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MEMORANDUM FOR SEE DISTRIBUTION LIST

5/28/04

FROM: AFRPA/DA-Griffiss
Environmental Section
153 Brooks Road
Rome, NY 13441-4105

SUBJECT: AOC-9 Final 2002 Remedial Investigation (RI) Report

1. Attached please find the AOC 9 Weapons Storage Area Landfill Final 2002 Remedial Investigation Report, former Griffiss Air Force Base. Responses to regulatory comments on the AOC-9 Draft 2002 Remedial Investigation (RI) Report are also included.

2. The AOC-9 Draft Feasibility Study will be issued within the next month.

3. If you have any questions, please contact Cathy Jerrard at (315) 330-2275.

MICHAEL F. MCDERMOTT
BRAC Environmental Coordinator

Attachment: As Noted

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Responses to Comments on AOC 9: Weapons Storage Area (WSA) Landfill Draft 2002 Remedial Investigation Report by Douglas Pocze, USEPA, Dated: February 23, 2004.

USEPA GENERAL COMMENTS

USEPA General Comment 1: Discussion of the installation and purpose of wells AOC9-MW12 and AOC9-MW13 have been omitted from this document. It is clear from the text that Wells AOC9-MW05 through AOC9-MW08 were installed as part of the 2000 Supplemental Investigation, and Wells AOC9-9Br, AOC9-10Br, and AOC9-11Br were installed as part of the Bedrock Groundwater Study, yet it is not clear when MW-12 and MW-13 were installed, although they are included in the discussion of the Field Pilot-scale Study in Section 2.4.2. These wells cannot be located on Figures 4-1 through 4-3, and it does not appear as though data from them have been included in summary tables. Finally, while these wells are included in the discussion of the natural attenuation parameters, they are not listed in the summary table for these parameters (Table 5-3). Please include discussion of these two wells (including rationale for installation, date of installation, well completion logs, development data, and summaries of any sampling of the wells) and revise figures to show the location of the wells.

Response to USEPA General Comment 1: Monitoring wells AOC9-MW12 and AOC9-MW13 were installed during the Treatability Pilot Study. A discussion of the installation and purpose of these wells has been added to Section 2.4.2 of this document. Figures 4-1 through 4-3 present the results of the Year 2000 SI and Year 2002 SI and as a result sampling results for these two wells are not included in these figures. However, these figures have been revised to show the location of wells AOC9-MW12 and AOC9-MW13. Table 2.4.2-1 has been added to provide analytical data for the pre-treatment samples collected during the baseline sampling for the Groundwater Treatability Study. Well completion logs, development data, and summaries are provided under separate cover (*Draft Groundwater Treatability Pilot Study report, Former Griffiss Air Force Base, Rome, New York, March 2003*) and are not duplicated here. Finally, Table 5-3 has been revised to list the natural attenuation parameters for the wells sampled during the treatability study baseline sampling.

USEPA General Comment 2: Overall, EPA comments and recommendations made on the *AOC 9 Draft Human Health Risk Assessment Site Conceptual Model (Draft) Griffiss AFB, Rome, NY,* dated August 7, 2001, and the responses to these comments were incorporated into the human health risk assessment in the RI document. One exception is the exclusion of evaluation of the inhalation of the soil particulate pathway. The RI (p. 6-3) states that "inhalation is considered unlikely under existing conditions." EPA specifically commented that this pathway should be quantitatively evaluated in the risk assessment. As the inhalation of particulate pathway is a complete exposure pathway, revise text to include it in the quantitative risk assessment.

Response to USEPA General Comment 2: The inhalation of soil particulates pathway was quantitatively evaluated in the Draft AOC 9 RI Report (HHRA) as a complete exposure pathway for the hypothetical future residential and future worker scenarios (see Section 6.1.2 Site Conceptual Model). In the evaluation of future receptors, the fraction of vegetative cover used in the calculation of the particulate emission factor (PEF) was set to zero to assess risks assuming no vegetative cover at the site. As shown in Tables 9.4 and 9.5, cancer risks calculated for the particulate inhalation pathway under the future residential scenario were well below the 10^{-6} risk level (1.4 E-8 and 1.9 E-8, respectively for the child and adult receptor) and non-cancer hazard quotients were less than one.

Under current conditions, the site is almost completely covered by grass or pavement, which will effectively eliminate generation of airborne dust. Taking current vegetative cover conditions at the site into account, the PEF value would be as much as 2 orders of magnitude lower than the PEF calculated for the future residential exposures. In addition, the exposure frequency assumed for the site visitors is one-half of that assumed for a future resident. Consequently, risks estimated for a current site visitor would be negligible. The text on page 6-3 has been revised to indicate that the current inhalation exposures are negligible due to the soil cover at the site; however, the particulate inhalation pathway has been evaluated under the future residential exposure scenario with the assumption that the vegetative cover is not present.

USEPA General Comment 3: The Exposure Assessment Uncertainties evaluation should be reinforced by a presentation of the risk results resulting from the use of Central Tendency (CT) exposure factors. CT risks should be calculated and presented for any RME results that exceed the acceptable threshold levels. CT risk results are very useful in the risk management process and in determining appropriate actions in the Feasibility Study.

Response to USEPA General Comment 3: Appropriate text and tables have been added to include an assessment of CT risks for RME results that exceed acceptable threshold levels. Based on the range of risks generally deemed acceptable by EPA (i.e., cancer risks between 10^{-4} and 10^{-6}, and non-cancer HI less than 1), the assessment of CT risks focuses on the following scenarios where risks exceed a cancer risk of 1 x 10^{-4} or an HI of 1:

- Current/future recreational users exposed to surface water.
- Groundwater use by hypothetical future residents and workers.

USEPA General Comment 4: While future development seems unlikely, groundwater use at AOC 9 is not currently prevented. Institutional Controls (deed restrictions) should be considered to prevent groundwater use.

Response to USEPA General Comment 4: AFRPA agrees, the use of Institutional Controls (deed restrictions) to prevent groundwater use will be considered in the Feasibility Study.

USEPA General Comment 5: While the risk assessment regarding fish consumption, as presented in the Human Health Risk Assessment, were overly conservative, the Feasibility Study should also consider Institutional Controls to prohibit consumption of the fish from Six Mile Creek (SMC).

Response to USEPA General Comment 5: As stated in the Six Mile Creek Record of Decision dated December 2003, improvements to the Six Mile Creek AOC have been and will continue to be made through the remediation of contamination sources to the creek. Surface water, sediment, and fish tissue samples will be collected from the creek to ensure that planned and completed remedial actions have the intended result of reducing contaminants in the creek. Per the final Six Mile Creek ROD, Institutional Controls are not required for Six Mile Creek.

USEPA General Comment 6: A recommendation presented in the Ecological Risk Assessment (ERA) is that no additional ERA activities are necessary at this site. Additional ERA activities, however, are necessary to confirm several of the statements presented in the Conclusions and Recommendations section (Section 7.4) of the report.

Response to USEPA General Comment 6: Section 7.4 has been augmented to illustrate the effect of using more realistic exposure parameters on the magnitude of the wildlife hazard quotients.

USEPA General Comment 7: The figures in this report tend to vary as to the exact location of the boundaries of AOC-9. For example, Figure 1-2 shows the southwestern boundary of AOC-9 being directly adjacent to the runway with portions of Six Mile Creek (SMC) and its unnamed tributary within the AOC-9 boundary. However, Figures 7-1 and 7-2 show SMC and the unnamed tributary as being outside of the southwestern boundary of AOC-9. The size and boundaries of AOC-9 should be consistent on all figures.

Response to USEPA General Comment 7: AFRPA agrees that clarification is warranted. Figure 1-2 shows the current boundaries of AOC 9. Figures 7-1 and 7-2 show only the portion of AOC 9 located south of Perimeter Road from which the surface water/sediment and soil samples utilized in the ecological risk assessment were collected. Additional labeling has been added to the figures to clarify that the rectangle shown on some of the report figures is indicating the Area of the Group I Geophysical Survey, not the boundary of AOC 9.

USEPA General Comment 8: It is unclear where and when background concentrations were used in the screening process. Comparison to background is vaguely mentioned in the conclusions section, but no comparison to background values is presented in the tables. This issue should be clarified.

Response to USEPA General Comment 8: For soil samples, as per NYSDEC TAGM 4046, site background values are used to screen concentrations of certain metals. For metals that TAGM 4046 suggests a certain level or site background (i.e., arsenic, barium, etc), the lower of the two values has been used. The background values are listed in the various Appendix G Tables (i.e., ESI Table 2-1, 1995 Group I AOIs Table 3.2-2, and RI Table 5-1). Background values, where used, are also listed in the screening tables under the Most Stringent Criteria heading.

USEPA General Comment 9: Bioaccumulation Factors (BAFs) are used in the food-chain modeling process to determine exposure point concentrations (EPCs) for the ingestion of earthworms and benthic invertebrates. While the equation used to calculate BAFs is presented in the text, the way that the BAF values are used to calculate EPCs is not provided. It may be inferred that EPCs in soil were multiplied by earthworm BAFs to derive earthworm EPCs, but all calculations performed in the ERA should be described in the text.

Response to USEPA General Comment 9: The method used to calculate EPCs for earthworms and benthic invertebrates using BAFs and soil/sediment chemical concentrations has been added to Section 7.3.5.1 of the report, under Exposure Point Concentration.

USEPA SPECIFIC COMMENTS

USEPA Specific Comment 1: Executive Summary, Page E-2. This section appears to be nearly identical to the text in the December 2002 *AOC 9 WSA Landfill Supplemental Investigation Draft 2002 Data Summary Report*, with only minor changes in wording related to the three potential source areas. As stated, in addition to defining the sources of groundwater contamination, the goals of this Remedial Investigation included evaluation of the former test pit area for the presence of petroleum hydrocarbons as well as additional sampling to confirm or invalidate the Aqueous Film-Forming Foam lagoon (AFFF) as a source of contamination to downgradient surface water bodies. Therefore, the conclusions for these two objectives should be reiterated in the Executive Summary (that is, that the soils in the area of the former test pits are not a source of petroleum hydrocarbons, and that neither the surface water nor sediments in the AFFF contained volatile organic compounds in excess of screening criteria). With regard to the third objective, however, the Executive Summary should clarify that the sediments did contain one SVOC, three pesticides, and three metals above screening values.

Response to USEPA Specific Comment 1: The Executive Summary has been revised to include the conclusions regarding the test pit excavations and the AFFF sampling as requested. In addition, the Executive Summary has been revised to state that the sediments within the AFFF lagoon did contain one SVOC, three pesticides, and three metals at concentrations above screening criteria.

USEPA Specific Comment 2: Section 2.1.1, Page 2-2. Include the well identification numbers (i.e., AOC9-9Br, AOC9-10Br, and AOC9-11Br) in this section. These were installed during the AOC 9 Bedrock Groundwater Study, but are not identified, although data from them are included in summary tables. Also identify these wells in appropriate portions of the text in the Section 3.5.3 "Bedrock" discussion.

Response to USEPA Specific Comment 2: Bedrock wells AOC9-9Br, AOC9-MW10Br, and AOC9-MW11Br have been identified in Sections 2.1.1, 3.5.3, and 5.1 where appropriate, as requested.

USEPA Specific Comment 3: Section 2.3.3, Page 2-13. The text in this section indicates that two discrete depth-specific sediment samples were collected from the AFFF lagoon. Please include the sampling method by which these samples were collected.

Response to USEPA Specific Comment 3: The sediment samples were collected using a hand auger in accordance with the *2002 Addendum to the March 1997 Work Plan for Site Investigations of Areas of Concern, Former Griffiss Air Force Base, Rome, New York, June 2002*. The sampling method has been added to the text as requested.

USEPA Specific Comment 4: Section 5.5.1, Page 5-13. The text in this section indicates that detected concentrations of aluminum, iron, and manganese were not considered chemicals of potential concern (COPCs) because these metals are common in soil and rock at AOC 9. However, the validity of this assumption cannot be examined without inclusion of background soil concentrations. Please revise the text to include a documented range of concentrations of these metals for comparison to the detected concentrations.

Response to USEPA Specific Comment 4: The range of concentrations of aluminum, iron, and manganese in AOC 9 soils and site background soils have been added to Section 5.5.1, as requested.

USEPA Specific Comment 5: Section 5.5.2, Page 5-15. It appears as though several omissions or transcription errors were made when evaluating the natural attenuation indicator data in Table 5-3 and summarizing these results in the text. In addition, references to MW-12 and MW-13 in the text cannot be verified because data for these wells is not included in the table. The inconsistencies in this section include the following:

Dissolved Organic Carbon (DOC): The text indicates that the maximum DOC in the monitored wells is 4.6 mg/L in MW-13. However, as per the table, the maximum concentration is 3.0 mg/L in MW-08D, and concentration in MW-13 cannot be verified.

Oxidation-Reduction Potential (ORP): Revise text to indicate that the measured readings were also negative for well AOC9-MW05, which is extremely downgradient of the plume, on the other side of the tributary to Six Mile Creek.

Ferrous Iron: Concentrations of ferrous iron in MW-12 and MW-13 cannot be verified; therefore, this reference should be removed or corrected. In addition, the concentration of iron in well AOC9-MW08 is not 3.55 μg/L as indicated. The concentration in this well as per the table is 1.61 mg/L (or 1,610 μg/L).

Sulfate: The maximum value of 7.62 mg/L identified in the text cannot be confirmed. This number does not appear to be shown anywhere on Table 5-3, and certainly not in the row of sulfate data. The maximum concentration shown in the table is 24.5 mg/L in G009-MW04, with the highest in the AOC series wells being 14.0 mg/L in AOC9-MW06.

Nitrate: While the text is accurate in reporting that concentrations in MW07 and MW-08 (ND and 0.0372 mg/L, respectively) are depleted, the text should also clarify that concentrations much higher than these were detected in most of the other wells (e.g., 1.76 mg/L in G009-MW04, 0.615 mg/L in AOC9-MW06). This adds weight to the argument for active anaerobic metabolism.

Also, a new figure should be considered showing just the locations of the wells that were monitored for natural attenuation parameters.

Response to USEPA Specific Comment 5: Table 5-3 has been revised to list the natural attenuation parameters for the wells sampled during the treatability study baseline sampling (see also General Comment 1). The revised table is now in agreement with the text.

Dissolved Organic Carbon (DOC): The maximum DOC concentration in the monitored wells is 4.6 mg/L in MW-13 as indicated in the text; therefore the text has not been revised.

Oxidation-Reduction Potential (ORP): Text has been revised, as requested, to indicate that the measured readings were also negative for well AOC9-MW05.

Ferrous Iron: The concentrations of ferrous iron in MW-12 and MW-13 indicated in the text are correct; therefore the text has not been revised. The concentration of ferrous iron in well AOC9-MW08 (3.55 μg/L) is also correct for the treatability study baseline sample. The text has been revised to clarify the round of sampling discussed.

Sulfate: The maximum sulfate concentration of 7.62 mg/L indicated in the text is correct. The maximum concentrations of 24.5 mg/L in G009-MW04 and 16.4 mg/L in G009-MW01 have been added to the text to further support the argument for active anaerobic metabolism.

Nitrate: The text has been revised, as requested, to clarify that much higher concentrations were detected in most of the other wells supporting the argument for active anaerobic metabolism.

Figures 4-1 through 4-3 have been revised to show all the AOC 9 wells. A new figure showing just the locations of the wells monitored for natural attenuation parameters was considered, however, it was determined that such a figure was not necessary.

USEPA Specific Comment 6: Section 6.1.1. It is important to note, that consistent with RAGS-Part A guidance, institutional controls cannot be considered in the risk assessment as suggested in the third paragraph. It is recommended that the text should be modified to indicate that the restriction of access to the site by gates was not considered in the risk assessment and that the risk assessment evaluated risks in the absence of institutional controls under current and future land use

Response to USEPA Specific Comment 6: The text has been revised (second paragraph of Section 6.1.2) to reflect that the risk assessment evaluated risks in the absence of institutional controls under current and future land use.

USEPA Specific Comment 7: Section 6.1.2. Define what is meant by open-space i.e., no development?

Response to USEPA Specific Comment 7: The text has been revised as requested to clarify the planned future use of the property in the vicinity of AOC 9 and the meaning of open space. All of the areas designated with this land use would be maintained as open space (i.e. no development is planned).

USEPA Specific Comment 8: Section 6.2.3. On page 6-8, it is unclear what is meant by the statement "In a few isolated cases, where current USEPA-recommended toxicity values differed from values used by Region 9, the RBSCs were adjusted accordingly." This discussion should clarify which chemical toxicity values were changed and the basis for these modifications.

Response to USEPA Specific Comment 8: The RBSCs derived from the Region 9 PRG table for the risk screening were reviewed and only two differences from the Region 9 PRGs were noted, both for tap water RBSCs. The differences were due to recent changes in the reference doses (RfDs) used in the calculation of the Region 9 PRGs for 1,1-dichloroethylene and xylenes. An RBSC of 18 µg/L was used in the risk assessment screening for 1,1-dichloroethylene in surface water and groundwater (based on 1/10th of the former PRG of 1.8e+2 µg/L). The most recent Region 9 PRG value for tap water is 3.4e+2 µg/L. This value is greater than the value used in the COPC screening, and; therefore, does not affect the risk assessment, as 1,1-dichloroethylene was not selected as a COPC based on the prior screening.

An RBSC of 1,100 µg/L (based on 1/10th of the previous non-cancer PRG) was used in the risk assessment for xylenes in surface and groundwater. The current value listed in the Region 9 PRG table is 2.1e+2 µg/L, resulting in an RBSC of 21 µg/L. Xylenes were not retained as a COPC based on the original risk-based screening; however, because of this change in values, xylene becomes a COPC in groundwater because the maximum detected groundwater concentration (218 µg/L) is greater than the RBSC based on the most recent Region 9 PRG. The text and tables in the report have been changed as appropriate.

USEPA Specific Comment 9: Section 6.4.1.1. The section indicates "... the term noncarcinogen refers to any chemical for which the carcinogenic evidence is negative or insufficient". Technically, chemicals can have both cancer and non-cancer health effects and the text should be modified to reflect this information.

The discussion of the Weight of Evidence classification should acknowledge that the Agency is developing new cancer guidelines (see 1996, 1999 and 2003) versions and that the classifications have been changed to likely, not likely, etc.

Response to USEPA Specific Comment 9: The text referred to in this comment has been modified as requested.

USEPA Specific Comment 10: Section 6.4.2. The discussion of the HEAST values is not consistent with the current toxicity hierarchy outlined in EPA's December 2003 memo. Specifically, HEAST values should not be used without an evaluation by NCEA to determine whether the data requires updates. It is recommended that the text should be modified to reflect that the chemical toxicity values in HEAST have been updated where appropriate based on NCEA's evaluation.

Response to USEPA Specific Comment 10: The AOC 9 risk assessment was prepared prior to the release of the December 2003 memo. The text has been reviewed and modified as requested to reflect the current procedure for use of toxicity values in HEAST.

USEPA Specific Comment 11: Sections 6.4.3 and 6.5.3.4. Text in these sections indicates that owing to a lack of toxicity values, potential risks from lead exposure were not quantified. However, EPA's approach to lead is to either compare to a value of 400 ppm in soil based on the OSWER directive or to use the IEUBK or adult lead model to calculate projected blood lead levels in the exposed population. The text should be revised to indicate these procedures.

Response to USEPA Specific Comment 11: The text has been revised to include a discussion of EPA's approach to assessing potential risks from exposure to lead in soil; however, the discussion of lead risks in Sections 6.4.3 and 6.5.3.4 pertains to lead detected in surface water. The maximum detected concentration of lead in soil was well below the OSWER criterion of 400 ppm used in the COPC screening process.

USEPA Specific Comment 12: Section 6.5.3.1. The conclusion that suspended sediment in samples do not reflect actual surface water contamination or likely exposures is unclear. There is a potential for sediments to be dislodged during play and therefore individuals may be exposed to suspended sediments. This text should be further clarified.

Response to USEPA Specific Comment 12: The discussion of suspended sediments has been modified to clarify that the maximum detected concentrations of iron and manganese used in the assessment of surface water risks were detected in seep samples and likely overestimate the actual exposure in surface water at the site.

USEPA Specific Comment 13: Section 6.5.3.6. The discussion regarding the omission of PCBs from the fish tissue data is not clear since information regarding the other sources of PCBs, etc. are not presented. In addition, review of the data indicates that despite the removal of the PCB information, the risks from exposure to these fish is still unacceptable. The text should be clarified regarding the basis for the determination that PCBs are not related to the AOC and how this is being addressed under another AOC. The homerange of the fish should also be discussed.

The discussion of whether the fish species are normally consumed by other individuals requires further clarification. Specifically, what surveys indicate that these fish species are not an edible species. What other fish species are present, etc. It should also be clarified that the goal of the risk assessment is to protect the RME individual and therefore, as suggested in the text, the potential exists for an individual to consume this fish species.

Response to USEPA Specific Comment 13: The purpose of the discussion was not to omit risks related to PCBs, but to illustrate that the bulk of the risk associated with fish consumption was from PCBs, which have not been detected in the various media at AOC 9. The text has been revised in Section 6.5.3.6 to discuss possible factors that may have contributed to the observed fish PCB concentrations, including the home range of the fish.

Although there is a potential for an individual to consume the fish species tested (*Semotilus atromaculatus* or creek chub), the creek chub is commonly used as bait for game fish such as bass. The discussion will be expanded to include this information as well as a discussion of potential predators of the creek chub present in Six Mile Creek.

USEPA Specific Comment 14: Section 6.6.4. The discussion regarding exposures through surface water contamination is not consistent with the goals of the risk assessment. It is suggested that the text should discuss the potential for overestimation of risk rather than discussing the conservatism of the risk assessment.

Response to USEPA Specific Comment 14: The text has been revised as suggested.

USEPA Specific Comment 15: Section 6.7 The discussion regarding the "hypothetical" exposures requires further consideration since there are no restrictions in place to prevent this activity. It is suggested that the text should be modified to indicate that there are no institutional controls in place to prevent this from occurring.

Response to USEPA Specific Comment 15: The text has been modified to indicate that institutional controls are not currently in place to prevent the hypothetical future exposure scenarios.

USEPA Specific Comment 16: Section 7.3.1.3, Page 7-9. This section describes the ecological receptors and the exposure pathways evaluated in this ERA. It is implied in this section that the consumption of contaminated surface water by birds and mammals is a complete exposure route. However, the Conceptual Model presented in Figure 7-4 shows that this pathway is either not applicable or is a minor exposure route. This contradiction should be corrected.

Response to USEPA Specific Comment 16: The text of this section has been augmented to indicate that consumption of surface water by birds and mammals, although a potentially complete exposure route, accounts for only a small fraction of total chemical exposure and thus is considered minor. This issue is also discussed in Section 7.3.5.1 under the subheading *Wildlife Exposure Scenarios and Pathways* and is illustrated by an example calculation in Appendix L.

USEPA Specific Comment 17: Section 7.3.4, Page 7-13. This section describes the aquatic biota risk screening performed in the ERA. The last sentence in the first paragraph of this section states that chemicals detected in water and sediment from SMC were assumed to be from upstream sources. Earlier sections indicate that groundwater discharges to SMC, so another source of contamination in SMC could be contaminated groundwater. Revise text accordingly.

Response to USEPA Specific Comment 17: The text in Section 7.3.4 has been revised as requested.

USEPA Specific Comment 18: Section 7.4.1, Page 7-29. This section provides conclusions and recommendations for the evaluation of aquatic life in the onsite drainageways and SMC. It was concluded that the high metal concentrations in the drainageway water samples were caused by suspended sediment, and therefore, no adverse ecological impacts are expected. This assumption should be confirmed by analyzing filtered samples from the drainageway.

Response to USEPA Specific Comment 18: AFRPA does not believe that analyzing filtered surface water samples from the drainageways on site is warranted. Filtered and unfiltered groundwater samples have been collected at numerous Areas of Interest over the last several years and analyzed for metals from both permanent and temporary monitoring wells on base with elevated levels of turbidity. Comparison of the data generated has consistently shown that even slightly elevated levels of turbidity at the time of sampling significantly increased the levels of metals detected.

USEPA Specific Comment 19: Section 7.4.4, Page 7-30. This section provides conclusions and recommendations for the evaluation of bird and mammal populations. It was concluded that the conservative assumptions made in the ERA resulted in an overestimation of risk and therefore, it was unlikely that any chemicals in environmental media at AOC 9 would pose a risk to wildlife. This assumption should be confirmed by re-running the food-chain model using more realistic area use factors (AUFs) and average concentrations. This modeling would provide more realistic hazard quotients.

Response to USEPA Specific Comment 19: Section 7.4 has been augmented to illustrate the effect of using more realistic exposure parameters on the magnitude of the wildlife hazard quotients.

USEPA Specific Comment 20: Section 9, Page 9-1. Include the August 2002 AOC 9 Bedrock Groundwater Study as a reference in this section.

Response to USEPA Specific Comment 20: Since the entire 2002 AOC 9 Bedrock Groundwater Study report is provided as Appendix J of this RI, the Bedrock Groundwater Study report is not cited in the text (rather the reader is directed to see Appendix J) and consequently, this report is not included in the list of references.

USEPA TABLES & FIGURES COMMENTS

USEPA Tables & Figures Comment 1: Table 5.1. The Table should clarify the source of the toxicity information for tetrachloroethylene. The listed data is 6/01/01 while a memo regarding the appropriate toxicity values for this chemical was issued on June 12, 2003 and is OSWER Directive 9285.7-75.

Response to USEPA Tables & Figures Comment 1: The oral RfD listed for tetrachloroethylene in Table 5.1 (1.0E-2 mg/kg-d) is based on an online search of EPA's IRIS database on 1/1/03, prior to the June 12, 2003 OSWER directive. The OSWER Directive cited in the comment contains toxicity values that are different from those originally used in the HHRA. The toxicity values from the OSWER Directive have been incorporated into the HHRA.

USEPA Tables & Figures Comment 2: Table 7.3-7. Table 7.3-7 is not provided in the report. Table 7.3-6 was erroneously provided twice resulting in the omission of Table 7.3-7. Include Table 7.3-7.

Response to USEPA Tables & Figures Comment 2: The error has been corrected, duplicate Table 7.3-6 has been removed and Table 7.3-7 is included in the report.

USEPA Tables & Figures Comment 3: Figures 4-1 through 4-3. Show the locations of AOC9-MW12 and AOC9-MW13 on these figures.

Response to USEPA Tables & Figures Comment 3: Figures 4-1 through 4-3 have been revised to show the location of wells AOC9-MW12 and AOC9-MW13, as requested.

AOC 9: Weapons Storage Area (WSA) Landfill
Final 2002 Remedial Investigation Report
Former Griffiss Air Force Base
Rome, New York

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Prepared for:

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List of Abbreviations and Acronyms

AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFFF	Aqueous film-forming foam
AFRPA	Air Force Real Property Agency
ALCM	Air Launch Cruise Missile
AMSL	Above Mean Seal Level
AOC	Area of Concern
AOI	Area of Interest
ASC	Ecology and Environment Analytical Services Center
AST	aboveground storage tank
ASTM	ASTM International, formerly known as American Society for Testing and Materials
Atm-m^3/mole	atmospheres cubic meters per mole
B913	Building 913
BAF	bioaccumulation factor
BEHP	bis(2-ethylhexyl)phthalate
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
BW	body weight
CDI	chronic daily intake
cm/s	centimeters per second
COPC	chemical of potential concern
CS	Confirmatory Sampling

List of Abbreviations and Acronyms (Cont.)

CT	central tendency
D	deep geoprobe
DCB	dichlorobenzene
DCE	dichloroethene
DNAPL	denser-than-water nonaqeuous phase liquid
DO	dissolved oxygen
DOC	dissolved organic carbon
DRMO	Defense Reutilization and Marketing Office
E & E	Ecology and Environment, Inc.
ED	exposure duration
EF	exposure frequency
EPC	exposure point concentrations
ERA	Ecological Risk Assessment
ERAGS	Ecological Risk Assessment Guidance for Superfund
ERDC	United States Army Engineer Research and Development Center
ESI	Expanded Site Investigation
FID/PID	flame ionization detector/photoionization detector
FS	Feasibility Study
FSP	Field Sampling Plan
ft/day	feet per day
ft/ft	foot per foot
FWIA	Fish and Wildlife Impact Analysis
GI	gastrointestinal
HEAST	Health Effects Assessment Summary Table
Hg	mercury
HHEM	Human Health Evaluation Manual
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient

List of Abbreviations and Acronyms (Cont.)

HSP	Health and Safety Plan
HTRW	Hazardous, Toxic, and Radioactive Waste
I	intermediate geoprobe
IDW	investigation-derived waste
IEUBK	Integrated Exposure Uptake Biokinetic
IR	ingestion rate
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
K	hydraulic conductivity
Kd	organic carbon partition coefficient
Koc	distribution coefficient
Kow	octanol water partition coefficient
L/day	liters per day
LADI	lifetime average daily intake
LMS	linearized multistaged
LOAEL	lowest-observed-adverse-effect level
LSA	lead-screen auger
MCL	maximum contaminant level
MEE	methane, ethane, ethane
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg-day	milligrams per kilogram per day
mg/L	milligrams per liter
mm	millimeter
NA	natural attenuation
NAPL	non-aqueous phase liquid
NCEA	National Center for Environmental Assessment
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	non-detect

List of Abbreviations and Acronyms (Cont.)

NEADS	Northeast Air Defense Sector
NOD	Natural Oxygen Demand
NORAD	North American Air Defense Command
NPL	National Priorities List
NTU	nephelometric turbidity unit
NYANG	New York Air National Guard
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSNHP	New York State Natural Heritage Program
ORNL	Oak Ridge National Laboratory
ORP	oxidation-reduction potential
OTH	other miscellaneous environmental factors site
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PISCES	passive in situ concentration/extraction sampler
PQL	practical quantification limit
PRGs	Preliminary Remediation Goals
QA	quality assurance
QAPjP	Quality Assurance Project Plan
QC	quality control
QCP	Quality Control Plan
QCSR	Quality Control Summary Report
RADC	Rome Air Development Center
RAGS	Risk Assessment Guidance for Superfund
RBSC	Risk-based Screening Concentration
RCRA	Resource Conservation and Recovery Act
RfC	reference concentrations

List of Abbreviations and Acronyms (Cont.)

RfD	reference dose
RI	Remedial investigation
RME	reasonable maximum exposure
RPF	relative potency factor
S	shallow geoprobe
SCM	site conceptual model
SDI	subchronic daily intake
SF	slope factor
SI	Supplemental Investigation
SMC	Six Mile Creek
SRAM	Short Range Attack Missile
STL	Severn Trent Laboratories, Inc.
SUF	site use factor
SVOC	semivolatile organic compound
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCE	trichloroethene
TCL	Target Compound List
TMB	trimethylbenzene
TMC	Three Mile Creek
TOC	total organic carbon
TOGS	Technical and Operational Guidance Series
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbon
TRV	toxicity reference value
UCL	upper confidence limit
UF	uncertainty factor
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

List of Abbreviations and Acronyms (Cont.)

USFWS	United States Fish and Wildlife Service
UST	underground storage tank
VC	vinyl chloride
VOC	volatile organic compound
WAD	work authorization directive
WSA	Weapons Storage Area
WWII	World War II

Executive Summary

Under contract to the United States Army Corps of Engineers (USACE), Kansas City district, Ecology and Environment, Inc., (E & E) conducted the Year 2002 Supplemental Investigation (SI) at Area of Concern (AOC) 9: Weapons Storage Area (WSA) landfill at the former Griffiss Air Force Base (AFB) in Rome, New York.

The purpose of this investigation was to more clearly define the source area of the chlorobenzene contamination detected in the groundwater during the 2000 SI, to determine if petroleum hydrocarbon contamination is present in the areas where sheens were observed during the test pit excavations, to determine if the aqueous film-forming foam (AFFF) lagoon is a source of contamination, and to assemble all of the historical investigation data into this Remedial Investigation (RI) Report.

The Group I Areas of Interest (AOIs) Confirmatory Sampling (CS) results (E & E 1996), Expanded Site Investigation (ESI) results (E & E 1998b), and Year 2000 SI results (E & E 2001), were used for the 2002 SI work plan recommendations. These recommendations were discussed by USACE, the Air Force Base Conversion Agency (AFBCA) (currently known as Air Force Real Property Agency [AFRPA]), and E & E during scoping sessions and conference calls before the final Year 2002 SI work plan was submitted in June 2002 (E & E 2002a). The United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC) reviewed and commented on the draft and final Year 2002 SI Work Plan. The 2002 SI field program was initiated on July 15, 2002 and was completed on July 25, 2002. The investigation included Geoprobe groundwater screening sampling; drilling and subsurface soil sampling of two soil borings; sediment sampling within the AFFF lagoon; and excavation and sampling of test pits. Geoprobe samples were analyzed for volatile organic compounds (VOCs) at the E & E Analytical Services Center (ASC) within 24 hours of sampling. Results from this survey were used to more clearly define the extent of the groundwater contamination on-site and the location of potential source areas.

The results of the Year 2002 SI samples were assessed using the same criteria as those used to screen samples taken in the RI (Law 1996a), the 1998 SI of AOCs (E & E 1998a), and the Year 2000 SI (E & E 2000b). Where possible, Year 2000 SI results were compared to CS and ESI results (i.e., for ESI wells and CS and ESI surface water and sediment sample locations re-sampled during the Year 2000 SI). Other groundwater analytical results (e.g., natural attenuation parameters) were evaluated in this report, and will be used in future Feasibility Studies (FSs) to evaluate remedies.

The results of the Year 2000 and 2002 investigations confirm that the groundwater at the AOC 9 site contains elevated levels of chlorinated solvents (tetrachloroethene [PCE] and trichloroethene [TCE]) and their breakdown products (cis-1,2-dichloroethene [DCE]; trans-1,2-DCE; and vinyl chloride [VC]); and elevated levels of aromatic hydrocarbons (benzene; n-butylbenzene; sec-butylbenzene; tert-butylbenzene; chlorobenzene; 1,2-dichlorobenzene [DCB]; 1,3-DCB; 1,4-DCB; ethylbenzene; isopropylbenzene; p-isopropyl toluene; naphthalene; n-propylbenzene; 1,2,4-trimethylbenzene [TMB]; and 1,3,5-TMB). Some of the highest concentrations detected were 2,352 µg/L of chlorobenzene; 513 µg/L of 1,2-DCB; 214.9 µg/L of 1,4-DCB; 173.3 µg/L PCE; 66.9 µg/L of TCE; 227.2 µg/L of cis-1,2-DCE; and 63.7 µg/L of VC. Degradation of the chlorinated solvents (PCE and TCE) appears to be occurring beneath the site, evidenced by the presence of elevated levels of daughter products (DCE and VC). The extent of contamination was well-defined both laterally and vertically by the Geoprobe/Hydropunch surveys. Three potential source areas appear to exist at AOC 9. One potential source area appears to exist between the WSA and Perimeter Road (in the vicinity of monitoring well AOC9-MW08). A second potential source area appears to exist on the southeast side of the concrete apron located south of Building 913 inside the WSA (in the vicinity of Geoprobe temporary well AOC9-GP56I and bedrock monitoring well AOC9MW-11Br), and the third potential source area may exist between Perimeter Road and Six Mile Creek (SMC), in the vicinity of the former storage igloos. Miscellaneous lower-level detections of chlorinated solvents (i.e., isolated levels of TCE up to 6.9 µg/L; cis-1,2-DCE up to 1.8 µg/L;

and chlorobenzene and dichlorobenzenes up to 12.1 µg/L) in samples collected within the WSA (AOC 9-GP29, -GP36, -GP39, -GP40, -GP41, and -GP43) suggest that localized spills or disposal may have taken place. The groundwater beneath AOC 9 discharges to the SMC drainage basin, which acts as a hydraulic boundary.

Surface water and sediment samples from the main channel of SMC contain chlorinated solvents from the site. However, the levels detected do not exceed screening criteria due to the significant mixing of the plume with creek water. Surface water samples from on-site intermittent streams and drainageways showed levels of chlorinated solvents in concentrations exceeding screening criteria, caused by groundwater discharge, supporting the identification of the area between the WSA and Perimeter Road as a potential source area.

Surface water and sediment samples from the AFFF lagoon did not contain volatile organic compounds (VOCs) in excess of screening criteria. However, one semivolatile organic compound (SVOC) (pyrene) and three pesticides were detected in the shallow sample at concentrations exceeding screening criteria. Copper was detected in both sediment samples at concentrations slightly above screening criteria and antimony and manganese were detected in the deeper samples at concentrations slightly above screening criteria. Based on the field observations and analytical data, the AFFF lagoon does not appear to be a source of the chlorinated solvent contamination present in the groundwater on site.

Debris (including glass, slag, bricks, ceramics, cinderblocks, asphalt, concrete, wire, and metal) encountered during test pit excavations within the boundaries of the former landfill accounted for less than 1% by volume of the excavated material. The lack of waste materials observed from test pit excavations support reports that the former WSA landfill was removed prior to the construction of the WSA. Based on the analytical data obtained from the samples collected from the 2002 excavations, the soils in the area of the test pits are not a source of petroleum hydrocarbon contamination.

1 Introduction

Ecology and Environment, Inc., (E & E) under contract with the United States Army Corps of Engineers (USACE), Kansas City District, Contract No. DACW41-99-D-9005, Work Authorization Directive (WAD) 09, performed the Year 2002 Supplemental Investigation (SI) at Area of Concern (AOC) 9: the Weapons Storage Area (WSA) Landfill (formerly Area of Interest [AOI] 9) at the former Griffiss Air Force Base (AFB) in Rome, New York (see Figures 1-1 and 1-2).

Field investigations were performed by E & E personnel between July 15 and July 25, 2002. The Geoprobe survey, drilling of borings, and test pit excavations were completed by Zebra Inc., under the supervision of an E & E geologist and site safety officer. Laboratory analyses were performed by E & E's Analytical Services Center (ASC), located in Lancaster, New York. Split samples were analyzed by the United States Army Engineer Research and Development Center (ERDC) Quality Assurance Laboratory located in Omaha, Nebraska. The Geoprobe, sediment, test pit, and soil boring location survey was conducted by LaFave, White, and McGivern, L.S., P.C. located in Boonville, New York.

Descriptions of previous investigations and current work performed are presented in Section 2 of this report. Physical characteristics of the study area are presented in Section 3. A preliminary discussion of the nature and extent of contamination are presented in Section 4.

1.1 Objectives of Investigation

The objectives of this investigation were to more clearly define the source area of the chlorobenzene contamination detected in the groundwater during the 2000 SI, to determine whether petroleum hydrocarbon contamination is present in the areas where sheens were observed during the test pit excavations, to determine whether the aqueous film-forming foam (AFFF) lagoon is a source of contamination, and to assemble all of the historical investigation data to produce this Remedial Investigation (RI) report.

1.2 Base Description and History of Operations

The former Griffiss AFB is located in Rome, New York. The base was established on February 1, 1942, as a Strategic Air Command bomber support installation. During World War II (WWII), activities at the base centered on aircraft engine repair. These activities were curtailed in the latter part of 1945. In 1949, electronics research began at the base. Watson Laboratories relocated to the base between 1950 and 1951 and became the Rome Air Development Center (RADC). In 1956, a major expansion of the existing airfield was initiated, including construction of an 11,500-foot-long runway. The WSA was constructed in the late 1950s in the northeastern portion of the base, northeast of the runway. This facility replaced a small munitions storage facility (i.e., the storage igloos) constructed in the early 1950s southwest of the WSA between the current Six Mile Creek (SMC) channel and Perimeter Road. The WSA was expanded in the late 1970s and early 1980s with the construction of additional storage igloos and other support facilities. The North American Air Defense Command (NORAD) Operational Control Center (now the Northeast Air Defense Sector [NEADS]) facilities were completed in the early 1980s.

The area of the former base is bordered by the Mohawk River along part of its western boundary and by the New York State (NYS) Barge Canal along its southern boundary. It consists of 3,539 acres, of which 3,278 acres were fee-purchased by the United States government between 1941 and 1978, 257 acres (currently occupied by the former base golf course) were donated by Oneida County in 1942 for initial base construction, and 4 acres (along the Barge Canal, south of the railroad tracks) are leased from NYS. In addition, the former base has 345 acres of clearance easements at both ends of its runway, 45 acres of rights-of-way, and 5 acres of restricted easements adjacent to the former WSA. Most of the former base is designated as Tract 243.000-0001-001 by the Oneida County Tax Office (Tetra Tech 1994).

The former Griffiss AFB was designated for realignment under the Base Realignment and Closure Acts of 1993 and 1995, resulting in deactivation of the 416th Bombardment Wing in September 1995. Some property has been retained by the government for organizations such as the Air Force Research Laboratory, NEADS, and the Defense Finance and Accounting Services, which will continue to operate at their current locations. The New York Air National Guard (NYANG) operated the runway for the 10th Mountain Division deployments until October 1998, when they were relocated to Fort Drum.

1.3 AOC 9 Description and History of Operations

AOC 9 is a grass-covered area approximately 1,200 feet long and 650 feet wide located on the southwest side of the inactive WSA. The site is part of a strip of land that lies between an airplane runway to the southwest and the WSA to the northeast; fences separate these other areas from AOC 9. Perimeter Road runs through the site and SMC borders the southwest edge. Between the WSA fence and Perimeter Road, there is a small water retention pond (the AFFF pond) that was connected to WSA operations. The ground surface at AOC 9 slopes gently downward toward SMC. Groundwater flows southwest toward the creek. There are several locations in this area where shallow groundwater discharges to the surface. The northwest end of the site proximate to the creek is generally wet.

The area comprising AOC 9 was originally farmland in the 1930s prior to base construction. In the 1940s and 1950s, the first landfill for the base (the WSA Landfill) was located beneath the northern portion of the former WSA and extended south between Perimeter Road and SMC (now designated as AOC 9). Based on aerial photographs, it was determined that the landfill was used between 1943 and 1957 but no later than 1960. The type of material buried at this site is unknown; however, it is reported that large quantities of the landfill were removed during construction of the WSA. In addition to the WSA, two munitions storage bunkers were erected between Perimeter Road and SMC in the early 1950s. One of the bunkers (also referred to as igloos) was removed in the late 1970s or early 1980s (i.e., prior to 1981), and the other bunker was removed in 1992. Although the bunkers were initially used for munitions storage, they were later used for storage of hazardous materials (Tetra Tech 1994).

Building 913 is located within the former WSA, along the northeast boundary of AOC 9. Building 913 is an earth-covered munitions storage igloo that was constructed in 1987 for storing Air Launch Cruise Missiles (ALCMs) and Short Range Attack Missiles (SRAMs). Building 913 is not an Installation Restoration Program (IRP) site, and no aboveground storage tanks (ASTs) or underground storage tanks (USTs), no Other Miscellaneous Environmental Factors sites (OTHs), and no wastewater related systems are associated with it (Tetra Tech 1994). In addition, no drywell is listed for Building 913 on the *Final Screening Table for Drywells, Grease Traps, Silver Recovery Units, and Miscellaneous Waste Water-Related systems* dated December 1997 (E & E 1997b).

AOC 9 was investigated as AOI 9 in 1995 under the Group I AOI Confirmatory Sampling (CS) program, in 1997 under the Expanded Site Investigation (ESI) program, and in 2000 under the SI program. Due to the presence of elevated chlorinated solvents (i.e., in excess of NYSDEC Class GA standards and United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels [MCLs]) in groundwater samples collected during the ESI at AOI 9 (E & E 1998b), the status of this site was changed from AOI to AOC. This change was requested by NYSDEC and USEPA representatives at the September 23, 1998 ESI meeting. This site is in proximity to the main runway and is planned to be retained as part of the airfield (USAF 1999).

1.4 Analytical Data Screening Process

The Year 2000 SI and the Year 2002 SI analytical results were screened using the same screening criteria presented in the Draft-Final RI (Law 1996a). Section 1.3 of Volume 1 (Background Information) of the RI describes the screening processes used at each AOC. A summary of the screening criteria that are described in the RI that are applicable to the SI are presented in the section below. Appendix G of this report contains the related sample screening tables from the RI and Part 703.6 of the New York Code of Rules and Regulations. Additionally, since some of the criteria have been updated since 1996, Appendix G also provides tables with the updated screening criteria for the parameters detected in the 2000 and 2002 samples.

For each parameter analyzed and detected, the most stringent criterion is used to screen the data. The most stringent value is also listed in the positive hits summary tables presented in Section 4. Only off-site laboratory data were screened against this criteria. A short summary of the various screening criteria used to screen the various media is presented below.

- **Groundwater:** State Class GA waters criteria (Technical and Operational Guidance Series [TOGS] 1.1.1, Ambient Water Quality Standards and Guidance Values, NYSDEC Division of Water 1993 [updated June 1998]); New York State Sanitary Code (New York State Sanitary Code for Drinking Water Supplies, Subpart 5-1, Public Water Systems, NYSDEC 1992 [updated April 2001]); and USEPA National Primary and Secondary Drinking Water MCLs (USEPA 2002b).

- **Sediment:** State Sediment Criteria for Protection of Wildlife Bioaccumulation, Benthic Aquatic Life (Fresh Water); and Human Health Bioaccumulation (Technical Guidance for Screening Contaminated Sediments, NYSDEC 1994a [updated January 1999]); Screening Guidelines for Inorganics and Organics (National Oceanic and Atmospheric Administration, 1994 [updated September 1999]); and State Sediment Criteria for Metals.

- **Soil:** Recommended State Cleanup Objectives (Technical and Administrative Guidance Memorandum [TAGM] 4046: Determination of Soil Cleanup Objectives and Levels, NYSDEC 1994b); Toxic Substance Control Act Cleanup Standards (40 CFR Part 761.125); USEPA Region III Risk-based Concentrations for Industrial Soils (March 1995); Proposed Resource Conservation and Recovery Act (RCRA) Corrective Action Levels (Proposed Rules, Subpart S. 40 CFR Section 264.521 (a) (2) (i-iv). Federal Register vol. 55 No. 145, July 27, 1990 [updated April 13, 2000]); USEPA Region III Soil Screening Levels - Transfer from Soil to Air (November 1996); and Site Background Soil Screening Levels (Law 1996a).

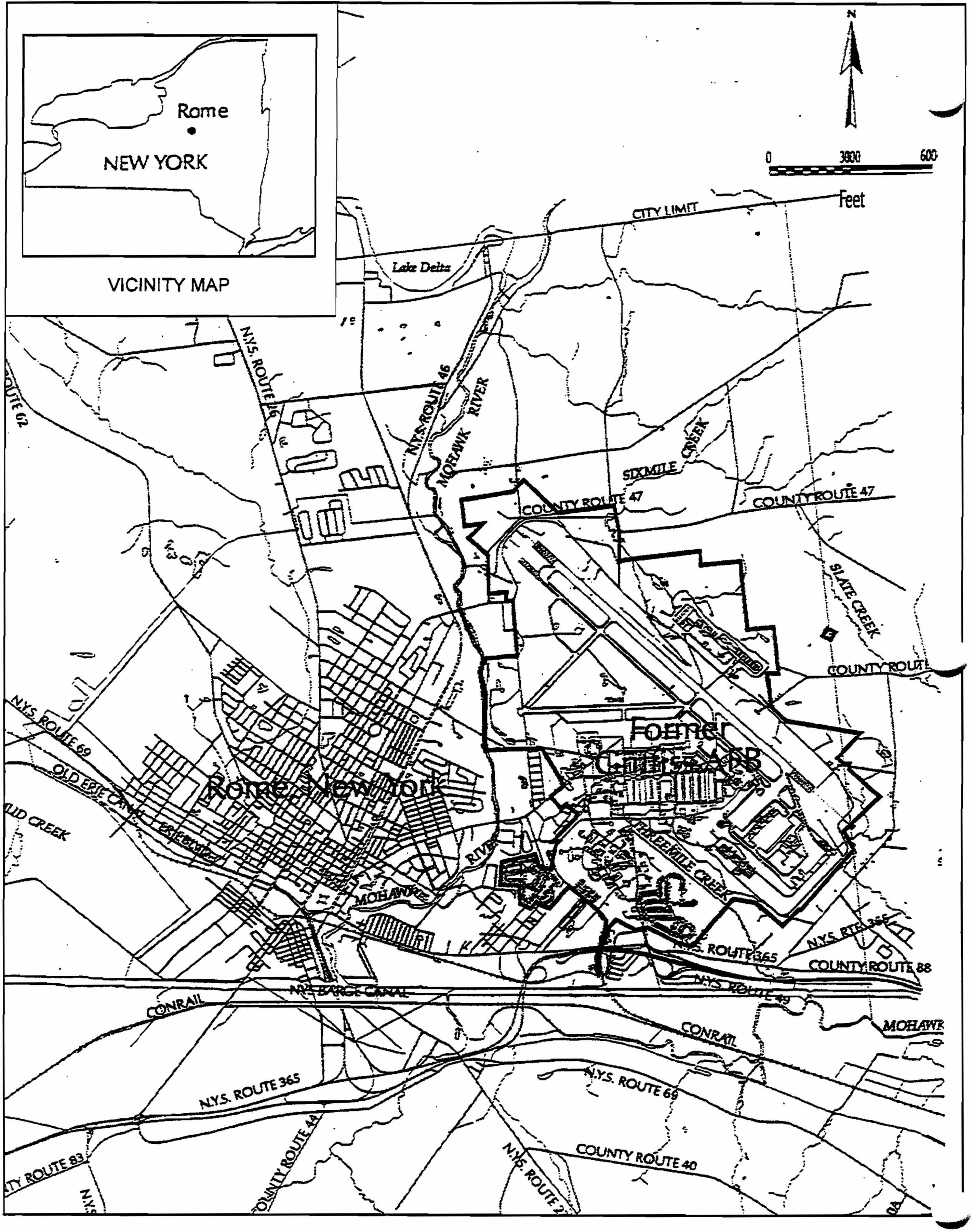
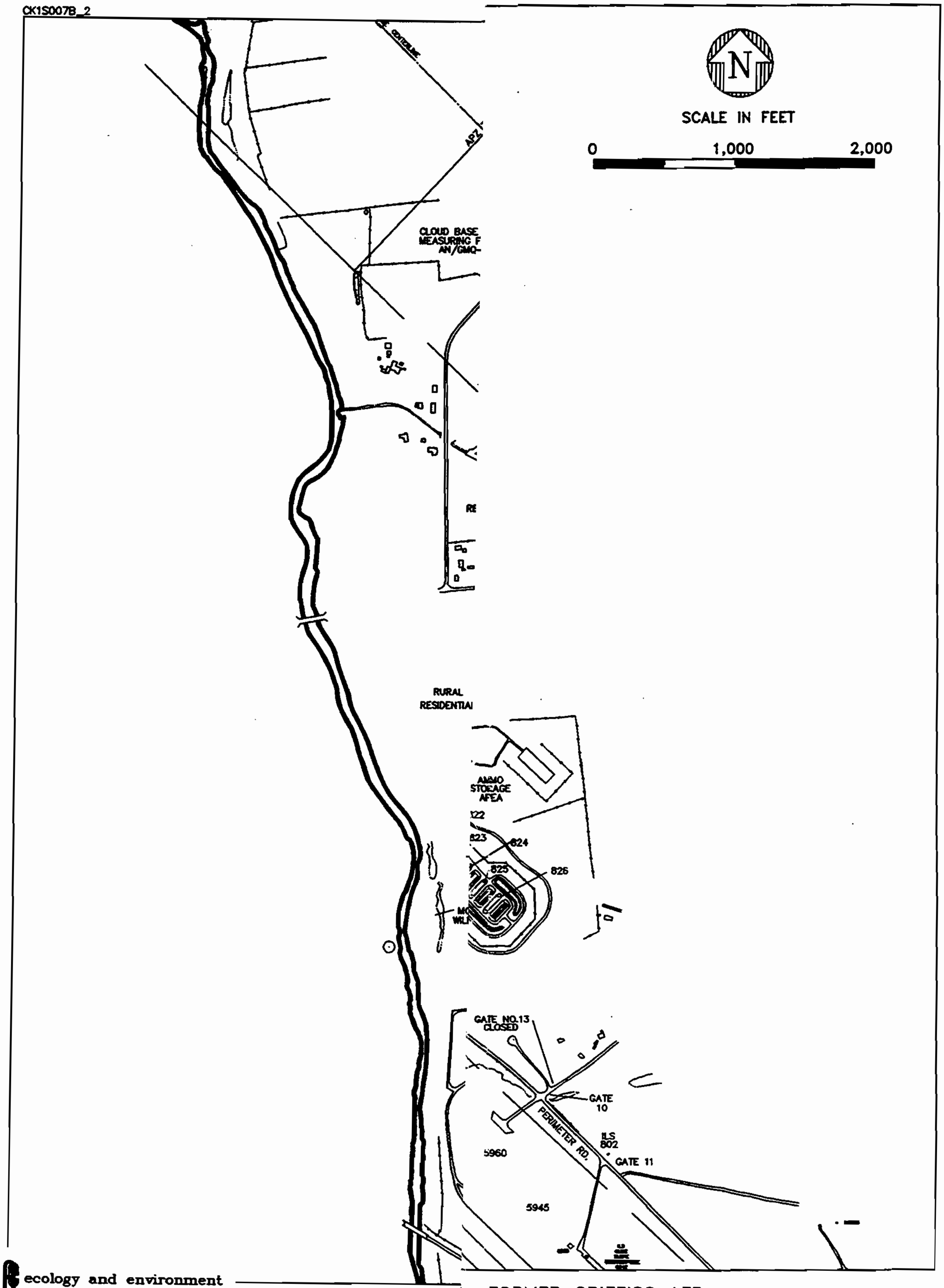


Figure 1-1 FORMER GRIFFISS AFB - SITE LOCATION MAP

CK1S007B_2



FORMER GRIFFISS AFB
AOC9: WEAPONS STORAGE AREA (WSA) LANDFILL
SITE LOCATION MAP

F:/Griffiss/ck1000/bubmaysra/ck1s007b_2.dwg
Last plotted: 12/18/02 JJK

2 Study Area Investigations

This section of the RI discusses all previous investigations and the Year 2002 SI field activities performed at the AOC 9 site. All SI work was performed in accordance with the June 2002 USACE-approved 2002 Addendum to the March 1997 Work Plan (E & E 2002a), which incorporated similar methodologies used during the RI (Law 1996a); SI (E & E 1998a); and Year 2000 SI (E & E 2001); and the September 1999 Quality Control Plan (QCP) (E & E 1999). The Addendum to the March 1997 Work Plan included the site-specific Health and Safety Plan (HSP), Quality Assurance Project Plan (QAPjP), and the QCP.

2.1 Investigations Prior to 2000 SI

2.1.1 Groundwater Sampling

Group I AOI Confirmatory Sampling

The Group I AOI CS program conducted in 1995 (1995 CS) included the following: drilling of four soil borings, installation of temporary wells in each boring (G009-LS04 through G009-LS07), and sampling of groundwater from each temporary well (see Figure 2-1). Groundwater samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) (SW8240); TCL semivolatile organic compounds (SVOCs) (SW8270); Target Analyte List (TAL) metals (SW846); and total recoverable petroleum hydrocarbons (TRPH) (SW418.1). No TRPH were detected in the groundwater samples. Trichloroethene (TCE), tetrachloroethene (PCE), and chlorobenzene were detected in the groundwater screening sample from G009-LS05 in concentrations exceeding the screening criteria. Several metals, including aluminum, iron, and manganese, were detected in concentrations that exceeded screening criteria in one or more wells (see Figure 2-1).

Expanded Site Investigation

The ESI sampling program was conducted in 1997 and included the drilling, installation, and sampling of four permanent monitoring wells (G009-MW01 through G009-MW04) (see Figure 2-2). Groundwater samples were analyzed for TCL VOCs (SW8260); TCL SVOCs (SW8270); pesticides/polychlorinated biphenyls (PCBs) (SW8081); TRPH (SW418.1); and TAL metals (SW6010/7000). The groundwater sample from G009-MW03 contained benzene, chlorobenzene, 1,2-dichlorobenzene (DCB), 1,3-DCB, 1,4-DCB, PCE, and TCE in concentrations that exceeded screening criteria. The groundwater sample from G009-MW04 contained chlorobenzene, 1,2-dichloroethane, and TCE in concentrations that exceeded screening criteria. Several metals, including aluminum, iron, manganese, and potassium, were detected in concentrations that exceeded screening criteria in one or more wells.

AOC 9 Bedrock Groundwater Study

The Bedrock Groundwater Study field program was completed in May 2002. The study consisted of drilling, installation, development, sampling, and slug testing of three new bedrock wells (AOC9-9Br, AOC9-MW10Br, and AOC9-MW11Br) and installation of one soil boring (see Appendix J). Soil and groundwater samples were analyzed for VOCs and natural attenuation parameters as described in Table 2-2 in Appendix J. In addition, soil and groundwater samples were collected for treatability bench-scale tests in preparation for a groundwater treatability pilot study. The AOC 9 Bedrock Groundwater Study Report concluded that groundwater contamination observed in the overlying overburden aquifer does not appear to have migrated downward into the underlying bedrock.

2.1.2 Surface Water Sampling

Remedial Investigation

The RI program conducted in 1994 (1994 RI) included the collection of one surface water sample (SMCSW-9) from the AFFF pond and two surface water samples (SMCSW-10 and SMCSW-11) from SMC in the vicinity of AOC 9 (see Figure 2-3). Surface water samples were analyzed for VOCs (USEPA 524.2); SVOCs (USEPA 525.1); pesticides (USEPA 507/508/632); dioxins (USEPA 1613A); total metals (USEPA 3005/6010/7740); total glycol (NYSDOH APC-44); radionuclides (USEPA 901.1M/ANL-Eichrona); herbicides (USEPA 515.1); and several wet chemistry parameters including TRPH (USEPA 418.1M), and cyanide (USEPA 9010).

SMCSW-9 contained bis(2-ethylhexyl)phthalate; pentachlorophenol; polynuclear aromatic hydrocarbons (PAHs) (benzo[a]pyrene, phenanthrene, and pyrene); several metals (aluminum, copper, iron, and manganese); and cyanide, each in concentrations exceeding screening criteria. SMCSW-10 contained bis(2-ethylhexyl)phthalate; two PAHs (phenanthrene and pyrene); two metals (iron and manganese); and cyanide, each in concentrations exceeding screening criteria. SMCSW-11 contained phenanthrene and metals (copper, iron, and manganese) in concentrations exceeding screening criteria.

Group I AOI Confirmatory Sampling

The 1995 CS of surface water consisted of the collection of four surface water samples (G009-SW01 through G009-SW04). Surface water samples were analyzed for TCL VOCs (SW8240); TCL SVOCs (SW8270); TAL metals (SW846); and TRPH (SW418.1). Only one (G009-SW02) of the 1995 AOI Confirmatory Sampling surface water samples was collected from SMC. Two of the samples (G009-SW03 and G009-SW04) were collected from seeps located at the southeastern portion of the site and the fourth (G009-SW01) from a seep located approximately 150 feet north of SMC (see Figure 2-1). G009-SW02 contained chlorobenzene in concentrations exceeding screening criteria. Several metals, including aluminum, cadmium, cobalt, copper, iron, lead, mercury, silver, vanadium, and zinc, were detected in concentrations that exceeded screening criteria in one or more samples (see Figure 2-1).

Supplemental Investigation Sampling

The SI program conducted in 1997 (1997 SI) collected one Passive In Situ Concentration/Extraction Sampler (PISCES) sample (SMCP-5) in the vicinity of AOC 9 (see Figure 2-3). This sample was designed to simulate contamination uptake by fish tissue. The sample was tested for pesticides and PCBs. SMCP-5 contained only a minor amount of the pesticide aldrin.

Expanded Site Investigation Sampling

The 1997 ESI surface water sampling consisted of the collection of four surface water samples (G009-SW05 through G009-SW08), which were analyzed for TCL VOCs (SW8260); SVOCs (SW8270); pesticides/PCBs (SW8081); TRPH (SW418.1); and TAL metals (SW6010/7000). No positive hits were detected except for several metals, including aluminum, chromium, iron, vanadium, and zinc, which were detected in one or more samples in concentrations that exceed screening criteria (see Figure 2-2), and one SVOC, butylbenzene phthalate, in one sample at a very low concentration well below the NYSDEC standard.

2.1.3 Sediment Sampling

Group I AOI Confirmatory Sampling

The 1995 CS of sediment consisted of the collection of four sediment samples (G009-SD01 through G009-SD04). Sediment samples were analyzed for TCL VOCs (SW8240); TCL SVOCs (SW8270); TAL metals (SW846); TRPH (SW418.1); and total organic carbon (TOC) (Lloyd Kahn). Several metals, including arsenic, cadmium, copper, iron, lead, manganese, nickel, and silver, were detected in concentrations that exceed screening criteria (see Figure 2-1).

Expanded Site Investigation Sampling

The 1997 ESI sediment sampling consisted of the collection of four sediment samples (G009-SD05 through G009-SD08) (see Figure 2-2). Sediment samples were analyzed for TCL VOCs (SW8260); TCL SVOCs (SW8270); pesticides/PCBs (SW8081); TRPH (SW418.1); TOC (Lloyd Kahn); and TAL metals (SW6010/7000).

G009-SD05 contained benzo(a)pyrene, G009-SD07 contained chlorobenzene, and G009-SD08 contained benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, indeno (1,2,3-cd) pyrene, phenanthrene, aldrin, and heptachlor epoxide in concentrations that exceed screening criteria. No analytes were detected in G009-SD06 in concentrations exceeding screening criteria.

2.1.4 Soil Sampling

Group I AOI Confirmatory Sampling

The 1995 CS of soils consisted of the collection of one subsurface soil sample from each of four lead-screen auger (LSA) borings (G009-LS01 through G009-LS04) from the saturated soils directly above the water table (see Figure 2-1). Subsurface soil samples were analyzed for TCL VOCs (SW8240); TCL SVOCs (SW8270); TAL metals (SW846); and TRPH (SW418.1). The screening criteria were exceeded only by concentrations of silver in G009-LS05-Z1 and G009-LS06-Z1 (see Figure 2-1).

Expanded Site Investigation Sampling

The 1997 ESI soil sampling consisted of the collection of three subsurface soil samples from each of five soil borings. The borings are labeled as; SS01, MW01, MW02, MW03, and MW04 on Figure 2-2. Subsurface soil samples were analyzed for TCL VOCs (SW8260); TCL SVOCs (SW8270); pesticides/PCBs (SW8081); TRPH (SW418.1); and TAL metals (SW6010/7000). Benzo(a)anthracene, benzo(a)pyrene, chrysene, and dieldrin were detected above screening criteria in one or more samples. Several metals, including arsenic, barium, beryllium, calcium, chromium, potassium, selenium, and thallium, were detected in concentrations exceeding screening criteria in one or more samples (see Figure 2-2).

2.1.5 Geophysical Surveys

Group I AOI Confirmatory Sampling

The geophysical survey conducted during the 1995 CS program indicated the presence of a strong geophysical anomaly believed to be associated with the berm that separated two former munitions storage igloos (see Figure 2-1). No other anomalies were detected, indicating that metallic material is not prevalent beneath the site. The anomaly from the berm was believed to be the result of steel reinforcement within the berm, however, no metallic materials were encountered in the berm during Year 2000 SI test pit excavations (AOC9-TP02).

On February 22, 2000, E & E personnel performed a site reconnaissance to determine the origin of the geophysical anomaly. The location of the anomaly corresponds well with the former location of an asphalt access road, which extended due west from Perimeter Road between the former storage igloo locations. The source of the anomaly is believed to be a buried electric line that directly corresponds with the orientation of the road and the anomaly.

2.1.6 Soil Gas Survey

Expanded Site Investigation Sampling

A passive soil gas survey of 49 points evenly spaced across the site was performed during the 1997 ESI (see Figure 2-2). The results of the survey indicated the presence of benzene, toluene, chlorobenzene, and chloromethane.

2.2 2000 Supplemental Investigation

The following sections describe all of the Year 2000 SI field activities conducted in March, April, and May, 2000. The majority of the field activities and sampling was conducted according to the Addendum to the March 1997 Work Plan for Site Investigations of Areas of Concern (E & E 2000a). On April 12, 2000, NYSDEC, USEPA, AFBCA, USACE, and E & E attended the AOC 9 data presentation to discuss preliminary analytical results obtained and field observations made during the Year 2000 SI Field Investigation. As a result of the discussions during the AOC 9 data presentation and at the request of NYSDEC and USEPA, the following additional field activities were conducted at AOC 9:

- Thirteen Geoprobe locations (AOC9-GP31 through AOC9-P43) were added to the 30 locations that were initially proposed in the Addendum to the March 1997 Work Plan and sampled to complete the delineation of the contaminant plumes. Therefore, a total of 43 Geoprobe and two Hydropunch sampling locations were used for contaminant plume delineation;

- Because of the difficulty of accessing wet areas with the Geoprobe rig, two Hydropunch locations (AOC9HYD-1, and AOC9HYD-2) were added to fill Geoprobe survey data gaps in the extremely wet areas within the Geoprobe survey grid;
- Eight additional surface water samples (AOC9-SW13 through AOC9-SW20) were collected from on-site intermittent creeks, drainageways, and the former AFFF pond and analyzed in the on-site field laboratory; and
- Analyses for the following natural attenuation parameters – methane, ethane, ethene (MEE) (SW3810/8015); anions (sulfate, chloride, nitrate, nitrite, and phosphate [USEPA 300] and sulfide [USEPA 376.1]) - and dissolved organic carbon (DOC) (SM5310B) were added to the list of analyses planned for the groundwater samples collected from the permanent monitoring wells on site. Field testing for alkalinity and ferrous iron was also added.

A complete listing of all samples planned and collected is provided in Table 2.2-1, and all sample locations are shown on Figure 2-3.

2.2.1 Geoprobe/Hydropunch Groundwater Sampling

The Year 2000 SI at this site included a Geoprobe/Hydropunch groundwater screening survey at 45 locations to delineate the contaminant plume, determine the optimal locations for permanent monitoring wells, and determine well screen elevations (see Section 2.2.2 and Figure 2-3). The location of the survey grid was determined using previous sample results from temporary wells, existing wells, and the direction of groundwater flow. On Figure 2-3, all vertically profiled Year 2000 SI Geoprobe/Hydropunch locations are shown in red, and all Geoprobe locations that were not vertically profiled are shown in dark blue.

Of the 45 Geoprobe/Hydropunch locations, 25 Geoprobe locations were vertically profiled along with two Hydropunch locations at shallow (S), intermediate (I), and deep (D) levels in the aquifer (if a sufficient water column existed). Geoprobe samples that were not vertically profiled were collected from the zone of highest contamination (i.e., the shallow, intermediate, or deep zone) based on the results of the nearby vertical profile locations. Vertical profiling was generally performed at 5-foot intervals from the water table to the top of bedrock. The Geoprobe survey was performed according to the procedures described in the Addendum to the March 1997 Work Plan (E & E 2000a).

All Geoprobe and Hydropunch groundwater screening samples underwent immediate analysis at the on-site field laboratory. The samples were tested for a select list of VOCs using Method SW8021B. A summary of Geoprobe well construction is presented in Table 2.2.1-1.

2.2.2 Monitoring Well Installation

Four permanent monitoring wells were installed at the site according to procedures outlined in the Addendum to the March 1997 Work Plan (E & E 2000a). Hazardous, toxic, and radioactive waste (HTRW) drill logs for each of the monitoring wells are presented in Appendix A of this report. The locations of the wells were determined using the results of the Geoprobe/Hydropunch survey. AOC9-MW08 was installed adjacent to the Geoprobe sampling location with the highest level of chlorobenzene (AOC9-GP28). Well AOC9-MW07 was installed in the center of the triangle formed by Geoprobe sampling locations AOC9-GP05, AOC9-GP06, and AOC9-GP14. This area contains the second highest concentration of chlorobenzene and the highest level of TCE. AOC9-MW05 and AOC9-MW06 were installed near the downgradient sides of the plume, between the main and secondary channels of SMC, at Geoprobe sampling locations AOC9-GP09 and AOC9-GP25, respectively. A summary of permanent monitoring well construction is presented in Table 2.2.2-1.

2.2.3 Monitoring Well Development

Each new permanent monitoring well was developed no sooner than 48 hours after grout placement. Temporary Geoprobe wells were not developed because they had no sand filter pack. Development was performed using a surge block, bailers, and dedicated submersible bladder pumps. Initially, each well was surged with a surge block and a minimum of 10 gallons was hand bailed to remove sediment from the wells. Dedicated submersible bladder pumps were used until pH, temperature, conductivity, and dissolved oxygen (DO) had stabilized, and turbidity of the discharge water was equal to or less than 50 nephelometric turbidity units (NTUs) (see Appendix B). Further information about equipment, supplies, and well development procedures is outlined in the Addendum to the March 1997 Work Plan (E & E 2000a).

2.2.4 Monitoring Well Sampling

Groundwater samples were collected from four newly installed permanent monitoring wells (AOC9-MW05 through AOC9-MW08) and four existing wells (G009-MW01 through G009-MW04) (see Figure 2-3). The samples were collected using USEPA low-flow purging and sampling procedures, in accordance with the Addendum to the March 1997 Work Plan (E & E 2000a).

The monitoring well samples were tested by off-site laboratories for VOCs (USEPA 524.2); SVOCs (USEPA 525.2); TCL pesticides (SW8081A); TCL PCBs (SW8082); and TAL filtered and unfiltered metals (SW6010B/7471A), in accordance with the Addendum to the March 1997 Work Plan (E & E 2000a). In addition, the monitoring well samples were analyzed for the following natural attenuation parameters: MEE (SW3810/8015); anions (sulfate, chloride, nitrate, nitrite, and phosphate [USEPA 300] and sulfide [USEPA 376.1]); and DOC (SM5310B), as described in Section 2.2. Field tests for alkalinity and ferrous iron were also performed. The pH, temperature, conductivity, DO, oxidation-reduction potential (ORP), and turbidity were also recorded (see Appendix C).

2.2.5 Water Level Measurements

Groundwater measurements of all new and existing site wells were obtained within a single one-day period using an electronic water level indicator. Water level and total depth were recorded. Groundwater measurements were also recorded from Geoprobe/Hydropunch sampling locations following stabilization.

2.2.6 Surface Water Sampling

Surface water samples were collected according to the procedures set forth in the Addendum to the March 1997 Work Plan (E & E 2000a). Eight samples (AOC9-SW13 through AOC9-SW20) were collected from on-site intermittent creeks, drainageways, and the former AFFF pond and were analyzed by the on-site field laboratory (see Figure 2-3 and Section 2.2). To avoid cross contamination, sample collection began at downstream locations and proceeded upstream. Four samples (AOC9-SW09 through AOC9-SW12) were collected from the main channel of SMC for off-site laboratory analysis (see Figure 2-3). Samples tested by the on-site laboratory were analyzed for VOCs (SW8021B). Samples tested by the off-site laboratory were analyzed for VOCs (USEPA 524.2), SVOCs (USEPA 525.2), TCL pesticides (SW8081A), TCL PCBs (SW8082), TAL metals (SW6010B/7470A), and hardness (USEPA 130.2).

2.2.7 Sediment Sampling

Four sediment samples (AOC9-SD09 through AOC9-SD12) were collected from the main channel of SMC (see Figure 2-3) according to the procedures outlined in the Addendum to the March 1997 Work Plan (E & E 2000a). The sediment samples were collected at the same locations as the corresponding surface water samples. Sediments were analyzed for TCL VOCs (SW8260B), TCL SVOCs (SW8270C), TCL pesticides (SW8081A), TCL PCBs (SW8082), TAL metals (SW6010B/7471A), TOC (Lloyd Kahn), and percent solids (American Society for Testing and Materials [ASTM] D2216).

2.2.8 Test Pit Excavation and Sampling

A total of 12 test pits were excavated at AOC 9. Six exploratory test pits (AOC9-TP01 through AOC9-TP06) were excavated to determine whether buried wastes related to the former storage igloos and the former WSA landfill were present. Six delineation test pits (AOC9-DTP01 through AOC9-DTP06) were excavated to verify the presumed location of the boundary of the former landfill (see Figure 2-3). Test pit locations were chosen based on results of the geophysical survey performed during the 1995 CS Program (i.e., to verify the source of the anomaly in the berm between the former igloos) and review of historical aerial photographs (i.e., to determine whether the former storage igloos are sources of contamination and whether wastes were disposed of in the former landfill; and to verify the former landfill boundary). Procedures for the excavation, examination, and sample collection are outlined in the Addendum to the March 1997 Work Plan (E & E 2000a).

One soil sample was collected from each of the six exploratory test pits (AOC9-TP01 through AOC9-TP06). Samples were not collected from the other six test pits (AOC9-DTP01 through AOC9-DTP06) used to delineate the landfill boundary. Test pits samples were tested for TCL VOCs (SW8260B); TCL SVOCs (SW8270C); TCL pesticides (SW8081A); TCL PCBs (SW8082); TAL metals (SW6010B/7471A); and percent solids (ASTM D2216).

2.3 2002 Supplemental Investigation

The following sections describe all of the Year 2002 SI field activities conducted in July 2002. All field activities and sampling were conducted according to the 2002 Addendum to the March 1997 Work Plan for Site Investigations of Areas of Concern (E & E 2002a).

A complete listing of all samples planned and actually collected is provided in Table 2.3-1, and all sample locations are shown on Figure 2-3.

2.3.1 2002 Geoprobe Groundwater Sampling

The Year 2002 SI at this site included a Geoprobe groundwater screening survey to further delineate the extent of the groundwater contamination that was identified in previous investigations and to identify potential source areas.

To achieve this goal, 56 Geoprobe groundwater-screening samples were collected from 14 Geoprobe locations in the area shown to contain the highest concentrations of chlorobenzene. Groundwater at 11 of the 14 Geoprobe locations was vertically profiled at 2-foot intervals designated as shallowest (S1), shallow (S2), intermediate (I), deep (D1), and deepest (D2) levels in the aquifer (if a sufficient water column existed). An approximately 1-foot unsampled zone remained between each of the 2-foot Geoprobe sample intervals, unless an insufficient water column existed.

The Geoprobe samples were collected in three phases. The Phase I Geoprobe sampling points were located north of Perimeter Road on a 60- by 90-foot grid, which surrounded permanent monitoring well AOC9-MW08 (see Figure 2-3). The Phase I sampling points (AOC9-GP44 through AOC9-GP48) consisted of 25 groundwater samples (five locations). Four of the five locations were placed 30 feet from existing well AOC9-MW08 (one upgradient, one downgradient, and one to each side- gradient location). The fifth Phase I location was placed 60 feet upgradient from existing well AOC9-MW08.

Results from the Phase I samples were used to determine the locations of the 15 Phase II samples (AOC9-GP49 through AOC9-GP51). The results of both the Phase I and Phase II samples were then used to determine the locations of the remaining Phase III samples (AOC9-GP52 through AOC9-GP57). Three of the Phase III Geoprobe locations were vertically profiled (AOC9-GP52 through AOC9-GP54), however, only four samples were collected from AOC9-GP53 and AOC9-GP54 due to an insufficient water column at these locations. Three of the Phase III Geoprobe locations were not vertically profiled (AOC9-GP55 through AOC9-GP57). A single Geoprobe sample was collected from the remaining locations (AOC9-GP55 through AOC9-GP57), which were not vertically profiled. These Geoprobe samples were collected from the zone of highest contamination (i.e., the intermediate zone) based on the results of the nearby vertical profile locations. They were used at the end of the survey to fill existing data gaps.

The Geoprobe survey was performed according to the procedures described in the Addendum to the March 1997 Work Plan (E & E 2002a).

All Geoprobe groundwater screening samples underwent immediate analysis at the E & E ASC. The samples were analyzed for low-level VOCs using Method SW8260B with a 24-hour turnaround. A summary of Geoprobe well construction is presented in Table 2.3.1-1.

2.3.2 2002 Subsurface Soil Boring Sampling

Two soil borings were installed and subsurface soil samples collected during the Year 2002 SI conducted at AOC 9 (see Figure 2-3). Continuous soil cores were collected from soil borings AOC9-SS01 and AOC9-SS02 using a Geoprobe macro-core sampler. Coring was conducted in 4-foot segments using a steel-core barrel lined with a dedicated acetate sleeve. Following extraction of the acetate sleeve from the core barrel, the sample was scanned for VOCs by the E & E team using a flame ionization detector/photo ionization detector (FID/PID). No VOCs were detected or staining observed in either soil boring.

At the request of NYSDEC, a Geoprobe soil boring (AOC9-SS01) was installed on the downgradient edge of the AFFF lagoon to determine if the lagoon was a source of contamination. Subsurface soil samples were collected from the vadose zone (4 to 6 feet below ground surface [BGS]), the top of the water table (11.5 to 16 feet BGS), and immediately above the top of bedrock (20 to 24 feet BGS). All subsurface soil samples were analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TAL metals, mercury, and percent solids.

Upon completion of the Geoprobe groundwater survey, AOC9-SS02 was installed approximately 15 feet upgradient of the area determined to contain the highest levels of chlorobenzene contamination (AOC9-GP44) within a potential source area. Three subsurface soil samples were collected from within the vadose zone (2 to 4, 6 to 8, and 10 to 10.5 feet BGS) in an attempt to determine whether residual contamination is present above the water table. These subsurface soil samples were analyzed for TCL VOCs. Geologic logs for these soil borings are provided in Appendix A.

2.3.3 2002 Sediment Sampling

At the request of NYSDEC, two sediment samples were collected from directly within the AFFF lagoon to determine if the lagoon was a source of contamination (see Figure 2-3). Two discrete depth-specific (0- to 0.5-foot and 0.5- to 2-foot) sediment samples were collected directly from within the AFFF lagoon using a hand auger. The shallow sample was collected first; then the hand auger was advanced at 0.5-foot increments to collect the 0.5- to 2-foot sample. Sediment samples were analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TAL metals, mercury, and percent solids.

2.3.4 2002 Test Pit Excavation and Sampling

Five test pits were excavated immediately adjacent to previous test pit excavations TP01, TP03, TP04, TP06, and DTP04, where sheens were observed during the 2000 SI test pit excavations (see Figure 2-3).

Five groundwater samples and one subsurface soil sample were collected to determine if petroleum hydrocarbon contamination was present. Groundwater samples were collected at each test pit location from the top of the water table and analyzed for TCL VOCs, SVOCs, pesticides/PCBs, total petroleum hydrocarbon (TPH) as diesel, and TPH as gasoline. In addition, one subsurface soil sample was collected from one of the five new test pits (AOC9-GW-TP04). The subsurface soil sample location and depth were determined in the field based on visual observation of potential contamination (i.e., soil discoloration). AOC9-GW-TP04 contained a layer of black silt, which contained a trace of iron debris and minor staining from which subsurface soil sample AOC9-TP04 was collected. The subsurface soil sample was analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TAL metals, mercury, and percent solids.

Test pits were excavated with a standard backhoe provided by the drilling subcontractor using the same procedures as described in the original SI work. The length, width, and depth of each excavation was based on field observations; however, none of the test pits exceeded 2 feet in width or 10 feet in depth. Each test pit was excavated to the water table to allow for collection of the groundwater samples. Each test pit was photographed (see Appendix K) and backfilled with the soil from the excavation in accordance with the 2002 Addendum to the March 1997 Work Plan (E & E 2002a).

The site geologist recorded the test pit dimensions, a brief lithologic description, and sampling information on trench logs, which are included in Appendix H.

2.4 Treatability Study

A treatability study was performed at AOC 9 in 2002/2003 including both bench-scale and pilot field-scale studies. Since at AOC 9, where chlorobenzene is the primary contaminant of concern, permanganate was not expected to be an effective oxidant, a Fenton-based reagent (which yields hydroxyl radicals that are strong non-specific oxidants capable of degrading a variety of organic compounds including chlorobenzene) was selected. However, in order to confirm the appropriate oxidizing agent for AOC 9, bench-scale studies were performed using both permanganate and a Fenton-based reagent. Potassium permanganate and the Fenton-based bench-scale studies for AOC 9 were performed by In-situ Oxidative Technologies, Inc. (ISOTEC) located in West Windsor, New Jersey. For the Fenton-based experiments, ISOTEC used patented catalysts (catalyst 4260 and experimental catalyst 7260) to treat the site-specific samples. These catalysts are circum-neutral pH (5-8) organometallic complexes that have high mobility in the subsurface. This treatability study also included the drilling, installation, and development (September 2002) and sampling (October 2002) of two permanent monitoring wells (AOC9-MW12 and AOC9-MW13). The monitoring wells were placed in a central downgradient location from the injection probes to intercept the treated groundwater.

2.4.1 Bench-scale Study

To complete the bench-scale studies, soil and groundwater samples were collected from both "contaminated" and "clean" (outside the plume) areas. The "contaminated" soil samples provided a good representation of the oxidant loading that would be needed and the "clean" samples were used to determine the natural oxygen demand (NOD). The bench-scale study was run for a groundwater system, and a soil/groundwater (two-phase) system and consisted of a set of batch experiments performed under zero-headspace conditions to minimize volatilization losses of the target contaminants, and prevent erroneous interpretations of destruction efficiency.

Natural organic matter and reduced metal species in the subsurface can exert a significant oxidant demand. Since this oxidant demand competes with the COCs for the available oxidant and can affect the oxidant's persistence and transport in the subsurface and limit the effectiveness of oxidizing the COCs, the permanganate bench tests consisted of separate NOD and chemical oxidation kinetics experiments. The higher the NOD, the higher the competition is for the COCs to be consumed by the permanganate. NOD can be separated into initial and long-term kinetic expressions. The initial kinetic expression generally occurs within the first 12 to 24 hours and provides an estimate of the amount of permanganate required to overcome the immediate NOD whereas the remaining oxidant residual is subject to long-term decay. The relationship between the initial and long-term kinetic expressions can be used to qualitatively assess the relative persistence of the oxidant in the subsurface. Only the permanganate experiments underwent NOD testing because the Fenton-based chemical reactions are catalytic, requiring the presence of organic matter or other natural constituents (e.g., metals) to initiate the reaction. Since these catalysts will always be present in the subsurface (i.e., they will never be totally consumed by the oxidant), the NOD on the aquifer is relatively insignificant.

The permanganate demand for the soil was established to be 5,287 milligrams per kilogram (mg/kg). The groundwater demand was determined to be an order of magnitude lower than the estimated soil demand (i.e., between 22 mg/L and 575 mg/L, with an average of 206 mg/L). Oxidation experiments with both the Fenton-based reagent and potassium permanganate performed on soil samples were inconclusive due to non-detectable levels of VOCs in the soil-slurry sample used for the study. Results from the Fenton-based test on the site groundwater indicated a 99.9% destruction of VOCs (i.e., total VOCs were reduced from 591 μg/L to 0.41 μg/L), while groundwater treated with permanganate showed no VOC reduction. Therefore, this study indicated that the Fenton-based process was very effective in treating the site contaminants while the potassium permanganate process indicated no effect on the contaminants.

2.4.2 Field Pilot-scale Study

A field pilot-scale study was performed at AOC 9 to identify and collect the data/information needed to assess the potential full-scale application of ISCO technology at these sites. Based on the results of the two bench-scale studies, the field pilot-scale study at this site was completed (between October 28 and November 1, 2002) using the Fenton-based reagent as the oxidant. Based on the results of the first injection, a second injection was completed (November 2003) to obtain additional information regarding radial effects and NOD (including the amount of oxidant needed to treat the plumes on a full scale basis). The temporary oxidant injection system at AOC 9 was installed during injection activities using a stepwise approach as the injections were completed (i.e., Geoprobe injectors were installed, the injection was made, then the injector was removed and reinstalled at a new location to make the next injection). The oxidant delivery process included pressure injection of 12.5% ISOTEC reagents (approximately 17,280 gallons during the first injection and 15,840 gallons during the second injection) at AOC 9. Various field parameters including oxidant injection delivery flow rates, pressures, and delivery concentrations of oxidant were measured during injection. Additionally, other field parameters including pH, temperature, conductivity, turbidity, DO, and ORP were measured at each site during injection and as part of post-injection performance monitoring.

Prior to the first injection (baseline sampling), two new wells specifically installed for the field pilot-scale study (AOC9-MW12 and AOC9-MW13) and one existing well (AOC9-MW08) were sampled using low-flow purging/sampling procedures (see Table 2.4.2-1). Groundwater samples were analyzed for VOCs by method 524.2, DOC by method SM5310B, TAL Metals/Mercury by method SW6010B/7470A (AOC9-MW08 and AOC9-MW13 only); sulfate by method USEPA 300, and ferrous iron (field-testing).

Another complete round of sampling was performed prior to the second injection.

Additionally, post-injection activities, including continuation of field monitoring and visual observations, groundwater sampling (three complete rounds and a limited fourth after the first injection and two complete rounds after the second injection), and data evaluation, started immediately after injection work was complete. Groundwater samples were analyzed for VOCs by method 524.2 (all samples), DOC by method SM5310B (Baseline and Round 2, 5, and 7 samples), TAL Metals/Mercury by method SW6010B/7470A (AOC9-MW08 and AOC9-MW13 Baseline and Round 2, 5, and 7 samples); sulfate by method USEPA 300 (Baseline and Round 2, 5, and 7 samples) and ferrous iron (field-testing of all except the Round 4 and 6 samples).

2.4.3 Summary of Treatability Study Results (first injection)

- The primary COC at this site is chlorobenzene with a maximum concentration of 2,150 µg/L (AOC9-GP44S2). Secondary COCs consist of 1,2-dichlorobenzene (1,2-DCB); 1,3-DCB; and 1,4-DCB.

- Based on the results of the two bench-scale studies, the field pilot-scale study at this site was completed using the Fenton-based reagent as the oxidant.

- Contaminant concentrations decreased from the Baseline sampling to Round 1, increased (rebound) from Round 1 to Round 2 (except for AOC9-MW13 that continued to decrease), and decreased from Round 2 to Round 3 (except for AOC9-MW12). Round 4 data collected at AOC9-GP44S2 and AOC9-MW12 indicated a continued decrease in concentration following the rebound.

- The comparison between pre- and post-treatment analytical results indicated an estimated mass removal of about 7 pounds of VOCs (or an approximate 28% reduction in mass) from site soil and groundwater.

- The degree of contaminant reduction of each COC in each well was relatively the same, indicating that the oxidant had the same relative effect on each parameter.

- The rebound effect noted in the monitoring wells at the upgradient part of the treatment area (AOC9-MW08, AOC9-GP48D1, and AOC9-GP44S2) is primarily attributable to desorption of contamination during treatment.

- The rebound effect in AOC9-MW12 may have occurred because it is located slightly farther away from the area of treatment than the other monitoring wells, and probably received less oxidant. This is further supported by the Round 4 results, which indicated a decrease in concentration that was likely caused by treated groundwater (from areas where more oxidant was delivered) migrating to AOC9-MW12.

- Effects associated with dilution are not expected to have significantly impacted the contaminant concentrations at the site.
- Diffusion from areas of higher contamination to areas of lower contamination is also not expected to have had a significant effect due to the lack of a highly concentrated source area.
- The data indicated a radial effect of up to 20 feet.
- Hydraulic radial effects noted in monitoring wells during injection are indicative of treatment fluids (catalyst and oxidant) distribution into the aquifer.
- The primary limitation to effective treatment at this site is the heterogeneities in the subsurface (i.e., getting the oxidant in direct contact with the contamination). However, it is expected that this can be overcome through design of the injection program.
- The pilot study data does not indicate that difficulties associated with overcoming NOD will be of concern.
- The data collected during the Phase 2 pilot study indicate that conditions are conducive for this technology to be further evaluated for treating VOC contamination at the site.
- The Phase 2 pilot-scale study results will be used to complete the review of this technology in the site feasibility studies.

2.5 Surveying

The 2000 and 2002 site surveys at AOC 9 were performed by LaFave, White, and McGivern, L.S., P.C. located in Boonville, New York. Surveyed locations included all 2000 and 2002 Geoprobe, Hydropunch, monitoring well, soil boring, surface water, sediment sampling locations, and test pit excavations.

Horizontal and vertical locations and elevations were recorded for the Geoprobe, Hydropunch, soil boring, and monitoring well locations; only horizontal locations were recorded for surface water/sediment sampling locations, and test pit excavations. A degree of accuracy of 0.03 foot was used for horizontal measurements, and 0.01 foot was used for vertical measurements. Data packages generated by the surveyor, including northings, eastings, and elevations, are included in Appendix D of this report.

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Llyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
AOC 9	03/15/00	AOC9-GP01S	Field	Groundwater	6.5-8.5	Y	T	N1							X											
	03/28/00	AOC9-GP01S/R	Field	Groundwater	6.5-8.5	N	T	N1							X											
	03/15/00	AOC9-GP02S	Field	Groundwater	5.0-7.0	Y	T	N1							X											
	03/15/00	AOC9-GP03S	Field	Groundwater	4.9-6.9	Y	T	N1							X											
	03/20/00	AOC9-GP04S	Field	Groundwater	0.5-2.5	Y	T	N1							X											
	03/16/00	AOC9-GP05S	Field	Groundwater	5.0-7.0	Y	T	N1							X											
	03/16/00	AOC9-GP05S/D	Field	Groundwater	5.0-7.0	Y	T	FD1							X											
	03/16/00	AOC9-GP05S/S	ERDC	Groundwater	5.0-7.0	Y	T	FR1							X											
	03/17/00	AOC9-GP06S	Field	Groundwater	2.0-4.0	Y	T	N1							X											
	03/17/00	AOC9-GP06S/D	Field	Groundwater	2.0-4.0	N	T	FR1							X											
	03/17/00	AOC9-GP06S/S	ERDC	Groundwater	2.0-4.0	N	T	FR1							X											
		AOC9-GP07S	Field	Groundwater		Y	S	N1							X											
	03/17/00	AOC9-GP08S	Field	Groundwater	7.0-9.0	Y	T	N1							X											
	03/17/00	AOC9-GP09S	Field	Groundwater	5.5-7.5	Y	T	N1							X											
	03/20/00	AOC9-GP10S	Field	Groundwater	1.6-3.6	Y	T	N1							X											
	03/15/00	AOC9-GP01I	Field	Groundwater	11.5-13.5	Y	T	N1							X											
	03/15/00	AOC9-GP02I	Field	Groundwater	10.0-12.0	Y	T	N1							X											
	03/15/00	AOC9-GP03I	Field	Groundwater	10.0-12.0	Y	T	N1							X											
	03/17/00	AOC9-GP04I	Field	Groundwater	5.0-7.0	Y	T	N1							X											
		AOC9-GP05I	Field	Groundwater		Y	S	N1							X											
		AOC9-GP05I/D	Field	Groundwater		Y	S	FD1							X											
		AOC9-GP05I/S	ERDC	Groundwater		Y	S	FR1							X											
	03/17/00	AOC9-GP06I	Field	Groundwater	7.9-9.0	Y	T	N1							X											
		AOC9-GP07I	Field	Groundwater		Y	S	N1							X											
		AOC9-GP08I	Field	Groundwater		Y	S	N1							X											
	03/17/00	AOC9-GP09I	Field	Groundwater	10.2-12.2	Y	T	N1							X											

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Liyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	03/20/00	AOC9-GP10I	Field	Groundwater	6.5-8.5	Y	T	N1							X											
	03/20/00	AOC9-GP10I (extra volume)	Field	Groundwater (MS/MSD)	6.5-8.5	Y	T	MS1							X											
	03/13/00	AOC9-GP01D	Field	Groundwater	17.5-19.5	Y	T	N1							X											
	03/28/00	AOC9-GP01D/R	Field	Groundwater	17.5-19.5	N	T	N1							X											
	03/13/00	AOC9-GP02D	Field	Groundwater	15.0-17.0	Y	T	N1							X											
	03/28/00	AOC9-GP02D/R	Field	Groundwater	15.0-17.0	N	T	N1							X											
	03/13/00	AOC9-GP03D	Field	Groundwater	14.8-16.8	Y	T	N1							X											
	03/13/00	AOC9-GP04D	Field	Groundwater	10.5-12.5	Y	T	N1							X											
	03/13/00	AOC9-GP04D/R	Field	Groundwater	10.5-12.5	N	T	N1							X											
	03/16/00	AOC9-GP05D	Field	Groundwater	10.0-12.0	Y	T	N1							X											
	03/16/00	AOC9-GP06D	Field	Groundwater	11.9-13.9	Y	T	N1							X											
	03/13/00	AOC9-GP07D	Field	Groundwater	9.1-11.1	Y	T	N1							X											
	03/13/00	AOC9-GP07D/R	Field	Groundwater	9.1-11.1	N	T	N1							X											
	03/14/00	AOC9-GP08D	Field	Groundwater	11.8-13.8	Y	T	N1							X											
	03/14/00	AOC9-GP09D	Field	Groundwater	15.0-17.0	Y	T	N1							X											
	03/14/00	AOC9-GP10D	Field	Groundwater	11.5-13.5	Y	T	N1							X											
	03/14/00	AOC9-GP10D/D	Field	Groundwater	11.5-13.5	Y	T	FD1							X											
	03/14/00	AOC9-GP10D/S	ERDC	Groundwater	11.5-13.5	Y	T	FR1							X											
	03/21/00	AOC9-GP11I	Field	Groundwater	11.1-13.1	Y	T	N1							X											
	03/21/00	AOC9-GP12I	Field	Groundwater	11.1-13.1	Y	T	N1							X											
	03/22/00	AOC9-GP13I	Field	Groundwater	7.0-9.0	Y	T	N1							X											
	05/25/00	AOC9-GP14D	ASC	Groundwater	10.8-12.8	N	T	N1							X											
	03/24/00	AOC9-GP14I	Field	Groundwater	7.0-9.0	Y	T	N1							X											
	05/25/00	AOC9-GP14S	ASC	Groundwater	3.0-5.0	N	T	N1							X											
	03/22/00	AOC9-GP15S	Field	Groundwater	5.2-7.5	Y	T	N1							X											
	03/22/00	AOC9-GP15S (extra volume)	Field	Groundwater (MS/MSD)	5.2-7.	Y	S	MS1							X											
	3/22/00	AOC9-GP16I	Field	Groundwater	9.5-	Y	T	N1							X											

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Liyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	03/22/00	AOC9-GP16I (extra volume)	Field	Groundwater	9.5-11.5	Y	T	N1							X											
	03/22/00	AOC9-GP17I	Field	Groundwater	9.0-11.0	Y	T	N1							X											
	03/22/00	AOC9-GP17I/R	Field	Groundwater	9.0-11.0	N	T	N1							X											
	03/22/00	AOC9-GP18D	Field	Groundwater	9.0-11.0	Y	T	N1							X											
	03/22/00	AOC9-GP19D	Field	Groundwater	7.8-9.8	Y	T	N1							X											
	03/22/00	AOC9-GP20D	Field	Groundwater	12.0-14.0	Y	T	N1							X											
	03/22/00	AOC9-GP20D/D	Field	Groundwater	12.0-14.0	Y	T	FD1							X											
	03/22/00	AOC9-GP20D/S	ERDC	Groundwater	12.0-14.0	Y	T	FR1							X											
	03/22/00	AOC9-GP21D	Field	Groundwater	14.7-16.7	Y	T	N1							X											
	03/22/00	AOC9-GP21D (extra volume)	Field	Groundwater (MS/MSD)	14.7-16.7	Y	T	MS1							X											
	03/22/00	AOC9-GP22D	Field	Groundwater	17.3-19.3	Y	T	N1							X											
	03/22/00	AOC9-GP22D/D	Field	Groundwater	17.3-19.3	Y	T	FD1							X											
	03/22/00	AOC9-GP22D/S	ERDC	Groundwater	17.3-19.3	Y	T	FR1							X											
	03/23/00	AOC9-GP23I	Field	Groundwater	7.0-9.0	Y	T	N1							X											
	03/23/00	AOC9-GP24I	Field	Groundwater	9.7-11.7	Y	T	N1							X											
	03/24/00	AOC9-GP25D	Field	Groundwater	11.5-13.5	Y	T	N1							X											
	03/24/00	AOC9-GP26D	Field	Groundwater	15.0-17.0	Y	T	N1							X											
	05/05/00	AOC9-GP27D	Field	Groundwater	15.2-17.2	N	T	N1							X											
	03/24/00	AOC9-GP27I	Field	Groundwater	12.9-14.9	Y	T	N1							X											
	05/05/00	AOC9-GP27S	Field	Groundwater	6.18-8.18	N	T	N1							X											
	03/28/00	AOC9-GP28D	Field	Groundwater	23.04-25.04	Y	T	N1							X											
	05/03/00	AOC9-GP28I	Field	Groundwater	16.5-18.5	N	T	N1							X											
	05/03/00	AOC9-GP28I/D	Field	Groundwater	16.5-18.5	N	T	FD1							X											
	05/03/00	AOC9-GP28I/S	ERDC	Groundwater	16.5-18.5	N	T	FR1							X											
	05/03/00	AOC9-GP28S	Field	Groundwater	11.1-13.1	N	T	N1							X											
	03/29/00	AOC9-GP29D	Field	Groundwater	22.8-24.8	Y	T	N1							X											
	04/28/00	AOC9-GP29I	Field	Groundwater	18.0-20.0	N	T	N1							X											

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Llyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	04/28/00	AOC9-GP29S	Field	Groundwater	13.0-15.0	N	T	N1							X											
	03/29/00	AOC9-GP30D	Field	Groundwater	19.34-20.34	Y	T	N1							X											
	04/28/00	AOC9-GP30S	Field	Groundwater	13.0-15.0	N	T	N1							X											
	03/31/00	AOC9-GP31S	Field	Groundwater	6.2-8.2	N	T	N1							X											
	03/31/00	AOC9-GP31S (extra volume)	Field	Groundwater	6.2-8.2	N	T	MS1							X											
	04/28/00	AOC9-GP32D	Field	Groundwater	15.8-17.8	N	T	N1							X											
	04/28/00	AOC9-GP32S	Field	Groundwater	13.0-15.0	N	T	N1							X											
	04/28/00	AOC9-GP33D	Field	Groundwater	21.5-23.5	N	T	N1							X											
	04/28/00	AOC9-GP33I	Field	Groundwater	15.0-17.0	N	T	N1							X											
	04/28/00	AOC9-GP33S	Field	Groundwater	8.0-10.0	N	T	N1							X											
	05/01/00	AOC9-GP34D	Field	Groundwater	13.5-15.5	N	T	N1							X											
	05/01/00	AOC9-GP34S	Field	Groundwater	10.0-12.0	N	T	N1							X											
	04/28/00	AOC9-GP35D	Field	Groundwater	19.0-21.0	N	T	N1							X											
	04/28/00	AOC9-GP35D/D	Field	Groundwater	19.0-21.0	N	T	FD1							X											
	04/28/00	AOC9-GP35D/S	ERDC	Groundwater	19.0-21.0	N	T	FR1							X											
	04/28/00	AOC9-GP35I	Field	Groundwater	14.0-16.0	N	T	N1							X											
	04/28/00	AOC9-GP35S	Field	Groundwater	10.0-12.0	N	T	N1							X											
	05/02/00	AOC9-GP36D	Field	Groundwater	24.4-26.4	N	T	N1							X											
	05/02/00	AOC9-GP36D/D	Field	Groundwater	24.4-26.4	N	T	FD1							X											
	05/02/00	AOC9-GP36D/S	ERDC	Groundwater	24.4-26.4	N	T	FR1							X											
	05/02/00	AOC9-GP36I	Field	Groundwater	17.7-19.7	N	T	N1							X											
	05/02/00	AOC9-GP36S	Field	Groundwater	11.9-13.9	N	T	N1							X											
	05/02/00	AOC9-GP37D	Field	Groundwater	24.4-26.4	N	T	N1							X											
	05/02/00	AOC9-GP37I	Field	Groundwater	18.6-20.6	N	T	N1							X											
	05/02/00	AOC9-GP37S	Field	Groundwater	12.0-14.0	N	T	N1							X											
	05/02/00	AOC9-GP37S (extra volume)	Field	Groundwater	12.0-14	N	T	MS1							X											
	/03/00	AOC9-GP38D	Field	Groundwater	27.1	N	T	N1							X											

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Llyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	05/03/00	AOC9-GP38D/D	Field	Groundwater	27.15-29.15	N	T	FD1							X											
	05/03/00	AOC9-GP38D/S	ERDC	Groundwater	27.15-29.15	N	T	FR1							X											
	05/03/00	AOC9-GP38I	Field	Groundwater	21.11-23.11	N	T	N1							X											
	05/03/00	AOC9-GP38I/D	Field	Groundwater	21.11-23.11	N	T	FD1							X											
	05/03/00	AOC9-GP38I/S	ERDC	Groundwater	21.11-23.11	N	T	FR1							X											
	05/03/00	AOC9-GP38S	Field	Groundwater	16.64-18.64	N	T	N1							X											
	05/02/00	AOC9-GP39D	Field	Groundwater	28.7-30.7	N	T	N1							X											
	05/02/00	AOC9-GP39I	Field	Groundwater	20.9-22.9	N	T	N1							X											
	05/02/00	AOC9-GP39S	Field	Groundwater	14.0-16.0	N	T	N1							X											
	05/03/00	AOC9-GP40D	Field	Groundwater	22.64-24.64	N	T	N1							X											
	05/03/00	AOC9-GP40I	Field	Groundwater	18.04-20.04	N	T	N1							X											
	05/03/00	AOC9-GP40S	Field	Groundwater	11.0-13.0	N	T	N1							X											
	05/04/00	AOC9-GP41D	Field	Groundwater	18.82-20.82	N	T	N1							X											
	05/04/00	AOC9-GP41I	Field	Groundwater	16.65-18.65	N	T	N1							X											
	05/04/00	AOC9-GP41S	Field	Groundwater	13.9-15.9	N	T	N1							X											
	05/04/00	AOC9-GP42D	Field	Groundwater	28.42-30.42	N	T	N1							X											
	05/04/00	AOC9-GP42I	Field	Groundwater	23.32-25.32	N	T	N1							X											
	05/04/00	AOC9-GP42S	Field	Groundwater	16.7-18.7	N	T	N1							X											
	05/04/00	AOC9-GP43D	Field	Groundwater	14.96-16.96	N	T	N1							X											
	05/25/00	AOC9-HYD1D	ASC	Groundwater	11.0-13.0	N	T	N1							X											
	05/25/00	AOC9-HYD1I	ASC	Groundwater	6.0-8.0	N	T	N1							X											
	05/25/00	AOC9-HYD1S	ASC	Groundwater	1.0-3.0	N	T	N1							X											
	05/25/00	AOC9-HYD2D	ASC	Groundwater	12.0-14.0	N	T	N1							X											
	05/25/00	AOC9-HYD2I	ASC	Groundwater	7.0-9.0	N	T	N1							X											
	05/25/00	AOC9-HYD2S	ASC	Groundwater	2.0-4.0	N	T	N1							X											
	03/20/00	AOC9-TP01	ASC	Subsurface Soil	0.0-10.0	Y	T	N1								X		X	X	X	X	X				
	03/20/00	AOC9-TP02	ASC	Subsurface Soil	0.0-6.5	Y	T	N1								X		X	X	X	X	X				

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL,
SAMPLE LISTING,
FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Llyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	03/21/00	AOC9-TP03	ASC	Subsurface Soil	0.0-6.0	Y	T	N1								X		X	X	X	X	X				
	03/21/00	AOC9-TP04	ASC	Subsurface Soil	0.0-6.0	Y	T	N1								X		X	X	X	X	X				
	03/21/00	AOC9-TP04/D	ASC	Subsurface Soil	0.0-6.0	Y	T	FD1								X		X	X	X	X	X				
	03/21/00	AOC9-TP04/S	ERDC	Subsurface Soil	0.0-6.0	Y	T	FR1								X		X	X	X	X	X				
	03/21/00	AOC9-TP05	ASC	Subsurface Soil	0.0-10.0	Y	T	N1								X		X	X	X	X	X				
	03/21/00	AOC9-TP06	ASC	Subsurface Soil	0.0-9.0	Y	T	N1								X		X	X	X	X	X				
	03/21/00	AOC9-TP06 (extra volume)	ASC	Subsurface Soil (MS/MSD)	0.0-9.0	Y	T	MS1								X		X	X	X	X	X				
		FIELDQC-TB9-GW1	ASC	DI Water	0.0-0.0	Y	S	TB1			X		X													
		FIELDQC-TB9-GW2	ASC	DI Water	0.0-0.0	Y	S	TB1			X		X													
		FIELDQC-TB9-GW3	ASC	DI Water	0.0-0.0	Y	S	TB1			X		X													
		FIELDQC-TB9-GW4	ASC	DI Water	0.0-0.0	Y	S	TB1			X		X													
		FIELDQC-TB9-GW5	ERDC	DI Water	0.0-0.0	Y	S	TB1			X		X													
	05/11/00	G009-MW01	ASC/LIFE	Groundwater	4.0-9.0	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/11/00	G009-MW01-F	ASC	Groundwater	4.0-9.0	Y	T	N1															X			
	05/11/00	G009-MW02	ASC/LIFE	Groundwater	4.0-9.0	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/11/00	G009-MW02-F	ASC	Groundwater	4.0-9.0	Y	T	N1															X			
	05/11/00	G009-MW03	ASC/LIFE	Groundwater	4.0-9.0	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/11/00	G009-MW03-F	ASC	Groundwater	4.0-9.0	Y	T	N1															X			
	05/11/00	G009-MW04	ASC/LIFE	Groundwater	6.7-16.7	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/11/00	G009-MW04-F	ASC	Groundwater	6.7-16.7	Y	T	N1															X			
	05/10/00	AOC9-MW05	ASC/LIFE	Groundwater	4.0-14.0	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/10/00	AOC9-MW05-F	ASC	Groundwater	4.0-14.0	Y	T	N1															X			
	05/10/00	AOC9-MW05 (extra volume)	ASC/LIFE	Groundwater (MS/MSD)	4.0-14.0	Y	T	MS1	X	X	X	X	X	X						X	X	X			X	X
	05/10/00	AOC9-MW05-F (extra volume	ASC	Groundwater (MS/MSD)	4.0-14.0	Y	T	MS1															X			
	05/08/00	AOC9-MW06	ASC/LIFE	Groundwater	4.2-14.2	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/08/00	AOC9-MW06-F	ASC	Groundwater	4.2-1	Y	T	N1															[illegible]			
	5/10/00	AOC9-MW07	ASC/LIFE	Groundwater	4.2	Y	T	N1	X	X	X	X	X	X						X	X	X	[illegible]		X	X

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Llyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	05/10/00	AOC9-MW07-F	ASC	Groundwater	4.2-9.2	Y	T	N1															X			
	05/25/00	AOC9-MW08	ASC/LIFE	Groundwater	15.4-20.4	Y	T	N1	X	X	X	X	X	X						X	X	X			X	X
	05/25/00	AOC9-MW08-F	ASC	Groundwater	15.4-20.4	Y	T	N1															X			
	05/25/00	AOC9-MW08/D	ASC/LIFE	Groundwater	15.4-20.4	Y	T	FD1	X	X	X	X	X	X						X	X	X			X	X
	05/25/00	AOC9-MW08/D-F	ASC	Groundwater	15.4-20.4	Y	T	FD1															X			
	05/25/00	AOC9-MW08/S	ERDC	Groundwater	15.4-20.4	Y	T	FR1	X	X	X	X	X	X						X	X	X			X	X
	05/25/00	AOC9-MW08/S-F	ERDC	Groundwater	15.4-20.4	Y	T	FR1															X			
	05/10/00	AOC9-SW09	ASC/LIFE	Surface Water	0.0-0.0	Y	T	N1					X	X						X	X	X		X		
	05/10/00	AOC9-SW10	ASC/LIFE	Surface Water	0.0-0.0	Y	T	N1					X	X						X	X	X		X		
	05/10/00	AOC9-SW10/D	ASC/LIFE	Surface Water	0.0-0.0	Y	T	FD1					X	X						X	X	X		X		
	05/10/00	AOC9-SW10/S	ERDC	Surface Water	0.0-0.0	Y	T	FR1					X	X						X	X	X		X		
	05/10/00	AOC9-SW11	ASC/LIFE	Surface Water	0.0-0.0	Y	T	N1					X	X						X	X	X		X		
	05/10/00	AOC9-SW12	ASC/LIFE	Surface Water	0.0-0.0	Y	T	N1					X	X						X	X	X		X		
	05/10/00	AOC9-SW12 (extra volume)	ASC/LIFE	Surface Water (MS/MSD)	0.0-0.0	Y	T	MS1					X	X						X	X	X		X		
	03/27/00	AOC9-SW13	Field	Surface Water	0.0-0.0	N	T	N1							X											
	03/27/00	AOC9-SW14	Field	Surface Water	0.0-0.0	N	T	N1							X											
	03/27/00	AOC9-SW15	Field	Surface Water	0.0-0.0	N	T	N1							X											
	03/29/00	AOC9-SW16	Field	Surface Water	0.0-0.0	N	T	N1							X											
	05/02/00	AOC9-SW17	Field	Surface Water	0.0-0.0	N	T	N1							X											
	05/02/00	AOC9-SW18	Field	Surface Water	0.0-0.0	N	T	N1							X											
	05/02/00	AOC9-SW18/D	Field	Surface Water	0.0-0.0	N	T	N1							X											
	05/02/00	AOC9-SW18/S	ERDC	Surface Water	0.0-0.0	N	T	N1							X											
	05/02/00	AOC9-SW19	Field	Surface Water	0.0-0.0	N	T	N1							X											
	05/02/00	AOC9-SW20	Field	Surface Water	0.0-0.0	N	T	N1							X											
	05/10/00	AOC9-SD09	ASC	Sediment	0.0-0.17	Y	T	N1								X	X	X	X	X	X	X				
	05/10/00	AOC9-SD10	ASC	Sediment	0.0-0.17	Y	T	N1								X	X	X	X	X	X	X				
	05/10/00	AOC9-SD10/D	ASC	Sediment	0.0-0.17	Y	T	FD1								X	X	X	X	X	X	X				

TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Lyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	05/10/00	AOC9-SD10/S	ERDC	Sediment	0.0-0.17	Y	T	FR1								X	X	X	X	X	X	X				
	05/10/00	AOC9-SD11	ASC	Sediment	0.0-0.17	Y	T	N1								X	X	X	X	X	X	X				
	05/10/00	AOC9-SD12	ASC	Sediment	0.0-0.17	Y	T	N1								X	X	X	X	X	X	X				
	05/10/00	AOC9-SD12 (extra volume)	ASC	Sediment (MS/MSD)	0.0-0.17	Y	T	MS1								X	X	X	X	X	X	X				
	03/23/00	FIELDQC-RB9-GP01	Field	Eqpt. Washwater	0.0-0.0	N	T	TB1							X											
	03/23/00	FIELDQC-RB9-GP02	Field	Eqpt. Washwater	0.0-0.0	N	T	TB1							X											
	03/24/00	FIELDQC-RB9-GP03	Field	Eqpt. Washwater	0.0-0.0	N	T	TB1							X											
	03/28/00	FIELDQC-RB9-GP04	Field	DI	0.0-0.0	N	T	TB1							X											
	03/13/00	FIELDQC-TB9-GP01	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/14/00	FIELDQC-TB9-GP02	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/14/00	FIELDQC-TB9-GP03	ERDC	Groundwater	0.0-0.0	N	T	TB1							X											
	03/20/00	FIELDQC-TB9-GP04	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/16/00	FIELDQC-TB9-GP05	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/17/00	FIELDQC-TB9-GP06	ERDC	Groundwater	0.0-0.0	N	T	TB1							X											
	03/27/00	FIELDQC-TB9-GP07	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/24/00	FIELDQC-TB9-GP08	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/29/00	FIELDQC-TB9-GP09	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	03/30/00	FIELDQC-TB9-GP10	Field	Groundwater	0.0-0.0	N	T	TB1							X											
	4/48/00	FIELDQC-TB9-GP11	Field	DI	0.0-0.0	N	T	TB1							X											
	04/28/00	FIELDQC-TB9-GP12	ERDC	DI	0.0-0.0	N	T	TB1							X											
	05/01/00	FIELDQC-TB9-GP13	Field	DI	0.0-0.0	N	T	TB1							X											
	05/01/00	FIELDQC-TB9-GP14	ERDC	DI	0.0-0.0	N	T	TB1							X											
	05/02/00	FIELDQC-TB9-GP15	Field	DI	0.0-0.0	N	T	TB1							X											
	05/02/00	FIELDQC-TB9-GP16	ERDC	DI	0.0-0.0	N	T	TB1							X											
	05/02/00	FIELDQC-TB9-GP17	ERDC	DI	0.0-0.0	N	T	TB1							X											
	05/08/00	FIELDQC-TB9-MW1	ASC/STL	DI	0.0-0.	N	T	TB1			X		X													
	/10/00	FIELDQC-TB9-MW2	ASC/STL	DI	0.0-0	N	T	TB1			X		X													

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TABLE 2.2-1
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, SAMPLE LISTING, FORMER GRIFFISS AIR FORCE BASE

Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Sulfate, Chloride, Nitrate, Nitrite, Phosphate EPA 300	Sulfide EPA 376.1	Methane, Ethane, Ethene SW3810/8015	Dissolved Organic Carbon SM5310B	VOCs 524.2	SVOC 525.2	Purgeable Aromatics 8021B	% Solids ASTM_D2216	TOC Llyod Hahn	TCL VOCs 8260B	TCL SVOCs 8270C	TCL Pesticides 8081A	TCL PCBs 8082	Total TAL Metals 6010B/7470A/7471A	Dissolved TAL Metals 6010B/7470A/7471A	Hardness 130.2	Ferrous Iron Field Hach Kit	Alkalinity Field Hach Kit
	05/11/00	FIELDQC-TB9-MW3	STL	DI	0.0-0.0	N	T	TB1			X		X													
	05/11/00	FIELDQC-TB9-MW4	ASC	DI	0.0-0.0	N	T	TB1			X		X													
	05/25/00	FIELDQC-TB9-MW6	STL	DI	0.0-0.0	N	T	TB1			X		X													
	05/25/00	FIELDQC-TB9-MW7	ASC	DI	0.0-0.0	N	T	TB1			X		X													
	05/25/00	FIELDQC-TB9-MW8	ERDC	DI	0.0-0.0	N	T	TB1			X		X													
		FIELDQC-TB9-SW1	ASC	DI	0.0-0.0	Y	S	TB1					X													
	05/10/00	FIELDQC-TB9-SW2	ERDC	DI	0.0-0.0	Y	T	TB1					X													

Note: One trip blank will be added to each shipment of Geoprobe groundwater samples (Purgeable Aromatics (8021B) if they are sent to the ASC for analysis.

Key:

AOC = Area of Concern.
ASC = E & E's Analytical Services Center.
ASTM = American Society for Testing and Materials.
D = Deep Geoprobe sample
/D = Duplicate sample.
DI = Deionized water.
ERDC = U.S. Army Engineer Research and Development Center Quality Assurance Laboratory.
-F = Filtered groundwater sample.
FD = Field duplicate.
FR = Field replicate/split.
GP = Geoprobe.
I = Intermediate Geoprobe sample
LIFE = Life Sciences Laboratory
MS/MSD = Matrix spike/matrix spike duplicate.
Depth = Depth interval at which sample was collected
MW = Monitoring well.

N = Original.
PCB = Polychlorinated biphenyl.
QC = Quality control sample.
RB = Rinsate blank
S = Shallow Geoprobe sample
/S = Split sample.
STL = Severn Trent Laboratories, Inc.
SD = Sediment sample.
SVOC = Semivolatile organic compound.
SW = Surface water sample.
TAL = Target analyte list.
TB = Trip blank.
TCL = Target compound list.
TOC = Total organic carbon.
VOC = Volatile organic compounds.
Stat= Status (T = Taken, S = Skipped)
WP= Sample in the work plan (Y = Yes, N = No)
WSA = Weapons Storage Area

Table 2.2.1-1

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Geoprobe Temporary Well Construction Summary, Former Griffiss Air Force Base, Rome, New York

Geoprobe No	Date Installed	Drilling Company	PVC Well Casing/ Screen ID (inches)	Depth Pushed (ft BGS)	Ground Elevation (ft AMSL)	Screened Interval (ft BGS)	Static Water Level (ft BGS)[a]
AOC9-GP01D	03/13/00	Maxim	1	19.5	496.72	17.5-19.5	0.40
AOC9-GP01I	03/15/00	Maxim	1	13.5		11.513.5	0.95
AOC9-GP01S	03/15/00	Maxim	1	8.5		6.5-8.5	0.90
AOC9-GP02D	03/13/00	Maxim	1	17	491.37	15-17	4.50
AOC9-GP021	03/15/00	Maxim	1	12		10-12	2.72
AOC9-GP02S	03/15/00	Maxim	1	7		5-7	4.40
AOC9-GP03D	03/13/00	Maxim	1	16.8	490.99	14.8-16.8	3.20
AOC9-GP03I	03/15/00	Maxim	1	12		10-12	2.40
AOC9-GP03S	03/15/00	Maxim	1	6.9		4.9-6.9	2.30
AOC9-GP04D	03/13/00	Maxim	1	12.5	484.71	10.5-12.5	0.50
AOC9-GP04I	03/17/00	Maxim	1	7.6		5.6-7.6	0.50
AOC9-GP04S	03/20/00	Maxim	1	1.5		0.5-2.5	0.50
AOC9-GP05D	03/16/00	Maxim	1	12	484.69	10-12	0.40
AOC9-GP05S	03/16/00	Maxim	1	7		5-7	0.40
AOC9-GP06D	03/16/00	Maxim	1	13.9	482.54	11.9-13.9	1.58
AOC9-GP06I	03/17/00	Maxim	1	9		7-9	1.68
AOC9-GP06S	03/17/00	Maxim	1	4		2-4	1.36
AOC9-GP07D	03/13/00	Maxim	1	11.1	484.09	9.1-11.1	7.20
AOC9-GP08D	03/14/00	Maxim	1	13.8	482.37	11.8-13.8	6.14
AOC9-GP08S	03/17/00	Maxim	1	9		7-9	5.78
AOC9-GP09D	03/14/00	Maxim	1	17	482.72	15-17	4.50
AOC9-GP09I	03/17/00	Maxim	1	12.1		10.1-12.1	4.30
AOC9-GP09S	03/17/00	Maxim	1	7.5		5.5-7.5	4.20
AOC9-GP10D	03/14/00	Maxim	1	13.5	477.29	11.5-13.5	1.88
AOC9-GP10I	03/20/00	Maxim	1	8.5		6.5-8.5	2.06
AOC9-GP10S	03/20/00	Maxim	1	3.6		1.6-3.6	2.10
AOC9-GP11I	03/21/00	Maxim	1	13.1	494.41	11.1-13.1	+0.60[b]
AOC9-GP12I	03/21/00	Maxim	1	13.1	494.64	11.1-13.1	0.40
AOC9-GP13I	03/22/00	Maxim	1	9	478.78	7-9	1.48
AOC-GP14S	5/25/00	Maxim	1	5	483.58	3-5	NA
AOC9-GP14I	03/22/00	Maxim	1	9		7-9	2.30
AOC9-GP14D	5/25/00	Maxim	1	12.8		10.8-12.8	NA
AOC9-GP15S	03/22/00	Maxim	1	7.5	486.92	5.5-7.5	2.18
AOC9-GP16I	03/22/00	Maxim	1	11.5	489.99	9.5-11.5	1.56
AOC9-GP17I	03/22/00	Maxim	1	11	482.48	9-11	4.64
AOC9-GP18D	03/22/00	Maxim	1	11	485.49	9-11	6.36
AOC9-GP19D	03/22/00	Maxim	1	9.8	483.04	7.8-9.8	1.18
AOC9-GP20D	03/22/00	Maxim	1	14	483.69	12-14	0.50
AOC9-GP21D	03/22/00	Maxim	1	16.7	489.39	14.7-16.7	2.40
AOC9-GP22D	03/22/00	Maxim	1	19.3	498.29	17.3-19.3	1.02
AOC9-GP23I	03/23/00	Maxim	1	9	486.81	7-9	5.00
AOC9-GP24I	03/23/00	Maxim	1	11.7	488.01	9.7-11.7	0.86
AOC9-GP25D	03/24/00	Maxim	1	13.5	482.57	11.5-13.5	4.38

Table 2.2.1-1

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill,
Geoprobe Temporary Well Construction Summary,
Former Griffiss Air Force Base, Rome, New York

Geoprobe No	Date Installed	Drilling Company	PVC Well Casing/ Screen ID (inches)	Depth Pushed (ft BGS)	Ground Elevation (ft AMSL)	Screened Interval (ft BGS)	Static Water Level (ft BGS) [a]
AOC9-GP26D	03/24/00	Maxim	1	17	487.85	15-17	7.86
AOC9-GP27D	05/05/00	Maxim	1	17.20	502.05	15.20-17.20	16.50[d]
AOC9-GP27I	03/24/00	Maxim	1	14.9		12.9-14.9	0.98
AOC9-GP27S	05/05/00	Maxim	1	8.18		6.18-8.18	1.14[d]
AOC9-GP28D	03/28/00	Maxim	1	25.04	514.28	23.04-25.04	9.22
AOC9-GP28I	05/03/00	Maxim	1	18.48		16.48-18.48	9.06[c]
AOC9-GP28S	05/03/00	Maxim	1	13.10		11.10-13.10	9.10[c]
AOC9-GP29D	03/29/00	Maxim	1	24.8	518.52	22.8-24.8	12.40
AOC9-GP29I	03/29/00	Maxim	1	20		18-20	11.85[c]
AOC9-GP29S	03/29/00	Maxim	1	15		13-15	12.8[c]
AOC9-GP30D	03/29/00	Maxim	1	21.34	518.62	19.34-21.34	12.84
AOC9-GP30S	04/28/00	Maxim	1	15		13-15	12.4[c]
AOC9-GP31S	03/30/00	Maxim	1	8.2	480.99	6.2-8.2	5.70
AOC9-GP32D	04/28/00	Maxim	1	17.8	519.67	15.8-17.8	13.75[c]
AOC9-GP32S	04/28/00	Maxim	1	15		13-15	13.5[c]
AOC9-GP33D	04/28/00	Maxim	1	23.5	510.30	21.5-23.5	9[c]
AOC9-GP33I	04/28/00	Maxim	1	17		15-17	8[c]
AOC9-GP33S	04/28/00	Maxim	1	10		8-10	7.85[c]
AOC9-GP34D	05/01/00	Maxim	1	15.5	517.04	13.5-15.5	11.0[c]
AOC9-GP34S	05/01/00	Maxim	1	12		10-12	10.68[c]
AOC9-GP35D	04/28/00	Maxim	1	21	523.65	19-21	10[c]
AOC9-GP35I	04/28/00	Maxim	1	16		14-16	10[c]
AOC9-GP35S	04/28/00	Maxim	1	12		10-12	10[c]
AOC9-GP36D	05/02/00	Maxim	1	26.38	520.52	24.38-26.38	12.18[c]
AOC9-GP36I	05/02/00	Maxim	1	19.70		17.70-19.70	13[c]
AOC9-GP36S	05/02/00	Maxim	1	13.9		11.9-13.9	13[c]
AOC9-GP37D	05/02/00	Maxim	1	26.42	522.52	24.62-26.42	11.20[c]
AOC9-GP37I	05/02/00	Maxim	1	20.67		18.67-20.67	11.14[c]
AOC9-GP37S	05/02/00	Maxim	1	14		12-14	11.4[c]
AOC9-GP38D	05/03/00	Maxim	1	29.15	523.98	27.15-29.15	16.22[c]
AOC9-GP38I	05/03/00	Maxim	1	23.11		21.11-23.11	16.94[c]
AOC9-GP38S	05/03/00	Maxim	1	18.94		16.94-18.94	16.45[c]
AOC9-GP39D	05/02/00	Maxim	1	30.67	521.59	28.67-30.67	13.36[c]
AOC9-GP39I	05/02/00	Maxim	1	22.89		20.89-22.89	13.45[c]
AOC9-GP39S	05/02/00	Maxim	1	16		14-16	13.10[c]
AOC9-GP40D	05/03/00	Maxim	1	24.64	522.65	22.64-24.64	10.55[c]
AOC9-GP40I	05/03/00	Maxim	1	20.04		18.04-20.04	10.76[c]
AOC9-GP40S	05/03/00	Maxim	1	12.99		10.99-12.99	10.76[c]
AOC9-GP41D	05/04/00	Maxim	1	20.82	525.1	18.82-20.82	13.42[c]
AOC9-GP41I	05/04/00	Maxim	1	18.65		16.65-18.65	13.52[c]
AOC9-GP41S	05/04/00	Maxim	1	15.90		13.90-15.90	13.54[c]

Table 2.2.1-1

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Geoprobe Temporary Well Construction Summary, Former Griffiss Air Force Base, Rome, New York

Geoprobe No	Date Installed	Drilling Company	PVC Well Casing/ Screen ID (inches)	Depth Pushed (ft BGS)	Ground Elevation (ft AMSL)	Screened Interval (ft BGS)	Static Water Level (ft BGS) [a]
AOC9-GP42D	05/04/00	Maxim	1	30.42	525.73	28.42-30.42	16.64 [c]
AOC9-GP42I	05/04/00	Maxim	1	25.32		23.32-25.32	16.56 [c]
AOC9-GP42S	05/04/00	Maxim	1	18.70		16.70-18.70	17.00 [c]
AOC9-GP43D	05/04/00	Maxim	1	16.96	526.78	14.96-16.96	13.56 [c]

[a] Water level measured on 04/05/00, unless otherwise indicated.
[b] Static water level above ground surface.
[c] Water level measured immediately following Geoprobe installation.
[d] Water level measured just prior to sampling.

Key:

AMSL = Above mean sea level.
AOC = Area of concern.
BGS = Below ground surface.
Ft = Feet.
Maxim = Maxim Technologies, Inc.
NA = Not available (collected with Hydropunch).
PVC = Polyvinyl chloride.
WSA = Weapon Storage Area.

Table 2.2.2-1

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Permanent Monitoring Well Construction Summary, Former Griffiss Air Force Base, Rome, New York

Well No	Date Stated	Date Completed	Drilling Company	Date Developed	Date Sampled	PVC Well Casing/ Screen ID (inches)	Depth Drilled (ft BGS)	Total Casing Depth (ft belowTOIC)	Ground Elevation (ft AMSL)	TOIC Elevation (ft AMSL)	Screened Interval (ft BGS)	Sand Interval (ft BGS)	Bentonite Seal Interval (ft BGS)	Grout Interval (ft BGS)	Static water Level (ft below TOIC) [a]
AOC9-MW05	4/12/00	4/12/00	Maxim	4/19/00	5/10/00	2	15	15.45	482.72	484.11	4-14	3.3-15	2-3.3	0-2	6.85
AOC9-MW06	4/13/00	4/13/00	Maxim	4/20/00	5/8/00	2	14.8	15.73	482.57	484.06	4.2-14.2	3.2-14.8	2.3-3.2	0-2.3	8.42
AOC9-MW07	4/13/00	4/13/00	Maxim	4/19/00	5/10/00	2	13	10.78	483.25	584.62	4.2-9.2	3-10	2-3	0-2	3.55
AOC9-MW08	5/5/00	5/5/00	Maxim	5/8/00	5/25/00	2	20.5	21.66	514.28	515.54	15.4-20.4	13-20.5	11-13	4-11	10.6

[a] Water level measured prior to well sampling.

Key:
AMSL = above mean sea level.
AOC = area of concern.
BGS = below ground surface.
ft = feet.
Maxim = Maxim Technologies, Inc.
MW = monitoring well.
PVC = polyvinyl chloride.
TOIC = top of inner casing.
WSA = Weapons Storage Area.

Table 2.3-1
AOC 9 2002 SI ADDITIONAL SAMPLING
SAMPLE LISTING
FORMER GRIFFISS AIR FORCE BASE, ROME, NY

									ANALYSES							
Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Select List VOCs 8260B	TCL VOCs 8260B	TCL SVOCs SW8270C	TPH as diesel and as gasoline 8015B Mod	TCL PCBs SW8082	TAL Metals 6010B/7470A/7471A	% Solids ASTM_D2216	TCL Pesticides SW8081A
AOC 9	07/15/02	FieldQC-TB9-GW1	ASC	DI Water	-	Y	T	TB1	X							
	07/16/02	FieldQC-TB9-GW2	ASC	DI Water	-	Y	T	TB1	X							
	07/17/02	FieldQC-TB9-GW3	ASC	DI Water	-	Y	T	TB1	X							
	07/18/02	FieldQC-TB9-GW4	ASC	DI Water	-	Y	T	TB1	X							
	07/19/02	FieldQC-TB9-GW5	ASC	DI Water	-	Y	T	TB1	X							
	07/22/02	FieldQC-TB9-GW6	ASC	DI Water	-	Y	T	TB1	X							
	07/23/02	FieldQC-TB9-GW7	ASC	DI Water	-	Y	T	TB1	X							
	07/24/02	FieldQC-TB9-GW8	ASC	DI Water	-	N	T	TB1	X							
	07/12/02	FieldQC-TB9-GW1/S	ERDC	DI Water	-	Y	T	TB1	X							
	07/17/02	FieldQC-TB9-GW2/S	ERDC	DI Water	-	Y	T	TB1	X							
	07/18/02	FieldQC-TB9-GW3/S	ERDC	DI Water	-	Y	T	TB1	X							
	07/19/02	FieldQC-TB9-GW4/S	ERDC	DI Water	-	Y	T	TB1	X							
	07/22/02	FieldQC-TB9-GW5/S	ERDC	DI Water	-	Y	T	TB1	X							
	07/23/02	FieldQC-TB9-GW6/S	ERDC	DI Water	-	Y	T	TB1	X							
		FieldQC-TB9-GW7/S	ERDC	DI Water	-	Y	S	TB1	X							
	07/17/02	AOC9-GP44S1	ASC	Groundwater	12.3 - 14.3	Y	T	N1	X							
	07/17/02	AOC9-GP44S2	ASC	Groundwater	15.9 - 17.9	Y	T	N1	X							
	07/17/02	AOC9-GP44I	ASC	Groundwater	19.3 - 21.3	Y	T	N1	X							
	07/17/02	AOC9-GP44I/D	ASC	Groundwater	19.3 - 21.3	Y	T	FD1	X							
	07/17/02	AOC9-GP44I/S	ERDC	Groundwater	19.3 - 21.3	Y	T	FR1	X							
	07/17/02	AOC9-GP44D1	ASC	Groundwater	22.4 - 24.4	Y	T	N1	X							
	07/15/02	AOC9-GP44D2	ASC	Groundwater	28.0 - 30.0	Y	T	N1	X							
	07/17/02	AOC9-GP45S1	ASC	Groundwater	10.1 - 12.1	Y	T	N1	X							
	07/17/02	AOC9-GP45S2	ASC	Groundwater	13.1 - 15.1	Y	T	N1	X							
	07/17/02	AOC9-GP45I	ASC	Groundwater	16.2 - 18.2	Y	T	N1	X							
	07/17/02	AOC9-GP45I (extra volume)	ASC	Groundwater (MS/MSD)	16.2 - 18.2	Y	T	MS1	X							
	07/17/02	AOC9-GP45D1	ASC	Groundwater	19.5 - 21.5	Y	T	N1	X							
	07/16/02	AOC9-GP45D2	ASC	Groundw[illegible]	23.0 - 25.0	Y	T	N1	X							

FORMER GRIFFISS AIR FORCE BASE, ROME, NY

									ANALYSES							
Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Select List VOCs 8260B	TCL VOCs 8260B	TCL SVOCs SW8270C	TPH as diesel and as gasoline 8015B Mod	TCL PCBs SW8082	TAL Metals 6010B/7470A/7471A	% Solids ASTM_D2216	TCL Pesticides SW8081A
	07/17/02	AOC9-GP46S1	ASC	Groundwater	9.4 - 11.4	Y	T	N1	X							
	07/17/02	AOC9-GP46S2	ASC	Groundwater	12.5 - 14.5	Y	T	N1	X							
	07/17/02	AOC9-GP46I	ASC	Groundwater	15.6 - 17.6	Y	T	N1	X							
	07/17/02	AOC9-GP46I/D	ASC	Groundwater	15.6 - 17.6	Y	T	FD1	X							
	07/17/02	AOC9-GP46I/S	ERDC	Groundwater	15.6 - 17.6	Y	T	FR1	X							
	07/17/02	AOC9-GP46D1	ASC	Groundwater	18.8 - 20.8	Y	T	N1	X							
	07/16/02	AOC9-GP46D2	ASC	Groundwater	22.5 - 24.5	Y	T	N1	X							
	07/16/02	AOC9-GP47S1	ASC	Groundwater	7.5 - 9.5	Y	T	N1	X							
	07/16/02	AOC9-GP47S2	ASC	Groundwater	11.0 - 13.0	Y	T	N1	X							
	07/16/02	AOC9-GP47I	ASC	Groundwater	14.0 - 16.0	Y	T	N1	X							
	07/16/02	AOC9-GP47D1	ASC	Groundwater	18.0 - 20.0	Y	T	N1	X							
	07/16/02	AOC9-GP47D2	ASC	Groundwater	21.2 - 23.2	Y	T	N1	X							
	07/18/02	AOC9-GP48S1	ASC	Groundwater	9.4 - 11.4	Y	T	N1	X							
	07/18/02	AOC9-GP48S2	ASC	Groundwater	12.5 - 14.5	Y	T	N1	X							
	07/18/02	AOC9-GP48I	ASC	Groundwater	15.8 - 17.8	Y	T	N1	X							
	07/18/02	AOC9-GP48I/D	ASC	Groundwater	15.8 - 17.8	Y	T	FD1	X							
	07/18/02	AOC9-GP48I/S	ERDC	Groundwater	15.8 - 17.8	Y	T	FR1	X							
	07/18/02	AOC9-GP48D1	ASC	Groundwater	19.3 - 21.3	Y	T	N1	X							
	07/16/02	AOC9-GP48D2	ASC	Groundwater	22.8 - 24.8	Y	T	N1	X							
	07/19/02	AOC9-GP49S1	ASC	Groundwater	10.7 - 12.7	Y	T	N1	X							
	07/19/02	AOC9-GP49S2	ASC	Groundwater	13.4 - 15.4	Y	T	N1	X							
	07/18/02	AOC9-GP49I	ASC	Groundwater	16.5 - 18.5	Y	T	N1	X							
	07/18/02	AOC9-GP49I (extra volume)	ASC	Groundwater (MS/MSD)	16.5 - 18.5	Y	T	MS1	X							
	07/18/02	AOC9-GP49D1	ASC	Groundwater	19.6 - 21.6	Y	T	N1	X							
	07/19/02	AOC9-GP49D2	ASC	Groundwater	23.2 - 25.2	Y	T	N1	X							
	07/19/02	AOC9-GP50S1	ASC	Groundwater	11.8 - 13.8	Y	T	N1	X							
	07/19/02	AOC9-GP50S2	ASC	Groundwater	14.5 - 16.5	Y	T	N1	X							
	07/19/02	AOC9-GP50I	ASC	Groundwater	17.6 - 19.6	Y	T	N1	X							
	07/19/02	AOC9-GP50I/D	ASC	Groundwater	17.6 - 19.6	Y	T	FD1	X							
	07/19/02	AOC9-GP50I/S	ERDC	Groundwater	17.6 - 19.6	Y	T	FR1	X							
	07/19/02	AOC9-GP50D1	ASC	Groundwater	20.6 - 22.6	Y	T	N1	X							
	07/19/02	AOC9-GP50D2	ASC	Groundwater	23.5 - 25.5	Y	T	N1	X							

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Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	ANALYSES Select List VOCs 8260B	TCL VOCs 8260B	TCL SVOCs SW8270C	TPH as diesel and as gasoline 8015B Mod	TCL PCBs SW8082	TAL Metals 6010B/7470A/7471A	% Solids ASTM_D2216	TCL Pesticides SW8081A
	07/22/02	AOC9-GP51S1	ASC	Groundwater	10.9 - 12.9	Y	T	N1	X							
	07/22/02	AOC9-GP51S2	ASC	Groundwater	14.0 - 16.0	Y	T	N1	X							
	07/22/02	AOC9-GP51I	ASC	Groundwater	16.9 - 18.9	Y	T	N1	X							
	07/22/02	AOC9-GP51D1	ASC	Groundwater	20.2 - 22.2	Y	T	N1	X							
	07/19/02	AOC9-GP51D2	ASC	Groundwater	23.0 - 25.0	Y	T	N1	X							
	07/23/02	AOC9-GP52S1	ASC	Groundwater	12.5 - 14.5	Y	T	N1	X							
	07/23/02	AOC9-GP52S2	ASC	Groundwater	15.4 - 17.4	Y	T	N1	X							
	07/22/02	AOC9-GP52I	ASC	Groundwater	18.4 - 20.4	Y	T	N1	X							
	07/22/02	AOC9-GP52I/D	ASC	Groundwater	18.4 - 20.4	Y	T	FD1	X							
	07/22/02	AOC9-GP52I/S	ERDC	Groundwater	18.4 - 20.4	Y	T	FR1	X							
	07/22/02	AOC9-GP52D1	ASC	Groundwater	21.4 - 23.4	Y	T	N1	X							
	07/22/02	AOC9-GP52D2	ASC	Groundwater	24.4 - 26.4	Y	T	N1	X							
	07/24/02	AOC9-GP53S1	ASC	Groundwater	12.0 - 14.0	Y	T	N1	X							
		AOC9-GP53S2	ASC	Groundwater	14.0 - 16.0	Y	S	N1	X							
	07/24/02	AOC9-GP53I	ASC	Groundwater	14.7 - 16.7	Y	T	N1	X							
	07/24/02	AOC9-GP53I (extra volume)	ASC	Groundwater (MS/MSD)	14.7 - 16.7	Y	T	MS1	X							
	07/23/02	AOC9-GP53D1	ASC	Groundwater	17.6 - 19.6	Y	T	N1	X							
	07/23/02	AOC9-GP53D2	ASC	Groundwater	19.9 - 21.9	Y	T	N1	X							
	07/23/02	AOC9-GP54S1	ASC	Groundwater	13.4 - 15.4	Y	T	N1	X							
		AOC9-GP54S2	ASC	Groundwater	14.0 - 16.0	Y	S	N1	X							
	07/23/02	AOC9-GP54I	ASC	Groundwater	15.2 - 17.2	Y	T	N1	X							
	07/23/02	AOC9-GP54I/D	ASC	Groundwater	15.2 - 17.2	Y	T	FD1	X							
	07/23/02	AOC9-GP54I/S	ERDC	Groundwater	15.2 - 17.2	Y	T	FR1	X							
	07/23/02	AOC9-GP54D1	ASC	Groundwater	17.1 - 19.1	Y	T	N1	X							
	07/23/02	AOC9-GP54D2	ASC	Groundwater	18.3 - 20.3	Y	T	N1	X							
	07/23/02	AOC9-GP55I	ASC	Groundwater	16.6 - 18.6	N	T	N1	X							
	07/24/02	AOC9-GP56I	ASC	Groundwater	17.2 - 19.2	N	T	N1	X							
	07/24/02	AOC9-GP57I	ASC	Groundwater	20.4 - 22.4	N	T	N1	X							

									ANALYSES							
Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Select List VOCs 8260B	TCL VOCs 8260B	TCL SVOCs SW8270C	TPH as diesel and as gasoline 8015B Mod	TCL PCBs SW8082	TAL Metals 6010B/7470A/7471A	% Solids ASTM_D2216	TCL Pesticides SW8081A
	07/19/02	AOC9-GW-TP01	ASC	Groundwater	Top of Water table	Y	T	N1		X	X	X	X			X
	07/19/02	AOC9-GW-TP03	ASC	Groundwater	Top of Water table	Y	T	N1		X	X	X	X			X
	07/19/02	AOC9-GW-TP03 (extra volume)	ASC	Groundwater (MS/MSD)	Top of Water table	Y	T	MS1		X	X	X	X			X
	07/19/02	AOC9-GW-TP04	ASC	Groundwater	Top of Water table	Y	T	N1		X	X	X	X			X
	07/19/02	AOC9-GW-TP04/S	ASC	Groundwater	Top of Water table	N	T	N1		X	X	X	X			X
	07/19/02	AOC9-GW-TP06	ASC	Groundwater	Top of Water table	Y	T	N1		X	X	X	X			X
	07/19/02	AOC9-GW-DTP04	ASC	Groundwater	Top of Water table	Y	T	N1		X	X	X	X			X
	07/19/02	AOC9-GW-DTP04/D	ASC	Groundwater	Top of Water table	Y	T	FD1		X	X	X	X			X
	07/19/02	AOC9-GW-DTP04/S	ERDC	Groundwater	Top of Water table	Y	T	FR1		X	X	X	X			X
	07/19/02	AOC9-TP04	ASC	Subsurface soil		Y	T	N1		X	X	X	X	X	X	X
	07/19/02	AOC9-TP04 (extra volume)	ASC	Subsurface soil (MS/MSD)		Y	T	MS1		X	X	X	X	X	X	X
	07/19/02	AOC9-TP04/D	ASC	subsurface soil		Y	T	FD1		X	X	X	X	X	X	X
	07/19/02	AOC9-TP04/S	ERDC	Subsurface soil		Y	T	FR1		X	X	X	X	X	X	X
	07/24/02	AOC9-SS01 (4-6)	ASC	Subsurface soil	4.0 - 6.0	Y	T	N1		X	X		X	X	X	X
	07/24/02	AOC9-SS01 (11.5-16)	ASC	Subsurface soil	11.5 - 16.0	Y	T	N1		X	X		X	X	X	X
	07/24/02	AOC9-SS01 (11.5-16)/D	ASC	Subsurface soil	11.5 - 16.0	Y	T	FD1		X	X		X	X	X	X
	07/24/02	AOC9-SS01 (11.5-16)/S	ERDC	Subsurface soil	11.5 - 16.0	Y	T	FR1		X	X		X	X	X	X
	07/24/02	AOC9-SS01 (20-24)	ASC	Subsurface soil	20 - 24	Y	T	N1		X	X		X	X	X	X
	07/24/02	AOC9-SS01 (20-24) (extra volume)	ASC	Subsurface soil (MS/MSD)	20 - 24	Y	T	MS1		X	X		X	X	X	X
	07/24/02	AOC9-SS02 (2-4)	ASC	Subsurface soil (MS/MSD)	2.0 - 4.0	Y	T	N1		X						
	07/24/02	AOC9-SS02 (6-8)	ASC	Subsurface soil (MS/MSD)	6.0 - 8.0	Y	T	N1		X						
	07/24/02	AOC9-SS02 (10-10.5)	ASC	Subsurface soil (MS/MSD)	10 - 10.5	Y	T	N1		X						
	07/15/02	AFFF-SD01	ASC	Sediment	0.0 - 0.5	Y	T	N1		X	X		X	X	X	X
	07/15/02	AFFF-SD01 (extra volume)	ASC	Sediment (MS/MSD)	0.0 - 0.5	Y	T	MS1		X	X		X	X	X	X
	07/15/02	AFFF-SD01/D	ASC	Sediment	0.0 - 0.5	Y	T	FD1		X	X		X	X	X	X
	07/15/02	AFFF-SD01/S	ERDC	Sediment	0.0 - 0.5	Y	T	FR1		X	X		X	X	X	X
	07/15/02	AFFF-SD02	ASC	Sediment	0.5 - 2.0	Y	T	N1		X	X		X	X	X	X
	07/18/02	AOC9-DW01	ASC	Drill Water	-	Y	T	N1	X	X	X	X	X	X		X

FORMER GRIFFISS AIR FORCE BASE, ROME, NY

									ANALYSES							
Location	Date	Sample Number	Lab	Matrix	Depth	WP	Stat	Type	Select List VOCs 8260B	TCL VOCs 8260B	TCL SVOCs SW8270C	TPH as diesel and as gasoline 8015B Mod	TCL PCBs SW8082	TAL Metals 6010B/7470A/7471A	% Solids ASTM_D2216	TCL Pesticides SW8081A

Key:

AFFF = Aqueous Film Forming Foam
AOC9 = Area of Concern 9.
ASC = E & E's Analytical Services Center.
ASTM = American Society for Testing and Materials.
BGS = Below ground surface.
D1 = Deep Geoprobe groundwater sample (20 to 22 feet BGS).
D2 = Deepest Geoprobe groundwater sample (23 to 25 feet BGS).
/D = Duplicate sample.
Depth = Depth interval at which sample will be collected.
DI = Deionized.
ERDC = U.S. Army Engineer Research and Development Center Quality Assurance Laboratory.
FD = Field duplicate.
FR = Field split/replicate.
GP = Geoprobe.
GW = Groundwater sample.
I = Intermediate Geoprobe sample.
MS/MSD = Matrix spike/matrix spike duplicate.

N = Original sample.
PCB = Polychlorinated biphenyls.
QC = Quality control sample.
S1 = Shallowest Geoprobe groundwater sample (11 to 13 feet BGS).
S2 = Shallow Geoprobe groundwater sample (14 to 16 feet BGS).
/S = Split sample.
SD = Sediment.
SI = Supplemental Investigation
SS = Subsurface soil sample.
Stat = Status (O= Open, T= Taken, S= Skipped).
SVOCs = Semivolatile organic compounds.
TAL = Target analyte list.
TB = Trip blank sample.
TCL = Target Compound List.
TP = Test pit.
VOCs = Volatile organic compound.
WP = Sample in work plan (Y= yes, N= no).

Table 2.3.1-1

Year 2002 Supplemental Investigation, AOC 9: WSA Landfill, Geoprobe Temporary Well Construction Summary, Former Griffiss Air Force Base, Rome, New York

Geoprobe No	Date Installed	Drilling Company	PVC Well Casing/ Screen ID (inches)	Depth Pushed (ft BGS)	Ground Elevation (ft AMSL)	Screened Interval (ft BGS)	Static Water Level (ft BGS) [a]
AOC9-GP44S1	7/17/02	Zebra	1	14.5	515.07	12.3 - 14.3	10.46
AOC9-GP44S2	7/17/02	Zebra	1	17.9		15.9 - 17.9	10.24
AOC9-GP44I	7/17/02	Zebra	1	21.5		19.3 - 21.3	10.51
AOC9-GP44D1	7/17/02	Zebra	1	24.5		22.4 - 24.4	10.44
AOC9-GP44D2	7/1502	Zebra	1	30.3		28.0 - 30.0	10.37
AOC9-GP45S1	7/17/02	Zebra	1	12.1	514.32	10.1 - 12.1	9.09
AOC9-GP45S2	7/17/02	Zebra	1	15.1		13.1 - 15.1	8.88
AOC9-GP45I	7/17/02	Zebra	1	18.5		16.2 - 18.2	8.86
AOC9-GP45D1	7/17/02	Zebra	1	22.0		19.5 - 21.5	8.80
AOC9-GP45D2	7/16/02	Zebra	1	25.7		23.0 - 25.0	8.87
AOC9-GP46S1	7/17/02	Zebra	1	11.5	513.83	9.4 - 11.4	8.65
AOC9-GP46S2	7/17/02	Zebra	1	14.5		12.5 - 14.5	8.62
AOC9-GP46I	7/17/02	Zebra	1	17.7		15.6 - 17.6	8.71
AOC9-GP46D1	7/17/02	Zebra	1	21.4		18.8 - 20.8	8.91
AOC9-GP46D2	7/16/02	Zebra	1	25.3		22.5 - 24.5	8.75
AOC9-GP47S1	7/16/02	Zebra	1	9.5	510.49	7.5 - 9.5	5.88
AOC9-GP47S2	7/16/02	Zebra	1	13.2		11.0 - 13.0	6.61
AOC9-GP47I	7/16/02	Zebra	1	16.5		14.0 - 16.0	5.86
AOC9-GP47D1	7/16/02	Zebra	1	20.5		18.0 - 20.0	6.51
AOC9-GP47D2	7/16/02	Zebra	1	24.0		21.2 - 23.2	5.92
AOC9-GP48S1	7/18/02	Zebra	1	11.6	513.29	9.4 - 11.4	8.69
AOC9-GP48S2	7/18/02	Zebra	1	14.9		12.5 - 14.5	8.64
AOC9-GP48I	7/18/02	Zebra	1	18.2		15.8 - 17.8	8.71
AOC9-GP48D1	7/18/02	Zebra	1	21.5		19.3 - 21.3	8.61
AOC9-GP48D2	7/16/02	Zebra	1	25.3		22.8 - 24.8	8.65
AOC9-GP49S1	7/19/02	Zebra	1	12.7	516.26	10.7 - 12.7	11.56
AOC9-GP49S2	7/19/02	Zebra	1	15.5		13.4 - 15.4	11.68
AOC9-GP49I	7/18/02	Zebra	1	18.5		16.5 - 18.5	11.52
AOC9-GP49D1	7/18/02	Zebra	1	21.5		19.6 - 21.6	11.69
AOC-GP49D2	7/19/02	Zebra	1	28.5		23.2 - 25.2	11.61
AOC9-GP50S1	7/19/02	Zebra	1	13.6	516.22	11.8 - 13.8	11.12
AOC9-GP50S2	7/19/02	Zebra	1	16.5		14.5 - 16.5	11.01
AOC9-GP50I	7/19/02	Zebra	1	20.0		17.6 - 19.6	11.22
AOC9-GP50D1	7/19/02	Zebra	1	22.5		20.6 - 22.6	11.15
AOC9-GP50D2	7/19/02	Zebra	1	26.0		23.5 - 25.5	11.02
AOC9-GP51S1	7/22/02	Zebra	1	12.9	515.14	10.9 - 12.9	9.45
AOC9-GP51S2	7/22/02	Zebra	1	16.0		14.0 - 16.0	9.29
AOC9-GP51I	7/22/02	Zebra	1	19.0		16.9 - 18.9	9.20
AOC9-GP51D1	7/22/02	Zebra	1	22.3		20.2 - 22.2	9.31
AOC9-GP51D2	7/19/02	Zebra	1	28.5		23.0 - 25.0	9.31
AOC9-GP52S1	7/23/02	Zebra	1	14.8	518.56	12.5 - 14.5	12.26
AOC9-GP52S2	7/23/02	Zebra	1	17.7		15.4 - 17.4	12.35
AOC9-GP52I	7/22/02	Zebra	1	20.4		18.4 - 20.4	12.32

Table 2.3.1-1

Year 2002 Supplemental Investigation, AOC 9: WSA Landfill, Geoprobe Temporary Well Construction Summary, Former Griffiss Air Force Base, Rome, New York

Geoprobe No	Date Installed	Drilling Company	PVC Well Casing/ Screen ID (inches)	Depth Pushed (ft BGS)	Ground Elevation (ft AMSL)	Screened Interval (ft BGS)	Static Water Level (ft BGS) [a]
AOC9-GP52D1	7/22/02	Zebra	1	23.4	518.56	21.4 - 23.4	12.31
AOC9-GP52D2	7/22/02	Zebra	1	27.0		24.4 - 26.4	12.30
AOC9-GP53S1	7/24/02	Zebra	1	14.0	520.11	12.0 - 14.0	13.28
AOC9-GP53I	7/24/02	Zebra	1	17.0		14.7 - 16.7	13.11
AOC9-GP53D1	7/23/02	Zebra	1	19.8		17.6 - 19.6	13.05
AOC9-GP53D2	7/23/02	Zebra	1	22.2		19.9 - 21.9	13.13
AOC9-GP54S1	7/23/02	Zebra	1	15.5	521.21	13.4 - 15.4	14.30
AOC9-GP54I	7/23/02	Zebra	1	17.3		15.2 - 17.2	14.28
AOC9-GP54D1	7/23/02	Zebra	1	19.4		17.1 - 19.1	14.46
AOC9-GP54D2	7/23/02	Zebra	1	20.3		18.3 - 20.3	14.45
AOC9-GP55I	7/23/02	Zebra	1	19.0	521.79	16.6 - 18.6	15.00
AOC9-GP56I	7/24/02	Zebra	1	19.3	523.82	17.2 - 19.2	15.85
AOC9-GP57I	7/24/02	Zebra	1	22.4	523.11	20.4 - 22.4	15.45

[a] Water level measured on 07/25/02.

Key:

AMSL = Above mean sea level.
AOC = Area of concern.
BGS = Below ground surface.
ft = Feet.
PVC = Polyvinyl chloride.
WSA = Weapon Storage Area.

Table 2.4.2-1 Summary of Positive Analytical Results for AOC 9 Baseline Monitoring Well Groundwater Samples, Former Griffiss Air Force Base, Rome, New York

Analyte	NYSDEC Standards[1]	EPA Standards[2]	Sample ID:	AOC9-MW08	MW08/D	AOC9-MW12	AOC9-MW13
			Date:	10/22/02	10/22/02	10/22/02	10/22/02
VOCs by Method 524.2 (μg/L)							
1,2,4-Trimethylbenzene	5	NA		**19.6**	**18.2**	**63.7**	**15.1**
1,2-Dichlorobenzene	3	600		**109**	**110**	**171**	**173**
1,3,5-Trimethylbenzene	5	NA		3.98	3.75	**18.3**	2.19
1,3-Dichlorobenzene	3	NA		**9.27**	**9.19**	**9.11**	**8.03**
1,4-Dichlorobenzene	3	75		**165**	**166**	**161**	**137**
2-Butanone	50 g	NA		5.00 U	5.00 U	5.00 U	5.00 U
2-Chlorotoluene	5	NA		0.306 J	0.317 J	0.500 U	0.500 U
2-Hexanone	50 g	NA		5.00 U	5.00 U	1.33 J	5.00 U
4-Chlorotoluene	5	NA		0.500 U	0.500 U	0.500 U	0.297 J
4-Isopropyltoluene	5	NA		0.543	0.546	0.765	0.495 J
Acetone	50 g	NA		5.00 U	6.97	7.33	6.43
Benzene	1	5		**7.48**	**7.43**	**4.39**	**3.39**
Carbon disulfide	60 g	NA		0.500 U	0.500 U	0.500 U	0.500 U
Chlorobenzene	5	100		**1670**	**1660**	**1380**	**1410**
Chloroethane	5	NA		0.550	0.634	0.366 J	0.123 J
Chloroform	7	80 (as TTHM)		0.500 U	0.500 U	0.500 U	0.500 U
Chloromethane	5	NA		0.309 J	0.346 J	0.209 J	0.0760 J
cis-1,2-Dichloroethene	5	70		2.82	2.86	**8.89**	**5.06**
Dibromochloromethane	50 g	80 (as TTHM)		0.500 U	0.500 U	0.500 U	0.500 U
Ethylbenzene	5	700		**6.20**	**6.17**	**10.9**	2.68
Isopropylbenzene	5	NA		**11.2**	**11.3**	**12.2**	4.89
m,p-Xylene	5	10,000 (total)		**6.04**	**5.82**	**22.9**	3.74
Naphthalene	10 g	NA		7.50	7.85	**23.4**	**10.6**
n-Butylbenzene	5 g	NA		0.500 U	0.500 U	0.500 U	0.500 U
n-Propylbenzene	5	NA		4.46	4.45	**8.44**	2.10
o-Xylene	5	10,000 (total)		1.92	1.84	1.42	0.388 J
sec-Butylbenzene	5	NA		4.21	4.21	**5.43**	3.00
tert-Butylbenzene	5	NA		2.36	2.31	2.88	1.61
Tetrachloroethene	5	5		0.500 U	0.500 U	0.169 J	0.178 J
Toluene	5	1000		0.183 J	0.186 J	0.197 J	0.137 J
trans-1,2-Dichloroethene	5	100		0.500 U	0.500 U	0.500 U	0.500 U
Trichloroethene	5	5		1.15	1.12	**6.31**	4.89
Vinyl chloride	2	2		1.13	1.11	1.67	0.704 J
Xylenes, Total	5	10,000 (total)		**8.00**	**7.69**	**24.7**	4.19
Metals/Mercury by Method 6010B/7470A (μg/L)							
Aluminum	NA	50 to 200 sw		**406**	**378**	NS	200 U
Arsenic	25	10		25.0 U	25.0 U	NS	25.0 U
Barium	1,000	2,000		59.8	59.2	NS	31.3
Cadmium	5	5		5.00 U	5.00 U	NS	5.00 U
Calcium	NA	NA		131000	135000	NS	106000
Chromium	50	100 (total)		10.0 U	10.0 U	NS	10.0 U
Cobalt	NA	NA		20.0 U	20.0 U	NS	20.0 U
Copper	200	1,300 al		20.0 U	20.0 U	NS	20.0 U
Iron	300	300 sw		**4650**	**4610**	NS	**1730**
Lead	25	15 al		5.00 U	1.85 J	NS	5.00 U
Magnesium	35,000 g	NA		8710	8710	NS	9810
Manganese	300	50 sw		**2910**	**2930**	NS	**1330**
Nickel	100	NA		20.0 U	20.0 U	NS	20.0 U
Potassium	NA	NA		2560	2510	NS	1800
Sodium	20,000	NA		17300	18000	NS	**24000**
Thallium	0.5 g	2		**33.4**	**34.5**	NS	**18.9 J**
Zinc	2,000 g	5,000 sw		2.16 J	10.0 U	NS	10.0 U

Key at the end of Table.

Table 2.4.2-1 Summary of Positive Analytical Results for AOC 9 Baseline Monitoring Well Groundwater Samples, Former Griffiss Air Force Base, Rome, New York

Analyte	NYSDEC Standards[1]	EPA Standards[2]	Sample ID: Date:	AOC9-MW08 10/22/02	MW08/D 10/22/02	AOC9-MW12 10/22/02	AOC9-MW13 10/22/02
Anions by Ion Chromatography by Method 300 (mg/L)							
Sulfate	250	250 sw		5.42	5.40	5.49	7.62
Dissolved Organic Carbon by method 5310B (mg/L)							
DOC	NA	NA		4.3	5.2	3.8	4.6
Ferrous Iron - Field Test (mg/L)							
Ferrous Iron	NA	NA		3.55	NS	2	1.7

(1) New York State Department of Environmental Conservation, Technical and Operational Guidance Series #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998.

(2) EPA National Primary and Secondary Drinking Water Standards, 2002.

(g) Guidance value used.

(al) Action level used in lieu of MCL.

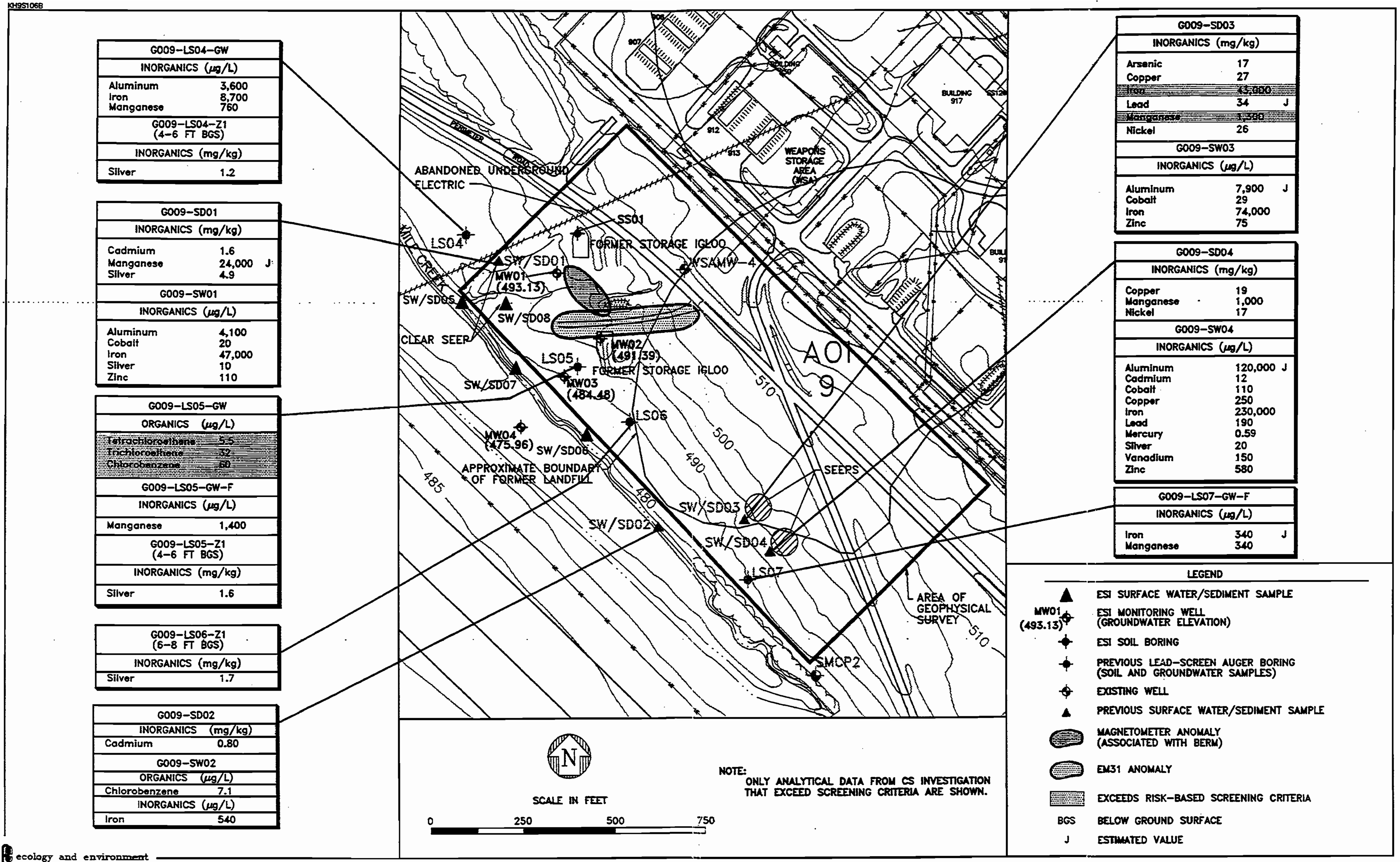
(sw) Secondary drinking water regulations.

Key:

AOC9 = Area of Concern.
DOC = Dissolved organic carbon.
EPA = Environmental Protection Agency.
J = Estimated value.
MCL = Maximum Contaminant Level.
mg/L = Milligrams per liter.
MW = Monitoring well.
N/A = This parameters not analyzed by Low Levels VOC 8260B Method.
NA = No criteria available.
NS = Not sampled for this parameter.
NYSDEC = New York State Department of Environmental Conservation.
R2 = Second round of performance monitoring sampling.
TTHM = Total trihalomethanes.
U = Not detected (practical quantitation limit listed).
VOC = Volatile organic compound.
µg/L = Micrograms per liter.

8.00	Result (shaded and bolded) exceeds the NYSDEC standard.
406	Result (shaded and underlined) exceeds the EPA MCL.
33.4	Result (shaded, bolded, and underlined) exceeds both the NYSDEC standard and the EPA MCL.

Key at the end of Table.



G009-LS04-GW		
INORGANICS (µg/L)		
Aluminum	3,600	
Iron	8,700	
Manganese	760	
G009-LS04-Z1 (4-6 FT BGS)		
INORGANICS (mg/kg)		
Silver	1.2	

G009-SD01		
INORGANICS (mg/kg)		
Cadmium	1.6	
Manganese	24,000	J
Silver	4.9	
G009-SW01		
INORGANICS (µg/L)		
Aluminum	4,100	
Cobalt	20	
Iron	47,000	
Silver	10	
Zinc	110	

G009-LS05-GW		
ORGANICS (µg/L)		
Tetrachloroethene	5.5	
Trichloroethene	32	
Chlorobenzene	60	
G009-LS05-GW-F		
INORGANICS (µg/L)		
Manganese	1,400	
G009-LS05-Z1 (4-6 FT BGS)		
INORGANICS (mg/kg)		
Silver	1.6	

G009-LS06-Z1 (6-8 FT BGS)	
INORGANICS (mg/kg)	
Silver	1.7

G009-SD02	
INORGANICS (mg/kg)	
Cadmium	0.80
G009-SW02	
ORGANICS (µg/L)	
Chlorobenzene	7.1
INORGANICS (µg/L)	
Iron	540

G009-SD03		
INORGANICS (mg/kg)		
Arsenic	17	
Copper	27	
Iron	43,000	
Lead	34	J
Manganese	1,500	
Nickel	26	
G009-SW03		
INORGANICS (µg/L)		
Aluminum	7,900	J
Cobalt	29	
Iron	74,000	
Zinc	75	

G009-SD04		
INORGANICS (mg/kg)		
Copper	19	
Manganese	1,000	
Nickel	17	
G009-SW04		
INORGANICS (µg/L)		
Aluminum	120,000	J
Cadmium	12	
Cobalt	110	
Copper	250	
Iron	230,000	
Lead	190	
Mercury	0.59	
Silver	20	
Vanadium	150	
Zinc	580	

G009-LS07-GW-F		
INORGANICS (µg/L)		
Iron	340	J
Manganese	340	

NOTE:
ONLY ANALYTICAL DATA FROM CS INVESTIGATION THAT EXCEED SCREENING CRITERIA ARE SHOWN.

LEGEND

▲	ESI SURFACE WATER/SEDIMENT SAMPLE
MW01 (493.13) ⊕	ESI MONITORING WELL (GROUNDWATER ELEVATION)
✦	ESI SOIL BORING
✦	PREVIOUS LEAD-SCREEN AUGER BORING (SOIL AND GROUNDWATER SAMPLES)
⊕	EXISTING WELL
▲	PREVIOUS SURFACE WATER/SEDIMENT SAMPLE
▨	MAGNETOMETER ANOMALY (ASSOCIATED WITH BERM)
▨	EM31 ANOMALY
▨	EXCEEDS RISK-BASED SCREENING CRITERIA
BGS	BELOW GROUND SURFACE
J	ESTIMATED VALUE

Figure 2-1 CS (1995) GROUP I RESULT
WEAPONS STORAGE AREA (WSA)
LANDFILL (AOI 9)

KH9S105B

G009-MW04-Z1-2 (0-0.25ft. BGS)	
INORGANIC (mg/kg)	
Arsenic	6.2
Barium	72
Berrylium	0.89
Chromium	23
Potassium	3,100
Selenium	5.8

G009-MW04-Z2-2 (0.25-2ft. BGS)	
INORGANIC (mg/kg)	
Aluminum	19,000
Arsenic	8.8
Berrylium	0.94
Chromium	25
Potassium	3,200
Selenium	6.5

G009-MW04-Z3-2 (6-10ft. BGS)	
INORGANIC (mg/kg)	
Arsenic	4.1
Selenium	8.8

G009-MW04	
ORGANIC (µg/L)	
1,2 Dichoroethane	3.2J
Chlorobenzene	34
Trichloroethene	4.5J
INORGANIC (µg/L)	
Aluminum	190
Iron	310
Manganese	410
Potassium	1,800

G009-MW04-GW-F	
INORGANIC (µg/L)	
Manganese	420
Potassium	1,200

G009-SW05	
INORGANIC (µg/L)	
Aluminum	980J
Iron	4,300J

G009-SW06	
INORGANIC (µg/L)	
Aluminum	380J
Iron	1,200
Zinc	32

G009-SW07	
INORGANIC (µg/L)	
Aluminum	150J
Iron	730

G009-MW01-Z1 (0-0.25ft. BGS)	
INORGANIC (mg/kg)	
Selenium	3

G009-MW01-Z2 (0.25-2ft. BGS)	
INORGANIC (mg/kg)	
Selenium	2.1
Thallium	0.58

G009-MW01-Z3 (4-6ft. BGS)	
INORGANIC (mg/kg)	
Selenium	1.9
Calcium	30,000

G009-MW01-Z1/D (0-0.25ft. BGS)	
ORGANIC (µg/kg)	
Benzo(a)pyrene	75J
INORGANIC (mg/kg)	
Arsenic	4
Selenium	4.3

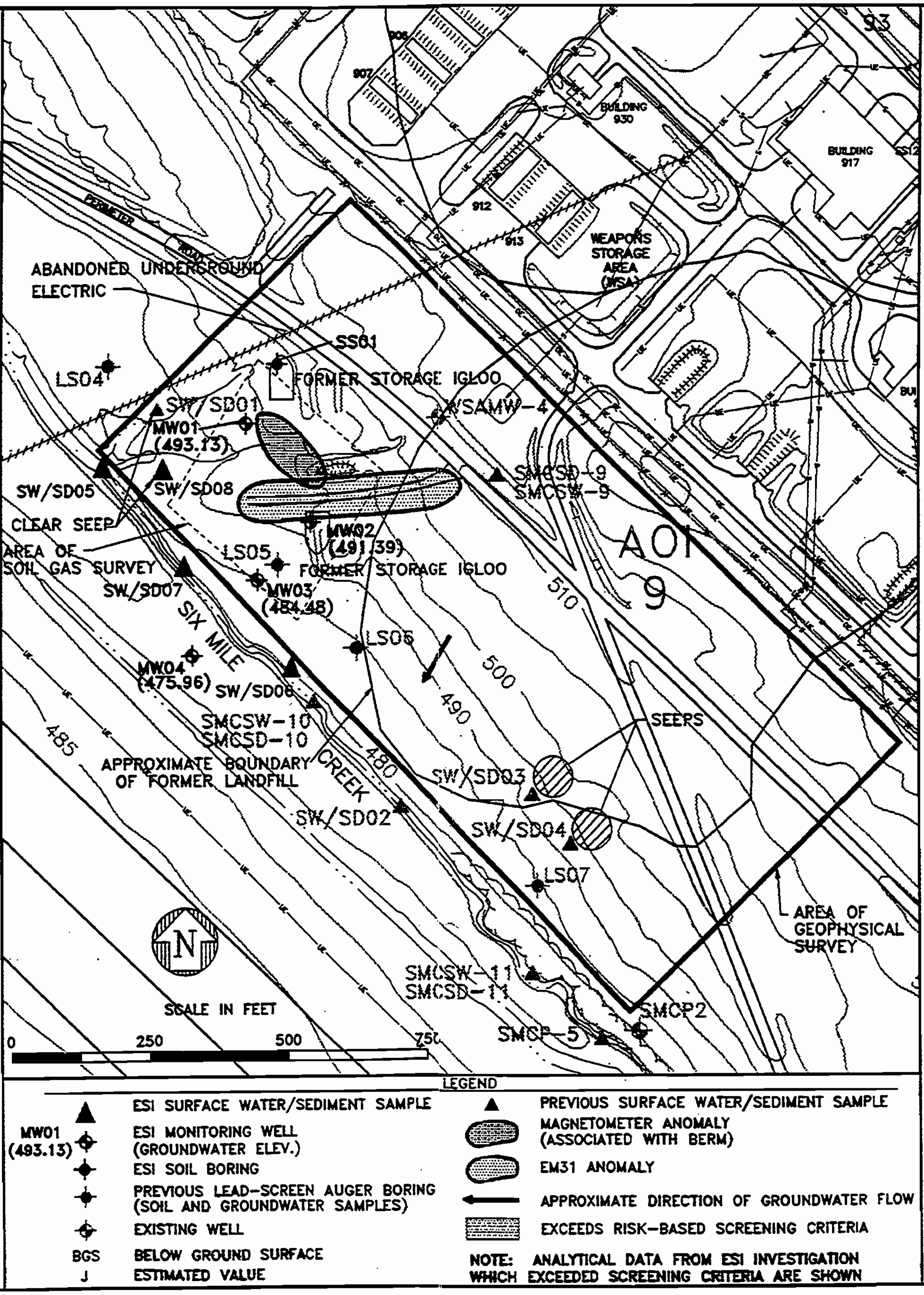
G009-MW01-Z3	
INORGANIC (mg/kg)	
Arsenic	4.7

G009-SS01-Z1 (0-0.25ft. BGS)	
INORGANIC (mg/kg)	
Arsenic	5.3
Selenium	3.8

G009-SS01-Z2 (0.25-2ft. BGS)	
INORGANIC (mg/kg)	
Selenium	3.3

G009-SS01-Z3 (4-6ft. BGS)	
INORGANIC (mg/kg)	
Selenium	2.4

G009-SW08 (0-0.25ft. BGS)	
INORGANIC (µg/L)	
Aluminum	27,000J
Chromium	3.5
Iron	69,000J
Vanadium	43
Zinc	390



LEGEND

▲	ESI SURFACE WATER/SEDIMENT SAMPLE	▲	PREVIOUS SURFACE WATER/SEDIMENT SAMPLE
MW01 (493.13) ⌖	ESI MONITORING WELL (GROUNDWATER ELEV.)	▨	MAGNETOMETER ANOMALY (ASSOCIATED WITH BERM)
⌖	ESI SOIL BORING	▨	EM31 ANOMALY
⌖	PREVIOUS LEAD-SCREEN AUGER BORING (SOIL AND GROUNDWATER SAMPLES)	←	APPROXIMATE DIRECTION OF GROUNDWATER FLOW
⌖	EXISTING WELL	▨	EXCEEDS RISK-BASED SCREENING CRITERIA
BGS	BELOW GROUND SURFACE		
J	ESTIMATED VALUE		

NOTE: ANALYTICAL DATA FROM ESI INVESTIGATION WHICH EXCEEDED SCREENING CRITERIA ARE SHOWN

G009-MW02-Z1 (0-0.25ft. BGS)	
ORGANICS (µg/kg)	
Benzo(a)pyrene	170J
INORGANIC (mg/kg)	
Arsenic	4.8
Selenium	4.2
Potassium	11,000

G009-MW02-Z2 (0.25-2ft. BGS)	
ORGANICS (µg/kg)	
Benzo(a)anthracene	490J
Benzo(a)pyrene	660J
Chrysene	670J
Dieldrin	46
INORGANIC (mg/kg)	
Arsenic	4.2
Selenium	3.8

G009-MW02-Z3 (4-6ft. BGS)	
INORGANIC (mg/kg)	
Selenium	4.3

G009-MW02-GW	
INORGANIC (µg/L)	
Manganese	500
Potassium	1,200

G009-MW02-GW-F	
INORGANIC (µg/L)	
Manganese	490
Potassium	1,300

G009-SD05 (0-0.5ft. BGS)	
ORGANICS (µg/kg)	
Benzo(a)pyrene	74 J

G009-SD08 (0-0.5ft. BGS)	
ORGANICS (µg/kg)	
Benzo(a)anthracene	1,400
Benzo(a)pyrene	1,300
Benzo(b)fluoranthene	1,400
Chrysene	1,700
Indeno(1,2,3-cd)pyrene	690J
Phenanthrene	3,100
Aldrin	47
Heptachlor Epoxide	59

G009-MW03-GW	
ORGANICS (µg/L)	
1,2-Dichlorobenzene	430
1,3-Dichlorobenzene	6.2
1,4-Dichlorobenzene	110
1,2-Dichloroethene (TOTAL)	27
Benzene	4.5J
Chlorobenzene	1,600
Tetrachloroethene	5.7
Trichloroethene	18
INORGANIC (µg/L)	
Manganese	6,700
Potassium	1,500

G009-MW03-GW-F	
INORGANIC (µg/L)	
Manganese	6,200
Potassium	1,400

G009-MW03-Z1 (0-0.25ft. BGS)	
INORGANIC (mg/kg)	
Selenium	3

G009-MW03-Z2 (0.25-2ft. BGS)	
INORGANIC (mg/kg)	
Selenium	4.6

G009-MW03-Z3 (4-6ft. BGS)	
INORGANIC (mg/kg)	
Selenium	3

G009-SD07 (0-0.5ft. BGS)	
ORGANICS (µg/kg)	
Chlorobenzene	42

Figure 2-2 ESI (1998) RESULTS
WEAPONS STORAGE AREA (WSA)
LANDFILL (AOI 9)

4 Nature and Extent of Contamination

This section of the RI discusses the findings of the Year 2000 and 2002 SI field programs for the AOC 9 site. The Year 2000 SI on-site laboratory results are presented in Appendix E, and the off-site laboratory results are presented in Appendix F. The Year 2002 SI laboratory results are presented in Appendix I. Quality Control (QC) evaluations are presented in the *Quality Control Summary Report (QCSR) for the Year 2000 and 2002 Supplemental Investigations* (E & E 2000b and 2002b).

4.1 Year 2000 and 2002 SI Groundwater Investigations

4.1.1 Year 2000 SI Groundwater

Geoprobe/Hydropunch Survey

Eighty-eight Geoprobe and six Hydropunch groundwater screening samples were collected from 45 locations in AOC 9 (see Figure 2-3). Table 4.1.1-1 summarizes the frequency of detection and the range of detected concentrations. A summary of positive results is presented in Table 4.1.1-2.

Volatile Organic Compounds. Based on the vertical profile of Geoprobe and Hydropunch sample data from on-site field laboratory analyses, the contaminant plume at this site was delineated both vertically and horizontally (see Figures 4-1 through 4-9). Twenty-one VOCs were detected in Geoprobe/Hydropunch samples. Sixteen of those VOCs were detected at levels that exceed the groundwater screening criteria. The highest levels of these contaminants are: 12.6 micrograms per liter (µg/L) of benzene; 48.1 µg/L of n-butylbenzene; 10.2 μg/L of sec-butylbenzene; 2,352 μg/L of chlorobenzene; 414.2 μg/L of 1,2-DCB; 214.9 μg/L of 1,4-DCB; 227.2 μg/L of cis-1,2-DCE; 50.3 μg/L of ethylbenzene; 22.8 μg/L of isopropylbenzene; 28.3 μg/L of naphthalene; 14 μg/L of n-propylbenzene; 173.3 μg/L of PCE; 66.9 μg/L of TCE; 68.8 μg/L of 1,2,4-TMB; 34.4 μg/L 1,3,5-TMB; and 63.7 μg/L of VC. The highest levels of the detected contaminants are detected at the following locations:

- **AOC9-GP03I**, located in the central portion of the site, southwest of the former storage igloos at a depth of 10 to 12 feet BGS, contained 14.9 μg/L of TCE, 227.2 μg/L of cis-1,2-DCE, 63.7 μg/L of VC, and 647.4 μg/L of chlorobenzene;
- **AOC9-GP05D**, located approximately 100 feet southwest of AOC9-GP03, and 60 feet northeast of SMC, at a depth of 10 to 12 feet BGS, contained 66.9 μg/L of TCE, 39.0 μg/L of cis-1,2-DCE, non-detect (ND) concentrations of VC, and 2,352.0 μg/L of chlorobenzene;
- **AOC-9-GP141**, located approximately 15 feet northeast of SMC, at a depth of 7 to 9 feet BGS, contained ND concentrations of TCE, 36.3 μg/L of cis-1,2-DCE, ND concentrations of VC, and 1,147.1 μg/L of chlorobenzene;
- **AOC9-GP27S**, located approximately 200 feet northeast of AOC9-GP03, just southwest of Perimeter Road, at a depth of 6 to 8 feet BGS, contained 28.6 μg/L of TCE, 39.8 μg/L of cis-1,2-DCE, ND concentrations of VC, and 2,352.0 μg/L of chlorobenzene;
- **AOC9-GP28I**, located approximately 100 feet northeast of AOC9-GP27, approximately 60 feet northeast of Perimeter Road, at a depth of 16.5 to 18.5 feet BGS, contained 27.0 μg/L of TCE, 2.6 μg/L of cis-1,2-DCE, ND concentrations of VC, and 2151.4 μg/L of chlorobenzene.

The five locations listed above are located in the same plane from northeast to southwest between the WSA and SMC (see Figure 2-3). Contamination isopleths of three of the highest level contaminants (TCE, cis-1,2-DCE, and chlorobenzene) are presented in Figures 4-1, 4-2, and 4-3, respectively. Figures 4-7, 4-8, and 4-9 provide contaminant (TCE, cis-1,2-DCE, and chlorobenzene) concentration contours for the shallow, intermediate, and deep zones within the overburden aquifer.

Groundwater from Monitoring Wells

Four monitoring wells (AOC9-MW05, -MW06, -MW07, and -MW08) were installed during the year 2000 SI (see Figure 2-3). Two of the wells (AOC9-MW05 and AOC9-MW06) are located either close to or outside the downgradient edge of the plume area outlined by the Geoprobe survey. One well (AOC9-MW07) is located in the center of the plume, upgradient of the main channel of SMC, and one well (AOC9-MW08) was installed at a potential source area (adjacent to AOC9-GP28). All of the wells were laboratory tested for VOCs, SVOCs, pesticides, PCBs, metals, and natural attenuation parameters (MEE; anions [sulfate, sulfide, chloride, nitrate, nitrite, and phosphate]; DOC); field tested for alkalinity; ferrous iron; and field measured for DO, ORP, pH, conductivity, and turbidity.

Twenty-two VOCs, eight SVOCs, and 20 metals were detected in the groundwater samples from the monitoring wells. Table 4.1.1-3 summarizes the frequency of detection, range of detection, and frequency of detection above screening criteria. Of the compounds detected, 14 VOCs and five metals were detected in concentrations that exceeded screening criteria (see Tables 4.1.1-3 and 4.1.1-4).

Volatile Organic Compounds. The highest levels of VOCs detected in concentrations that exceeded screening criteria are 3.95 µg/L of benzene; 1,320 µg/L of chlorobenzene; 373 µg/L of 1,2-DCB; 200 µg/L of 1,4-DCB; 34.9µg/L of cis-1,2-DCE; 6.53 µg/L of ethylbenzene; 10.1 µg/L of isopropylbenzene; 72.6 µg/L of methylene chloride; 17.7 µg/L of TCE; 46 µg/L of 1,2,4-TMB; 10.9 µg/L of 1,3,5-TMB; 11.7 µg/L of VC; 16.4 µg/L of m,p-xylene; and 10 µg/L of o-xylene. All of these compounds, with the exception of methylene chloride and the xylenes, were also detected in concentrations exceeding screening criteria in the 2000 Geoprobe/Hydropunch groundwater screening samples. The concentrations detected in the monitoring well samples were lower and, in some cases, much lower than those detected in the Geoprobe/Hydropunch samples. This is mainly because three of the four new wells were installed on the edge of the plume area, and the screens on the existing wells are shallower than the nearby contaminated temporary Geoprobe wells. Lower levels in the monitoring wells can also be attributed to the fact that Geoprobe samples were collected from three discrete 2-foot screen intervals, whereas well samples were collected from a 5-foot or 10-foot screened interval, which may have resulted in the dilution of contaminants. The only exception to this correlation is the sample from G009-MW04, which had much higher levels of contamination than the nearby Geoprobe samples (AOC9-GP07D and AOC9-GP08S/D). This occurred because the well is along the main axis of the contaminant plume, and the Geoprobe sample locations are side-gradient (these locations were chosen to define the edge of the plume). Therefore, the off-site laboratory analyses of well data is consistent with the on-site laboratory analyses of nearby Geoprobe survey temporary well samples.

Metals. The highest levels of metals detected above screening criteria are 2,770 µg/L of aluminum; 10,800 µg/L of iron; 6,810 µg/L of manganese; 23.2 µg/L of selenium; and 7.46J µg/L of thallium. Aluminum, iron, and manganese are common, naturally occurring elements in the soil and rock in the vicinity of the site. In some cases (G009-MW01, -MW02, -MW03, and -MW04), selenium was only detected in the Year 2000 SI filtered samples and was not detected in either the filtered or unfiltered 1997 ESI samples, and in other cases (AOC9-MW05, -MW06, and -MW07) selenium was detected at higher levels in the filtered sample as opposed to the unfiltered sample. Although selenium was detected, the levels detected are suspect. Thallium was only detected in AOC9-MW07. The source of the thallium is unknown and based on its presence in other sample media across the base, it may be naturally occurring.

Comparison of Year 1997 ESI Data and Year 2000 SI Data

Data collected in December 1997 from monitoring wells G009-MW01, -MW02, -MW03, and -MW04, as part of the ESI, were compared to the data from samples collected in May 2000, under the SI. The following is a summary of the findings:

- **G009-MW01:** Selenium increased from not detected to 21.7 µg/L in the filtered sample (selenium was not detected in either unfiltered sample).
- **G009-MW02:** Iron increased from 170 to 420 µg/L; selenium increased from not detected to 23.2 µg/L in the filtered sample (selenium was not detected in either unfiltered sample); and manganese decreased from 500 to 200 µg/L.
- **G009-MW03:** Iron increased from 180 to 721 µg/L; selenium increased from not detected to 22.5 µg/L in the filtered sample (selenium was not detected in either unfiltered sample); manganese decreased from 6,700 to 3,430 µg/L;

chlorobenzene decreased from 1,600 to 146 µg/L; 1,2-DCB decreased from 430 to 82.5 µg/L; and 1,3-DCB decreased from 110 to 31.4 µg/L.

- **G009-MW04:** Chlorobenzene increased from 34 to 235 µg/L; manganese increased from 410 to 561 µg/L; selenium increased from not detected to 16.6 µg/L in the filtered sample (selenium was not detected in either unfiltered sample); aluminum decreased from 190 µg/L to not detected; and iron decreased from 310 to 240 µg/L.

The cause of fluctuations in contaminant levels between 1997 and 2000 is unknown at this time due to the insufficient amount of available data.

4.1.2 Year 2002 SI Groundwater

Geoprobe Survey

Fifty-six Geoprobe groundwater screening samples were collected from 14 locations in AOC 9 (see Figure 2-3). Eleven of the 14 locations were vertically profiled, as described in Section 2.3.1 of this report. All samples were immediately analyzed for low level VOCs in the E & E ASC, using method SW8260B. The primary objective of the 2002 Geoprobe groundwater survey was to better define the source area of the chlorobenzene contamination detected in the groundwater during the 2000 SI. The major contaminants of interest in the contaminant plume are chlorobenzene, 1,2-dichlorobenzene, TCE, cis-1,2-DCE, and VC (see Figures 4-1 through 4-9). Table 4.1.2-1 summarizes the frequency of detection and the range of detected concentrations. A summary of positive results is presented in Table 4.1.2-2.

Volatile Organic Compounds. The contaminant plume at the site was delineated both vertically and horizontally using the Goeprobe sample data from the Year 2000 and 2002 SIs (see Figures 4-1 through 4-9). Nineteen VOCs were detected in the 2002 SI Geoprobe samples with 15 VOCs detected at levels above the updated, most stringent groundwater screening criteria. The highest levels of contaminants are: 352 µg/L of acetone; 12.6 µg/L of benzene; 2,150 µg/L of chlorobenzene; 513 µg/L of 1,2-DCB; 7.32 µg/L of 1,3-DCB; 151 µg/L of 1,4-DCB; 70.2 µg/L of cis-1,2-DCE; 71.2 µg/L of total 1,2-DCE; 59.6 µg/L of ethylbenzene; 15.4 µg/L of PCE; 10.3 µg/L of TCE; 13.1 µg/L of

VC; 197 µg/L of m,p-xylene; 19.7 µg/L o-xylene; and 218 µg/L of total xylene. Table 4.1.2-1 summarizes the frequency of detection of each compound and the range of detected concentrations. A summary of the positive hits for each sample is given in Table 4.1.2-2.

The highest Year 2002 SI levels of contaminants were detected within Geoprobe AOC9-GP44, located approximately 30 feet southeast of AOC9-GP28 and AOC9-MW08, and approximately 60 feet northeast of Perimeter Road:

- AOC9-GP44S2 at a depth of 15.9 to 17.9 feet BGS, was found to contain ND concentrations of TCE, ND concentrations of cis-1,2-DCE, ND concentrations of VC, and 2,150 µg/L of chlorobenzene;
- AOC9-GP44I at a depth of 19.3 to 21.3 feet BGS, was found to contain 10.3 µg/L of TCE, 70.0 µg/L of cis-1,2-DCE, 13.1 µg/L of VC, and 1,610 µg/L of chlorobenzene;
- AOC9-GP44D1 at a depth of 22.4 to 224.4 feet BGS, was found to contain ND concentrations of TCE, 25.8 µg/L of cis-1,2-DCE, 6.32 µg/L of VC, and 1,630 µg/L of chlorobenzene;

AOC9-GP44 is located in the same northeast to southwest plane as the five 2000 Geoprobe sampling locations with the highest levels of the detected contaminants (see Figure 2-3). Contamination isopleths of three of the highest level contaminants (TCE, cis-1,2-DCE, and chlorobenzene) are presented in Figures 4-1, 4-2, and 4-3, respectively. Figures 4-7, 4-8, and 4-9 provide contaminant (TCE, cis-1,2-DCE, and chlorobenzene) concentration contours for the shallow, intermediate, and deep zones within the overburden aquifer. Based on these maps, these contaminants have similar distribution patterns across the site. A chlorinated solvent plume composed primarily of chlorobenzene, TCE, and related compounds extends between AOC9-GP28 and GP44 and the main and secondary channels of the SMC drainage basin, where it dissipates. However, the chlorobenzene plume extends approximately 225 feet farther to the northeast (AOC9-GP56). AOC9-GP56 is located on the southwest side of Building 913 between the concrete apron in front of the building and a drainage ditch that discharges into a culvert that extends to the southwest under Perimeter Road. As described in Section 3.5.3, groundwater flow beneath the site is to the southwest, then locally south/southeast on the southwest side of the creek channel, and then again to the southwest. The vertical gradient in the overburden in the vicinity of the SMC drainage basin is believed to be upwards because of the following site characteristics:

- The SMC drainage basin is a groundwater discharge area bordered by a wetland that remains wet year round;
- Groundwater contamination, (i.e., chlorobenzene) has been detected in SMC; and
- The shallow bedrock underlying the creek is the Utica shale, which has a much lower permeability, thereby restricting the downward flow of groundwater flow in the vicinity of the creek (see Appendix J, AOC 9 Bedrock Groundwater Study).

Therefore, groundwater from beneath the site primarily discharges to the SMC drainage basin (i.e., the main and secondary channels), with a small fraction of the groundwater flow passing beneath the creeks. Although lower levels of contamination were found beyond the main channel of SMC, most of the contamination appears to discharge to the main channel or degrade in the channel area, based on the levels detected on the upgradient side and downgradient side of the creek and a general understanding of the hydrogeology in the area (see Section 3.5.3). The low-level contamination on the southwest side of the creek channels immediately downgradient of the site in the vicinity of AOC9-GP07, -08, -09, -10, -17, -18, -25, -26, and G009-MW04 and AOC9-MW06 is expected to be captured by either the main channel or by the secondary channel further downstream by groundwater flowing south/southeast back toward the creek channels.

In addition to the lateral migration of the plume, contamination has also migrated vertically through the sand and silt overburden aquifer to the top of bedrock (i.e., approximately 25 feet BGS in the vicinity of the WSA and 14 feet BGS in the vicinity of SMC). The highest concentrations of chlorobenzene and TCE are situated in the middle of the aquifer between the water table and the top of bedrock at or slightly downgradient of the probable source areas. The highest concentrations of cis-1,2-DCE are also situated in the middle of the aquifer between the water table and the top of bedrock. However, the highest concentrations of cis-1,2-DCE extend downgradient from the areas containing the highest levels of TCE contamination, as would be expected for a daughter product (i.e. the elevated levels of cis-1,2-DCE result from the breakdown of TCE). Each of the contaminants tends to flow down through the aquifer from the upgradient source areas, flow through the aquifer above the bedrock surface until approaching SMC, and then flow upwards toward SMC and its major tributary. The contamination does extent into the till and weathered bedrock overlying the Utica Shale bedrock but does not extend into competent bedrock.

The overall shape of the contaminant plumes at the site is linear and oriented northeast/southwest (approximately 750 feet long) with relatively narrow center (i.e., the upgradient width varies, depending upon the constituent, between 80 and 500 feet; the central plume width varies between 150 and 210 feet; and the downgradient plume width varies between 500 and 720 feet) (see Figures 4-1, 4-2, and 4-3). The downgradient edge of the plume appears to be widest due to natural dispersion and the change in direction of groundwater flow in proximity to the creeks, resulting in a lobe of contamination extending to the south.

No specific VOC sources were located during this investigation or past investigations. However, source areas with the highest concentrations, bounded by non-detect areas, are clearly identifiable on Figures 4-1 through 4-9. In an attempt to determine the potential source area(s), historical maps and aerial photographs were studied to determine the previous uses of the site. This investigation revealed the following:

- The site was originally farmland in the 1930s prior to base construction.
- In the 1940s and 1950s the northeast portion of the site was part of the WSA landfill.
- Sometime in the early to mid 1950s two munitions storage bunkers (igloos) were constructed in the area between SMC and what is now Perimeter Road.
- The WSA landfill was reportedly removed prior to the construction of the WSA in the late 1950s and early 1960s.
- The WSA was constructed northeast of the site, and the remainder of the site was relatively undeveloped between the WSA and SMC, with the exception of the two munitions storage igloos. The use of the igloos changed from munitions storage to hazardous material storage (Tetra Tech 1994), probably after the WSA was complete.
- One of the igloos was removed in the late 1970s or early 1980s, and the other igloo (closest to Perimeter Road [designated as OTH-808]) was removed in 1992 (Tetra Tech 1994). No additional structures have been built in this area.

- Building 913 was constructed in 1987 and used for storing ALCMs and SRAMs.

Based on this history and the data obtained during the Geoprobe surveys, three probable source areas have been identified: the southwest side of Building 913 (chlorobenzene), the former WSA landfill in the vicinity of AOC9-GP28 and GP44 (chlorobenzene and TCE/DCE), and the former storage igloos (TCE/DCE) (see Figures 4-1 through 4-9). Disposal or small spills may have occurred between Perimeter Road and SMC, most likely at or near the storage igloos. In consideration of the fairly long period after the initial disposal of solvents and creation of the source areas, it is likely that the original sources of contamination may have diffused to a more residual state and therefore may be extremely difficult to positively identify within the study area.

Although specific source areas could not be positively identified, the extent of the dissolved contaminant plume has been well defined by the Geoprobe surveys. Chlorobenzene levels are higher than TCE levels and appear to originate in two of the suspected source areas (i.e., the southwest side of Building 913 and the former WSA landfill in the vicinity of AOC9-GP28 and GP44) (see Figures 4-3, 4-6, and 4-9). The TCE contamination may be the result of several small spills over different time periods in the former WSA landfill in the vicinity of AOC9-GP28, GP44, and the former storage igloos south of Perimeter Road.

TCE has largely degraded throughout the plume area to its daughter products (cis-1,2-DCE and VC). The degradation of TCE is due to many environmental factors.

While the concentration of TCE stays relatively uniform (19.7 to 28.6 µg/L) along the axis of the plume between AOC9-GP28 and AOC9-GP03, the levels of cis-1,2-DCE and VC increase from 6.6 to 227 µg/L and 1.8 to 63.7 µg/L, respectively, between the same two Geoprobe locations. The presence of aromatic compounds (benzene, butylbenzenes, chlorobenzene, dichlorobenzenes, ethylbenzene, isopropylbenzene, p-isopropyl toluene, naphthalene, n-propylbenzene, toluene, and trimethylbenzenes) aid in the degradation process by acting as electron donors in the dechlorination process. These compounds, which vary in concentration throughout the site and are highest in the suspected source area between the WSA and Perimeter Road, may have caused degradation not only of the TCE in this area but also of its daughter products. Both field and laboratory natural attenuation parameters from the permanent monitoring wells were also tested to help determine whether natural attenuation takes place at the site. Off-site laboratory analyses included MEE; anions (sulfate, sulfide, nitrate, nitrite, and chloride); and DOC (see Table 4.1.1-4). Field tests of natural attenuation parameters for alkalinity and ferrous iron and field measurements of pH, temperature, conductivity, DO, ORP, and turbidity were also recorded (see Appendix C). Evaluation of these parameters is discussed in the fate and transport section (Section 5) of this report.

Based on the highest concentrations of VOC (chlorobenzene and TCE) contamination detected on site, it does not appear likely that a non-aqueous phase liquid (NAPL) is present. Typically, for a NAPL to be present, the concentration of a contaminant detected in the dissolved-phase plume would be equal to or greater than one percent of the solubility of that contaminant. The solubility of chlorobenzene and TCE is 472 milligrams per liter (mg/L) and 1,100 mg/L, respectively. One percent of the solubility of chlorobenzene and TCE are 4.72 mg/L and 11.00 mg/L, respectively. The highest levels of chlorobenzene (2.4 mg/L) and TCE (0.07 mg/L) detected on site indicate that it is unlikely that a NAPL is present at AOC 9.

Summary of 2000 and 2002 SI Groundwater Investigation Results

The findings of the Year 2000 and 2002 SI Geoprobe/Hydropunch surveys and monitoring well sampling indicated the following:

- Benzene, chlorobenzene, 1,2-DCB, 1,4-DCB, cis-1,2-DCE, ethylbenzene, isopropyl benzene, methylene chloride, TCE, 1,2,4-TMB, 1,3,5-TMB, VC, and xylenes, were detected in concentrations exceeding screening criteria in monitoring well and Hydropunch/Geoprobe samples. Additionally, methylene chloride and xylenes were detected in concentrations exceeding screening criteria in the monitoring well samples.
- VOC levels in G009-MW03 decreased between 1997 (ESI) and 2000 (2000 SI) and increased in G009-MW04. Due to the insufficient quantity of data, the cause of these fluctuations of contaminant levels cannot be determined at this time.
- Presence of high levels of TCE daughter products (cis-1,2-DCE and VC) indicates TCE degradation.
- The contaminant plume is linear, oriented northeast/southwest (approximately 750 feet long), and characterized by a relatively narrow in center and a wide

downgradient edge of the plume with all constituents following the same elongated plume shape.

- Contamination has migrated both laterally and vertically (through the sand and silt overburden aquifer to the top of bedrock) with each of the main constituents migrating over the same distance.
- Potential source areas may exist on the southwest side of Building 913 (chlorobenzene), the former WSA landfill in the vicinity of AOC9-GP28 and GP44 (chlorobenzene and TCE/DCE), and the former storage igloos (TCE/DCE). It is likely that all of the source areas are residual and, therefore, extremely difficult to characterize.
- Based on the highest concentrations of VOC contamination at the site, it does not appear that a NAPL is present.
- In addition to VOCs, naturally occurring aluminum, iron, and manganese, as well as selenium (suspect levels), and thallium (source unknown) were detected above screening criteria.

4.2 2002 SI Soil Boring Sampling

Upon completion of the Geoprobe groundwater sampling, a Geoprobe soil boring (AOC9-SS02) was installed approximately 15 feet upgradient of AOC9-GP44, which is one of the areas determined to be a probable chlorobenzene source area. Three subsurface soil samples were collected from the vadose zone (2 to 4, 6 to 8, and 10 to 10.5 feet BGS) in an attempt to determine whether residual contamination was present above the water table. These subsurface soil samples were analyzed for TCL VOCs.

In addition, at the request of NYSDEC, a Geoprobe soil boring (AOC9-SS01) was installed on the downgradient edge of the AFFF lagoon. Subsurface soil samples were collected from the vadose zone (4 to 6 feet BGS), the top of the water table (11.5 to 16 feet BGS), and immediately above the top of bedrock (20 to 24 feet BGS). These subsurface soil samples were analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TAL metals, mercury, and percent solids. Table 4.2-1 summarizes the frequency of detection of each compound, the range of detected concentrations, and the frequency of detection above screening criteria. A summary of positive results and screening criteria is presented in Table 4.2-2. HTRW Drilling Logs are provided in Appendix A.

Continuous soil cores were collected from soil borings AOC9-SS01 and AOC9-SS02 using a Geoprobe macro-core sampler. Soil cores were scanned for VOCs by the

E & E team using a FID/PID. No FID/PID readings above background were obtained and no staining was observed on any of the soil cores.

Volatile Organic Compounds. No VOCs were detected in the soil samples collected from soil boring AOC9-SS01. Three VOCs were detected in the subsurface soil sample AOC9-SS02 (6-8): acetone (6.19 J micrograms per kilogram [µg/kg]), PCE (1.51 J µg/kg), and TCE (1.66 J µg/kg). None of the VOCs were detected at concentrations exceeding screening criteria (see Table 4.2-2).

Semivolatile Organic Compounds. No semivolatile organic compounds were detected in any of the subsurface soil samples collected from soil boring AOC9-SS01.

Metals. Twenty metals were detected in the subsurface soil samples collected from soil boring AOC9-SS01 as summarized on Table 4.2-2. Of these, antimony (2.35J to 4.94J mg/kg); calcium (3,800 to 29,100 mg/kg); chromium (5.80 to 13.0 mg/kg); copper (13.2 to 28.2 mg/kg); iron (11,300 to 26,900 mg/kg); nickel (6.76 to 15.5 mg/kg); thallium (2.49J to 5.66J mg/kg); and zinc (27.2 to 65.1 mg/kg) exceeded screening criteria in one or more samples.

Pesticides/PCBs. No pesticides or PCBs were detected in any of the subsurface soil samples collected from soil boring AOC9-SS01.

Summary of 2002 SI Soil Boring Sampling

No VOCs were detected in the soil samples collected from soil boring AOC9-SS01 (installed to determine whether the lagoon was a source of contamination).

- No SVOCs, pesticides, or PCBs were detected in any of the subsurface soil samples collected from soil boring AOC9-SS01.
- Eight metals were detected at concentrations greater than the screening criteria in one or more of the soil samples collected from AOC9-SS01 with antimony, iron, thallium, and zinc detected at concentrations exceeding the screening criteria in all three samples collected and chromium, copper, and nickel levels exceeding screening criteria in the shallow soil sample only.

- Based on the field observations and analytical data, the AFFF lagoon does not appear to be a source of contamination.

- Three VOCs were detected in the intermediate (6 to 8 feet BGS) sample collected from boring AOC9-SS02 (installed to determine whether residual contamination was present in the vadose zone) below screening criteria. No VOCS were found in the other two samples.

- The analytical data for the AOC9-SS02 soil samples indicate that residual contamination from a spill is not present in the vadose zone at that location. Rather, the source of the low levels detected at AOC9-SS02 is most likely off-gassing of the groundwater plume contaminants.

4.3 2000 SI Surface Water Sampling

SMC Surface Water Samples

Four surface water samples (AOC9-SW09 through AOC9-SW12) were collected from the main channel of SMC. Sample locations are shown on Figure 2-3. The creek flows to the southeast, and therefore sample AOC9-SW09 is the farthest upgradient location and AOC9-SW12 is the farthest downgradient location. All samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, and TAL metals. Table 4.3-1 summarizes the frequency of detection of each compound, the range of detected concentrations, and the frequency of detection above screening criteria. A summary of positive results and screening criteria is presented in Table 4.3-2.

Volatile Organic Compounds. Two VOCs were detected in the SMC surface water samples: chlorobenzene in all of the surface water samples was detected at very low concentrations (0.236 μg/L to 0.85 μg/L) and 1,2 DCB in AOC9-SW10 was detected at a very low concentration (0.406 μg/L). 1,2-DCB was not detected in duplicate sample AOC9-SW10/D. None of the VOCs were detected at concentrations exceeding screening criteria.

No VOCs, except for very low concentrations of chlorobenzene, were detected in the downgradient samples AOC9-SW11 and AOC9-SW12 from SMC.

Semivolatile Organic Compounds. Three SVOCs were detected in the surface water samples. Phenanthrene was detected in all of the samples at very low concentrations well below the screening level criteria (see Table 4.3-2). In addition, two phthalates, bis(2-ethylhexyl)phthalate and diethylphthalate, were detected in all of the surface water samples. Bis(2-ethylhexyl) phthalate exceeded screening criteria in all four samples. Phthalates are common laboratory and field artifacts caused by the use of protective gloves and therefore are not of concern.

Metals. Twelve metals were detected in the surface water samples as summarized on Table 4.3-2. Of these, aluminum, iron, and manganese exceeded screening criteria in all samples, and lead exceeded criteria in AOC9-SW12.

Pesticides/PCBs. No pesticides or PCBs were detected in any of the surface water samples collected from the main channel of SMC.

Summary and Comparison of SMC Surface Water Sample Results

- Chlorobenzene was detected in surface water sample G009-SW02 collected in 1995, but not in the 2000 sample collected at the same location (AOC9-SW12).
- A comparison of the metals concentrations in the various samples collected at the same location during different investigations reveals variations for some of the locations. Such variations are common because metals concentrations are influenced by sample turbidity, and because analyte concentrations (both VOCs and metals) are often affected by seasonal differences in the water level and the discharge and runoff volume.
- The absence of VOC levels exceeding screening criteria in SMC indicates that the groundwater plume discharging to the creek is either significantly diluted by the high volume of water running through the drainage basin, degraded before entering the creek, or both.

Year 2000 SI On-site Surface Water Samples

Seven surface water samples (AOC9-SW13 through AOC9-SW15 and AOC9-SW17 through AOC9-SW20) were collected from two on-site tributaries that discharge to SMC. Sample AOC9-SW16 was collected from the former AFFF pond. All samples were analyzed for VOCs in the on-site field laboratory. A summary of the frequency of detection of each compound and the range of detected concentrations is shown in Table 4.3-3 and a summary of positive results is presented in Table 4.3-4.

There were no VOCs detected in samples AOC9-SW16 (former AFFF pond), AOC9-SW19 (upgradient drainageway), and AOC9-SW20 (northeast of the site and farthest upgradient). These results support previous hypotheses that the source area or areas are southwest of the WSA. A total of 13 VOCs were detected in the remaining five samples (see Tables 4.3-3 and 4.3-4). Five of these VOCs (cis-1,2-DCE, TCE, PCE, chlorobenzene, and 1,4-DCB) were detected at concentrations exceeding screening criteria. Sample AOC9-SW15 collected near the center of the site downgradient of AOC9-SW18 from a pool of water at the mouth of the culvert that extends under Perimeter Road, contained four VOCs (cis-1,2-DCE, TCE, PCE and chlorobenzene) at concentrations exceeding screening criteria. Sample AOC9-SW18 and its duplicate AOC9-SW18/D contained PCE above screening criteria. The duplicate sample also contained cis-1,2-DCE and chlorobenzene above screening criteria. AOC9-SW19 collected at the mouth of the culvert extending into the WSA was clean. The fact that water seeping from the ground into the drainageway from the area between the WSA and Perimeter Road (AOC9-SW18) contained elevated levels of VOCs whereas water flowing from the culvert from the WSA (AOC9-SW19) was clean supports the hypothesis that a source exists between the WSA and Perimeter Road. Sample AOC9-SW14, which is also located near the center of the site in a wet area near one of the former storage igloos, contained chlorobenzene and 1,4-DCB at concentrations exceeding screening criteria. The level of chlorobenzene in this sample (41.3 μg/L) was comparable to the level (55.8 μg/L) detected in the nearby shallow Hydropunch sample (AOC9HYD-1S). AOC9-SW13, which is downgradient of most of the on-site surface water samples, contained cis-1,2-DCE at concentrations exceeding screening criteria.

Locations of on-site intermittent streams and drainageways surface water samples with elevated levels of VOCs generally correspond to areas with elevated levels of VOCs in the groundwater. The presence of elevated VOC levels in the intermittent streams and drainageways provides further evidence of an upward groundwater gradient causing contaminated groundwater discharge to both on-site drainageways and SMC.

4.4 Year 2000 and 2002 SI Sediment Sampling

4.4.1 Year 2000 SI Sediments

Four sediment samples, AOC9-SD09 through AOC9-SD12, were collected from SMC at the same locations as the surface water samples (see Figure 2-3). All samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, TAL metals, and TOC. All sediment results were screened against NYSDEC Technical Guidance and National Oceanic and Atmospheric Administration screening guidelines for inorganic and organic analytes (see Appendix G). The NYSDEC screening criteria for organic compounds are calculated based on the TOC concentration for each individual sample. Therefore, the concentrations of organic compounds in each sample are compared to sample-specific standards. The frequency of detection, range of detected concentrations, and frequency of detection above screening criteria are shown on Table 4.4.1-1, and a summary of positive results and screening criteria is presented on Table 4.4.1-2.

Volatile Organic Compounds. Six VOCs were detected in the sediment samples. Acetone was detected in all of the samples at concentrations below screening criteria. Since acetone is generally a laboratory artifact and it was not detected in any of the other media in the immediate vicinity, it is not a contaminant of concern. AOC9-SD10 contained 1,2-DCB, 1,4-DCB, and chlorobenzene, with only chlorobenzene detected above exceeding screening criteria. In addition to the duplicate sample VOCs found in the original sample, duplicate sample also contained low levels of 2-butanone and toluene. This sample was located near the downgradient edge of the groundwater plume in the vicinity of high levels of groundwater contamination where the plume discharges into SMC (see Figures 4-1, 4-2, and 4-3).

Semivolatile Organic Compounds. SVOCs were only detected in one of the four samples (AOC9-SD10). The detected SVOCs include fluoranthene, phenanthrene, and pyrene, all in concentrations well below screening criteria.

Pesticides. One pesticide was present in two of the four samples. Heptachlor epoxide, the only pesticide found, was detected in AOC9-SD10 and AOC9-SD12 at concentrations exceeding screening criteria. Heptachlor epoxide was not detected in duplicate sample AOC9-SD10/D.

Metals. As summarized on Table 4.4.1-2, a total of 21 metals were detected in the sediment samples. None of the metals were detected at concentrations exceeding screening criteria.

Summary of Year 2000 SI Sediment Sample Results

The Year 2000 sediment samples were collected near locations that were previously sampled as part of the 1997 ESI and 1995 CS investigations (there were no SMC RI sample locations re-sampled during this investigation). A comparison of these samples appears below:

- Benzo(a)pyrene concentration at 1997 ESI location G009-SD05 and its Year 2000 SI corresponding location (AOC9-SD09) decreased from levels exceeding screening criteria to non-detectable levels.

- At 1997 ESI location G009-SD07 and its corresponding Year 2000 SI location (AOC9-SD10) chlorobenzene levels increased from 42 μg/kg to 157 μg/kg, and heptachlor epoxide, not previously detected was found in the 2000 sample. The presence of elevated chlorobenzene levels at this sediment location corresponds with the elevated level of chlorobenzene detected in Year 2000 SI Geoprobe groundwater samples from upgradient AOC9-GP14 location.

- There were no compounds detected above criteria at the 1997 ESI sample location G009-SD06 and its corresponding Year 2000 SI locations (AOC9-SD11).

- At 1995 CS location G009-SD02 and the corresponding Year 2000 SI location (AOC9-SD12), the concentration of cadmium increased from 0.80 mg/kg to 1.77 mg/kg and heptachlor epoxide, not previously detected, was found in the 2000 sample.

The variation observed in the analyte concentrations for samples collected from similar locations may be the result of seasonal differences such as amount of discharge, runoff, and water levels changes.

4.4.2 Year 2002 SI Sediments

Two discrete depth-specific (0- to 0.5-foot, and 0.5- to 2-foot) sediment samples, AFFF-SD01 and AFFF-SD02, were collected directly from within the AFFF lagoon. The locations are shown on Figure 2-3. The sediment samples were analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TAL metals, mercury, and percent solids. The Year 2002 sediment results were screened against the same criteria as the Year 2000 sediment results.

Volatile Organic Compounds. 2-butanone was the only VOC detected in the sediment samples. Sediment sample AFFF-SD01, collected from 0.0 to 0.5-foot below the bottom of the lagoon, contains 7.01 J µg/kg of 2-butanone, and sediment sample AFFF-SD02, collected from 0.5 to 2.0-feet below the bottom of the lagoon, contains 4.17 J µg/kg of 2-butanone. No screening criteria is available for 2-butanone.

Semivolatile Organic Compounds. The only SVOC detected was pyrene in sample AFFF-SD02 at a concentration above the screening criteria.

Pesticides. Three pesticides, heptachlor, 4,4'-DDD, and 4,4'-DDT were detected in sample AFFF-SD01 at concentrations exceeding screening criteria; however, no pesticides were detected in the deeper sediment sample (AFFF-SD02). 4,4'-DDT was not detected in the duplicate sample AFFF-SD01/D.

Metals. As summarized on Table 4.4.2-2, 18 metals were detected in the sediment samples. Only copper (20.1 mg/kg) was detected in AFFF-SD01 at a concentration exceeding screening criteria. Duplicate sample AFFF-SD01/D contained 13.4 mg/kg of copper, which does not exceed the screening criteria. Sample AFFF-SD02 contained antimony (2.51J mg/kg), copper (18.4 mg/kg), and manganese (477J mg/kg) at concentrations slightly above the most stringent screening criteria.

Summary of Year 2002 SI Sediment Sample Results

Two sediment samples were collected within the AFFF lagoon during the Year 2002 SI: AFFF-SD01 from the 0.0 to 0.5-foot depth interval and AFFF-SD02 from 0.5 to

2.0 feet below the bottom of the lagoon. The results of this sampling are summarized below:

- The only VOC detected was 2-butanone (no criteria available).
- One SVOC (pyrene) and three pesticides (heptachlor, 4,4'-DDD, and 4,4'-DDT) were detected in shallow sample AFFF-SD01 at concentrations exceeding screening criteria.
- No pesticides were detected in the deeper sediment sample (AFFF-SD02).
- A total of 18 metals were detected in the sediment samples. Copper was detected in both sediment samples at concentrations slightly above the most stringent screening criteria and antimony and manganese were detected in sample AFFF-SD02 at concentrations slightly exceeding screening criteria.

Based on the analytical data described above, it does not appear as though the AFFF lagoon is a source of the chlorinated solvent contamination present in the groundwater on site.

4.5 Year 2000 and 2002 SI Test Pit Results

4.5.1 Year 2000 SI Test Pits

As mentioned in Section 2.2.8, 12 test pits were excavated at AOC 9 during the Year 2000 SI. Six exploratory test pits (AOC9-TP01 to AOC9-TP06) were excavated and sampled to characterize soils at the site in an attempt to locate a potential source area in the vicinity of the former storage igloos and determine whether landfill materials are present in the former WSA Landfill. Six delineation test pits (AOC9-DTP01 to AOC9-DTP06) were excavated to verify the boundary of the former landfill (see Figure 2-3).

Excavation Observations

The soils encountered were generally medium-brown, silty sand with abundant cobbles. Groundwater was encountered in most locations at varying depth intervals. No organic vapor analyzer (OVA) readings were detected in any of the test pits; however, a sulfur odor was encountered in AOC9-TP06. A sheen was also noted on groundwater flowing into test pits AOC9-TP01, -TP03, -TP04, -TP06, and -DTP04. Less than 1% by volume of landfill debris was encountered in any of the pits; only trace amounts of miscellaneous debris (including glass, slag, bricks, ceramics, cinder blocks, asphalt, concrete, wire, and metal) were encountered in AOC9-TP04, -TP05, -TP06, -DTP01, -DTP02, -DTP03, -DTP04, -DTP05, and -DTP06. A summary of test pit dimensions and observations is presented in Table 4.5.1-1.

The approximate boundary of the former landfill was determined using both aerial photographs and test pit observations and is shown on Figure 2-3. Very little debris was found in the area, indicating that the landfill, which apparently existed in the 1940s and 1950s, was removed from this area. Test pit excavation findings agree with the conclusion that no landfill currently exists south of the WSA fence line near Perimeter Road.

Soils

One sample was collected from each of the six exploratory test pits. All of the samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides, TCL PCBs and TAL metals. A summary of the frequency of detection, range of detected concentrations, and frequency of detection above screening criteria is shown in Table 4.5.1-2. Table 4.5.1-3 presents a summary of positive analytical results and screening criteria.

Volatile Organic Compounds. VOCs were detected in two of the six test pit samples. Five VOCs, 1,2-DCB, 1,4-DCB, 2-butanone, acetone, and chlorobenzene, were detected in AOC9-TP03 and acetone was detected in AOC9-TP06. Acetone is a common laboratory contaminant; therefore, the low levels detected are not of concern. None of the VOCs were detected at concentrations exceeding screening criteria.

Semivolatile Organic Compounds. SVOCs were detected in two test pit samples with 18 SVOCs detected in AOC9-TP03 and eight SVOCs detected in AOC9-TP04. Of these, benzo(a)pyrene was detected at concentrations exceeding screening criteria in both samples, and benzo(a)anthracene, benzo(b)fluoranthene, chrysene and dibenzo(a,h)anthracene were detected in concentrations exceeding screening criteria in AOC9-TP03.

Pesticides. Four pesticides - aldrin, alpha-BHC, dieldrin, and endrin ketone -were detected in AOC9-TP03. Dieldrin was the only pesticide detected in concentrations that exceeded screening criteria. Pesticides were not detected in any of the other samples.

Metals. As shown on Table 4.5.1-3, 20 metals were detected in the test pit samples. Cadmium, the only metal to exceed the screening criteria, was detected in all of the samples except AOC9-TP05.

4.5.2 Year 2002 SI Test Pits

Five test pits were excavated and sampled immediately adjacent to previous test pit excavations TP01, TP03, TP04, TP06, and DTP04, where sheens were observed during the 2000 SI test pit excavations as described in Section 2.3.4 (see Figure 2-3).

Excavation Observations

The same soil conditions were encountered as during the 2000 SI. No OVA readings were detected and no sheens or odors indicative of petroleum contamination were observed in any of the test pits. Less than 1% by volume of landfill debris was encountered in the pits.

Soil

One original subsurface soil and one duplicate sample were collected from test pit AOC9-GW-TP04 and analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TAL metals, mercury, and percent solids. A summary of the frequency of detection, range of detected concentrations, and frequency of detection above screening criteria is shown in Table 4.2-1. Table 4.2-2 presents a summary of positive analytical results and screening criteria.

Volatile Organic Compounds. Acetone and 2-butanone were detected in sample AOC9-TP04 and only acetone was detected in the duplicate sample at concentrations below screening criteria (no screening criteria is available for 2-butanone).

Semivolatile Organic Compounds. No SVOCs were detected in sample AOC9-TP04 or the duplicate sample.

Pesticides/PCBs. No PCBs were detected in samples of the test pit. One pesticide, 4,4'-DDT, was detected in sample AOC9-TP04 and its duplicate at concentrations below screening criteria.

Metals. Five metals (antimony, beryllium, iron, thallium, and zinc) were detected at concentrations slightly above the screening criteria in both AOC9-TP04 and the duplicate sample (see Table 4.2-2).

Total Petroleum Hydrocarbons. TPH were not detected in the test pit soil samples.

Groundwater

Groundwater samples were collected at each test pit location from the top of the water table and analyzed for TCL VOCs, SVOCs, pesticides/PCBs, TPH as diesel, and TPH as gasoline. A summary of the frequency of detection, range of detected concentrations, and frequency of detection above screening criteria is shown in Table 4.5.2-1. Table 4.5.2-2 presents a summary of positive analytical results and screening criteria.

Volatile Organic Compounds. Four VOCs, acetone, 1,2-DCB, 1,4-DCB, and chlorobenzene, were detected in groundwater sample AOC9-GW-TP03 collected from the location of one of the former storage igloos (probable source area), and only acetone was detected in sample AOC9-GW-TP04. 1,2-DCB, 1,4-DCB, and chlorobenzene were the only VOCs detected at concentrations above screening criteria in AOC9-GW-TP03.

Semivolatile Organic Compounds. 1,2-DCB (23.9 μg/L), and 1,4-DCB (21.4 μg/L) were detected at concentrations above the screening criteria in sample AOC9-GW-TP03, and BEHP was detected at a concentration above screening criteria in sample AOC9-GW-DTP04. Phthalates are common laboratory and field artifacts caused by the use of protective gloves and therefore are not of concern. Naphthalene (4.35J μg/L) and phenanthrene (3.72 µg/L) were the only other SVOCs detected and were found in AOC9-GW-TP03 at concentrations below the screening criteria.

Pesticides/PCBs. No PCBs were detected in any of the groundwater samples collected from the test pits. Two pesticides (aldrin and dieldrin) were detected in one of the groundwater samples (AOC9-GW-TP03). Aldrin was detected at a concentration of 0.573 µg/L and dieldrin was detected at a concentration of 0.327J µg/L, both of which exceed the most stringent screening criteria.

Total Petroleum Hydrocarbons. TPH as diesel and TPH as gasoline were not detected in four of the five test pits sampled. Only sample AOC9-GW-TP03 contained very low levels of TPH, which ranged from 0.123 µg/L to 0.260 µg/L. No screening criteria is available for TPH.

Summary of Year 2000 and 2002 Test Pit Excavation Observations and Sample Results

Laboratory analysis of the Year 2000 test pit samples indicated the following:

- AOC9-TP03 contained five polynuclear aromatic hydrocarbons (PAHs), one pesticide (dieldrin), and one metal (cadmium) above screening criteria.
- Sample AOC9-TP04 contained one PAH and cadmium above screening criteria.
- Samples AOC9-TP01, -TP02, and -TP06 contained only cadmium above screening criteria.

Results of the samples from the Year 2002 SI test pits excavated immediately adjacent to test pit excavations TP01, TP03, TP04, TP06, and DTP04 are as follows:

- No VOCs, SVOCs, pesticides, or PCBs were detected in soil sample AOC9-TP04 at levels above screening criteria and five metals (antimony, beryllium, iron, thallium, and zinc) were detected at concentrations slightly above the screening criteria.
- 1,2-DCB 1,4-DCB were detected in AOC9-GW-TP03 (from the northernmost former igloo location) at concentrations greater than the screening criteria.

- BEHP was detected at a concentration above screening criteria in sample AOC9-GW-DTP04.
- No PCBs were detected in any of the groundwater samples collected from the test pits.
- Aldrin and dieldrin (pesticides) were detected in groundwater sample AOC9-GW-TP03 at concentrations exceeding screening criteria.
- Low levels of TPH, were only found in AOC9-GW-TP03.
- With the exception of BEHP in the groundwater, AOC9-TP03 contained the highest concentrations of any of the analytes in the soil and groundwater collected from the test pits. This location is a likely contributing source of groundwater contamination in the area.

The findings of the 2000 and 2002 test pit excavations are summarized below.

- The areas from which the test pit samples were collected do not appear to be a source of petroleum hydrocarbon contamination.
- Test pit excavations did not indicate the presence of wastes in the WSA landfill with less than 1% debris by volume.
- No potential contaminant source areas were discovered due to the minimal amount of landfill material encountered.
- The landfill appears to have been removed prior to the construction of the WSA, as reported.

4.6 Data Assessment

The Year 2000 and 2002 field investigations consisted of the collection of environmental samples in accordance with the February 2000 (E & E 2000a) and the June 2002 (E & E 2002a) Addenda to the March 1997 Work Plan for Site Investigations of Areas of Concern at Former Griffiss Air Force Base, Rome, New York, respectively. Any minor variances in field methodologies that occurred during the investigation are noted on the Daily Activity Summary reports or field adjustment forms. E & E prepared the reports in the field each day and submitted them to USACE and AFRPA. All field activities were carried out in accordance with the approved QCP. An E & E QC inspector was present on site approximately two days every other week of the Year 2000 sampling and once during the Year 2002 SI field activities. Field inspection forms are included in Appendix F of the QCSR under system audits.

Methodologies used for field notebooks; sample labeling, packaging, and custody; equipment decontamination; collection of investigation-derived waste (IDW); and site survey were performed in accordance with the above referenced the February 2000 and June 2002 Field Sampling Plans (for the Year 2000 SI and Year 2002 SI respectively), the March 1997 Work Plan for Site Investigations of Areas of Concern (E & E 1997a), and documents referenced therein.

For the Year 2000 SI, a completeness goal of 99% for the off-site laboratory data and 100% for the on-site laboratory data was achieved for analytical level III data. For the Year 2002 SI, a completeness goal of over 99.9% was achieved for analytical level III data. The analytical data meet specified QC criteria, with any exceptions or qualifications noted in the respective QCRS reports. For the Year 2000 SI, a total of 5,104 data points are associated with the groundwater, test pits, surface water and sediment samples collected at AOC 9 and a total of 2,541 data points are associated with the groundwater samples collected from the Geoprobe and Hydropunch locations at the AOC 9. For the Year 2002 SI, a total of 5,714 data points are associated with the samples collected at AOC9. The data points that were qualified as estimated should be considered useable for the purposes of this project. Any other samples results that are flagged "J" as estimated are due to reported results below the PQL but above the detection limit. A total of 54 Year 2000 SI data points that were qualified "UR" as rejected and not usable for the purposes of this project. All but four of the Year 2000 SI rejected data points are associated with the anticipated analytical method problems for Method 525 and do not impact the overall data quality. The only Year 2002 SI rejected data points were the eight hexachloropentadiene and 3,3'Dichlorobenzidine non-detect results in sediment and soil samples collected at the site.

Table 4.1.1-1 Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection for Groundwater Samples from Geoprobe Temporary Wells and Hydropunches, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration (µg/L)
Benzene	30/94	Trace – 12.6
n-Butylbenzene	8/94	Trace – 48.1
sec-Butylbenzene	9/94	Trace – 10.2
tert-Butylbenzene	10/94	Trace – 2.4
Chlorobenzene	39/94	Trace – 2352
1,2-Dichlorobenzene	42/94	Trace – 414.2
1,3-Dichlorobenzene	12/94	Trace – 2.3
1,4-Dichlorobenzene	37/94	Trace – 214.9
cis-1,2-Dichloroethene	33/94	Trace – 227.2
trans-1,2-Dichloroethene	15/94	Trace – 3.8
Ethylbenzene	25/94	Trace – 50.3
Isopropylbenzene	6/94	Trace – 22.8
p-Isopropyl toluene	4/94	Trace – 2.4
Naphthalene	1/94	28.3
n-Propylbenzene	9/94	Trace – 14.0
Tetrachloroethene	31/94	Trace – 173.3
Toluene	34/94	Trace – 1.4
Trichloroethene	48/94	Trace – 66.9
1,2,4-Trimethylbenzene	8/94	Trace – 68.8
1,3,5-Trimethylbenzene	10/94	Trace – 34.4
Vinyl Chloride	15/94	1.3J – 63.7

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

PARAMETER		Sample ID:	AOC9-GP01S	AOC9-GP01I	AOC9-GP01D	AOC9-GP02S	AOC9-GP02I	AOC9-GP02D	AOC9-GP03S	AOC9-GP03I
		Sample Date:	3/15/2000	3/15/2000	3/13/2000	3/15/2000	3/15/2000	3/13/2000	3/15/2000	3/15/2000
		Depth (ft):	6.5-8.5	11.5-13.5	17.5-19.5	5.0-7.0	10.0-12.0	16.5-20.5	4.9-6.9	10.0-12.0
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	ND	1.3	Trace	ND	ND	Trace	ND	4.3
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	Trace	ND	ND	Trace	ND	5.4
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	1.0	3.8	647.4
1,2-Dichlorobenzene	µg/L	1	ND	Trace	ND	ND	Trace	1.2	1.6	191.3
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	6.9
1,4-Dichlorobenzene	µg/L	1	ND	1.1	Trace	ND	ND	ND	1.2	102.4
cis-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	1.9	227.2
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	Trace	3.8
Ethylbenzene	µg/L	1	ND	1.1	1.0	ND	ND	Trace	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	2.1
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	Trace	ND	ND	ND	ND	ND	ND
Toluene	µg/L	1	1.2	1.6	1.1	ND	ND	1.1	ND	1.3
Trichloroethene	µg/L	1	1.2	1.3	Trace	ND	1.1	1.3	ND	14.9
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	Trace	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	1.1	ND	ND	Trace	ND	ND	1.6
Vinyl Chloride	µg/L	1	2.7 J	ND	2.1 J	ND	ND	1.8	ND	63.7

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

PARAMETER		Sample ID:	AOC9-GP03D	AOC9-GP04S	AOC9-GP04I	AOC9-GP04D	AOC9-GP05S	AOC9-GP05D	AOC9-GP05S DUP	AOC9-GP06S
		Sample Date:	3/13/2000	3/20/2000	3/15/2000	3/13/2000	3/16/2000	3/16/2000	3/16/2000	3/16/2000
		Depth (ft):	14.8-16.8	0.5-2.5	5.0-7.0	10.5-12.5	5.0-7.0	10.0-12.0	5.0-7.0	2.0-4.0
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	1.4	ND	ND	1.0	3.2	5.3	3.0	ND
n-Butylbenzene	µg/L	1	1.9	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	1.5	1.4	1.6	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	1.7	ND	1.9	ND
Chlorobenzene	µg/L	1	14.6	1.2	ND	1.1	506.9	719.0	530.0	ND
1,2-Dichlorobenzene	µg/L	1	6.4	ND	ND	Trace	93.3	414.2	96.2	1.6
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	1.0	ND	ND	Trace	27.1	95.6	25.1	Trace
cis-1,2-Dichloroethene	µg/L	1	10.5	ND	ND	1.4	51.5	39.0	71.3	1.2
trans-1,2-Dichloroethene	µg/L	1	Trace	ND	ND	ND	2.3	1.1	2.1	ND
Ethylbenzene	µg/L	1	1.2	1.1	ND	ND	2.7	ND	2.6	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	1.4	ND	1.3	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	1.0	1.1	1.0	1.2	ND
Tetrachloroethene	µg/L	1	6.3	ND	ND	Trace	ND	173.3	ND	ND
Toluene	µg/L	1	1.2	1.4	ND	1.0	ND	ND	ND	ND
Trichloroethene	µg/L	1	22.6	ND	2.0	5.7	1.2	66.9	1.2	1.0
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	3.1 J	23.1	7.5 J	20.2	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP06S DUP	AOC9-GP06I	AOC9-GP06D	AOC9-GP07D	AOC9-GP08S	AOC9-GP08D	AOC9-GP09S	AOC9-GP09I
		Sample Date:	3/16/2000	3/16/2000	3/16/2000	3/13/2000	3/16/2000	3/14/2000	3/16/2000	3/16/2000
PARAMETER		Depth (ft):	2.0-4.0	7.9-9.0	11.9-13.9	9.1-11.1	7.0-9.0	11.8-13.8	5.5-7.5	10.2-12.2
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	ND	1.5	1.5	1.1	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	16.7	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	1.2	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	2.1	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	217.2	205.2	2.4	ND	2.0	ND	1.5
1,2-Dichlorobenzene	µg/L	1	1.6	89.6	110.5	Trace	1.0	1.5	ND	1.2
1,3-Dichlorobenzene	µg/L	1	ND	1.9	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	Trace	ND	21.1	Trace	Trace	Trace	ND	Trace
cis-1,2-Dichloroethene	µg/L	1	1.1	34.5	24.3	2.5	6.4	5.9	ND	ND
trans-1,2-Dichloroethene	µg/L	1	ND	Trace	Trace	ND	1.8	ND	ND	ND
Ethylbenzene	µg/L	1	ND	2.6	ND	1.0	ND	ND	ND	Trace
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	1.0	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	2.7	8.9	1.2	3.5	2.5	ND	ND
Toluene	µg/L	1	ND	1.3	1.2	1.2	ND	ND	ND	ND
Trichloroethene	µg/L	1	Trace	9.8	23.8	6.9	8.6	21.2	ND	ND
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	µg/L	1	ND	10.3 J	ND	3.5 J	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

PARAMETER		Sample ID:	AOC9-GP09D	AOC9-GP10S	AOC9-GP10I	AOC9-GP10D	AOC9-GP10D DUP	AOC9-GP11I	AOC9-GP12I	AOC9-GP13I
		Sample Date:	3/14/2000	3/20/2000	3/20/2000	3/14/2000	3/14/2000	3/21/2000	3/21/2000	3/21/2000
		Depth (ft):	15.0-17.0	1.6-3.6	6.5-8.5	11.5-13.5	11.5-13.5	11.1-13.1	11.1-13.1	7.0-9.0
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	1.0	ND	ND	ND	ND	1.9	Trace	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	1.8	ND	ND	ND	300.4	1.9	ND
1,2-Dichlorobenzene	µg/L	1	ND	1.2	ND	Trace	Trace	239.2	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	6.9	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	Trace	Trace	69.0	ND	ND
cis-1,2-Dichloroethene	µg/L	1	ND	2.5	ND	ND	ND	141.5	1.1	ND
trans-1,2-Dichloroethene	µg/L	1	ND	Trace	ND	ND	ND	1.5	ND	ND
Ethylbenzene	µg/L	1	Trace	Trace	ND	ND	ND	1.8	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Tetrachloroethene	µg/L	1	ND	ND	ND	ND	ND	8.1	ND	ND
Toluene	µg/L	1	1.3	ND	ND	ND	ND	Trace	Trace	Trace
Trichloroethene	µg/L	1	ND	3.1	ND	ND	ND	19.7	Trace	ND
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	17.8	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

PARAMETER		Sample ID:	AOC9-GP14S	AOC9-GP14I	AOC9-GP14D	AOC9-GP15S	AOC9-GP16I	AOC9-GP17I	AOC9-GP18D	AOC9-GP19D
		Sample Date:	5/25/2000	3/24/2000	5/25/2000	3/22/2000	3/22/2000	3/22/2000	3/22/2000	3/22/2000
		Depth (ft):	3.0-5.0	7.0-9.0	10.8-12.8	5.2-7.5	9.5-11.5	9.0-11.0	9.0-11.0	7.8-9.8
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	7.29 J	12.6	7.92 J	2.6	Trace	ND	Trace	Trace
n-Butylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	1.2	ND (10 X)	ND	1.1	ND
Chlorobenzene	µg/L	1	909	1147.1	795	773.4	189.7	2.2	76.9	ND
1,2-Dichlorobenzene	µg/L	1	76.3	96.7	103	17.6	51.5	ND	18.9	ND
1,3-Dichlorobenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	Trace	ND
1,4-Dichlorobenzene	µg/L	1	15.2 J	24.8	21.5 J	10.1	18.5	ND	4.6	ND
cis-1,2-Dichloroethene	µg/L	1	33.3	36.3	37.2	6.4	Trace	ND	2.4	ND
trans-1,2-Dichloroethene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
Ethylbenzene	µg/L	1	ND (5 X)	Trace	ND (5 X)	ND	ND (10 X)	11.7	4.3	ND
Isopropylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND (5 X)	Trace	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
Naphthalene	µg/L	2	ND (2.5 X)	ND (10 X)	ND (2.5 X)	ND	ND (10 X)	ND	ND	ND
n-Propylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
Tetrachloroethene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	Trace	ND
Toluene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	Trace	Trace	Trace
Trichloroethene	µg/L	1	ND (5 X)	ND (10 X)	17.9 J	Trace	ND (10 X)	2.2	5.3	1.8
1,2,4-Trimethylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
Vinyl Chloride	µg/L	1	12.7 J	ND (10 X)	7.04 J	1.3 J	ND (10 X)	ND	1.8 J	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP20D	AOC9-GP20D DUP	AOC9-GP21D	AOC9-GP22D	AOC9-GP22D DUP	AOC9-GP23I	AOC9-GP24I	AOC9-GP25D
		Sample Date:	3/22/2000	3/22/2000	3/22/2000	3/22/2000	3/22/2000	3/23/2000	3/23/00	3/24/2000
PARAMETER		Depth (ft):	12.0-14.0	12.0-14.0	14.7-16.7	17.3-19.3	17.3-19.3	7.0-9.0	9.7-11.7	11.5-13.5
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	Trace	Trace	ND	ND	ND	1.1	ND	Trace
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	Trace	Trace	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	Trace	2.4	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	Trace	1.1	ND	Trace
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	1.1	Trace	1.1	ND	Trace
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	1.6	1.5	ND	ND	ND
cis-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	1.2	ND	ND
Ethylbenzene	µg/L	1	Trace	ND	ND	1.6	Trace	ND	Trace	Trace
Isopropylbenzene	µg/L	1	ND	ND	ND	Trace	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	1.6	Trace	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	ND	Trace	1.3	ND	Trace	ND	ND
Toluene	µg/L	1	Trace	Trace	ND	Trace	Trace	1.0	ND	Trace
Trichloroethene	µg/L	1	Trace	Trace	ND	1.9	Trace	Trace	ND	Trace
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND	3.2	Trace	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	1.2	1.2	Trace	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP26D	AOC9-GP27S	AOC9-GP27I	AOC9-GP27D	AOC9-GP28S	AOC9-GP28SDUP	AOC9-GP28I	AOC9-GP28D
		Sample Date:	3/24/2000	5/5/2000	3/24/2000	5/5/2000	5/3/2000	5/3/2000	5/3/2000	3/28/2000
PARAMETER		Depth (ft):	15.0-17.0	6.18-8.18	12.9-14.9	15.2-17.2	11.1-13.1	11.1-13.1	16.5-18.5	23.04-25.04
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	Trace	ND (25 X)	1.5	ND (25 X)	4.0	ND (50 X)	7.3	1.9
n-Butylbenzene	µg/L	1	ND	40.1	ND	ND (25 X)	1.5	ND (50 X)	48.1	ND
sec-Butylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	1.2	ND (50 X)	10.2	ND
tert-Butylbenzene	µg/L	1	ND	ND (25 X)	Trace	ND (25 X)	ND	ND (50 X)	ND	ND
Chlorobenzene	µg/L	1	ND	2352.0	495.7	574.6	820.5	705.7	2151.4	415.9
1,2-Dichlorobenzene	µg/L	1	ND	Trace	261.9	432.1	273.1	243.0	40.1	341.4
1,3-Dichlorobenzene	µg/L	1	ND	Trace	5.1	ND (25 X)	7.3	ND (50 X)	6.1	4.5
1,4-Dichlorobenzene	µg/L	1	ND	198.0	19.4	46.7	157.0	132.9	214.9	81.8
cis-1,2-Dichloroethene	µg/L	1	1.6	39.8	14.9	Trace	6.2	ND (50 X)	2.6	6.6
trans-1,2-Dichloroethene	µg/L	1	ND	ND (25 X)	1.0	ND (25 X)	Trace	ND (50 X)	ND	Trace
Ethylbenzene	µg/L	1	ND	33.0	2.5	Trace	5.2	ND (50 X)	50.3	ND
Isopropylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	1.8	ND (50 X)	22.8	ND
p-Isopropyl toluene	µg/L	1	ND	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	2.4	ND
Naphthalene	µg/L	2	ND	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	28.3	ND
n-Propylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	Trace	ND (50 X)	14.0	ND
Tetrachloroethene	µg/L	1	ND	ND (25 X)	19.6	Trace	Trace	ND (50 X)	10.9	ND
Toluene	µg/L	1	Trace	ND (25 X)	ND	ND (25 X)	Trace	ND (50 X)	1.1	Trace
Trichloroethene	µg/L	1	3.1	28.6	13.2	Trace	9.7	ND (50 X)	27.0	23.9
1,2,4-Trimethylbenzene	µg/L	1	ND	68.8	Trace	ND (25 X)	ND	ND (50 X)	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	1.4	ND (50 X)	34.4	ND
Vinyl Chloride	µg/L	1	ND	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	ND	1.8 J

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

PARAMETER		Sample ID:	AOC9-GP29S	AOC9-GP29I	AOC9-GP29D	AOC9-GP30S	AOC9-GP30D	AOC9-GP31S	AOC9-GP32S	AOC9-GP32D
		Sample Date:	4/28/2000	4/28/2000	3/29/2000	4/28/2000	3/29/2000	3/31/2000	4/28/2000	4/28/2000
		Depth (ft):	13.0-15.0	18.0-20.0	22.8-24.8	13.0-15.0	19.34-20.34	6.2-8.2	13.0-15.0	15.8-17.8
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	117.6	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	Trace	10.2	3.4	ND	ND	ND	ND	ND
Toluene	µg/L	1	ND	ND	Trace	ND	ND	Trace	Trace	Trace
Trichloroethene	µg/L	1	ND	6.9	2.0	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP33S	AOC9-GP33I	AOC9-GP33D	AOC9-GP34S	AOC9-GP34D	AOC9-GP35S	AOC9-GP35I	AOC9-GP35D
		Sample Date:	4/28/2000	4/28/2000	4/28/2000	5/1/2000	5/1/2000	4/28/2000	4/28/2000	4/28/2000
PARAMETER		Depth (ft):	8.0-10.0	15.0-17.0	21.5-23.5	10.0-12.0	13.5-15.5	10.0-12.0	14.0-16.0	19.0-21.0
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	Trace	Trace	ND	ND	ND	Trace	ND
Toluene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	1.3	Trace	ND	ND	ND
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP35D DUP	AOC9-GP36S	AOC9-GP36I	AOC9-GP36D	AOC9-GP36D DUP	AOC9-GP37S	AOC9-GP37I	AOC9-GP37D
		Sample Date:	4/28/2000	5/2/2000	5/2/2000	5/2/2000	5/2/2000	5/2/2000	5/2/2000	5/2/2000
PARAMETER		Depth (ft):	19.0-21.0	11.9-13.9	17.7-19.7	24.4-26.4	24.4-26.4	12.0-14.0	18.6-20.6	24.4-26.4
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	1.2	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	10.0	2.3	2.2	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	5.2	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	2.7	Trace	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/L	1	ND	Trace	1.2	1.8	2.5	ND	ND	ND
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	3.4	Trace	Trace	Trace	Trace	ND	ND
Toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	6.8	Trace	Trace	Trace	ND	ND	ND
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

PARAMETER		Sample ID:	AOC9-GP38S	AOC9-GP38I	AOC9-GP38I DUP	AOC9-GP38D	AOC9-GP38D DUP	AOC9-GP39S	AOC9-GP39I	AOC9-GP39D
		Sample Date:	5/3/2000	5/3/2000	5/3/2000	5/3/2000	5/3/2000	5/2/2000	5/2/2000	5/2/2000
		Depth (ft):	16.64-18.64	21.11-23.11	21.11-23.11	27.15-29.15	27.15-29.15	14.0-16.0	20.9-22.9	28.7-30.7
Test: VOCs - 8021B	Units	PQL								
Benzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	μg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	μg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Toluene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	μg/L	1	ND	ND	ND	ND	ND	6.4	ND	ND
1,2,4-Trimethylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	μg/L	1	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP40S	AOC9-GP40I	AOC9-GP40D	AOC9-GP41S	AOC9-GP41I	AOC9-GP41D	AOC9-GP42S	AOC9-GP42I
		Sample Date:	5/3/2000	5/3/2000	5/3/2000	5/4/2000	5/4/2000	5/4/2000	5/4/2000	5/4/2000
PARAMETER		Depth (ft):	11.0-13.0	18.04-20.04	22.64-24.64	13.9-15.9	16.65-18.65	18.82-20.82	16.7-18.7	23.32-25.32
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	12.1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	6.9	ND	Trace	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	5.2	ND	Trace	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	2.7	Trace	ND	ND	ND
1,2,4-Trimethylbenzene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-2
Year 2000 SI
AOC9: WSA Landfill,
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells and Hydropunches, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GP42D	AOC9-GP43D	AOC9-HYD1-S	AOC9-HYD1-I	AOC9-HYD1-D	AOC9-HYD2-S	AOC9-HYD2-I	AOC9-HYD2-D
		Sample Date:	5/4/2000	5/4/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000
PARAMETER		Depth (ft):	28.42-30.42	14.96-16.96	1.0-3.0	6.0-8.0	11.0-13.0	2.0-4.0	7.0-9.0	12.0-14.0
Test: VOCs - 8021B	Units	PQL								
Benzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
n-Butylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
sec-Butylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
tert-Butylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Chlorobenzene	µg/L	1	ND	ND	55.8	21.9	14.3	ND (5 X)	6.77	53.3
1,2-Dichlorobenzene	µg/L	1	ND	ND	22.2	14.6	10.8	ND	2.51 J	14.7 J
1,3-Dichlorobenzene	µg/L	1	ND	ND	1.17 J	ND (5 X)	5.60	ND (5 X)	ND (5 X)	ND (5 X)
1,4-Dichlorobenzene	µg/L	1	ND	ND	12.3	7.01	5.41	ND (5 X)	ND (5 X)	8.00 J
cis-1,2-Dichloroethene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
trans-1,2-Dichloroethene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Ethylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Isopropylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
p-Isopropyl toluene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Naphthalene	µg/L	2	ND	ND	ND (2.5 X)	ND (2.5 X)	ND (2.5 X)	ND (2.5 X)	ND (2.5 X)	ND (2.5 X)
n-Propylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Tetrachloroethene	µg/L	1	ND	Trace	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Toluene	µg/L	1	Trace	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Trichloroethene	µg/L	1	ND	Trace	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	1.35 J	ND (5 X)
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)	ND (5 X)
Vinyl Chloride	µg/L	1	ND	ND	ND (50 X)	ND (50 X)	ND (50 X)	ND (50 X)	ND (50 X)	ND (50 X)

Key:

ft = Feet.
ID = Identification.
J = Estimated quantity.
ND = Not detected.

PQL = Practical Quantitation Limit.
SI = Supplemental Investigation.
WSA = Weapons Storage Area.
(5X) = Dilution factor of 5

Source: Ecology and Environment, Inc. 2000

Table 4.1.1-3

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for Groundwater Samples from Monitoring Wells, Former Griffiss AFB, Rome, New York

			Comparison to Screening Criteria	
Parameter	Frequency of Detection	Range of Detected Concentration	Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
Anions - 300 (mg/L)				
Chloride	2/8	12.8 - 24.1	0	250
Nitrogen, Nitrate (As N)	7/8	0.0372J - 1.76	0	10
Phosphorus, Dissolved Orthophosphate	1/8	0.37	-	-
Sulfate	8/8	3.56 - 24.5	0	250
Dissolved Organic Carbon - SM 5310B (mg/L)				
Total Organic Carbon	8/8	0.848J - 3.45	-	-
TAL Metals - SW6010B/7471A/7470A (µg/L)				
Aluminum	2/16	587 - 2770	2	50
Barium	16/16	8.05 - 158	0	1000
Beryllium	4/16	0.111J - 0.222J	0	3
Cadmium	3/16	0.753J - 0.994J	0	5
Calcium	16/16	35200 - 101000	-	-
Chromium	2/16	1.58J - 3.80J	0	50
Cobalt	4/16	0.902J - 3.73J	-	-
Copper	3/16	4.13J - 13.6J	0	200
Iron	10/16	178 - 10800	8	300
Lead	2/16	2.12J - 3.32J	0	15
Magnesium	16/16	3210 - 9590	0	35000
Manganese	15/16	4.21J - 6810	14	50
Nickel	2/16	3.40J - 12.4J	0	100
Potassium	16/16	799J - 2100	-	-
Selenium	10/16	12.2 - 23.2	10	10
Silver	1/16	4.59J	0	50
Sodium	16/16	1330 - 15000	0	20000
Thallium	2/16	6.20J - 7.46J	2	0.5
Vanadium	2/16	2.37J - 6.37J	-	-
Zinc	14/16	3.04J - 19.9	0	2000
Semivolatiles - 525.2 (µg/L)				
2-Methylnaphthalene	2/8	0.57J - 0.63J	-	-
Bis(2-ethylhexyl)adipate	2/8	0.68J - 1.2J	0	20
Bis(2-ethylhexyl)phthalate	6/8	0.61J - 1.0J	0	5
Butylbenzylphthalate	2/8	0.61J - 0.68J	0	50
Di-n-butylphthalate	6/8	12J - 15J	0	50
Diethylphthalate	6/8	3.6J - 4.8J	0	50
Naphthalene	1/8	6.6	0	10
Phenanthrene	6/8	0.6J - 0.67J	0	50
Volatiles - 524.2 (µg/L)				
Benzene	3/8	0.650 - 3.95	2	1
sec-Butylbenzene	2/8	0.882 - 3.93	0	5
tert-Butylbenzene	1/8	0.348J	0	5

Table 4.1.1-3

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for Groundwater Samples from Monitoring Wells, Former Griffiss AFB, Rome, New York

			Comparison to Screening Criteria	
Parameter	**Frequency of Detection**	**Range of Detected Concentration**	**Frequency of Detection Above Screening Criteria**	**Most Stringent Screening Criteria**
Chlorobenzene	4/8	146 - 1320	4	5
1,2-Dichlorobenzene	5/8	0.363J - 373	4	3
1,2-Dichlorobenzene	5/8	0.363 - 373	4	3
1,4-Dichlorobenzene	4/8	10.3 - 200	4	3
1,1-Dichloroethene	1/8	0.605	0	5
cis-1,2-Dichloroethene	4/8	3.86 - 34.9	3	5
trans-1,2-Dichloroethene	2/8	0.345J - 0.527	0	5
Ethylbenzene	1/8	6.53	1	5
Isopropylbenzene	1/8	10.1	1	5
Methylene chloride	1/8	72.6	1	5
Naphthalene	1/8	7.92	0	10
n-Propylbenzene	1/8	4.76	0	5
Tetrachloroethene	2/8	1.70 - 2.41	0	5
Toluene	1/8	0.32J	0	5
Trichloroethene	6/8	0.854 - 17.7	2	5
1,2,4-Trimethylbenzene	1/8	46.0	1	5
1,3,5-Trimethylbenzene	1/8	10.9	1	5
Vinyl chloride	3/8	2.72 - 11.7	3	2
m,p-Xylene	1/8	16.4	1	5
o-Xylene	1/8	10.0	1	5
MEE - Headspace GC-FID analysis (µg/L)				
Methane	3/8	37 - 2800	-	-

Key:

J = Estimated concentration.
µg/L = Micrograms per liter.
WSA = Weapons Storage Area.

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW05 5/10/00 4 – 14	AOC9-MW05-F 5/10/00 4 – 14	AOC9-MW06 5/8/00 4.2 – 14.2	AOC9-MW06-F 5/8/00 4.2 – 14.2	AOC9-MW07 5/10/00 4.2 – 9.2	Most Stringent Criteria
Test: Anions – 300 (mg/L)						
Chloride	0.1 U	NA	0.1 U	NA	0.1 U	250
Nitrogen, Nitrate (as N)	0.0672 J	NA	0.615	NA	0.1 U	10
Phosphorus, Dissolved Orthophosphate	0.370	NA	0.1 U	NA	0.1 U	—
Sulfate	9.21	NA	14.0	NA	15.9	250
Test: Dissolved Organic Carbon – SM 5310B (mg/L)						
Total Organic Carbon (TOC)	1.51	NA	1.39	NA	3.45	—
Test: MEE – Headspace GC – FID analysis (µg/L)						
Methane	9.3 U	NA	5.7 U	NA	1800	—
Test: Semivolatiles – 525.2 (µg/L)						
2-Methylnaphthalene	0.34 UJ	NA	0.28 UJ	NA	0.28 UJ	—
Bis(2-ethylhexyl)adipate	0.5 UJ	NA	0.5 U	NA	0.5 U	20
Bis(2-ethylhexyl)phthalate	1 J	NA	0.5 U	NA	0.92 J	5
Butylbenzylphthalate	0.44 UJ	NA	0.5 U	NA	0.5 U	50
Di-n-butylphthalate	12 J	NA	0.22 UJ	NA	0.41 UJ	50
Diethylphthalate	4.8 J	NA	0.5 U	NA	0.5 U	50
Naphthalene	0.19 UJ	NA	0.23 UJ	NA	0.29 UJ	10
Phenanthrene	0.6 J	NA	0.5 U	NA	0.5 U	50
Test: TAL Metals – SW6010B/7471A/7470A (µg/L)						
Aluminum	587	35.0 U	72.6 U	21.3 U	2770	50
Barium	44.8	39.0	16.3 J	15.1 J	109	1000
Beryllium	5 U	0.222 J	5 U	5 U	5 U	3
Cadmium	0.994 J	0.753 J	5 U	5 U	0.964 J	5
Calcium	35200	36400	63100	70000	77000	—
Chromium	1.58 J	10 U	10 U	10 U	3.80 J	50
Cobalt	20 U	20 U	20 U	20 U	3.73 J	—
Copper	6.98 J	20 U	20 U	20 U	13.6 J	200
Iron	10800	9140	178	14.2 U	8610	300
Lead	5 U	5 U	5 U	2.12 U	3.32 J	15
Magnesium	3290	3210	7370	7950	8760	35000
Manganese	1500	1370	128	154	6810	50
Nickel	20 U	20 U	20 U	20 U	12.4 J	100
Potassium	1310	0	1660	1770	2100	—

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW05 5/10/00 4 – 14	AOC9-MW05-F 5/10/00 4 – 14	AOC9-MW06 5/8/00 4.2 – 14.2	AOC9-MW06-F 5/8/00 4.2 – 14.2	AOC9-MW07 5/10/00 4.2 – 9.2	Most Stringent Criteria
Selenium	12.2	14.6	17.0	19.3	16.4	10
Silver	10 U	4.59 J	10 U	10 U	10 U	50
Sodium	1330	1410	4420	4960	4420	20000
Thallium	10 U	10 U	10 U	10 U	7.46 J	0.5
Vanadium	2.37 J	20 U	20 U	20 U	6.37 J	—
Zinc	6.73 J	7.85 J	6.40 J	3.56 J	19.9	2000
Test: Volatiles – 524.2 (µg/kg)						
1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	50 U	5
1,2,4-Trimethylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
1,2-Dichlorobenzene	0.5 U	NA	0.5 U	NA	373	3
1,3,5-Trimethylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
1,4-Dichlorobenzene	0.5 U	NA	0.5 U	NA	84.3	3
Benzene	0.5 U	NA	0.5 U	NA	50 U	1
Chlorobenzene	0.5 U	NA	0.5 U	NA	940	5
cis-1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	30.9 J	5
Ethylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
Isopropylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
m,p-Xylene	0.5 U	NA	0.5 U	NA	50 U	5
Methylene chloride	0.5 U	NA	0.5 U	NA	72.6	5
n-Propylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
Naphthalene	0.5 U	NA	0.5 U	NA	50 U	10
o-Xylene	0.5 U	NA	0.5 U	NA	50 U	5
sec-Butylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
tert-Butylbenzene	0.5 U	NA	0.5 U	NA	50 U	5
Tetrachloroethene	0.5 U	NA	0.5 U	NA	50 U	5
Toluene	0.5 U	NA	0.5 U	NA	50 U	5
trans-1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	50 U	5
Trichloroethene	0.5 U	NA	0.854	NA	50 U	5
Vinyl chloride	0.5 U	NA	0.5 U	NA	50 U	2

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW07-F 5/10/00 4.2 – 9.2	AOC9-MW08 5/25/00 15.4 – 20.4	AOC9-MW08-F 5/25/00 15.4 – 20.4	AOC9-MW08/D 5/25/00 15.4 – 20.4	AOC9-MW08/D-F 5/25/00 15.4 – 20.4	Most Stringent Criteria
Test: Anions - 300 (mg/L)						
Chloride	NA	0.1 U	NA	0.1 U	NA	250
Nitrogen, Nitrate (as N)	NA	0.0372 J	NA	0.1 U	NA	10
Phosphorus, Dissolved Orthophosphate	NA	0.1 U	NA	0.1 U	NA	—
Sulfate	NA	3.56	NA	3.60	NA	250
Test: Dissolved Organic Carbon – SM 5310B (mg/L)						
Total Organic Carbon (TOC)	NA	2.5	NA	3.0	NA	—
Test: MEE – Headspace GC-FID analysis (µg/L)						
Methane	NA	2800	NA	2700	NA	—
Test: Semivolatiles – 525.2 (µg/L)						
2-Methylnaphthalene	NA	0.57 J	NA	0.63 J	NA	—
Bis(2-ethylhexyl)adipate	NA	1.2 J	NA	0.68 J	NA	20
Bis(2-ethylhexyl)phthalate	NA	1.7 J	NA	1 J	NA	5
Butylbenzylphthalate	NA	0.61 J	NA	0.43 UJ	NA	50
Di-n-butylphthalate	NA	12 J	NA	13 J	NA	50
Diethylphthalate	NA	3.6 J	NA	3.9	NA	50
Naphthalene	NA	6.4	NA	6.6	NA	10
Phenanthrene	NA	0.61 J	NA	0.63 J	NA	50
Test: TAL Metals – SW6010B/7471A/7470A (µg/L)						
Aluminum	26.4 U	100 U	100 U	100 U	100 U	50
Barium	51.9	41.3	44.2	40.4	40.3	1000
Beryllium	5 U	5 U	5 U	0.204 U	5 U	3
Cadmium	5 U	5 U	5 U	5 U	5 U	5
Calcium	81700	101000	97500	99700	95800	—
Chromium	10 U	10 U	10 U	10 U	10 U	50
Colbalt	0.903 J	1.22 J	20 U	0.902 J	20 U	—
Copper	20 U	4.13 J	20 U	20 U	20 U	200
Iron	398	1420	1540	1500	1510	300
Lead	5 U	5 U	5 U	5 U	5 U	15
Magnesium	8330	5410	5410	5540	5300	35000
Manganese	5710	2240	2170	2200	2140	50
Nickel	3.40 J	20 U	20 U	20 U	20 U	100
Potassium	978 J	1[illegible]	1800	1910	1790	—

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW07-F 5/10/00 4.2 – 9.2	AOC9-MW08 5/25/00 15.4 – 20.4	AOC9-MW08-F 5/25/00 15.4 – 20.4	AOC9-MW08/D 5/25/00 15.4 – 20.4	AOC9-MW08/D-F 5/25/00 15.4 – 20.4	Most Stringent Criteria
Selenium	18.0	10 U	10 U	10 U	10 U	10
Silver	10 U	10 U	10 U	10 U	10 U	50
Sodium	4410	4250	4050	4150	3930	20000
Thallium	6.20 J	10 U	10 U	10 U	10 U	0.5
Vanadium	20 U	20 U	20 U	20 U	20 U	—
Zinc	5.79 J	5.11 J	8.78 U	10 U	3.87 U	2000
Test: Volatiles – 524.2 (μg/L)						
1,1-Dichloroethene	NA	0.5 U	NA	0.5 U	NA	5
1,2,4-Trimethylbenzene	NA	42.3	NA	46.0	NA	5
1,2-Dichlorobenzene	NA	172	NA	180	NA	3
1,3,5-Trimethylbenzene	NA	10.7	NA	10.9	NA	5
1,4-Dichlorobenzene	NA	187	NA	200	NA	3
Benzene	NA	3.87	NA	3.95	NA	1
Chlorobenzene	NA	1250	NA	1320	NA	5
cis-1,2-Dichloroethene	NA	3.86	NA	3.97	NA	5
Ethylbenzene	NA	6.28	NA	6.53	NA	5
Isopropylbenzene	NA	9.64	NA	10.1	NA	5
m,p-Xylene	NA	15.6	NA	16.4	NA	5
Methylene chloride	NA	0.5 U	NA	0.5 U	NA	5
n-Propylbenzene	NA	4.64	NA	4.76	NA	5
Naphthalene	NA	7.51	NA	7.92	NA	10
o-Xylene	NA	9.57	NA	10.0	NA	5
sec-Butylbenzene	NA	3.72	NA	3.93	NA	5
tert-Butylbenzene	NA	0.5 U	NA	0.5 U	NA	5
Tetrachloroethene	NA	0.5 U	NA	0.5 U	NA	5
Toluene	NA	0.304 J	NA	0.320 J	NA	5
trans-1,2-Dichloroethene	NA	0.5 U	NA	0.5 U	NA	5
Trichloroethene	NA	4.06	NA	4.23	NA	5
Vinyl chloride	NA	2.72	NA	2.79	NA	2

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	GO09-MW01 5/11/00 4 – 9	GO09-MW01-F 5/11/00 4 – 9	GO09-MW02 5/11/00 4 – 9	GO09-MW02-F 5/11/00 4 – 9	GO09-MW03 5/11/00 4 – 9	Most Stringent Criteria
Test: Anions – 300 (mg/L)						
Chloride	0.1 U	NA	24.1	NA	12.8	250
Nitrogen, Nitrate (as N)	0.226	NA	0.592	NA	0.237	10
Phosphorus, Dissolved Orthophosphate	0.1 U	NA	0.1 U	NA	0.1 U	—
Sulfate	16.4	NA	9.11	NA	12.5	250
Test: Dissolved Organic Carbon – SM 5310B (mg/L)						
Total Organic Carbon (TOC)	1.14	NA	0.968 J	NA	0.848 J	—
Test: MEE – Headspace GC-FID analysis (µg/L)						
Methane	41 B	NA	37	NA	410 B	—
Test: Semivolatiles – 525.2 (µg/L)						
2-Methylnaphthalene	0.42 UJ	NA	0.36 UJ	NA	0.41 UJ	—
Bis(2-ethylhexyl)adipate	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	20
Bis(2-ethylhexyl)phthalate	0.5 UJ	NA	0.5 UJ	NA	0.76 J	5
Butylbenzylphthalate	0.5 UJ	NA	0.5 UJ	NA	0.68 J	50
Di-n-butylphthalate	13 J	NA	14 J	NA	14 J	50
Diethylphthalate	4.6 J	NA	4.7 J	NA	4.8 J	50
Naphthalene	0.24 UJ	NA	0.19 UJ	NA	0.31 UJ	10
Phenanthrene	0.6 J	NA	0.56 J	NA	0.67 J	50
Test: TAL Metals SW6010B/7471A/7470A (µg/L)						
Aluminum	100 U	9.08 U	141 U	9.71 U	200 U	50
Barium	8.39 J	8.05 J	158	19.3 J	10.7 J	1000
Beryllium	5 U	5 U	5 U	0.111 J	5 U	3
Cadmium	5 U	5 U	5 U	5 U	5 U	5
Calcium	66500	74200	82800	94800	85000	—
Chromium	10 U	10 U	10 U	10 U	10 U	50
Colbalt	20 U	20 U	20 U	20 U	20 U	—
Copper	20 U	20 U	20 U	20 U	20 U	200
Iron	16.1 U	50 U	420	34.7 U	721	300
Lead	5 U	5 U	5 U	5 U	5 U	15
Magnesium	5650	6120	4040	4440	6120	35000
Manganese	6.55 U	4.21 J	200	157	3430	50
Nickel	20 U	20 U	20 U	20 U	20 U	100
Potassium	799 J	83	1320	1490	1210	—

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	GO09-MW01	GO09-MW01-F	GO09-MW02	GO09-MW02-F	GO09-MW03	Most Stringent Criteria
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	
PARAMETER Depth (ft):	4 – 9	4 – 9	4 – 9	4 – 9	4 – 9	
Selenium	10 U	21.7	10 U	23.2	10 U	10
Silver	10 U	10 U	10 U	10 U	10 U	50
Sodium	4500	5300	12600	15000	7190	20000
Thallium	10 U	10 U	10 U	10 U	10 U	0.5
Vanadium	20 U	20 U	20 U	20 U	20 U	—
Zinc	3.04 J	3.78 J	4.15 J	5.48 J	3.49 J	2000
Test: Volatiles – 524.2 (µg/L)						
1,1-Dichloroethene	0.5 U	NA	0.5 U	NA	0.605	5
1,2,4-Trimethylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	5
1,2-Dichlorobenzene	0.363 J	NA	0.5 U	NA	82.5	3
1,3,5-Trimethylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	5
1,4-Dichlorobenzene	0.5 U	NA	0.5 U	NA	31.4	3
Benzene	0.5 U	NA	0.5 U	NA	0.650	1
Chlorobenzene	0.5 U	NA	0.5 U	NA	146	5
cis-1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	34.9	5
Ethylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	5
Isopropylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	5
m,p-Xylene	0.5 U	NA	0.5 U	NA	0.5 U	5
Methylene chloride	0.5 U	NA	0.5 U	NA	0.5 U	5
n-Propylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	5
Naphthalene	0.5 U	NA	0.5 U	NA	0.5 U	10
o-Xylene	0.5 U	NA	0.5 U	NA	0.5 U	5
sec-Butylbenzene	0.5 U	NA	0.5 U	NA	0.882	5
tert-Butylbenzene	0.5 U	NA	0.5 U	NA	0.348 J	5
Tetrachloroethene	0.5 U	NA	0.5 U	NA	1.70	5
Tolune	0.5 U	NA	0.5 U	NA	0.5 U	5
trans-1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	0.345 J	5
Trichloroethene	0.869	NA	0.888	NA	6.57	5
Vinyl chloride	0.5 U	NA	0.5 U	NA	11.7	2

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID:	GO09-MW03-F	GO09-MW04	GO09-MW04-F			Most Stringent Criteria
	Sample Date:	5/11/00	5/11/00	5/11/00			
	Depth (ft):	4 – 9	6.7 – 16.7	6.7 – 16.7			
Test: Anions – 300 (mg/L)							
Chloride		NA	0.1 U	NA			250
Nitrogen, Nitrate (as N)		NA	1.76	NA			10
Phosphorus, Dissolved Orthophosphate		NA	0.1 U	NA			—
Sulfate		NA	24.5	NA			250
Test: Dissolved Organic Carbon – SM 5310B (mg/L)							
Total Organic Carbon (TOC)		NA	1.32	NA			—
Test: MEE – Headspace GC-FID analysis (µg/L)							
Methane		NA	480 B	NA			—
Test: Semivolatiles – 525.2 (µg/L)							
2-Methylnaphthalene		NA	0.36 UJ	NA			—
Bis(2-ethylhexyl)adipate		NA	0.5 UJ	NA			20
Bis(2-ethylhexyl)phthalate		NA	0.69 J	NA			5
Butylbenzylphthalate		NA	0.5 UJ	NA			50
Di-n-butylphthalate		NA	15 J	NA			50
Diethylphthalate		NA	4.5 J	NA			50
Naphthalene		NA	0.3 UJ	NA			10
Phenanthrene		NA	0.59 J	NA			50
Test: TAL Metals SW6010B/7471A/7470A (µg/L)							
Aluminum		100 U	55.2 U	21.8 U			50
Barium		10.1 J	16.5 J	18.5 J			1000
Beryllium		5 U	5 U	0.120 J			3
Cadmium		5 U	5 U	5 U			5
Calcium		94000	70600	81200			—
Chromium		10 U	10 U	10 U			50
Colbalt		20 U	20 U	20 U			—
Copper		20 U	20 U	20 U			200
Iron		12.9 U	240	22.8 U			300
Lead		5 U	5 U	5 U			15
Magnesium		6440	8570	9590			35000
Manganese		3620	561	616			50
Nickel		20 U	20 U	20 U			100
Potassium		1310	[illegible]	1300			—

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID: Sample Date: Depth (ft):	GO09-MW03-F 5/11/00 4 – 9	GO09-MW04 5/11/00 6.7 – 16.7	GO09-MW04-F 5/11/00 6.7 – 16.7			Most Stringent Criteria
Selenium		22.5	10 U	16.6			10
Silver		10 U	10 U	10 U			50
Sodium		8420	7010	8210			20000
Thallium		10 U	10 U	10 U			0.5
Vanadium		20 U	20 U	20 U			—
Zinc		10 U	3.59 J	3.75 J			2000
Test: Volatiles – 524.2 (µg/L)							
1,1-Dichloroethene		NA	0.5 U	NA			5
1,2,4-Trimethylbenzene		NA	0.5 U	NA			5
1,2-Dichlorobenzene		NA	44.1	NA			3
1,3,5-Trimethylbenzene		NA	0.5 U	NA			5
1,4-Dichlorobenzene		NA	10.3	NA			3
Benzene		NA	2.15	NA			1
Chlorobenzene		NA	235	NA			5
cis-1,2-Dichloroethene		NA	17.9	NA			5
Ethylbenzene		NA	0.5 U	NA			5
Isopropylbenzene		NA	0.5 U	NA			5
m,p-Xylene		NA	0.5 U	NA			5
Methylene chloride		NA	0.5 U	NA			5
n-Propylbenzene		NA	0.5 U	NA			5
Naphthalene		NA	0.5 U	NA			10
o-Xylene		NA	0.5 U	NA			5
sec-Butylbenzene		NA	0.5 U	NA			5
tert-Butylbenzene		NA	0.5 U	NA			5
Tetrachloroethene		NA	2.41	NA			5
Tolune		NA	0.5 U	NA			5

Table 4.1.1-4

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR GROUNDWATER SAMPLES FROM MONITORING WELLS, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	GO09-MW03-F	GO09-MW04	GO09-MW04-F			Most Stringent Criteria
Sample Date:	5/11/00	5/11/00	5/11/00			
PARAMETER Depth (ft):	4 – 9	6.7 – 16.7	6.7 – 16.7			
trans-1,2-Dichloroethene	NA	0.527	NA			5
Trichloroethene	NA	17.7	NA			5
Vinyl chloride	NA	4.84	NA			2

Key:

B = Detected in blank.
/D - Duplicate sample.
-F = Filtered sample.
J = Estimated.
µg/kg = Micrograms per kilogram.
µg/L = Micrograms per liter.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.
NA = Not analyzed.
PCBs = Polychlorinated biphenyls.
TAL = Target Analyte List.
U = Not detected.
UJ = Not detected; estimated detection limit reported.
UNK = Unknown.
UR = Not detected; rejected sample
WSA = Weapons Storage Area.

Shaded area equals result above the most stringent criterion. For a full list of screening criteria see Appendix G.

Table 4.1.2-1 Year 2002 Supplemental Investigation Additional Sampling, AOC 9: WSA Landfill, Frequency of Detection for Groundwater Samples from Geoprobe Temporary Wells, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration (µg/L)
Acetone	12/56	3.27 J-352
Benzene	27/56	0.107 J-12.6 J
2-Butanone	3/56	0.945 J-4.22 J
Carbon disulfide	1/56	0.201 J
Chlorobenzene	45/56	0.163 J-2150
Chloroform	4/56	0.0730 J-0.110 J
1,2-Dichlorobenzene	48/56	0.0720 J-513 J
1,3-Dichlorobenzene	26/56	0.174 J-7.32 J
1,4-Dichlorobenzene	40/56	0.194 J-151 J
1,2- Dichloroethene, Total	24/56	0.188 J-71.2
cis-1,2-Dichloroethene	29/56	0.0900 J-70.0
Ethylbenzene	12/56	0.0790 J-59.6
Tetrachloroethene	24/56	0.0870 J-15.4
Toluene	21/56	0.0780 J-3.92 J
Trichloroethene	37/56	0.152 J-10.3 J
Vinyl Chloride	10/56	0.188 J-13.1 J
m,p-Xylene	8/56	0.268 J-197
o-Xylene	8/56	0.104 J-19.7
Xylenes, Total	8/56	0.544 J-218

Key:

AOC = Area of Concern.
J = Estimated Value.
µg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Sample ID:	AOC9-GP44S1	AOC9-GP44S2	AOC9-GP44I	AOC9-GP44I/D	AOC9-GP44D1	AOC9-GP44D2	AOC9-GP45S1	AOC9-GP45S2
Analyte Date:	07/17/02	07/17/02	07/17/02	07/17/02	07/17/02	07/15/02	07/17/02	07/17/02
Analyte Depth (ft)	12.3-14.3	15.9-17.9	19.3-21.3	19.3-21.3	22.4-24.4	28.0-30.0	10.1-12.1	13.1-15.1
VOCs, Low Level by Method 8260B ($\mu g/L$)								
1,2-Dichlorobenzene	12.1	31.6 J	44.5 J	513 J	153	11.3	2.48	6.76
1,2-Dichloroethene, Total	10.0 U	40.0 U	40.0 U	71.2	26.2 J	10.8	0.255 J	1.07
1,3-Dichlorobenzene	1.36 J	7.32 J	3.92 J	40.0 U	6.64 J	1.00 U	1.00 U	1.00 U
1,4-Dichlorobenzene	35.1	111	91.2 J	151 J	109	1.66	15.0	46.2
2-Butanone	50.0 U	200 U	200 U	200 U	200 U	0.945 J	5.00 U	5.00 U
Acetone	50.0 U	200 U	200 U	200 U	200 U	94.5 U	5.00 U	5.00 U
Benzene	10.0 U	4.20 J	40.0 U	12.6 J	5.36 J	2.46	0.238 J	1.18
Carbon disulfide	50.0 U	200 U	200 U	200 U	200 U	5.00 U	5.00 U	5.00 U
Chlorobenzene	315	2150	996 J	1610 J	1630	52.0	118	664
Chloroform	10.0 U	40.0 U	40.0 U	40.0 U	40.0 U	1.00 U	1.00 U	1.00 U
cis-1,2-Dichloroethene	10.0 U	40.0 U	40.0 U	70.0	25.8 J	10.7	0.259 J	1.09
Ethylbenzene	7.31 J	59.6	32.3 J	21.9 J	34.7 J	0.317 J	0.0790 J	0.706 J
m,p-Xylene	3.80 J	197	100	73.0	104	0.880 J	1.00 U	1.00 U
o-Xylene	3.91 J	19.7 J	3.92 J	3.24 J	8.08 J	0.104 J	1.00 U	1.00 U
Tetrachloroethene	10.0 U	40.0 U	40.0 U	5.24 J	40.0 U	0.235 J	0.294 J	0.175 J
Toluene	10.0 U	3.92 J	3.40 J	40.0 U	4.00 J	0.466 J	1.00 U	0.0860 J
Trichloroethene	1.04 J	40.0 U	4.60 J	10.3 J	40.0 U	1.18	0.797 J	0.601 J
Vinyl chloride	5.35 J	40.0 U	11.5 J	13.1 J	6.32 J	1.36	1.00 U	1.00 U
Xylenes, Total	7.68 J	218	105	76.9	113	0.990 J	1.00 U	1.00 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
$\mu g/L$ = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Sample ID:	AOC9-GP45I	AOC9-GP45D1	AOC9-GP45D2	AOC9-GP46S1	AOC9-GP46S2	AOC9-GP46I	AOC9-GP46I/D	AOC9-GP46D1
Analyte Date:	07/17/02	07/17/02	07/16/02	07/17/02	07/17/02	07/17/02	07/17/02	07/17/02
Analyte Depth (ft)	16.2-18.2	19.5-20.5	23.0-25.0	9.4-11.4	12.5-14.5	15.6-17.6	15.6-17.6	18.8-20.8
VOCs, Low Level by Method 8260B (µg/L)								
1,2-Dichlorobenzene	22.4 J	18.2 J	3.97	1.01	5.46 J	7.65 J	17.6 J	15.3
1,2-Dichloroethene, Total	25.0 U	40.0 U	1.00 U	1.00 U	20.0 U	10.0 U	10.0 U	10.0 U
1,3-Dichlorobenzene	2.78 J	2.84 J	0.339 J	0.277 J	20.0 U	10.0 U	10.0 U	10.0 U
1,4-Dichlorobenzene	67.8	70.4	7.31	3.91	29.3	21.4	49.8	42.8
2-Butanone	125 U	200 U	5.00 U	5.00 U	100 U	50.0 U	50.0 U	50.0 U
Acetone	125 U	200 U	24.5	5.00 U	100 U	50.0 U	50.0 U	50.0 U
Benzene	25.0 U	40.0 U	0.156 J	1.00 U	20.0 U	1.12 J	1.99 J	10.0 U
Carbon disulfide	125 U	200 U	5.00 U	5.00 U	100 U	50.0 U	50.0 U	50.0 U
Chlorobenzene	689	902	45.2	40.8	431	309 J	394 J	409
Chloroform	25.0 U	40.0 U	1.00 U	1.00 U	20.0 U	10.0 U	10.0 U	10.0 U
cis-1,2-Dichloroethene	25.0 U	40.0 U	0.136 J	0.0970 J	20.0 U	10.0 U	10.0 U	10.0 U
Ethylbenzene	25.0 U	40.0 U	0.118 J	1.00 U	20.0 U	10.0 U	1.52 J	0.840 J
m,p-Xylene	25.0 U	40.0 U	1.00 U	1.00 U	20.0 U	10.0 U	10.0 U	10.0 U
o-Xylene	25.0 U	40.0 U	1.00 U	1.00 U	20.0 U	10.0 U	10.0 U	10.0 U
Tetrachloroethene	25.0 U	40.0 U	1.00 U	0.808 J	20.0 U	10.0 U	10.0 U	10.0 U
Toluene	25.0 U	40.0 U	0.145 J	1.00 U	20.0 U	10.0 U	0.670 J	10.0 U
Trichloroethene	25.0 U	40.0 U	0.347 J	2.23	20.0 U	1.65 J	1.36 J	1.30 J
Vinyl chloride	25.0 U	40.0 U	1.00 U	1.00 U	20.0 U	10.0 U	10.0 U	10.0 U
Xylenes, Total	25.0 U	40.0 U	1.00 U	1.00 U	20.0 U	10.0 U	10.0 U	10.0 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
µg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Analyte	Sample ID:	AOC9-GP46D2	AOC9-GP47S1	AOC9-GP47S2	AOC9-GP47I	AOC9-GP47D1	AOC9-GP47D2	AOC9-GP48S1	AOC9-GP48S2
Analyte	Date:	07/16/02	07/16/02	07/16/02	07/16/02	07/16/02	07/16/02	07/18/02	07/18/02
Analyte	Depth (ft)	22.5-24.5	7.5-9.5	11.0-13.0	14.0-16.0	18.0-20.0	21.2-23.2	9.4-11.4	12.5-14.5
VOCs, Low Level by Method 8260B (µg/L)									
1,2-Dichlorobenzene		1.44 J	2.07 J	8.74 J	65.4	2.90	1.00 U	0.228 J	4.12
1,2-Dichloroethene, Total		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	0.229 J	1.00 U	0.498 J
1,3-Dichlorobenzene		2.00 U	0.465 J	1.54 J	50.0 U	0.174 J	1.00 U	1.00 U	0.270 J
1,4-Dichlorobenzene		1.06 J	12.0	41.5	82.4	3.51	1.00 U	0.194 J	3.43
2-Butanone		10.0 U	25.0 U	100 U	250 U	5.00 U	5.00 U	5.00 U	5.00 U
Acetone		94.6	60.9	285	352	23.4	10.9	5.00 U	5.00 U
Benzene		2.00 U	5.00 U	3.06 J	50.0 U	1.00 U	1.00 U	1.00 U	0.480 J
Carbon disulfide		10.0 U	25.0 U	100 U	250 U	5.00 U	5.00 U	5.00 U	5.00 U
Chlorobenzene		4.48	98.9	475	1350	25.4	0.458 J	1.00 U	8.54
Chloroform		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	1.00 U	1.00 U
cis-1,2-Dichloroethene		2.00 U	5.00 U	20.0 U	50.0 U	0.0900 J	0.226 J	0.159 J	0.506 J
Ethylbenzene		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	1.00 U	1.00 U
m,p-Xylene		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	1.00 U	1.00 U
o-Xylene		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	1.00 U	1.00 U
Tetrachloroethene		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	0.224 J	0.113 J
Toluene		2.00 U	5.00 U	20.0 U	50.0 U	0.108 J	1.00 U	1.00 U	1.00 U
Trichloroethene		0.448 J	0.950 J	20.0 U	50.0 U	0.861 J	1.00 U	0.702 J	0.393 J
Vinyl chloride		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	1.00 U	1.00 U
Xylenes, Total		2.00 U	5.00 U	20.0 U	50.0 U	1.00 U	1.00 U	1.00 U	1.00 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
µg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Sample ID:	AOC9-GP48I	AOC9-GP48I/D	AOC9-GP48D1	AOC9-GP48D2	AOC9-GP49S1	AOC9-GP49S2	AOC9-GP49I	AOC9-GP49D1
Analyte Date:	07/18/02	07/18/02	07/18/02	07/16/02	07/19/02	07/19/02	07/18/02	07/18/02
Analyte Depth (ft)	15.8-17.8	15.8-17.8	19.3-21.3	22.8-24.8	10.7-12.7	13.4-15.4	16.5-18.5	19.6-21.6
VOCs, Low Level by Method 8260B (µg/L)								
1,2-Dichlorobenzene	11.2	11.5	14.0	10.9	0.233 J	1.00 U	0.493 J	0.163 J
1,2-Dichloroethene, Total	0.549 J	0.539 J	0.638 J	0.604 J	0.315 J	1.00 U	2.20	1.39
1,3-Dichlorobenzene	0.715 J	0.748 J	0.980 J	0.518 J	1.00 U	1.00 U	1.00 U	1.00 U
1,4-Dichlorobenzene	10.4	11.1	14.9	7.49	1.00 U	1.00 U	1.00 U	1.00 U
2-Butanone	5.00 U	5.00 U	5.00 U	1.53 J	5.00 U	5.00 U	5.00 U	5.00 U
Acetone	5.00 U	5.00 U	5.00 U	5.20	5.00 U	5.00 U	5.00 U	5.00 U
Benzene	1.04	1.02	1.23	0.980 J	0.116 J	1.00 U	0.118 J	0.115 J
Carbon disulfide	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Chlorobenzene	30.6	32.1	42.7	13.4	1.00 U	1.00 U	0.555 J	0.163 J
Chloroform	0.0760 J	1.00 U	1.00 U	0.110 J	0.0830 J	1.00 U	1.00 U	1.00 U
cis-1,2-Dichloroethene	0.557 J	0.548 J	0.648 J	0.594 J	0.320 J	1.00 U	2.24	1.41
Ethylbenzene	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
m,p-Xylene	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
o-Xylene	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Tetrachloroethene	1.00 U	1.00 U	0.121 J	1.00 U	9.65	6.21	12.6	15.4
Toluene	0.194 J	0.189 J	0.334 J	0.349 J	0.0930 J	0.0880 J	0.0980 J	0.0800 J
Trichloroethene	0.152 J	0.166 J	0.411 J	0.233 J	8.83	7.35	5.41	5.37
Vinyl chloride	1.00 U	1.00 U	1.00 U	0.188 J	1.00 U	1.00 U	1.00 U	1.00 U
Xylenes, Total	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
µg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Analyte Analyte	Sample ID: Date: Depth (ft)	AOC9-GP49D2 07/19/02 23.2-25.2	AOC9-GP50S1 07/19/02 11.8-13.8	AOC9-GP50S2 07/19/02 14.5-16.5	AOC9-GP50I 07/19/02 17.6-19.6	AOC9-GP50I/D 07/19/02 17.6-19.6	AOC9-GP50D1 07/19/02 20.6-22.6	AOC9-GP50D2 07/19/02 23.5-25.5	AOC9-GP51S1 07/22/02 10.9-12.9
VOCs, Low Level by Method 8260B (µg/L)									
1,2-Dichlorobenzene		0.0720 J	1.00 U	0.164 J	0.117 J	0.105 J	0.444 J	0.204 J	1.02 J
1,2-Dichloroethene, Total		0.300 J	1.00 U	2.44	1.48	1.52	3.21	1.94	2.00 U
1,3-Dichlorobenzene		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	0.244 J
1,4-Dichlorobenzene		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	6.53
2-Butanone		5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	10.0 U
Acetone		11.3	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	9.24	10.0 U
Benzene		0.123 J	1.00 U	0.107 J	1.00 U	1.00 U	0.318 J	0.156 J	2.00 U
Carbon disulfide		5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	10.0 U
Chlorobenzene		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	0.631 J	0.623 J	63.1
Chloroform		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U
cis-1,2-Dichloroethene		0.305 J	1.00 U	2.48	1.50	1.54	3.26	1.97	2.00 U
Ethylbenzene		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U
m,p-Xylene		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U
o-Xylene		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U
Tetrachloroethene		11.4	4.67	9.63	12.2	11.7	11.3	7.70	0.528 J
Toluene		0.141 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U
Trichloroethene		4.55	8.38	8.41	7.42	6.76	6.12	8.64	1.21 J
Vinyl chloride		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U
Xylenes, Total		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
µg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Sample ID:	AOC9-GP51S2	AOC9-GP51I	AOC9-GP51D1	AOC9-GP51D2	AOC9-GP52S1	AOC9-GP52S2	AOC9-GP52I	AOC9-GP52I/D
Analyte Date:	07/22/02	07/22/02	07/22/02	07/19/02	07/23/02	07/23/02	07/22/02	07/22/02
Analyte Depth (ft)	14.0-16.0	16.9-18.9	20.2-22.2	23.0-25.0	12.5-14.5	15.4-17.4	18.4-20.4	18.4-20.4
VOCs, Low Level by Method 8260B (µg/L)								
1,2-Dichlorobenzene	5.20 J	17.5 J	12.8 J	8.77 J	1.25 J	1.40 J	10.5	11.1
1,2-Dichloroethene, Total	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	1.43	1.51
1,3-Dichlorobenzene	1.24 J	2.60 J	2.08 J	10.0 U	0.380 J	0.360 J	2.22	2.26
1,4-Dichlorobenzene	32.6	72.5	59.3	29.3	8.12	8.99	47.1	49.3
2-Butanone	50.0 U	200 U	100 U	50.0 U	12.5 U	25.0 U	5.00 U	5.00 U
Acetone	50.0 U	200 U	100 U	50.0 U	12.5 U	25.0 U	5.00 U	5.00 U
Benzene	10.0 U	40.0 U	20.0 U	1.27 J	2.50 U	5.00 U	1.43	1.51
Carbon disulfide	50.0 U	200 U	100 U	50.0 U	12.5 U	25.0 U	5.00 U	5.00 U
Chlorobenzene	371	881	717	316	60.6	113	796	781
Chloroform	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	1.00 U	1.00 U
cis-1,2-Dichloroethene	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	1.41	1.48
Ethylbenzene	0.930 J	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	2.25	2.51
m,p-Xylene	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	0.275 J	0.295 J
o-Xylene	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	0.272 J	0.286 J
Tetrachloroethene	10.0 U	40.0 U	20.0 U	10.0 U	0.235 J	5.00 U	0.247 J	0.252 J
Toluene	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	0.798 J	0.823 J
Trichloroethene	1.04 J	40.0 U	20.0 U	10.0 U	0.420 J	0.635 J	0.729 J	0.753 J
Vinyl chloride	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	0.946 J	0.978 J
Xylenes, Total	10.0 U	40.0 U	20.0 U	10.0 U	2.50 U	5.00 U	0.544 J	0.578 J

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J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
µg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Sample ID:	AOC9-GP52D1	AOC9-GP52D2	AOC9-GP53S1	AOC9-GP53I	AOC9-GP53D1	AOC9-GP53D2	AOC9-GP54S1	AOC9-GP54I
Analyte Date:	07/22/02	07/22/02	07/24/02	07/24/02	07/23/02	07/23/02	07/23/02	07/23/02
Analyte Depth (ft)	21.4-23.4	24.4-26.4	12.0-14.0	14.7-16.7	17.6-19.6	19.9-21.9	13.4-15.4	15.2-17.2
VOCs, Low Level by Method 8260B (μg/L)								
1,2-Dichlorobenzene	14.4	0.920 J	0.775 J	2.43	6.23	7.64	1.00 U	1.00 U
1,2-Dichloroethene, Total	1.49	5.00 U	0.674 J	1.00	0.714 J	0.382 J	1.00 U	1.00 U
1,3-Dichlorobenzene	2.58	5.00 U	1.00 U	0.176 J	0.332 J	0.582 J	1.00 U	1.00 U
1,4-Dichlorobenzene	61.6	7.14	0.576 J	3.04	8.99	13.6	1.00 U	1.00 U
2-Butanone	5.00 U	25.0 U	5.00 U	5.00 U	4.22 J	10.0 U	5.00 U	5.00 U
Acetone	5.00 U	25.0 U	5.00 U	5.00 U	14.0	10.0 U	5.00 U	5.00 U
Benzene	1.73	5.00 U	1.00 U	0.157 J	1.64 J	2.73	1.00 U	1.00 U
Carbon disulfide	5.00 U	25.0 U	5.00 U	5.00 U	10.0 U	10.0 U	5.00 U	5.00 U
Chlorobenzene	776	86.3	2.71	6.57	47.5	65.8	1.00 U	1.00 U
Chloroform	1.00 U	5.00 U	1.00 U	1.00 U	2.00 U	2.00 U	1.00 U	1.00 U
cis-1,2-Dichloroethene	1.47	5.00 U	0.685 J	1.02	0.702 J	0.376 J	1.00 U	1.00 U
Ethylbenzene	2.43	5.00 U	1.00 U	1.00 U	2.00 U	2.00 U	1.00 U	1.00 U
m,p-Xylene	0.268 J	5.00 U	1.00 U	1.00 U	2.00 U	2.00 U	1.00 U	1.00 U
o-Xylene	0.296 J	5.00 U	1.00 U	1.00 U	2.00 U	2.00 U	1.00 U	1.00 U
Tetrachloroethene	0.228 J	0.390 J	0.139 J	0.0870 J	2.00 U	2.00 U	1.00 U	1.00 U
Toluene	0.606 J	5.00 U	1.00 U	1.00 U	0.328 J	0.170 J	1.00 U	1.00 U
Trichloroethene	0.615 J	0.780 J	0.615 J	0.846 J	0.214 J	2.00 U	1.00 U	1.00 U
Vinyl chloride	0.813 J	5.00 U	1.00 U	1.00 U	0.470 J	0.504 J	1.00 U	1.00 U
Xylenes, Total	0.561 J	5.00 U	1.00 U	1.00 U	2.00 U	2.00 U	1.00 U	1.00 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
μg/L = Micrograms per liter.

Table 4.1.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Screening Samples from Temporary Geoprobe Wells, Former Griffiss Air Force Base, Rome, New York

Analyte Analyte	Sample ID: Date: Depth (ft)	AOC9-GP54I/D 07/23/02 15.2-17.2	AOC9-GP54D1 07/23/02 17.1-19.1	AOC9-GP54D2 07/23/02 18.25-20.25	AOC9-GP55I 07/23/02 16.6-18.6	AOC9-GP56I 07/24/02 17.2-19.2	AOC9-GP57I 07/24/02 20.4-22.4
VOCs, Low Level by Method 8260B (µg/L)							
1,2-Dichlorobenzene		1.00 U	1.00 U	1.00 U	1.00 U	2.92 J	1.15
1,2-Dichloroethene, Total		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	0.188 J
1,3-Dichlorobenzene		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	0.195 J
1,4-Dichlorobenzene		1.00 U	1.00 U	1.00 U	1.00 U	14.4	0.665 J
2-Butanone		5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	5.00 U
Acetone		5.00 U	5.00 U	5.00 U	3.27 J	25.0 U	5.00 U
Benzene		1.00 U	1.00 U	0.187 J	1.00 U	5.00 U	0.549 J
Carbon disulfide		5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	0.201 J
Chlorobenzene		1.00 U	0.181 J	1.00 U	1.00 U	161	25.0
Chloroform		1.00 U	1.00 U	0.0730 J	1.00 U	5.00 U	1.00 U
cis-1,2-Dichloroethene		1.00 U	1.00 U	0.108 J	1.00 U	5.00 U	0.191 J
Ethylbenzene		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
m,p-Xylene		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
o-Xylene		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
Tetrachloroethene		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
Toluene		1.00 U	1.00 U	0.0780 J	0.104 J	5.00 U	0.149 J
Trichloroethene		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
Vinyl chloride		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
Xylenes, Total		1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U

Key:

AOC9 = Area of Concern 9.
/D = Duplicate sample.
D = Deep Geoprobe location.
ft = Feet.
GP = Geoprobe location.
I = Intermediate Geoprobe location.
J = Estimated value.
U = Non detected (quantitation limit listed).
S = Shallow Geoprobe location.
µg/L = Micrograms per liter.

Table 4.2-1
YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, FREQUENCY OF DETECTION AND EXCEEDANCE OF SCREENING CRITERIA FOR SOIL BORING & TEST PIT SUBSURFACE SOIL SAMPLES
FORMER GRIFFISS AFB, ROME, NEW YORK

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
VOCs by Method 8260B (µg/Kg)				
Acetone	2/7	5.07 J – 40.3 J	0/7	200
2-Butanone	1/7	3.07 J	0/7	300
Tetrachloroethene	1/7	1.51 J	0/7	1400
Trichloroethene	1/7	1.66 J	0/7	700
SVOCs by Method 8270C (µg/Kg)		**No SVOCs detected.**		
PCBs by Method 8082 (µg/Kg)		**No PCBs detected.**		
Pesticides by Method 8081A (µg/Kg)				
4,4'-DDT	1/7	1.47 J	0/7	2100
Total Petroleum Hydrocarbons by Method 8015B (mg/L)			**No TPHs detected.**	
Metals/Mercury, by Method 6010B/7471A (mg/Kg)				
Aluminum	4/7	4660 - 11700	0/7	18306
Antimony	4/7	0.749 J - 4.94 J	6/7	ND
Arsenic	2/7	0.722 J - 3.35 J	0/7	7.5
Barium	4/7	12.9 - 50.1	0/7	300
Beryllium	1/7	0.264 J - 0.298 J	2/7	0.16
Calcium	4/7	1320 - 29100	3/7	23821
Chromium	4/7	5.80 - 13.0	1/7	10
Cobalt	4/7	2.34 J - 7.73 J	0/7	19
Copper	4/7	6.79 - 28.2	1/7	25
Iron	4/7	10300 - 26900	6/7	2000
Lead	4/7	3.16 - 13.8	0/7	36
Magnesium	4/7	932 - 4410	0/7	7175
Manganese	4/7	182 J - 1410 J	0/7	2106
Mercury	2/7	0.0154 J - 0.0439	0/7	0.1
Nickel	4/7	3.38 - 15.5	1/7	13
Potassium	4/7	268 - 1010	0/7	1993
Sodium	4/7	19.5 J - 135 J	0/7	259
Thallium	4/7	0.871 J - 5.66 J	6/7	ND
Vanadium	4/7	4.97 J - 15.2	0/7	36
Zinc	4/7	24.4 - 65.1	6/7	20

Key:

J = Estimated value.
ND = Not Detected.
Mg/Kg = Milligrams per kilogram.
Mg/L = Milligrams per litre.
PCBs = Polychlorinated biphenyls.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.
µg/Kg = Micrograms per kilogram.

Table 4.2-2
Year 2002 SI Additional Sampling, AOC 9
Analytical Data Summary of Positive Hits for Subsurface Soil Samples, Former Griffiss Air Force Base, Rome, New York

Analyte	Most Stringent Criteria	Sample ID: AOC9-SS01(11_5-16) Date: 07/24/02	AOC9-SS01(11_5-16)/D 07/24/02	AOC9-SS01(20-24) 07/24/02	AOC9-SS01(4-6) 07/24/02
VOCs by Method 8260B (µg/Kg)					
2-Butanone	300	11.3 U	11.3 U	12.2 U	11.7 U
Acetone	200	11.3 U	11.3 U	12.2 U	11.7 U
Tetrachloroethene	1400	5.65 U	5.64 U	6.09 U	5.83 U
Trichloroethene	700	5.65 U	5.64 U	6.09 U	5.83 U
SVOCs by Method 8270C (µg/Kg)	-	No SVOCs detected			
PCBs by Method 8082 (µg/Kg)	-	No PCBs detected			
Pesticides by Method 8081A (µg/Kg)					
4,4'-DDT	2100	3.98 U	4.34 U	4.52 U	4.59 U
Total Petroleum Hydrocarbons by Method 8015B (mg/kg)		N/A	N/A	N/A	N/A
Metals/Mercury, by Method 6010B/7471A (mg/Kg)					
Aluminum	18306	5080	4920	4660	11700
Antimony	ND	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	4.9	13.6 U	3.35 J	1.48 J	12.5 U
Barium	71	18.8	17.9	12.9	50.1
Beryllium	0.16	2.73 U	2.49 U	1.23 U	2.50 U
Calcium	23821	29100	27400	25000	3800
Chromium	10	6.83 J	6.55 J	5.80	[illegible]
Cobalt	19	3.84 J	3.67 J	3.05 J	7.73 J
Copper	25	18.9	16.5	13.2	[illegible]
Iron	2000	15300	12300	11400	[illegible]
Lead	36	4.40 J	3.66 J	3.16	13.8
Magnesium	7175	2790	2780	2570	4410
Manganese	2106	545 J	522 J	300 J	1410 J
Mercury	0.1	0.0369 U	0.0386 U	0.0417 U	0.0154 J
Nickel	13	9.41 J	7.73 J	6.76	[illegible]
Potassium	1993	1010	816	809	920
Sodium	259	135 J	69.5 J	51.5 J	102 J
Thallium	ND	5.66 J	4.70 J	2.49 J	[illegible]
Vanadium	36	5.63 J	4.97 J	5.30	15.2
Zinc	20	56.6	34.7	27.2	[illegible]

Notes: Shaded results exceed the most stringent screening criterion. For a full list of screening criteria see Appendix G.

Key:

AOC 9 = Area of Concern 9.
/D = Duplicate sample.
J = Estimated value.
mg/Kg = Milligrams per kilogram.
N/A = Not analyzed for this parameter.
NA = No criteria available.
PCBs = Polychlorinated biphenyls.
SS = Soil sample.
SVOC = Semivolatile organic compound.
TP = Test pit sample.
U = Not detected (practical quantitation limit listed).
VOC = Volatile organic compound.
µg/Kg = Micrograms per kilogram.

Table 4.2-2
Year 2002 SI Additional Sampling, AOC 9
Analytical Data Summary of Positive Hits for Subsurface Soil Samples, Former Griffiss Air Force Base, Rome, New York

Analyte	Most Stringent Criteria	Sample ID: Date:	AOC9-SS02(10-10_5) 07/24/02	AOC9-SS02(2-4) 07/24/02	AOC9-SS02(6-8) 07/24/02	AOC9-TP04 07/19/02	AOC9-TP04/D 07/19/02
VOCs by Method 8260B (μg/Kg)							
2-Butanone	300		10.3 U	10.2 U	10.6 U	3.07 J	11.8 U
Acetone	200		10.3 U	10.2 U	6.19 J	40.3 J	5.07 J
Tetrachloroethene	1400		5.13 U	5.10 U	1.51 J	5.71 U	5.88 U
Trichloroethene	700		5.13 U	5.10 U	1.66 J	5.71 U	5.88 U
SVOCs by Method 8270C (μg/Kg)	-		N/A	N/A	N/A	None detected	
PCBs by Method 8082 (μg/Kg)	-		N/A	N/A	N/A	None detected	
Pesticides by Method 8081A (μg/Kg)							
4,4´-DDT	2100		N/A	N/A	N/A	1.47 J	4.63 U
Total Petroleum Hydrocarbons by Method 8015B (mg/kg)			N/A	N/A	N/A	None detected	
Metals/Mercury, by Method 6010B/7471A (mg/Kg)							
Aluminum	18306		N/A	N/A	N/A	7230	7650
Antimony	ND		N/A	N/A	N/A	[illegible]	[illegible]
Arsenic	4.9		N/A	N/A	N/A	0.722 J	1.33 J
Barium	71		N/A	N/A	N/A	28.8	26.2
Beryllium	0.16		N/A	N/A	N/A	[illegible]	[illegible]
Calcium	23821		N/A	N/A	N/A	1320	1330
Chromium	10		N/A	N/A	N/A	6.18	6.57
Cobalt	19		N/A	N/A	N/A	2.34 J	2.52
Copper	25		N/A	N/A	N/A	6.79	9.38
Iron	2000		N/A	N/A	N/A	[illegible]	[illegible]
Lead	36		N/A	N/A	N/A	8.72	7.73
Magnesium	7175		N/A	N/A	N/A	932	1380
Manganese	2106		N/A	N/A	N/A	182 J	251 J
Mercury	0.1		N/A	N/A	N/A	0.0439	0.0368 J
Nickel	13		N/A	N/A	N/A	3.38	4.46
Potassium	1993		N/A	N/A	N/A	268	271
Sodium	259		N/A	N/A	N/A	27.0 J	19.5 J
Thallium	ND		N/A	N/A	N/A	[illegible]	[illegible]
Vanadium	36		N/A	N/A	N/A	12.8	13.8
Zinc	20		N/A	N/A	N/A	[illegible]	[illegible]

Notes: Shaded results exceed the most stringent screening criterion. For a full list of screening criteria see Appendix G.

Key:

AOC 9 = Area of Concern 9.
/D = Duplicate sample.
J = Estimated value.
mg/Kg = Milligrams per kilogram.
N/A = Not analyzed for this param
NA = No criteria available.
PCBs = Polychlorinated biphenyls.
SS = Soil sample.
SVOC = Semivolatile organic compound.
TP = Test pit sample.
U = Not detected (practical quantitation limit listed).
VOC = Volatile organic compound.
μg/Kg = Micrograms per kilogram.

Table 4.3-1

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for Surface Water Samples, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
TAL Metals - SW6010B/7471A/7470A (µg/L)				
Aluminum	4/4	131-172	4	87
Barium	4/4	12.3-12.8	0	1000
Calcium	4/4	20300-27500	0	-
Copper	4/4	3.06-4.19	0	6.12-7.24
Iron	4/4	588-757	4	300
Lead	1/4	2.13	1	1.54-1.92
Magnesium	4/4	3160-3450	0	-
Manganese	4/4	140-169	4	50
Nickel	1/4	5.27	0	35.65-42.15
Potassium	4/4	1490-1730	0	-
Sodium	4/4	6170-6710	0	-
Zinc	4/4	4.83-9.76	0	56.54-66.9
Semivolatiles - 525.2 (µg/L)				
Bis(2-ethylhexyl)phthalate	4/4	0.57-2.1	4	0.6
Diethylphthalate	4/4	5.4-6.3	0	23000
Phenanthrene	4/4	0.69-0.8	0	5
Volatiles - 524.2 (µg/L)				
1,2-Dichlorobenzene	1/4	0.406	0	5
Chlorobenzene	4/4	0.236-0.85	0	5

Key:

J = Estimated concentration.
µg/L = Micrograms per liter.
WSA = Weapons Storage Area.

Table 4.3-2
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR THE SURFACE WATER SAMPLES, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	MOST STRINGENT CRITERIA
Sample Date:	5/10/2000	5/10/2000	5/10/2000	5/10/2000	5/10/2000	
PARAMETER Depth (ft):	-	-	-	-	-	
Test: Hardness - EPA 130.2		**Units: mg/L**				
Hardness (As CaCO3)	64	66	66	78	66	-
Test: Semivolatiles - 525.2		**Units: µg/L**				
Bis(2-ethylhexyl)phthalate	1.4 J	0.72 J	0.57 J	1.8 J	2.1 J	0.6
Diethylphthalate	5.7 J	5.8 J	5.4 J	6.3 J	5.8 J	23000
Phenanthrene	0.8	0.77 J	0.74	0.76	0.69	5
Test: Metals - SW6010B/7471A		**Units: µg/L**				
Aluminum	172	152	131	149	162	87
Barium	12.4 J	12.8 J	12.3 J	12.3 J	12.3 J	1000
Calcium	22000	20300	21400	27500	23000	-
Copper*	3.06 J					6.12
		3.07 J	20 U			6.28
				3.16 J		7.24
					4.19 J	6.28
Iron	712	655	588	650	757	300
Lead*	5 UJ					1.54
		5 UJ	5 UJ			1.60
				5 UJ		1.92
					2.13 J	1.60
Magnesium	3160	3200	3160	3310	3450	-
Manganese	169	163	154	140	158	50
Nickel*	20 U					35.65
		5.27 J	20 U			36.59
				20 U		42.15
					20 U	36.59
Potassium	1580	1640	1490	1730	1430	-
Sodium	6360	6410	6590	6170	6710	-
Zinc*	5.02 J					56.55
		5.16 J	8.41 J			58.04
				4.83 J		66.90
					9.76 J	58.04

For more details on the screening criteria see Appendix G

Source: Ecology and Environment,

Table 4.3-2

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR THE SURFACE WATER SAMPLES, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	MOST STRINGENT CRITERIA
Sample Date:	5/10/2000	5/10/2000	5/10/2000	5/10/2000	5/10/2000	
PARAMETER Depth (ft):	-	-	-	-	-	
Test: Volatiles - 524.2		**Units: µg/L**				
1,2-Dichlorobenzene	20 U	0.406 J	0.5 U	0.5 U	0.5 U	5
Chlorobenzene	0.85 J	0.835	0.816	0.236 J	0.268 J	5

Key:

Qualifiers:

J = estimated

U = not detected

Units:

mg/L = milligrams per liter

µg/L = micrograms per liter

WSA = Weapons Storage Area

Screening:

☐ Result above the most stringent criterion. For a full list of criteria refer to Appendix G.

* The standards for copper, lead, nickel, and zinc are calculated based on the water hardness; therefore the concentrations of these metals are compared to sample-specific standards for each sample.

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For more details on the screening criteria see Appendix G

Source: Ecology and Environment, Inc., August 2000

Table 4.3-3

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for On-site Laboratory Surface Water Samples, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration
Volatiles – 8021B (µg/L)		
Benzene	1/8	Trace
n-Butylbenzene	1/8	4.1
Chlorobenzene	4/8	2.2 - 41.3
1,2-Dichlorobenzene	2/8	Trace – 1.4
1,4-Dichlorobenzene	2/8	Trace – 6.0
cis-1,2-Dichloroethene	3/8	Trace – 9.7
Ethylbenzene	1/8	Trace
Isopropylbenzene	1/8	Trace
Tetrachloroethene	3/8	Trace – 3.0
Toluene	1/8	8.6
Trichloroethene	3/8	Trace – 4.1
1,3,5-Trimethylbenzene	2/8	Trace
1,2,4-Trimethylbenzene	1/8	Trace

Key:

µg/L	= Micrograms per liter.
WSA	Weapons Storage Area.

Table 4.3-4
YEAR 2000 SUPPLEMENTAL INVESTIGATION
AOC 9: WSA LANDFILL
ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF SURFACE WATER SAMPLES FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-SW13	AOC9-SW14	AOC9-SW15	AOC9-SW16	AOC9-SW17	AOC9-SW18	AOC9-SW18 DUP	AOC9-SW19	AOC9-SW20
		Sample Date:	3/27/2000	3/27/2000	3/27/2000	3/29/2000	5/2/2000	5/2/2000	5/2/2000	5/2/2000	5/2/2000
		Depth (ft):									
Test: VOCs - 8021B	Units	PQL									
Benzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	4.1	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	41.3	10.6	ND	2.2	3.1	8.3	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	Trace	1.4	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	6.0	ND	ND	Trace	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/L	1	2.3	ND	9.7	ND	ND	Trace	1.1	ND	ND
Ethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	Trace	ND	1.9	ND	ND	3.0	3.4	ND	ND
Toluene	µg/L	1	ND	ND	ND	ND	8.6	ND	ND	ND	ND
Trichloroethene	µg/L	1	Trace	ND	4.1	ND	ND	2.3	2.5	ND	ND
1,2,4-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	Trace	ND	ND	ND	ND

Key:

ft = Feet.
ID = Identification.
ND = Not detected.

PQL = Practical Quantitation Limit.
SI = Supplemental Investigation.
WSA = Weapons Storage Area.

Source: Ecology and Environment, Inc. 2000

Table 4.4.1-1

Year 2000 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for Sediment Samples, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
TAL Metals - SW6010B/7471A/7470A (mg/Kg)				
Aluminum	4/4	3120-8600	0	-
Antimony	4/4	0.645-1.14	0	2
Arsenic	4/4	1.78-3.53	0	6
Barium	4/4	18.3-48.7	0	-
Beryllium	4/4	0.239-0.536	0	-
Cadmium	4/4	0.994-2.08	4	0.6
Calcium	4/4	2030-4450	0	-
Chromium	4/4	5.09-13.0	0	26
Cobalt	4/4	3.17-7.21	0	-
Copper	4/4	8.81-19.1	4	16
Iron	4/4	9930-21200	1	20000
Lead	4/4	6.90-13.7	0	31
Magnesium	4/4	1420-3240	0	-
Manganese	4/4	367-3290	3	460
Mercury	4/4	0.0623-0.274	1	0.15
Nickel	4/4	6.81-17.9	1	16
Potassium	4/4	331-735	0	-
Selenium	4/4	2.43-5.36	0	-
Thallium	1/4	1.15	0	-
Vanadium	4/4	6.84-17.7	0	-
Zinc	4/4	28.5-51.9	0	120
Pesticides - SW 8081A (µg/Kg)				
Heptachlor epoxide	2/4	1.72-2.28	2	0.0127
Semivolatiles - SW 8270C (µg/Kg)				
Fluoranthene	1/4	84.5-125	0	600
Phenanthrene	1/4	79.0	0	240
Pyrene	1/4	75.0-100	0	665
Volatiles - SW 8260B (µg/Kg)				
1,2-Dichlorobenzene	1/4	78.9-129	0	190.8-298.8[a]
1,4-Dichlorobenzene	1/4	20.3-32.2	0	190.8-298.8[a]
2-Butanone	1/5	15.0	0	-
Acetone	4/5	9.87-58.5	0	-
Chlorobenzene	1/5	157-284	2	55.65-87.15[a]
Toluene	1/5	4.06	0	1220

[a] The standards for these compounds were calculated based on sample-specific total organic carbon; therefore a range for the criteria is presented based on actual sample concentrations.

Key:

J = Estimated concentration.
mg/Kg = Milligrams per kilogram.
µg/Kg = Micrograms per kilogram.
WSA = Weapons Storage Area.

TABLE 4.4.1-2
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING CRITERIA FOR SEDIMENT SAMPLES FROM FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID: Sample Date: PARAMETER Depth (ft):	AOC9-SD09 5/10/2000 -	AOC9-SD10 5/10/2000 -	AOC9-SD10/D 5/10/2000 -	AOC9-SD11 5/10/2000 -	AOC9-SD12 5/10/2000 -	Most Stringent Criteria
Test: Total Organic Carbon		Units: mg/kg				
Total Organic Carbon	33800	15900	24900	54600	34000	-
Test: Pesticides - SW8081A		Units: µg/kg				
Heptachlor epoxide	2.98 U		3.38 U	3.72 U		-
		2.28 J				0.0127 [a]
					1.72 J	0.044 [a]
Test: Semivolatiles - SW8270C		Units: µg/kg				
Fluoranthene	499 U	125 J	84.5 J	640 U	586 U	600
Phenanthrene	499 U	79.0 J	602 U	640 U	586 U	240
Pyrene	499 U	100 J	75.0 J	640 U	586 U	665
Test: Metals - SW6010B/7471A		Units: µg/kg				
Aluminum	8600	3120	6890	6220	7010	-
Antimony	1.08 J	0.645 J	1.14 J	0.932 J	0.826 J	2
Arsenic	3.08	1.78	2.79	3.53	3.18	6
Barium	40.7	18.3	33.7	48.7	40.1	-
Beryllium	0.536 J	0.239 J	0.458 J	0.420 J	0.535 J	-
Cadmium	1.56	0.994	1.78	2.08	1.77	0.6
Calcium	3620	2030	3830	4450	4100	-
Chromium	13.0	5.09	10.4	9.85	10.7	26
Cobalt	6.86	3.17	6.29	7.21	6.59	-
Copper	16.6	8.81	18.3	17.6	19.1	16
Iron	15300	9930	17800	21200	17400	20000
Lead	13.7	6.90	12.2	11.8	13.2	31
Magnesium	3240	1420	2970	2990	2930	-
Manganese	689	367	382	3290	632	460
Mercury	0.274	0.0623	0.0638	0.0699	0.144	0.15
Nickel	14.1	6.81	14.1	17.9	14.1	16.0
Potassium	735	331	636	665	675	-
Selenium	4.40	2.43	5.03	5.36	4.54	-
Thallium	1.38 U	1.35 U	1.69 U	1.15 J	1.78 U	-
Vanadium	17.7	6.84	13.8	12.7	14.7	-
Zinc	44.5	28.5	49.0	44.9	51.9	120.0

For more details on the screening criteria see Appendix G

Source: Ecology and Environment, Inc., August 2000

TABLE 4.4.1-2
YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING CRITERIA FOR SEDIMENT SAMPLES FROM FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-SD09 5/10/2000 -	AOC9-SD10 5/10/2000 -	AOC9-SD10/D 5/10/2000 -	AOC9-SD11 5/10/2000 -	AOC9-SD12 5/10/2000 -	Most Stringent Criteria
Test: Volatiles - SW8260C		Units: µg/kg				
1,2-Dichlorobenzene	7.1 U			8.91 U	8.59 U	-
		78.9				190.8[a]
			129			298.8[a]
1,4-Dichlorobenzene	7.1 U			8.91 U	8.59 U	-
		20.3				190.8[a]
			32.2			298.8[a]
2-Butanone	14.2 U	17 U	15.0 J	17.8 U	17.2 U	-
Acetone	15.8	32.7	58.5	50.7	9.87 J	-
Chlorobenzene	7.1 U			8.91 U	8.59 U	-
		157				55.65[a]
			284			87.15[a]
Toluene	7.1 U	8.48 U		8.91 U	8.59 U	-
			4.06 J			1220[a]

Qualifiers:

J = estimated

U = not detected

Units:

mg/kg = milligrams per kilogram

µg/kg= micrograms per kilogram

WSA = Weapons Storage Area

Screening:

☐ Result above the most stringent criterion. For a full list of criteria refer to Appendix G.

[a] The standards for heptachlor epoxide, 1,2-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, and toluene were calculated based on the total organic carbon concentration; therefore the concentrations of these compounds are compared to sample-specific standards for each sample. The criteria were calculated only for the samples with positive hits of these compounds

For more details on the screening criteria see Appendix G

Source: Ecology and Environment, Inc., August 2000

Table 4.4.2-1

Year 2002 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for Sediment Samples, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
Volatiles by Method 8260B (µg/Kg)				
2-Butanone	2/2	4.17 J – 7.01 J	0/3	NA
Semivolatiles by Method 8270C (µg/Kg)				
Pyrene	1/2	44.7 J	1/2	0.665
PCBs by Method 8082 (µg/Kg)		**No PCBs detected.**		
Pesticides by Method 8081A (µg/Kg)				
4,4' - DDD	1/2	0.801 J – 1.14 J	1/2	0.002
4,4' - DDT	1/2	0.743 J	1/2	0.001
Heptachlor	1/2	0.805 J – 0.960 J	1/2	0.0127
Metals/Mercury, by Method 6010B/7471A (mg/Kg)				
Aluminum	2/2	6320 - 9580	0/2	NA
Antimony	1/2	2.51 J	1/2	2
Arsenic	2/2	2.00 J – 2.65 J	0/2	6
Barium	2/2	24.5 – 43.9	0/2	NA
Beryllium	1/2	0.720 J	0/2	NA
Calcium	2/2	2570 - 4060	0/2	NA
Chromium	2/2	8.05 – 12.6	0/2	26
Cobalt	2/2	4.48 J – 6.98	0/2	NA
Copper	2/2	13.4 – 20.1	2/2	16
Iron	2/2	14600 - 17500	0/2	20000
Lead	2/2	6.86 J – 16.2 J	0/2	31
Magnesium	2/2	2150 - 3350	0/2	NA
Manganese	2/2	377 J – 477 J	1/2	460
Nickel	2/2	8.09 – 13.3	0/2	16
Potassium	2/2	737 - 1100	0/2	NA
Sodium	2/2	36.2 J – 57.8 J	0/2	NA
Vanadium	2/2	7.67 J – 13.4	0/2	NA
Zinc	2/2	33.7 – 54.3	0/2	120

Key:

J = Estimated value.
ND = Not Detected.
Mg/Kg = Milligrams per kilogram.
Mg/L = Milligrams per litre.
PCBs = Polychlorinated biphenyls.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.
µg/Kg = Micrograms per kilogram.

Table 4.4.2-2
Year 2002 SI Additional Sampling, AOC 9
Analytical Data Summary of Positive Hits for Sediment Samples, Former Griffiss Air Force Base, Rome, New York

Analyte	Most Stringent Criteria	Sample ID: Date:	AFFF-SD01 07/15/02	AFFF-SD01/D 07/15/02	AFFF-SD02 07/15/02
VOCs by Method 8260B (µg/Kg)					
2-Butanone	NA		7.01 J	6.53 J	4.17 J
SVOCs by Method 8270C (µg/Kg)					
Pyrene	0.665		467 U	414 U	447 J
PCBs by Method 8082 (µg/Kg)					
Pesticides by Method 8081A (µg/Kg)					
4,4´-DDD	0.002		1.14 J	0.801 J	3.32 U
4,4´-DDT	0.001		0.743 J	5.25 U	4.42 U
Heptachlor	0.0127		0.805 J	0.960 J	3.32 U
Metals/Mercury, by Method 6010B/7471A (mg/Kg)					
Aluminum	NA		9580	6320	6760
Antimony	2		3.23 U	2.66 U	2.51 J
Arsenic	6		2.00 J	2.65 J	2.51 J
Barium	NA		43.9	26.8	24.5
Beryllium	NA		0.720 J	1.33 U	2.15 U
Calcium	NA		2600	4060	2570
Chromium	26		12.6	8.05	8.32 J
Cobalt	NA		6.98	4.54 J	4.48 J
Copper	16		20.1	13.4	18.4
Iron	20000		17500	17400	14600
Lead	31		16.2 J	6.86 J	8.16
Magnesium	NA		3350	2150	2770
Manganese	460		390 J	377 J	477 J
Nickel	16		13.3	8.09	9.89
Potassium	NA		1100	769	737
Sodium	NA		36.2 J	57.8 J	52.3 J
Vanadium	NA		13.4	8.46	7.67 J
Zinc	120		54.3	33.7	46.0

Note: Shaded results exceed the most stringent screening criterion. For a full list of screening criteria see Appendix G.

Key:

AFFF = Aqueous Film Forming Foam.
AOC 9 = Area of Concern 9.
/D = Duplicate sample.
J = Estimated value.
mg/Kg = Milligrams per kilogram.
NA = No criteria available.
PCBs = Polychlorinated biphenyls.
SD = Sediment sample.
SVOC = Semivolatile organic compound.
U = Not detected (practical quantitation limit listed).
VOC = Volatile organic compound.
µg/Kg = Micrograms per kilogram.

Table 4.5.1-1

YEAR 2000 SUPPLEMENTAL INVESTIGATION
AOC 9: WSA LANDFILL
TEST PIT EXCAVATION SUMMARY, FORMER GRIFFISS AFB, ROME, NEW YORK

Test Pit Number	Date Excavated	Total Length (feet)	Total Depth (feet)	Depth Sample Collected (feet)	Observations
AOC9-TP01	3/20/00	25	6.0	10	Dark brown silty sand with large cobbles. Sheen observed on water flowing into pit (no OVA readings or odor). Re-excavated and sampled in 2002 (see log form in Appendix H).
AOC9-TP02	3/20/00	15	6.5	6.5	Medium brown silty sand with abundant cobbles.
AOC9-TP03	3/21/00	25	5.0	5.0	Sand, silt, and clay with abundant cobbles. Location had standing surface water; therefore, the test pit continuously filled with water during the excavation. Oily sheen noted to depth of 5 feet, but no OVA readings or odor. Re-excavated and sampled in 2002 (see log form in Appendix H).
AOC9-TP04	3/21/00	25	6.0	6.0	Medium brown to light brown silty sand with abundant cobbles. Water table with sheenencountered at a depth of 4 feet. Trace amounts of miscellaneous trash and glass debris. Re-excavated and sampled in 2002 (see log form in Appendix H).
AOC9-TP05	3/20/00	20	10.0	9.5	Medium to dark brown silty sand with dark stratifications, 5 to 10% cobbles, and trace amounts of miscellaneous debris.
AOC9-TP06	3/21/00	25	7.0	6.5	Medium to dark brown silty sand with abundant cobbles. Gray mottled clay lens between depth of 4 to 5 feet. Trace amounts of metal debris at 5 feet. Water table with sheen encountered at 7 feet. Sulfur odor noted in pit. Re-excavated and sampled in 2002 (see log form in Appendix H).
AOC9-DTP01	3/21/00	25	8.0	—	Dark to medium brown silty sand with abundant cobbles. Miscellaneous debris at depth of 2.5 to 3 feet (brick and concrete fragments).
AOC9-DTP02	3/22/00	50	6.0	—	Dark to medium brown silty sand with abundant cobbles. Asphalt encountered from former road. Trace amounts of miscellaneous debris (ceramic brick, slag, glass, metal). Water table encountered at depth of 6 feet.
AOC9-DTP03	3/21/00	30	5.0	—	Medium to dark brown silt, sand, and clay with abundant cobbles. Water table encountered at depth of 5 feet. Trace amounts of glass and brick fragments encountered.
AOC9-DTP04	3/22/00	30	5.0	—	Dark brown/gray silt, clay, and sand with abundant cobbles. Water table encountered at 3 feet. Sheen noted on water entering test pit. Miscellaneous debris encountered (glass, wire). Re-excavated and sampled in 2002 (see log form in Appendix H).
AOC9-DTP05	3/22/00	78	7	—	Dark to medium brown silty sand with trace amounts of metal debris. Groundwater was not encountered.
AOC9-DTP06	3/22/00	30	8.5	—	Dark to medium brown silty sand with abundant cobbles. Miscellaneous debris encountered (glass, cinder blocks, asphalt).

Key:

OVA = Organic vapor analyzer.
WSA = Weapons Storage Area.

Table 4.5.1-2

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, FREQUENCY OF DETECTION AND EXCEEDANCE OF SCREENING CRITERIA FOR SOIL SAMPLES FORMER GRIFFISS AFB, ROME, NEW YORK

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
TAL Metals - SW6010B/7471A/7470A (mg/Kg)				
Aluminum	6/6	3360-7260	0	18306
Arsenic	6/6	0.905-2.39	0	3.8
Barium	6/6	10.0-28.1	0	300
Beryllium	6/6	0.158-0.355	0	0.65
Cadmium	6/6	1.41-2.17	5	1
Calcium	6/6	879-18300	0	23821
Chromium	6/6	4.81-9.51	0	22.6
Cobalt	6/6	2.84-5.66	0	30
Copper	6/6	8.57-21.0	0	43
Iron	6/6	8220-18300	0	47350
Lead	6/6	1.45-5.34	0	36.2
Magnesium	6/6	1640-3520	0	7175
Manganese	6/6	142-546	0	2106
Nickel	6/6	6.30-12.7	0	46
Potassium	6/6	485-869	0	1993
Selenium	1/6	0.651	0	2
Silver	1/6	0.284	0	1.1
Sodium	3/6	28.5-42.8	0	259
Vanadium	6/6	6.53-13.5	0	150
Zinc	6/6	16.4-43.6	0	120
Pesticides - SW 8081A (µg/Kg)				
Aldrin	1/6	1.26	0	40
alpha-BHC	1/6	1.05	0	100
Dieldrin	1/6	59.4	1	40
Endrin ketone	1/6	3.20	0	-
Semivolatiles - SW 8270C (µg/Kg)				
2-Methylnaphthalene	1/6	219	0	36400
Acenaphthene	1/6	579	0	50000
Anthracene	1/6	1440	0	6800
Benz(a)anthracene	2/6	163-2170	1	224
Benzo(a)pyrene	2/6	87.3-1400	2	61
Benzo(b)fluoranthene	2/6	161-1510	1	1100
Benzo(g,h,i)perylene	1/6	520	0	50000
Benzo(k)fluoranthene	2/6	133-1800	1	1100
Carbazole	1/6	536	0	11000
Chrysene	2/6	168-1900	1	400
Dibenz(a,h)anthracene	1/6	225	1	14
Dibenzofuran	1/6	520	0	6200
Fluoranthene	2/6	280-6110	0	50000
Fluorene	1/6	741	0	50000
Indeno(1,2,3-cd)pyrene	1/6	283	0	3200
Naphthalene	1/6	601	0	13000
Phenanthrene	2/6	116-7110	0	50000
Pyrene	2/6	308-5390	0	50000

Table 4.5.1-2

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, FREQUENCY OF DETECTION AND EXCEEDANCE OF SCREENING CRITERIA FOR SOIL SAMPLES FORMER GRIFFISS AFB, ROME, NEW YORK

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
Volatiles - SW 8260B (µg/Kg)				
1,2-Dichlorobenzene	1/6	11.1	0	7900
1,4-Dichlorobenzene	1/6	4.74	0	8500
2-Butanone	1/6	3.80	0	300
Acetone	2/6	9.45-18.8	0	200
Chlorobenzene	1/6	2.37	0	1700

Key:

mg/Kg = Milligrams per kilogram.
µg/Kg = Micrograms per kilogram.
WSA = Weapons Storage Area

Table 4.5.1-3

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR SOIL SAMPLES, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-TP01 3/20/00 0 – 10	AOC9-TP02 3/20/00 0 – 6.5	AOC9-TP03 3/21/00 0 – 6	AOC9-TP04 3/21/00 0 – 6	AOC9-TP05 3/21/00 0 – 10	Most Stringent Criteria
Test: Pesticides – SW 8081A (μg/kg)						
Aldrin	1.27 U	1.1 U	1.26	1.13 U	1.19 U	40
alpha-BHC	1.27 U	1.1 U	1.05 J	1.13 U	1.19 U	100
Dieldrin	2.53 U	2.19 U	59.4	2.25 U	2.39 U	40
Endrin ketone	2.53 U	2.19 U	3.20	2.25 U	2.39 U	—
Test: Semivolatiles – SW 8270C (μg/kg)						
2-Methylnaphthalene	404 U	402 U	219 J	361 U	396 U	36400
Acenaphthene	404 U	402 U	579	361 U	396 U	50000
Anthracene	404 U	402 U	1440	361 U	396 U	6800
Benz(a)anthracene	404 U	402 U	2170 J	163 J	396 U	224
Benzo(a)pyrene	404 U	402 U	1400	87.3 J	396 U	61
Benzo(b)fluoranthene	404 U	402 U	1510 J	161 J	396 U	1100
Benzo(g,h,i)perylene	404 U	402 U	520	361 U	396 U	50000
Benzo(k)fluoranthene	404 U	402 U	1800	133 J	396 U	1100
Carbazole	404 U	402 U	536	361 U	396 U	11000
Chrysene	404 U	402 U	1900 J	168 J	396 U	400
Dibenz(a,h)anthracene	404 U	402 U	225 J	361 U	396 U	14
Dibenzofuran	404 U	402 U	520	361 U	396 U	6200
Fluoranthene	404 U	402 U	6110	280 J	396 U	50000
Fluorene	404 U	402 U	741	361 U	396 U	50000
Indeno(1,2,3-cd)pyrene	404 U	402 U	283 J	361 U	396 U	3200
Naphthalene	404 U	402 U	601	361 U	396 U	13000
Phenanthrene	404 U	402 U	7110	116 J	396 U	50000
Pyrene	404 U	402 U	5390	308 J	396 U	50000
Test: TAL Metals – SW6010B/7471A/7470A (mg/kg)						
Aluminum	5310	7110	6550	7170	3360	18306
Arsenic	0.905 J	1.05	0.981	0.995	1.22	3.8
Barium	15.2	28.1	23.3	20.7	10.0	300
Beryllium	0.325 J	0.294 J	0.331 J	0.245 J	0.158 J	0.65
Cadmium	1.47	1.70	1.41	1.52	0.959	1
Calcium	1360	1830	11300	994	879	23821
Chromium	7.84	8.18	8.54	9.43	4.81	22.6
Cobalt	3.64	3.64	3.71	3.67	2.84	30

Table 4.5.1-3

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR SOIL SAMPLES, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID: Sample Date: Depth (ft):	AOC9-TP01 3/20/00 0 – 10	AOC9-TP02 3/20/00 0 – 6.5	AOC9-TP03 3/21/00 0 – 6	AOC9-TP04 3/21/00 0 – 6	AOC9-TP05 3/21/00 0 – 10	Most Stringent Criteria
Copper		17.4	9.74	10.7	8.96	8.57	43
Iron		12700	13200	11800	11300	8220	47350
Lead		2.70	11.1	3.22	20.4	1.45	36.2
Magnesium		2220	1810	1920	2100	1640	7175
Manganese		173	531	374	142	242	2106
Nickel		8.96	7.04	8.00	9.09	6.30	46
Potassium		827	485	715	486	632	1993
Selenium		0.947 U	0.86 U	0.651 J	0.841 U	0.688 U	2
Silver		0.947 U	0.86 U	0.809 U	0.841 U	0.284 J	1.1
Sodium		28.5 J	86 U	32.9 J	84.1 U	68.8 U	259
Vanadium		10.8	13.5	12.1	11.7	6.53	150
Zinc		29.7	34.9	27.2	35.8	16.4	120
Test: Volatiles – SW 8260B (μg/kg)							
1,2-Dichlorobenzene		7.68 U	7.41 U	11.1	6.51 U	6.09 U	7900
1,4-Dichlorobenzene		7.68 U	7.41 U	4.74 J	6.51 U	6.09 U	8500
2-Butanone		15.4 U	14.8 U	3.80 J	13 U	12.2 U	300
Acetone		15.4 U	14.8 U	18.8	13 U	12.2 U	200
Chlorobenzene		7.68 U	7.41 U	2.37 J	6.51 U	6.09 U	1700

Table 4.5.1-3

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR SOIL SAMPLES, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID: Sample Date: PARAMETER Depth (ft):	AOC9-TP06 3/21/00 0 – 9	Most Stringent Criteria
Test: Pesticides – SW 8081A (μg/kg)		
Aldrin	1.17 U	40
alpha-BHC	1.17 U	100
Dieldrin	2.34 U	40
Endrin ketone	2.34 U	—
Test: Semivolatiles – SW 8270C (μg/kg)		
2-Methylnaphthalene	380 U	36400
Acenaphthene	380 U	50000
Anthracene	380 U	6800
Benz(a)anthracene	380 U	224
Benzo(a)pyrene	380 U	61
Benzo(b)fluoranthene	380 U	1100
Benzo(g,h,i)perylene	380 U	50000
Benzo(k)fluoranthene	380 U	1100
Carbazole	380 U	11000
Chrysene	380 U	400
Dibenz(a,h)anthracene	380 U	14
Dibenzofuran	380 U	6200
Fluoranthene	380 U	50000
Fluorene	380 U	50000
Indeno(1,2,3-cd)pyrene	380 U	3200
Naphthalene	380 U	13000
Phenanthrene	380 U	50000
Pyrene	380 U	50000
Test: TAL Metals – SW6010B/7471A/7470A (mg/kg)		
Aluminum	7260	18306
Arsenic	2.39	3.8
Barium	23.1	300
Beryllium	0.355 J	0.65
Cadmium	2.17	1
Calcium	18300	23821

Table 4.5.1-3

YEAR 2000 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL, ANALYTICAL DATA SUMMARY OF POSITIVE HITS AND SCREENING FOR SOIL SAMPLES, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID: Sample Date: Depth (ft):	AOC9-TP06 3/21/00 0 – 9	Most Stringent Criteria
Chromium		9.51	22.6
Cobalt		5.66	30
Copper		21.0	43
Iron		18900	47350
Lead		5.34	36.2
Magnesium		3520	7175
Manganese		546	2106
Nickel		12.7	46
Potassium		869	1993
Selenium		1.08 U	2
Silver		1.08 U	1.1
Sodium		42.8 J	259
Vanadium		12.5	150
Zinc		43.6	120
Test: Volatiles – SW 8260B (μg/kg)			
1,2-Dichlorobenzene		6.36 U	7900
1,4-Dichlorobenzene		6.36 U	8500
2-Butanone		12.7 U	300
Acetone		9.45 J	200
Chlorobenzene		6.36 U	1700

Key:

/D - Duplicate sample.
-F = Filtered sample.
J = Estimated.
μg/kg = Micrograms per kilogram.
μg/L = Micrograms per liter.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.
NA = Not analyzed.

PCBs = Polychlorinated biphenyls.
TAL = Target Analyte List.
U = Not detected.
UJ = Not detected; estimated detection limit reported.
UNK = Unknown.
UR = Not detected; rejected sample
WSA = Weapons Storage Area.

Shaded area equals result above the most stringent criterion. For a full list of screening criteria see Appendix G.

Table 4.5.2-1

Year 2002 Supplemental Investigation, AOC 9: WSA Landfill, Frequency of Detection and Exceedance of Screening Criteria for Groundwater Samples from Test Pits, Former Griffiss AFB, Rome, New York

Parameter	Frequency of Detection	Range of Detected Concentration	Comparison to Screening Criteria	
			Frequency of Detection Above Screening Criteria	Most Stringent Screening Criteria
VOC by Method 8260B (µg/L)				
1,2-Dichlorobenzene	1/5	16.8	1/5	3
1,4-Dichlorobenzene	1/5	17.3	1/5	3
Acetone	2/5	3.49J – 5.43J	0/5	50
Chlorobenzene	1/5	101	1/5	5
SVOCs by Method 8270C (µg/L)				
1,2 Dichlorobenzene	1/5	23.9	1/5	3
1,4-Dichlorobenzene	1/5	21.4	1/5	3
Bis(2-ethylhexyl)phthalate	1/5	7.76J	1/5	5
Naphthalene	1/5	4.35J	0/5	10
Phenanthrene	1/5	3.72J	0/5	50
PCBs by Method 8082 (µg/L)		**No PCBs were detected.**		
Pesticides by Method 8081A (µg/L)				
Aldrin	1/5	0.573J	1/5	ND
Dieldrin	1/5	0.327J	1/5	0.004
TPH by Method 8015B (mg/L)				
Diesel Range Organics	1/5	0.260	NA	NA
Gasoline Range Organics	1/5	0.123	NA	NA

Key:

J = Estimated concentration.
µg/L = Micrograms per liter.
Mg/L = Milligrams per liter
WSA = Weapons Storage Area.
AOC 9 = Area of Concern 9.
NA = No criteria available.
ND = Not detected.
PCBs = Polychlorinated biphenyls.
SVOC = Semivolatile organic compound.
TP = Test pit.
TPH = Total Petroleum Hydrocarbons.
U = Not detected.
VOC = Volatile Organic Compounds.

Table 4.5.2-2
Year 2002 SI, AOC 9
Analytical Data Summary of Positive Hits for Groundwater Samples from Test Pits, Former Griffiss Air Force Base, Rome, New York

Analyte	Most Stringent Criteria	Sample ID: Date:	AOC9-GW-DTP04 07/19/02	AOC9-GW-DTP04/D 07/19/02	AOC9-GW-TP01 07/19/02	AOC9-GW-TP03 07/19/02	AOC9-GW-TP04 07/19/02	AOC9-GW-TP06 07/19/02
VOC by Method 8260B (µg/L)								
1,2-Dichlorobenzene	3		5.00 U	5.00 U	5.00 U	16.8	5.00 U	5.00 U
1,4-Dichlorobenzene	3		5.00 U	5.00 U	5.00 U	17.3	5.00 U	5.00 U
Acetone	50		10.0 U	10.0 U	10.0 U	3.49 J	5.43 J	10.0 U
Chlorobenzene	5		5.00 U	5.00 U	5.00 U	101	5.00 U	5.00 U
SVOCs by Method 8270C (µg/L)								
1,2-Dichlorobenzene	3		10.0 U	10.0 U	10.0 U	23.9	10.0 U	10.0 U
1,4-Dichlorobenzene	3		10.0 U	10.0 U	10.0 U	21.4	10.0 U	10.0 U
Bis(2-ethylhexyl)phthalate	5		7.76 J	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Naphthalene	10		10.0 U	10.0 U	10.0 U	4.35 J	10.0 U	10.0 U
Phenanthrene	50		10.0 U	10.0 U	10.0 U	3.72 J	10.0 U	10.0 U
PCBs by Method 8082 (µg/L)			No PCBs were detected.					
Pesticides by Method 8081A (µg/L)								
Aldrin	ND		0.0500 U	0.0500 U	0.0500 U	0.573 J	0.0500 U	0.0500 U
Dieldrin	0.004		0.0500 U	0.0500 U	0.0500 U	0.327 J	0.0500 U	0.0500 U
TPH-Diesel Range Organics by Method 8015B (mg/L)								
Diesel Range Organics	NA		0.100 U	0.100 U	0.100 U	0.260	0.100 U	0.100 U
Gasoline Range Organics	NA		0.100 U	0.100 U	0.100 U	0.123	0.100 U	0.100 U
TPH-Gasoline Range Organics by Method 8015B (mg/L)								
Diesel Range Organics	NA		0.100 U	0.100 U	0.100 U	0.260	0.100 U	0.100 U
Gasoline Range Organics	NA		0.100 U	0.100 U	0.100 U	0.123	0.100 U	0.100 U

Note: Shaded results exceed the most stringent screening criterion. For a full list of screening criteria see Appendix G.

Key:

AOC 9 =	Area of Concern 9.	SVOC =	Semivolatile organic compound.
/D =	Duplicate sample.	TP =	Test pit.
J =	Estimated value.	TPH =	Total petroleum hydrocarbons.
mg/L =	Milligrams per liter.	U =	Not detected (practical quantitation limit listed).
NA =	No criteria available.	VOC =	Volatile organic compound.
ND =	Not detected.	µg/L =	Micrograms per liter.
PCBs =	Polychlorinated biphenyls.		

3 Physical Characteristics of the Study Area

3.1 Physiography

Rome is located in the Mohawk Section physiographic province near the border of the Tug Hill Plateau physiographic province. The Mohawk Section geomorphology exhibits a pronounced glacial imprint. Glacial deposits of the Mohawk Valley were deposited during the Wisconsin (Pleistocene) stage by the westward-advancing Mohawk sublobe of the Ontario glacial lobe. Reshaping of floodplains, valley walls, and the upland areas was accomplished by erosion during glacial advance. Recession of glaciers to the west and east led to the formation of a proglacial lake between the glaciers and the northern margin of the Appalachian Plateau. Deposition of gravel, sand, silt, and clay occurred during retreat of the ice (Law 1996a).

In general, the surface of the Mohawk section consists of a glacial plain of considerable relief. The floodplain of the Mohawk River, which varies in width from 0 to 2 miles, extends across the Mohawk Section and reaches a maximum elevation of approximately 450 feet above mean sea level (AMSL). At most places, the floodplain is bounded by steep slopes or actual bluffs leading up to elevations of at least 700 or 800 feet AMSL. At places, especially along upfaulted structural blocks, elevations of 1,100 or 1,200 feet are found close to the river, providing considerable relief (Law 1996a).

3.2 Topography

The former Griffiss AFB lies within the Mohawk Valley between the Appalachian plateau and the Adirondack Mountains (see Figure 1-1). The topography across the former base is mostly flat, with elevations ranging from 435 to 595 feet AMSL. The highest elevations are to the northeast. A rolling plateau northeast of the former base reaches an elevation of 1,300 feet AMSL. The NYS Barge Canal and the Mohawk River Valley south of the former base lie below 430 feet AMSL (Tetra Tech 1994).

3.3 Geology

3.3.1 Geologic Setting

The surficial geology of the former Rome area is comprised of unconsolidated glacial deposits of Pleistocene age. These deposits consist of two distinct glacial in origin soil units. The first unit consists of glaciofluvial deposits comprised of meltwater outwash (deltaic) sands and gravels (i.e., highly permeable, well-sorted, coarse to fine gravel with sand). The deposits become finer-grained with increasing distance from the former glacial borders. The second unit consists of glacial tills, which are ice contact deposits of unstratified, unsorted mixtures of clay, silt, gravel, cobbles and boulders. These are relatively impermeable with moderate to high clay contents. Underlying the unconsolidated deposits are the Upper Ordovician Utica and Frankfort shales and Middle Silurian shale, sandstone, and dolomite beds. The Utica shale is relatively soft, black and gray carbonaceous shale containing calcareous argillites.

3.3.2 Soils

Soils at the former Griffiss AFB consist primarily of glacial till with significant quantities of silt and gravel and minor quantities of clay and sand (Tetra Tech 1994). The thickness of these soils ranges from 0 to 12 feet in the north portion of the former base to a maximum 150 feet in one area of the south portion. However, the average thickness of the unconsolidated sediments is 25 to 50 feet in the central portion and 100 to 150 feet in the south and southwest portion of the former base.

Glacial soils within the boundaries of the former Griffiss AFB were deposited during the Wisconsinan glacial stage of the Pleistocene Epoch. The former Griffiss AFB soils are secondarily derived from fluvial deposits from the Mohawk River, SMC, and other smaller streams (Tetra Tech 1994). The glacial deposits are highly weathered rock and soil left behind by the retreating ice mass. Multiple advancements and withdrawals of the glacial ice during the Wisconsinan glacial period created a complex of soil types in and around the former Griffiss AFB referred to as glacial drift, or till. Glacial drift can include a range of grain sizes from rock flour to large boulders. The grain sizes of the overburden at the former Griffiss AFB range from fine silt to small boulders (E & E 1996). Lacustrine soils within the glacial drift observed at the former Griffiss AFB are derived from the proglacial lakes that formed on the perimeter of the retreating ice mass.

Overburden observed during soil boring, monitoring well, and test pit installation at AOC 9 consisted of fine to coarse sand with some gravel seams and silt (see Appendix A). In addition, cobbles and/or concrete debris were encountered in the area north of Perimeter Road.

3.3.3 Stratigraphy

The bedrock in the area is covered by deposits of clay, silt, sand, and gravel as described above. These materials were deposited by glacial, fluvial, and lacustrine processes. Glacial till extends over most of Griffiss AFB and directly overlies the Utica shale bedrock. Above the till lie deposits that are the result of fluvial deposition in front of or along the margins of the ice sheet. In addition, some sediments were deposited in Pleistocene glacial lakes. The highland area on the east-northeast side of the base is made up of outwash deposits and there are terrace-like features made up entirely of sand and gravel deposits, which extend east to the town of Floyd. In general, the thickness of the outwash deposits is less than 50 feet under the former Griffiss AFB (Tetra Tech 1994).

The Utica shale is the uppermost bedrock unit beneath the site and surrounding area. This unit is Upper Ordovician in age and is described as black and gray, carbonaceous, slightly fissile to massive, and highly fossiliferous. The shale is approximately 300 to 400 feet thick, and dips four to five degrees southwest (Law 1994). The surface of the Utica Shale bedrock slopes toward the Mohawk River in the northwest and southern portions of the base and to the southwest in the northeastern part of the base. The depth from the ground surface to the top of the bedrock ranges from 0 feet on the north side of the former base to as much as 150 feet on the south side. Typical depths to bedrock on the base range from 30 to 50 feet BGS. The shallowest depths to bedrock, 15 feet or less, are found on the north side of SMC (E & E 1995). Bedrock beneath the site generally dips to the southwest and south. The elevation of the bedrock surface changes from 500 feet AMSL northeast of the runway to 350 feet AMSL south of the Skyline Housing Area (Law 1994).

3.3.4 Structure

Several faults are known to exist in the area near the former Griffiss AFB. The faults that occur in the Utica shale are not directly observable due to the thickness of overburden deposits. One fault has been mapped near the town of Stittville, approximately 4 miles east of the base (Law 1993a). A lineament that extends north-to-south from the Lake Delta Reservoir along the Mohawk River and ends near the western boundary of the base has also been mapped. This feature is observable on satellite imagery as well as topographic maps and may indicate a change in bedrock or a buried fault. There have been numerous small earthquakes, which have not caused damage, throughout central New York. The cause of these small tremors may be due to rebound of areas depressed by glacial weight (Law 1993a).

Joints are present in the sedimentary rock underlying the Rome area. The joint planes are orientated north, west, and southwest with the predominant direction east of southeast along the Mohawk Valley. The orientation of the joint planes is usually vertical or nearly vertical (Law 1993a).

3.4 Surface Water Hydrology

Surface drainage at the former Griffiss AFB is highly controlled due to a network of large-diameter storm sewers beneath the base that discharge into the Mohawk River, SMC, Three Mile Creek (TMC), and the NYS Barge Canal. Potential wetland areas lie at both the northeast and southeast ends of the base.

3.5 Groundwater Hydrology

3.5.1 Regional

The water table of this region basically follows the topography. Groundwater discharge zones, such as seeps, streams, or surface water, are characteristic in some areas.

A large percentage of the water used in the region is from glacial deposits, while a minor percentage is obtained from the Utica shale. Good to moderate quality groundwater is available from the deposits of sand and gravel underlying the Mohawk River Valley (Tetra Tech 1994).

3.5.2 Local

Local groundwater moves toward the southwest from the northeast across the base boundary, then reaches a groundwater divide that lies east-to-west across the western part of the base. Groundwater flow from this divide flows toward the Mohawk River and the NYS Barge Canal, which serve as discharge points for groundwater flowing away from the base (Tetra Tech 1994).

3.5.3 Site-Specific

Overburden

Groundwater flow beneath AOC 9 is to the southwest and discharge is into the SMC drainage basin (see Table 3.5.3-1 and Figure 3-1). The SMC drainage basin in the site area includes the main channel of SMC and a secondary channel running parallel to the main creek on the southwest side that ultimately joins with the main channel before entering the culverted section downstream of the site. Local groundwater flow between the main channel and the secondary channel and along the southwest side of the secondary channel is hydraulically influenced by the presence of the creeks. This results in groundwater flow back towards the creek channels in a south/southeasterly direction. Regional flow beyond the local influence of the creeks (i.e., southwest of the runway) is to the south/southwest (E & E 1998a).

The water table at the site exhibits a gradient of 0.042 foot per foot (ft/ft) across the site (i.e., from Building 913 [B913] in the WSA to SMC). The depth of groundwater beneath the WSA is 10 to 12 feet BGS but is closer to the ground surface between Perimeter Road and SMC. In some areas, groundwater discharges to the surface as seeps, and other wet areas. These discharge areas are primarily located south of Perimeter Road, especially at the former storage Igloo closest to Perimeter Road, and along the upgradient slope on the northeast side of SMC. However, seeps were also noted in the drainageway on the northeast side of Perimeter Road in the vicinity of AOC9-SW18 (see Figure 3-1). There are also three intermittent drainageways crossing the site, one of which drains the

WSA. Although clusters of permanent wells at different depth intervals are not available at this site, the vertical hydraulic gradient is believed to be upward in the vicinity of SMC resulting in a discharge area. This is supported by the presence of significant year-round flow of SMC in the vicinity of the site, and the presence of the numerous surface discharges and wet areas. In addition, the presence of the relatively impermeable underlying bedrock results in preferential upward flow of groundwater rather than downward flow because the bedrock serves as a hydraulic boundary.

For these reasons, the hydrology at this site can be separated into two distinct areas: northeast of Perimeter Road and southwest of Perimeter Road. As previously stated, the overall site groundwater gradient is 0.042 ft/ft between B913 (located within the WSA) and SMC. However, the gradient northeast of Perimeter Road (between B913 and Perimeter Road) is 0.018 ft/ft, and southwest of Perimeter Road (between Perimeter Road and SMC) is 0.064 ft/ft (based on the July 2002 groundwater elevation data (see Table 3.5.3-1). In addition, groundwater elevations recorded from the area northeast of Perimeter Road in December 2002 indicate a gradient of 0.014 ft/ft (see Appendix J). These gradients, along with measured hydraulic conductivities have an effect on groundwater flow velocities described below.

In order to determine site hydraulic conductivity and groundwater flow velocity, aquifer tests were performed on seven overburden wells (AOC9-MW1, AOC9-MW2, AOC9-MW3, AOC9-MW7, AOC9-MW08, AOC9-MW12, and AOC9-MW13) in January 2003 (see E & E 2004), and the three bedrock wells (AOC9-9Br, AOC9-MW10Br, and AOC9-MW11Br) in June 2002 (see Appendix J). Each well was aquifer tested using slug test methods. Slug tests are performed to determine the horizontal conductivity (K value) of the aquifer immediately adjacent to a well. Slug tests can be performed as either rising- or falling-head tests. A rising-head test is performed by rapidly lowering the water level in a well and recording the rising head as it returns to its static level. A solid slug or bailer of known volume is inserted into the well and after allowing the head to equilibrate back to static conditions, it is rapidly removed from the well, resulting in a drop in the head. Falling-head tests are performed by rapidly raising the water level in a well by inserting a solid slug or a slug of clean water of known volume into the well, and monitoring the head as it falls back to its static level. However, falling-head tests can only be performed on wells where the static water level is above the top of the well screen and sand pack. If the water level is below the top of the screen or sand pack, the insertion of the slug will force water into the unsaturated voids of the sand pack, not the formation, thus giving an erroneously high K value. Since all of the water levels in the wells tested were above the well screen and sand pack, falling-head tests were performed. Data collection was initiated at the time of slug insertion with an In-Situ, Inc., Hermit 2000 data logger and pressure transducer system. Water level measurements were automatically recorded at predetermined time intervals on a logarithmic scale as the head fell back to its initial static level. The slug test was considered complete when the head returned to at least 95% of the static level or when no significant change in head was recorded over a period of approximately 30 minutes. Data transfer software by In-Situ, Inc., was used to download the slug test data to a computer. The raw data were then processed and interpreted using AQTESOLVE software (Duffield 1998). The interpretation methods of Bouwer and Rice (1976) were used for all the wells (Bouwer 1988). Appendix N provides the graphs from which the K values were determined.

K values recorded in January 2003 from the overburden wells ranged from 10^{-1} to 10^{-3} centimeters per second (cm/s) (see Table 3.5.3-2). These values correlate well with typical K values for clean sand to silty sand deposits (Freeze and Cherry 1979). K values from the upgradient wells (AOC9-MW08, -MW12, and -MW13) located northeast of Perimeter Road were slightly higher (10^{-1} to 10^{-2} cm/s with an average of 9.87 x 10^{-2} cm/s or 280 feet per day [ft/day]) than K values from the downgradient wells (G009-MW1, -MW2, and -MW3, and AOC9-MW7) (10^{-2} to 10^{-3} cm/s with an average of 1.61 x 10^{-2} cm/s or 45.8 ft/day), thus further confirming the presence of different hydrologic conditions northeast and southwest of Perimeter Road.

Assuming an average effective porosity (n) of approximately 0.35 (for silty sand and sand), the groundwater velocity northeast of Perimeter Road is estimated to be 14.4 ft/day (using an average K value of 280 ft/day and a gradient of 0.018 ft/ft), and the velocity southwest of Perimeter Road is estimated to be 8.4 ft/day (using an average K value of 45.8 ft/day and an average gradient of 0.064 ft/ft). Although the gradient southwest of Perimeter Road is higher, the lower K values are causing the groundwater velocities to be much lower than the area northeast of Perimeter Road. This difference in the groundwater velocities between the northern and southern portions of the site would be expected to slow down groundwater flowing from the north area as it reaches the south area, causing a damming effect, which would explain the reduced hydraulic gradient observed north of Perimeter Road.

To confirm the hydraulic conductivities (K values) obtained from the slug tests, a brief pump test was performed on G009-MW02 in July 2003. A submersible pump was installed in MW02 and the water level was allowed to return to static conditions. The well was pumped at 0.5 gallon per minute (gpm) until the water level stabilized. Data collection was initiated at the time pumping began with an In-Situ, Inc., Hermit 2000 data logger and pressure transducer system as was done during the slug tests. Data transfer software by In-Situ, Inc., was used to download the slug test data to a computer. The raw data were then processed and interpreted using AQTESOLVE software (Duffield 1998). A K value of 1.8 x 10^{-3} cm/s was obtained using the interpretation methods of Cooper-Jacob, which corresponds to a groundwater velocity of 0.93 ft/day. This value correlates well with typical K values for the silty sands observed on site during drilling activities, and provides a more reasonable value than the slug tests which can provide elevated K values for the area immediately surrounding a well due the effect of the porous sandpack around the wells compared to the relatively small volume of the slug used.

Bedrock

Bedrock groundwater flow at AOC 9 is generally the same as overburden flow (i.e., predominantly to the southwest) and is characterized by a low horizontal gradient of 0.035 ft/ft. As stated earlier, an upward gradient exists in the vicinity of SMC. However, a slight downward vertical gradient was observed between the overburden and bedrock at AOC 9 overburden/bedrock well pairs AOC9-MW5/AOC9-MW10Br (9%) and AOC9-MW6/AOC9-MW9Br (10%). K values calculated from slug tests performed on the bedrock wells ranged between 10^{-4} and 10^{-6} cm/s with an average of 5.1 x 10^{-5} cm/s (or 0.145 ft/day). These values are higher than those typically exhibited by shales (10^{-8} and 10^{-11} cm/s) (Freeze and Cherry 1979; Domenico and Schwartz 1990); however, hydraulic conductivities of fractured sedimentary rocks, such as shale, often exceed the typical ranges listed in the literature by several orders of magnitude due to fracturing and weathering (see Appendix J).

Assuming an average effective porosity (n) of approximately 0.10 (for shale), the groundwater velocity in the bedrock beneath the site is estimated to be 0.05 ft/day (based on an average K value of 0.145 ft/day, and gradient of 0.035 ft/ft).

3.6 Climate

The mean annual precipitation in the area is 45.6 inches and the mean annual snowfall is 107 inches. Average winter temperatures range from 15° to 20°F. Spring, summer, and fall are relatively mild with average temperatures ranging from 31° to 81°F. Wind speed averages 5 knots with wind direction primarily out of the southwest (Law 1993).

Table 3.5.3-1

Years 2000 and 2002 Supplemental Investigations, AOC 9: WSA Landfill, Groundwater Elevations on May 17, 2000, and July 25, 2002, Former Griffiss Air Force Base, Rome, New York

Well No.	Ground Elevation (ft AMSL)	Top of Casing Elevation (ft AMSL)	2000 Groundwater Elevation (ft AMSL)	2000 Depth to Groundwater (ft below TOIC)	2002 Groundwater Elevation (ft AMSL)	2002 Depth to Groundwater (ft below TOIC)
AOC 9 Year 2000 SI Monitoring Wells						
AOC9-MW05	482.72	484.11	476.82	7.29	476.10	8.01
AOC9-MW06	482.57	484.06	477.93	6.13	478.07	5.99
AOC9-MW07	483.25	484.62	480.62	4.00	479.98	4.64
AOC9-MW08	514.28	515.54	505.90	9.64	504.73	10.81
ESI Monitoring Wells						
G009-MW01	492.67	494.93	492.81	2.12	492.38	2.55
G009-MW02	494.54	496.04	491.19	4.85	490.45	5.59
G009-MW03	485.1	486.28	484.37	1.91	483.59	2.69
G009-MW04	483.97	485.21	476.26	8.95	476.19	9.02
2002 Bedrock Groundwater Study Monitoring Wells						
AOC9-MW9Br	481.21	482.59	NA	NA	473.85	8.74
AOC9-MW10Br	481.40	482.10	NA	NA	474.01	8.09
AOC9-MW11Br	524.21	525.85	NA	NA	508.06	17.79

Key:

AMSL = Above mean sea level.
AOC = Area of concern.
Br = Bedrock well.
ESI = Expanded Site Investigation.
ft = Feet.
MW = Monitoring well.
NA = Not Available.
SI = Supplemental Investigation.
TOIC = Top of inner casing.
WSA = Weapons Storage Area.

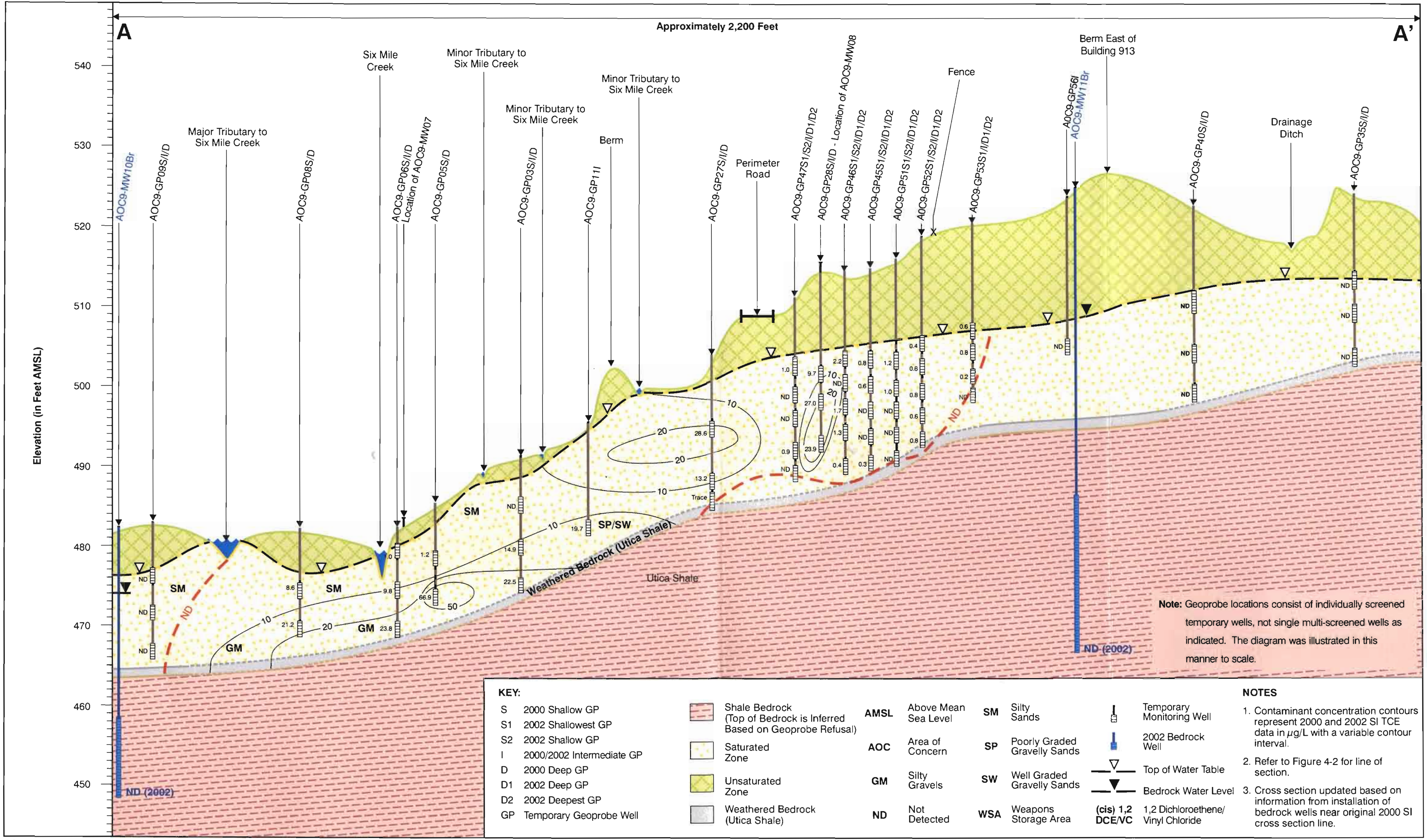
Table 3.5.3-2
Summary of Slug Test Results, AOC 9
Former Griffiss AFB, Rome, New York

AOC	Well No.	Hydraulic Conductivity (K) (cm/s)	Rising/Falling Head Slug Test
Overburden Wells			
AOC 9	G009-MW1	8.72 E^{-3}	Falling
	G009-MW2	9.17 E^{-3}	Falling
	G009-MW3	3.66 E^{-2}	Falling
	AOC9-MW7	9.64 E^{-3}	Falling
	AOC9-MW8	1.83 E^{-1}	Falling
	AOC9-MW12	6.98 E^{-2}	Falling
	AOC9-MW13	4.34 E^{-2}	Falling
Bedrock Wells			
AOC 9	AOC9-MW9Br	1.55 E^{-5}	Falling
	AOC9-MW10Br	1.36 E^{-4}	Falling
	AOC9-MW11Br	1.18 E^{-6}	Falling

Key:

AOC = Area of Concern.
Br = Bedrock well.
Cm/s = Centimeters per second.
MW = Monitoring well.

02:001002_UK10_03_03
Fig4-4.CDR-11/14/03-GRA



Note: Geoprobe locations consist of individually screened temporary wells, not single multi-screened wells as indicated. The diagram was illustrated in this manner to scale.

KEY:

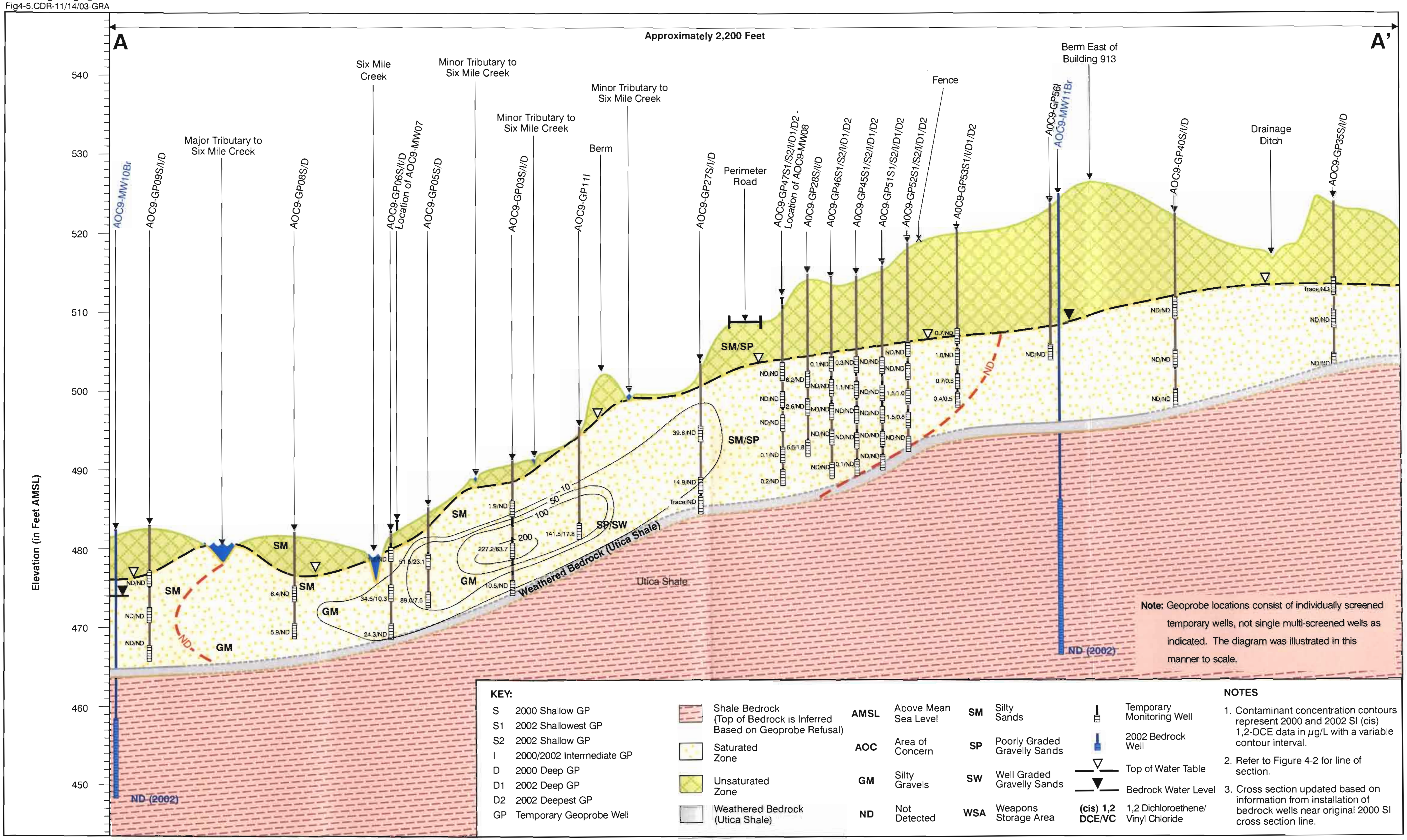
S	2000 Shallow GP
S1	2002 Shallowest GP
S2	2002 Shallow GP
I	2000/2002 Intermediate GP
D	2000 Deep GP
D1	2002 Deep GP
D2	2002 Deepest GP
GP	Temporary Geoprobe Well
▨	Shale Bedrock (Top of Bedrock is Inferred Based on Geoprobe Refusal)
☐	Saturated Zone
🟩	Unsaturated Zone
▨	Weathered Bedrock (Utica Shale)
AMSL	Above Mean Sea Level
AOC	Area of Concern
GM	Silty Gravels
ND	Not Detected
SM	Silty Sands
SP	Poorly Graded Gravelly Sands
SW	Well Graded Gravelly Sands
WSA	Weapons Storage Area
	Temporary Monitoring Well
	2002 Bedrock Well
▽	Top of Water Table
▼	Bedrock Water Level
(cis) 1,2 DCE/VC	1,2 Dichloroethene/ Vinyl Chloride

NOTES

1. Contaminant concentration contours represent 2000 and 2002 SI TCE data in μg/L with a variable contour interval.
2. Refer to Figure 4-2 for line of section.
3. Cross section updated based on information from installation of bedrock wells near original 2000 SI cross section line.

SOURCE: Ecology and Environment, Inc. 2003

Figure 4-4 YEAR 2000 AND 2002 SUPPLEMENTAL INVESTIGATION (SI), AOC 9: WEAPONS STORAGE AREA (WSA) LANDFILL, CROSS SECTION A-A' TCE CONCENTRATIONS



Note: Geoprobe locations consist of individually screened temporary wells, not single multi-screened wells as indicated. The diagram was illustrated in this manner to scale.

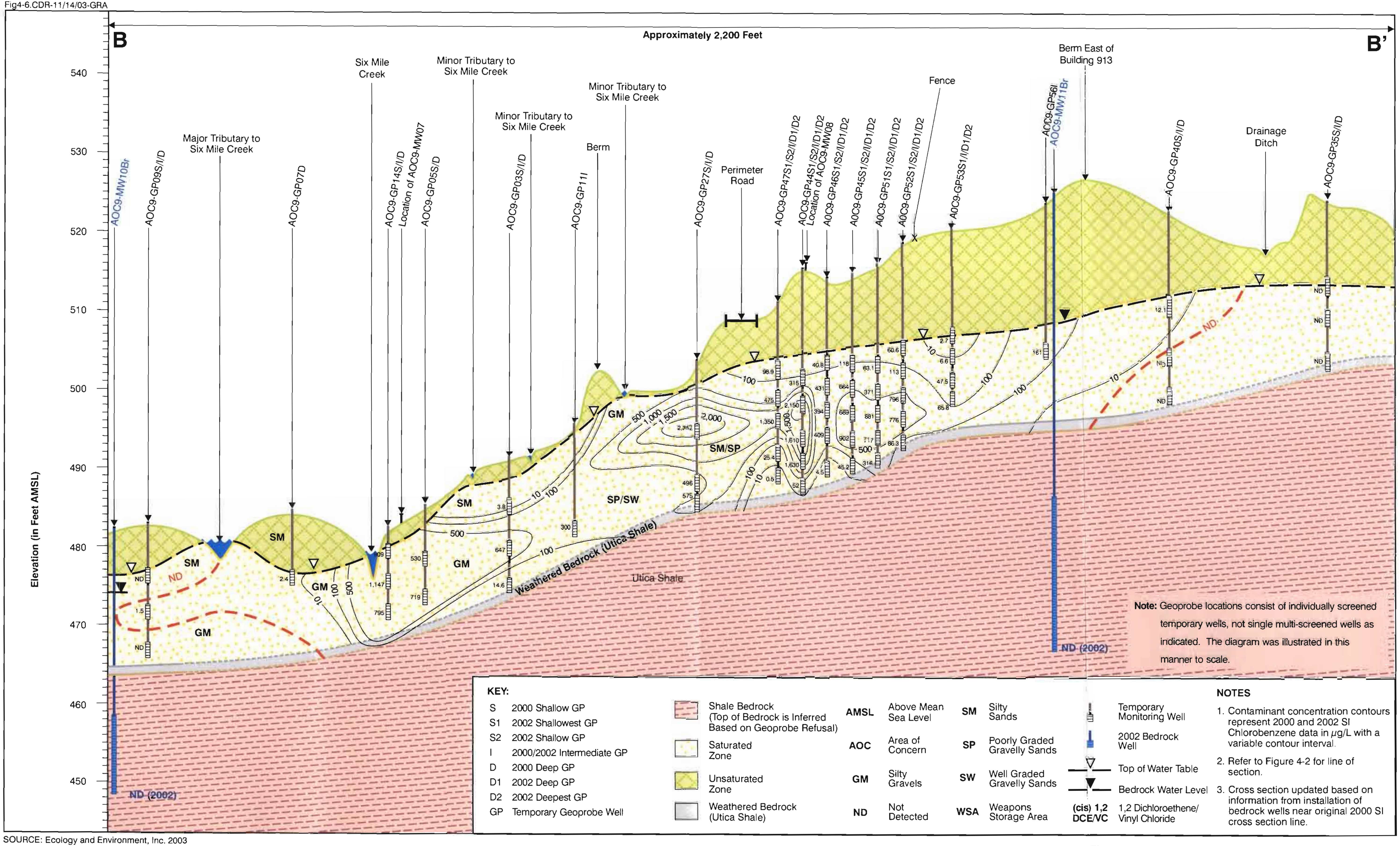
NOTES

1. Contaminant concentration contours represent 2000 and 2002 SI (cis) 1,2-DCE data in μg/L with a variable contour interval.
2. Refer to Figure 4-2 for line of section.
3. Cross section updated based on information from installation of bedrock wells near original 2000 SI cross section line.

SOURCE: Ecology and Environment, Inc. 2003

Figure 4-5 YEAR 2000 AND 2002 SUPPLEMENTAL INVESTIGATION (SI), AOC 9: WEAPONS STORAGE AREA (WSA) LANDFILL, CROSS SECTION A-A' (cis) 1,2-DCE AND VC CONCENTRATIONS

02:001002_UK10_03_03
Fig4-6.CDR-11/14/03-GRA



Note: Geoprobe locations consist of individually screened temporary wells, not single multi-screened wells as indicated. The diagram was illustrated in this manner to scale.

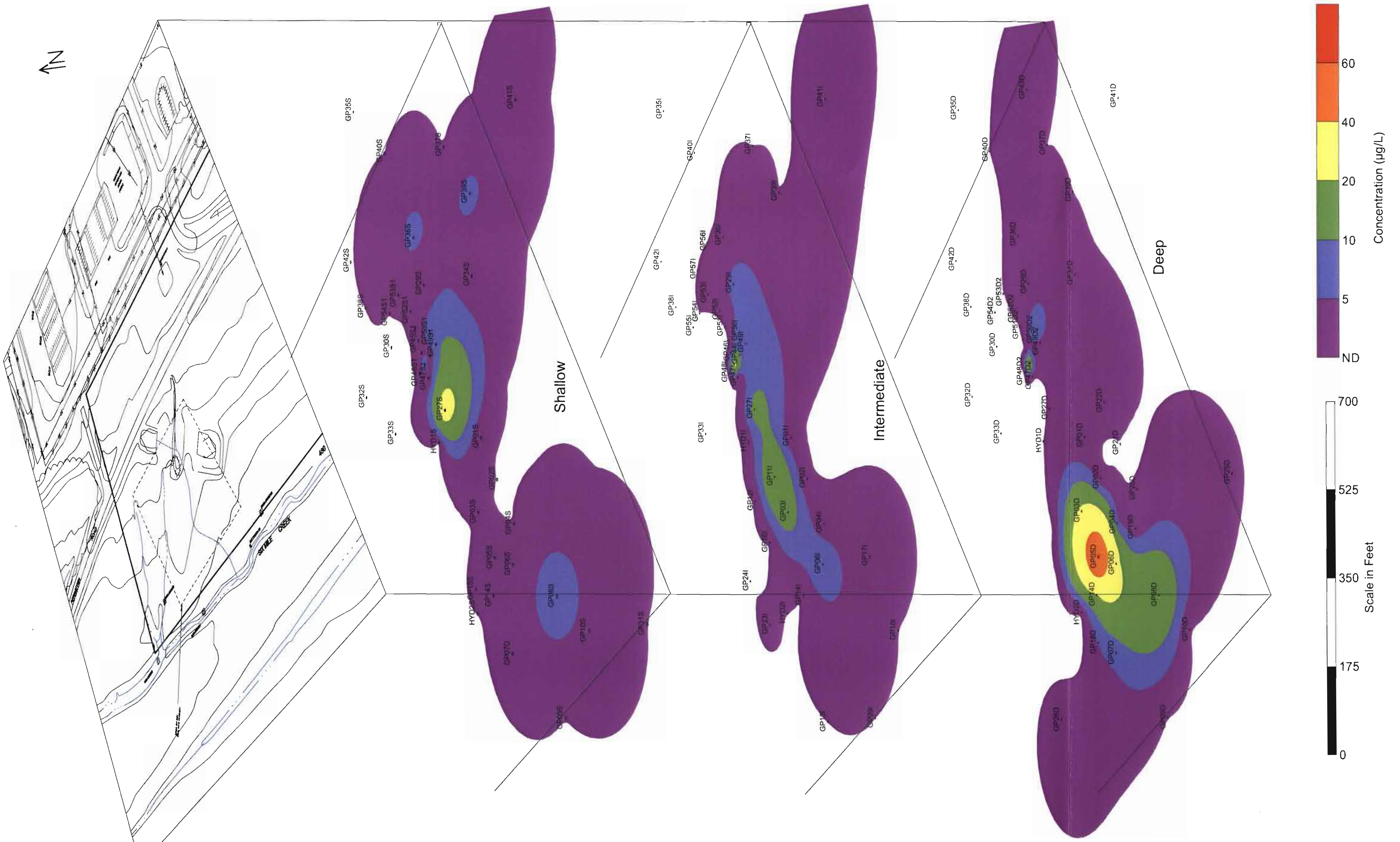
NOTES

1. Contaminant concentration contours represent 2000 and 2002 SI Chlorobenzene data in μg/L with a variable contour interval.
2. Refer to Figure 4-2 for line of section.
3. Cross section updated based on information from installation of bedrock wells near original 2000 SI cross section line.

SOURCE: Ecology and Environment, Inc. 2003

Figure 4-6 YEAR 2000 AND 2002 SUPPLEMENTAL INVESTIGATION (SI), AOC 9: WEAPONS STORAGE AREA (WSA) LANDFILL, CROSS SECTION B-B' CHLOROBENZENE CONCENTRATIONS

02:001002UK10_03_04-Fig4-7_8_9.cdr
001002.UK10.03.04
TCE.srf



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environment, inc.

Notes:
1. Geoprobe groundwater screening samples collected during 2000 and 2002 SI's.
2. For contouring purposes, trace values equal 0.5 µg/L and non-detect equals 0 for field GC results.

Figure 4-7 Three-Dimensional View of Trichloroethene Concentrations AOC-9, Former Griffiss Air Force Base

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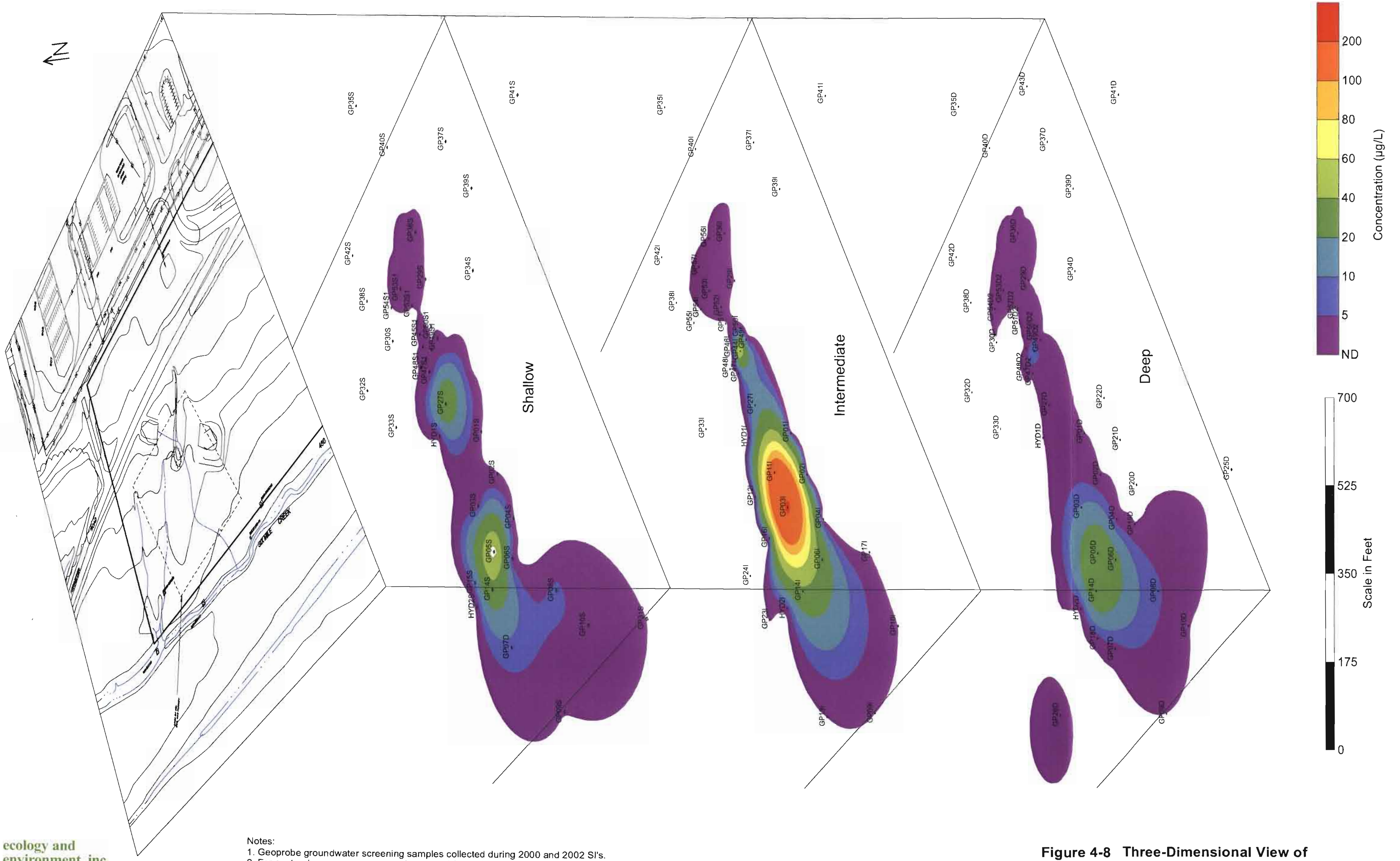
001002.UK10 03.04
DCE.srf



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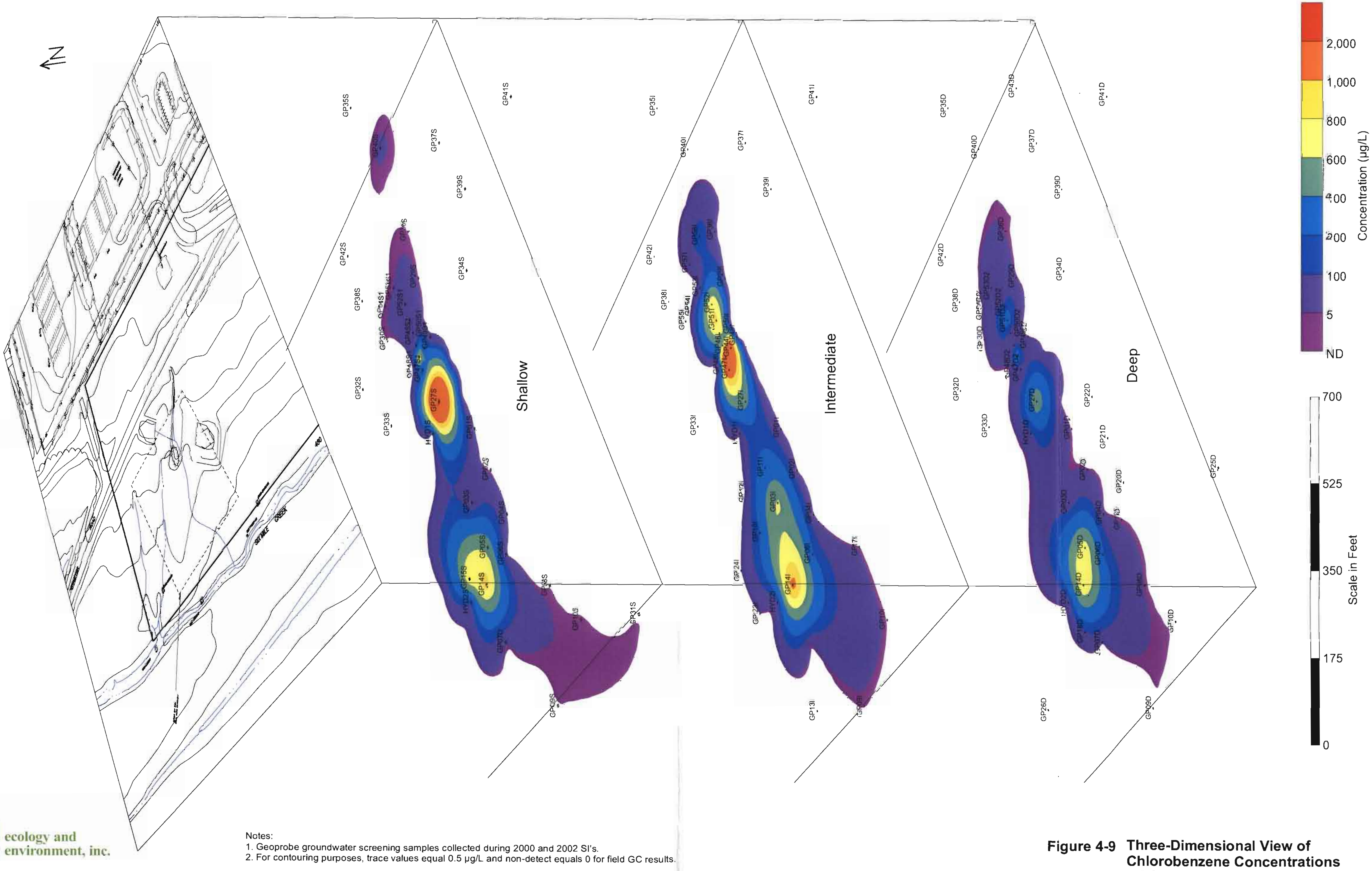
Notes:
1. Geoprobe groundwater screening samples collected during 2000 and 2002 SI's.
2. For contouring purposes, trace values equal 0.5 µg/L and non-detect equals 0 for field GC results.

Figure 4-8 Three-Dimensional View of
cis-1,2-Dichlorobenzene Concentrations
AOC-9, Former Griffiss Air Force Base

02:001002UK10_03_04-Fig4-7_8_9.cdr
001002.UK10.03.04
CBE.srf



ecology and environment, inc.

Notes:
1. Geoprobe groundwater screening samples collected during 2000 and 2002 SI's.
2. For contouring purposes, trace values equal 0.5 µg/L and non-detect equals 0 for field GC results.

Figure 4-9 Three-Dimensional View of Chlorobenzene Concentrations AOC-9, Former Griffiss Air Force Base

5 Fate and Transport

This section presents a discussion of the natural mechanisms that may result in and affect migration of contaminant compounds and elements at AOC 9 and the chemical persistence and behavioral characteristics of those compounds and elements. This information is combined with site-specific data and observations to assess the extent of migration that has occurred. The following discussion is based on the understanding that the current site conditions are related to the potential source areas and chemical compounds and elements at the site.

As discussed in Section 4.0, a variety of organic and inorganic compounds are present at concentrations above screening criteria in the soil, sediment, surface water, and groundwater at the site. Only contaminants above screening levels are discussed in this section. The contaminants and associated contaminated media requiring possible remediation will be evaluated in the feasibility study. However, several compounds/elements that may drive such remedial measures are selected here for evaluation of their typical migration behavior. Specifically, this section evaluates fate and transport of VOCs, (including aromatic hydrocarbons, halogenated aromatic hydrocarbons, and halogenated aliphatic hydrocarbons); and select inorganic compounds (aluminum, iron, manganese, selenium, and thallium). It should be noted that additional VOCs, SVOCs, and inorganics as well as pesticides, were detected at relatively low concentrations and/or sporadic locations throughout the site; and are, therefore, generally not pertinent to this study.

5.1 General Factors Influencing Fate and Transport

Knowledge of contaminant fate and transport is important in determining how contaminants will be distributed throughout environmental media at AOC 9. General factors controlling contaminant fate and transport at AOC 9 are summarized below.

- The 16.5 to 33-foot-thick surficial glacial outwash deposits at AOC 9 consist primarily of silty fine to coarse sands with some rounded to sub-rounded gravel and cobbles.
- Underlying the glacial outwash is an approximately 1-foot-thick deposit of glacial till, which consists of dense, unsorted, unstratified deposits of clay, silt, and gravel.
- The uppermost bedrock unit at AOC 9 is the 300 to 400-foot-thick, carbonaceous, slightly fissile to massive, and highly fossiliferous black to gray Utica Shale.
- Overburden groundwater flows southwest towards topographical lows and discharges into SMC, an unnamed tributary, and the surface seeps located immediately upgradient of SMC and the culvert beneath Perimeter Road.
- Overburden hydrology at the site can be separated into two distinct areas: northeast of Perimeter Road (water level at 10 to 12 feet BGS) and southwest of Perimeter Road (water encountered from ground surface to 7 feet BGS).
- The overall site groundwater gradient is 0.042 ft/ft between Building 913 and SMC (0.018 to 0.014 ft/ft northeast of Perimeter Road and 0.064 ft/ft southwest of Perimeter Road, respectively).
- K values recorded from the overburden wells ranged from 10^{-1} to 10^{-3} cm/s (typical for clean sand to silty sand deposits) with the upgradient wells located northeast of Perimeter Road having slightly higher K values than the downgradient wells.
- Overburden groundwater velocities are estimated to be 14.4 ft/day and 8.4 ft/day northeast and southwest of Perimeter Road, respectively. Such a difference in groundwater velocities is consistent with the reduced hydraulic gradient observed north of Perimeter Road and the "pooling" of contaminants in this area.
- Bedrock groundwater flow at AOC 9 is predominantly to the southwest and is characterized by a low horizontal gradient of 0.035 ft/ft with a slight downward vertical gradient observed between the overburden and bedrock at AOC 9, and groundwater velocity of 0.05 ft/day.

- Since the AOC 9 Bedrock Groundwater Study Report concluded that groundwater contamination observed in the overlying overburden aquifer does not appear to have migrated downward into the underlying bedrock (based on results from wells AOC9-9Br, AOC9-MW10Br, and AOC9-MW11Br), evaluation of contaminant fate and transport within the bedrock is not included in this section.

5.2 Contaminant Chemical and Physical Properties

Table 5.2-1 presents physical and chemical properties of representative COPCs identified at AOC 9. These properties typically influence the fate and transport of contaminants and are discussed below.

5.2.1 Organic Carbon Partition Coefficient

The organic carbon partition coefficient (K_{oc}) is indicative of the tendency of an organic chemical to partition between particulates containing TOC and water. Analytes with a high K_{oc} (> 10,000 mg/L) will readily adsorb to organic carbon and become relatively immobile, but also persistent and bioaccumulative. Analytes with a low K_{oc} (< 1,000 mg/L) will not adsorb to soil organic carbon and will, therefore, be mobile in the environment (Ney 1998).

5.2.2 Distribution Coefficient (K_d)

The distribution coefficient (K_d) provides an indication to which dissolved contaminants present in groundwater may potentially bind (adsorb) to soil material. A high number indicates that the contaminant will readily adsorb to soil material and become relatively immobile. When none of the contaminant is adsorbed to the soil material, the K_d is equal to zero, and the contaminant would be assumed to move at the same speed as the groundwater. This coefficient is generally site specific and depends on the structure and chemical composition of the soil whereby:

> $K_d = K_{oc}(f_{oc})$; where K_{oc} is the octanol-carbon partition coefficient and f_{oc} is the fraction of organic carbon in the soil.

K_d values were calculated for a representative list of site contaminants. These values are shown in Table 5-1.

5.2.3 Octanol Water Partition Coefficient

The octanol water partition coefficient (K_{ow}) is an indicator of the bioaccumulation potential of a chemical in the fatty tissue of living organisms and the chemical's ability to adsorb to soil. A low Log K_{ow} (<2.7) indicates that the analyte will not significantly adsorb to the soil, making it highly mobile in the environment, as well as having little to no bioaccumulation and a tendency to biodegrade. A high Log K_{ow} (>3) indicates that the analyte will be adsorbed to the soil and have little mobility in the environment, that the analyte will not biodegrade significantly, and that it will likely bioaccumulate (Ney 1998).

5.2.4 Water Solubility

Water solubility describes the mass of a compound that will become dissolved in water at a given temperature and pressure. Water solubility is important in assessing the fate and transport of contaminants in groundwater because it indicates the analyte's affinity for water. High water solubility means that greater amounts of the analyte will enter the aqueous phase, whereas low water solubility indicates that a contaminant can be present in a saturated aquifer as a separate phase (non-aqueous; USEPA 1989).

The water solubility of an analyte can be used to assess chemical mobility, chemical stability or breakdown, bioaccumulation, and chemical sorption. An analyte with low water solubility (<10 mg/L) will tend to adsorb to soil, be persistent, bioaccumulate, and have negligible mobility in the environment. Conversely, an analyte with high water solubility (>1,000 mg/L) will adsorb to soil only negligibly and be highly mobile in the environment, but will readily biodegrade and should not bioaccumulate (Ney 1998).

5.2.5 Henry's Law Constant

The Henry's Law constant is the ratio of the vapor pressure of a compound in air to the solubility in of the compound in water at a constant temperature under equilibrium conditions. The Henry's Law constant indicates the relative ease with which the constituent may be removed from aqueous solution by volatilization (i.e., whether it is more likely to partition to water or the air; USEPA 1989). A low Henry's Law constant ($<10^{-7}$ atmospheres cubic meters per mole [atm-m^3/mole]) indicates that the analyte is less volatile than water and, therefore, as the water evaporates the concentration of the analyte will increase. For analytes with a high Henry's Law constant (>10^{-3} atm-m^3/mole), volatilization from water will be rapid (Howard 1990).

5.2.6 Vapor Pressure

Vapor pressure is a measure of the volatility of chemicals in their pure state, which indicates whether a chemical will significantly volatilize into the air. The higher the vapor pressure of a chemical, the greater its tendency to volatilize into the air. A chemical with a low vapor pressure (<10^{-6} millimeters [mm] of mercury [Hg]) will not volatilize significantly into the air, but will instead be persistent in the environment and have the potential to bioaccumulate. A chemical with a high vapor pressure (>10^{-2} mm of Hg) is likely to significantly volatilize into the air (Ney 1998).

5.2.7 Density/Specific Gravity

The density of a substance is its weight per unit volume. The density of a non-aqueous liquid will determine whether it sinks or floats when it encounters groundwater. The specific gravity of a chemical is its density normalized to the density of water. A non-aqueous liquid with a specific gravity less than one will float in water, while a liquid with a specific gravity greater than one will sink. More-dense-than-water contaminants generally must also be present as a denser-than-water nonaqeuous phase liquid (DNAPL) before they will sink through water. This can be useful in positioning well screen depths when attempting to monitor for specific analytes released to groundwater. Compounds denser than water released to soil will also have a tendency to migrate faster through soil layers than compounds less dense than water (USEPA 1989).

5.3 Potential Sources of Contamination and Routes of Migration

5.3.1 Potential Source Areas

VOC groundwater contamination is the primary contamination of concern at AOC 9. However, secondary contamination of surface water (primarily in the on-site drainageways) and sediment in SMC has been observed in the areas where groundwater discharges to the surface.

No specific VOC sources were located during this investigation or past investigations. However, areas of high contaminant concentrations in groundwater, bounded by non-detect areas, are clearly identifiable on Figures 4-1 through 4-9. In an attempt to determine the potential source area(s), historical maps and aerial photographs were studied to determine the previous uses of the site (see Section 1.3).

The site history described in previous sections indicates that historical operational changes (construction and demolition of buildings, removal of the WSA landfill materials, etc.) may have resulted in the movement of contaminated soils.

Based on this history and the data obtained during the Geoprobe surveys three probable source areas have been identified: the southwest side of B913 (chlorobenzene), the former WSA landfill in the vicinity of AOC9-GP28 and GP44 (chlorobenzene and TCE/DCE), and the former storage igloos (TCE/DCE) (see Figures 4-1, 4-2, and 4-3). Disposal or small spills may have occurred between Perimeter Road and SMC, most likely at or near the storage igloos. As stated previously, based on the relatively low concentrations of contaminants present (significantly less than 1% of the solubility of the contaminants), it is likely that the original sources of contamination have degraded and diffused to a more residual state, and therefore identification of existing source areas is best described in terms of the high concentrations of detected contaminants.

5.3.2 Routes of Migration

Natural and other mechanisms that can result in the migration of contaminants from their source areas include: surface water flow, infiltration, groundwater flow, and volatilization. Other historical migration of contaminants at the site may have been associated with the physical movement of soils and associated contaminants during the removal of the WSA landfill materials, construction of the WSA, and removal of the igloos.

Surface Water Flow

Surface water flow at AOC 9 is a mechanism that allows lateral migration of contaminants from the groundwater into the on-site drainageways and ultimately into SMC. Surface water flow at AOC 9 occurs almost continually in the on-site drainageways, which are fed by groundwater seeps, with the possible exception of extremely dry periods. In addition, during a particularly large precipitation event, surface water flow could possibly occur as sheet flow over the ground surface. However, it is unlikely that historical surface spills at AOC 9 have been transported significantly over the site by sheet flow due to the vegetative cover and porous nature of the soils. Based on recent site observations, approximately 10% of site surface areas are covered with an impermeable barrier (i.e., concrete or asphalt [south of B913 and Perimeter Road]), and the remaining 90% of the site areas are covered with vegetation (primarily grass). Surface water has been observed to enter the drainage ditches (along Perimeter Road and within the WSA); accumulate in the topographic low areas on site; or infiltrate the ground. The drainage ditches along Perimeter Road and within the WSA connect to the culvert beneath Perimeter Road and discharge to the southwest into the drainageways, which flow into SMC.

Erosion results in the entrainment of soil particles within the surface water flow, whereby particles remain suspended in turbulent flows and subsequently settle in more quiescent waters. Thus, erosion via surface water flow is expected to be most significant during and immediately following heavy precipitation events. Based on field observation of site topography and current surface conditions at AOC 9, it is believed that erosion is a significant migration pathway only along the on-site drainageways south of Perimeter Road.

Infiltration

Infiltration of precipitation would be expected in all areas not covered by a relatively impermeable barrier (i.e., concrete or asphalt). Since the majority of the site surface areas have a vegetative cover, it is expected that migration of contaminants in subsurface soils due to infiltration would be significant. It is expected that infiltration would permit water-soluble compounds potentially present in the unsaturated overburden to migrate vertically downward to the groundwater table. In addition, infiltration may recharge the groundwater with residual organic contaminants, potentially enhancing the contaminant plume present in the overburden groundwater on site.

Groundwater Flow

Groundwater flow is the primary contaminant transport mechanism at AOC 9 for water-soluble contaminants with lesser sorbing characteristics. Overburden groundwater flow would be expected to allow both vertical and lateral migration of contaminants within the saturated zone, as well as migration of the saturated zone of any residual contamination potentially present in the overlying unsaturated zone due to infiltration. Migration via groundwater flow may allow contaminants to travel significant distances from their source areas.

Groundwater in the overburden at AOC 9 is typically encountered 10 to 12 feet BGS north of Perimeter Road and from ground surface to 7 feet BGS south of Perimeter Road. The groundwater flows southwest towards topographical lows and discharges into SMC, an unnamed tributary, and surface seeps.

Evaluation of contaminant fate and transport within the bedrock is not necessary since it was concluded during the AOC 9 bedrock groundwater study that overburden groundwater contamination does not appear to have migrated downward into the underlying bedrock.

Volatilization

Subsurface VOC contamination has been observed to migrate in the form of soil gas above the groundwater table, and ultimately to the ambient air at the ground surface.

A passive soil gas survey of 49 points evenly spaced across the southern portion of the site was performed during the 1997 ESI (see Figure 2-2). The results of the survey indicated the presence of benzene, toluene, chlorobenzene, and chloromethane in the soil gas. Migration of VOCs is less predictable than groundwater migration due to natural subsurface heterogeneities and subsurface structures (i.e., utilities, building foundations, pavement, etc.).

5.4 Contaminant Persistence and Behavioral Characteristics

From the several classes of chemical compounds/elements detected in the various environmental media at AOC 9, VOCs, (including aromatic hydrocarbons, halogenated aromatic hydrocarbons, and halogenated aliphatic hydrocarbons); and metals (aluminum, iron, manganese, selenium, and thallium) are identified as the most significant contaminants based solely on their presence at concentrations above screening values. Other contaminants detected at relatively low concentrations and/or sporadic locations throughout the site were reviewed, but are considered less significant to the overall evaluation of the site and are not included in the discussion below.

In general, chemical compounds within a given chemical class behave similarly in the environment. However, significant differences in behavior of chemical compounds may be observed within a chemical class. Their behavior is dependent on their physical and chemical properties as well as environmental conditions, such as the presence of bacteria, pH variations, and ORP conditions. Water solubility is a critical property affecting the environmental transport of a chemical: highly soluble chemicals can be rapidly leached from soil and are generally mobile in groundwater. For inorganic contaminants, the solubility will depend on the valence state of the element and on the chemistry of the surrounding medium. A compound's volatilization rate from water depends on its vapor pressure and water solubility: highly water-soluble compounds generally have lower volatilization rates from water than compounds with low water solubility. Vapor pressure and Henry's Law constants are measures of volatilization behavior.

The following discussion is based on published information on the chemical classes and specific chemicals at AOC 9. Relevant physical and chemical properties are summarized in Table 5-1.

5.4.1 Volatile Organic Compounds

The VOCs detected at AOC 9 have been historically grouped into the following three general groups.

- **Halogenated Aliphatic Hydrocarbons.** This group of VOCs is a major class of chemicals detected in site media. TCE, cis-1,2-DCE, methylene chloride, and vinyl chloride are examples of halogenated aliphatic hydrocarbons detected on site. Due to their moderate water solubility and sorption characteristics, these compounds may leach from soils and enter groundwater in dissolved phase. These compounds also have a high potential for volatilization to the atmosphere. Since many of them also have densities greater than water, they may form a separate phase (i.e., DNAPL) within an aquifer if present in sufficient volume. Degradation of several halogenated aliphatic hydrocarbons results in numerous byproducts, which may not have been originally placed in the environment (e.g., PCE degrades to TCE, 1,2-DCE, and eventually to vinyl chloride). The rate and extent of degradation are highly dependent on site-specific factors such as nutrient availability and microbial composition in soil and groundwater. Halogenated aliphatic hydrocarbons are not significantly bioaccumulated.

- **Aromatic Hydrocarbons.** This group of VOCs is also a major class of chemicals detected in site media. Chlorobenzene, benzene, ethylbenzene, isopropylbenzene, and xylene are examples of aromatic hydrocarbons detected on site. Aromatic hydrocarbons do not typically degrade into other compounds unless site-specific factors (e.g., pH, temperature, microbial activity) in soil are met; nor are they especially persistent in the environment. Based on their high vapor pressures and relatively low water solubilities, volatilization is a significant transport mechanism in media exposed to the atmosphere (e.g., surface soils). These chemicals have moderate sorption tendencies, and may leach from soil to groundwater. This group includes many of the VOCs associated with petroleum products (e.g., benzene, toluene, ethylbenzene, and xylene [BTEX]).

Chlorobenzene is the VOC detected at the highest concentrations and over the largest area at AOC 9. Chlorobenzene and related products are commonly used in the manufacture of nitrochlorobenzenes, phenol, aniline, and other industrial chemicals. It also functions as a paint solvent, heat-transfer medium, and an intermediate compound in the manufacture of some pesticides. Most chlorobenzene that is discharged to the environment quickly evaporates and is subsequently degraded atmospherically via reactions with photochemically generated hydroxyl radicals. Enzymes involved in the microbial degradation of chlorobenzene are believed to have evolved from similar enzymes catalyzing the degradation of benzene and toluene (McLeish 2002).

- **Halogenated Aromatic Hydrocarbons.** This group of VOCs is a significant class of chemicals detected in site media. 1,2-DCB, 1,4- DCB, 1,2,4-TMB, and 1,3,4-TMB are examples of halogenated aromatic hydrocarbons detected on site. These compounds volatilize readily in oxygenated environments and have a strong tendency to sorb onto soil particles. They are generally moderately soluble in water, likely undergo very limited biodegradation, and may also bioaccumulate in the environment.

5.4.2 Groundwater Transport of VOCs

The groundwater transport of aqueous phase organic contaminants in the overburden groundwater is dependent on the physical characteristics of the aquifer (e.g., groundwater velocity) and chemical properties of the contaminant (e.g., retardation factor). Based on a simplified form of the advection dispersion equation (describes the spread of a contaminant as it moves through groundwater), the following methodology accounts for contaminant movement in a homogenous porous medium in one direction not accounting for degradation or transformation (Walton 1984). This method accounts for sorption (i.e., the process whereby dissolved matter is removed or immobilized in or onto the soil matrix of a porous medium).

Groundwater velocities for the northern and southern sections of AOC 9 are discussed in section 5.1 of this report. The groundwater velocities were calculated using the following equation.

- **Groundwater Velocity:** $v = ki / n$
  This equation is based on Darcy's Law and is based on the physical properties of the aquifer whereby:

  k = hydraulic conductivity
  i = hydraulic gradient
  n = effective porosity

- **Retardation factor:** $R = 1 + \rho^b / n\,(K_d)$
  This equation is based on the advection dispersion equation whereby:

  ρ^b = bulk dry density of porous media (soil)
  n = effective porosity
  K_d = distribution coefficient

The retardation factor accounts for the fact that sorption results in a reduction in advection (i.e., when contaminants travel at the same rate as the average velocity of groundwater) by R times. Therefore, if dispersion is neglected, the center of mass of a groundwater plume travels slower than the groundwater velocity by R times. Containment velocities are presented in Section 5.5.2.

5.4.3 Inorganics

Inorganics (primarily metals) as a class are highly variable in their general properties and their behavior in the environment, and are naturally occurring in the various environmental media. The fate of inorganics in the environment is largely determined by their water solubility and tendency to bind to soil that contain minor to moderate amounts of silt and clay. Migration of inorganics is dependant on many factors, including the metal's valence and speciation, and qualities of the subsurface environment (e.g., pH, ORP, the level of organics, the presence of potential anions [such as sulfate, chloride, and others]).

Inorganics can be transported via erosion (if found in surface soil) due to surface water flow. Inorganic concentrations in groundwater are influenced by the composition of aquifer materials, such that they may dissolve or weather (i.e., partial dissolution process in which certain elements leach, leaving other elements behind). Inorganics are soluble to a limited degree in water, with their actual solubilities influenced by pH. Solubilities themselves, however, do not describe the extent of migration through leaching and surface water/groundwater transport. Rather, it is a degree of partition between the soil matrix and the leaching water. In most cases, these inorganics would strongly adsorb to the soil matrix and not preferentially partition into surface and groundwater. Thus, inorganics can range from highly immobile to very soluble.

The 2000 and 2002 Site Investigations performed at AOC 9 did not include identification of processes that affect the transport of individual inorganics. However, the transport behaviors described are borne out in the groundwater and soil samples collected from monitoring wells (G009-MW01 through G009-MW04 that were installed during the 1997 ESI). These are the only wells installed at AOC 9 from which both soil and groundwater samples were collected. The groundwater and soils data collected show the following:

- Seventeen metals were detected in the soil samples with, eight metals (arsenic, barium, beryllium, calcium, chromium, potassium, selenium, and thallium) detected at concentration exceeding screening criteria, and only eight metals were detected in the groundwater samples with only manganese and potassium detected at concentrations exceeding screening criteria.

Based on the neutral to acidic groundwater pH (as measured during the 2000 SI), inorganic parameters are expected to have low mobility (higher mobility in acidic environments) and to migrate in a similar direction as the groundwater.

5.5 Observed and Predicted Migration

This section combines potential migration pathways with the site contaminant trends and distribution, as well as an understanding of the persistence and behavioral characteristics of the predominant contaminants detected at AOC 9. As described above, potential significant migration pathways include surface water flow, groundwater flow (including infiltration), and volatilization.

5.5.1 Surface Water Flow

Groundwater contamination is well documented at AOC 9. In addition, due to the historical uses of the site, site activities (e.g., chemical spills to the ground) may have resulted in surface soil contamination at various, sporadic locations throughout the site, although significant surface soil contamination has not been detected to date.

Surface water flow at AOC 9, associated with the discharge of groundwater to the ground surface and precipitation events that does not pond for evaporation and infiltration, has been observed to allow lateral migration of overburden groundwater and possibly near surface soil contaminants. The elevated levels of VOCs detected in the on-site drainageway surface water samples generally correspond to the areas with elevated VOC levels in the groundwater. Analytical data for the surface water samples collected from the on-site drainageways agree with the assumption that contaminated groundwater discharges into the on-site drainageways in the vicinity of the former storage igloos (south of Perimeter Road) and the upgradient end of the culvert passing beneath Perimeter Road, before discharging into SMC (see Section 4.3).

Two VOCs were detected in the SMC surface water samples collected during the 2000 SI. Chlorobenzene was detected at very low concentrations in all four samples and 1,2-DCB was detected in one sample at a very low concentration. No VOCs were detected at concentrations exceeding screening criteria. The absence of contaminants at concentrations exceeding screening criteria in SMC indicates that the surface water and groundwater discharging to the creek is either significantly diluted by the high volume of water flowing in the creek, degraded before entering the creek, quickly volatilized as it comes in contact with the atmosphere, or a combination of all three processes.

Aluminum, iron, and manganese, were also detected in all four Year 2000 SI surface water samples at concentrations exceeding screening criteria. Concentrations detected in AOC 9 soil samples (1995 Group I AOIs CS, 1997 ESI and 2000 SI) ranged between 3,500 and 19,000 mg/Kg for aluminum; between 8,220 and 29,000 mg/kg for iron; and between 80 and 860 mg/kg for manganese. Aluminum detected in site background soils (see Appendix G) ranged between 5,710 and 12,100 mg/Kg (site background level estimated as twice the arithmetic mean at 18,306 mg/kg); iron detected in site background soils ranged between 16,600 and 32,400 mg/Kg (site background level of 47,350 mg/kg); and manganese detected in site background soils ranged between 418 and 2,300 mg/Kg (site background level of 7,175 mg/kg). Based on the ranges of aluminum, iron, and manganese concentrations found in AOC 9 and site background soils, these elements are considered common and naturally occurring at AOC 9 and are not considered Chemicals of Potential Concern (COPCs). Lead was detected in one surface water sample (AOC9-SW12) above screening criteria. The source of the lead is unknown and not believed to be site-related, as none of the concentrations of lead detected in either the 2000 SI or 2002 SI soil or sediment samples exceeded screening criteria.

In addition, erosion of the on-site drainageways and upgradient bank of SMC results in the entrainment of soil particles within the surface water flow, whereby particles remain suspended in turbulent flows and are subsequently deposited in SMC. Sediment samples collected from SMC during the 1995 CS investigation, 1997 ESI (G009-SD07), and Year 2000 SI (AOC9-SD10) confirm that the sediment in a small portion of SMC immediately downgradient of AOC 9 has been adversely impacted by site contaminants either via erosion, groundwater discharge into SMC, or a combination of both. However, sediment samples collected immediately upgradient and downgradient of AOC 9 contained little or no significant site-related contamination.

5.5.2 Groundwater Flow

Overburden groundwater flow is the primary contaminant transport mechanism at AOC 9 for the COPCs (VOCs) as well as dissolved inorganic compounds. Overburden groundwater at the site is recharged by the infiltration of precipitation and associated with the migration of uncontaminated groundwater from upgradient areas off site. VOCs and inorganic compounds found in the overburden permanent monitoring wells and Geoprobe temporary wells indicate that leaching of these compounds from site soils has occurred and, if residual VOC contamination remains in the subsurface soils, may continue to occur; and that the presence of inorganic compounds is likely a natural occurrence.

Halogenated aliphatic hydrocarbons, aromatic hydrocarbons, and halogenated aromatic hydrocarbons are the primary groups of VOCs detected at AOC 9.

As expected, based on the overburden groundwater flow direction, and confirmed by the analytical data, the lateral migration of VOC contamination is also generally to the southwest towards topographical lows and discharges into SMC, the unnamed tributary, and the surface seeps located immediately upgradient of SMC and the culvert beneath Perimeter Road.

Halogenated aliphatic compounds were generally detected at their highest concentrations further downgradient than the highest concentrations of either the aromatic hydrocarbons, or the halogenated aromatic hydrocarbons. This is consistent with the anticipated behavior as halogenated aliphatics typically have lower partitioning coefficients and thus, are less likely to sorb on to the soils, and instead are likely to leach more quickly into the groundwater.

The inorganics migration rate in groundwater is not well understood and is difficult to predict. In general, the pH of the groundwater is approximately 7.0, which does not enhance mobility rates of the inorganics. Although migration of metals in groundwater is expected to occur, it is less significant than migration of VOCs.

In general, the VOCs and inorganics are expected to flow along with the groundwater, but at lower rates than the groundwater. Based on the methodology presented in Section 5.4.2, the estimates of contaminant migration rates for significant VOCs in overburden groundwater based on the retardation factor are provided below.

Groundwater Velocity

As discussed in Section 3.5.3, groundwater velocities for the site are estimated to be 14.4 and 8.4 ft/day northeast and southwest of Perimeter Road, respectively. The lower K values southwest of Perimeter Road are causing the groundwater velocities to be much lower than northeast of Perimeter Road despite the higher gradient. The difference in groundwater velocities between the northern and southern portions of the site is expected to slow down groundwater flow from the north to the south area, causing a damming effect, which along with the more level topography north of Perimeter Road would explain the “pooling” of contaminants in this area.

Retardation Factor

Based on the bench scale tests performed for the Groundwater Treatability Pilot Study (E & E 2003a), the soil bulk dry density at AOC 9 is 1.5 g/cc. Although TAGM 4046 assumes the mass fraction of organic carbon for primary water-bearing soils to be 1%, analytical data obtained from the soil samples used for bench scale tests performed indicates that the average mass fraction of organic carbon is approximately 0.9%. Table 5-1 presents K_{oc} and K_d for several detected VOCs and Table 5-2 presents estimates of contaminant velocities for select site contaminants in overburden groundwater.

Natural Attenuation Evaluation

Groundwater samples collected from the monitoring wells on site at AOC 9 during the 2000 SI were analyzed for Natural Attenuation (NA) parameters (see Table 5-3). In addition, the contaminant concentrations and distribution patterns within the dissolved phase were evaluated to identify degradation patterns. The following review was performed to determine whether NA of halogenated aliphatic hydrocarbons occurs at the site.

Contaminant Concentrations

An increase of degradation products (e.g., cis-1,2-DCE and VC) concentrations in relation to parent compounds (TCE) concentrations is the absolute requirement for establishing occurrence of NA. The progress of degradation can best be evaluated through evaluation of contaminant concentrations in the Geoprobe and hydropunch samples collected during the 2000 and 2002 SIs (see Figures 4-1 through 4-3). TCE, cis-1,2-DCE, and VC have been detected in groundwater from the suspected upgradient source area surrounding monitoring well AOC9-MW08 downgradient to SMC and its unnamed tributary. Concentrations of TCE in the plume range from 10.3 µg/L near MW08 to a high of 66.9 µg/L immediately upgradient of SMC, indicating that a slug of TCE has moved from the source area, northeast of Perimeter Road, towards SMC. Concentrations of cis-1,2-DCE and VC in the plume range from 70 and 13.1 µg/L, respectively, near MW08 to a high of 227.2 and 63.7 µg/L, respectively, upgradient of SMC, indicating that as the slug of TCE moved from the source area towards SMC, much of it degraded into daughter products. This indicates that NA occurs in the plume.

Evaluation of the NA parameters focused primarily on the 2000 SI NA data collected from monitoring wells AOC9-MW07 and -MW08, and the Baseline Treatability Study data. AOC9-MW08 is located in the middle of the upgradient portion of the plume, and MW07 is located in the middle of the downgradient portion of the plume (see Figures 4-1 through 4-3). Monitoring wells G009-MW02 and -MW03 are located in the central portion of the plume towards the edge. The remaining wells on site are located outside of the areas of significant contamination, and were used for comparison purposes.

Dissolved Organic Carbon: DOC is a typical electron donor necessary for the reduction of chlorinated compounds. Higher DOC concentrations (>20 mg/L) indicate favorable conditions for NA. However, DOC concentrations in the monitoring wells at AOC 9 (SI and Treatability Study Baseline data) range from ND in MW07 to a high of 4.6 mg/L in MW13 indicating that as organic carbon from the wetland soils in the southern portion of the contaminant plume dissolves into the groundwater, the dechlorination process immediately uses it up, or that DOC is not the primary electron donor in use on site. Thus, DOC does not provide significant support of the NA occurrence. However, BTEX compounds can also be a source of carbon and energy used to reduce chlorinated compounds. Varying levels of BTEX and related compounds have been detected in site media throughout AOC 9.

Chloride: Chloride is produced during reductive dechlorination. Review of the data suggests that background levels are non-detect at the site. Chloride concentrations in monitoring wells MW07 and MW08 were also non-detect. However, chloride levels in monitoring wells MW02 and MW03 were measured at significantly elevated concentrations (24.1 and 12.8 mg/L, respectively), indicating that dechlorination may be occurring in the center of the contaminant plume.

Oxygen: Reductive dechlorination, the primary biological treatment mechanism, occurs only in anaerobic conditions (less than 0.5 mg/L of DO). Oxygen, measured during low-flow purging using a flow-through cell showed fairly aerobic conditions in all wells at AOC 9. These observations are strong contraindicators of NA. However, during the Baseline sampling for the Treatability Study, DO levels in wells AOC 9-MW08 and -MW12 were consistent with anaerobic conditions. DO levels measured in the field are questionable due to difficulties encountered with the DO probes during sampling and they may vary seasonally.

ORP: ORP measures the availability of electrons, although its measurements can only be evaluated comparatively, unless they are at the extreme ends of the typical ranges (e.g., -300 to -400 mV or +300 mV). Such extreme readings were not found at AOC 9. However, negative readings were measured in the upgradient (AOC 9-MW08) and downgradient portions (AOC 9-MW07) of the plume as well as in well AOC9-MW05 located farther downgradient of the plume, on the other side of the tributary to Six Mile Creek. Thus, this parameter provides moderate support of the presence of NA.

Ferrous iron: The presence of ferrous iron suggests conditions of strong enough reducing power that may be sufficient to promote reductive dechlorination. Ferrous iron concentrations (using SI and Treatability Study Baseline data) were very low everywhere except in the wells located in the plume and downgradient portions (AOC 9-MW07, -MW08, -MW12, and -MW13) with upgradient plume well AOC 9-MW08 having the highest concentration of 3.55 μg/L during the 2002 treatability study baseline sampling. This parameter provides moderate support of the presence of NA.

Sulfate: Sulfate is an electron acceptor used under anaerobic conditions. A localized depletion of this anion compared to background suggests the occurrence of active anaerobic metabolism. Sulfate levels in monitoring wells AOC 9-MW07, -MW08, -MW12, and -MW13 were measured at significantly depleted concentrations (ND to 7.62 mg/L) whereas much higher concentrations were detected in most of the other wells (e.g., 24.5 mg/L in G009-MW04 and 16.4 mg/L in G009-MW01), which is a strong indication that active anaerobic metabolism (NA) occurs in these portions of the contaminant plume.

Nitrate: Nitrate has a role similar to sulfate, and its concentrations are interpreted in a similar fashion. A localized depletion of this anion compared to background suggests the occurrence of active anaerobic metabolism. Nitrate concentrations in monitoring wells MW07 and MW08 were measured at significantly depleted concentrations (ND and 0.037J mg/L, respectively) whereas much higher concentrations were detected in most of the other wells (e.g., 1.76 mg/L in G009-MW04 and 0.615 mg/L in AOC9-MW06), which is a strong indication that active anaerobic metabolism (NA) occurs in these portions of the contaminant plume.

Methane: Methane is the most important of the three parameters evaluated by the MEE analysis because its presence suggests very strong reducing conditions, which are conducive to reductive dechlorination. A localized increase of methane compared to background suggests the occurrence of active anaerobic metabolism. Methane concentrations in monitoring wells MW07 and MW08 were measured at significantly increased concentrations (1.8 and 2.8 mg/L, respectively) when compared to the range (ND to 0.48B mg/L) detected in the remaining wells on site. This is a strong indication that active anaerobic metabolism (NA) occurs in these portions of the contaminant plume.

Ethene/Ethane: No ethene was observed in any of the monitoring wells, and only MW07 contained ethane (3.45 μg/L). Ethene and ethane are ultimate end-products of reductive dechlorination, but require extremely reducing conditions to be produced. More typically, partially reduced compounds such as DCE and VC are subsequently oxidized to complete the destruction process, and thus the absence of ethane or ethene accumulation across the site is not unexpected. However, detection of ethane in MW07, which is located in the center of the downgradient portion of the plume, indicates that extremely reducing conditions do exist in the area of the plume immediately upgradient of SMC.

Summary of NA Evaluation

In summary, based on the distribution of contaminants (TCE, cis-1,2-DCE and VC) and the NA parameters discussed above, there is strong evidence that NA of halogenated aliphatic hydrocarbons occurs at AOC 9. The NA appears to be occurring primarily along the central axis of the plume, from the upgradient source area near AOC9-MW08 down to the wetland area immediately upgradient of SMC (AOC9-MW07).

Groundwater has been observed to spread contamination in the direction of groundwater flow (southwesterly) and vertically downward through the overburden north of Perimeter Road, and vertically upward towards SMC and the associated wetlands. As the contamination migrates, the natural organic carbon in the soil will adsorb the organic compounds, thus slowing the advance of the VOC plumes. Additionally, VOCs will be attenuated in the direction of groundwater flow in response to dispersion, volatilization, and degradation (as described above). Overall, unless residual contamination is present in the subsurface soils in the source areas, VOC concentrations in the overburden groundwater would be expected to decline over time as contaminants migrate horizontally, and vertically attenuate.

The metals migration rate in groundwater is not well understood and is difficult to predict. In general the pH of the groundwater is approximately 7.0, which does not enhance mobility rates of the detected inorganics. Migration of metals in groundwater is expected to occur, but is less significant than migration of VOCs.

5.5.3 Volatilization

A passive soil gas survey of 49 points evenly spaced across the southern portion of the site was performed during the 1997 ESI (see Figure 2-2). The results of the survey indicated VOC contamination present in the groundwater (benzene, toluene, chlorobenzene, and chloromethane) was migrating in the form of soil gas through the unsaturated soil zone, and ultimately to the ambient air at the ground surface. In addition, volatilization of VOCs likely occurs at the locations discussed where groundwater discharges to the surface.

Migration of soil vapors (gases) occurs through the void spaces between the soil grains in the unsaturated soil zone. The thickness of the unsaturated soil zone ranges from nonexistent in the wetland areas immediately upgradient of SMC to a maximum of approximately 15 feet thick north of Perimeter Road. However, migration of soil gas is less predictable than groundwater migration due to natural subsurface heterogeneities and subsurface structures (i.e., utilities, building foundations, pavement, etc.).

Table 5-1 Summary of Chemical and Physical Properties of Select Organic Contaminants AOC 9, Former Griffiss AFB, Rome, New York

Chemical	K_{oc} (mg/L)	Log K_{ow}	S (mg/L)	H (Atm x m3/mole)	VP (mm of Hg)	K_d (mg/L)[1]	Density
Benzene	83	2.13	1,780[a]	5.48E-03[b]	76[a]	0.75	0.8765[a]
Chlorobenzene	330	2.71 – 2.98	500[a]	4.45E-03[b]	9[a]	2.97	1.1058[a]
Ethylbenzene	1100	1.56 – 2.15	1,780[a]	4.48E-03[b]	76[a]	9.90	0.8765[a]
Isopropylbenzene	2818	3.66	48.3[b]	1.47E-02[b]	10[c]	25.36	0.8618[a]
Methylene Chloride	25	1.25	16,700[b]	2.57E-03	400[d]	0.23	1.325[a]
Trichloroethene	126	2.53	1,100[a]	9.9E-03[a]	57.8[a]	1.13	1.4642[a]
Vinyl Chloride	57	0.60	1,100[b]	2.78	2,660[b]	0.51	0.9106[a]
Xylene	240	3.18	200[b]	7.1E-03	8.8[b]	2.16	0.8631[a]
1,2-Dichlorobenzene	1700	3.38 – 3.55	100[a]	1.2E-03[a]	1.5[b]	15.30	1.3048[a]
1,4-Dichlorobenzene	1700	3.37	65.3[b]	1.5E-03[a]	10[e]	15.30	1.2475[a]
cis-1,2-Dichloroethene	59	2.09	600[a]	6.74E-03[b]	200[f]	0.53	1.27[b]
1,2,4-Trimethylbenzene	468	3.78	57[b]	6.16E-03[b]	2.10[b]	4.21	0.8760[a]
1,3,5-Trimethylbenzene	1622	3.42	48.2[b]	3.93E-03[b]	1[g]	14.60	0.8652[a]

Sources: Montgomery 2000, EPA EMCI Online Database 2001, and Risk Assessment Information System. Draft Groundwater Treatability Pilot Study Report, Former Griffiss Air Force Base, Rome, New York (E & E 2003).

Notes:

(1) Kd calculated assuming the fraction organic carbon is 0.9%.

[a] Value at 20°C
[b] Value at 25°C
[c] Value at 38.3°C
[d] Value at 24.1°C
[e] Value at 54.8°C
[f] Value at 14°C
[g] Value at 9.6°C

Key:

BCF = Bioconcentration factor for freshwater fish unless otherwise noted.
Density = Density/specific gravity (g/cm^3).
H = Henry's Law constant (in atmospheres per cubic meter per mole).
K_{oc} = Organic carbon coefficient (in milliliters per gram).
K_d = Distribution coefficient (in milliliters per gram).
K_{ow} = Octanol Water Partition Coefficient.
S = Solubility (in milligrams per liter).
VP = Vapor pressure (in millimeters mercury).

Table 5-2 Estimated Average Contaminant Velocities, AOC 9, Former Griffiss AFB, Rome, New York

Chemical	Retardation Factor	Estimated Average Contaminant Velocities (feet per day) North Area	Estimated Average Contaminant Velocities (feet per day) South Area
Benzene	4.2	3.43	2.00
Chlorobenzene	13.7	1.05	0.61
Ethylbenzene	43.4	0.33	0.19
Isopropylbenzene	109.7	0.13	0.08
Methylene Chloride	2.0	7.20	4.20
Trichloroethene	5.8	2.48	1.49
Vinyl Chloride	3.2	4.5	2.63
Xylene	10.3	1.40	0.82
1,2-Dichlorobenzene	66.6	0.22	0.13
1,4-Dichlorobenzene	66.6	0.22	0.13
cis-1,2-Dichloroethene	3.3	4.36	2.55
1,2,4-Trimethylbenzene	19.0	0.76	0.44
1,3,5-Trimethylbenzene	63.6	0.23	0.13

Table 5-3
AOC 9 Summary of Natural Attenuation Indicators, Former Griffiss Air Force Base, Rome, New York

Analyte	Year 2000 Supplemental Investigation									2002 Baseline for Treatability Study			
	G009-MW01 5/11/00	G009-MW02 5/11/00	G009-MW03 5/11/00	G009-MW04 5/11/00	AOC9-MW05 5/9/00	AOC9-MW06 5/8/00	AOC9-MW07 5/10/00	AOC9-MW08 5/25/00	AOC9-MW08/D 5/25/00	AOC9-MW08 10/22/02	AOC9-MW08/D 10/22/02	AOC9-MW12 10/22/02	AOC9-MW13 10/22/02
pH (s.u.)	7.56	6.86	7.20	7.24	7.06	7.31	7.34	7.27		7.08		7.1	7.23
Temperature (°C)	8.61	10.11	8.80	8.11	9.19	9.55	9.86	11.95		11.48		10.83	10.55
Conductivity (µS/cm)	285.0	364.0	355.0	321.0	175.0	171.0	315.0	385.0		1034.0		737	909
Turbidity (NTU)	1.59	7.15	18.8	9.48	22.6	14.4	21.9	48		28.8		4.48	2.17
DO (mg/L)	3.39	13.58	1.38	4.18	1.97	4.67	1.39	2.42		0.67		0.13	0.14
ORP (mV)	168.3	144.8	158.7	199.1	-39.1	238.1	-36.9	-101.6		-34		19	-8
Alkalinity (mg/L as $CaCO_3$)	9.35	12.57	12.28	9.06	10.8	130	10.62	225		NM		NM	NM
Ferrous Iron (mg/L)	0.00	0.00	0.03	0.00	0.35	0.02	0.35	1.61		3.55		2	1.7
Chloride (mg/L)	0.1 U	24.1	12.8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA
Nitrogen, Nitrate (mg/L)	0.226	0.592	0.237	1.76	0.0672 J	0.615	0.1 U	0.0372 J	0.1 U	NA	NA	NA	NA
Nitrogen, Nitrite (mg/L)	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA
Phosphorus, Dissolved Orthophosphate (mg/L)	0.1 U	0.1 U	0.1 U	0.1 U	0.37	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA
Sulfate (mg/L)	16.4	9.11	12.5	24.5	9.21	14.0	0.1 U	3.56	3.60	5.42	5.40	5.49	7.62
DOC (mg/L)	1.14	0.968 J	0.848 J	1.32	1.51	1.39	0.1 U	2.5	3.0	4.3	5.2	3.8	4.6
Ethane (µg/L)	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.45	3.7 U	3.7 U	NA	NA	NA	NA
Ethene (µg/L)	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	NA	NA	NA	NA
Methane (µg/L)	41 B	37	410 B	480 B	9.3 U	5.7 U	1800	2800	2700	NA	NA	NA	NA
Propane (µg/L)	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	NA	NA	NA	NA
Sulfide (mg/L)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA

Key:

AOC 9 = Area of Concern 9.
B = Analyte detected in the blank.
$CaCO_3$ = Calcium carbonate.
/D = Duplicate sample.
DO = Dissolved oxygen.
DOC = Dissolved organic carbon.
J = Estimated value.
mg/Kg = Milligrams per kilogram.
mg/L = Milligrams per liter.
mV = Millivolt.
MW = Monitoring well.

NA = Not analyzed for this parameter.
NM = Field parameters not measured.
NTU = Nephelometric turbidity units.
ORP = Oxidation reduction potential.
s.u. = Standard units.
U = Not detected (practical quantitation limit listed).
µg/Kg = Micrograms per kilogram.
µg/L = Micrograms per liter.
µS/cm = MicroSiemens per centimeter.
°C = Degrees Celsius.

6 Human Health Risk Assessment

6.1 Introduction

The objective of this baseline human health risk assessment (HHRA) is to determine whether contaminants from AOC 9 could pose significant risks to human health under existing or potential future site conditions. This assessment is based on environmental data collected during a series of investigations over a 10-year period from July 1992 through July 2002. The results of this evaluation may be used to help determine whether site remediation is warranted and, if so, to help define remedial goals.

Environmental investigations at AOC 9 have shown that high levels of chlorinated hydrocarbons are present in site groundwater, and that the contaminant plume extends to SMC. The sources of groundwater contamination appear to be localized waste disposal and possibly solvent leaks or spills related to past WSA operations.

AOC 9 is currently inactive and access is restricted by gates across Perimeter Road. There is no evidence that anyone visits the site on a regular basis. This area is expected to remain vacant in the future (USAF 1995; 1999), acting as a buffer zone between the runway and future development in adjacent areas. The on-base portion of SMC is classified by the NYSDEC as Class C surface water, the best use of which is fishing. In the vicinity of AOC 9, the creek is shallow and has no known recreational use.

6.1.1 Risk Assessment Organization

The HHRA has been prepared and organized following the general approach outlined in the USEPA's Risk Assessment Guidance for Superfund (RAGS), Volume I, Human Health Evaluation Manual (HHEM), Part A (USEPA 1989) and Part D (USEPA 2001a), and other related USEPA guidance.

The risk assessment is organized into the following major sections:

- Section, 6.1, which introduces the conceptual site model identifying potential pathways for human exposure to site-related contaminants;
- Section 6.2, which briefly reviews available site characterization data, describes the screening process and criteria used to select COPCs, and identifies the COPCs to be carried through the quantitative assessment;
- Section 6.3, the exposure assessment, which reviews the exposure setting and potentially complete exposure pathways, then describes how exposure point concentrations and exposure estimates were calculated for each exposure scenario;
- Section 6.4, the toxicity assessment, which briefly describes how quantitative toxicity values developed by USEPA are used to estimate the magnitude of cancer risks or the likelihood of systemic health effects, then summarizes toxicity values for the COPCs at this site;
- Section 6.5, the risk characterization, which explains how the toxicity and exposure estimates were combined to calculate potential risks, then presents and discusses the estimated site risks;
- Section 6.6, the uncertainty assessment, which discusses sources of uncertainty in the risk evaluation process and their tendencies to underestimate or overestimate true site risks; and
- Section 6.7, which summarizes the results and conclusion of the HHRA.

Tables were prepared in accordance with RAGS Part D (USEPA 2001a) to accompany the risk assessment text can be found in Appendix L.

6.1.2 Site Conceptual Model

A site conceptual model (SCM) for AOC 9 is presented in Figure 6-1. Soil and groundwater at the site were contaminated by past spills and localized waste disposal activities. Contaminants detected in soil include metals, PAHs, pesticides, and VOCs. In groundwater, metals and VOCs (mainly chlorinated hydrocarbons) were detected. Contaminants have migrated with groundwater flow and surface runoff from source areas to drainageways and SMC.

Consistent with RAGS-Part A guidance, institutional controls were not considered in the risk assessment. Therefore, restriction of access to the site by gates was not considered and the risk assessment evaluated risks in the absence of institutional controls under current and future land use.

Under existing conditions, individuals visiting AOC 9 for recreational purposes would come into contact with surface soils, and those who approaching or wading in the creeks or tributaries would also have contact with sediment and surface water. Visitors could potentially be exposed to site-related contaminants by:

- Direct contact (dermal contact and incidental ingestion via hand-to-mouth transfer) with surface soil;
- Direct contact with sediment in SMC and along the creek bank; and
- Direct contact with surface water in SMC and intermittent flows in drainage channels.

Groundwater is inaccessible and there are no direct routes of exposure to groundwater contamination. Inhalation exposures are unlikely under existing conditions. The low levels of VOCs detected in soil gas, surface water, and sediment indicate that vapor releases to ambient air are negligible. The soil at AOC 9 is generally moist and the surface is covered with grass that prevents wind erosion and generation of airborne dust from soil. Although current conditions are expected to mitigate exposure to airborne dust, dust exposure is included in the evaluation of potential future risks to on-site receptors using the assumption that the soil cover is not present at the site.

Site-related contaminants discharged to SMC may be taken up by fish. Recreational fishing is unlikely in the shallow water near AOC 9, but might occur elsewhere along the creek. If fishermen consume fish from SMC, they could potentially be exposed to site-related contaminants, particularly those that tend to bio-concentrate in fish, such as certain metals and pesticides. As part of the RI of the SMC AOC (Law 1996a), fish samples were collected from three locations along the creek, one adjacent to AOC 9, and fish consumption risks were estimated from the fish tissue data in the associated HHRA. Fish consumption was not re-evaluated in this HHRA, but the relevant risk results from the previous assessment are reviewed in the risk characterization section, since this exposure route could be a significant contributor to the total risks of some site visitors.

According to the USAF's plans for disposal and reuse of the airfield property at Griffiss AFB (USAF 1995; 1999), the area between the northeast edge of the runway and Perimeter Road will be maintained as public/recreational/open space. All of the areas designated with this land use would be maintained as open space (i.e., no development is planned). However, this area is currently part of a secured airfield and access is limited. The area north of Perimeter Road, including the former WSA, is currently designated as Vacant Land (Development Reserve). Several small businesses are currently operating within the former WSA, and the remaining vacant land is potentially available for development. Since no development of the site is expected in the foreseeable future, potential exposure pathways for future site visitors are expected to be the same as those of current visitors. However, the frequency of such exposures could increase from current levels if the site were to become more accessible due to land use changes and development in surrounding areas.

Although existing conditions at AOC 9 are not expected to change, this HHRA assumes that site development could occur and considers two hypothetical alternative future land uses, residential use and commercial/industrial use. Future site residents, who would likely engage in outdoor recreation near their homes, could potentially be exposed to contaminants in surface soil, sediment, and surface water by the same direct contact routes as site visitors. In addition, if there were areas of bare soil as a result of future development, residents might inhale airborne dust raised by wind erosion of the surface soil. If homes were constructed over the plume of VOC contamination that exists in groundwater at AOC 9, vapors could infiltrate upward through the soil and enter the buildings through foundations cracks, exposing residents to contaminant vapors though inhalation of indoor air. The exposure pathways described thus far for future site residents include:

- Direct contact with surface soil;
- Inhalation of airborne dust from wind erosion of surface soil;
- Direct contact with sediment during recreational activities;
- Direct contact with surface water during recreational activities; and
- Inhalation of indoor air vapors that have infiltrated up from VOCs in groundwater.

Since there is an existing municipal water supply system, it is highly unlikely that site groundwater would ever be used for household needs. However, if a well were installed for domestic water use, residents would also be exposed to groundwater contamination as follows:

- Consumption of drinking water from the tap;
- Dermal contact with groundwater, mainly during baths or showers; and
- Inhalation of vapors released directly from groundwater to air during baths/showers.

If the site were developed for a commercial/industrial land use, future workers could potentially be exposed to contaminants in surface soil and groundwater by the same pathways as future residents that are outlined above. Future site workers would not be expected to have contact with creek sediment and surface water under normal circumstances.

Development of AOC 9 for either alternative future use scenario would involve a period of construction with probable excavation and re-grading of soil in at least part of the site. During excavation activities, construction workers would be directly exposed to contamination in subsurface soil that is normally inaccessible. In addition, excavation and other soil disturbance could increase airborne dust levels substantially, exposing the workers to soil contaminants on inhaled particles. Excavations in some areas could extend into the water table, allowing intermittent direct exposures to contaminated groundwater and release of vapors from volatile groundwater contaminants to ambient air. The exposure pathways for construction (excavation) workers are:

- Direct contact (dermal contact and incidental ingestion via hand-to-mouth transfer) with subsurface soil;
- Inhalation of airborne dust from disturbance of subsurface soil;
- Direct contact with groundwater seeping into excavated areas (intermittent exposure); and
- Inhalation of vapors released to air from exposed groundwater.

A list potential exposure pathways and receptor groups considered in the HHRA based on the SCM is presented in Table 1 in Appendix L. Note again that no development of the site is planned, and the area is expected to remain vacant (USAF 1995; 1999). The exposure pathways listed for recreational visitors are the only pathways that might reasonably be expected under existing and anticipated future site conditions. The hypothetical future exposures listed for site residents, commercial/industrial workers, and construction workers are considered unlikely.

6.2 Identification of Chemicals of Potential Concern

This section describes the process that was used to select the COPCs for the HHRA. All available analytical data were first compiled, reviewed, and sorted by exposure medium. The contaminant concentrations detected in each medium were then screened against risk-based screening concentrations (RBSCs) to eliminate chemicals found only at low levels that would be unlikely to pose any significant health risk.

6.2.1 Data Collection

This risk assessment relies on data collected from AOC 9 during a series of field investigations, listed below:

- Thirteen soil boring samples collected from AOC 9 in July 1992 as part of a site investigation of the WSA (Law 1993);
- Four surface water and eight sediment samples collected from the AFFF pond and SMC near AOC 9 in May 1994 as part of the RI for SMC (Law 1996a);
- Confirmatory samples from AOC 9 along the creek bank collected in August/ September 1995, including four soil boring samples, four groundwater samples from temporary monitoring wells, four sediment samples, and four surface water samples (E & E 1996);
- The 1997 ESI included a passive soil gas survey and collection of 15 soil boring samples, four groundwater samples from newly installed permanent wells, four sediment samples, and four surface water samples (E & E 1998b);
- The Year 2000 SI (E & E 2001a) that included collection of six soil samples from test pits, groundwater samples from the four existing monitoring wells and four newly installed wells, sediment and surface water samples from four creek locations and the AFFF pond, and for VOC analysis only, 94 groundwa-

ter samples from 46 Geoprobe/Hydropunch locations, and eight surface water samples from intermittent creeks and drainage ways; and

- The Year 2002 SI (E & E 2002c) that included collection of seven soil samples from a test pit and two boring locations, a sediment sample from the AFFF pond, and (for VOC analysis only) 56 groundwater samples from another 14 Geoprobe locations.

Details of the sampling activities, analyses performed, and analytical results can be found in the referenced reports and are summarized in Section 2 of this report.

6.2.2 Data Evaluation and Data Qualifiers

Data were reviewed using USEPA's functional guidelines for evaluating inorganic and organic analyses (USEPA 1994a, b), and the usability of data for risk assessment purposes was determined using established USEPA guidelines (USEPA 1992a).

Some of the reported analytical results were flagged with a "J" qualifier indicating that the value reported is estimated. The "J" qualifier is usually applied when the reported value is less than the specified method detection limit. While they marginally reduce the accuracy and confidence in the results of the quantitative estimates of exposures, USEPA guidance requires use of J-flagged values because they are the best available estimates of the actual concentrations present.

A "U" flag applied to an analytical result indicates that the chemical was not detected in the sample at the specified quantitation limit. (In the analytical summaries included in some of the earlier reports, U-flagged values were reported as "ND"). For chemicals that were selected as COPCs (based on high concentrations detected in some site samples) to be carried through the quantitative risk assessment, U-flagged results were included in the data sets and used in the calculations of exposure point concentrations (EPCs) by assuming each non-detected concentration to be equal to half the quantitation limit reported, in accordance with USEPA recommendations (USEPA 1989).

6.2.3 Selection of Chemicals of Potential Concern

Chemicals detected in soil, sediment, surface water, or groundwater were identified as COPCs if concentrations detected at the site exceeded RBSCs based on human health risks. The criteria that were considered are discussed below.

Essential Nutrients

Calcium, magnesium, potassium, and sodium are considered to be essential nutrients. Although extremely high doses of essential nutrients may cause adverse health effects in humans, these substances generally are not considered to be toxic to humans under normal conditions of exposure. Therefore, these chemicals were excluded as COPCs in the HHRA.

Risk-Based Screening Concentrations

COPCs were selected by comparison of detected concentrations to RBSCs adapted from USEPA Region 9 Preliminary Remediation Goals (PRGs), specifically the risk-based PRGs calculated for soil and tap water using residential exposure assumptions. The risk-based PRGs calculated by USEPA Region 9 correspond to either a target cancer risk of 1 x 10^{-6} or to a target hazard index (HI) of 1.0 for non-cancer effects. For screening purposes, PRG values based on non-cancer effects were adjusted downward by an order of magnitude to give RBSCs corresponding to a target HI of 0.1. PRG values based on cancer risk were adopted as RBSCs without adjustment. Concentrations in site soil and sediment were compared to risk-based criteria derived for residential soil, while surface water and groundwater were compared to risk-based criteria derived for tap water. If a chemical was detected at a concentration exceeding its RBSC in even one sample, it was identified as a COPC and carried through the quantitative assessment. Chemicals detected only at concentrations below the RBSCs, which pose negligible health risks, were eliminated from further consideration in the risk assessment.

In Appendix L, Tables 2.1 through 2.4 summarize the occurrence and the levels of all chemicals detected in soil, sediment, surface water and groundwater along with the RBSCs. COPCs are identified in the second to last column in Tables 2.1 through 2.4 and highlighted in bold font. The COPCs are:

- In soil – aluminum, antimony, arsenic, iron, manganese, thallium, dieldrin, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene;

- In sediment – aluminum, arsenic, iron, manganese, thallium, aldrin, heptachlor epoxide, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene;

- In surface water – aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, silver, vanadium, cyanide, BEHP, pentachlorophenol, benzene, chlorobenzene, 1,4-DCB, cis-1,2-DCE, PCE, TCE, and 1,3,5-TMB; and

- In groundwater – aluminum, chromium, iron, manganese, thallium, 2-methylnaphthalene, naphthalene, acetone, benzene, n-butylbenzene, chlorobenzene, chloroform, 1,2-DCB, 1,3-DCB, 1,4-DCB, 1,2-dichloroethane, cis-1,2-DCE, methylene chloride, PCE, TCE, 1,2,4-TMB, 1,3,5-TMB, xylenes, and VC.

6.3 Exposure Assessment

There are three steps in the exposure assessment process: characterization of the exposure setting, identification of potential exposure pathways, and quantification of potential exposures.

6.3.1 Exposure Setting and Potentially Exposed Populations

Section 1.3 provides a brief description of site setting. Currently, the AOC 9 is inactive and access is restricted. Although visitors may occasionally enter the site for recreational purposes, there is no evidence that this occurs on a regular basis. The site is expected to remain vacant, but it could become more accessible to visitors if the surrounding areas were redeveloped for commercial use.

6.3.2 Complete Exposure Pathways

Exposure pathways that are potentially complete under existing site conditions or under assumed future site conditions are shown in the SCM (Figure 6-1). Table 1 in Appendix L lists potential exposure pathways and receptors based on the SCM, indicates which were selected for quantitative evaluation in the risk assessment, and provides the rationale for selection or exclusion. For resident and recreational exposures, child and adult age groups are included in accordance with USEPA recommendations (see discussion in Section 6.3.3.2.).

Most of the pathways listed were selected for quantitative evaluation. Construction workers' minor exposures from intermittent direct contact with groundwater were not evaluated. Risks associated with consumption of fish from SMC were evaluated in a previous HHRA for the SMC AOC; results from the previous assessment are reviewed in the risk characterization section and included with the risk summary.

6.3.3 Quantification of Exposure

This section explains how the quantitative exposure estimates were obtained. Section 6.3.3.1 describes the exposure media that were evaluated and the calculations of exposure point concentrations for the COPCs. Section 6.3.3.2 presents the exposure estimate calculations for each route of exposure and explains the rationale for selecting the input values used in the calculations.

6.3.3.1 Exposure Point Concentrations

EPCs of COPCs in surface soil, subsurface soil, sediment, surface water, and groundwater were calculated directly from concentrations measured in those media, and the results are summarized in Appendix L Tables 3.1 through 3.6. For current and future surface soil exposures, the EPC was based on all surface and near-surface soil samples collected from depths up to 2 feet. Deeper soil samples collected from depths greater than 2 feet were used to calculate the EPCs for subsurface soil exposures of construction workers. The EPC for sediment was based on the sediment samples collected from AOC 9 and the adjacent portion of SMC. Two EPCs were estimated for surface water. The EPC for creek water exposures was based on samples collected from the creek and from seeps on the creek bank. The other EPC for "temporary" surface water was based on samples collected from site drainage ditches and the AFFF pond.

The available data set for groundwater included a large number of samples that had been collected from temporary wells for VOC analysis in order to determine the area extent of the contaminant plume. Samples were collected from multiple depths at some locations, and a fair number of samples was collected from locations outside the plume. In cases where there were multiple samples from a location, the results were consolidated by retaining the maximum detected concentration of each COPC or, if a chemical was not detected at the location, the median quantitation limit. To avoid underestimating potential exposures associated with the contaminant plume in site groundwater, samples at or beyond the fringe containing only trace or non-detectable levels of VOC contamination were eliminated from the data set. The resulting "plume" data set was used to calculate the EPCs for groundwater.

For direct contact routes (ingestion and dermal contact), EPCs were estimated directly from measured concentrations in the data sets described above. For non-detect results, a value equal to half the reported quantitation limit was substituted. Following USEPA guidance (USEPA 1992b), the 95% upper confidence limit (UCL) of the arithmetic mean concentration was calculated as a conservative estimate of the average concentration for each COPC. The distribution of each data set (reported concentrations of the COPC in the exposure media) was first tested using the Shapiro-Wilks' test to determine whether the distribution was closer to a normal or lognormal. The UCL was then calculated using the equation appropriate for the distribution that best fit the data. If the calculated UCL concentration was higher than the maximum detected concentration in the data set, the maximum detected concentration was used as the EPC (USEPA 1992b). In cases where there were only one or two detected results and the data set distribution could not be determined, the maximum detected concentrations was used as the EPC.

For exposures to contaminants in air (airborne particles or vapors), EPCs were estimated indirectly from soil or groundwater concentrations, using USEPA-recommended models. The exposure tables for inhalation routes in Appendix L (Tables 4.6, 4.8. 4.10, and 4.11) reference the specific air models and additional tables that show the modeling equations, the assumed input variables, and the modeling results.

6.3.3.2 Exposure Estimation Calculations

Table 1 in Appendix L lists all potential exposure pathways and receptors considered, and indicates which pathway/receptor combinations were selected for quantitative evaluation. The equations used to estimate the magnitude of potential exposures are provided in Appendix L, Tables 4.1 through 4.12. The input values for the exposure variables are also presented and sources are referenced in these tables.

The exposure equations used to calculate exposure estimates combine the following:

- Estimates of contaminant concentrations in the exposure media described above;

- Estimates of contact rate and frequency and duration of exposure than an individual receptor in the receptor population would experience; and

- Estimates of physiological parameters (e.g., body weight [BW], life expectancy).

USEPA-recommended standard default exposure factors (USEPA 1991a) were used whenever appropriate. Where standard defaults were unavailable or inappropriate, exposure factor values generally were based on USEPA recommendations or estimated from data in the Exposure Factors Handbook (USEPA 1997a), taking into consideration the nature of the expected exposures. Input values were selected to reflect a long-term reasonable maximum exposure (RME) as well as a long-term average, or central tendency, (CT) exposure. Accordingly, for contact rate variables, the values selected for the RME evaluations are high-end estimates of long-term exposures. For the CT evaluation, average values are used for certain exposure parameters (such as exposure duration) in place of high-end values. The rationale for non-default input values are explained in footnotes at the bottom of the exposure tables.

In accordance with USEPA recommendations for residential land use, the residential exposure duration of 30 years for the RME scenarios was divided between two age groups: 1) a six-year exposure of young children (under age six years), because their exposures relative to body weight are considerable greater than those of adults, and 2) a 24-year exposure as adults. Since cancer risks are considered cumulative over a lifetime, USEPA recommends that the cancer risks estimated for child and adult residents be added together to obtain a total cancer risk for the entire 30-year residential exposure duration.

With regard to the quantitative evaluation of sediment and surface water exposure of future residents indicated in Table 1, it was assumed that resident's exposures to creek sediment and surface water would occur during recreational activities in the same way as recreational visitors. To be consistent with residential exposures, the same child and adult age groups were adopted for the evaluation of recreational visitors (along with an adolescent receptor), and the RME recreational exposure scenario was assumed to occur at a high frequency that would be conservative for future site residents as well as future site visitors (see exposure assumptions in Appendix L Tables 4.2 and 4.3). The quantitative estimates for the child and adult recreational visitor exposures to creek sediment and surface water were assumed to apply also to future residents and those risks were included in the total risks and the risk summaries for future site residents.

By convention, exposure estimates for evaluating non-cancer risks are calculated as chronic daily intakes (CDIs) or subchronic daily intakes (SDIs), with averaging times equal to the duration of exposure, while the exposure estimates for evaluating cancer risks are calculated as lifetime average daily intakes (LADIs), with averaging times equal to a 70-year lifetime. The calculated exposure estimates are then combined with toxicity estimates (see Section 6.4.2) to obtain the risk estimates. The exposure estimates calculated for this assessment appear along with the associated toxicity values and risk estimates in Table 7.1 through 7.7 in Appendix L.

6.4 Toxicity Assessment

The purpose of the toxicity assessment is to provide an estimate of the relationship between the extent of exposure to a contaminant and the likelihood and/or severity of adverse effects. Section 6.4.1 describes the practices and procedures generally used to develop the quantitative toxicity values and the process for incorporating the toxicity values into the risk assessment. Section 6.4.2 presents the toxicity values used to estimate risks associated with exposure to COPCs along with their bases and sources.

6.4.1 Development of Toxicity Values

Carcinogenic and noncarcinogenic health effects are both evaluated quantitatively in the risk assessment. Endpoints for these two different types of effects are assessed differently because the mechanism(s) by which chemicals cause cancer is fundamentally different from the process(es) by which noncarcinogenic effects are caused. The principal difference in the evaluation reflects the assumption that noncarcinogenic effects exhibit a threshold dose below which no adverse effects occur, whereas no such threshold has been shown to exist for most carcinogenic effects.

6.4.1.1 Classification of Chemicals as Carcinogens or Noncarcinogens

As used in this risk assessment, the term carcinogen refers to a chemical for which there is sufficient evidence that exposure may result in continuing uncontrolled cell division (cancer) in humans and/or animals. Conversely, the term noncarcinogen refers to any chemical for which the carcinogenic evidence is negative or insufficient.

The likelihood that a chemical is a human carcinogen is specified by the USEPA's weight-of-evidence classification. Data derived from human and animal studies are reviewed and characterized as sufficient, limited, no data, or evidence of no effect. According to these USEPA guidelines, chemicals in the first two groups, A and B (B1 or B2), are considered human carcinogens or probable human carcinogens and should be subjected to nonthreshold carcinogenic risk procedures. Group C chemicals, which are considered to be possible human carcinogens, may or may not be subject to these procedures, depending on the quality of the available data. Group D chemicals are not classified as carcinogens due to inadequate evidence in animals, while Group E chemicals show no evidence of carcinogenicity in human or animal studies. Under USEPA's draft revised guidelines (USEPA 1999), the group designations have been replaced by standard descriptors. Therefore, the A, B, and C classifications, respectively, are replaced by *"Carcinogenic to Humans, Likely to be Carcinogenic to Humans, Suggestive Evidence of Carcinogenicity, but Not Sufficient to Assess Human Carcinogenic Potential"*. Groups D and E are replaced by *"Data are Inadequate for An Assessment of Human Carcinogenic Potential,"* and *"Not Likely To Be Carcinogenic To Humans"*.

Exposure to some chemicals may result in both carcinogenic and noncarcinogenic effects. In those cases, both types of effects were considered and evaluated in the quantitative assessment.

6.4.1.2 Assessment of Noncarcinogens

The potential for noncarcinogenic adverse health effects (e.g., organ damage, immunological effects, birth defects, skin irritation) is usually assessed by comparing the estimated site-related exposure to the reference dose (RfD). USEPA develops the RfD by identifying the no-observed-adverse-effect level (NOAEL) or lowest-observed-adverse-effect level (LOAEL) in the scientific literature and adjusting that value using uncertainty factors (UFs), which compensate for the data limitations of the critical study or studies and for the uncertainties associated with differences between the study conditions and the human exposure situation (e.g., different species, different doses, different routes, different lengths of exposure) and variability in the human population, so that the resulting RfD is protective of the human population. RfDs are typically expressed in units of milligrams per kilogram per day (mg/kg-day).

USEPA often provides non-cancer toxicity values for inhalation exposures as reference concentrations (RfCs). The RfC, which is derived in essentially the same way as the RfD, is expressed as a concentration in air (mg/m^3) for a continuous, 24-hour exposure. For risk assessment purposes, the RfC is converted to a corresponding inhalation RfD using the default adult BW of 70 kg and an inhalation rate of m^3/day:

$$\text{RfD (mg/kg-day)} = \text{RfC (mg/m}^3\text{) x 20 m}^3\text{/day x 1/70 kg}$$

According to USEPA (1997a), the RfD (or RfC) is an estimate (with uncertainty spanning perhaps an order of magnitude) of the daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime (for a chronic RfD) or a portion of a lifetime (for a subchronic RfD). The RfD is used as a reference point for gauging the potential effects of other exposures. Generally, exposures that are less than the RfD are not likely to be associated with adverse health effects. As the exposure increases beyond the RfD and as the size of the excess increases, the potential for health effects also increases. Noncarcinogenic hazards are usually assessed by calculating a hazard quotient (HQ) for each chemical exposure by each exposure pathway as follows:

$$HQ = ADI/RfD$$

where:

HQ = Hazard quotient,
ADI = Average daily intake (either a CDI or SDI), and
RfD = Reference dose.

HQs associated with the same type of adverse health effect should be summed across pathways and chemicals to obtain an HI. An HI greater than 1.0 indicates that adverse effects are possible, whereas an HI less than 1.0 indicates that adverse effects would not be expected. The higher the HI is above 1.0, the more likely it is that an adverse effect could occur.

6.4.1.3 Assessment of Carcinogens

In contrast to noncarcinogenic effects for which thresholds are thought to exist, thresholds have not been demonstrated for most carcinogenic effects. Consequently, federal regulatory agencies assume that any exposure to a carcinogen entails some finite risk of cancer. However, depending on the potency of a specific carcinogen and the level of exposure, such a risk could be extremely small.

Several mathematical models have been developed to estimate low-dose carcinogenic risks from high-dose cancer bioassays. USEPA selected the linearized multistage (LMS) model as the default approach to estimate toxicity values based on prudent public health policy, and uses the 95% UCL of the slope of the dose-response curve to estimate low-dose slope factors (SFs) (USEPA 1986). More recently, USEPA has proposed other default approaches, the use of straight line extrapolation or a margin of exposure approach in certain cases (USEPA 1996). The results of these procedures are unlikely to underestimate the actual cancer SFs for humans. SFs are expressed as the inverse of the daily dose per unit body weight ($[\text{mg/kg-day}]^{-1}$).

Toxicity values for carcinogenic effects are sometimes expressed in terms of unit risks or the risk-per-unit concentration of the substance in the medium where human contact occurs. Inhalation SFs are derived from inhalation unit risks, which are expressed as $(\mu g/m^3)^{-1}$, by assuming a BW of 70 kg and continuous lifetime exposure at an inhalation rate of 20 m^3/day.

$$\text{SF (mg/kg-day)}^{-1} = \text{Unit risk } (\mu g/m^3)^{-1} \times 70 \text{ kg} \times 1000\ \mu g/mg \, / \, (20\ m^3/\text{day})$$

Using SFs, excess lifetime cancer risks associated with each chemical exposure by each pathway can be estimated by:

$$\text{Risk} = \text{LADI} \times \text{SF}$$

where:

LADI = Lifetime average daily dose, and
SF = Slope factor.

The separate cancer risks are summed across chemicals and exposure pathways that apply to a given receptor group to obtain the total cancer risk for that receptor.

6.4.1.4 Route-to-Route Extrapolation of Reference Doses and Slope Factors

Because USEPA has not developed RfDs and SFs for the dermal route, oral RfDs and SFs are commonly used to evaluate risks from dermal exposure. When this is done, the oral toxicity value, which is based on the administered dose, must first be adjusted to an absorbed dose basis because dermal exposures are expressed as absorbed doses. The dermal SF is estimated by dividing the oral SF by the fraction of the administered dose that is absorbed through the gastrointestinal (GI) tract. The dermal RfD is estimated by multiplying the oral RfD by the fraction of GI absorption.

Although inhalation route biokinetics differ more from oral route biokinetics than does the dermal route, oral toxicity values may also be used to evaluate the inhalation exposures and vice versa. Extrapolation of toxicity values from one route to another is inappropriate if the critical effect for either route is at the point of contact. For example, the critical effect from copper ingestion is gastrointestinal irritation; therefore, the oral RfD can not be used to evaluate dermal or inhalation risks.

6.4.2 Toxicity Values for the COPCs at AOC 9

Toxicity values used to estimate potential carcinogenic and noncarcinogenic effects for the COPCs identified at AOC 9 (see Tables 2.1 through 2.4 in Appendix L) were compiled from the following USEPA sources:

- The Integrated Risk Information System (IRIS) computer database (USEPA 2003a). This is the preferred source of toxicity values because these data are the most recent USEPA criteria available and USEPA has reviewed them extensively;

- The Health Effects Assessment Summary Tables (HEAST), (USEPA 1997b). HEAST contains provisional RfDs and SFs that were developed by the USEPA's National Center for Environmental Assessment (NCEA); and

- NCEA's Superfund Health Risk Technical Support Center, which periodically revises provisional RfDs and SFs based on updated toxicity information and develops new toxicity values for some chemicals that are not listed in IRIS or HEAST.

Toxicity values obtained from HEAST are to be evaluated by NCEA prior to use in the risk evaluation to determine if the value is appropriate or if an update is required. Only values that are currently available from the above sources were used in this risk assessment.

In Appendix L, Tables 5.1, 5.2, 6.1, and 6.2 list the toxicity values for COPCs that were used in this risk assessment. Table 5.1 lists oral and dermal RfDs and Table 5.2 lists inhalation RfDs for noncarcinogenic effects along with the associated target organ(s), UFs, confidence levels and sources of the RfDs. Table 6.1 lists oral and dermal SFs and Table 6.2 lists inhalations SFs along with USEPA's weight-of-evidence classifications, and sources of the SFs.

Several carcinogenic PAHs were identified as COPCs at AOC 9 including benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Note that benzo(a)pyrene is the only carcinogenic PAH for which USEPA has developed SFs. In its Provisional Guidance for Quantitative Risk Assessment of PAHs (USEPA 1993a), USEPA recommended that the other carcinogenic PAHs be assessed in terms of their potencies relative to benzo(a)pyrene using the following relative potency factors (RPFs):

Benzo(a)pyrene	1.0
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Chrysene	0.001
Dibenz(a,h)anthracene	1.0
Indeno(1,2,3-cd)pyrene	0.1

In accordance with the USEPA guidance, SFs for benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were obtained by multiplying the oral and inhalation SFs of benzo(a)pyrene by the appropriate relative potency factors. The resulting SFs are listed in Appendix L Tables 6.1 and 6.2.

6.4.3 Assessment of Lead

One of the COPCs identified in surface water was lead. Although the toxic effects from lead exposure are well known, there are no verified or USEPA consensus toxicity values available for lead in IRIS, HEAST, or other sources. The absence of authoritative toxicity values reflects the scientific community's inability to agree on a threshold dose for lead's noncarcinogenic effects or to satisfactorily estimate its carcinogenic potency, despite a large body of scientific literature on its toxicological effects (USEPA 2003b). USEPA has developed procedures to evaluate residential and industrial exposure to lead in soil (the Integrated Exposure Uptake Biokinetic [IEUBK] model and adult lead model); however, the potential health risk from lead in surface water cannot be quantitatively estimated. Potential risks from exposure to lead in surface water are discussed qualitatively in this assessment (see Section 6.5.3.5).

6.5 Risk Characterization

This section combines information developed in the exposure and toxicity assessment sections (Sections 6.3 and 6.4) to obtain quantitative estimates of potential risks to human health posed by the COPCs.

6.5.1 Risk Estimation Procedures

Potential cancer risks are estimated by multiplying the estimated LADI of each carcinogen by its SF. This calculated risk, which is expressed as the probability of an individual developing cancer over a lifetime, is an estimated upper-bound incremental probability. Initially, cancer risks are estimated separately for exposure to each chemical for each exposure pathway and receptor category (e.g., adult, child). Separate cancer risk estimates then are summed across chemicals and exposure pathways applicable to a receptor population to obtain the total excess lifetime cancer risk for that population. Cancer risk estimates are provided in scientific notation; a cancer risk of 1×10^{-6} is equivalent to 1E-6 or 0.000001 or one-in-a-million.

Comparing the estimated CDI or SDI of a substance to the appropriate RfD assesses the potential for adverse noncarcinogenic effects. This comparison is made by calculating the ratio of the estimated CDI (or SDI) to the RfD to obtain an HQ. HQs that are associated with similar critical effects should be summed to obtain an HI for that effect, whereas HQs for different critical effects should be kept separate. However, for screening purposes, HQs are commonly summed across chemicals and exposure pathways applicable to a given receptor population to obtain an HI for that population.

6.5.2 Magnitude of Estimated Risks

Federal environmental laws and regulations recognize that very small risks are insignificant. The concept of de minimis risk refers to a level below which risks are so small that they are not of concern.

Government agencies regard cancer risks less than 10^{-6} as de minimis and consider risks between 10^{-6} and 10^{-4} to be within a generally acceptable range. The USEPA Superfund program has adopted these regulatory risk levels. Under the current USEPA Superfund policy, as stated in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), (USEPA 1992c), acceptable exposures to known or suspected carcinogens are generally those that represent an excess upper-bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6}. In addition, USEPA uses the 10^{-6} risk level as the point of departure for determining remediation goals for National Priorities List (NPL) sites (USEPA 1992c).

For evaluating noncarcinogenic effects, USEPA defines acceptable exposure levels as those to which the human population, including sensitive subgroups, may be exposed without adverse effects during a lifetime or part of a lifetime, incorporating an adequate margin of safety. An HI equal to 1 approximates this acceptable exposure level. If the HI were less than 1, adverse effects usually would not be expected. An adverse effect may occur when the HI is greater than 1.

6.5.3 Risk Estimates

Tables 7.1 through 7.11 in Appendix L present the calculated estimates of potential exposures and associated risks for all receptor/exposure pathway combinations evaluated. Estimated risks are summarized and the totals of the risks for each receptor are presented in Tables 9.1 through 9.7. The results for each receptor group are discussed below.

6.5.3.1 Recreational Visitor Risk Estimates (Tables 9.1, 9.2, and 9.3)

Based on RME assumptions for recreational visitors, the total estimated cancer risks associated with potential exposures to surface soil, sediment, and surface water at AOC 9 are 2 x 10^{-5} for the child, 2 x 10^{-5} for the adult (giving a child/adult total of 4 x 10^{-5}), and 8 x 10^{-6} for the adolescent. All of these estimates fall within the range of cancer risks regarded as generally acceptable under current Superfund policy.

The total HIs calculated for potential non-cancer effects in recreational visitors are 11 for the child, 6 for the adult, and 10 for the adolescent receptor, all exceeding the 1.0 benchmark. Exposure to surface water in the creek and seeps accounts for the bulk of these total HIs, due mainly to the high concentrations of manganese and iron. Broken down by target organs, the HI for nervous system effects due mostly to manganese is 7 for the child, 5 for the adult, and 7 for the adolescent, while the HI for unspecified organs due to iron is 2 for the child, 1 for the adult, and 2 for the adolescent.

The risks calculated for surface water are based on assumed contact rates and exposure frequencies that are extremely conservative and unrealistically high for a shallow creek with no recreational use Exposure Frequency (EF) of 100 days per year for the child and 175 day per year for adults and adolescents, ingestion rate (IR) of 50 ml/day, dermal contact with all skin below child's waist and all skin below hips of adults and adolescents for 2 hours per event). Furthermore, the EPCs for manganese and iron in surface water that are driving the HI estimates for recreational visitors (see Tables 7.1, 7.2. and 7.3) are the maximum concentrations reported (46,000 µg/L for manganese; 230,000 µg/L for iron), which were found in seep samples G009-SW01 and G009-SW04 (see Table 3.4). The seeps, along with surface drainage at the site, form small, shallow drainage ways that drain into SMC, and are not representative of likely recreational exposures to surface water at the site. The high metal levels in seeps do not reflect actual surface water contamination or likely exposures in SMC. Iron and manganese concentrations reported in creek water samples were considerably lower (by a couple of orders of magnitude) than the maximum seep concentrations.

6.5.3.2 Future Resident Risk Estimates (Tables 9.4 and 9.5)

Based on RME assumptions for future site residents at AOC 9, the total estimated cancer risks associated with standard residential exposures to surface soil and groundwater plus recreational exposures to sediment and surface water are 6 x 10^{-3} for the child and 2 x 10^{-3} for the adult, giving a child/adult total cancer risk of 8 x 10^{-3}, above the acceptable range. The bulk of this risk is due to exposures associated with household groundwater use, mainly from inhalation of vapors released from groundwater during baths/showers, which accounts for about 95% of the child cancer risk and about 83% of the adult risk, and from water ingestion. The chemicals in groundwater most responsible for the estimated cancer risk are TCE, 1,4-DCB, 1,3,5-TMB, 1,2,4-TMB, VC, and 1,2-dichloroethane. The estimated cancer risks from residential exposure to soil, 1 x 10^{-5} for the child and 5 x 10^{-6} for the adult, and the risks from recreational exposures to sediment and surface water (discussed above) are minor compared to groundwater and within USEPA's acceptable risk range.

The total HIs calculated for future site residents are 921 for the child and 103 for the adult. Most of the total HI (91% for the child, 71 % for the adult) is associated with inhalation of vapors released from groundwater during baths/showers. The HIs associated with residential exposure to surface soil or with recreational sediment and surface water exposures (discussed above) are minor compared to groundwater. For residential soil exposures by all three routes, the total HI for the adult is less than 1.0 and the total HI for the child is about 2, with no target-specific HIs exceeding 1.0.

Total HIs across media but segregated by target organ are listed under the total receptor HIs for child and adult residents in Tables 9.4 and 9.5. The top four target organs are the liver, respiratory system, blood, and nervous system. The HIs for liver effects (630 for the child, 63 for the adult) are mostly due to the presence of chlorobenzene in site groundwater, though TCE, 1,2-dichloroethane and thallium in groundwater also contribute. The HIs for respiratory system effects (140 for the child, 12 for the adult) are mostly due to naphthalene, 1,2,4-TMB, and 1,3,5-TMB in groundwater. The TMB, 1,2-DCB, and cis-1,2-DCE in groundwater account for most of the total HIs for blood effects (101 for the child, 11 for the adult). The HIs for nervous system effects (97 for the child, 20 for the adult) are due mainly to the trimethylbenzenes and manganese in groundwater.

6.5.3.3 Future Commercial/Industrial Worker Risk Estimates (Table 9.6)

Risks estimated for future commercial/industrial workers at AOC 9 from exposure to soil and groundwater contaminants were lower than future resident risks but still above

USEPA's risk benchmarks. The same chemicals in groundwater that drive resident risk estimates (see discussion above) also drive the risks estimated for workers.

Based on RME assumptions, the total estimated cancer risk for future site workers is 8 x 10^{-4}. Inhalation of vapors released from groundwater during showering accounts for almost 80% of the worker's total cancer risk, and groundwater consumption accounts for most of the rest. The total HI calculated for workers is 32, also due mainly to vapor inhalation while showering (70%) and groundwater consumption (25%).

6.5.3.4 Future Construction Worker Risk Estimates (Table 9.7)

The total estimated cancer risk for future construction workers from exposure to subsurface soil and groundwater contamination at AOC 9 is 3 x 10^{-7}, mostly from incidental soil ingestion. The risk is below levels of concern for cancer risk.

The total HI calculated for construction workers is 2, slightly above the benchmark of 1 for non-cancer effects, due mainly to inhalation of manganese on airborne dust raised by disturbance of soil during construction activities. Inhalation of manganese may affect the central nervous system. The concentrations of manganese found in site soils are within the range of naturally occurring levels in soil.

6.5.3.5 Risks from Lead in Surface Water

Risks from lead exposure in surface water cannot be quantitatively estimated because lead has no approved toxicity values. Lead was identified as a COPC in surface water because concentrations reported in several seep samples (up to 190 μg/L) were higher than the screening concentration of 15 μg/L, which is based on the action level for lead in drinking water. It seems unlikely that this level of lead in surface water would pose any significant health risk since the rate for incidental ingestion of water is much lower than the 2 liters-per-day rate assumed for drinking water consumption. Moreover, it is likely that the higher concentrations of lead and other metals reported in seep samples are a reflection of suspended sediment content rather than water contamination.

6.5.3.6 Risks from Consumption of Fish From SMC

Although potential exposures to site-related contaminants through consumption of fish from SMC were not evaluated in this HHRA, this exposure route was evaluated in a previous HHRA for the SMC AOI (Law 1996a). Exposures and risks were estimated for SMC based on fish tissue data collected from two locations, SMCFS-3 adjacent to AOC 9 and SMCFS-2 about 0.6 mile upstream. Contaminant levels found in fish from the two locations were similar, except for the higher PCB concentrations found in fish at SMCFS-3.

No PCBs have been detected in Six Mile Creek surface water or sediment above the culvert, even though fish samples taken from the upper reach (adjacent to AOC 9) were found to contain PCBs above fish tissue guidelines. Below the culvert, PCBs were detected in sediments at levels of 84 to 320 μg/kg. PCBs were previously identified as entering Six Mile Creek through Rainbow Creek, which joins Six Mile Creek in the culvert (Law 1996b). However, no PCBs were detected in PISCES samples. This may explain why PCBs were only found in the lower reaches of Six Mile Creek. The presence of contaminated fish in the upper reach of Six Mile Creek may be due to upstream migration of these fish. However, in SI sampling (E & E 1998), no PCBs were found in Rainbow Creek surface water or PISCES samples, which collect certain types of contaminants over an extended period of time. Thus, Rainbow Creek may no longer be a source of PCB contamination to Six Mile Creek. This is likely due to the completion of remedial actions of the Coal Storage Yard site, the Building 35 RCRA site, and the Defense Reutilization and Marketing Office (DRMO) site, all located at the head of Rainbow Creek.

The EPCs for fish consumption were estimated from the maximum chemical concentrations detected in whole body fish tissues from the two locations. Hazard indices were calculated for four age groups: adult, child, youth (6 to 12 years old, similar to adolescent in this HHRA), and adolescent (12 to 18 years old). Cancer risks were calculated for the adult receptor only, assuming 30 years exposure duration (ED). Copies of the risk calculation tables from the prior HHRA (Tables C.11 and C.12) are included in Appendix L of this report. During the review of the tables for this report, a significant error was noticed, specifically that the EPC for manganese was 10 times greater than the maximum detected concentration, so that exposures and HQs calculated for manganese in the tables are 10 times greater than they should have been. The non-cancer HIs cited below are based on corrected HQ and HI values.

Based on RME exposure assumptions, the estimated total cancer risk for the adult from fish consumption was 2 x 10^{-2}, even higher than the risks associated with potential future groundwater use and much higher than the risks estimated for soil, sediment, and surface water exposures at AOC 9. Ninety-six percent of the cancer risk from fish consumption was due to PCB-1260, which was detected at a concentration of 13.5 mg/kg in a creek chub sample collected near AOC 9. As discussed in Section 2, PCBs have not been detected in any soil, sediment, surface water, or groundwater sample from AOC 9, and the concentration of PCB-1260 found in fish appears to be from another source area. The total cancer risk associated with COPC other than PCB is 8 x 10^{-4}, mostly due to dieldrin, which was detected at a concentration of 0.313 mg/kg in the same creek chub sample. Dieldrin was detected in two soil samples from AOC 9, but it was not detected in sediment and surface water near the site.

Corrected total estimated HIs associated with fish consumption are 26 for the adult, 44 for the child, and 30 for the youth. These HIs are larger than the total HIs calculated for recreational exposures to site soil, sediment, and surface water, but small in comparison to the HIs associated with groundwater use. About half of the total HIs for fish consumption are due to PCB-1254, which is not a site-related contaminant. Other chemicals in fish showing HIs greater than 1.0 included antimony (child HI = 10), manganese (child HI = 4), dieldrin (child HI = 3), and cadmium (child HI = 2). These chemicals are present in soil at AOC 9; however, the concentrations of metals in site soils are not substantially greater than typical levels found in soil.

The previous HHRA points out that the risk estimates for fish consumption are extremely conservative for several reasons. The EPCs estimated from concentrations measured in whole body fish tissue samples are likely greater than concentrations in the edible portions. In addition, the fish species collected (creek chub) is typically used as bait for game fish and is not normally consumed by recreational fishermen. Furthermore, SMC is a relatively small habitat and is not expected to support predators of the creek chub that would be consumed by recreational fisherman such as smallmouth bass and perch.

6.6 Uncertainty Assessment

The risk characterization combines and integrates the results from data collection and evaluation, the exposure assessment, and the toxicity assessment to obtain quantitative estimates of the potential risks posed by site contamination. There are inherent uncertainties associated with the assumptions used in each element, and with the overall risk assessment process, which may lead to underestimation or overestimation of true risks and which affect the degree of confidence that can be placed in the risk characterization results. The following sections briefly describe uncertainties associated with each step of the process and the way they likely affect the overall risk estimates.

6.6.1 Environmental Sampling and Analysis

Samples collected during the investigations were intended to characterize the nature and extent of contamination at the site. Accordingly, sampling locations were selected in a purposeful or directed manner to focus on particular areas where contamination was known or suspected to be present. Samples collected in this manner provide considerable information about the site but are not statistically representative of contamination that may be present on the site as a whole.

Because of the variability and uncertainty inherent in the sampling and measurement processes, the chemical concentrations reported may differ from the actual chemical concentrations. Uncertainty is introduced by the use of estimated results, which may not have the same precision and accuracy as data meeting all standard QC criteria. There is also uncertainty associated with the use of non-detect results, assuming concentrations based on half the reported quantitation limits, which may overestimate or underestimate the true concentrations present. These factors decrease the level of confidence in the exposure concentration estimates but are generally minor contributors to the overall risk characterization uncertainties.

6.6.2 Exposure Assessment Uncertainties

Exposure point concentrations for soil, sediment, surface water, and groundwater were estimated directly from COPC concentrations measured in environmental samples from AOC 9. To avoid underestimating the average long-term exposure point concentration, the value used for each COPC was either the 95% UCL of the mean or the maximum observed concentration. This approach is likely to overestimate the actual average concentrations of the COPCs in the exposure media.

For inhalation exposures, contaminant concentrations in air were estimated from soil and groundwater concentrations using modeling and conservative model input assumptions. The results may overestimate actual inhalation exposures.

All exposure calculations assume that the chemical concentrations will remain constant over the duration of exposure; up to 30 years for a site visitor or future site resident. Actual concentrations could remain the same or decrease, depending on both site-specific and chemical-specific factors. Organic chemicals can evaporate or dissolve in infiltrating precipitation, and migrate away from the source areas, substantially reducing concentrations over time. Furthermore, under favorable conditions, many organic chemicals can degrade as the result of chemical or biological transformations. Since inorganics do not degrade and are relatively immobile, the concentrations of inorganic COPCs in soil would be expected to remain relatively stable. On the other hand, migration of contaminated soils away from the source area (due to surface runoff and erosion) would tend to reduce the concentrations of all contaminants in site soils over the long term.

The individual exposure parameter values used in the RME calculations were selected to represent a high-end estimate of exposure for an individual receptor that is conservative but still within the range of possible exposures. The exposure values selected were either recommended standard default values or conservatively protective estimates. As a result, the calculated potential exposures probably overestimate the actual exposure for most individuals in the receptor populations. Estimated risks based on mean or median exposure values to reflect the CT exposures of receptor populations were considerably lower than the estimates based on RME assumptions presented in this assessment (see Tables 9.1.CT through 9.6.CT). Estimated excess cancer risks for the future residential receptor (6×10^{-4} for the adult and child combined) were approximately 93% lower than the risks estimated for the RME scenario (8×10^{-3}). A 65% reduction in cancer risk was estimated for the recreational receptor under the CT scenario versus the RME scenario (1.4×10^{-5} vs. 4×10^{-5}). Although significantly lower, the estimated cancer and non-cancer risks under the CT scenario are above the acceptable risk range, primarily due to COPC in groundwater. Estimated excess cancer risks for the future commercial/industrial worker under the CT scenario (7×10^{-5}) were an order of magnitude lower than risk estimated for the RME scenario (8×10^{-4}), and are within the risk range considered generally acceptable by USEPA.

Additional uncertainty is associated with the procedures used to estimate dermal absorption of chemicals. Dermal absorption of COPCs in soil was estimated using conservative absorption factors recommended by USEPA. The recommended defaults, which generally fall at the upper ends of the ranges that have been observed in absorption studies, may not reflect actual dermal absorption.

Following USEPA recommendations, dermal absorption of inorganics from water was estimated by using a steady-state model and, as a default in most cases, the permeability constant of water; however the actual ability of metals to permeate the skin is generally less than that of water. As a result, dermal exposures and risks from metals in water may be overestimated. For organic compounds, dermal absorption from water was estimated the non-steady-state procedure recommended USEPA's dermal guidance (USEPA 2001b), which requires a number of input parameters that are difficult to measure, such as the dermal permeability constant. The non-steady-state approach and recommended input values tend to give higher estimates of absorbed doses than the traditional steady-state approach, and may be overly conservative for some compounds.

6.6.3 Toxicity Assessment Uncertainties

The basic uncertainties associated with the derivation of toxicity values in the toxicity assessment include:

- Uncertainties arising from the design, execution, or relevance of the scientific studies that form the basis of the assessment; and
- Uncertainties involved in extrapolation from the underlying scientific studies to the exposure situation being evaluated, including variable responses to chemical exposure within human and animal populations, between species, and between routes of exposure.

These uncertainties could result in a toxicity estimate based directly on the underlying studies that either underestimates or overestimates the true toxicity of a chemical. The toxicity assessment process compensates for these basic uncertainties through: the use of UFs and modifying factors in the derivation of RfDs for assessing noncarcinogenic effects; and the method of calculating the 95% UCL value from the linearized multistage model to derive low-dose SFs for assessing cancer risks. This approach ensures that the potential toxicity of a chemical to humans is unlikely to be underestimated; however, actual toxicity may be substantially overestimated as a result.

The use of adjusted oral toxicity values to evaluate dermal risks is an additional source of uncertainty to the dermal risk estimates, because the biokinetics (uptake, distribution, metabolism, and elimination) from dermal exposure may be different from ingestion. The same is true when oral toxicity values are used to evaluate the inhalation route. Because of these differences, effects caused by oral exposure to a chemical may not be caused by dermal exposure or inhalation exposure, or the effects may occur at a higher or lower dose.

In the absence of information to the contrary, USEPA guidelines indicate that carcinogenic risks should be treated as additive and that HIs for similar noncarcinogenic effects should also be treated as additive. The assumption of risk additivity ignores possible synergisms or antagonisms among different chemicals, which would increase or decrease their toxic effects and could tend to underestimate or overestimate total site risks.

6.6.4 Risk Characterization Uncertainties

As explained earlier, intentionally conservative assumptions are used throughout the risk assessment process in order to provide a high-end estimate of risks to potentially exposed populations. The cumulative effect of this approach is that the true risk is not likely to be underestimated and is in fact likely to be overestimated.

The last UF to consider is the probability of the postulated exposures actually occurring. The surface soil, sediment, and surface water exposure pathways for recreational visitors to AOC 9 are potentially complete under existing site conditions, but the postulated exposure rates and the frequencies of occurrence are likely overestimates of actual exposures. The rates and frequency of recreational exposures could conceivably increase in the future if the site were to become more accessible to the public as a result of development in nearby surrounding areas, but are unlikely to exceed the extremely conservative assumptions used in this HHRA.

Although there are no restrictions in place to prevent future residential or commercial use of the site, the future residential scenario, future commercial/industrial scenario, and future construction scenario evaluated in this assessment are purely hypothetical. The site is expected to remain as vacant land with no residential or commercial development. Even if the site were developed in the distant future, there is little likelihood that the groundwater would be used as a potable water supply.

6.7 Conclusion of the Human Health Risk Assessment

Under existing site conditions and expected future site conditions, assuming no development of the site, contaminants present in soil, sediment, and surface water at AOC 9 do not appear to pose any significant health risks. The total cancer risks estimated for recreational exposures to these media are within the 10^{-6} to 10^{-4} range, which are regarded as acceptable under current USEPA Superfund policy. The total HIs calculated for recreational soil and sediment exposures are about 1 or lower. Separated by target organ, the HIs calculated for soil and sediment contamination are all less than 1, indicating that adverse health effects from potential exposures are unlikely. The HIs calculated for recreational exposures to surface water contamination under the RME scenario are higher (child HI = 9, adult HI = 6); however, these numbers are based on the maximum concentrations of manganese and iron reported in seep samples, which are about 50 times greater than the highest levels measured in the creek. The higher metals concentrations in seeps do not reflect actual surface water contamination or likely exposure levels.

Fish consumption was not evaluated in this HHRA, but results from a previous HHRA for SMC (Law 1996a) indicate that if recreational visitors were to consume fish from the creek, their potential risks from fish consumption would be unacceptably high (cancer risk 2×10^{-2}, HI up to 44), much greater than the risks from direct contact with soil, sediment, and surface water at the site. Most of the risks estimated for fish consumption were due to PCBs, which are not site-related contaminants.

The total risks estimated for future site residents and commercial/industrial workers under the RME scenarios are well above levels regarded as acceptable under current USEPA Superfund policy. For future residential exposures at AOC 9, the estimated total child/adult lifetime cancer risk is 8×10^{-3}, and the total HIs for child and adult are 921 and 102, respectively. The total estimated cancer risk for future commercial/industrial workers is 8×10^{-4}, and the total HI is 32 under the RME scenario. Under the CT scenario, the estimated cancer risk for the future commercial/industrial worker (7×10^{-5}) is within the acceptable risk range.

The bulk of the risks estimated for residents and workers, both the cancer risks and non-cancer HIs, are associated with exposures from groundwater use, mostly inhalation of vapors released from groundwater during baths/showers. The chemicals in groundwater that account for most of the cancer risk are TCE, 1,4-DCB, 1,3,5-TMB, 1,2,4-TMB, VC, and 1,2-dichloroethane. When broken down by target organs or systems, the largest HIs were associated with effects to the liver (child HI = 630), respiratory system (child HI = 140), blood (child HI = 101), and nervous system (child HI = 97). Individual chemicals with the greatest HIs included chlorobenzene, naphthalene, 1,2-DCB, 1,2,4-TMB, 1,3,5-TMB, and cis-1,2-DCE.

The risks estimated for future surface soil exposures indicate that soil contaminants would not pose significant health risks to future site residents or commercial/industrial workers. Although the total HI for the child resident is about 2, the HIs for individual target organs are less than 1. The total HIs for soil exposures of adult residents and workers are less than 1. The estimated total lifetime cancer risks are 2 x 10^{-5} for residents and 4 x 10^{-6} for workers, both within the 10^{-6}-to-10^{-4} range.

Assuming future development at AOC 9 that would include excavation activities, the total HI calculated for construction workers is 2, due mainly to inhalation of manganese on airborne dust raised by disturbance of soil during construction activities. This is slightly above the benchmark of 1 for possible non-cancer effects. Inhalation of manganese may affect the central nervous system. The total cancer risk for construction workers is 3 x 10^{-7}, below levels of concern.

Note that AOC 9 is in an area that is expected to remain undeveloped open land (USAF 1999), and that future conditions will likely be similar to current conditions. The risks estimated for the future residential scenario, the future commercial/industrial scenario, and the future construction scenario should be regarded as purely hypothetical. The exposure pathways evaluated for recreational visitors are the only pathways that might reasonably be expected under existing and anticipated future site conditions. However, because conservative assumptions were employed throughout the risk assessment process, the quantitative estimates of exposures and risks for recreational visitors are likely greater than the actual exposures and risks (especially for surface water).

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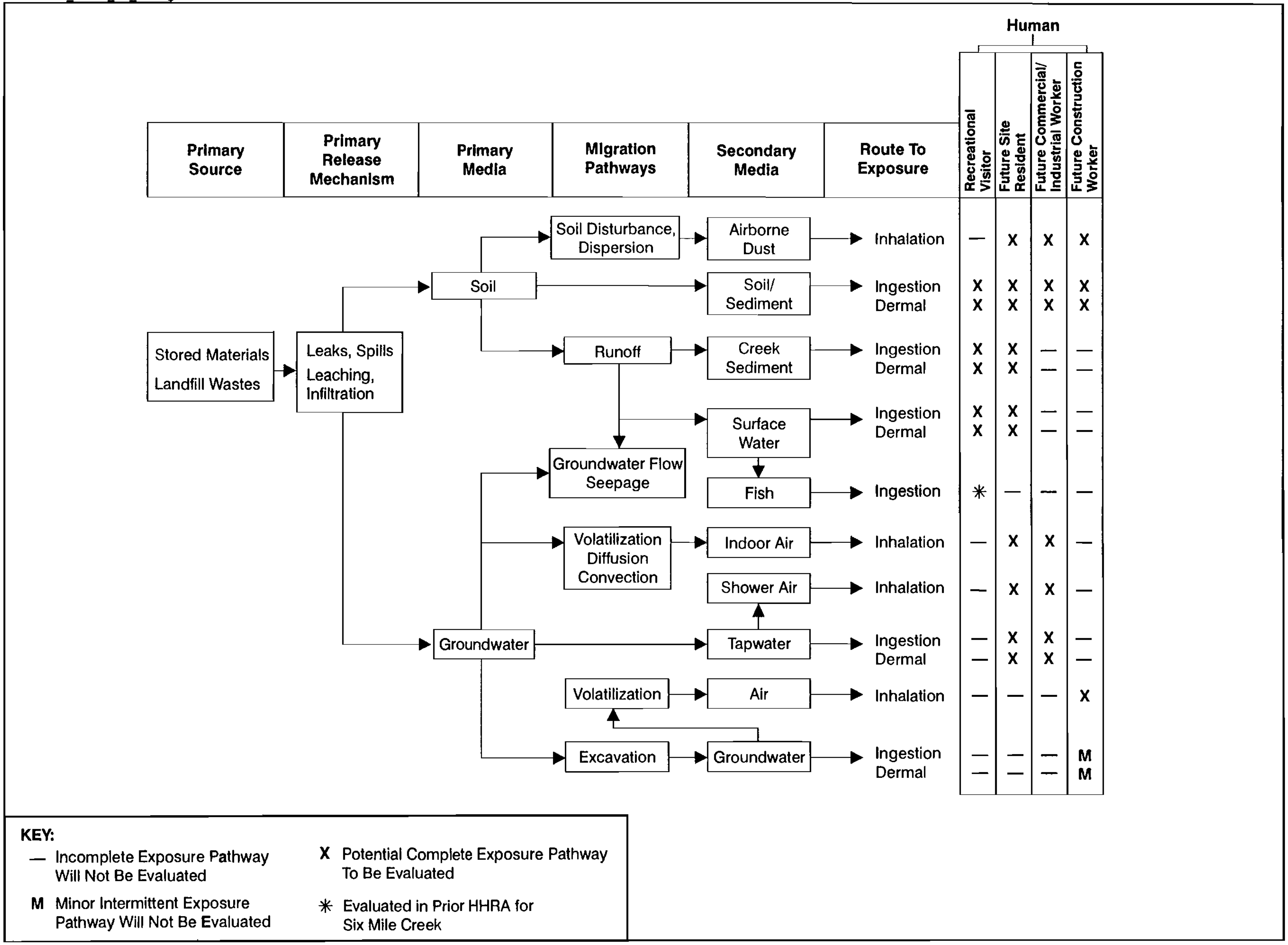

SOURCE: Ecology and Environment, Inc. 2003

Figure 6-1 **Human Health Risk Assessment Site Conceptual Model, Former Griffiss AFB, AOC 9: Weap Storage Area Landfill**

7 Ecological Risk Assessment for AOC 9

7.1 Introduction

This section presents an assessment of the potential impacts of site-related contaminants on the ecological resources at AOC 9. This assessment was preceded by several less detailed evaluations that were conducted at AOC 9 over the past 10 years. Collectively, these previous evaluations indicated that several metals and organic chemicals are present in soil, sediment, and surface water at AOC 9 at concentrations above background and risk-based screening benchmarks. Based on these findings and on subsequent discussions between the USEPA, NYSDEC, AFRPA, and USACE, it was decided that a more detailed Ecological Risk Assessment (ERA) for AOC 9 was warranted (E & E 2001b). This assessment is presented in this section.

As specified in the *Draft AOC 9 Ecological Risk Assessment Site Conceptual Model* memorandum (E & E 2001c), the present assessment is consistent with NYSDEC guidance for characterizing threats to fish and wildlife at inactive hazardous waste sites (NYSDEC 1994c). Specifically, this assessment satisfies the first two steps of NYSDEC guidance calling for a thorough site description (Step 1) and a contaminant-specific impact assessment (Step 2). This assessment is also consistent with ERA guidance issued by USEPA, including:

- *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (USEPA 1997c);
- *Guidelines for Ecological Risk Assessment* (USEPA 1998); and
- *Wildlife Exposure Factors Handbook* (USEPA 1993c).

Finally, in addition to the above mentioned state and federal guidance documents, this assessment also utilizes publications from Oak Ridge National Laboratory (ORNL) and recent articles from the peer-reviewed literature, as appropriate. The general objective of the assessment was to evaluate environmental samples from AOC 9 for site-related contaminants and estimate the potential risks these contaminants pose to the natural environment.

The remainder of this report is organized as follows:

- Section 7.2 presents site maps for topography, cover type, and drainage pathways; presents a description of the ecological resources at AOC 9; describes the value of these resources to fish, wildlife, and people; and identifies applicable fish and wildlife regulatory criteria;
- Section 7.3 presents a problem formulation for the ERA at AOC 9; identifies measurement and assessment endpoints; presents the "risk screening" for plants, soil fauna, aquatic biota, and wildlife; summarizes the chemicals of concern for these receptors; and describes uncertainties in the assessment; and
- Section 7.4 describes the key findings of the assessment and makes recommendations regarding the use of more realistic assumptions for the risk evaluation at the site.

7.2 Site Description

This section addresses the requirements of Step 1 of NYSDEC's *Fish and Wildlife Impact Analysis (FWIA) for Inactive Hazardous Waste Sites* (NYSDEC 1994c). Step one of the FWIA process includes preparation of various site maps, description of fish and wildlife resources, description of fish and wildlife resource values, and identification of applicable fish and wildlife regulatory criteria. The contents of this section are also consistent with the component of *Ecological Risk Assessment Guidance for Superfund* (ERAGS) Step 1 that addresses the environmental setting (USEPA 1997c).

AOC 9, also known as the WSA landfill, is a grass-covered area located on the southwest side of the inactive WSA. The site location and surrounding area are shown in Figures 1-1 and 1-2. Historic aerial photographs show that the landfill was used between 1943 and 1957, but no later than 1960 (E & E 2000a). The type of material buried at this site is unknown. However, based on base personnel reports and site investigations it is believed that much of the material in the landfill was removed during construction of the

WSA. Only trace amounts of debris (i.e., metal, glass, and ceramic fragments) were observed during test pit excavations performed in the fill areas during the 2000 and 2002 Supplemental Investigations of AOC 9.

AOC 9 is part of a strip of land between the Instrument runway and the WSA (see Figure 1-2). SMC and Perimeter Road run through AOC 9. On the southwest side of Perimeter Road, the site slopes gently downward toward SMC. There are several locations in AOC 9 where shallow groundwater discharges to the surface in the form of seeps. These seeps, along with the surface drainage in the WSA (i.e., culverts and ditches along the roadways) form small, shallow drainageways that drain into SMC. The northwest end of AOC 9 proximate to SMC is generally wet. Most of AOC 9 is covered with grass and other vegetation that is periodically mowed.

7.2.1 Site Maps

The former Griffiss AFB lies within the Mohawk Valley between the Appalachian plateau and the Adirondack Mountains (see Figure 1-1). The topography across the former base is relatively flat, with elevations ranging from 435 to 595 feet above mean sea level. The highest elevations are to the northeast. A rolling plateau northeast of the former base reaches an elevation of 1,300 feet. The NYS Barge Canal and Mohawk River lie to the south and west of the base, respectively (see Figure 1-1), below an elevation of 430 feet AMSL.

Key features of AOC 9; including topography and the locations of the water, sediment, and soil samples used in this assessment are shown on Figures 7-1 and 7-2. Figure 7-3 displays watercourses and cover types.

7.2.2 Description of Site Characteristics of Fish and Wildlife Resource

7.2.2.1 Terrestrial Habitats

Three distinct terrestrial cover types were identified within the study area (see Figure 7-3). These cover types are ranked in accordance with Edinger et al. (2002) and their individual characteristics are described below.

Shallow Emergent Marsh

This cover type is described as a marsh area that resides on dark organic soils that are permanently saturated. Characteristic plants include bluejoint grass *(Clamagrotis canadensis),* reed canary grass *(Phalaris arundinacea),* sedges *(Carex stricta, C. lacustris),* tufted loosestrife *(Lythrum thrysiflora),* swamp candles *(Lysimachia terrestris),* sensitive fern *(Onoclea sensibilis),* angelica (*Angelica atropurperea),* bur-reed *(Sparganium eurycarpum),* horsetail *(Equisetum arvense),* and cattails (*Typha latifolia*).

Within the study area, the characteristic species of this cover type were observed in the wetland areas adjacent to SMC, including reed canary grass *(Phalaris arundinacea),* which dominated the border of the wetland area, and cattails *(Typha latifolia),* which occurred throughout the wetland areas adjacent to the creek. The landscape in this area is characterized by the occurrence of pockets where pools of water accumulate, thus forming small pocket wetland areas.

Mowed Areas

This cover type consists of mowed areas associated with maintained grasses. Much of AOC 9 is mowed on a regular basis for safety reasons regarding line-of-sight for aircraft and to minimize the potential for bird-aircraft strikes on the nearby runway.

Rights of Way

This cover type is found in and around AOC 9. It includes the Instrument Runway, which forms the southwest border of the site and Perimeter Road, which is a paved road used for base access running through the site (see Figure 7-3).

7.2.2.2 Aquatic Habitats

Surface drainage at the former Griffiss AFB is highly controlled due to a network of large diameter storm sewers beneath the base that discharge into the Mohawk River, SMC, TMC, and the NYS Barge Canal. Potential wetland areas lie at both the northeast and southeast ends of the base.

SMC flows through the AOC 9 study area and is characterized as a natural stream that enters Griffiss AFB near the northern boundary of the property, but has been extensively modified within the base. The on-base portion of the creek consists of culverted, unculverted, channelized, and unchannelized segments. The creek appears to be largely unaltered near the base boundaries, but is channelized and culverted elsewhere on base.

The unculverted portion of the creek is approximately 8,400 feet long. An additional 7,200-foot segment of the creek is buried and culverted along the runway. A water control structure regulates water flow onto the base and diverts floodwaters through a canal to the Mohawk River. After exiting the base on the southeastern boundary, the creek flows approximately 2 miles to the NYS Barge Canal. Where it crosses the base, SMC is classified by NYSDEC as a Class C surface-water body.

Near AOC 9, SMC is approximately 9 feet wide and 1 foot deep. In this area, the creek appears to have been channelized and the bottom substrate is variable, ranging from soft sediment to gravel and rock rubble (Law 1996a). Several species of fish occur in the creek near AOC 9, including the common shiner (*Notropis cornutus*), blacknose dace (*Rhinichthys atratulus*), creek chub (*Semotilus atromaculatus*), white sucker (*Catostomus commersoni*), and tessellated darter (*Etheosotma olmstedi*) (Law 1996). The creek also supports many species of aquatic insects, including mayflies (Ephemeroptera), dragonflies (Odonata), caddisflies (Trichoptera), true flies (Diptera), and true bugs (Hemiptera) (Law 1996a).

7.2.2.3 Species of Special Concern

The United States Fish and Wildlife Service (USFWS) and New York State Natural Heritage Program (NYSNHP) were contacted for information on species and habitats of concern in the site vicinity. A copy of the correspondence with these agencies is included in Appendix M. Based on information provided by the USFWS and NYSNHP, no endangered, threatened, or special concern species are known to occur within a 2-mile radius of the site, and none were observed during wetland surveys conducted at AOC 9 (E & E 2003). However, Corey (1994) observed whorled mountain-mint (*Pycnanthemum verticillatum* var. *verticillatum*), a state-listed threatened plant, at two locations within a 2-mile radius of the site.

Sensitive habitats have been identified at various locations throughout the base property, including a rich sloping fen adjacent to SMC and Landfill 1, and a hemlock hardwood forest bordering TMC (E & E 2003). However, these habitats are not in the vicinity of AOC 9 and have not been included as part of the study area.

7.2.2.4 Observations of Stress

No signs of stressed vegetation or wildlife were observed at AOC 9 during sampling or wetland delineation activities conducted there by E & E personnel.

7.2.3 Description of Fish and Wildlife Resource Values

7.2.3.1 Value to Associate Fauna

AOC 9 is located within the Mohawk Valley ecozone (Reschke 1990) near the border of the Tug Hill Plateau physiographic province. Fish and wildlife resources within a 2-mile radius of AOC 9 are expected to be characteristic of those naturally found within this ecozone. However, AOC 9 itself does not represent high-quality habitat due to the periodic mowing of most of the site. The area immediately surrounding AOC 9 is developed and includes several buildings, paved roads, fences, and mowed lawns. A fence between AOC 9 and perimeter road limits wildlife access to the site. Consequently, the value of AOC 9 as a source of food and habitat for wildlife is low. Wildlife species present at AOC 9 are limited to those that have adjusted to using areas with limited and routinely disturbed habitat.

7.2.3.2 Value to Humans

Currently, there are no known uses of AOC 9 by humans. To a passerby, the site appears as a strip of land between the WSA and runway. Humans currently working at the former base would be expected to travel past the site, but not regularly utilize it. Recreational fishing in the shallow water in the vicinity of AOC 9 is unlikely, but might occur elsewhere along the creek.

7.2.4 Identification of Fish and Wildlife Regulatory Criteria

The following are criteria that are potentially relevant to any remediation efforts that may be undertaken at AOC 9:

- Clean Water Act, 233 U.S.C. 1261 et seq. Sec 404;
- The Freshwater Wetlands Act (Article 24 ECL, 6 NYCRR, Parts 663 and 664);

- Regulations pertaining to streams and navigable water bodies (Article 15 ECL, 6 NYCRR, Part 608);
- Significant habitats and species of the NYSNHP;
- NYSDEC Ambient Water Quality Standards and Guidance Values (NYSDEC 1998b); and
- Technical Guidance for Screening Contaminated Sediments (NYSDEC 1999).

7.3 Ecological Risk Assessment

This section presents the problem formulation for the ERA at AOC 9; defines measurement and assessment endpoints; presents the risk assessment and measurement endpoints for plants and soil fauna, aquatic biota, and wildlife; summarizes chemicals of concern for these receptor groups; and discusses uncertainties and other factors that should be considered in interpreting the results of this ERA.

This section satisfies the requirements of Step 2 of NYSDEC (1994b) for conducting a contaminant-specific impact assessment, the objective of which is to determine the impacts of site-related contaminants on fish and wildlife resources. This section also satisfies Steps 1 and 2 of USEPA (1997b) for conducting a screening level ERA. Major sources of data and other information used in this assessment include:

- *AOC 9: Weapons Storage Area Landfill Supplemental Investigation Draft Data Summary Report, Former Griffiss Air Force Base, Rome, NY* (E & E 2001a);
- *Draft Report for Expanded Site Investigation and Confirmatory Sampling of Areas of Interest and Drywell/Wastewater-Related Systems, Former Griffiss Air Force Base, Rome, NY, Volume 1* (E & E 1998b); and
- *United States Air Force, Griffiss Air Force Base, New York, Draft Final Report, Volume 6, Remedial Investigation, SMC Area of Concern* (Law 1996a)

7.3.1 Problem Formulation

Problem formulation is the first step in the ERA process and identifies the goals, breadth, and focus of the assessment (USEPA 1997c, 1998a). The problem formulation step identifies contaminant sources and migration pathways; potential site-related contaminants; and ecological receptors and exposure pathways. A site conceptual model is then developed to summarize the relationship between stressors and receptors, and serves as a guide for further steps of the risk assessment. The problem formulation step for AOC 9 is based on a review of existing reports and data, as described below.

7.3.1.1 Contaminant Sources and Migration Pathways

Historic releases from either stored materials, small spills, or landfill waste, since removed during construction of the WSA, led to contamination of soil and groundwater at AOC 9. Contaminants detected in soil include chlorinated hydrocarbons, metals, PAH, and pesticides (E & E 1998b, 2001a). Chlorinated hydrocarbons have also been detected in groundwater at the site (E & E 2001a).

The main contaminants at the site appear to be chlorinated hydrocarbons, which are present in groundwater and subsurface soil. Primarily tetrachloroethene, trichloroethene, cis-1,2 dichloroethene, vinyl chloride, chlorobenzene, and dichlorobenzene are present at the site. However, several metals may also be site-related contaminants. For example, the selenium concentration in site soil is an order of magnitude greater than the average concentration for uncontaminated soils in the eastern United States (E & E 1998b). These contaminants have the potential to migrate in groundwater and in surface runoff from their upland sources toward SMC. Additional information on the fate and transport of site-related contaminants at AOC 9 is provided in Section 5 of this report.

7.3.1.2 Potential Site-Related Contaminants

Based on previous work at AOC 9 (E & E 1998b, 2001a), the following constituents appear to be site related:

- **In Soil and Sediment:** chlorinated hydrocarbons (cis-1,2-DCE, PCE, TCE, VC, chlorobenzene, DCBs), selenium, and PAH.
- **In Surface Water:** chlorinated hydrocarbons (cis-1,2-DCE, PCE, TCE, VC, chlorobenzene, DCB).

This list of site-related chemicals is based on a preliminary review of the existing site data that was conducted during development of the *Draft AOC 9 Ecological Risk Assessment Site Conceptual Model* (E & E 2001c). An important objective of this report is to formally screen the available data against risk-based benchmarks to identify a complete list of chemicals that may pose a threat to ecological receptors at the site. This screening is presented in Sections 7.3.3 to 7.3.5 for plants and soil fauna, aquatic biota, and wildlife. A summary of chemicals exceeding benchmarks and/or effect levels is presented in Section 7.3.6.

7.3.1.3 Ecological Receptors and Exposure Pathways

Potential exposure pathways and receptors are summarized in the site conceptual model shown in Figure 7-4. On-site vegetation may be affected by contact with contaminated soil and shallow groundwater that discharges to the surface. Soil organisms, such as earthworms, may be affected by contact with contaminated soil. Birds, mammals, amphibians, and reptiles that use the site may be affected by incidental ingestion of contaminated soil, consumption of contaminated surface water, and consumption of contaminated food items. In SMC and in the on-site drainageways to the creek, site-related chemicals have the potential to affect aquatic life as well as wildlife that use the creek as a source of food and water. Benthic invertebrates, amphibians, and fish could be exposed to contaminants through direct contact with contaminated water and sediment, incidental ingestion of sediment, and through the food chain. Wildlife using the creek could be exposed to contaminants through incidental sediment ingestion, consumption of water, and through the food chain. Direct contact with contaminated soil, sediment, and surface water is considered a minor route of exposure for wildlife due to protection provided by their external coverings (i.e., fur, feathers, and scales). Drinking of surface water also is considered a minor exposure route because chemicals typically are found at much greater concentrations in sediment, soil, and prey compared with surface water. Appendix L provides an example calculation to illustrate this point.

7.3.2 Assessment and Measurement Endpoints

In an ERA, “assessment endpoints” are expressions of the ecological resources that are to be protected (USEPA 1997c). An assessment endpoint consists of an ecological entity and a characteristic of the entity that is important to protect. According to USEPA (1998), assessment endpoints do not represent a desired achievement or goal, and should not contain words such as “protect” or “restore,” or indicate a direction for change such as “loss” or “increase.” Assessment endpoints are distinguished from management goals by their neutrality (USEPA 1998).

Measurements used to evaluate risks to the assessment endpoints are termed "measures", or "measurement endpoints", and may include direct measures of effect (e.g., results of sediment toxicity tests), measures of exposure (e.g., levels of chemicals in water, sediment, and soil) and/or measures of ecosystem and receptor characteristics (e.g., habitat characteristics or water quality conditions) (USEPA 1998). Based on the site ecology, COPCs, and conceptual model, ecological resources potentially at risk from chemical contamination at AOC 9 include aquatic life in the on-site drainageways and SMC and populations of plants, soil fauna, birds, mammals, and reptiles that use the site. The assessment and measurement endpoints for these categories of ecological resources are described below.

Aquatic Life in On-site Drainageways and SMC

- Assessment Endpoint: Sustained levels of reproduction, survival, and growth of aquatic life (benthic and water column organisms) that can serve as a food source for wildlife.
- Measurement Endpoint 1: Measured concentrations of COPCs in surface water, which can be compared with NYSDEC, USEPA, and other water quality criteria, standards, and benchmarks for protection of aquatic life.
- Measurement Endpoint 2: Measured concentrations of COPCs in sediment, which can be compared with NYSDEC, USEPA, and other sediment quality standards and benchmarks for protection of benthic life.

Terrestrial and Wetland Plant Communities

- Assessment Endpoint: Sustainability (survival, growth, reproduction) of terrestrial and wetland plants that can serve as shelter and food for local invertebrates and wildlife.
- Measurement Endpoint: Measured concentrations of COPCs in surface soil, which can be compared with published phytotoxicity benchmarks.

Soil Fauna

- Assessment Endpoint: Sustainability (survival, growth, and reproduction) of soil invertebrates that can process/condition soil and serve as a food source for wildlife.

- Measurement Endpoint: Measured concentrations of COPCs in surface soil, which can be compared with published benchmarks for effects on earthworms and soil-microbial processes.

Bird and Mammal Populations

- Assessment Endpoint: Sufficient rates of survival, growth, and reproduction of birds and mammals to sustain healthy populations in the vicinity of AOC 9.
- Measurement Endpoint: Measured concentrations of COPCs in environmental media from AOC 9 and SMC near the site, which can be used to model dietary exposure to site COPCs for comparison to published toxicity thresholds.

Amphibians and Reptiles

Amphibians are identified as a potential receptor group at AOC 9 (see Figure 7-4). For this assessment, amphibians are considered a part of the aquatic community of the on-site drainageways and SMC, and will be evaluated in the same fashion as other aquatic organisms (see measurement endpoints for aquatic life listed above). Reptiles are also identified as a potential receptor group for AOC 9 (see Section 7.3.1.3). Unfortunately, methods for evaluating risks to reptiles from chemical contamination in the environment are poorly developed. Consequently, reptiles are not evaluated in this assessment.

7.3.3 Plant and Soil Fauna Risk Screening

Twenty-five surface-soil samples (21 investigative samples and four replicate samples) were collected from AOC 9 in previous site investigations. The sampling locations are shown in Figure 7-1. The samples were measured for VOCs, SVOCs, pesticides, and metals. The complete soil database used in this assessment is presented in Appendix M. With the exceptions noted below, the concentrations of metals and organic chemicals in these samples were compared with benchmarks from Efroymson et al. (1997a, 1997b) to identify site-related chemicals that may pose a risk to on-site vegetation, soil invertebrates, and soil microbes.

Six metals that are routinely measured in environmental samples (aluminum, iron, calcium, magnesium, potassium, and sodium) were not evaluated in this assessment. Aluminum was not evaluated based on draft USEPA guidance (USEPA 2000a) that states that aluminum should not be considered a chemical of concern at sites where the soil pH is greater than 5.5, which applies to AOC 9. Calcium, magnesium, sodium, potassium, and iron were not evaluated because they are naturally abundant in soil and also function as important macro-nutrients for plants and animals.

7.3.3.1 Plant Risk Screening

Table 7.3-1 summarizes the screening of surface-soil data against the available phytotoxicity benchmarks. Few analytes exceeded the available benchmarks. The total PAH concentration in a single sample (AOC9-TP03) exceeded the PAH screening benchmark of 20 mg/kg by approximately 50%. The total zinc concentration in six of 25 samples exceeded the zinc phytotoxicity benchmark of 50 mg/kg. The exceedances of the zinc benchmark ranged from 12 to 86%. The largest number of exceedances and those of the greatest magnitude were for selenium, which exceeded its benchmark of 1 mg/kg in 11 of 25 samples. The exceedances of the selenium benchmark ranged from 110 to 550%. The potential significance of the exceedances is discussed in Section 7.3.7. Phytotoxicity screening benchmarks are not available for the VOCs and pesticides detected in surface soil at AOC 9, so the potential risks to plants from these chemicals could not be evaluated.

7.3.3.2 Soil Fauna Risk Screening

Table 7.3-2 summarizes the comparisons of surface-soil data from AOC 9 with available benchmarks for effects on earthworms and soil-microbial processes. In cases where a screening benchmark was available both for toxicity to earthworms and soil-microbial processes, the lower of the two was used. Few chemicals in surface soil exceeded the available benchmarks. The total PAH concentration in a single sample (AOC9-TP03) exceeded the PAH screening benchmark of 30 mg/kg by 7%. The total vanadium concentration in three of 18 samples marginally exceeded the vanadium benchmark of 20 mg/kg. The largest number of exceedances was for manganese, which exceeded its benchmark for effects on soil-microbial processes (100 mg/kg) in 24 of 25 samples. The potential significance of the exceedances is discussed in Section 7.3.7. Screening benchmarks are not available for the VOCs and pesticides detected in surface-soil at AOC 9, so the potential risks to soil fauna from these chemicals could not be evaluated.

7.3.4 Aquatic Biota Risk Screening

Two small drainageways to SMC occur on AOC 9. This section compares water and sediment data from these tributaries with criteria, standards, and benchmarks. Chemicals that exceed the screening values are considered site-related COPCs for aquatic life. If a chemical was identified as a COPC in the on-site tributaries, its concentration in water and sediment from SMC also was examined. Chemicals detected in water and sediment from the creek, but not in the on-site tributaries or in soil or groundwater at AOC 9, were assumed to be from upstream sources, not from AOC 9.

7.3.4.1 On-Site Surface Water

Four surface water samples were collected from the on-site tributaries during the 1997 ESI field investigation (see Figure 7-2 for sampling locations). The sample data were compared with chronic water quality standards from NYSDEC (1998c) and other sources. Table 7.3-3A summarizes the data and screening results. With the exception of acetone, which was detected in a single sample (G009-SW01), organic chemicals were not detected in the tributary water samples. The single acetone detect (13 µg/L) was considerably less than the Tier II Secondary Chronic Value (1,500 µg/L) for this chemical.

Numerous metals were routinely detected in the tributary water samples. The total concentrations of 10 metals exceeded the NYSDEC chronic standard in one or more samples (see Table 7.3-3A). However, it should be noted that the NYSDEC chronic standards typically apply to dissolved (filtered) metal concentrations, whereas the concentrations in the tributary water samples represent total (unfiltered) concentrations. Consequently, the screening of the metals data is highly conservative. It is likely that the number and magnitude of exceedances for metals would be considerably less if filtered sample data were available to compare with the standards.

7.3.4.2 On-Site Sediment

Four sediment samples were collected from the on-site drainageways (see Figure 2-4 for sampling locations). The sample data were compared with sediment benchmarks for protection of benthic life from NYSDEC (1999) and other sources. Table 7.3-4A summarizes the data and screening results. 2-butanone, 2-methyl-naphthalene, acetone, butylbenzylphthalate, methylene chloride, and toluene were detected in the tributary sediment samples. The measured concentrations of these six chemicals were considerably less than the available screening benchmarks. PAHs were detected in one of the four drainageway samples (G009-SD08). In this sample, nine PAHs exceeded their respective screening benchmarks by approximately a factor of two. One of the four tributary sediment samples (G009-SD08) was analyzed for PCBs and pesticides. PCBs were not detected in the sample. Two pesticides, aldrin and heptachlor epoxide, were detected in sample G009-SD08. Both pesticides exceeded their screening benchmark for effects on benthic life. The potential significance of the exceedances is discussed in Section 7.3.7.

7.3.4.3 Water and Sediment from SMC Near AOC 9

Table 7.3-3B summarizes the surface water data for SMC near AOC 9. Copper and zinc often were detected in the samples. Nickel and lead were detected in selected samples. The concentrations of these metals in SMC were an order of magnitude lower than in the on-site drainageways and did not exceed water quality standards. Chlorobenzene and dichlorobenzene were detected in selected samples from the creek. The concentrations did not exceed NYSDEC's chronic water quality standard of 5 μg/L for the sum of mono- and dichlorobenzenes. Bis(2-ethylhexyl)phthalate was detected routinely in the samples. In several instances, the measured concentration exceeded the water quality standard for this chemical. However, bis(2-ethylhexyl)phthalate is a common sample contaminant due to its presence in the gloves used by field and laboratory personnel. It is suspected that the chemical is from this source, and is not site-related. It is also worthwhile to note that bis(2-ethylhexyl)phthalate was not detected in water or sediment from the on-site drainageways at AOC 9 (see Tables 7.3-3A and 7.3-4A). This observation also suggests that AOC 9 is not the source of this chemical to SMC. Aluminum and iron were often detected at levels in excess of water quality standards. However, because the samples were unfiltered, it is suspected that this is the result of suspended solids. Overall, the data suggest that surface water in SMC has not been adversely affected by AOC 9.

Table 7.3-4B summarizes the sediment data for SMC near AOC 9. Except for acetone, the VOCs detected in creek sediment near AOC 9 did not exceed screening benchmarks. The single acetone detect most likely is a laboratory artifact. Several PAHs were occasionally detected in creek sediment near AOC 9. However, the concentrations did not exceed screening benchmarks. Seven pesticides (DDD, DDT, beta-BHC, endosulfan sulfate, heptachlor, heptachlor epoxide, and methoxychlor) were detected in creek sediment near AOC 9 at levels in excess of conservative screening benchmarks. Except for heptachlor epoxide, these pesticides were not detected in sediment from the on-site drainageways (see Table 7.3-4B) and thus are most likely from upstream sources. Silver and manganese were detected in creek sediment near AOC 9 in excess of screening benchmarks. These metals were also found in excess of screening benchmarks in sediment from the on-site tributaries. As such, they may be site-related. However, their frequency of detection in creek sediment was low and the screening benchmarks were only marginally exceeded. Consequently, it seems unlikely that they would have a significant impact on benthic life in the creek. Overall, the data suggest that sediment in SMC has not been adversely affected by AOC 9.

7.3.5 Wildlife Risk Screening

This section presents an evaluation of potential risks to wildlife at AOC 9. The evaluation was performed in accordance with state, federal, and other available guidance for ERA (NYSDEC 1994a; USEPA 1997c, 1998; Sample et al. 1996). The wildlife risk evaluation consists of three parts: exposure assessment, ecological effects assessment, and risk characterization. The exposure assessment (Section 7.3.5.1) estimates wildlife exposure to facility-related chemicals from levels in environmental media and exposure parameters for the wildlife species. The ecological effects assessment (Section 7.3.5.2) summarizes the potential toxic effects of facility-related chemicals on wildlife by establishing toxicity reference values (TRVs) for each chemical and receptor. The risk characterization (Section 7.3.5.3) combines the results of the exposure and ecological effects assessments to provide an estimate of risk to wildlife at the site.

7.3.5.1 Exposure Assessment

This section discusses potential wildlife exposures to organic chemicals and metals at AOC 9. Potential ecological receptors and exposure pathways were generally discussed in Section 7.3.1.3 and identified in the ecological conceptual site model (see Figure 7-4). This section describes specific wildlife exposure scenarios that will be evaluated in the assessment, estimates levels of facility-related chemicals in exposure media, and quantifies exposure.

Wildlife Exposure Scenarios and Pathways

Four wildlife species representing different functional groups were selected as receptors for this assessment. For the terrestrial portion of AOC 9, a songbird, the American robin (*Turdus migratorius*), and a small mammal, the short-tailed shrew (*Blarina brevicauda*), were evaluated. These two receptors have relatively small home ranges and could derive a large portion of their food and habitat requirements from the site. In addition, both the robin and shrew feed extensively on soil invertebrates, such as earthworms, and are likely to be highly exposed to soil contamination at the site. The raccoon (*Procyon lotor*) and a wading bird, the great blue heron (*Ardea herodias*), were evaluated as receptors that could forage in SMC near AOC 9 and in the on-site drainageways to the creek. By utilizing these habitats, these receptors could be exposed to site-related chemicals in surface water, sediment, and prey.

For these four wildlife receptors, this assessment evaluates exposure from incidental ingestion of contaminated soil or sediment and consumption of contaminated prey. Exposure through drinking was not quantitatively evaluated because consumption of surface water accounts for only a small faction of the total chemical exposure for wildlife. This is due to the fact that chemicals typically occur in soil, sediment, and biota at much greater concentrations (part per million concentration range) than in surface water (part per billion concentration range). An example exposure calculation is provided in Appendix L. Direct contact with contaminated soil, sediment, and surface water is considered a minor route of exposure for wildlife due to the protection provided by fur and feathers, and was not quantitatively evaluated.

American Robin. The American robin (*Turdus migratorius*) is a common resident of open areas, woodland edges, and early successional habitats (USEPA 1993c). The makeup of the diet varies seasonally, with invertebrates making up the majority of food items during the spring and early summer. During this time, robins feed on the ground, searching the soil and leaf litter for invertebrates. Robins establish small territories during the breeding season, and potentially could reside entirely within the area provided by AOC 9, assuming adequate nesting sites are available. Northern populations typically winter in southern locations.

Short-Tailed Shrew. The short-tailed shrew (*Blarina brevicauda*) is a small, carnivorous mammal that is common in many habitats, especially those with abundant vegetative cover (USEPA 1993c). This shrew feeds primarily on invertebrates, including insects, earthworms, slugs, and snails. Vertebrates and plants typically make up a minor component of the diet. The species is active year-round. Shrews have a relatively small home range (USEPA 1993c) and potentially could reside entirely within the area provided by AOC 9.

Raccoon. The raccoon (*Procyon lotor*) is the most abundant and widespread medium-sized omnivore in North America. Raccoons are found near virtually every aquatic habitat, in particular hardwood swamps, mangroves, flooded forests, and freshwater and saltwater marshes (USEPA 1993c). They are also common in suburban residential areas and cultivated and abandoned farmlands. Raccoons use surface water for both drinking and foraging. The raccoon is an omnivore and opportunistic feeder. They feed primarily on fleshy fruits, nuts, acorns, and corn, but also eat grain, insects, frogs, crayfish, eggs, and virtually any animal and vegetable matter. The proportion of the diet depends on location and season, although plant material is usually a more important component of the diet than animal material. Typically, it is only in the spring and early summer that raccoons eat more animal than plant material. The size of a raccoon's home range depends on several factors, including its sex and age, habitat quality, food sources, and season. Values from a few hectares to more than a few thousand hectares have been reported, although home ranges of several hundred hectares appear to be most common (USEPA 1993c). Raccoons may forage in SMC near AOC 9 and also in the one-site tributaries. However, it seems unlikely that the site could provide a large part of the food or habitat requirements for this receptor.

Great Blue Heron. The great blue heron (*Ardea herodias*) is a wading bird that occurs in a variety of freshwater and marine habitats and breeds throughout much of North America. Small fish make up 90 to 98% of its diet, with the rest consisting of crustaceans, insects, amphibians, reptiles, birds, and small mammals (USEPA 1993c).

taceans, insects, amphibians, reptiles, birds, and small mammals (USEPA 1993c). The great blue heron fishes by still hunting and stalking in shallow water. In New York State, the great blue heron can be both a seasonal migrant and a resident species throughout the year as long as open water persists. Migrations in the northeast are highly dependent upon the severity of the winter season, primarily the degree of ice cover on feeding waters. Heron breeding colonies are generally close to foraging areas. According to USEPA (1993c), the foraging range (i.e., distance from breeding colony to feeding area) for this species can vary from an average of 3.1 km to a maximum of 24 km. Herons may forage in SMC near AOC 9 and potentially also in the on-site drainageways. However, it seems unlikely that the site could provide a large part of the food or habitat requirements for this species.

Exposure Estimates

First, this section discusses the computational methods used to estimate wildlife exposure to chemicals through ingestion of prey and incidental ingestion of soil and sediment. Second, specific assumptions used to estimate exposure for the wildlife receptors evaluated in this assessment are presented.

Computational Methods. The total chemical exposure for wildlife receptors was calculated as the sum of exposures from diet and from incidental soil/sediment ingestion. As noted above, chemical exposure from surface-water consumption was not quantitatively evaluated because it is minor compared with exposure from food ingestion and incidental ingestion of soil and sediment (see Section 7.3.5.1.1 and Appendix L). Dietary exposure is calculated by multiplying the chemical concentration in each food item by its fraction of the total diet and summing the contribution from each item. This sum is then multiplied by the receptor's site use factor (SUF), ED, and IR, and divided by the receptor's BW, as shown in the following equation:

$$EE_{diet} = ([(P_1 \text{ x } CF_1) + (P_2 \text{ x } CF_2) + \ldots (P_n \text{ x } CF_n)] \text{ x } SUF \text{ x } ED \text{ x } IR)/BW$$

where:

EE_{diet} = Estimated exposure from diet (mg/kg/day);
P_n = Percentage of diet represented by food item ingested;

CF_n = Chemical concentration in food item n (mg/kg dry weight);
SUF = Site use factor (unitless);
ED = Exposure duration (unitless), equal to fraction of year spent at site;
IR = Ingestion rate of receptor (kg/day in dry weight); and
BW = Body weight of receptor (kg in fresh weight).

Ingestion rate, home range, and body weight for the robin, shrew, raccoon, and heron were taken from USEPA (1993c), Sample and Suter (1994), and Sample et al. (1996). The values are presented in Table 7.3-5. Assumptions regarding diet composition for the robin, shrew, raccoon, and heron are described below under *Exposure Assumptions.*

The SUF indicates the portion of an animal's home range represented by the site. If the home range is larger than the site, the SUF equals the site area divided by the home range area. If the site area is greater than or equal to the home range, the SUF is equal to 1.

ED is the percentage of the year spent in the site area by the receptor species.

Wildlife exposure to chemicals through incidental soil or sediment ingestion is estimated in a manner similar to dietary exposure. Specifically, the soil EPC is multiplied by the soil ingestion rate and then multiplied by the SUF and ED and divided by BW, as shown by the following equation:

$$EE_{soil} = C_{soil} \text{ x } IR_{soil} \text{ x } SUF \text{ x } ED / BW$$

where:

EE_{soil} = estimated exposure from soil (or sediment) ingestion (mg/kg/day);
C_{soil} = chemical concentration in soil (or sediment) (mg/kg);
SUF = site use factor (unitless);
ED = exposure duration (unitless); fraction of year spent at site;
BW = body weight of receptor species (kg fresh weight).

Soil/sediment ingestion estimates for the endpoint species were taken from Sample and Suter (1994) and Sample et al. (1996) and are presented in Table 7.3-5.

The total exposure for a receptor is the sum of exposure from diet and soil or sediment ingestion, as represented by the following equation:

$$EE_{total} = EE_{diet} + EE_{soil/sediment}$$

where:

EE_{total} = total exposure (mg/kg/day);
EE_{diet} = estimated exposure from diet (mg/kg/day); and
$EE_{soil/sediment}$ = estimated exposure from soil/sediment ingestion (mg/kg/day).

Exposure Assumptions. The robin and shrew were conservatively assumed to prey entirely on earthworms. Earthworms were chosen as a representative prey item for these receptors because earthworms are abundant in central NYS, are important in the diets of shrews and robins, and have been well studied compared with other groups of soil invertebrates. The diet of the raccoon was conservatively assumed to consist entirely of crayfish from the on-site drainageways to SMC. Crayfish were chosen as a representative aquatic prey species for the raccoon because they are abundant in central NYS and are known to be readily eaten by raccoons (USEPA 1993c). The diet of the heron was assumed to consist entirely of small fish from SMC near AOC 9 and/or from the on-site drainageways. The assumed diets are summarized in Table 7.3-5. Contaminant levels in prey items (earthworms, fish, and crayfish) were estimated as described in the following section.

To provide a conservative estimate of exposure to site-related chemicals, the SUF and ED were assumed to be 1.0 for all receptors. That is, AOC 9 was assumed to be a closed system and the shrew, robin, raccoon, and heron were assumed to derive all of their food and habitat requirements from the site. In addition, the maximum chemical concentrations in soil and sediment were used to estimate exposure from incidental soil/sediment ingestion and to estimate chemical concentrations in wildlife prey. These assumption are highly conservative and often are used in screening level ERAs to avoid overlooking chemicals that may be of concern for wildlife (USEPA 1997c).

Exposure Point Concentrations

- **General Considerations –** Only those chemicals that were detected in surface soil from AOC 9, or in water or sediment from the on-site drainageways, were considered in the wildlife risk assessment (see Tables 7.3-6, 7.3-7, and 7.3-8 for a complete listing). If a chemical was not detected at least once in these media, it was not evaluated further. This approach was adopted in order to focus the wildlife risk assessment on site-related chemicals. Some chemicals, such as PCBs, were not detected in on-site media but were found at detectable levels in fish, sediment, or water from SMC near AOC 9. These chemicals were assumed to originate from other sources and were not evaluated in this assessment.

  When calculating exposure point concentrations (EPCs), chemicals in the following groups of constituents were summed together within each sample and exposure was based on the sum of the constituents.

  - **PAHs** – A total PAH concentration was calculated as the sum of the individual PAHs measured in each sample. One-half the detection limit was used for non-detected PAHs.
  - **Chlorinated benzenes –** A total chlorinated benzene concentration was calculated as the sum of the mono-, di- and trichlorobenzene compounds measured in each sample. One-half the detection limit was used for non-detected chlorobenzenes.

  For these groups of chemicals, the best available toxicological data for any compound within the group was used as the TRV for the group (see Section 7.3.5.2).

- **Surface Soil –** EPCs for VOCs, SVOCs, pesticides, and metals in surface soil are listed in Table 7.3-6. These EPCs were used to estimate exposure due to incidental soil ingestion for the shrew and robin, and also as the basis for estimating chemical concentrations in earthworms (as described below), the assumed prey for the shrew and robin. The maximum surface-soil concentration was used as the EPC to estimate exposure for the robin and shrew.

- **Earthworms –** For this assessment, the robin and shrew were conservatively assumed to prey entirely on earthworms. For metals, the expected earthworm concentration was calculated from the soil EPC using the bioaccumulation relationships developed by Sample et al. (1998). A bioaccumulation factor of 1.0 was used for metals not addressed by Sample et al. 1998 (i.e., the earthworm chemical concentration was assumed to be the same as the soil EPC). For organic chemicals, the expected earthworm concentration was estimated using a bioaccumulation factor (BAF) that relates the earthworm chemical concentration to the soil EPC. A model presented in Menzie et al. (1992) was used to calculate earthworm BAFs. The model predicts BAFs based on the soil organic content (f_{oc}) and lipid content of the earthworm (Y_L) using the following equation:

$$BAF = Y_L/(0.66f_{oc}).$$

The soil organic carbon content at AOC 9 was assumed to be 1%. The lipid content of earthworms was assumed to be 2% (Menzie et al. 1992). The soil EPC was multiplied by the earthworm BAF to estimate the earthworm EPC for organic chemicals. The BAFs and EPCs for earthworms are presented in Table 7.3-6.

- **Sediment** – Table 7.3-7 lists EPCs for VOCs, SVOCs, pesticides, and metals for sediment in the on-site drainageways. Because only a small number of sediment samples were collected from the on-site drainageways, the maximum detected concentration was used to estimate wildlife exposure to chemicals in sediment. The sediment EPCs were used to estimate exposure due to incidental sediment ingestion for the raccoon and heron, two receptors that potentially may be exposed to sediment while foraging. The sediment EPCs were also used as the basis for estimating chemical concentrations in benthic invertebrates, such as crayfish (as described below), the assumed prey for the raccoon.

- **Benthic Invertebrates** – For this assessment, the raccoon was conservatively assumed to prey entirely on crayfish from the on-site drainageways to SMC at AOC 9. For metals, the expected crayfish concentration was calculated from the sediment EPC using the bioaccumulation relationships developed by Bechtel Jacobs (1998). A bioaccumulation factor of 1.0 was used for metals not addressed by Bechtel Jacobs (1998) (i.e., the crayfish chemical concentration was assumed to be the same as the sediment EPC). For organic chemicals, the expected crayfish concentration was estimated using a BAF that relates the crayfish chemical concentration to the sediment EPC. A model developed by Menzie et al. (1992) from studies on aquatic oligochaetes was used to calculate crayfish BAFs. The model predicts BAFs based on the sediment organic content (f_{oc}) and lipid content of the crayfish (Y_L) using the following equation:

  $$BAF = Y_L/(0.66f_{oc}).$$

  A sediment organic carbon content of 4% was assumed based on sample data from the on-site drainageways (see Table 7.3-4). The lipid content of crayfish was assumed to be 2%. The sediment EPC was multiplied by the crayfish BAF to estimate the crayfish EPC for organic chemicals. The BAFs and EPCs for crayfish are presented in Table 7.3-7.

- **Fish** -- For this assessment, the heron was conservatively assumed to feed on small fish from SMC in the vicinity of AOC 9 and/or from the on-site drainageways. EPCs for metals and pesticides in fish were based on measured concentrations of chemicals in fish reported by Law (1996) for a composite sample of creek chubs collected from SMC near AOC 9. If a pesticide or metal being evaluated was not detected in the fish sample from Law (1996), one-half the reported detection limit was used. For PAHs and other semivolatile compounds, it was conservatively assumed that the concentrations in fish eaten by the heron were the same as the maximum sediment concentrations of these chemicals. The fish EPCs are provided in Table 7.3-8.

7.3.5.2 Ecological Effects Assessment

This section establishes TRVs for the wildlife receptors being evaluated. The TRVs were derived from toxicity studies reported in the scientific literature. The wildlife TRVs represent NOAELs or LOAELs for each contaminant for each receptor. Toxicity values that represent chronic NOAELs are preferred in deriving TRVs. If only a LOAEL is available, or if no chronic studies are available, the toxicity value is multiplied by an uncertainty factor ranging from 0.01 to 1 to extrapolate to a chronic NOAEL.

Toxicity results from laboratory studies are often expressed as a concentration in food (e.g., mg/kg). This concentration must be converted to a dose (as mg chemical/kg body weight/day) to allow for a comparison among species of various body sizes. This conversion is performed by multiplying the concentration in diet by the food ingestion rate (which may come from measurements made in the toxicity study or from published values for the test species), and dividing by the test organism's body weight (also taken from the study or estimated from literature).

For mammals, differences in body size between the test species and the receptor species can also be a source of uncertainty. Therefore, the test species NOAEL is modified by a body scaling factor to calculate the receptor species NOAEL (Sample et al. 1996). Receptor species NOAELs were calculated using the following equation:

$$\text{TRV} = \text{NOAEL}_W = \text{NOAEL}_T \text{ x } (\text{BW}_T/\text{BW}_W)^{1/4}$$

where:

NOAEL_W = No observed adverse effect level for wildlife species (mg/kg/day);
NOAEL_T = No observed adverse effect level for test species (mg/kg/day);
BW_T = Body weight of test species (kg);
BW_W = Body weight of wildlife species (kg); and
$(\text{BW}_T/\text{BW}_W)^{1/4}$ = Body scaling factor.

The same approach is used to adjust LOAELs for body weight. For birds, Mineau et al. (1996) suggested that body-weight scaling is not appropriate; therefore, toxicity values for the robin and heron were not adjusted using this technique.

Table 7.3-9 lists the TRVs for the wildlife receptors and chemicals considered in this assessment. Most of the TRVs were derived from toxicity data summarized by Sample et al. (1996). Sample et al. (1996) list a mammalian TRV for only one PAH, benzo(a)pyrene. The mammalian TRV for this PAH was used as a surrogate for all PAHs.

Avian TRVs for PAHs are not provided in Sample et al. (1996). However, a study by Patton and Dieter (1980) examined the effects of a mixture of PAHs on liver function in ducks. The mixture of PAHs was representative of light crude oil and included many of the individual PAH compounds detected in soil and sediment at AOC 9. Increased liver weights were observed at a level of 4,000 ppm in the diet, but no effects were seen on survival, growth, or organ histopathology. No effects on any of these parameters were observed at the lower level of 400 ppm in the diet. Therefore, the dietary level of 400 ppm PAH was used herein as a NOAEL for exposure of birds to total PAH. This NOAEL is considered chronic since it is based on a test duration of seven months.

To derive a TRV for total PAHs from the NOAEL in diet, the 400 ppm dietary level was converted to a daily dose by multiplying the NOAEL by the ingestion rate (0.1 kg/day) and dividing by the body weight (1 kg) of a mallard (Sample et al. 1996), which results in a dose of 40 mg/kg/day (see Table 7.3-9). This dose was considered to be the TRV for total PAHs for avian receptors. Because this TRV represents the safe dose for a mixture of PAHs, it was used to evaluate the potential toxicity of the total PAH concentration in wildlife food and soil/sediment.

7.3.5.3 Wildlife Risk Characterization

The potential risks posed by site-related chemicals were evaluated by calculating an HQ for each contaminant for each endpoint species. The HQ for all pathways was determined by dividing the total exposure from all pathways (EE_{total}) by the appropriate TRV for the endpoint species and contaminant, as shown in the following equation:

$$HQ = EE_{total}/TRV$$

Hazard quotients for each receptor were calculated based on both the NOAEL and LOAEL TRVs, and are abbreviated as HQ_{NOAEL} and HQ_{LOAEL}, respectively. For a given receptor and chemical, a HQ_{NOAEL} greater than 1.0 indicates that the estimated exposure exceeds the highest dose at which no adverse effect was observed. Such a result does not imply that the receptor is at risk, especially if the HQ is only marginally above 1.0. A HQ_{LOAEL} greater than 1.0 suggests that a chronic adverse affect is possible. Tables 7.3-10 through 7.3-13 present the estimated exposure from food and soil/sediment ingestion, the total exposure, and the calculated HQs for the robin, shrew, raccoon, and heron.

NOAEL Exceedances: For the American robin, HQs greater than 1.0 were observed for total PAHs, four pesticides (DDD, DDE, DDT, and dieldrin), and five metals (cadmium, chromium, lead, nickel, and zinc) (see Table 7.3-10). For the shrew, HQs greater than 1.0 were observed for total PAHs, dieldrin, and seven metals (antimony, arsenic, barium, cadmium, selenium, thallium, and vanadium) (see Table 7.3-11). For the raccoon, HQs greater than 1.0 were observed for total PAHs and four metal (arsenic, barium, manganese, and vanadium) (see Table 7.3-12). For the heron, only the HQ for zinc exceeded 1.0 (see Table 7.3-13).

LOAEL Exceedances: For the American robin, two pesticides (DDE and DDT) and three metals (chromium, lead, selenium) were predicted to pose a risk (i.e., HQ_{LOAEL} exceeded 1.0) (see Table 7.3-10). The shrew was predicted to potentially be at risk from PAHs and three metals (selenium, thallium, and vanadium) (see Table 7.3-11). For the raccoon, PAHs, barium, and manganese were predicted to pose a potential risk (see Table 7.3-12). No chemicals were predicted to pose a risk to the heron (see Table 7.3-13).

7.3.6 Summary of Chemicals of Potential Concern

Table 7.3-14 summarizes the chemicals exceeding benchmarks or effect levels in soil, sediment, and surface water at AOC 9 based on the conservative screening conducted in this section. Potential risks were predicted for plants and soil fauna from several metals and total PAH. Potential risks were predicted for aquatic life in the on-site drainageways from numerous metals in surface water. Potential risks were predicted for benthic life in the on-site drainageways from several metals, PAHs, and two pesticides.

Several metals and pesticides were predicted to pose a risk to birds and mammals based on the conservative screening conducted in this section. Uncertainties in the COPC selection process as well as other factors that should be considered in interpreting the screening results are discussed below.

7.3.7 Uncertainty Evaluation and Additional Considerations

7.3.7.1 Major Sources of Uncertainty

Significant sources of uncertainty in this ERA include the following.

- **Bioavailability:** The bioavailability of chemicals in environmental media at AOC 9 is poorly understood. To be conservative, it was assumed that 100% of the chemicals in soil, sediment, and surface water were bioavailable to all ecological receptors. If the bioavailability is less than 100%, which seems likely, the potential risks to all categories of ecological receptors would be correspondingly lower. Adriano (1986) discusses factors affecting bioavailability of metals in soil. McIntosh (1991) reviews studies on bioavailability of metals in sediment. Jager et al. (2003) discusses availability of PAHs in soil to earthworms. These authors all indicate that various factors (e.g., pH, cation exchange capacity, organic matter content, redox potential, soil/sediment mineralogy, time) influence the bioavailability of chemicals in soil and sediment.

- **Reliability of Soil Benchmarks:** Many of the available soil screening benchmarks for plants and soil fauna were developed from laboratory studies in which chemical solutions were added to clean soil to arrive at a range of test concentrations. In such studies, the added chemicals are highly bioavailable. Comparing total chemical concentrations in soil to solution-based benchmarks is questionable, and is likely to result in an overestimation of risk. For aluminum, USEPA (2000a) has deemed that such a comparison is inappropriate.

- **Dissolved Metals in Surface Water:** These data are lacking for the site. Most of NYSDEC's water quality standards for metals are based on dissolved concentrations. Comparing total (unfiltered) sample concentrations to these standards is a highly conservative screening approach and has likely resulted in numerous metals being inappropriately identified as COPCs in surface water.

- **COPCs in Wildlife Prey:** Food-chain transfer of chemicals at AOC 9 is poorly understood. The potential risks to wildlife at the site are largely driven by estimated concentrations of chemicals in wildlife prey. For this assessment, prey concentrations were estimated from measured soil and sediment concentrations using uptake factors from the literature. Or, if a literature-based uptake factor was not available, it was assumed that the prey concentration was the same as the soil or sediment concentration. The uncertainty associated with this approach is often high, since a number of site-specific factors affect food-chain transfer of chemicals. In general, the uptake factors used in this assessment are intended to provide a conservative estimate of chemicals in wildlife prey and are likely to result in an overestimation of risk.

- **Wildlife TRVs:** Uncertainty exists in the wildlife risk assessment due to the limited amount of toxicity data for certain chemicals. This necessitated the use of some chemicals as surrogates for others or prevented an evaluation of risks for certain chemicals. For example, when estimating risks for the shrew and raccoon from PAHs, it was assumed that all PAHs had the same toxicity as benzo(a)pyrene. This assumption most likely results in a conservative estimate of risk given what is known about the relative toxicity of benzo(a)pyrene versus other PAHs in humans. In addition, the values of NOAELs and LOAELs reported in the literature are imprecise. While the LOAEL is the lowest dose that produced an adverse effect in a particular laboratory study, it may not be the lowest dose at which an effect could occur (or might have been observed) if the dosage levels in the study had been different. Similarly, while the NOAEL is the highest dose at which no effect was observed in a particular laboratory study, it may not be the highest dose at which no effect could occur (or might have been observed) if the dosage levels in the study had been different.

- **Wildlife Diet:** Uncertainty may result from the assumptions made about the diets of the wildlife receptors evaluated in this assessment. For the shrew and robin, the assumption of a diet consisting entirely of earthworms is conservative. In addition to earthworms, shrews consume other invertebrates (i.e., slugs, snails, centipedes, and various insects), fungi, plant materials, and small mammals (USEPA 1993c). Similarly, robins also consume other invertebrates (i.e., sowbugs, spiders, and various insects) and plant materials (USEPA 1993c). These foods are less intimately associated with the soil matrix than earthworms, and thus accumulate lesser amounts of soil contamination. The assumed diet for the shrew and robin in this assessment likely results in a overestimation of exposure and risks from chemicals in soil. The diet assumed for the raccoon (100% crayfish) also is highly conservative. Raccoons typically consume a considerable amount of plant material.

7.3.7.2 Additional Considerations

Five metals in soil (chromium, manganese, selenium, vanadium, and zinc) were predicted to pose a potential risk to plants or soil fauna at AOC 9 based on comparisons to conservative screening benchmarks. As noted above, these solution-based benchmarks are highly conservatively biased. In some cases, they are similar to or less than the background soil concentration for the metal. In such cases, the usefulness of the benchmark for identifying genuine ecological impacts is low.

To determine if metals in soil at AOC 9 are from natural or anthropogenic sources, metal-to-aluminum plots were constructed. This approach is well described in the literature (e.g., Windom et al. 1989) and has been used to identify anthropogenic metals enrichment in freshwater and marine sediments (Forstner and Wittman 1979), precipitation (Thornton et al. 1981), and atmospheric dust (Davidson et al. 1984). In essence, the approach provides a graphical method for identifying locations where metals are enriched due to anthropogenic activities. In uncontaminated soils, metal concentrations typically increase linearly with clay content. Marked departures from this linear relationship usually indicate anthropogenic enrichment. In practice, aluminum is used to estimate the clay content because it is a major structural element of clay minerals. Plots of chromium, manganese, selenium, vanadium, and zinc versus aluminum are included in Appendix M. A discussion of the plots follows.

The relationship between vanadium and aluminum at AOC 9 is highly linear ($r^2 = 0.9879$, see Appendix M), suggesting that vanadium in surface soil at the site is of a natural, not anthropogenic, origin. Thus, the three exceedances of the vanadium benchmark for soil fauna are unlikely to be of ecological concern. Instead, they are most likely a consequence of using a solution-based benchmark to screen total soil concentrations.

Chromium and zinc concentration in soil at AOC 9 also were highly correlated with aluminum ($r^2 = 0.8418$ for chromium; $r^2 = 0.8316$ for zinc; see Appendix M) although the relationships were not as strong as for vanadium. Nonetheless, for these two metals, the variability in the data is largely due to aluminum, which suggests that chromium and zinc in surface soil at AOC 9 are largely from background sources. Again, as for vanadium, the exceedances of the screening benchmarks for chromium and zinc are unlikely to indicate an adverse ecological impact. Instead, they are simply a consequence of using solution-based benchmarks to screen total soil concentrations.

Manganese and selenium concentrations in soil at AOC 9 are not well correlated with aluminum ($r^2 = 0.2763$ for manganese; $r^2 = 0.5822$ for selenium). These results suggest that there may be other sources of manganese and selenium to surface soil at AOC 9 in addition to natural weathering. However, it is worth noting that manganese levels in surface soil at AOC 9 do not exceed the maximum background manganese concentration (2,300 mg/kg) measured in site-specific background soil samples collected during the basewide Remedial Investigation (see Table 3.2-2, E & E 1996 and Appendix G). Nor do manganese levels in surface soil at AOC 9 exceed the 90th percentile manganese concentration (1,450 mg/kg) for uncontaminated soils in the Eastern United States (see Table 3.2-2, E & E 1996). Hence, it appears that manganese levels at AOC 9 are no higher than normally encountered in uncontaminated soil, and thus are unlikely to pose an ecological risk.

7.4 Conclusions and Recommendations

The assessment endpoints for this ERA were stated in Section 7.3.2. For the reasons given below, the results of this assessment suggest that current levels of environmental contamination at AOC 9 are unlikely to adversely affect the assessment endpoints.

7.4.1 Aquatic Life in the On-Site Drainageways and SMC

Aquatic life in SMC near AOC 9 do not appear to be at risk from site-related chemicals based on the general lack of exceedances of water and sediment quality benchmarks in samples from the creek near the site. Aquatic life in the on-site drainageways potentially could be at risk from several metals in water. However, the identification of numerous metals as COPCs in surface water from the drainageways may be due the fact that data from unfiltered water samples were compared with standards for dissolved metals. If the high metal concentrations in the drainageway water samples were due to suspended sediment, then the benchmark exceedances are unlikely to indicate an adverse ecological impact.

7.4.2 Plant Communities

Plant communities at AOC 9 may potentially be impacted by selenium in surface soil, based on numerous exceedances of the selenium phytotoxicity benchmark. In addition, there is evidence suggesting that selenium levels in site soil are elevated above background. However, the apparent risk to plants from selenium is highly uncertain because the selenium benchmark is solution-based and thus tends to overestimate risks when compared to total soil concentrations. In addition, no visible evidence of dead or stressed vegetation was observed at the site. PAHs are elevated at a single sample location at AOC 9 above the phytotoxicity screening benchmark. Any impacts to plants from PAHs would be highly localized and would not impact plant communities at the site.

7.4.3 Soil Fauna Community

Soil fauna communities at AOC 9 may potentially be impacted by manganese in surface soil, based on numerous exceedances of the manganese screening benchmark. In addition, there is evidence suggesting that manganese levels in site soil are elevated above background. However, the apparent risk to soil fauna from manganese is highly uncertain because the manganese benchmark is solution-based and thus tends to overestimate risks when it is used to screen total soil concentrations. PAHs are marginally elevated at a single sample location at AOC 9 above the soil-fauna benchmark. Any impacts to soil fauna from PAHs would be highly localized and would not impact the soil-fauna community at the site.

7.4.4 Bird and Mammal Populations

The screening approach used to evaluate wildlife risks in this assessment suggests that several organic chemicals and metals may pose a risk to birds and mammals at AOC 9. However, the screening-level risk estimates are based on three highly conservative assumptions: the receptors derive all of their food and habitat requirements from AOC 9; the avian receptors spend all year at the site; and the receptors are exposed at all times to only the maximum concentrations of chemicals in soil and sediment at the site. In reality, the wildlife receptors evaluated for this assessment are likely to utilize AOC 9 only occasionally, and their exposure to site-related chemicals would be averaged across the site. When these factors are considered, it seems unlikely that any chemicals in environmental media at AOC 9 would pose a risk to wildlife.

To provide a more realistic evaluation of risks to the heron and raccoon, the SUF and ED were changed. Specifically, the following was done:

- For the heron, the exposure estimates were recalculated based on a more realistic SUF. The available foraging habitat for the heron at AOC 9 can be estimated from the length of Six Mile Creek adjacent to AOC 9 (0.5 km) added to the length of the on-site tributaries to the creek (0.3 km). This sum (0.8 km) can be divided by the average foraging range (3.1 km) for the heron (see Section 3.5.1.1) to arrive at a SUF of 0.26. In addition, an ED of 0.5 was assumed based on the migratory behavior of this species.

- For the raccoon, the exposure estimates were recalculated based on a more realistic SUF of 0.03. This SUF is based on the area of AOC 9 (18 ha) divided by the average home range size for this receptor (630 ha) (USEPA 1993).

Table 7.4-1 illustrates the effect of these changes on the HQs for these two receptors (only chemicals with HQs greater than 1 in Tables 7.3-12 and 7.3-13 are included in Table 7.4-1). No chemicals are predicted to pose a risk to the raccoon and heron when realistic estimates of the SUF and ED are used.

To provide a more realistic estimate of risks to the shrew and robin from chemicals in soil, it seems reasonable to investigate the following:

- For the shrew, the exposure estimates could be recalculated based on the 95% upper confidence limit of the average soil chemical concentration (95% UCL concentration). Because over 20 surface-soil samples are available for AOC 9, the database is adequate to support calculation of the 95% UCL concentration.

- For the robin, the exposure estimates also could be recalculated based on the 95% UCL concentration. In addition, an ED of 0.5 could be assumed to account for the migratory behavior of this receptor.

An example calculation was conducted for the shrew for total PAHs to investigate the degree of change in the HQs that could be expected when the 95% UCL concentration is used instead of the maximum. The HQs for total PAHs for the shrew were reduced by approximately a factor of four (see Table 7.4-2). One would expect a similar reduction in the HQs for the shrew from other chemicals in soil, and an even greater reduction for the robin due to the application of an ED of 0.5. In summary, it appears that the use of the 95% UCL concentration instead of the maximum (and ED of 0.5 for the robin) would eliminate most predicted risks for these two receptors.

7.4.5 Summary

The ERA for AOC 9 focused on four assessment endpoints: terrestrial and wetland plant communities; soil-fauna community; aquatic life in SMC and the on-site tributaries to the creek; and bird and mammal populations in the site vicinity. The potential ecological risk to these receptor groups was evaluated in accordance with state and federal guidance for ERA. PAHs, several chlorinated pesticides, and several metals exceeded conservative screening benchmarks at selected sampling locations, or were predicted to a pose risk to certain wildlife species when exposure was calculated from the maximum chemical concentrations in soil and sediment. These include potential risks to terrestrial and wetland plant communities for selenium and PAHs; risks to soil fauna for manganese and PAHs; risks to aquatic life in the on-site drainageways for several metals in the water; and risks to bird and mammals for organics and metals. However, given the conservative nature of the risk estimation process, the results overall suggest that current levels of environmental contamination at AOC 9 are unlikely to adversely affect populations or communities of ecological receptors at the site.

7.4.6 Recommendations

No additional ERA activities are recommended for AOC 9.

Table 7.3-1 Screening Data Summary for Phytotoxicity Contaminants of Potential Concern

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Soil Phytotoxicity Benchmark^1	Frequency of Exceedance Phytotoxicity
VOC and SVOC μg/kg						
Acetone	5.07	93	22	14	NA	NA
Benzoic acid	38	1760	22	4	NA	NA
2-Butanone	3.07	28	18	5	NA	NA
Chlorobenzene	2.37	14	18	2	NA	NA
1,4-Dichlorobenzene	4.74	4.74	18	1	NA	NA
Methylene chloride	7.4	25	18	4	NA	NA
1,1,1-Trichloroethane	6.8	6.8	22	1	NA	NA
Bis(2-ethylhexyl)phthalate	48	370	22	13	100,000	0
Carbazole	536	536	18	1	20,000	0
Chloromethane	28	56	22	4	NA	0
Dibenzofuran	520	520	18	1	20,000	0
PAH μg/kg						
2-Methylnaphthalene	219	219	18	1	20,000	0
Acenaphthene	579	579	18	1	20,000	0
Anthracene	39	1440	18	2	20,000	0
Benzo(a)anthracene	43	2170	21	5	20,000	0
Benzo(a)pyrene	75	1440	18	5	20,000	0
Benzo(b)fluoranthene	76	1510	18	4	20,000	0
Benzo(g,h,i)perylene	520	520	18	1	20,000	0
Benzo(k)fluoranthene	71	1800	18	4	20,000	0
Chrysene	87	1900	18	4	20,000	0
Dibenzo(a,h)anthracene	225	225	17	1	20,000	0
Fluoranthene	150	6110	18	4	20,000	0
Fluorene	741	741	18	1	20,000	0
Indeno(1,2,3-cd)pyrene	283	283	18	1	20,000	0
Naphthalene	601	601	18	1	20,000	0
Phenanthrene	160	7110	18	3	20,000	0
Pyrene	210	5390	18	4	20,000	0
Total PAH	251	31998	18	5	20,000	1
Hydrocarbons						
Diesel Range Organics	13.9	14.3	2	2	NA	NA
TRPH	35	57	11	2	NA	NA
Pesticides μg/kg						
4,4′-DDD	0.53	5.6	18	5	NA	NA
4,4′-DDE	0.9	13	18	7	NA	NA
4,4′-DDT	13	15	18	2	NA	NA
Aldrin	1.26	1.26	18	1	NA	NA
alpha-BHC	1.05	1.05	18	1	NA	NA
Dieldrin	46	59.4	18	2	NA	NA
Endrin ketone	3.2	3.2	7	1	NA	NA
Metals mg/kg						
Antimony	0.46	3.5	22	13	5	0
Arsenic	0.905	6.8	25	25	10	0
Barium	9.7	72	25	25	500	0
Beryllium	0.158	0.94	18	9	10	0
Cadmium	0.89	3.2	25	12	4	0
Chromium2	3.2	25	25	25	75	0
Cobalt2	2.52	13	18	18	25	0
Copper2	8.57	32	25	25	60	0
Lead	1.45	39	25	25	50	0
Manganese2	80	956	25	25	1500	0
Mercury	0.021	0.33	25	9	0.3	0

Source: Ecology and Environment, Inc.
2003

Table 7.3-1 Screening Data Summary for Phytotoxicity Contaminants of Potential Concern

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Soil Phytotoxicity Benchmark[1]	Frequency of Exceedance Phytotoxicity
Nickel	4.46	27	25	25	30	0
Selenium	0.29	6.5	25	19	1	11
Silver	0.284	0.284	18	1	2	0
Thallium	0.28	0.975	21	7	1	0
Vanadium2	6.53	34	18	18	50	0
Zinc	12.2	93	25	25	50	6

Key:

applicable.

mg/kg = Milligrams per kilogram.

μg/kg = Micrograms per kilogram.

SVOC = Semivolatile organic compound.

PAH = Polycyclic Aromatic Hydrocarbon.

TRPH = Total recoverable petroleum hydrocarbons.

VOC = Volatile organic compound.

Gray shading indicates exceedance of screening value.

Note:

1. Benchmarks taken from Efroymson et al. (1997a) unless otherwise noted. When a chemical had no benchmark, the benchmark for a structurally similar chemical was used as a surrogate. Specifically, the benchmark for acenaphthene (20,000 μg/kg) was used as a surrogate for all other individual PAHs, total PAHs, carbazole, and dibenzofuran; and the benchmark for diethylphthalate (100,000 μg/kg) was used as a surrogate for bis(2-ethylhexyl)phthalate.
2. Lower value of phytotoxicity range from Appendix 2 of Alloway (1990).

Source: Ecology and Environment, Inc.
2003

Table 7.3-2 Screening Data Summary for Soil Fauna Contaminants of Potential Concern

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Soil Earthworm-Microbial Benchmark[1]	Frequency of Exceedance Earthworm-Microbial
VOC and SVOC µg/kg						
Acetone	5.07	93	22	14	NA	NA
Benzoic acid	38	1760	22	4	NA	NA
2-Butanone	3.07	28	18	5	NA	NA
Chlorobenzene	2.37	14	18	2	40,000	0
1,4-Dichlorobenzene	4.74	4.74	18	1	20,000	0
Methylene chloride	7.4	25	18	4	NA	NA
1,1,1-Trichloroethane	6.8	6.8	22	1	NA	NA
Bis(2-ethylhexyl)phthalate	48	370	22	13	200,000	0
Carbazole	536	536	18	1	30,000	0
Chloromethane	28	56	22	4	NA	0
Dibenzofuran	520	520	18	1	30,000	0
PAH µg/kg						
2-Methylnaphthalene	219	219	18	1	30,000	0
Acenaphthene	579	579	18	1	30,000	0
Anthracene	39	1440	18	2	30,000	0
Benzo(a)anthracene	43	2170	21	5	30,000	0
Benzo(a)pyrene	75	1440	18	5	30,000	0
Benzo(b)fluoranthene	76	1510	18	4	30,000	0
Benzo(g,h,i)perylene	520	520	18	1	30,000	0
Benzo(k)fluoranthene	71	1800	18	4	30,000	0
Chrysene	87	1900	18	4	30,000	0
Dibenzo(a,h)anthracene	225	225	17	1	30,000	0
Fluoranthene	150	6110	18	4	30,000	0
Fluorene	741	741	18	1	30,000	0
Indeno(1,2,3-cd)pyrene	283	283	18	1	30,000	0
Naphthalene	601	601	18	1	30,000	0
Phenanthrene	160	7110	18	3	30,000	0
Pyrene	210	5390	18	4	30,000	0
Total PAH	251	31998	18	5	30,000	1
Hydrocarbons						
Diesel Range Organics	13.9	14.3	2	2	NA	NA
TRPH	35	57	11	2	NA	NA
Pesticides µg/kg						
4,4′-DDD	0.53	5.6	18	5	NA	NA
4,4′-DDE	0.9	13	18	7	NA	NA
4,4′-DDT	13	15	18	2	NA	NA
Aldrin	1.26	1.26	18	1	NA	NA
alpha-BHC	1.05	1.05	18	1	NA	NA
Dieldrin	46	59.4	18	2	NA	NA
Endrin ketone	3.2	3.2	7	1	NA	NA
Metals mg/kg						
Antimony	0.46	3.5	22	13	NA	NA
Arsenic	0.905	6.8	25	25	60	0
Barium	9.7	72	25	25	3000	0
Beryllium	0.158	0.94	18	9	NA	NA
Cadmium	0.89	3.2	25	12	20	0
Chromium	3.2	25	25	25	10	6
Cobalt	2.52	13	18	18	1000	0
Copper	8.57	32	25	25	60	0
Lead	1.45	39	25	25	500	0
Manganese	80	956	25	25	100	24

Source: Ecology and Environment, Inc.
2003

Table 7.3-2 Screening Data Summary for Soil Fauna Contaminants of Potential Concern

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Soil Earthworm-Microbial Benchmark[1]	Frequency of Exceedance Earthworm-Microbial
Mercury	0.021	0.33	25	9	0.1	0
Nickel	4.46	27	25	25	90	0
Selenium	0.29	6.5	25	19	70	0
Silver	0.284	0.284	18	1	50	0
Thallium	0.28	0.975	21	7	NA	NA
Vanadium	6.53	34	18	18	20	3
Zinc	12.2	93	25	25	100	0

Key:

applicable.

mg/kg = Milligrams per kilogram.

μg/kg = Micrograms per kilogram.

SVOC = Semivolatile organic compound.

PAH = Polycyclic Aromatic Hydrocarbon.

TRPH = Total recoverable petroleum hydrocarbons.

VOC = Volatile organic compound.

Gray shading indicates exceedance of screening value.

Note:

1. Benchmarks taken from Efroymson et al (1997b). The listed benchmark is the lower of the two for earthworm toxicity or soil microbe toxicity. When a chemical had no benchmark, the benchmark for a structurally similar chemical was used as a surrogate, if available. Specifically, the benchmark for fluorene (30,000 μg/kg) was used as a surrogate for all other PAHs, total PAHs, carbazole, and dibenzofuran; and the benchmark for dimethylphthalate (200,000 μg/kg) was used as a surrogate for all other phthalates.

Source: Ecology and Environment, Inc.
2003

Table 7.3-3A Screening Data Summary for Surface Water Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Surface Water Screening Benchmark	Frequency of Exceedance Surface Water Benchmark
VOC and SVOC µg/L						
1,1,1-Trichloroethane	ND	ND	4	0	NA	NA
1,1,2,2-Tetrachloroethane	ND	ND	4	0	NA	NA
1,1,2-Trichloroethane	ND	ND	4	0	NA	NA
1,1-Dichloroethane	ND	ND	4	0	NA	NA
1,1-Dichloroethene	ND	ND	4	0	NA	NA
1,2,4-Trichlorobenzene	ND	ND	4	0	NA	NA
1,2-Dichlorobenzene	ND	ND	4	0	NA	NA
1,2-Dichloroethane	ND	ND	4	0	NA	NA
1,2-Dichloropropane	ND	ND	4	0	NA	NA
1,3-Dichlorobenzene	ND	ND	4	0	NA	NA
1,4-Dichlorobenzene	ND	ND	4	0	NA	NA
2,4,5-Trichlorophenol	ND	ND	4	0	NA	NA
2,4,6-Trichlorophenol	ND	ND	4	0	NA	NA
2,4-Dichlorophenol	ND	ND	4	0	NA	NA
2,4-Dimethylphenol	ND	ND	4	0	NA	NA
2,4-Dinitrophenol	ND	ND	4	0	NA	NA
2,4-Dinitrotoluene	ND	ND	4	0	NA	NA
2,6-Dinitrotoluene	ND	ND	4	0	NA	NA
2-Butanone	ND	ND	4	0	NA	NA
2-Chloroethyl vinyl ether	ND	ND	3	0	NA	NA
2-Chloronaphthalene	ND	ND	4	0	NA	NA
2-Chlorophenol	ND	ND	4	0	NA	NA
2-Hexanone	ND	ND	4	0	NA	NA
2-Methylnaphthalene	ND	ND	4	0	NA	NA
2-Methylphenol	ND	ND	4	0	NA	NA
2-Nitroaniline	ND	ND	4	0	NA	NA
3,3'-Dichlorobenzidine	ND	ND	4	0	NA	NA
3-Nitroaniline	ND	ND	4	0	NA	NA
4-Chloro-3-methylphenol	ND	ND	4	0	NA	NA
Acetone	13	13	4	1	1500	0
Benzidine	ND	ND	1	0	NA	NA
Benzoic Acid	ND	ND	4	0	NA	NA
Benzyl Alcohol	ND	ND	4	0	NA	NA
PAH µg/L						
Acenaphthene	ND	ND	4	0	NA	NA
Acenaphthylene	ND	ND	4	0	NA	NA
Anthracene	ND	ND	4	0	NA	NA
Benzene	ND	ND	4	0	NA	NA
Benzo(a)anthracene	ND	ND	4	0	NA	NA
Benzo(a)pyrene	ND	ND	4	0	NA	NA
Benzo(b)fluoranthene	ND	ND	4	0	NA	NA
Benzo(g,h,i)perylene	ND	ND	4	0	NA	NA
Benzo(k)fluoranthene	ND	ND	4	0	NA	NA
Chrysene	ND	ND	4	0	NA	NA
Dibenzo(a,h)anthracene	ND	ND	4	0	NA	NA
Fluoranthene	ND	ND	4	0	NA	NA

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Eco Risk Screening Data Tables Final.xls-Table 3-3 SW scm-7/18/2003

Source: Ecology and Environment, Inc.
2003

Table 7.3-3A Screening Data Summary for Surface Water Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Surface Water Screening Benchmark	Frequency o Exceedance Surface Water Benchmark
Fluorene	ND	ND	4	0	NA	NA
Indeno(1,2,3-cd)pyrene	ND	ND	4	0	NA	NA
Naphthalene	ND	ND	4	0	NA	NA
Phenanthrene	ND	ND	4	0	NA	NA
Pyrene	ND	ND	4	0	NA	NA
Other SVOC µg/L						
Bis(2-ethylhexyl)phthalate	ND	ND	4	0	NA	NA
Butylbenzylphthalate	ND	ND	4	0	NA	NA
Carbazole	ND	ND	1	0	NA	NA
Carbon disulfide	ND	ND	4	0	NA	NA
Carbon tetrachloride	ND	ND	4	0	NA	NA
Chlorobenzene	ND	ND	4	0	NA	NA
Chloroethane	ND	ND	4	0	NA	NA
Chloroform	ND	ND	4	0	NA	NA
Chloromethane	ND	ND	4	0	NA	NA
cis-1,3-Dichloropropene	ND	ND	4	0	NA	NA
Diethylphthalate	ND	ND	4	0	NA	NA
Dimethylphthalate	ND	ND	4	0	NA	NA
Di-n-butyl phthalate	ND	ND	4	0	NA	NA
Di-n-octyl phthalate	ND	ND	4	0	NA	NA
Dibenzofuran	ND	ND	4	0	NA	N
Dibromochloromethane	ND	ND	4	0	NA	NA
Ethylbenzene	ND	ND	4	0	NA	NA
Hexachlorobenzene	ND	ND	4	0	NA	NA
Hexachlorobutadiene	ND	ND	4	0	NA	NA
Hexachlorocyclopentadiene	ND	ND	4	0	NA	NA
Hexachloroethane	ND	ND	4	0	NA	NA
Isophorone	ND	ND	4	0	NA	NA
Methylene chloride	ND	ND	4	0	NA	NA
Nitrobenzene	ND	ND	4	0	NA	NA
N-Nitroso-di-n-propylamine	ND	ND	4	0	NA	NA
N-Nitrosodiphenylamine	ND	ND	4	0	NA	NA
Pentachlorophenol	ND	ND	4	0	NA	NA
Phenol	ND	ND	4	0	NA	NA
Styrene	ND	ND	4	0	NA	NA
Tetrachloroethene	ND	ND	4	0	NA	NA
Toluene	ND	ND	4	0	NA	NA
Total Xylenes	ND	ND	4	0	NA	NA
trans-1,3-Dichloropropene	ND	ND	4	0	NA	NA
Trichloroethene	ND	ND	4	0	NA	NA
Vinyl acetate	ND	ND	4	0	NA	NA
Vinyl chloride	ND	ND	4	0	NA	NA

Source: Ecology and Environment, Inc. 2003

Table 7.3-3A Screening Data Summary for Surface Water Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Surface Water Screening Benchmark	Frequency of Exceedance Surface Water Benchmark
Hydrocarbons						
TRPH	ND	ND	4	0	NA	NA
PCB μg/L						
Aroclor 1016	ND	ND	1	0	NA	NA
Aroclor 1221	ND	ND	1	0	NA	NA
Aroclor 1232	ND	ND	1	0	NA	NA
Aroclor 1242	ND	ND	1	0	NA	NA
Aroclor 1248	ND	ND	1	0	NA	NA
Aroclor 1254	ND	ND	1	0	NA	NA
Aroclor 1260	ND	ND	1	0	NA	NA
Pesticides μg/L						
4,4′-DDD	ND	ND	1	0	NA	NA
4,4′-DDE	ND	ND	1	0	NA	NA
4,4′-DDT	ND	ND	1	0	NA	NA
Aldrin	ND	ND	1	0	NA	NA
alpha-BHC	ND	ND	1	0	NA	NA
beta-BHC	ND	ND	1	0	NA	NA
Chlordane	ND	ND	1	0	NA	NA
delta-BHC	ND	ND	1	0	NA	NA
Dieldrin	ND	ND	1	0	NA	NA
Endosulfan I	ND	ND	1	0	NA	NA
Endosulfan II	ND	ND	1	0	NA	NA
Endosulfan sulfate	ND	ND	1	0	NA	NA
Endrin	ND	ND	1	0	NA	NA
Endrin aldehyde	ND	ND	1	0	NA	NA
gamma-BHC	ND	ND	1	0	NA	NA
Heptachlor	ND	ND	1	0	NA	NA
Heptachlor epoxide	ND	ND	1	0	NA	NA
Methoxychlor	ND	ND	1	0	NA	NA
Toxaphene	ND	ND	1	0	NA	NA
Metals μg/L (total)						
Antimony	ND	ND	4	0	NA	NA
Arsenic	16	47	4	3	150	0
Barium	190	960	4	4	NA	NA
Beryllium	7.6	7.6	4	1	11	0
Cadmium*	12	12	4	1	1.7	1
Chromium*	35	62	4	2	58.6	1
Cobalt	20	110	4	4	5	4
Copper*	21	250	4	3	7.0	4
Lead*	29	190	4	3	2.8	3
Manganese	12000	46000	4	4	300	4
Mercury	0.59	0.59	4	1	0.77	0
Nickel*	24	160	4	4	40.8	2

Source: Ecology and Environment, Inc.
2003

Table 7.3-3A Screening Data Summary for Surface Water Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Surface Water Screening Benchmark	Frequency of Exceedance Surface Water Benchmark
Selenium	ND	ND	4	0	4.6	0
Silver*	10	20	4	2	0.1	2
Thallium	ND	ND	4	0	8	0
Vanadium	43	150	4	2	14	2
Zinc*	75	580	4	4	64.8	4

Key:

NA = Not available or not applicable.

ND = Not detected.

mg/kg = Milligrams per kilogram.

μg/kg = Micrograms per kilogram.

* = Screening value was calculated based on site specific hardness value of 75 ppm.

SVOC = Semivolatile organic compound.

PAH = Polycyclic Aromatic Hydrocarbon.

PCB = Polychlorinated biphenyl.

TRPH = Total recoverable petroleum hydrocarbons.

VOC = Volatile organic compound.

Gray shading indicates exceedance of screening value.

Note:

1. Screening values taken From "New York State Department of Environmental Conservation - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations - June 1998", except for acetone, which is a Tier II Secondary Chronic value from Suter and Tsao (1996).

2. Metals criteria apply to the dissolved form for arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc; to the acid soluble form for beryllium, cobalt, thallium and vanadium; and to the ionic form for silver. The manganese standard of 300 μg/L is based on aesthetics, not toxicity to aquatic biota.

Source: Ecology and Environment, Inc.
2003

Table 7.3-3B Screening Data Summary for Surface Water Contaminants of Potential Concern - Six Mile Creek near AOC-9

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Surface Water Screening Benchmark	Frequency of Exceedance Surface Water Benchmark
VOC and SVOC μg/L						
1,2-Dichlorobenzene	0.406	0.406	9	1	5	0
Bis(2-ethylhexyl)phthalate	0.57	2.1	9	5	0.6	4
Butylbenzylphthalate	3.9	3.9	9	1	NA	NA
Chlorobenzene	0.236	0.268	9	2	5	0
Diethylphthalate	5.4	6.3	9	5	NA	NA
PAH μg/L						
Phenanthrene	0.77	0.77	9	1	5	0
Metals μg/L (total)						
Aluminum	150	27000	9	4	100	4
Barium	12.3	12.8	9	5	NA	NA
Copper*	3.06	4.19	9	4	7.0	0
Iron	730	69000	9	4	300	4
Lead*	2.13	2.13	9	1	2.8	0
Nickel*	5.27	5.27	9	1	40.8	0
Zinc*	4.83	9.76	9	5	64.8	0

Key:

NA = Not available or not applicable.

mg/L = Milligrams per liter.

μg/L = Micrograms per liter.

* = Screening value was calculated based on site specific hardness value of 75 ppm.

SVOC = Semivolatile organic compound.

PAH = Polycyclic aromatic hydrocarbon.

VOC = Volatile organic compound.

Gray shading indicates exceedance of screening value.

Note:

1. Screening values taken From "New York State Department of Environmental Conservation - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations - June 1998".
2. Metals criteria apply to the dissolved form for copper, lead, nickel, and zinc.

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Eco Risk Screening Data Tables 3-3b and 3-4b.xls-Table 3-3b SW scm-7/18/2003

Source: Ecology and Environment, Inc.
2003

Table 7.3-4A Screening Data Summary for Sediment Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Sediment Screening Benchmark	Frequency of Exceedance Sediment Benchmark
VOC and SVOC µg/kg						
1,1,1-Trichloroethane	ND	ND	4	0	NA	NA
1,1,2,2-Tetrachloroethane	ND	ND	4	0	NA	NA
1,1,2-Trichloroethane	ND	ND	4	0	NA	NA
1,1-Dichloroethane	ND	ND	4	0	NA	NA
1,1-Dichloroethene	ND	ND	4	0	NA	NA
1,2,4-Trichlorobenzene	ND	ND	4	0	NA	NA
1,2-Dichlorobenzene	ND	ND	4	0	NA	NA
1,2-Dichloroethane	ND	ND	4	0	NA	NA
1,2-Dichloroethene, Total	ND	ND	1	0	NA	NA
1,2-Dichloropropane	ND	ND	4	0	NA	NA
1,3-Dichlorobenzene	ND	ND	4	0	NA	NA
1,4-Dichlorobenzene	ND	ND	4	0	NA	NA
2,4,5-Trichlorophenol	ND	ND	4	0	NA	NA
2,4,6-Trichlorophenol	ND	ND	4	0	NA	NA
2,4-Dichlorophenol	ND	ND	4	0	NA	NA
2,4-Dimethylphenol	ND	ND	4	0	NA	NA
2,4-Dinitrophenol	ND	ND	4	0	NA	NA
2,4-Dinitrotoluene	ND	ND	4	0	NA	NA
2,6-Dinitrotoluene	ND	ND	4	0	NA	NA
2-Butanone4	14	14	4	1	1080	0
2-Chloroethyl vinyl ether	ND	ND	3	0	NA	NA
2-Chloronaphthalene	ND	ND	4	0	NA	NA
2-Chlorophenol	ND	ND	4	0	NA	NA
2-Hexanone	ND	ND	4	0	NA	NA
2-Methylnaphthalene	180	180	4	1	1360	0
2-Methylphenol	ND	ND	4	0	NA	NA
2-Nitroaniline	ND	ND	4	0	NA	NA
2-Nitrophenol	ND	ND	4	0	NA	NA
3,3'-Dichlorobenzidine	ND	ND	4	0	NA	NA
3-Nitroaniline	ND	ND	4	0	NA	NA
4,6-Dinitro-2-methylphenol	ND	ND	4	0	NA	NA
4-Bromophenylphenylether	ND	ND	4	0	NA	NA
4-Chloro-3-methylphenol	ND	ND	4	0	NA	NA
4-Chloroaniline	ND	ND	4	0	NA	NA
4-Chlorophenylphenylether	ND	ND	4	0	NA	NA
4-Methyl-2-pentanone	ND	ND	4	0	NA	NA
4-Methylphenol	ND	ND	4	0	NA	NA
4-Nitroaniline	ND	ND	4	0	NA	NA
4-Nitrophenol	ND	ND	4	0	NA	NA
Acetone4	6.2	14	4	2	34.8	0
Benzidine	ND	ND	1	0	NA	NA
Benzoic acid	ND	ND	4	0	NA	NA
Benzyl alcohol	ND	ND	4	0	NA	NA
Bis(2-chloroethoxy)methane	ND	ND	4	0	NA	NA
Bis(2-chloroethyl)ether	ND	ND	4	0	NA	NA
Bis(2-chloroisopropyl)ether	ND	ND	3	0	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	4	0	NA	NA
Bromodichloromethane	ND	ND	4	0	NA	NA
Bromoform	ND	ND	4	0	NA	NA
Bromomethane	ND	ND	4	0	NA	NA
Butylbenzylphthalate	63	63	4	1	7980	0
Carbazole	ND	ND	1	0	NA	NA

Source: Ecology and Environment, Inc.
2003

Table 7.3-4A Screening Data Summary for Sediment Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Sediment Screening Benchmark	Frequency of Exceedance Sediment Benchmark
Carbon disulfide	ND	ND	4	0	NA	NA
Carbon tetrachloride	ND	ND	4	0	NA	NA
Chlorobenzene	ND	ND	4	0	NA	NA
Chloroethane	ND	ND	4	0	NA	NA
Chloroform	ND	ND	4	0	NA	NA
Chloromethane	ND	ND	4	0	NA	NA
cis-1,3-Dichloropropene	ND	ND	4	0	NA	NA
Dibenzofuran	ND	ND	4	0	NA	NA
Dibromochloromethane	ND	ND	4	0	NA	NA
Diethylphthalate	ND	ND	4	0	NA	NA
Dimethylphthalate	ND	ND	4	0	NA	NA
Di-n-butyl phthalate	ND	ND	4	0	NA	NA
Di-n-octyl phthalate	ND	ND	4	0	NA	NA
Ethylbenzene	ND	ND	4	0	NA	NA
Hexachlorobenzene	ND	ND	4	0	NA	NA
Hexachlorobutadiene	ND	ND	4	0	NA	NA
Hexachlorocyclopentadiene	ND	ND	4	0	NA	NA
Hexachloroethane	ND	ND	4	0	NA	NA
Methylene chloride4	1.8	1.8	4	1	1480	0
Pentachlorophenol	ND	ND	4	0	NA	NA
Phenol	ND	ND	4	0	NA	NA
Styrene	ND	ND	4	0	NA	NA
Tetrachloroethene	ND	ND	4	0	NA	NA
Toluene	1.7	1.7	4	1	1960	0
Total Xylenes	ND	ND	4	0	NA	NA
trans-1,3-Dichloropropene	ND	ND	4	0	NA	NA
Trichloroethene	ND	ND	4	0	NA	NA
Vinyl acetate	ND	ND	4	0	NA	NA
Vinyl chloride	ND	ND	4	0	NA	NA
PAH μg/kg						
Acenaphthene	ND	ND	4	0	5600	NA
Acenaphthylene	160	160	4	1	5600	0
Anthracene	380	380	4	1	4280	0
Benzene	ND	ND	4	0	NA	NA
Benzo(a)anthracene	1400	1400	4	1	480	1
Benzo(a)pyrene2	1300	1300	4	1	370	1
Benzo(b)fluoranthene2	1400	1400	4	1	240	1
Benzo(g,h,i)perylene2	750	750	4	1	170	1
Benzo(k)fluoranthene	ND	ND	4	0	NA	NA
Chrysene2	1700	1700	4	1	340	1
Dibenzo(a,h)anthracene2	440	440	4	1	60	1
Fluoranthene	1500	1500	4	1	4080	0
Fluorene	410	410	4	1	320	1
Indeno(1,2,3-cd)pyrene2	690	690	4	1	200	1
Naphthalene	ND	ND	4	0	1200	NA
Phenanthrene2	3100	3100	4	1	560	1
Pyrene	5700	5700	4	1	38440	0
Hydrocarbons						
TRPH	ND	ND	1	0	NA	NA
Petroleum Hydrocarbons	ND	ND	3	0	NA	NA

Source: Ecology and Environment, Inc.
2003

Table 7.3-4A Screening Data Summary for Sediment Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Sediment Screening Benchmark	Frequency of Exceedance Sediment Benchmark
PCB μg/kg						
Aroclor 1016	ND	ND	1	0	NA	NA
Aroclor 1221	ND	ND	1	0	NA	NA
Aroclor 1232	ND	ND	1	0	NA	NA
Aroclor 1242	ND	ND	1	0	NA	NA
Aroclor 1248	ND	ND	1	0	NA	NA
Aroclor 1254	ND	ND	1	0	NA	NA
Aroclor 1260	ND	ND	1	0	NA	NA
Pesticides μg/kg						
4,4′-DDD	ND	ND	1	0	NA	NA
4,4′-DDE	ND	ND	1	0	NA	NA
4,4′-DDT	ND	ND	1	0	NA	NA
Aldrin2	47	47	1	1	6	1
alpha-BHC	ND	ND	1	0	NA	NA
beta-BHC	ND	ND	1	0	NA	NA
Chlordane	ND	ND	1	0	NA	NA
delta-BHC	ND	ND	1	0	NA	NA
Dieldrin	ND	ND	1	0	NA	NA
Endosulfan I	ND	ND	1	0	NA	NA
Endosulfan II	ND	ND	1	0	NA	NA
Endosulfan sulfate	ND	ND	1	0	NA	NA
Endrin	ND	ND	1	0	NA	NA
Endrin aldehyde	ND	ND	1	0	NA	NA
gamma-BHC	ND	ND	1	0	NA	NA
Heptachlor	ND	ND	1	0	NA	NA
Heptachlor epoxide	59	59	1	1	4	1
Methoxychlor	ND	ND	1	0	NA	NA
Toxaphene	ND	ND	1	0	NA	NA
Physical Properties						
% Moisture	23	23	1	1	NA	NA
Solids - Total %	29	55	3	3	NA	NA
Total Organic Carbon mg/kg	43000	48000	2	2	NA	NA

Source: Ecology and Environment, Inc.
2003

Table 7.3-4A Screening Data Summary for Sediment Contaminants of Potential Concern from On-site Drainageways

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Sediment Screening Benchmark - LEL	Sediment Screening Benchmark - SEL	Frequency of Exceedance LEL Sediment Benchmark	Frequency of Exceedance SEL Sediment Benchmark
Metals mg/kg								
Antimony	ND	ND	4	0	2	25	NA	NA
Arsenic	2.2	17	4	4	6	33	1	0
Barium	14	270	4	4	NA	NA	NA	NA
Beryllium	ND	ND	4	0	NA	NA	NA	NA
Cadmium	1.6	1.6	4	1	0.6	9	1	0
Chromium	3.4	5.2	4	3	26	110	0	0
Cobalt	3.5	16	4	4	NA	NA	NA	NA
Copper	7.3	27	4	4	16	110	2	0
Lead	5.7	34	4	4	31	110	1	0
Manganese	390	24000	4	4	460	1100	3	2
Mercury	ND	ND	4	0	0.15	1.3	NA	NA
Nickel	7.3	26	4	4	16	50	2	0
Selenium	0.5	0.5	4	2	NA	NA	NA	NA
Silver	4.9	4.9	4	1	1	2.2	1	1
Thallium	ND	ND	4	0	NA	NA	NA	NA
Vanadium	8.4	11	4	2	NA	NA	NA	NA
Zinc	27	76	4	3	120	270	0	0

Key:
NA = Not available or not applicable.
ND = Not detected.
LEL = Lowest effect level.
SEL = Severe effect level.

mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
SVOC = Semivolatile organic compound.
PAH = Polycyclic Aromatic Hydrocarbon.
PCB = Polychlorinated biphenyl.
VOC = Volatile organic compound.
Gray shading indicates exceedance of screening value.

Note:

1. Screening values taken From "New York State Department of Environmental Conservation - Technical Guidance for Screening Contaminated Sediment - 1999", except where otherwise noted. Benchmarks for organic chemicals were adjusted to 4% total organic carbon (TOC) based on site-specific TOC of 4.5%.
2. Lowest effect level (LEL) taken from Persaud et al. (1993)
3. When a chemical had no benchmark, the benchmark for a structurally similar chemical was used as a surrogate. Specifically, the benchmark for bis(2-ethylhexyl)phthalate was used for butylbenzylphthalate, and the benchmark for acenaphthene was used as a surrogate for acenaphthylene.
4. Benchmark taken from Table 3 in Suter and Tsao (1996) adjusted to 4% TOC.

Source: Ecology and Environment, Inc.
2003

Table 7.3-4B Screening Data Summary for Sediment Contaminants of Potential Concern - Six Mile Creek near AOC-9

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Sediment Screening Benchmark	Frequency of Exceedance Sediment Benchmark
VOC and SVOC µg/kg						
1,2-Dichlorobenzene	72	72	11	1	120	0
2-Butanone[3]	4.17	15	11	4	270	0
Acetone[3]	9.87	9.87	11	1	8.7	1
Methylene chloride	1.5	2.2	11	2	370	0
Toluene	4.06	4.06	11	1	490	0
PAH µg/kg						
Benzo(a)pyrene	74	74	11	1	370	0
Bis(2-ethylhexyl)phhalate	56	91	11	2	1995	0
Fluoranthene	84.5	125	11	2	10200	0
Phenanthrene	79	79	11	1	560	0
Pyrene	4.7	100	11	5	9610	0
Pesticides µg/kg						
4,4´-DDD	0.801	35	11	6	8	2
4,4´-DDT	0.743	88	11	4	8	2
beta-BHC	1.3	18	11	3	5	2
Endosulfan sulfate	6.3	88	11	3	0.3	3
Heptachlor	0.805	0.96	11	2	1	0
Heptachlor epoxide	1.72	14	11	3	0.9	3
Methoxychlor	20	280	11	3	6	3

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Sediment Screening Benchmark - LEL	Sediment Screening Benchmark - SEL	Frequency of Exceedance LEL Sediment Benchmark	Frequency of Exceedance SEL Sediment Benchmark
Metals mg/kg								
Antimony	0.645	2.51	11	6	2	25	1	0
Arsenic	2	2.51	11	3	6	33	0	0
Beryllium	0.239	0.72	11	6	NA	NA	NA	NA
Chromium	8.32	8.32	11	1	26	110	0	
Cobalt	4.48	4.54	11	2	NA	NA	NA	NA
Lead	6.86	16.2	11	2	31	110	0	0
Manganese	377	477	11	3	460	1100	1	0
Silver	1.24	1.78	11	5	1	2.2	5	0
Thallium	1.15	1.15	11	1	NA	NA	NA	NA
Vanadium	7.67	31	11	2	NA	NA	NA	NA

Key:

NA = Not available or not applicable.
LEL = Lowest effect level.
SEL = Severe effect level.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
SVOC = Semivolatile organic compound.
PAH = Polycyclic aromatic hydrocarbon.
VOC = Volatile organic compound.
Gray shading indicates exceedance of screening value.

Note:

1. Screening values taken From "New York State Department of Environmental Conservation - Technical Guidance for Screening Contaminated Sediment - 1999", except where otherwise noted. Benchmarks for organic chemicals were adjusted to 1% total organic carbon (TOC).
2. Lowest effect level (LEL) taken from Persaud et al. (1993)
3. Benchmark taken from Table 3 in Suter and Tsao (1996).

Source: Ecology and Environment, Inc.
2003

Table 7.3-5 Exposure Parameters for Wildlife Species

Species	Dietary Composition Invertebrates	Plants	Incidental Soil Intake (kg/d)dw	Home Range (ha)	Site Use Factor (SUF)	Exposure Duration	Food Ingestion Rate (kg/d) ww	Percent Water in Diet	Food Ingestion Rate (kg/d)dw	Body Mass (kg)
Songbird										
American Robin	100%		0.0019	0.42	1	1	0.093	80%	0.0186	0.077
Small mammal										
Short Tailed Shrew	100%		0.00117	0.39	1	1	0.009	70%	0.002	0.015
Raccoon	100%		0.0243	630	1	1	1.1	75%	0.27	5.3
Wading Bird	**fish**									
Great Blue Heron	100%		0	10,000	1	1	0.42	75%	0.102	2.39

Key:

Diet: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
Soil intake: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
Water Intake: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
Home Range: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
SUF: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
Exposure Duration: All receptor species were assumed at the site year round
Food Ingestion: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
% Water in Diet: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook
Body Weight: Sample et al. 1994; EPA 1993 Wildlife Exposure Factors Handbook

kg = kilogram.
(kg/d)dw = kilograms per day dry weight.
(kg/d)ww = kilograms per day wet weight.

Note:

1. Raccoon and Robin diet were assumed to be 100% aquatic invertebrates and soil invertebrates, respectively, since an abundance of vegetative material is not available at the site due to regular mowing activities in the area surrounding the existing runway.

Source: Ecology and Environment, Inc.
2003

Table 7.3-6 Exposure Point Concentration Summary for American Robin and Short-tailed Shrew

Analyte	Minimum Detected Value	Maximum Detected Value	Number of Samples	Frequency of Detection	Exposure Point Concentration Soil	BAF Earthworm	EPC Earthworm
VOC and SVOC µg/kg							
Acetone	5.07	93	22	14	93	3.03	282
Benzoic acid	38	1760	22	4	1760	3.03	5333
2-Butanone	3.07	28	18	5	28	3.03	85
Chlorobenzene	2.37	14	18	2	18	3.03	55
Methylene chloride	7.4	25	18	4	25	3.03	76
1,1,1-Trichloroethane	6.8	6.8	22	1	6.8	3.03	21
Bis(2-ethylhexyl)phthalate	48	370	22	13	370	3.03	1121
Carbazole	536	536	18	1	536	3.03	1624
Chloromethane	28	56	22	4	56	3.03	170
Dibenzofuran	520	520	18	1	520	3.03	1576
PAH µg/kg							
Total PAHs	251	31998	18	5	31998	3.03	96964
Hydrocarbons							
Diesel Range Organics	13.9	14.3	2	2	14.3	3.03	43
TRPH	35	57	11	2	57	3.03	173
Pesticides µg/kg							
4,4′-DDD	0.53	5.6	18	5	5.6	3.03	17
4,4′-DDE	0.9	13	18	7	13	3.03	39
4,4′-DDT	13	15	18	2	15	3.03	45
Aldrin	1.26	1.26	18	1	1.26	3.03	3.82
alpha-BHC	1.05	1.05	18	1	1.05	3.03	3.18
Dieldrin	46	59.4	18	2	59.4	3.03	180
Endrin ketone	3.2	3.2	7	1	3.2	3.03	10
Metals mg/kg							
Antimony	0.46	3.4	22	13	3.4	1	3
Arsenic	0.905	6.8	25	25	6.8	0.523	4
Barium	9.7	72	25	25	72	1	72
Beryllium	0.158	0.94	18	9	0.94	1	1
Cadmium	0.89	3.2	25	12	3.2	see note 3	22.8
Chromium	3.2	25	25	25	25	3.16	79
Cobalt	2.52	13	18	18	18	1	18
Copper	8.57	32	25	25	32	see note 3	14.5
Lead	1.45	39	25	25	39	1.52	59
Mercury	0.021	0.0439	25	9	0.0439	see note 3	1.8
Nickel	4.46	27	25	25	27	4.73	128
Selenium	0.29	6.5	25	19	6.5	see note 3	4.30
Silver	0.284	0.284	18	1	0.284	1	0.28
Thallium	0.28	0.975	21	7	0.975	1	1
Vanadium	6.53	34	18	18	34	1	34
Zinc	12.2	93	25	25	93	see note 3	379

Key:
BAF = Bioaccumulation factor
COPC = Chemical of Potential Concern
EPC = Exposure Point Concentration
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
PAH = Polycyclic Aromatic Hydrocarbon.
PCB = Polychlorinated biphenyl.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.

Note:

1. Earthworm EPC calculated using models from Sample et al. 1998, and Menzie et al.1992. See text for further explanation.
2. BAF values were assumed to be one (1) for contaminants in which a BAF was not available in the published literature.
3. 95% upper prediction limit calculated as per Appendix D in Sample et al. (1998) using maximum soil concentration.

Source: Ecology and Environment, Inc.
2003

Table 7.3-7 Exposure Point Concentration Summary for Raccoon

Analyte	Minimum detected value	Maximum Detected value	Number of Samples	Frequency of Detection	Exposure Point Concentration Sediment	BSAF Aquatic Invertebrates	EPC Aquatic Invertebrates
VOC and SVOC µg/kg							
2-Butanone	14	14	4	1	14	0.76	11
Acetone	6.2	14	4	2	14	0.76	11
Butylbenzylphthalate	63	63	4	1	63	0.76	48
Methylene chloride	1.8	1.8	4	1	1.8	0.76	1
Toluene	1.7	1.7	4	1	1.7	0.76	1
PAH µg/kg							
Total PAHs	160	19110	4	1	19110	0.76	14524
Pesticides µg/kg							
Aldrin	47	47	1	1	47	0.76	36
Heptachlor epoxide	59	59	1	1	59	0.76	45
Metals mg/kg							
Arsenic	2.2	17	4	4	17	see note 2	5.08
Barium	14	270	4	4	270	1	270
Cadmium	1.6	1.6	4	1	1.6	see note 2	2.65
Chromium	3.4	5.2	4	3	5.2	see note 2	3.46
Cobalt	3.5	16	4	4	16	1	16
Copper	7.3	27	4	4	27	see note 2	31.2
Lead	5.7	34	4	4	34	see note 2	3.77
Manganese	390	24000	4	4	24000	1	24000
Nickel	7.3	26	4	4	26	see note 2	7.98
Selenium	0.5	0.5	4	2	0.5	1	0.5
Silver	4.9	4.9	4	1	4.9	1	4.9
Vanadium	8.4	11	4	2	11	1	11
Zinc	27	76	4	3	76	see note 2	155.7

Key:
BSAF = Biota Sediment Accumulation Factor.
EPC = Exposure Point Concentration.
NA = Not available or not applicable.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per
SVOC = Semivolatile organic compound.
PAH = Polycyclic aromatic hydrocarbon.
VOC = Volatile organic compound.

Note:
1. BSAF for aquatic invertebrates calculated using models from Bechtel Jacobs Company 1998, and Menzie et al. 1992. See text for further explanation.
2. 95% upper prediction limit calculated as per Appendix A in Bechtel Jacobs (1998) using maximum sediment concentration.

Source: Ecology and Environment, Inc.
2003

Table 7.3-8 Exposure Point Concentration Summary for Great Blue Heron

Analyte	Exposure Point Concentration Sediment	Exposure Point Concentration Fish Tissue
VOC and SVOC µg/kg		
2-Butanone	14	NA
Acetone	14	NA
Butylbenzylphthalate	63	63
Methylene chloride	1.8	NA
Toluene	1.7	NA
PAH µg/kg		
Total PAH's	19110	19110
Pesticides µg/kg		
Aldrin	47	*60*
Heptachlor epoxide	59	*60*
Metals mg/kg		
Arsenic	17	*4.05*
Barium	270	NA
Cadmium	1.6	1.44
Chromium	5.2	*8.5*
Cobalt	16	*10.5*
Copper	27	17.2
Lead	34	*2.1*
Manganese	24000	11.8
Mercury	ND	0.18
Nickel	26	*10.5*
Selenium	0.5	2.85
Silver	4.9	NA
Vanadium	11	NA
Zinc	76	157

Key:
NA = Not available or not applicable.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
SVOC = Semivolatile organic compound.
PAH = Polycyclic aromatic hydrocarbon.
VOC = Volatile organic compound.

Note:

1. Values presented in *italics* represent the 1/2 detection limit concentration for contaminants that were not detected in fish tissue samples.

Source: Ecology and Environment, Inc.
2003

Table 7.3-9 Summary of Toxicity Benchmark Values for Wildlife Species

Analyte	Test Animal	Exposure Duration	Critical Effects	End Point Species	TRV NOAEL - test animal mg/kg/day	TRV LOAEL - test animal mg/kg/day	Body Size Scaling Factor	TRV NOAEL - endpoint species mg/kg/day	TRV LOAEL - endpoint species mg/kg/day	Reference
VOC and SVOC µg/kg										
Acetone	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	rat	90 days	liver and kidney damage	Short Tailed Shrew	10	50	2.2	22	110	Sample et al. 1996
	rat	90 days	liver and kidney damage	Raccoon	10	50	0.506	5.06	25.3	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Benzoic acid	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
2-Butanone	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Chlorobenzene	peking duck	35 days	retarded growth	American Robin	5	50	NA	NA	NA	Hollingsworth et al.
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	peking duck	35 days	retarded growth	Great Blue Heron	5	50	NA	NA	NA	Hollingsworth et al.
Total - Dichlorobenzene	peking duck	35 days	retarded growth	American Robin	5	50	NA	NA	NA	Hollingsworth et al.
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	peking duck	35 days	retarded growth	Great Blue Heron	5	50	NA	NA	NA	Hollingsworth et al.
Methylene chloride	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	rat	2 years	livr histology	Short Tailed Shrew	5.85	50	2.2	12.87	110	Sample et al. 1996
	rat	2 years	livr histology	Raccoon	5.85	50	0.506	2.9601	25.3	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	mouse	2 generations	reproduction	Short Tailed Shrew	1000	NA	1.19	1190	NA	Sample et al. 1996
	mouse	2 generations	reproduction	Raccoon	1001	NA	0.274	274.274	NA	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ringed dove	4 weeks	reproduction	American Robin	1.1	NA	NA	NA	NA	Sample et al. 1996
	mouse	105 days	reproduction	Short Tailed Shrew	18.3	183	1.19	21.777	217.77	Sample et al. 1996
	mouse	106	reproduction	Raccoon	18.3	183	0.274	5.0142	50.142	Sample et al. 1996
	ringed dove	4 weeks	reproduction	Great Blue Heron	1.1	NA	NA	NA	NA	Sample et al. 1996
Carbazole	mallard ducks			American Robin	40	400	NA	NA	NA	Patton and Dieter 1980
	mouse	7-16 gestation	reproduction	Short Tailed Shrew	1	10	1.19	1.19	11.9	Sample et al. 1996
	mouse	7-16 gestation	reproduction	Raccoon	1	10	0.274	0.274	2.74	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Dibenzofuran	mallard ducks			American Robin	40	400	NA	NA	NA	Patton and Dieter 1980
	mouse	7-16 gestation	reproduction	Short Tailed Shrew	1	10	1.19	1.19	11.9	Sample et al. 1996
	mouse	7-16 gestation	reproduction	Raccoon	1	10	0.274	0.274	2.74	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	mouse	6-12 gestation	reproduction	Short Tailed Shrew	26	260	1.19	30.94	309.4	Sample et al. 1996
	mouse	6-12 gestation	reproduction	Raccoon	26	260	0.274	7.124	71.24	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA

Source: Ecology and Environment, Inc.
2003

Table 7.3-9 Summary of Toxicity Benchmark Values for Wildlife Species

Analyte	Test Animal	Exposure Duration	Critical Effects	End Point Species	TRV NOAEL - test animal mg/kg/day	TRV LOAEL - test animal mg/kg/day	Body Size Scaling Factor	TRV NOAEL - endpoint species mg/kg/day	TRV LOAEL - endpoint species mg/kg/day	Reference
PAH ug/kg										
Total PAH's	mallard ducks			American Robin	40	400	NA	NA	NA	Patton and Dieter 1980
	mouse	7-16 gestation	reproduction	Short Tailed Shrew	1	10	1.19	1.19	11.9	Sample et al. 1996
	mouse	7-16 gestation	reproduction	Raccoon	1	10	0.274	0.274	2.74	Sample et al. 1996
	mallard ducks			Great Blue Heron	40	400	NA	NA	NA	Patton and Dieter 1980
Hydrocarbons										
Diesel Range Organics	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
TRPH	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Pesticides µg/kg										
4,4´-DDD	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
4,4´-DDE	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
4,4´-DDT	brown pelican	5 years	reproduction	American Robin	0.0028	0.028	NA	NA	NA	Sample et al. 1996
	rat	2 years	reproduction	Short Tailed Shrew	0.8	4	2.2	1.76	8.8	Sample et al. 1996
	rat	2 years	reproduction	Raccoon	0.8	4	0.506	0.4048	2.024	Sample et al. 1996
	brown pelican	5 years	reproduction	Great Blue Heron	0.0028	0.028	NA	NA	NA	Sample et al. 1996
Aldrin	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	rat	3 generations	reproduction	Short Tailed Shrew	0.2	1	2.2	0.44	2.2	Sample et al. 1996
	rat	3 generations	reproduction	Raccoon	0.2	1	0.506	0.1012	0.506	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
alpha-BHC	japanese quail	90 days	reproduction	American Robin	0.56	2.25	NA	NA	NA	Sample et al. 1996
	mink	331 days	reproduction	Short Tailed Shrew	0.014	0.14	2.85	0.0399	0.399	Sample et al. 1996
	mink	331 days	reproduction	Raccoon	0.014	0.14	0.659	0.009226	0.09226	Sample et al. 1996
	japanese quail	90 days	reproduction	Great Blue Heron	0.56	2.25	NA	NA	NA	Sample et al. 1996
Dieldrin	barn owl	2 years	reproduction	American Robin	0.077	NA	NA	NA	NA	Sample et al. 1996
	rat	3 generations	reproduction	Short Tailed Shrew	0.02	0.2	2.2	0.044	0.44	Sample et al. 1996
	rat	3 generations	reproduction	Raccoon	0.02	0.2	0.506	0.01012	0.1012	Sample et al. 1996
	barn owl	2 years	reproduction	Great Blue Heron	0.077	NA	NA	NA	NA	Sample et al. 1996
Endrin ketone	screech owl	>10 weeks	reproduction	American Robin	0.01	0.1	NA	NA	NA	Sample et al. 1996
	mouse	120 days	reproduction	Short Tailed Shrew	0.092	0.92	1.19	0.10948	1.0948	Sample et al. 1996
	mouse	120 days	reproduction	Raccoon	0.092	0.92	0.274	0.025208	0.25208	Sample et al. 1996
	screech owl	> 10 weeks	reproduction	Great Blue Heron	0.01	0.1	NA	NA	NA	Sample et al. 1996
Heptachlor	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	mink	181 days	reproduction	Short Tailed Shrew	0.1	1	2.85	0.285	2.85	Sample et al. 1996
	mink	181 days	reproduction	Raccoon	0.1	1	0.65	0.065	0.65	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA

Source: Ec d Environment, Inc.

Table 7.3-9 Summary of Toxicity Benchmark Values for Wildlife Species

Analyte	Test Animal	Exposure Duration	Critical Effects	End Point Species	TRV NOAEL - test animal mg/kg/day	TRV LOAEL - test animal mg/kg/day	Body Size Scaling Factor	TRV NOAEL - endpoint species mg/kg/day	TRV LOAEL - endpoint species mg/kg/day	Reference
Metals mg/kg										
Antimony	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	mouse	lifetime	lifespan	Short Tailed Shrew	0.125	1.25	1.19	0.14875	1.4875	Sample et al. 1996
	mouse	lifetime	lifespan	Raccoon	0.125	1.25	0.274	0.03425	0.3425	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Arsenic	brown-headed cow bir	7 months	mortality	American Robin	2.46	7.38	NA	NA	NA	Sample et al. 1996
	rabbit	6-18 days gestation	reproduction	Short Tailed Shrew	0.396	1.58	1.19	0.47124	1.8802	Nemac et al. 1998
	rabbit	6-18 days gestation	reproduction	Raccoon	0.396	1.58	0.274	0.108504	0.43292	Nemac et al. 1998
	brown-headed cow bir	7 months	mortality	Great Blue Heron	2.46	7.38	NA	NA	NA	Sample et al. 1996
Barium	1-day old chicks	4 weeks	mortality	American Robin	20.8	41.7	NA	NA	NA	Sample et al. 1996
	rat	16 months/10 days	growth, hypertension, mortal	Short Tailed Shrew	5.1	19.8	2.2	11.22	43.56	Sample et al. 1996
	rat	16 months/10 days	growth, hypertension, mortal	Raccoon	5.1	19.8	0.506	2.5806	10.0188	Sample et al. 1996
	1-day old chicks	4 weeks	mortality	Great Blue Heron	20.8	41.7	NA	NA	NA	Sample et al. 1996
Beryllium	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	rat	lifetime	longevity, weight loss	Short Tailed Shrew	0.66	NA	2.2	1.452	NA	Sample et al. 1996
	rat	lifetime	longevity, weight loss	Raccoon	0.66	NA	0.506	0.33396	NA	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Cadmium	mallard ducks	90 days	reproduction	American Robin	1.45	20	NA	NA	NA	Sample et al. 1996
	rat	6 weeks	reproduction	Short Tailed Shrew	1	10	2.2	2.2	22	Sample et al. 1996
	rat	6 weeks	reproduction	Raccoon	1	10	0.506	0.506	5.06	Sample et al. 1996
	mallard ducks	90 days	reproduction	Great Blue Heron	1.45	20	NA	NA	NA	Sample et al. 1996
Chromium	black duck	10 months	reproduction	American Robin	1	5	NA	NA	NA	Sample et al. 1996
	rat	90 days and 3 years	reproduction, longevity	Short Tailed Shrew	2737	NA	2.2	6021.4	NA	Sample et al. 1996
	rat	90 days and 3 years	reproduction, longevity	Raccoon	2737	NA	0.506	1384.922	NA	Sample et al. 1996
	black duck	10 months	reproduction	Great Blue Heron	1	5	NA	NA	NA	Sample et al. 1996
Cobalt	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Copper	1 day old chicks	10 weeks	growth, mortality	American Robin	47	61.7	NA	NA	NA	Sample et al. 1996
	mink	357 days	reproduction	Short Tailed Shrew	11.7	15.14	2.85	33.345	43.149	Sample et al. 1996
	mink	357 days	reproduction	Raccoon	11.7	15.14	0.65	7.605	9.841	Sample et al. 1996
	1 day old chicks	10 weeks	growth, mortality	Great Blue Heron	47	61.7	NA	NA	NA	Sample et al. 1996
Lead	japanese quail	12 weeks	reproduction	American Robin	1.13	11.3	NA	NA	NA	Sample et al. 1996
	rat	3 generations	reproduction	Short Tailed Shrew	8	80	2.2	17.6	176	Sample et al. 1996
	rat	3 generations	reproduction	Raccoon	8	80	0.506	4.048	40.48	Sample et al. 1996
	japanese quail	12 weeks	reproduction	Great Blue Heron	1.13	11.3	NA	NA	NA	Sample et al. 1996
Manganese	japanese quail	75 days	growth	American Robin	977	NA	NA	NA	NA	Sample et al. 1996
	rat	224 days	reproduction	Short Tailed Shrew	88	284	2.2	193.6	624.8	Sample et al. 1996
	rat	224 days	reproduction	Raccoon	88	284	0.506	44.528	143.704	Sample et al. 1996
	japanese quail	75 days	growth	Great Blue Heron	977	NA	NA	NA	NA	Sample et al. 1996
Mercury	japanese quail	1 year	reproduction	American Robin	0.45	9	NA	NA	NA	Sample et al. 1996
	mouse	20 month	mortality	Short Tailed Shrew	13.2	NA	1.19	15.708	NA	Sample et al. 1996
	mouse	20 month	mortality	Raccoon	13.2	NA	0.274	3.6168	NA	Sample et al. 1996
	japanese quail	1 year	reproduction	Great Blue Heron	0.45	9	NA	NA	NA	Sample et al. 1996
Nickel	mallard ducks	90 days	mortality	American Robin	77.4	107	NA	NA	NA	Sample et al. 1996
	rat	3 generations	reproduction	Short Tailed Shrew	40	80	2.2	88	176	Sample et al. 1996
	rat	3 generations	reproduction	Raccoon	40	80	0.506	20.24	40.48	Sample et al. 1996
	mallard ducks	90 days	mortality	Great Blue Heron	77.4	107	NA	NA	NA	Sample et al. 1996
Selenium	mallard ducks	78 days	reproduction	American Robin	0.5	1	NA	NA	NA	Sample et al. 1996
	rat	1 year	reproduction	Short Tailed Shrew	0.2	0.33	2.2	0.44	0.726	Sample et al. 1996
	rat	1 year	reproduction	Raccoon	0.2	0.33	0.506	0.1012	0.16698	Sample et al. 1996
	mallard ducks	78 days	reproduction	Great Blue Heron	0.5	1	NA	NA	NA	Sample et al. 1996

Source: Ecology and Environment, Inc.
2003

Table 7.3-9 Summary of Toxicity Benchmark Values for Wildlife Species

Analyte	Test Animal	Exposure Duration	Critical Effects	End Point Species	TRV NOAEL - test animal mg/kg/day	TRV LOAEL - test animal mg/kg/day	Body Size Scaling Factor	TRV NOAEL - endpoint species mg/kg/day	TRV LOAEL - endpoint species mg/kg/day	Reference
Silver	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Short Tailed Shrew	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Raccoon	NA	NA	NA	NA	NA	NA
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	American Robin	NA	NA	NA	NA	NA	NA
	rat	60 days	reproduction	Short Tailed Shrew	0.0074	0.074	2.2	0.01628	0.1628	Sample et al. 1996
	rat	60 days	reproduction	Raccoon	0.0074	0.074	0.506	0.0037444	0.037444	Sample et al. 1996
	NA	NA	NA	Great Blue Heron	NA	NA	NA	NA	NA	NA
Vanadium	mallard ducks	12 weeks	mortality	American Robin	11.4	NA	NA	NA	NA	Sample et al. 1996
	rat	60 days	reproduction	Short Tailed Shrew	0.21	2.1	2.2	0.462	4.62	Sample et al. 1996
	rat	60 days	reproduction	Raccoon	0.21	2.1	0.506	0.10626	1.0626	Sample et al. 1996
	mallard ducks	12 weeks	mortality	Great Blue Heron	11.4	NA	NA	NA	NA	Sample et al. 1996
Zinc	white leghorn hen	44 weeks	reproduction	American Robin	14.5	131	NA	NA	NA	Sample et al. 1996
	rat	1-6 days gestation	reproduction	Short Tailed Shrew	160	320	2.2	352	704	Sample et al. 1996
	rat	1-6 days gestation	reproduction	Raccoon	160	320	0.506	80.96	161.92	Sample et al. 1996
	white leghorn hen	44 weeks	reproduction	Great Blue Heron	14.5	131	NA	NA	NA	Sample et al. 1996

Key:

LOAEL = Lowest observed adverse effect level.
mg/kg = Milligrams per kilogram.
mg/kg/day = Milligrams per kilogram per day.
µg/kg = Micrograms per kilogram.
NA = No value available.
NOAEL = No observed adverse effect level.
PAH = Polycyclic aromatic hydrocarbon.
SVOC = Semivolatile organic compound.
TRV = Toxicity reference value.
VOC = Volatile organic compound.

Note:
1. Toxicity values taken from "Toxicological Benchmarks for Wildlife: 1996 Revision", Sample et al. 1996.

Source: Ecology and Environment, Inc.
2003

Table 7.3-10 Summary of Calculated Exposure Risks for the American robin, AOC-9, Former Griffiss Air Force Base, Rome, New York

	American robin							
	EPC soil	Soil ingestion	Ingestion of Food	Total	NOAEL	LOAEL		
Analyte		(mg/kg/d)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)	NOAEL - HQ	LOAEL - HQ
VOC and SVOC µg/kg								
Acetone	93.00	0.002	0.340	0.34	NA	NA	NA	NA
Benzoic acid	1760.00	0.043	6.442	6.48	NA	NA	NA	NA
2-Butanone	28.00	0.001	0.102	0.10	NA	NA	NA	NA
Chlorobenzene	18.00	0.000	0.066	0.07	5	50	0.0133	0.00133
Methylene chloride	25.00	0.001	0.091	0.09	NA	NA	NA	NA
1,1,1-Trichloroethane	6.80	0.000	0.025	0.03	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	370.00	0.009	1.354	1.36	1.1	NA	1.24	NA
Carbazole	536.00	0.013	1.962	1.97	40	400	0.0494	0.00494
Chloromethane	56.00	0.001	0.205	0.21	NA	NA	NA	NA
Dibenzofuran	520.00	0.013	1.903	1.92	40	400	0.05	0.005
PAH µg/kg								
Total PAH's	31998.00	0.790	117.112	117.90	40	400	2.95	0.295
Hydrocarbons mg/kg								
Diesel Range Organics	14.30	0.000	0.052	0.05	NA	NA	NA	NA
TRPH	57.00	0.001	0.209	0.21	NA	NA	NA	NA
Pesticides µg/kg								
4,4´-DDD	5.60	0.00014	0.020	0.02	0.0028	0.028	7.4	0.74
4,4´-DDE	13.00	0.0003	0.048	0.05	0.0028	0.028	17.1	1.71
4,4´-DDT	15.00	0.0004	0.055	0.06	0.0028	0.028	19.7	1.97
Aldrin	1.26	0.0000	0.005	0.00	NA	NA	NA	NA
alpha-BHC	1.05	0.0000	0.004	0.00	0.56	2.25	0.01	0.002
Dieldrin	59.40	0.0015	0.217	0.22	0.077	NA	2.8	NA
Endrin ketone	3.20	0.0001	0.012	0.01	0.3	NA	0.04	NA
Metals mg/kg								
Antimony	3.40	0.08	0.82	0.91	NA	NA	NA	NA
Arsenic	6.80	0.17	0.86	1.03	2.46	7.38	0.42	0.14
Barium	72.00	1.78	17.39	19.17	20.8	41.7	0.92	0.46
Beryllium	0.94	0.02	0.23	0.25	NA	NA	NA	NA
Cadmium	3.20	0.08	5.51	5.59	1.45	20	3.9	0.28
Chromium	25.00	0.62	19.08	19.70	1	5	20	3.9
Cobalt	18.00	0.44	4.35	4.79	NA	NA	NA	NA
Copper	32.00	0.79	3.49	4.28	47	61.7	0.09	0.07
Lead	39.00	0.96	14.32	15.28	1.13	11.3	13.5	1.35
Mercury	0.04	0.00	0.43	0.44	0.45	9	0.97	0.05
Nickel	27.00	0.67	30.85	31.52	77.4	107	0.41	0.29
Selenium	6.50	0.16	1.04	1.20	0.5	1	2.4	1.2
Silver	0.28	0.01	0.07	0.08	NA	NA	NA	NA
Thallium	0.98	0.02	0.24	0.26	NA	NA	NA	NA
Vanadium	34.00	0.84	8.21	9.05	11.4	NA	0.79	NA
Zinc	93.00	2.29	91.55	93.85	14.5	131	6.5	0.72

Key:

EPC = Exposure point concentration.
HQ = Hazard quotient.
LOAEL = Lowest observed adverse effect level.
mg/kg = Milligrams per kilogram.
mg/kg/day = Milligrams per kilogram per day.
µg/kg = Micrograms per kilogram.
NA = No value available.
NOAEL = No observed adverse effect level.
PAH = Polycyclic aromatic hydrocarbon.
SVOC = Semivolatile organic compound.
TRV = Toxicity reference value.
VOC = Volatile organic compound.

Grey shading indicates hazard quotient greater than one.

Table 7.3-11 Summary of Calculated Exposure Risks for the Short Tailed Shrew, AOC-9, Former Griffiss Air Force Base, Rome, New York

Short Tailed Shrew								
Analyte	EPC soil	Soil ingestion (mg/kg/d)	Ingestion of Food (mg/kg/d)	Total (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	NOAEL - HQ	LOAEL - HQ
VOC and SVOC µg/kg								
Acetone	93.00	0.007	0.169	0.18	22	110	0.01	0.002
Benzoic acid	1760.00	0.137	3.200	3.34	NA	NA	NA	NA
2-Butanone	28.00	0.002	0.051	0.05	NA	NA	NA	NA
Chlorobenzene	18.00	0.001	0.033	0.03	NA	NA	NA	NA
Methylene chloride	25.00	0.002	0.045	0.05	12.87	110	0.004	0.0004
1,1,1-Trichloroethane	6.80	0.001	0.012	0.01	1190	NA	0.00001	NA
Bis(2-ethylhexyl)phthalate	370.00	0.029	0.673	0.70	21.7	217.7	0.03	0.003
Carbazole	536.00	0.042	0.975	1.02	1.19	11.89	0.9	0.09
Chloromethane	56.00	0.004	0.102	0.11	NA	NA	NA	NA
Dibenzofuran	520.00	0.041	0.945	0.99	1.19	11.89	0.8	0.08
PAH µg/kg								
Total PAH's	31998.00	2.496	58.178	60.67	1.19	11.89	51	5.1
Hydrocarbons mg/kg								
Diesel Range Organics	14.30	0.001	0.026	0.03	NA	NA	NA	NA
TRPH	57.00	0.004	0.104	0.11	NA	NA	NA	NA
Pesticides µg/kg								
4,4´-DDD	5.60	0.0004	0.0102	0.011	1.76	8.8	0.006	0.001
4,4´-DDE	13.00	0.0010	0.0236	0.025	1.76	8.8	0.014	0.003
4,4´-DDT	15.00	0.0012	0.0273	0.028	1.76	8.8	0.016	0.003
Aldrin	1.26	0.0001	0.0023	0.002	0.44	2.2	0.005	0.001
alpha-BHC	1.05	0.0001	0.0019	0.002	0.039	0.39	0.051	0.005
Dieldrin	59.40	0.0046	0.1080	0.113	0.04	0.44	2.816	0.256
Endrin ketone	3.20	0.0002	0.0058	0.006	0.109	1.09	0.056	0.006
Metals mg/kg								
Antimony	3.40	0.27	0.45	0.72	0.148	1.48	4.9	0.49
Arsenic	6.80	0.53	0.47	1.00	0.47	1.88	2.1	0.53
Barium	72.00	5.62	9.60	15.22	11.22	43.56	1.4	0.35
Beryllium	0.94	0.07	0.13	0.20	1.45	NA	0.14	NA
Cadmium	3.20	0.25	3.04	3.29	2.2	22	1.5	0.15
Chromium	25.00	1.95	10.53	12.48	6021	NA	0.002	NA
Cobalt	18.00	1.40	2.40	3.80	NA	NA	NA	NA
Copper	32.00	2.50	1.93	4.42	33.34	43.14	0.13	0.10
Lead	39.00	3.04	7.90	10.95	17.6	176	0.62	0.06
Mercury	0.04	0.00	0.24	0.24	15.7	NA	0.02	NA
Nickel	27.00	2.11	17.03	19.13	88	176	0.2	0.11
Selenium	6.50	0.51	0.57	1.08	0.44	0.73	2.5	1.5
Silver	0.28	0.02	0.04	0.06	NA	NA	NA	NA
Thallium	0.98	0.08	0.13	0.21	0.0162	0.162	12.7	1.3
Vanadium	34.00	2.65	4.53	7.19	0.462	4.62	15.6	1.6
Zinc	93.00	7.25	50.53	57.79	352	704	0.16	0.08

Key:

EPC = Exposure point concentration.
HQ = Hazard quotient.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
PAH = Polycyclic aromatic hydrocarbon.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.

Grey shading indicates hazard quotient greater than one.

Table 7.3-12 Summary of Calculated Exposure Risks for the Raccoon, AOC-9, Former Griffiss Air Force Base, Rome, New York

	Raccoon							
Analyte	EPC sediment	Sediment ingestion (mg/kg/d)	Ingestion of Invertebrates (mg/kg/d)	Total (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	NOAEL - HQ	LOAEL - HQ
VOC and SVOC µg/kg								
2-Butanone	14	0.0001	0.0022	0.002	NA	NA	NA	NA
Acetone	14	0.0001	0.0099	0.010	5.06	25.3	0.002	0.0004
Butylbenzylphthalate	63	0.0003	0.0003	0.001	5.01	50.14	0.000	0.0000
Methylene chloride	1.8	0.0000	0.0003	0.000	2.96	25.3	0.000	0.0000
Toluene	1.7	0.0000	0.0000	0.000	7.12	71.2	0.000	0.0000
PAH µg/kg								
Total PAH's	19110	0.0876	3.014	3.102	0.274	2.743	11.32	1.13
Pesticides µg/kg								
Aldrin	47	0.0002	0.0000	0.000	0.101	0.506	0.00	0.00
Heptachlor epoxide	59	0.0003	0.0074	0.008	0.065	0.65	0.12	0.01
Metals mg/kg								
Arsenic	17	0.08	0.26	0.34	0.108	0.432	3.12	0.78
Barium	270	1.24	13.75	14.99	2.58	10.01	5.81	1.50
Cadmium	1.6	0.01	0.14	0.14	0.506	5.06	0.28	0.03
Chromium	5.2	0.02	0.18	0.20	1384	NA	0.00	NA
Cobalt	16	0.07	0.82	0.89	NA	NA	NA	NA
Copper	27	0.12	1.59	1.71	7.6	9.8	0.23	0.17
Lead	34	0.16	0.19	0.35	4	40.4	0.09	0.01
Manganese	24000	110.04	1222.64	1332.68	44.53	143.70	29.93	9.27
Nickel	26	0.12	0.41	0.53	20.24	40.48	0.03	0.01
Selenium	0.5	0.00	0.03	0.03	0.101	0.166	0.27	0.17
Silver	4.9	0.02	0.25	0.27	NA	NA	NA	NA
Vanadium	11	0.05	0.56	0.61	0.106	1.06	5.76	0.58
Zinc	76	0.35	7.93	8.28	80.96	161.92	0.10	0.05

Key:

EPC = Exposure point concentration.
HQ = Hazard quotient.
LOAEL = Lowest observed adverse effect level.
mg/kg = Milligrams per kilogram.
mg/kg/day = Milligrams per kilogram per day.
µg/kg = Micrograms per kilogram.
NA = No value available.
NOAEL = No observed adverse effect level.
PAH = Polycyclic aromatic hydrocarbon.
SVOC = Semivolatile organic compound.
TRV = Toxicity reference value.
VOC = Volatile organic compound.

Grey shading indicates hazard quotient greater than one.

Table 7.3-13 Summary of Calculated Exposure Risks for the Great Blue Heron, AOC-9, Former Griffiss Air Force Base, Rome, New York

Great Blue Heron						
Analyte	EPC sediment	Ingestion of Fish (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	NOAEL - HQ	LOAEL - HQ
VOC and SVOC µg/kg						
2-Butanone	14	NA	NA	NA	NA	NA
Acetone	14	NA	NA	NA	NA	NA
Butylbenzylphthalate	63	0.01	NA	NA	NA	NA
Methylene chloride	1.8	NA	NA	NA	NA	NA
Toluene	1.7	NA	NA	NA	NA	NA
PAH µg/kg						
Total PAH's	19110	3.36	40	400	0.084	0.008
Pesticides µg/kg						
Aldrin	47	0.011	NA	NA	NA	NA
Heptachlor epoxide	59	0.011	NA	NA	NA	NA
Metals mg/kg						
Arsenic	17	0.71	2.46	7.38	0.29	0.10
Barium	270	NA	20.8	41.7	NA	NA
Cadmium	1.6	0.25	1.45	20	0.17	0.01
Chromium	5.2	1.49	1	5	1	0.30
Cobalt	16	1.85	NA	NA	NA	NA
Copper	27	3.02	47	61.7	0.06	0.05
Lead	34	0.37	1.13	11.3	0.33	0.03
Manganese	24000	2.07	977	NA	0.002	NA
Mercury	ND	0.03	0.45	9	0.07	0.004
Nickel	26	1.85	77.4	107	0.02	0.02
Selenium	0.5	0.50	0.5	1	1.0	0.50
Silver	4.9	NA	NA	NA	NA	NA
Vanadium	11	NA	11.4	NA	NA	NA
Zinc	76	27.59	14.5	131	2	0.21

Key:

EPC = Exposure point concentration.
HQ = Hazard quotient.
LOAEL = Lowest observed adverse effect level.
mg/kg = Milligrams per kilogram.
mg/kg/day = Milligrams per kilogram per day.
µg/kg = Micrograms per kilogram.
NA = No value available.
NOAEL = No observed adverse effect level.
PAH = Polycyclic aromatic hydrocarbon.
SVOC = Semivolatile organic compound.
TRV = Toxicity reference value.
VOC = Volatile organic compound.

Grey shading indicates hazard quotient greater than one.

Table 7.3-14 Summary of Chemicals Exceeding Screening Benchmarks or Effect Levels at AOC 9

Chemical	Environmental Medium and Receptor Group							
	Soil				Sediment			Water
	Plants[A]	Soil Fauna[B]	Wildlife[C]		Benthic Life[D]	Wildlife[E]		Aquatic Life[F]
			NOAEL	LOAEL		NOAEL	LOAEL	
Metals								
Antimony			X					
Arsenic			X		X	X		
Barium			X			X	X	
Cadmium			X		X			X
Chromium		X	X	X				X
Cobalt								X
Copper					X			X
Lead			X	X	X			X
Manganese		X			X	X	X	X
Nickel					X			X
Selenium	X		X	X				
Silver					X			X
Thallium			X	X				
Vanadium		X	X	X		X		X
Zinc	X		X			X		X
Organic Chemicals								
Aldrin					X			
DDD			X					
DDE			X	X				
DDT			X	X				
Dieldrin			X					
Heptachlor epoxide					X			
PAHs	X	X	X	X	X	X	X	

Key:

AOC = Area of Concern
LOAEL = Lowest observed adverse effect level
NOAEL = No observed adverse effect level
PAHs = Polycyclic aromatic hydrocarbon.

Footnotes:

[A] Based on comparing soil chemical concentrations to phytotoxicity benchmarks (see Table 7.3-1).
[B] Based on comparing soil chemcial concentrations to earthworm and soil-microbe screening benchmarks (see Table 7.3-2).
[C] Based on modeled exposure estimates for the robin and/or shrew (see Tables 7.3-10 and 7.3-11).
[D] Based on comparing chemical concentrations in sediment from on-site tributaries to sediment benchmarks (Table 7.3-4).
[E] Based on modeled exposure estimates for the raccoon and/or heron (see Tables 7.3-12 and 7.3-13).
[F] Based on comparing chemical concentration in water from on-site tributaties to surface-water standards (see Table 7.3-3).

Table 7.4-1

Effect of Site Use Factor and Exposure Duration on Hazard Quotients for the Raccoon and Heron

Chemical	Conservative Scenario[A]		Realistic Scenario[B]			
	NOAEL-HQ	LOAEL-HQ	SUF	ED	NOAEL-HQ	LOAEL-HQ
Raccoon						
Total PAHs	11.32	1.13	0.03	1	0.34	0.034
Arsenic	3.12	0.78	0.03	1	0.094	0.023
Barium	5.81	1.50	0.03	1	0.174	0.045
Manganese	29.93	9.27	0.03	1	0.90	0.28
Vanadium	5.76	0.58	0.03	1	0.17	0.017
Heron						
Zinc	2	0.21	0.26	0.5	0.26	0.027

[A] Raccoon HQs from Table 7.3-12. Heron HQs from Table 7.3-13. Both the SUF and ED were 1 for this scenario.
[B] HQs for realistic scenario determined by multiplying HQs from conservative scenario by SUF and ED.

Key:

ED = exposure duration (i.e. fraction of year spent at the site)
HQ = hazard quotient
LOAEL = lowest observed adverse effect level
NOAEL = no observed adverse effect level
PAH = polycyclic aromatic hydrocarbon
SUF = site use factor (i.e. fraction of receptor's home range represented by the site)

Table 7.4-2

Summary of Results for Maximum and 95% UCL Exposure Scenarios for the Shrew for Total PAHs in Soil

Parameter	Maximum Concentration Exposure Scenario[A]	95% UCL Concentration Exposure Scenario[B]
Soil EPC (mg/kg)	32	8.9[C]
EE-diet (mg/kg/day)	58.2	16.3
EE-soil (mg/kd/day)	2.5	0.7
EE-total (mg/kg/day)	60.7	17
HQ-NOAEL (unitless)	51	14.2
HQ-LOAEL (unitless)	5.1	1.4

[A] From Table 7.3-11.

[B] EE-diet, EE-soil, EE-total, HQ-NOAEL, and HQ-LOAEL calculated as described in Section 7.3.5.

[C] Based on Central Limit Theorem (Adjusted) as described in (USEPA 2002c).

Key:

EE-diet = estimated exposure from diet
EE-soil = estimates exposure from incidental soil ingestion
EPC = exposure point concentration
HQ = hazard quotient
LOAEL = lowest observed adverse effect level
NOAEL = no observed adverse effect level
UCL = upper confidence limit (on mean concentration)

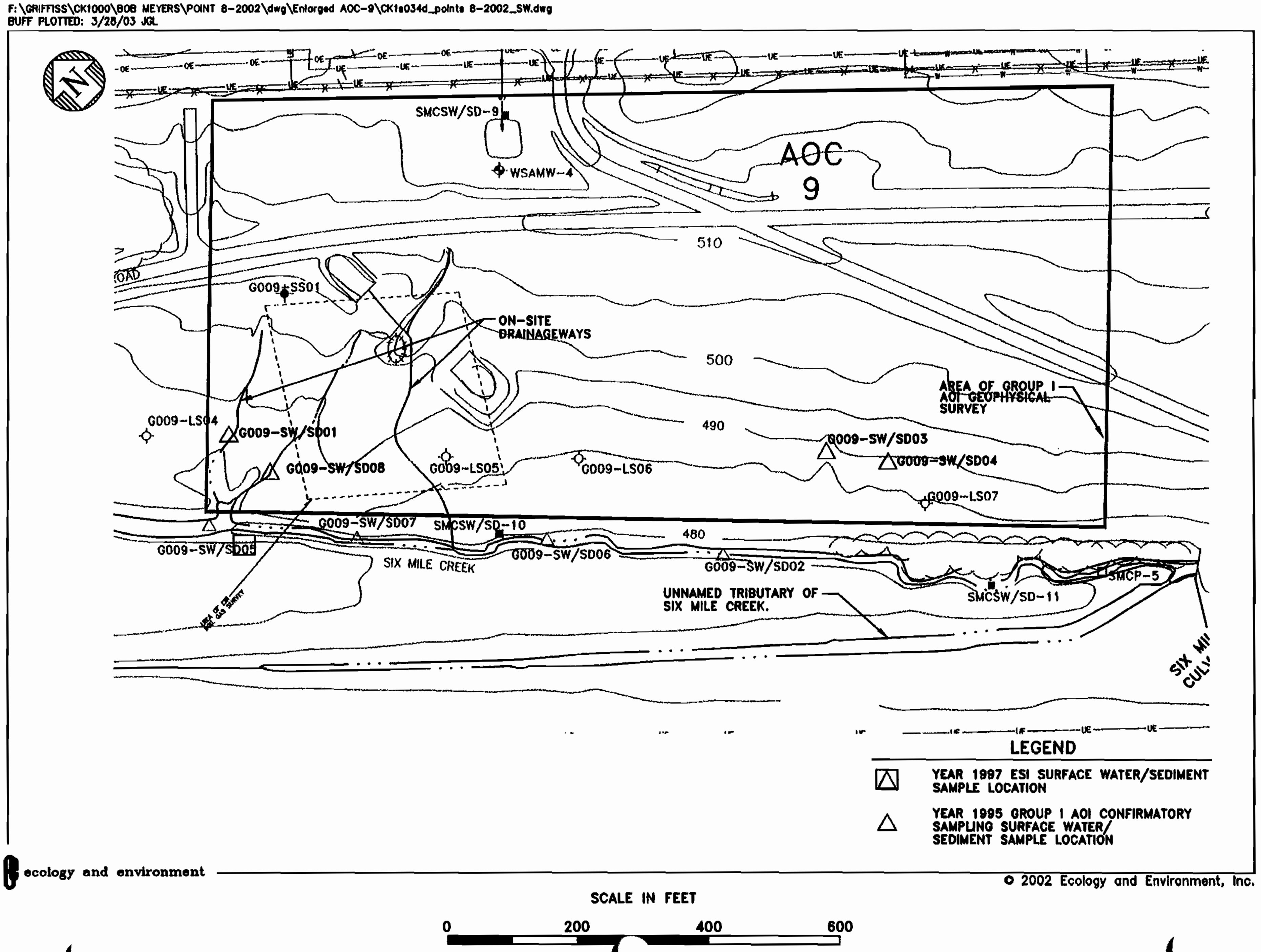
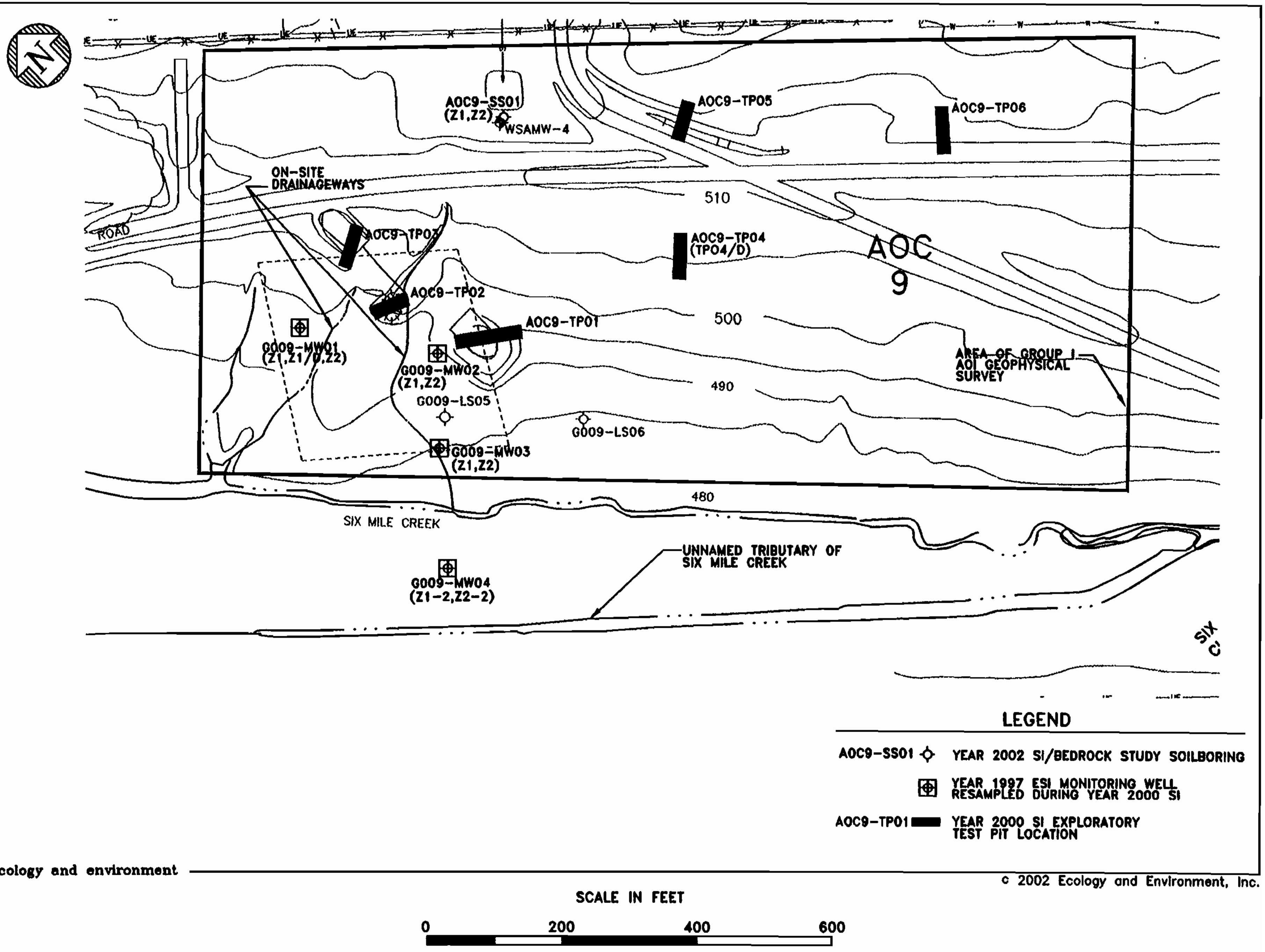


FIGURE 7-1
SURFACE WATER\SEDIMENT SAMPLE LOCATIONS

F:\GRIFFISS\CK1000\BOB MEYERS\POINT 8-2002\dwg\Enlarged AOC-9\CK1a034d_points 8-2002_SO.dwg
BUFF PLOTTED: 3/28/03 JGL



ecology and environment

FIGURE 7-2
AOC-9 SOIL SAMPLE LOCATIONS

02:001002_UK10_03_02-B1059
I:\buffalo\griffiss\workarea\leighton\AOC9.mxd-03_27_2003-GIS

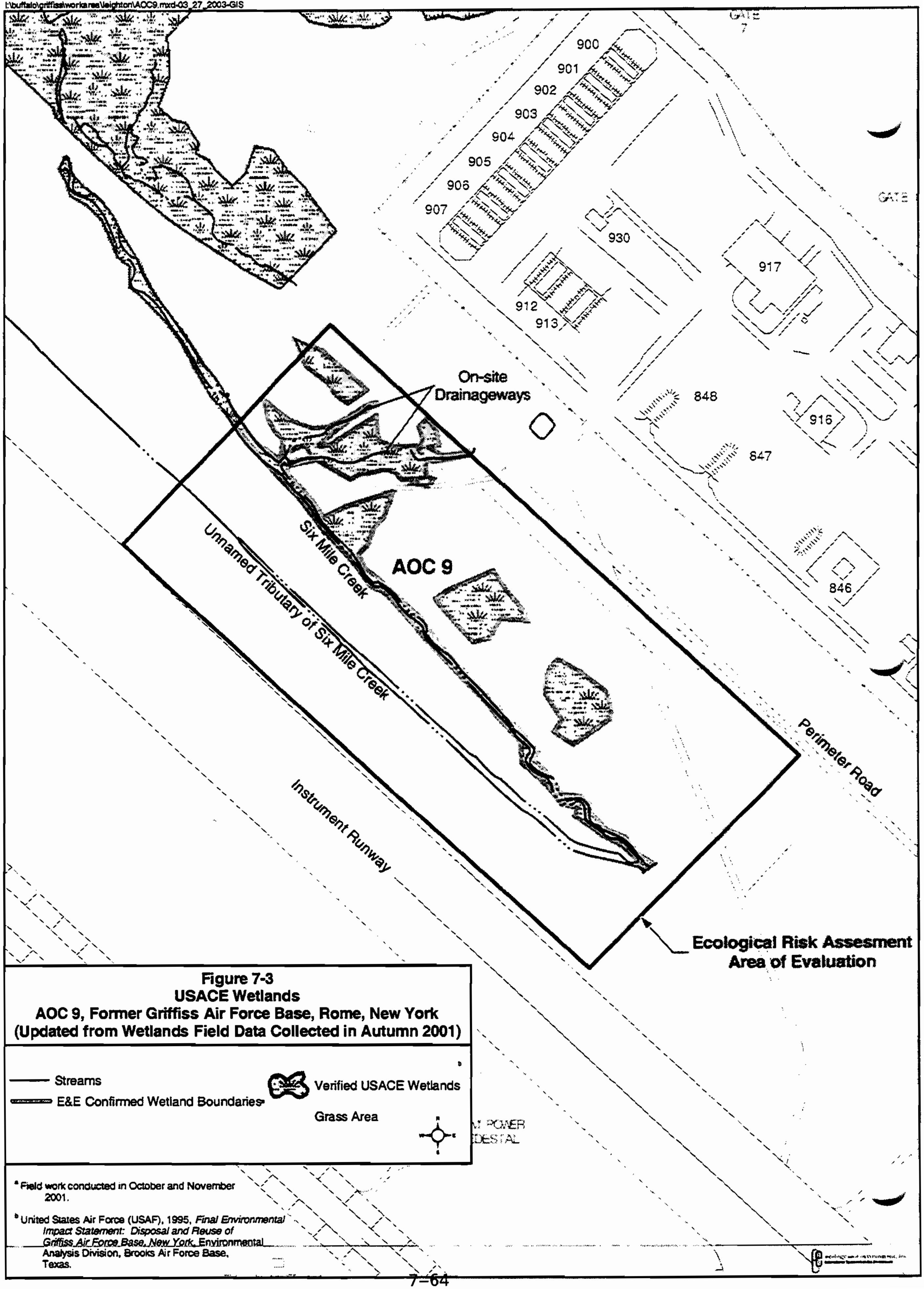
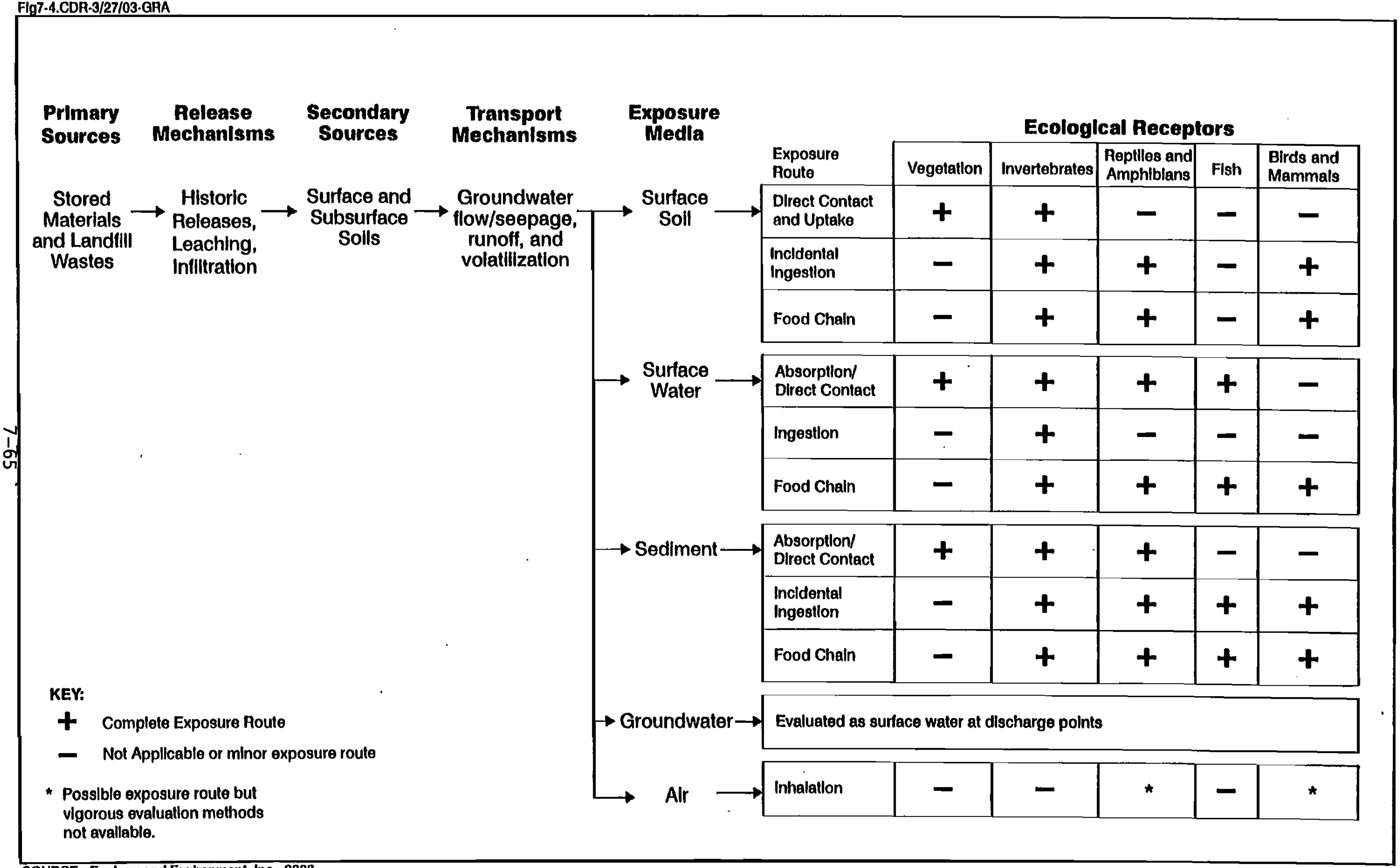


Figure 7-3
USACE Wetlands
AOC 9, Former Griffiss Air Force Base, Rome, New York
(Updated from Wetlands Field Data Collected in Autumn 2001)

[a] Field work conducted in October and November 2001.

[b] United States Air Force (USAF), 1995, *Final Environmental Impact Statement: Disposal and Reuse of Griffiss Air Force Base, New York*, Environmental Analysis Division, Brooks Air Force Base, Texas.

02:001002_UK10_03_03-B1059
Fig7-4.CDR-3/27/03-GRA



Exposure Media	Exposure Route	Vegetation	Invertebrates	Reptiles and Amphibians	Fish	Birds and Mammals
Surface Soil	Direct Contact and Uptake	+	+	–	–	–
	Incidental Ingestion	–	+	+	–	+
	Food Chain	–	+	+	–	+
Surface Water	Absorption/ Direct Contact	+	+	+	+	–
	Ingestion	–	+	–	–	–
	Food Chain	–	+	+	+	+
Sediment	Absorption/ Direct Contact	+	+	+	–	–
	Incidental Ingestion	–	+	+	+	+
	Food Chain	–	+	+	+	+
Groundwater	Evaluated as surface water at discharge points					
Air	Inhalation	–	–	*	–	*

KEY:
+ Complete Exposure Route
– Not Applicable or minor exposure route
* Possible exposure route but vigorous evaluation methods not available.

SOURCE: Ecology and Environment, Inc., 2003

Figure 7-4 Ecological Risk Assessment Conceptual Model For AOC 9

8 Summary and Conclusions

8.1 Summary and Conclusions

Several investigations have been conducted at AOC 9 including the Group I Confirmatory Sampling (1995 CS), an ESI (1998 ESI), and Year 2000 and 2002 SIs. The site was initially designated as AOI 9 and was later upgraded to AOC 9 based on the results of the groundwater, surface water, sediment and soil sampling performed during the 1998 ESI.

8.1.1 Nature and Extent of Contamination

In general, data collection during the Year 2000 and 2002 SIs have defined the nature and extent of on-site contamination at AOC 9. A summary of the investigations conducted and the contaminants of concern detected at the site is presented in the following sections.

8.1.1.1 Groundwater Investigations

The following is a summary of the results of the groundwater investigations:

- Groundwater beneath AOC 9 contains elevated levels of several chlorinated solvents, their breakdown products, and aromatic hydrocarbons.

- Metals detected in concentrations exceeding screening criteria include naturally occurring aluminum, iron, and manganese, selenium (questionable results), and thallium (source unknown).

- Geoprobe samples with the highest VOCs levels are located in the same plane from northeast to southwest between the WSA and SMC.

- A comparison of 1997 and 2000 groundwater VOC concentrations in wells G009-MW01 through -MW04 indicate a decrease in VOC levels in G009-MW03 and an increase in G009-MW04. The cause of these fluctuations of contaminant levels was not determined due to the insufficient quantity of available sample data.

- The extent of contamination is well defined by the Geoprobe surveys.

- Probable source areas are identified on the southwest side of B913 (chlorobenzene), the former WSA landfill near AOC9-GP28 and GP44 (chlorobenzene and TCE/DCE), and the former storage igloos (TCE/DCE).

- The distribution of the constituents of the contaminant plume is relatively the same (i.e., elongated over a common axis), and each of the main constituents has migrated over similar lateral and vertical distances.

- The contaminated groundwater discharges to the SMC drainage basin, which acts as a hydraulic boundary.

- Evaluation of NA parameters and the presence of high levels of its daughter products (cis-1,2-DCE and VC) indicate NA of TCE.

Test Pit Groundwater Samples

During the Year 2002 SI, five test pits were excavated immediately adjacent to test pit excavations TP01, TP03, TP04, TP06, and DTP04, where sheens were observed during the 2000 SI test pit excavations. Groundwater samples were collected from each test pit to determine if petroleum hydrocarbon contamination was present and the results are summarized below:

- Groundwater sample AOC9-GW-TP03 collected from the location of a former storage igloo (probable source area) was the only test pit containing compounds (1,2- DCB, 1,4-DCB, chlorobenzene, aldrin and dieldrin) above screening criteria.

- No PCBs were detected in any of the groundwater samples collected and TPH were only detected in AOC9-GW-TP03.

- Based on the field observations and analytical data, the areas where test pit samples were collected do not appear to be a source of petroleum hydrocarbon contamination.

8.1.1.2 Surface Water Investigations

Four surface water samples (AOC9-SW09 through AOC9-SW12) were collected from the main channel of SMC, seven surface water samples (AOC9-SW13 through AOC9-SW15 and AOC9-SW17 through AOC9-SW20) were collected from two on-site drainageways that discharge to SMC, and one sample (AOC9-SW16) was collected from the former AFFF pond. The results of the surface water sampling are summarized below.

Six Mile Creek Surface Water Samples

- Chlorobenzene was detected in the 1995 G009-SW02 sample but not in the 2000 sample collected at the same location (AOC9-SW12).
- The absence of VOC levels exceeding screening criteria in SMC indicates that the groundwater plume discharging to the creek is either significantly diluted by the high volume of water running through the drainage basin, degraded before entering the creek, or both.
- Three SVOCs were detected in the surface water samples, with only BEHP detected above screening criteria in all four samples.
- Twelve metals were detected in the surface water samples. Of these, aluminum, iron, and manganese exceeded screening criteria in all samples, and lead exceeded criteria in AOC9-SW12.
- A comparison of the metals concentrations in the various samples collected at the same location during different investigations reveals variations for some of the locations that may be due to variations in sample turbidity and seasonal differences in the water level and the discharge and runoff volume.
- No pesticides or PCBs were detected in any of the surface water samples collected from the main channel of SMC.

On-site Surface Water Samples

- VOCs were not detected in the former AFFF pond (AOC9-SW16), upgradient drainageway (AOC9-SW19), and northeast of the site and farthest upgradient (AOC9-SW20).
- Water seeping from the ground (AOC9-SW18) contained elevated levels of VOCs and the water flowing from the culvert from the WSA (AOC9-SW19) was clean supporting the hypothesis that a source exists between the WSA and Perimeter Road.

- The elevated levels of VOCs detected in surface water samples from on-site drainageways generally correspond to the areas where elevated levels of VOCs were detected in the groundwater.

- The fact that these intermittent streams and drainageways contain elevated levels of VOCs provides further evidence that there is an upward groundwater gradient and contaminated groundwater discharges to both on-site drainageways and SMC.

8.1.1.3 Sediment Investigations

Six Mile Creek Sediment Samples

- There were slight variations in the results of the 1995 and 1997 samples when compared to the 2000 samples collected at the same locations:
  - Benzo(a)pyrene concentration at G009-SD05/ AOC9-SD09 decreased to non-detectable levels;
  - Chlorobenzene at G009-SD07 /AOC9-SD10) increased and heptachlor epoxide was detected for the first time; and
  - At G009-SD02 /AOC9-SD12 cadmium levels increased and heptachlor epoxide was detected for the first time.

- The variations observed in the analyte concentrations for samples collected from similar locations may be the result of seasonal differences such as amount of discharge, runoff, and water level changes.

- The presence of elevated chlorobenzene levels at G009-SD07 /AOC9-SD10 corresponds with the elevated level of chlorobenzene detected in Year 2000 SI Geoprobe groundwater samples from upgradient AOC9-GP14 location.

AFFF Lagoon Sediment Samples

- The only VOC detected was 2-butanone (no criteria available).

- One SVOC (pyrene) and three pesticides (heptachlor, 4,4'-DDD, and 4,4'-DDT) were detected in the shallow sample at concentrations exceeding screening criteria.

- Copper was detected in both sediment samples at concentrations slightly above screening criteria and antimony and manganese were detected in the deeper samples at concentrations slightly above screening criteria.

- The AFFF lagoon does not appear to be a source of the chlorinated solvent contamination present in the groundwater on site.

8.1.1.4 Subsurface Soil Investigations

Soil Borings

- Only silver was found above screening criteria in two of the four 1995 CS LSA boring soil samples.
- Benzo(a)anthracene, benzo(a)pyrene, chrysene, dieldrin, and several metals were detected above screening criteria in at least one of the 15 1997 ESI soil samples.
- Based on the field observations and analytical data (absence of VOCs, SVOCs, pesticides, and PCBs and presence of eight metals found above screening criteria), the AFFF lagoon does not appear to be a source of contamination.
- The analytical data from boring AOC 9-SS02 (three VOCs detected only in the intermediate sample) indicate that residual contamination from a spill is not present in the vadose zone at that location. Rather, the source of the low levels detected at AOC9-SS02 is most likely off-gassing of the groundwater plume contaminants.

Test Pit Excavations

- The areas from where the test pit samples were collected do not appear to be a source of petroleum hydrocarbon contamination.
- Test pit excavations did not indicate the presence of wastes in the WSA landfill with less than 1% debris by volume.
- No potential contaminant source areas were discovered due to the minimal amount of landfill material encountered.
- The landfill appears to have been removed prior to the construction of the WSA, as reported.

8.1.2 Fate and Transport

Source Areas:

- No specific VOC sources were located during this investigation or past investigations. However, source areas with the highest concentrations in groundwater, bounded by non-detect areas, are clearly identifiable.

- Three probable source areas have been identified: the southwest side of Building 913 (chlorobenzene), the former WSA landfill in the vicinity of AOC9-GP28 and GP44 (chlorobenzene and TCE/DCE), and the former storage igloos (TCE/DCE).

Routes of Migration:

- Surface water flow at AOC 9 allows lateral migration of contaminants from the groundwater into the on-site drainageways and ultimately into SMC.

- Infiltration of precipitation would be expected in all areas not covered by a relatively impermeable barrier (i.e., concrete or asphalt). It is expected that through the process of infiltration water-soluble compounds potentially present in the unsaturated overburden could migrate vertically downward to the groundwater table.

- Groundwater flow is the primary contaminant transport mechanism at AOC 9 for contaminants that are water-soluble with lesser sorbing characteristics.

- Overburden groundwater flow allows both vertical and lateral migration of contaminants within the saturated zone, as well as residual contamination potentially present in the overlying unsaturated zone migrating into the saturated zone due to infiltration.

- Groundwater VOC contamination has migrated in the form of soil gas above the groundwater table and ultimately to the ambient air at the ground surface.

Observed and Predicted Migration:

- The potential significant migration pathways include surface water flow, groundwater flow (including infiltration), and volatilization.

- Surface water flow at AOC 9 has allowed lateral migration of overburden groundwater and near surface soil contaminants.

- The elevated levels of VOCs detected in surface water samples from the on-site drainageways generally correspond to the areas where elevated levels of VOCs were detected in the groundwater.

- Contaminated groundwater discharges into the on-site drainageways near the former storage igloos (south of Perimeter Road), and the upgradient end of the culvert, which passes beneath Perimeter Road, before discharging into SMC.

- Overburden groundwater flow is the primary contaminant transport mechanism at AOC 9 for VOCs as well as dissolved inorganic compounds.

- Overburden groundwater at the site is recharged by the infiltration of precipitation and is associated with the migration of uncontaminated groundwater from upgradient areas off site.

- Leaching of VOCs from site soils has occurred and, if residual VOC contamination remains in the subsurface soils, may continue to occur; and, in the presence of inorganic compounds, is likely a natural occurrence.

- Groundwater flows southwest towards topographical lows and discharges into SMC, an unnamed tributary, and the surface seeps located immediately upgradient of SMC and the culvert beneath Perimeter Road.

- Groundwater contamination has spread southwesterly (groundwater flow direction), and vertically downward through the overburden north of Perimeter Road and upward towards SMC and the associated wetlands.

- As the contamination migrates, the natural organic carbon in the soil adsorbs the organic compounds, thus slowing the advance of the VOC plumes.

- VOCs are attenuated in the direction of groundwater flow in response to dispersion, volatilization, and degradation, among other factors.

- Unless residual contamination is present in the subsurface soils in the source areas, overburden groundwater VOC concentrations should decline over time as contaminants migrate horizontally, vertically, and attenuate.

- VOC contamination present in the groundwater has migrated in the form of soil gas above the groundwater table, and ultimately to the ambient air at the ground surface.

- Migration of soil gas is less predictable than groundwater migration due to natural subsurface heterogeneities and subsurface structures.

- The thickness of the unsaturated soil zone ranges from nonexistent in the wetland areas immediately upgradient of SMC to a maximum of approximately 15 feet thick north of Perimeter Road.

- Migration of soil vapors occurs through the void spaces between the soil grains in the overburden.

- Volatilization of VOCs likely occurs where groundwater discharges to the surface.

8.1.3 Human Health Risk Assessment

- Under existing site conditions and expected future site conditions, assuming no development of the site, contaminants present in soil, sediment, and surface water at AOC 9 do not appear to pose any significant health risks.

- The total cancer risks estimated for recreational exposures to these media are acceptable under current USEPA Superfund policy.

- The total and separated by target organ HIs for recreational soil and sediment exposures are about 1 or lower indicating that adverse health effects from potential exposures are unlikely.

- HIs calculated for recreational exposures to surface water contamination are higher but they are based on a combination of extremely unlikely, conservative exposure assumptions and are driven by the maximum concentrations of manganese and iron reported in seep samples that do not reflect actual surface water contamination or likely exposure levels.

- A previous HHRA for SMC (Law 1996a) indicated that potential risks from fish consumption by recreational visitors would be unacceptably high and much greater than the risks from direct contact with soil, sediment, and surface water at the site.

- Most of the risks estimated for fish consumption were due to PCBs, which are not site-related contaminants

- Total risks estimated for future site residents and commercial/industrial workers are well above levels regarded as acceptable under current USEPA Superfund policy.

- The bulk of the risks estimated for residents and workers are associated with exposures from groundwater use, mostly inhalation of vapors released from groundwater during baths/showers.

- The chemicals in groundwater that account for most of the cancer risk are TCE, 1,4-DCB, 1,3,5-TMB, 1,2,4-TMB, VC, and 1,2-DCE, with chlorobenzene, naphthalene, 1,2-DCB, 1,2,4-TMB, 1,3,5-TMB, and cis-1,2-DCE having the greatest HIs.

- The largest HIs were associated with effects to the liver, respiratory system, blood, and nervous system.

- Soil contaminants would not pose significant health risks to future site residents or commercial/industrial workers.

- Assuming future development at AOC 9 that would include excavation activities, the total HI calculated for construction workers is slightly above the benchmark of 1 for possible non-cancer effects mainly to inhalation of manganese on airborne dust raised by disturbance of soil during construction activities.

- AOC 9 is expected to remain undeveloped open land (USAF 1999), and future conditions will likely be similar to current conditions. Risks estimated for the future residential scenario, the future commercial/industrial scenario, and the future construction scenario should be regarded as purely hypothetical.

- The exposure pathways evaluated for recreational visitors are the only pathways that might reasonably be expected under existing and anticipated future site conditions.

- The quantitative estimates of exposures and risks for recreational visitors are likely greater than the actual exposures and risks (especially for surface water) due to the conservative assumptions employed throughout the risk assessment process.

8.1.4 Ecological Risk Assessment

- The ERA focused on four assessment endpoints: terrestrial and wetland plant communities; the soil-fauna community; aquatic life in SMC and the on-site tributaries to the creek; and bird and mammal populations in the site vicinity.

- The potential ecological risk to these receptor groups was evaluated in accordance with state and federal guidance for ecological risk assessment.

- PAHs, several chlorinated pesticides, and several metals exceeded conservative screening benchmarks at selected sampling locations, or were predicted to a pose risk to certain wildlife species when exposure was calculated from the maximum chemical concentrations in soil and sediment.

- Overall, current levels of environmental contamination at AOC 9 are unlikely to adversely affect populations or communities of ecological receptors at the site.

8.2 Conclusions and Recommendations

Results of the Year 2000 and 2002 SI activities and analytical data indicate that the groundwater is significantly contaminated, and contamination is discharging into the SMC drainage basin. Lower levels of contaminants have also been found in on-site surface waters, sediments, and soils.

8.2.1 Conclusions

- A variety of organic and inorganic compounds is present at concentrations above screening criteria in the soil, sediment, surface water, and groundwater at the site.
- The primary contaminants of concern are VOCs present in the groundwater, although PAHs, metals, and some pesticides are have been detected sporadically at concentrations exceeding screening criteria in the various environmental media.
- No specific sources have been identified. However, residual sources may be present in the subsurface soils near the probable source areas.
- Three probable source areas have been identified at AOC 9, on the southwest side of Building 913 (chlorobenzene), the former WSA landfill near AOC9-GP28 and GP44 (chlorobenzene and TCE/DCE), and the former storage igloos (TCE/DCE).
- Groundwater flows laterally southwest towards topographical lows and discharges into SMC, and vertically downward through the overburden north of Perimeter Road and upward towards SMC and the associated wetlands.
- Groundwater flow is the primary contaminant transport mechanism at AOC 9 for VOCs.
- Both vertical and lateral migration of groundwater contaminants within the saturated zone, as well as migration into the saturated zone from any residual contamination in the overlying unsaturated zone should be expected.
- Natural attenuation of TCE in the groundwater is occurring.
- The AFFF lagoon does not appear to be a source of contamination.
- Significant petroleum hydrocarbon contamination does not appear to be present at AOC 9.
- The landfill that existed in the 1940s and 1950s, was removed from this area prior to the construction of the WSA, as reported, and currently there is no landfill south of the WSA fence line near Perimeter Road.
- Groundwater contamination observed in the overlying overburden aquifer has not migrated downward into the underlying bedrock.

8.2.2 Data Limitations and Recommendations for Future Work

- Additional investigation of the groundwater, surface water and sediment contamination present at AOC 9 is not recommended.

- Collection of additional subsurface soil samples from the three probable source areas and immediately upgradient of them may be necessary to confirm the presence or absence of residual contamination in the overburden.

- Remedial alternatives for AOC 9 will be discussed in the feasibility study.

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A 2000 SI and 2002 SI HTRW Drill Logs

Borehole Record for AOC9MW-5

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

HTRW DRILLING LOG

DISTRICT USACE KC

HOLE NUMBER AOC9M

SHEET 1 OF

1 COMPANY NAME Ecology & Environment

2 DRILL SUBCONTRACTOR MAXIM

3 PROJECT SI Addendum

4. LOCATION Rome, NY / Griffiss P

5 NAME OF DRILLER Al Kimbal

6. MANUFACTURER'S DESIGNATION OF DRILL CME 850-ATV

7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT HSA 4 1/4 Augers
Split Spoons 2", 2-foot long

8 HOLE LOCATION AOC9 MW5

9. SURFACE ELEVATION 482.3

10. DATE STARTED 4/12/00

11 DATE COMPLETED 4/12/00

12. OVERBURDEN THICKNESS >17

13. DEPTH DRILLED INTO ROCK NA

14. TOTAL DEPTH OF HOLE 15

15. DEPTH GROUNDWATER ENCOUNTERED 5' BGS

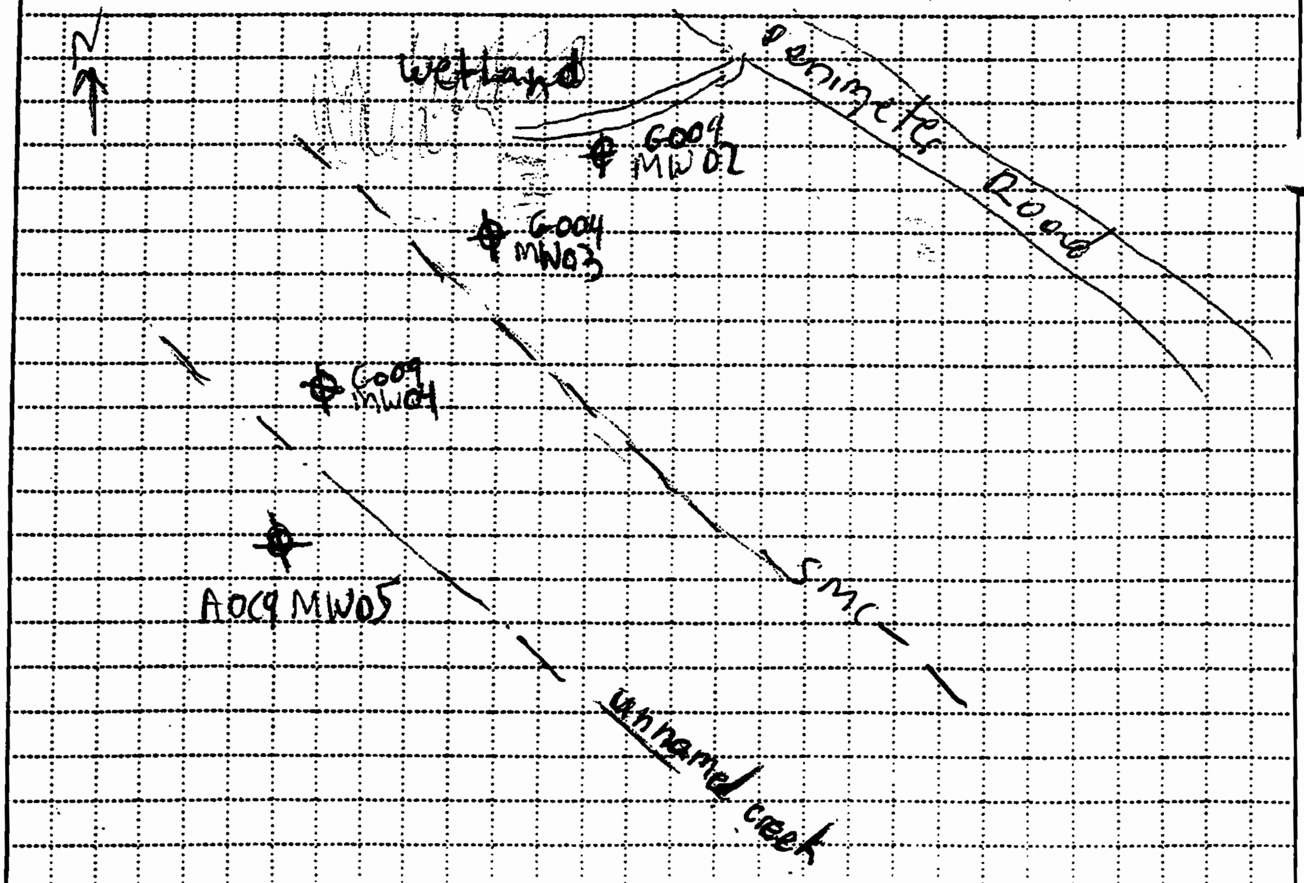
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 7.29' TOIC, 5-23-00 @ 1419

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19 TOTAL NUMBER OF CORE BOXES NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21 TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
		X				

LOCATION SKETCH/COMMENTS

SCALE: Not to scale



PROJECT SI Addendum

HOLE NO AOC9MW-5

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

Figure 4-2. HTRW Drilling Log

HOC4MW-3

Lock Number B x - 1

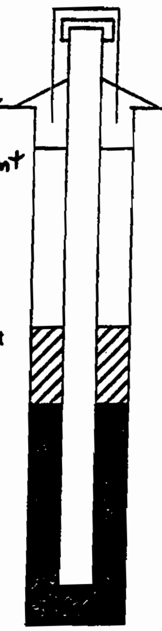
Sheet 2 of 6

SCREENED WELL

Inner Casing Material PVC Schedule 40

Stick-up 1.45 ft

Inner Casing Inside Diameter 2 inches



GROUND SURFACE

Top of Grout ______ ft Cement

Top of Seal at 2 ft

Top of Sand Pack 3.3 ft

Top of Screen at 4 ft

Bottom of Screen at 14 ft

Bottom of Hole at 15 ft

Bottom of Sandpack at 15.

Quantity of Material Used:

Bentonite Pellets 1.3 ft

Cement ______

Borehole Diameter 8½ inches

Cement/Bentonite ______

Grout ______

Screen Slot Size 0.010

Screen Type 0.010

☒ PVC Schedule 40

☐ Stainless Steel ______

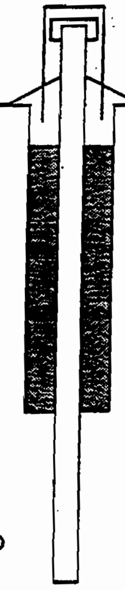
Pack Type/Size:

☒ Sand 0s Cilica #0

☐ Gravel ______

☐ Natural ______

OPEN-HOLE WELL



Stick-up ______ ft

Inner Casing Material ______

Inner Casing Inside Diameter ______ inches

Outer Casing Diameter ______ inches

Borehole Diameter ______ ft

Bedrock ______ ft

Bottom of Rock Socket/Outer Casing ______ ft

Bottom of Inner Casing ______ ft

Corehole Diameter ______

Bottom of Corehole ______ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. AOC9MW-5

PROJECT SI Addendum

INSPECTOR L. Angelaki

SHEET 3 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REM
	0	Topsoil (rooty silty sand moist SM				2/5	
	1	NR	0	—	—	6/13	—
	2	NR				9/10	
	3					18/17	
	4	SANDY SILT SM				4/4	
	5	NR				3/4	wet at 5' BGS
	6	SANDY SILT SM					
		SILT + SHALE FRAGMENTS GM				5/5	
	7					7/3	
	8	SILT & coarse gravel GM				weight of hammer 37	
	9	NR			—		

MRK FORM JUN 89 55-2

PROJECT SI Addendum

HOLE NO. AOC9 MW-5

ADC9MW-5 sheet 4 of 6

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	Moist	Wet
0	0-0.2 Topsoil: sand, silty, brown	○	⦶	○
	rooty, moist	○	⦶	○
	0.2-2 NR	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
2	2-4 NO RECOVERY	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
4	4-4.2 SANDY SILT: Brown sandy silt with	○	○	○
	little clay moist	○	⊗	○
	4.2-6 NR (rock fragments in shoe)	○	○	○
	wet around 5' BGS	○	○	○
		○	○	○
		○	○	○
6	6-6.4 SANDY SILT: Brown/orange sandy silt	○	○	○
	with little clay & gravel fragment	○	○	⊗
	6.4-7 SILT & fragments of shale. Sandy silt	○	○	⦶
	with some shale fragments	○	○	⦶
	7-8 NR	○	○	⦶
8	8-8.8 . SILT+Gravel: Brown sandy silt with	○	○	⦶
	some clay med to low plasticity	○	○	⦶
	med cohesion, saturated, coarse	○	○	⦶
	gravel	○	○	⦶

HTW DRILLING LOG

HOLE NO. AOC9mw-

PROJECT SI Addendum

INSPECTOR L Angeleti

SHEET 5 **OF** 6 **SHEETS**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS
	9	NR				12/12	
	10	SILT + GRAVEL GM				Weight of casing/4	
	11	NR				7/5	
	12	SAME AS ABOVE				10/10	
	13					3/7	
		NR					
	14						
	15	Bottom of hole at 15' BGS					

MRK FORM JUN 89 55-2

PROJECT SI Addendum

HOLE NO. AOC9MW-5

AOC4MW-5 Sheet 6 of 6

Depth(feet)	NARRATIVE LITHOLOGIC DESCRIPTION	Dry	Moist	Wet
9	9-8-10 NR	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
10	10-11 SILT & GRAVEL Brown silt some	○	○	○
	sand & clay + gravel	○	○	○
	saturated	○	○	○
	11-12 NR	○	○	○
		○	○	○
		○	○	○
		○	○	○
12	12-13.5 Same as above	○	○	○
	13.5--14 NR	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
14	Auger to 15 BGS	○	○	○
	Bottom of hole at 15 BGS	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

Borehole Record for AOC9MW-6

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

HTRW DRILLING LOG

DISTRICT USACE KC

HOLE NUMBER AOC9MW6

SHEET 1 OF

1. COMPANY NAME Ecology & Environment, Inc

2. DRILL SUBCONTRACTOR MAXIM

3. PROJECT SI Addendum

4. LOCATION Griffiss Park, Rome, NY

5. NAME OF DRILLER Al Kimbal

6. MANUFACTURER'S DESIGNATION OF DRILL CME 850 ATV

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT HSA 4 1/4 Augers
Split Spooning with 2" SS 2ft long

8. HOLE LOCATION AOC9MW - 6

9. SURFACE ELEVATION 482.17

10. DATE STARTED 4/13/00

11. DATE COMPLETED 4/13/00

12. OVERBURDEN THICKNESS > 15

13. DEPTH DRILLED INTO ROCK —

14. TOTAL DEPTH OF HOLE 14.8

15. DEPTH GROUNDWATER ENCOUNTERED 4

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 6.13 TOIC, 5-23-00 @ 1449

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) —

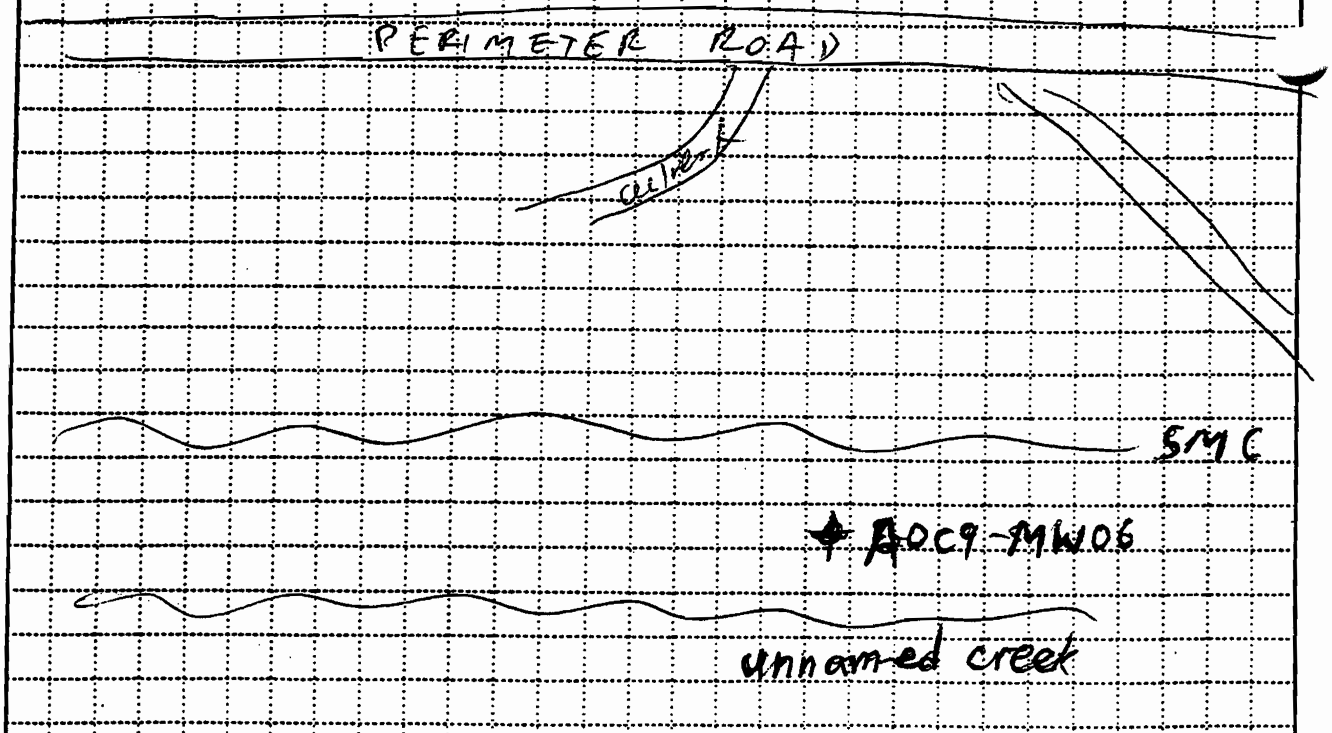
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
—	—	—	—

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
	—	—	—	—	—	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		

LOCATION SKETCH/COMMENTS

SCALE: not to scale



PROJECT SI Addendum

HOLE NO. AOC9 MW-6

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

Figure 4-2. HTRW Drilling Log

AOC9MW-6

Lock Number BX1

Sheet 2 of 6

SCREENED WELL

PVC Riser Stick up:

Stick-up 1.53 ft

Top of Grout ________ ft Cement

Top of Seal at 2.3 ft

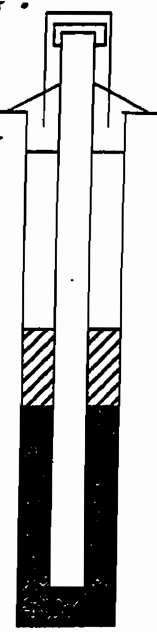
Top of Sand Pack 3.2 ft

Top of Screen at 4.2 ft

Bottom of Screen at 14.2 ft

Bottom of Hole at 14.8 ft

Bottom of Sandpack at 14.8



Inner Casing Material PVC schedule 40

Inner Casing Inside Diameter 2 inches

GROUND SURFACE

Quantity of Material Used:

Bentonite Pellets 1 ft

Cement ________

Borehole Diameter 8 1/4 inches

Cement/Bentonite ________

Grout ________

Screen Slot Size 0.010"

Screen Type

☒ PVC schedule 40

☐ Stainless Steel ____

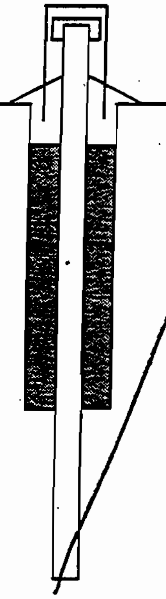
Pack Type/Size:

☑ Sand RMS Silica #0

☐ Gravel ________

☐ Natural ________

OPEN-HOLE WELL



Stick-up ________ ft

Inner Casing Material ________

Inner Casing Inside Diameter ________ inches

Outer Casing Diameter ________ inches

Borehole Diameter ________ ft

Bedrock ________ ft

Bottom of Rock Socket/ Outer Casing ______ ft

Bottom of Inner Casing ________ ft

Corehole Diameter ________

Bottom of Corehole ________ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	Moist	Wet
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

4/13/90

HTW DRILLING LOG

HOLE NO. A0C9MW

PROJECT SI Addendum

INSPECTOR L. Angeleli

SHEET 3 **OF** 6 **SHEETS**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARK
		(1/2 ice on top) Topsoil, moist SM SILTY SAND, dry				B/4	
	1	NR	0	–	–		–
						2/1	
	2	SANDY SILT SM				1/2	
	3	NR	0	–	–		–
						2/2	
	4	ORGANIC SILT OL				WH/WH	WH = weight of hammer
		SAND GRAY COARSE SAND BROWN FINE + MED SW					
	5	NR	0	–	–	2/1	
	6	SILT - SAND SM				5/6	
	7	NR	0	–	–	14/17	–
	8	SILT + GRAVEL GM	0.4 ppm in soil	–	–	11/28	–

Depth(feet).	AOC9 MW-6 NARRATIVE LITHOLOGIC DESCRIPTION Sheet 4 of 6	Moisture Content Dry	 Moist	 Wet
0	0-0.4 <u>TOPSOIL</u>: Dark brown, sandy silty, organic	○	☒	○
	rooty, moist soil	○	☒	○
	0.4-0.5 <u>SILTY SAND</u>: Brown, fine, silty sand	☒	☒	○
	moist to dry	☒	☒	○
	0.5-2 NR	○	○	○
		○	○	○
		○	○	○
		○	○	○
2	2-2.5 <u>SANDY SILT</u>: Gray sandy silt, v. little	○	☒	○
	clay, moist	○	☒	○
	2.5-4 NR	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
4	4-4.5 <u>ORGANIC SILT</u> Dark gray/black organic	○	○	☒
	silt with some sand, wet	○	○	☒
	4.5-4.6 <u>SAND</u>: Gray coarse sand wet	○	○	○
	4.6-4.8 <u>SAND</u>: Brown fine & medium sand	○	○	☒
	with some silt, wet	○	○	☒
	4.8-6 NR	○	○	○
		○	○	○
6	6-6.8 <u>SILT + SAND</u>: Brown silt and coarse	○	○	☒
	sand, some gravel (1")	○	○	☒
	wet	○	○	☒
	6.8-8 NR	○	○	○
		○	○	○
8	8-9.1 <u>SILT-GRAVEL</u> Brown silt & coarse	○	○	☒
	& medium gravel with	○	○	☒
9	some fine sand, wet	○	○	☒

HTW DRILLING LOG

HOLE NO. AOC9MW-6

PROJECT SI Addendum

INSPECTOR L. Anglelohi

SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS
	9	NR	-0-	–	–	14/8	—
	10	SILT+GRAVEL GM	1 ppm CH4 in hole	—	–	14/26	—
	11	NR	0 in soil			13/28	
	12	SAND+GRAVEL GW	1 ppm CH4 in hole			17/18	
		SILT+GRAVEL GM		—	–		—
	13		0 in soil			21/24	
		NR					
	14	Augered to 14.8' BGS Bottom of hole at 14.8' BGS					

MRK FORM JUN 89 55-2

PROJECT SI Addendum

HOLE NO. AOC9MW-6

AOC9MW-8 Sheet 6 of 6

NARRATIVE LITHOLOGIC DESCRIPTION

Depth(feet)	Narrative	Dry	Moist	Wet
9	9.1-10 NR	○	○	○
10	10-10.5 SILT+GRAVEL: Brown medium and coarse gravel and silt saturated	○	○	●
	10.5-12 NR	○	○	○
12	12.0-12.2 SAND+GRAVEL: Brown, coarse & fine gravel, silt	○	○	●
	12.2-13.5 SILT+GRAVEL as above at 10-10.5	○	○	○
	13.5-14 NR	○	○	○
14	Bottom of hole at 14.8 BGS	○	○	○
14.8		○	○	○

Borehole Record for AOC9MW-7

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

HTRW DRILLING LOG

DISTRICT USACE KC

HOLE NUMBER AOC9 MW-7

SHEET 1 OF 6 SHEETS

1 COMPANY NAME Ecology & Environment

2 DRILL SUBCONTRACTOR MAXIM

3 PROJECT SI Addendum

4. LOCATION GRIFFISS PARK Rome, NY

5 NAME OF DRILLER Al Kimbal

6. MANUFACTURER'S DESIGNATION OF DRILL CME 850 ATV

7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT HSA 4 1/4 augers
2" split spoon 2-ft long

8 HOLE LOCATION AOC9 MW-7

9. SURFACE ELEVATION 482.72

10. DATE STARTED 4/13/00

11 DATE COMPLETED 4/13/00

12. OVERBURDEN THICKNESS >13

13. DEPTH DRILLED INTO ROCK NA

14. TOTAL DEPTH OF HOLE 13

15. DEPTH GROUNDWATER ENCOUNTERED 4' BGS

16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 4.00' TOIC, 5-23-00 @ 1512

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) —

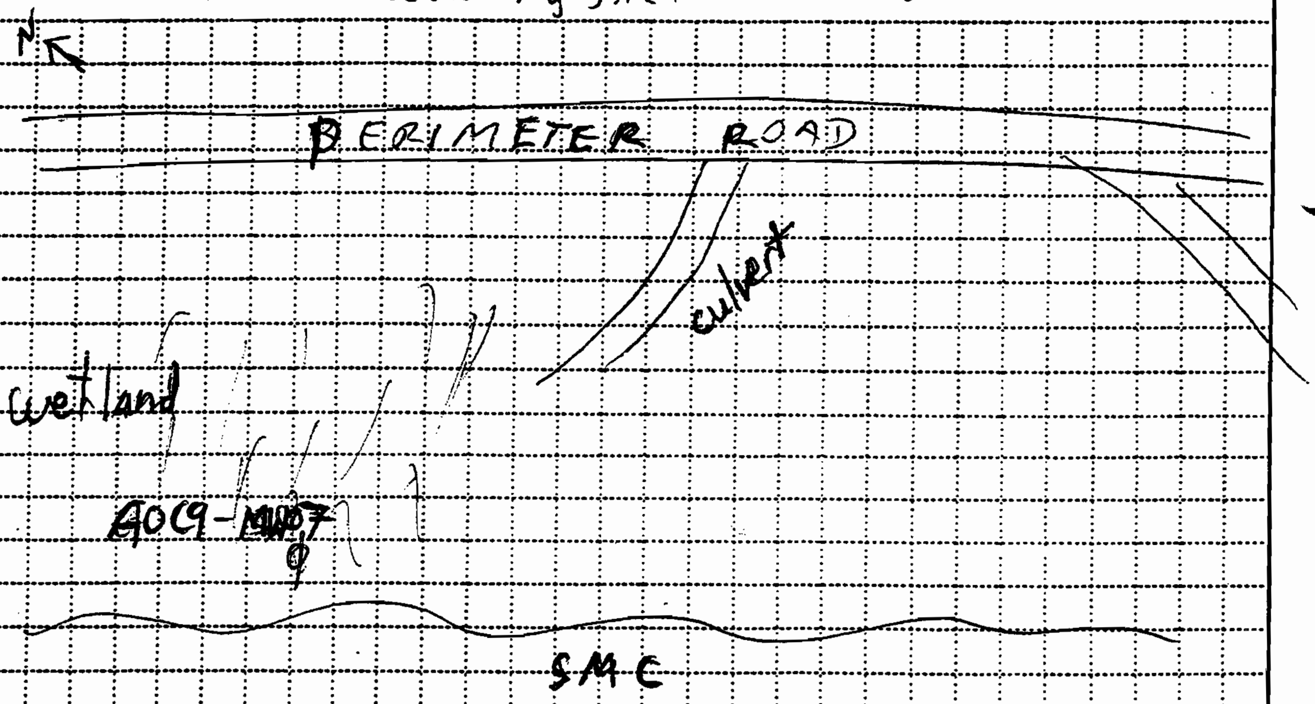
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19 TOTAL NUMBER OF CORE BOXES

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21 TOTAL CORE RECOVERY N/A

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR

LOCATION SKETCH/COMMENTS See also Fig 3.12-1

SCALE: Not to scale



PROJECT SI Addendum

HOLE NO AOC9 MW-7

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

Figure 4-2. HTRW Drilling Log

AOC9MW-7

Lock Number BX-1

Sheet 2 oF 6

SCREENED WELL

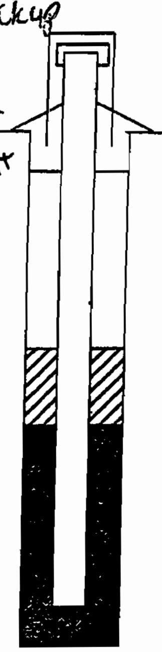
1.58ft PVC stickup

Inner Casing Material PVC (Sch. 40)

Inner Casing Inside Diameter 2 inches

Stick-up ________ ft

GROUND SURFACE



Top of Grout ________ ft

Top of Seal at 2 ft

Top of Sand Pack 3 ft

Top of Screen at 9.2 ft

Bottom of Screen at 9.2 ft

Bottom of Hole at 13 ft

Bottom of Sandpack at ≃10 *

* hole filled in with mostly cutting from 10' to 13' BGS

Quantity of Material Used:

Bentonite Pellets medium chips <10lbs

Cement ________

Borehole Diameter 8 1/4 inches

Cement/ Bentonite —

Grout —

Screen Slot Size 0.010

Screen Type ________

☒ PVC schedule 40

☐ Stainless Steel ____

Pack Type/Size: 120 lbs

☒ Sand #0 U.S. Silica

☐ Gravel ________

☐ Natural ________

OPEN-HOLE WELL

Stick-up ________ ft

Inner Casing Material ________

Inner Casing Inside Diameter ________ inches

Outer Casing Diameter ________ inches

Borehole Diameter ________ ft

Bedrock ________ ft

Bottom of Rock Socket/ Outer Casing ________ ft

Bottom of Inner Casing ________ ft

Corehole Diameter ________

Bottom of Corehole ________ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
		○	○	○
	5/13/00	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. AOC9MW-7

PROJECT SI addendum

INSPECTOR L. Angeloni

SHEET 3 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0 1	Topsoil SM SILTY SAND NR	0	–	–	1/1 1/1	–
	2 3	SILTY SAND SM SILT ML NR	0	–	–	2/2 3/3	–
	4 5	SILT-GRAVEL GM SAND SW	Hole: 6ppm CH4 9ppm total 10 ppm CH4 in soil	–	–	5/5 4/5	–
	6 7	~~SILT+GRAVEL~~ V.A 4/13/00 SAND (sil) SW NR	80ppm CH4 in hole 10 ppm in silt +gravel → slough all CH4 15 ppm in gravel ~~total~~ 0.6 ppm CH4	–	–	4/4 3/4	–
	8	SAND SW GRAVEL + SILT GM	4.2 CH4 in hole 0.4 CH4 0.6 total } soil	–	– –	4/5	–

MRK FORM JUN 89 55-2

PROJECT SI Addendum 22

HOLE NO. AOC9MW 7

AOC9MW7

NARRATIVE LITHOLOGIC DESCRIPTION

Sheet 4 of 6

Depth(feet).	Narrative	Moisture Content Dry	Moist	Wet
0	0-0.4 TOPSOIL : Organic, rooty dark brown sandy	○	☒	○
	silty, moist	○	☒	○
	0.4-0.5 : SILTY SAND: Dark brown silty sand	⦶	⦶	○
	with trace rounded gravel (fine sand)	⦶	⦶	○
	moist to dry	⦶	⦶	○
	0.5-2 NR	○	○	○
		○	○	○
		○	○	○
2	2-2.5 SILTY SAND: Brown silty sand, little	○	⦶	○
	clay, moist	○	⦶	○
	2.5-3 SILT: Brown silt with some sand	○	⦶	○
	and some gray clay, little	○	⦶	○
	gravel, moist	○	⦶	○
4	3-4 NR	○	○	○
	4-4.5 : SILT + GRAVEL : Gray silt and fine	○	○	☒
	to coarse gravel, wet	○	○	☒
	4.5-5 SAND : Brown/gray fine sand, wet	○	○	○
	few silt.	○	○	○
	5-6 NR	○	○	○
		○	○	○
6		○	○	○
	6-7 SAND : Brown gray fine & medium	○	○	⦶
	sand few silt, wet	○	○	⦶
		○	○	⦶
		○	○	○
		○	○	○
8		○	○	○
	8-8.5 SAND as above	○	○	⦶
	8.5-9 GRAVEL with some silt. (coarse gravel	○	○	⦶
9	9-10 NR	○	○	○

HTW DRILLING LOG

PROJECT SI Addendum	INSPECTOR L. Angelotti	HOLE NO. AOC9MW-7 SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	9	nr				9/12	
	10	augered to 13' BGS to clean hole from soft, light, organics.					
	11						
	12						
	13						

AOC9MW-7 Sheet 6 of 6

Depth(feet)	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	Moist	Wet
9		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
10		○	○	○
	Bottom of hole at 13 BGS	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

Borehole Record for A0C9-MW08

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

HTRW DRILLING LOG

DISTRICT Kansas City

HOLE NUMBER AOC9-MW08

1 COMPANY NAME Ecology & Environment

2 DRILL SUBCONTRACTOR Maxim

SHEET 1 OF 3 SHEETS

3 PROJECT

4. LOCATION Griffis AFB

5 NAME OF DRILLER Bob Kimball

6. MANUFACTURER'S DESIGNATION OF DRILL CME-55

7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
4.25 ID hollow stem auger
2-in. split spoon

8 HOLE LOCATION AOC9-MW08

9. SURFACE ELEVATION 513.91

10. DATE STARTED 5/5/00

11 DATE COMPLETED 5/5/00

12. OVERBURDEN THICKNESS >20 ft

15. DEPTH GROUNDWATER ENCOUNTERED ~9 ft

13. DEPTH DRILLED INTO ROCK 0'

16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 8.86 BGS

14. TOTAL DEPTH OF HOLE 20.50' BGS

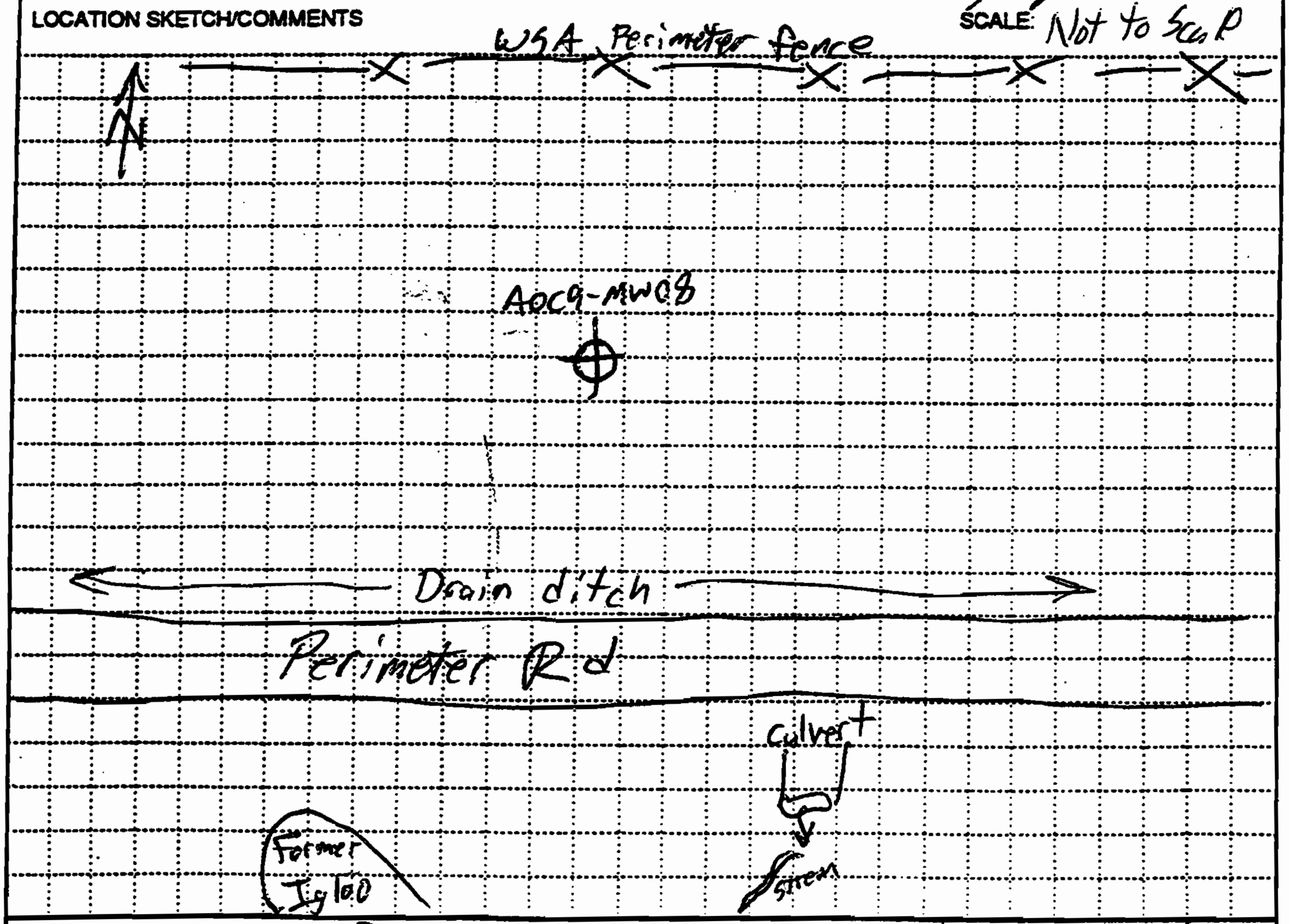
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) 9.64 TOIC, 5-23-00 @ 1539

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19 TOTAL NUMBER OF CORE BOXES
	—	—	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21 TOTAL CORE RECOVERY
	—	—	—	—	—	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Keith Lyday

LOCATION SKETCH/COMMENTS SCALE: Not to Scale



PROJECT GAFB WAD3

HOLE NO. AOC9 MW08

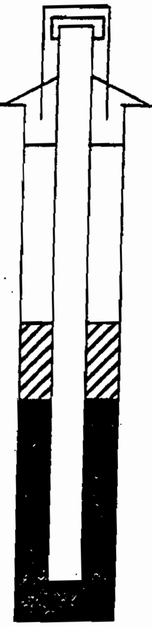
ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

Figure 4-2. HTRW Drilling Log

2 of 7

Lock Number #BX-1

SCREENED WELL



Stick-up 1.36 ft

Top of Grout 4 ft

Top of Seal at 11 ft

Top of Sand Pack 13 ft

Top of Screen at 15.4 ft

Bottom of Screen at 20.4 ft

Bottom of Hole at 20.5 ft

Bottom of Sandpack at 20.5

Inner Casing Material PVC

Inner Casing Inside Diameter 2 inches

GROUND SURFACE

Quantity of Material Used:

Bentonite Pellets 2 ft

Cement

Borehole Diameter 8.0 inches

~~Cement~~/ Bentonite 2 ft

Grout 7 ft

Screen Slot Size 0.010

Screen Type

☒ PVC Sch. 40

☐ Stainless Steel

Pack Type/Size:

☒ Sand #0

☐ Gravel

☐ Natural

OPEN-HOLE WELL

Stick-up ft

Inner Casing Material

Inner Casing Inside Diameter inches

Outer Casing Diameter inches

Borehole Diameter ft

Bedrock ft

Bottom of Rock Socket/ Outer Casing ft

Bottom of Inner Casing ft

Corehole Diameter

Bottom of Corehole ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	Moist	Wet
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

SI Addendum → **HTW DRILLING LOG**

HOLE NO. AOC9 MW08

PROJECT ~~LF6/Bldg 115 Groundwater Inv~~

INSPECTOR Reed Lyday

SHEET OF 3 SHEETS 7

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0 1	brown ~~sandy clay~~ clayey sand - loose (some limestone ~~nodules~~ gravel) SC dry	~~NA~~ 0	NA	NA	5/5/7/8 ~~NA~~	50% recov.
	2 3	dk brown to red, silty med sand w/ limestone gravel SM dry med. dense	~~NA~~ 0	NA	NA	4/4/7/8	50% recov.
	4 5	clayey ~~st~~ silt (slough?) gray brown MH soft med ~~fine~~ sand, red-brown Fe laminae med dense SP dry	~~NA~~ 0	NA	NA	5/9/6/9	80% recov.
	6 7	med. ~~fine~~ ~~fine~~ silty sand, brown, ~~loose~~ med. dense SM dry	0	NA	NA	7/8/8/7	90% recov.
	8 9	med sand, brown to tan loose, wet ~ 9 ft SP ▽	0	NA	NA	5/3/1/1	

PROJECT SI Addendum

HOLE NO. AOC9 MW08

4 of 7

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
		●	○	○
		●	○	○
	all sample descriptions are based on	○	○	○
	continuous split spoon samples.	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	wet ~ 9 ft.	○	○	○
		○	○	●

HTW DRILLING LOG

HOLE NO. AOC9MW08

PROJECT ~~LF6/Bldg 775 Groundwater~~ **INSPECTOR** Reed Loyday

SHEET 7 **OF** 5 **SHEETS**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS
	9 10						
	10 11 12	med. silty sand, brown, Fe stains, loose SM	∅	NA	NA	WH/WH/1/1/	50% recov.
	12 13 14	red to tan, med. silty sand med. dense SM ~~med.~~ ~~gray~~ silty sand, med. some in gravel, gray SM	∅ 1.5 ppm	NA	NA	4/4/12/13	100% recov.
	14 15 16	sand, md to coarse, some gravel, gray med. dense SP	5ppm 3.5ppm 1.5ppm	NA	NA	11/12/ 11/14	100% recov.
	16 17 18	sand, medium, gray SP	11 ppm 100 ppm 250ppm	NA	NA	7/9/ 13/7	100% recov.

MRK FORM JUN 89 55-2

PROJECT ~~LF6/Bldg 775 A-Gro~~ SI Addendum

HOLE NO. AOC9MW08

Depth(feet)	NARRATIVE LITHOLOGIC DESCRIPTION 6 of 7	Moisture Content		
		Dry	Moist	Wet
		○	○	○
	water ~9 ft	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. Aoc9MW

PROJECT SI Addendum

INSPECTOR Reed Lyday

SHEET OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	RE
	18 19 20	Sand, med to coarse, dense gravel @ base SP	0.5 1.5 20 ppm 30 ppm	NA	NA	14/15/ 18/37	100% recov.
		BOTTOM OF HOLE					

MRK FORM JUN 89 55-2

PROJECT SI Addendum

HOLE NO. AOC9-MW07

Borehole Record for ADC9-SS01

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

HTRW DRILLING LOG

DISTRICT Kansas City

HOLE NUMBER AOC9- SS01

SHEET 1 OF 9 SHEET

1 COMPANY NAME Ecology & Environment

2 DRILL SUBCONTRACTOR Zebra

3 PROJECT AOC9-2002

4. LOCATION GAFB- AOC9

5 NAME OF DRILLER Will Mualliga

6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe - Truck mounted

7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 2-inch Geoprobe rods

8 HOLE LOCATION AOC9

9. SURFACE ELEVATION ~~7/24/02~~ 517.84

10. DATE STARTED 7/24/02

11 DATE COMPLETED 7/24/02

12. OVERBURDEN THICKNESS >24' BGS

15. DEPTH GROUNDWATER ENCOUNTERED 11.5' BGS

13. DEPTH DRILLED INTO ROCK —

16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA

14. TOTAL DEPTH OF HOLE 24'

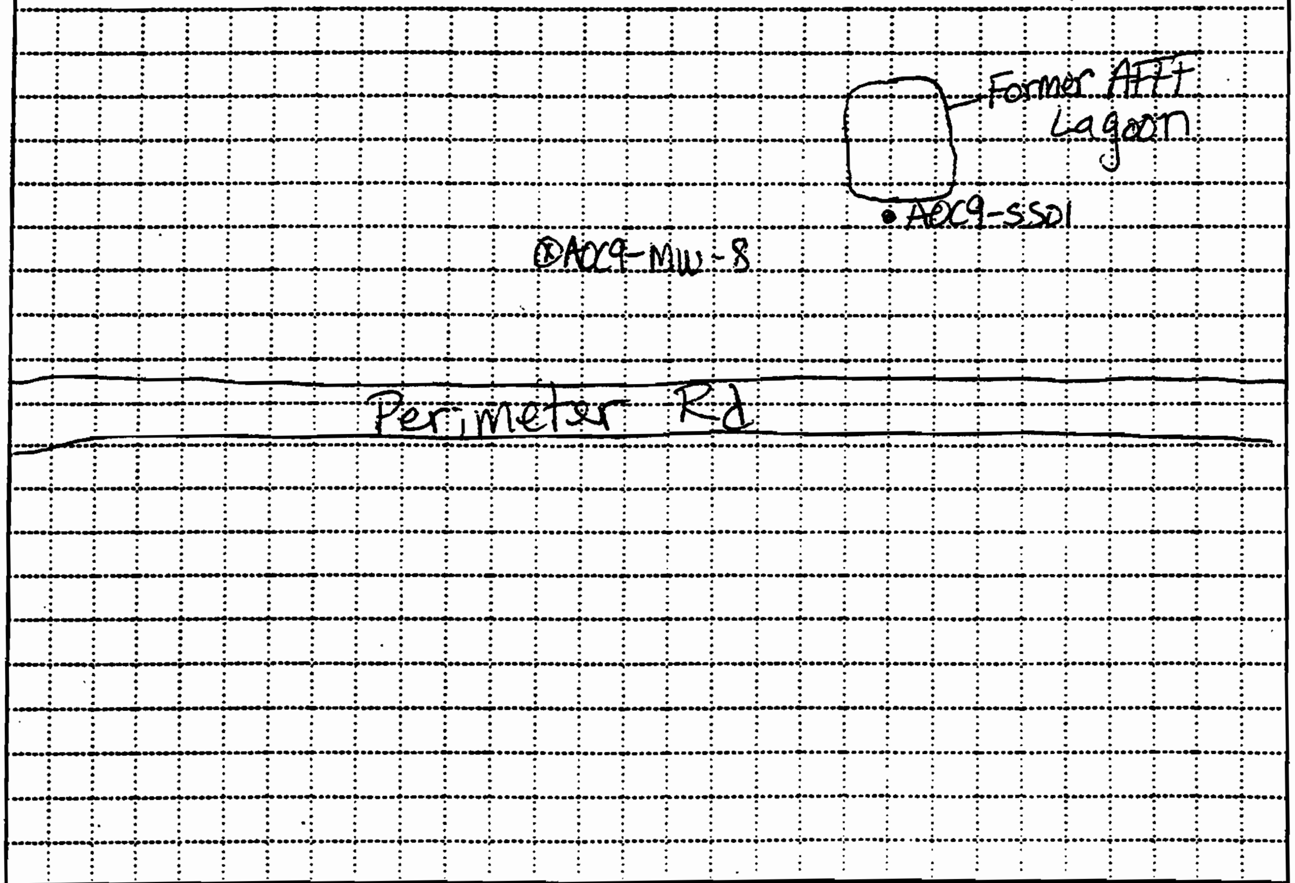
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19 TOTAL NUMBER OF CORE BOXES NA
	—	—	

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21 TOTAL CORE RECOVERY NA %
	X	X	SVOCs	PCBs/Pesticides	Percent solids	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
	X					

LOCATION SKETCH/COMMENTS

SCALE: 1" = 100'



PROJECT AOC9 GAFB

HOLE NO AOC9 - SS01

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

Figure 4-2. HTRW Drilling Log

2 of 8

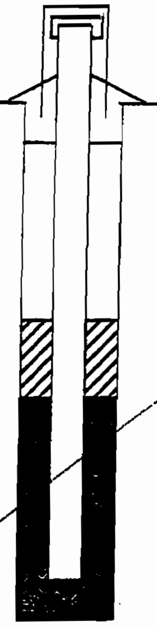
Lock Number ________

SCREENED WELL

Inner Casing Material ________

Inner Casing Inside Diameter ____ inches

Stick-up ________ ft



GROUND SURFACE

Top of Grout ________ ft

Top of Seal at ______ ft

Top of Sand Pack ______ ft

Top of Screen at _____ ft

Bottom of Screen at ________ ft

Bottom of Hole at ________ ft

Bottom of Sandpack at ________

Quantity of Material Used:

Bentonite Pellets ________

Cement ________

Borehole Diameter ______ inches

Cement/Bentonite ________

Grout ________

Screen Slot Size ________

Screen Type ________

☐ PVC ________

☐ Stainless Steel ________

Pack Type/Size:

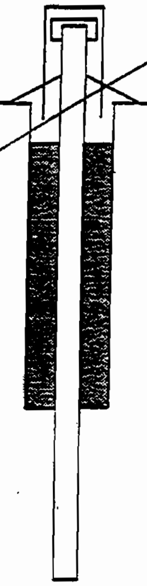
☐ Sand ________

☐ Gravel ________

☐ Natural ________

NA

OPEN-HOLE WELL



Stick-up ________ ft

Inner Casing Material ________

Inner Casing Inside Diameter ________ inches

Outer Casing Diameter ________ inches

Borehole Diameter ________ ft

Bedrock ________ ft

Bottom of Rock Socket/ Outer Casing ______ ft

Bottom of Inner Casing ________ ft

Corehole Diameter ________

Bottom of Corehole ________ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	 Moist	 Wet
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. AOC9-SS01

PROJECT 2002 GAFB - AOC9

INSPECTOR Stephanie Reynolds Smith

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d (ppm)	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMAR h
				N/A		N/A	
		Fine sand, some pebbles (SP)	0				
	1		0				
	2						
		Fine sand, trace clay, some gravel (SP),	1				
	3						
			0		AOC9-SS01 (4-6)		3 ppm downhole
	4						
			0.5				
	5						
		Clay with sand & gravel (CL)	0.5				
	6	Gravel w/ sand & trace clay (GP)					
			0.5				
	7						
			0.5				
	8	Sand with gravel (SP)					
			0				
	9						

MRK FORM JUN 89 55-2

PROJECT 2002 GAFB ~~A~~ AOC9

HOLE NO. AOC9-SS01

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION 4 of 8	Moisture Content Dry	Moist	Wet
	0-0.3' Organic rich brown fine sand	☒	○	○
	0.3'-2.5' Brown fine sand, some pebbles, dry	☒	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	2.5'-4' Dark brown fine sand, trace clay, some	○	○	○
	gravel, large pebble at end of run, dry	☒	○	○
		○	○	○
		○	○	○
		○	○	○
	4-5.5' Same sand as 2.5'-4' interval	○	○	○
		○	○	○
		○	○	○
		○	○	○
	5.5'-5.8' Dark brown clay with sand &	○	☒	○
	gravel, moist	○	○	○
	5.8'-8' Dark brown gravel with dark brown	○	☒	○
	fine sand & trace clay, moist	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	8'-12' Brown to dark brown fine to medium	○	○	○
	sand with some gravel	○	○	○
		○	○	○
	At 8.7' large pebble	○	○	○

HTW DRILLING LOG

HOLE NO. AOC9-SS01

PROJECT 2002 GAFB AOC9

INSPECTOR S. Reynolds Smith

SHEET 3 **OF** 5 **SHEETS**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d (ppm)	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS
	9	Sand with gravel (SP)	0	N/A		N/A	
	10	↓	0	↓		↓	
	11		1		sms AOC9-SS 01 (11.5-16) and /D+/S		Wet at 11.5'
	12		0				
	13		1				
	14		0				
	15		0				
	16		5				
	17						
	18	↓					

Depth(feet)	NARRATIVE LITHOLOGIC DESCRIPTION 6 of 8	Moisture Content		
		Dry	Moist	Wet
		○	○	○
		○	○	○
		○	○	○
	At 10.1' Shale fragments	○	☒	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	☒
	12'-16' Brown to dark brown fine to medium	○	○	☒
	sand, trace gravel, wet	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	16'-20' Same sand w/ gravel as 12'-16' interval	○	○	☒
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. AOC9-SS01

PROJECT AOC9 GAFB

INSPECTOR S. Reynolds Smith

SHEET
OF 7 SHEETS 8

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMAR h
		Sand with gravel (SP)	0	N/A		N/A	
	19		0				
	20		0.5		AOC9-SS01(20-24)		
	21		0.5				
	22						
	23		0.5				
	24	= B.OH	0.5				

MRK FORM JUN 89 55-2

PROJECT AOC9 GAFB

HOLE NO. AOC9-SS01

HTW DRILLING LOG

HOLE NO.

PROJECT

INSPECTOR

SHEET

OF SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h

PROJECT

HOLE NO.

MRK FORM JUN 89 55-2

8 of 8

Depth (feet)	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	Moist	Wet
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	20'-24' Same sand with gravel as above	○	○	☒
	Hole backfilled	○	○	○
	24' BGS = B.O.H	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

Borehole Record for AOC9-SS02

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

HTRW DRILLING LOG

DISTRICT Kansas City

HOLE NUMBER AOC9-SS02

SHEET 1 OF 5 SHEETS

1 COMPANY NAME Ecology & Environment

2 DRILL SUBCONTRACTOR Zebra

3 PROJECT AOC9-2002

4 LOCATION GAFB - AOC9

5 NAME OF DRILLER

6 MANUFACTURER'S DESIGNATION OF DRILL Geoprobe - Truck mounted

7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 2 inch Geoprobe rods

8 HOLE LOCATION AOC9

9 SURFACE ELEVATION 515.09

10 DATE STARTED 7/24/02

11 DATE COMPLETED 7/24/02

12 OVERBURDEN THICKNESS >12'

13 DEPTH DRILLED INTO ROCK

14 TOTAL DEPTH OF HOLE 12'

15 DEPTH GROUNDWATER ENCOUNTERED 10.5' bgs

16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA

17 OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

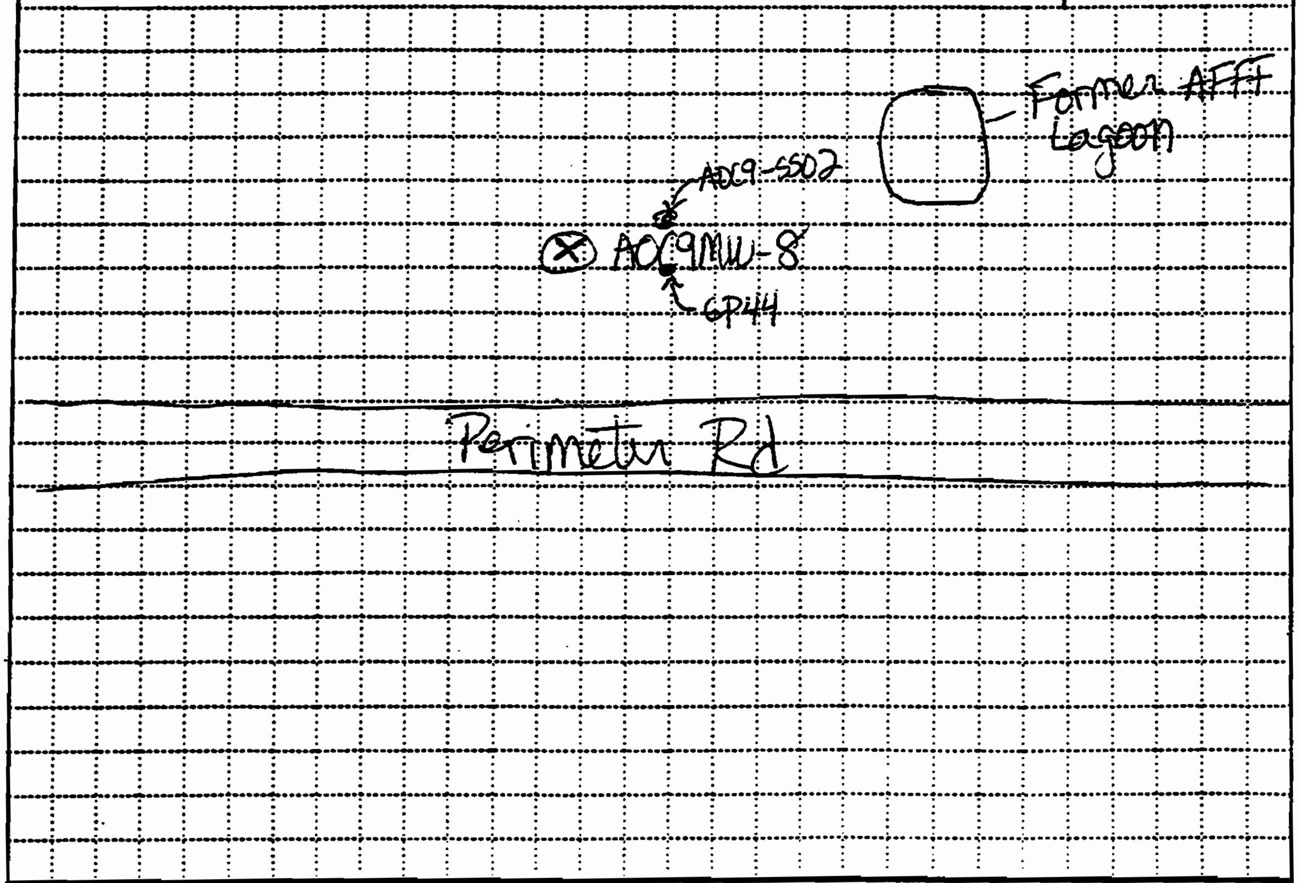
18 GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19 TOTAL NUMBER OF CORE BOXES
	–	–	NA

20 SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21 TOTAL CORE RECOVERY %
	X					

22 DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23 SIGNATURE OF INSPECTOR
	X			

LOCATION SKETCH/COMMENTS

SCALE: 1" = 100'



PROJECT GAFB AOC9

HOLE NO AOC9-SS02

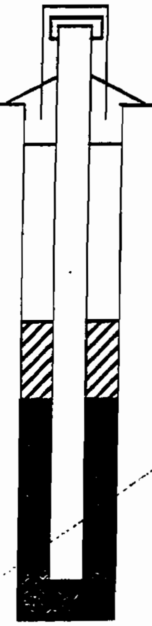
ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

Figure 4-2. HTRW Drilling Log

2 of 5

SCREENED WELL



Stick-up ________ ft

Top of Grout ________ ft

Top of Seal at ________ ft

Top of Sand Pack ________ ft

Top of Screen at ________ ft

Bottom of Screen at ________ ft

Bottom of Hole at ________ ft

Bottom of Sandpack at ________

Lock Number ________

Inner Casing Material ________

Inner Casing Inside Diameter ____ inches

GROUND SURFACE

Quantity of Material Used:

Bentonite Pellets ________

Cement ________

Borehole Diameter ________ inches

Cement/ Bentonite ________

Grout ________

Screen Slot Size ________

Screen Type ________

☐ PVC ________

☐ Stainless Steel ________

Pack Type/Size:

☐ Sand ________

☐ Gravel ________

☐ Natural ________

NA

OPEN-HOLE WELL

Stick-up ________ ft

Inner Casing Material ________

Inner Casing Inside Diameter ________ inches

Outer Casing Diameter ________ inches

Borehole Diameter ________ ft

Bedrock ________ ft

Bottom of Rock Socket/ Outer Casing ________ ft

Bottom of Inner Casing ________ ft

Corehole Diameter ________

Bottom of Corehole ________ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content Dry	Moist	Wet
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. AOC9-SS02

PROJECT GAFB AOC9

INSPECTOR Stephanie Reynolds Smith

SHEET 3 OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d (ppm)	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMA
		Fine sand, some gravel (SP)		N/A		N/A	
			0				
	1						
			0				
	2				AOC9-SS02(2-4)		
			0				
	3						
			0				
	4						
			0.3				
	5						
			0				
	6				AOC9-SS02(6-8)		
	7		0				
	8	Sand (SP)					
	9		0				

MRK FORM JUN 89 55-2

PROJECT GAFB - AOC9

HOLE NO. AOC9-SS02

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
	4 of 5	Dry	Moist	Wet
	0-0.6' Organic rich fine brown sand, some gravel,	☒	○	○
	dry	○	○	○
	0.6-4' Fine brown sand, some gravel, dry	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	4'-8' Only 0.7' Recovery: Fine brown	☒	○	○
	sand, some gravel, dry	○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
		○	○	○
	8'-12' Brown fine to medium sand,	○	○	○
	wet at 10.5'	○	○	○
		○	○	○
		○	○	○

HTW DRILLING LOG

HOLE NO. AOC9-SS02

PROJECT GAFB AOC9

INSPECTOR S. Reynolds Smith

SHEET 5 **OF** 5 **SHEETS**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMAR
		Sand (SP)		N/A		N/A	
			0				
	10				AOC9-SS02 (10-10.5)		
			0				wet at 10.5'
	11						
			0.5				
	12		3				

B 2000 SI Well Development Logs

WELL DEVELOPMENT RECORD

SITE SI amendum

DATE 4/19/2000

LOCATION AOC-9

WELL NO. MW05

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

~~$V = Tr^2(0.163)$~~

Where:

V = Static volume of well in gallons;

T = Depth of water in the well, measured in feet;

r = Inside radius of well casing in inches;

and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).

1 well volume (v) = ~~1.21~~ ~~3 gal~~ ~~18.1~~ gallons.

13.9 gal = 1 Vol.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509 x10^{-3}
11/2	0.092	0.0123	1.142	1.142 x10^{-3}
2	0.163	0.0218	2.024	2.024 x10^{-3}
21/2	0.255	0.0341	3.167	3.167 x10^{-3}
3	0.367	0.0491	4.558	4.558 x10^{-3}
31/2	0.500	0.0668	6.209	6.209 x10^{-3}
4	0.653	0.0873	8.110	8.110 x10^{-3}
41/2	0.826	0.1104	10.260	10.260 x10^{-3}
5	1.020	0.1364	12.670	12.670 x10^{-3}
51/2	1.234	0.1650	15.330	15.330 x10^{-3}
6	1.469	0.1963	18.240	18.240 x10^{-3}
7	2.000	0.2673	24.840	24.840 x10^{-3}
8	2.611	0.3491	32.430	32.430 x10^{-3}
9	3.305	0.4418	41.040	41.040 x10^{-3}
10	4.080	0.5454	50.670	50.670 x10^{-3}
11	4.937	0.6600	61.310	61.310 x10^{-3}
12	5.875	0.7854	72.960	72.960 x10^{-3}
14	8.000	1.0690	99.350	99.350 x10^{-3}
16	10.440	1.3960	129.650	129.650 x10^{-3}
18	13.220	1.7670	164.180	164.180 x10^{-3}
20	16.320	2.1820	202.680	202.680 x10^{-3}
22	19.750	2.6400	245.280	245.280 x10^{-3}
24	23.500	3.1420	291.850	291.850 x10^{-3}
26	27.580	3.6870	342.520	342.520 x10^{-3}
28	32.000	4.2760	397.410	397.410 x10^{-3}
30	36.720	4.9090	456.020	456.020 x10^{-3}
32	41.780	5.5850	518.870	518.870 x 10^{-3}
34	47.160	6.3050	585.680	585.680 x10^{-3}
36	52.880	7.0690	656.720	656.720 x10^{-3}

1 Gallon = 3.785 liters

1 Meter = 3.281 feet

1 Gallon water weighs 8.33 lbs. = 3.779 kilograms

1 Liter water weighs 1 kilogram = 2.205 pounds

1 Gallon per foot of depth = 12.419 liters per foot of depth

1 Gallon per meter of depth = 12.419 x 10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 7.5'

WELL DEPTH (TD) 14.9

COLOR DK Grey

ODOR None

CLARITY NO Clarity

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 7.9'

WELL DEPTH (TD) 14.9'

COLOR almost clear.

ODOR None

CLARITY almost Clear.

DESCRIPTION OF DEVELOPMENT TECHNIQUE Initial Bail of 10 gallons after surge block, Then pump well at rate of 1/2 liter/minute checking for pH Temp, Conduct, Turbid, color, odor, + 0/2 parts, at 1/2 hour intervals for 1st two hours + at one hour Intervals Thereafter.

02: 001002_UK02_00_90-B0234
Fig3-4.CDR(P2)-9/29/99-GRA

WELL DEVELOPMENT - PARAMETER MEASUREMENTS mw05

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (umhos/cm)	TEMP. (C)	TURB. (NTU)	DO (mg/L)	COMMENTS
	GALS.	BORE VOL.						
0905	10	0.7	6.8	419	45.7	>1000		
0930	20	1.4	6.9	362	46.6	588		
0950	30	2.1	6.95	360	45.5	368		
1000	35	2.5	7.0	345	45.2	107		
1015	40	2.8	6.98	357	45.5	84.7		
1030	50	3.5	6.96	352	45.9	48.9		
1115	75-80	5.7	6.99	356	47.4	23.7		Comp. Dev.

DEVELOPED BY: Hennick | Sansone

DATE 4/19/2000

WELL DEVELOPMENT RECORD

SITE Ft Devens DATE 4/26/2000

LOCATION AOC-9 WELL NO. MW06

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

$$V = Tr^2(0.163)$$

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).

~~[illegible]~~
1 well volume (v) = ~~14.7~~ gallons.
14.7 = 1 Vol
gallons

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509 x10^{-3}
11/2	0.092	0.0123	1.142	1.142 x10^{-3}
2	0.163	0.0218	2.024	2.024 x10^{-3}
21/2	0.255	0.0341	3.167	3.167 x10^{-3}
3	0.367	0.0491	4.558	4.558 x10^{-3}
31/2	0.500	0.0668	6.209	6.209 x10^{-3}
4	0.653	0.0873	8.110	8.110 x10^{-3}
41/2	0.826	0.1104	10.260	10.260 x10^{-3}
5	1.020	0.1364	12.670	12.670 x10^{-3}
51/2	1.234	0.1650	15.330	15.330 x10^{-3}
6	1.469	0.1963	18.240	18.240 x10^{-3}
7	2.000	0.2673	24.840	24.840 x10^{-3}
8	2.611	0.3491	32.430	32.430 x10^{-3}
9	3.305	0.4418	41.040	41.040 x10^{-3}
10	4.080	0.5454	50.670	50.670 x10^{-3}
11	4.937	0.6600	61.310	61.310 x10^{-3}
12	5.875	0.7854	72.960	72.960 x10^{-3}
14	8.000	1.0690	99.350	99.350 x10^{-3}
16	10.440	1.3960	129.650	129.650 x10^{-3}
18	13.220	1.7670	164.180	164.180 x10^{-3}
20	16.320	2.1820	202.680	202.680 x10^{-3}
22	19.750	2.6400	245.280	245.280 x10^{-3}
24	23.500	3.1420	291.850	291.850 x10^{-3}
26	27.580	3.6870	342.520	342.520 x10^{-3}
28	32.000	4.2760	397.410	397.410 x10^{-3}
30	36.720	4.9090	456.020	456.020 x10^{-3}
32	41.780	5.5850	518.870	518.870 x 10^{-3}
34	47.160	6.3050	585.680	585.680 x10^{-3}
36	52.880	7.0690	656.720	656.720 x10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419 x 10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 6.26'
WELL DEPTH (TD) 14.84'
COLOR Dark Brown
ODOR None
CLARITY No Clarity (>1000 Turbid).

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 6.5'
WELL DEPTH (TD) 14.84'
COLOR Nearly Clear
ODOR None
CLARITY nearly Clear / pt. cloudy.

DESCRIPTION OF DEVELOPMENT TECHNIQUE Initially Bail 10 gallons after Surge Block, Then pump at a rate of ½ liter/minute ~~for 1st two hours~~ less a checking for Temp, pH, Turbid, Conduct, color, odor + % part every ½ hour for 1st two hours, + Then once an hour Thereafter. until reading of <50 NTU's achieved.

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

mw06

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
0800	10	0.7	6.9	478	48.5	>1000	Bailed 10 gallons
0830	10	0.7	6.94	481	48.1	>1000	Begun Pumping
0900	15	1.0	6.44	442	51.3	>1000	
0930	20	1.4	7.08	440	52.2	>1000	
1000	30	2.0	7.05	435	54.0	180	
1030	45	3.0	7.06	437	55.3	26.5	@ 28.5 NTUs achieved
≈ 1130	70	4.8	7.05	440	54.9	NC	~~at 45~~ gallons, well
							pumped to 70 gallons
							with difficulty getting
							volume.

DEVELOPED BY: Samson | Hennick

DATE 4/20/2000

WELL DEVELOPMENT RECORD

SITE Former Griffiss Air Force Base DATE 4/19/2000

LOCATION AOC-9 WELL NO. MW07

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

~~$V = Tr^2(0.163)$~~

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 11.34 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
11/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
21/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
31/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
41/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
51/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 3.4'
WELL DEPTH (TD) 10.1'
COLOR Brown grey.
ODOR —
CLARITY

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) ≃3.8' TOIC
WELL DEPTH (TD) 10.1
COLOR Clear-none
ODOR —
CLARITY Clear

DESCRIPTION OF DEVELOPMENT TECHNIQUE Hand Bailed 1st Vol. to removed silt, use bladder pump to complete.

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

MW07

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
1245	0 ~~11.4~~	0	6.88	453	48.8	>1000	Color Dark Brown
1305	11.4	1	7.0	437	49.0	203	Hand bailed first Bore vol.
1315	~~3~~ 17	1½	7.04	431	48.6	108	
1330	~~4~~ 28	2½	7.05	444	49.3	38.1	
1345	~~5~~ 39	3½	7.08	453	50.5	56.2	
1430	~~6~~ 45	4	7.01	457	52.0	21.8	Color almost clear
1445	51	4½	7.1	450	54.1	12.4	
1500	57	5	7.16	468	54.4	12.3	water is clear
							Total volume pumped:
							57 [redacted] gallons

DEVELOPED BY: C. Sansone / M. Hennick

DATE 4-19-2000

WELL DEVELOPMENT RECORD

SITE Former Griffis Air Force Base
DATE 5/8/2000
LOCATION AOC-9
WELL NO. MW108

MEASUREMENT OF WATER LEVEL AND WELL VOLUME

- Prior to sampling, the static water level and total depth of the well will be measured with a calibrated weighted line. Care will be taken to decontaminate equipment between each use to avoid cross contamination of wells.
- The number of linear feet of static water (difference between static water level and total depth of well) will be calculated.
- The static volume will be calculated using the formula:

~~$V = Tr^2(0.163)$~~

Where:
V = Static volume of well in gallons;
T = Depth of water in the well, measured in feet;
r = Inside radius of well casing in inches;
and 0.163 = A constant conversion factor which compensates for r^2h factor for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons, and (pi).
1 well volume (v) = 13.5 gallons.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (in)	Gallons per Foot of Depth	Cubic Feet per Foot of Depth	Liter per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
11/2	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
21/2	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
31/2	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
41/2	0.826	0.1104	10.260	10.260×10^{-3}
5	1.020	0.1364	12.670	12.670×10^{-3}
51/2	1.234	0.1650	15.330	15.330×10^{-3}
6	1.469	0.1963	18.240	18.240×10^{-3}
7	2.000	0.2673	24.840	24.840×10^{-3}
8	2.611	0.3491	32.430	32.430×10^{-3}
9	3.305	0.4418	41.040	41.040×10^{-3}
10	4.080	0.5454	50.670	50.670×10^{-3}
11	4.937	0.6600	61.310	61.310×10^{-3}
12	5.875	0.7854	72.960	72.960×10^{-3}
14	8.000	1.0690	99.350	99.350×10^{-3}
16	10.440	1.3960	129.650	129.650×10^{-3}
18	13.220	1.7670	164.180	164.180×10^{-3}
20	16.320	2.1820	202.680	202.680×10^{-3}
22	19.750	2.6400	245.280	245.280×10^{-3}
24	23.500	3.1420	291.850	291.850×10^{-3}
26	27.580	3.6870	342.520	342.520×10^{-3}
28	32.000	4.2760	397.410	397.410×10^{-3}
30	36.720	4.9090	456.020	456.020×10^{-3}
32	41.780	5.5850	518.870	518.870×10^{-3}
34	47.160	6.3050	585.680	585.680×10^{-3}
36	52.880	7.0690	656.720	656.720×10^{-3}

1 Gallon = 3.785 liters
1 Meter = 3.281 feet
1 Gallon water weighs 8.33 lbs. = 3.779 kilograms
1 Liter water weighs 1 kilogram = 2.205 pounds
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{-3} cubic meters per meter of depth

INITIAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 10.6
WELL DEPTH (TD) 21.7
COLOR Dark Brown
ODOR none
CLARITY cloudy (turbidity >1000)

FINAL DEVELOPMENT WATER

WATER LEVEL (TOIC) 10.75
WELL DEPTH (TD) 21.7
COLOR none
ODOR none
CLARITY Clear

DESCRIPTION OF DEVELOPMENT TECHNIQUE Hand Bailed 1st 10 gallons (Removed Sed.) then used bladder pump to complete Dev.

WELL DEVELOPMENT - PARAMETER MEASUREMENTS

mw08

TIME	TOTAL VOL. WITHDRAWN		pH	COND. (µmhos/cm)	TEMP. (°C/°F)	TURB. (NTU)	COMMENTS
	GALS.	BORE VOL.					
1600	0	0	6.16	426.5	6.76	71000	OVA reading 0ppm
1605	5	<1	6.25	428.2	6.31	"	
1610	10	<1	6.38	428.8	6.63	"	· Hand Bailed 1st 10 gallons
1615	13.5	1	6.42	429.6	6.41	"	· Bladder pumped after 10 gallons
1620	17		6.87	423	6.56	"	
1625	21		6.99	424	6.52	"	
1630	25		7.02	386	6.41	"	
1635	29	>2	7.06	398	6.56	"	
1640	32		7.08	392	6.60	1000	
1645	35		7.09	388	6.62	539	
1650	37		7.10	390	6.66	364	
1655	40	≃3	7.19	387	6.60	256	
1700	44		7.21	386	6.57	122	
1705	48		7.27	389	6.51	70	
1710	51		7.29	391	6.56	44	
1715	55	≃4	7.31	399	6.52	31	
1720	59		7.34	401	6.57	21	
1725	62		7.34	404	6.59	17	
1730	64		7.31	401	6.59	13	
1735	66		7.30	403	6.57	12	
1740	70	5.2	7.34	404	6.59	13	

Turbidity checked every 2 min from 1715 to be sure it stayed under 50 NTU's

one well Vol. = 13.5 gallons

DEVELOPED BY: Chris Sansone

DATE 5/8/00

C 2000 SI Well Sampling Logs

Groundwater Sample Log

Project: aoc-4 (SI Addendum)
Site: Former Griffiss Air Force Base
Well No.: MW01 (G009-mw01)
Sample Date: 5/11/2000
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as CaCO3): 160 ÷ 17.1 = 9.35
Ferrous Iron (mg/L): ~~0.03~~ U4 0
Initial Water Level (Feet TOIC): 1.95'
Final Water Level (feet TOIC): 2.2'
Casing Type: PVC

Sample ID: G009-MW01
Sample Time: 1120
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0
Sample Turbidity (NTUs): 1.59
Well Depth (feet TOIC): 11.1
Screen Interval (feet BGS): 4'-9'
Casing Inner Diameter (inches): 2"
Initial OVA Reading (ppm): 0 ppm

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	Comments
1020	7.77	8.78	285.0	3.0	6.45	186.5	2.19'	- Well purged at rate of 1/24
1025	7.70	8.50	284.0	1.86	4.33	186.6	2.19'	per minute
1030	7.76	8.50	284.0	1.94	4.40	186.3	2.18'	- Sampled at rate of 150 ml
1035	7.61	8.39	284.0	2.0	4.35	184.3	2.2'	minute.
1040	7.59	8.65	283.0	1.88	3.99	180.1	2.2'	
1045	7.58	8.67	285.0	1.93	3.63	177.5	2.25'	T.Y. pumped ≅ 12 gallons
1050	7.57	8.70	284.0	1.89	3.81	176.0	2.25'	
1055	7.57	8.61	284.0	1.81	3.96	174.8	2.25	
1100	7.56	8.53	284.0	1.73	9.10	173.5	2.23'	Initial purge of 5 gallons
1105	7.56	8.51	283.0	1.68	3.91	172.2	2.28'	71000 NTU's
1110	7.56	8.74	284.0	1.69	3.69	171.4	2.25'	
1115	7.66	8.69	285.0	1.61	3.42	169.4	2.2'	
1120	7.56	8.61	285.0	1.59	3.39	168.3	2.2'	
								ova end = 0ppm.

Key:

BGS	= Below ground surface.	mg/L	= Milligrams per liter	ppm	= Parts per million.
°C	= Degrees centigrade.	mV	= Millivolts.	PVC	= Polyvinyl chloride.
$CaCO_3$	= Calcium carbonate.	NTU	= Nephelometric turbidity unit.	TOIC	= Top of inner (PVC) casing.
DO	= Dissolved oxygen.	ORP	= Redox potential.		

Groundwater Sample Log

Project: SI Addendum
Site: Former Griffiss Air Force Base AOC -9
Well No.: G009-MW02
Sample Date: 5/11/2000
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as $CaCO_3$): 12.57
Ferrous Iron (mg/L): 0
Initial Water Level (Feet TOIC): 5.41
Final Water Level (feet TOIC): 5.4'
Casing Type: PVC PVC

Sample ID: G009-mw02
Sample Time: 1440
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0
Sample Turbidity (NTUs): 7.15
Well Depth (feet TOIC): ~~5.4'~~ 11.1'
Screen Interval (feet BGS): 4'-9'
Casing Inner Diameter (inches): 2''
Initial OVA Reading (ppm): 0

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	Comments
1340	7.42	9.56	330.0	44.2	11.72	145.4	5.4'	well sampled at
1345	7.39	9.31	342.0	42.1	11.61	145.9	5.4'	rate of 175 ml/minute
1350	7.21	9.27	346.0	41.3	11.90	147.0	5.4'	
1355	7.11	9.14	349.0	39.0	11.80	148.6	5.4'	
1400	6.92	9.09	353.0	39.8	12.80	150.7	5.45'	
1405	6.90	9.53	359.0	15.9	12.61	151.1	5.4'	
1410	6.88	10.18	365.0	11.8	13.71	148.2	5.47	
1415	6.86	10.25	364.0	9.28	13.60	148.1	5.4'	
1420	6.87	10.21	364.0	8.29	13.47	147.4	5.42	
1425	6.87	9.95	364.0	8.63	13.69	146.9	5.4	
1430	6.86	10.19	364.0	8.19	13.52	145.7	5.45	
1435	6.86	10.0	365.0	7.76	13.41	145.1	5.47	
1440	6.86	10.11	364.0	7.15	13.58	144.8	5.4	

Key:
BGS = Below ground surface.
°C = Degrees centigrade.
$CaCO_3$ = Calcium carbonate.
DO = Dissolved oxygen.
mg/L = Milligrams per liter
mV = Millivolts.
NTU = Nephelometric turbidity unit.
ORP = Redox potential.
ppm = Parts per million.
PVC = Polyvinyl chloride.
TOIC = Top of inner (PVC) casing.

Groundwater Sample Log

Project: 5I Addendum
Site: Former Griffiss Air Force Base AOC9
Well No.: G009-MW03
Sample Date: 5/11/2000
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as $CaCO_3$): 12.28
Ferrous Iron (mg/L): 0.03
Initial Water Level (Feet TOIC): 1.35
Final Water Level (feet TOIC): 1.50
Casing Type: PVC PVC

Sample ID: G009-mw03
Sample Time: 1310
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0
Sample Turbidity (NTUs): 18.8
Well Depth (feet TOIC): 11.1'
Screen Interval (feet BGS): 4-9'
Casing Inner Diameter (inches): 2in
Initial OVA Reading (ppm): 0

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	Comments
1200	7.38	8.51	354.0	125	3.03	168.9	1.35	
1205	7.31	8.48	353.0	95.7	3.41	168.0	1.39	
1210	7.29	8.42	353.0	71.8	2.95	166.8	1.4	
1215	7.23	8.38	352.0	65.6	2.71	166.2	1.4	
1220	7.25	8.36	352.0	33.4	2.20	165.1	1.4	
1225	7.23	8.16	352.0	27.3	1.53	165.0	1.5	
1230	7.23	8.69	353.0	29.1	1.44	164.9	1.5	
1235	7.23	8.59	354.0	25.1	1.44	161.5	1.58	
1240	7.21	8.63	354.0	24.1	1.39	160.7	1.5	
1245	7.21	8.61	355.0	23.9	1.39	160.7	1.5	
1250	7.20	8.75	355.0	21.7	1.40	159.2	1.52	
1255	7.20	8.67	355.0	19.9	1.39	158.9	1.55	Well pumped at 1/2L/min
1300	7.19	8.72	355.0	19.2	1.38	158.9	1.5	sampled at rate of 200 ml/min
1305	7.19	8.81	356.0	19.0	1.38	158.7	1.55	
1310	7.20	8.80	355.0	18.8	1.38	158.7	1.5	

Key:

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DO = Dissolved oxygen.
mg/L = Milligrams per liter
mV = Millivolts.
NTU = Nephelometric turbidity unit.
ORP = Redox potential.
ppm = Parts per million.
PVC = Polyvinyl chloride.
TOIC = Top of inner (PVC) casing.

Groundwater Sample Log

Project: ~~AOC-9~~ SI Addendum
Site: Former Griffiss Air Force Base AOC9
Well No.: ~~MW04~~ G009-MW04
Sample Date: 5/11/2000
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as $CaCO_3$): 155 ÷ 17.1 = 9.06
Ferrous Iron (mg/L): 0
Initial Water Level (Feet TOIC): 8.15'
Final Water Level (feet TOIC): 8.35'
Casing Type: PVC

Sample ID: G009-~~AOC9~~-MW04
Sample Time: 0935
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0
Sample Turbidity (NTUs): 9.48
Well Depth (feet TOIC): 18.8'
Screen Interval (feet BGS): 6.7' - 16.7'
Casing Inner Diameter (inches): 2"
Initial OVA Reading (ppm): 0 ppm.

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	Comments
0835	7.25	8.12	319.0	80.1	7.14	222.5	8.45'	- Well pumped at rate of 1/2 L/min.
0840	7.24	8.15	319.0	54.2	7.24	222.3	8.45'	- Sample taken at rate of 175 ml
0845	7.22	7.92	319.0	52.4	6.60	220.9	8.48'	per minute.
0850	7.19	8.08	319.0	37.5	5.25	215.1	8.45'	
0855	7.19	8.19	319.0	29.6	5.16	213.4	8.35'	
0900	7.19	8.14	319.0	25.8	4.77	210.8	8.35'	
0905	7.2 ~~7.44~~	7.88	320.0	14.8	4.53	209.5	8.35'	
0910	7.21	7.77	321.0	14.8	4.37	208.1	8.35'	
0915	7.22	7.79	320.0	12.9	4.32	206.7	8.35'	Tot pumped = 16.75 gal.
0920	7.23	7.87	322.0	11.5	4.34	202.4	8.37'	
0925	7.23	8.0	321.0	10.4	4.31	201.8	8.35'	
0930	7.24	8.13	321.0	9.83	4.29	200.5	8.35'	
0935	7.24	8.11	321.0	9.48	4.18	199.1	8.35'	Initial purge of 5 gallons to start
~~0940~~								getting H_2O Clear!
~~0945~~								

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ORP = Redox potential.
ppm = Parts per million.
PVC = Polyvinyl chloride.
TOIC = Top of inner (PVC) casing.

Groundwater Sample Log

Project: SI Addendum
Site: Former Griffiss Air Force Base
Well No.: ~~[illegible]~~ cs AOC9-MW05
Sample Date: 5/9/2000
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as $CaCO_3$): 10.8 mg/L
Ferrous Iron (mg/L): 0.35 mg/L
Initial Water Level (Feet TOIC): 6.85'
Final Water Level (feet TOIC): 6.9'
Casing Type: PVC PVC

Sample ID: AOC9-mw05
Sample Time: 1255
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0 mg/L
Sample Turbidity (NTUs): 22.6
Well Depth (feet TOIC): 15.45
Screen Interval (feet BGS): 4-14'
Casing Inner Diameter (inches): 6
Initial OVA Reading (ppm): 0

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	DO %	Comments
1135	7.15	7.80	181	>1000	6.57	-158.1	6.85	64.2	
1140	7.14	7.89	180	>1000	6.43	-156.9	6.93	63.8	
1145	7.13	7.93	179	>1000	6.58	-154.6	6.93	64.9	
1150	7.11	8.24	179	880	5.62	-53.2	6.97	57.2	
1155	7.10	8.35	178	546	4.45	-54.5	6.91	49.1	
1200	7.09	8.37	177	210	3.91	-53.1	6.88	42.2	
1205	7.09	8.69	177	175	3.30	-49.7	6.97	35.2	
1210	7.08	8.80	177	107	2.95	-42.6	6.96	25.9	
1215	7.08	8.95	176	63	2.21	-41.9	6.96	21.0	
1225	7.08	9.03	176	55	2.10	-42.5	6.94	17.6	
1230	7.06	9.07	175	25.0	1.96	-41.1	6.93	9.8	
1235	7.06	9.11	175	23.2	1.98	-40.3	6.91	10.1	
1245	7.06	9.13	175	22.9	1.97	-39.7	6.90	10.0	
1250	7.06	9.14	175	22.8	1.98	-39.3	6.90	9.9	
1255	7.06	9.14	175	22.6	1.97	-39.1	6.91	10.2	Begin Sampling

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NTU = Nephelometric turbidity unit.
ORP = Redox potential.
ppm = Parts per million.
PVC = Polyvinyl chloride.
TOIC = Top of inner (PVC) casing.

Groundwater Sample Log

Project: SI Addendum

Site: Former Griffiss Air Force Base

Well No.: AOC9-MW06

Sample Date: 5/8/00

Sampling Device: QED T1200 bladder pump

Alkalinity (mg/L as $CaCO_3$): 130

Ferrous Iron (mg/L): 0.02

Initial Water Level (Feet TOIC): 8.42

Final Water Level (feet TOIC): 8.22

Casing Type: PVC

Sample ID: AOC9-MW06 & AOC9-MW06-F

Sample Time: 1659-1703

Sample Tubing: QED teflon-lined polyethylene

Phenolphthalein Alkalinity (mg/L): 0

Sample Turbidity (NTUs): 14.4

Well Depth (feet TOIC): 15.32

Screen Interval (feet BGS): 4.2-14.2

Casing Inner Diameter (inches): 2

Initial OVA Reading (ppm): 0

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	Comments
1451	7.61	10.54	183	>1000	0.64	238.6	8.32	Flow rate 375ml/min Light Brown Color
1456	7.33	10.10	179	1000	4.35	238.3	8.34	Light brown color same rate
1501	7.30	10.16	177	70.8	4.13	246.7	8.31	Flow rate 400 ml/min ≃1 gallon
1506	7.33	10.07	176	399	4.24	247.6	8.33	Light-brown color same rate
1511	7.32	9.86	174	248	4.30	241.5	8.32	Flow rate 375 light color ≃ 2 gals
1516	7.33	9.77	174	130	4.44	242.3	8.32	-"- -"- -"- almost clear
1521	7.32	9.83	173	67.7	~~243.3~~ 4.51	243.8	8.33	Flow rate 350 ↓ <3 gals
1526	7.32	9.87	173	68.9	4.52	240.2	8.34	-"- -"- 350 ↓
1531	7.32	10.09	173	38.2	4.54	243.2	8.36	Flow rate 350 clear <4 gals
1536	7.34	9.70	173	35.2	4.54	236.4	8.34	-"- -"- -"-
1541	7.32	9.62	172	25.1	4.56	245.1	8.32	-"- -"- -"- < 5 gals
1546	7.29	9.64	172	25.5	4.57	239.1	8.35	-"- -"- -"-
1551	7.35	9.68	171	18.0	4.59	237.2	8.31	Flow rate: 350ml/min 5.5 gals
1556	7.32	9.53	171	14.2	4.66	244.7	8.36	Flow: 350 ml/min
1601	7.33	9.52	171	13.5	4.65	244.8	8.37	Flow: 350 ml/min ≃ 6.5 gals
1606	7.31	9.55	171	14.4	4.67	238.1	8.31	Flow: 350 ml/min
1703				14.0			8.30	Collected sample at a flow
								rate of 200ml/min.

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mV = Millivolts.
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ppm = Parts per million.
PVC = Polyvinyl chloride.
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Groundwater Sample Log

5I Addendum

Project: 00100LUR03.05.00.70
Site: Former Griffiss Air Force Base
Well No.: AOC9-MW07
Sample Date: 5/10/00
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as $CaCO_3$): 10.62
Ferrous Iron (mg/L): 0.35
Initial Water Level (Feet TOIC): 3.55
Final Water Level (feet TOIC): 3.80
Casing Type: PVC

Sample ID: AOC9-MW07 & AOC9-MW07-D
Sample Time: 0939
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0
Sample Turbidity (NTUs): 21.9
Well Depth (feet TOIC): 10.2
Screen Interval (feet BGS): 4.2-9.2
Casing Inner Diameter (inches): 2
Initial OVA Reading (ppm): 0

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	Comments
842	7.42	9.70	336.0	>1000	4.53	100.1	3.55	400ml/min Brown
847	7.22	8.42	317.0	575	1.01	46.4	3.85	300ml/min Brown
852	8.48	8.43	315.0	90.7	0.90	-14.5	3.70	250mL/min (1gal) light br color
857	~~11.01~~ 7.34	11.01	317.0	60.1	1.61	-21.7	3.67	almost clear
902	7.34	10.73	318.0	61.8	1.50	-29.3	3.77	
907	7.34	10.40	317.0	62.9	1.35	-34.6	3.68	275 mL/min
912	7.34	10.40	317.0	68.4	1.19	-36.8	3.75	275ml/min (2gals)
917	7.36	10.44	317.0	46.4	0.99	-38.9	3.70	270ml/min clear
922	7.35	10.19	317.0	33.4	1.38	-37.7	3.72	270ml/min
927	7.34	10.23	316.0	23.4	1.40	-36.8	3.72	270ml/min (>3gals)
932	7.34	9.85	316.0	23.8	1.35	-36.7	3.78	270ml/min
937	7.34	9.86	315.0	21.9	1.39	-36.9	3.71	270ml/min
939				21.9			3.80	Reduce flow to 200ml/min and sample

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mV = Millivolts.
NTU = Nephelometric turbidity unit.
ORP = Redox potential.

ppm = Parts per million.
PVC = Polyvinyl chloride.
TOIC = Top of inner (PVC) casing.

Groundwater Sample Log

Project: ~~LF6/B775 GW Study~~ SI Addendum GAFB WAD3
Site: Former Griffiss Air Force Base
Well No.: AOC9-MW8
Sample Date: 5-25-00
Sampling Device: QED T1200 bladder pump
Alkalinity (mg/L as $CaCO_3$): 225 mg/L
Ferrous Iron (mg/L): 1.61
Initial Water Level (Feet TOIC): 9.48
Final Water Level (feet TOIC): 9.48
Casing Type: PVC PVC

Sample ID: AOC9-MW08
Sample Time: 8:35
Sample Tubing: QED teflon-lined polyethylene
Phenolphthalein Alkalinity (mg/L): 0 mg/L
Sample Turbidity (NTUs): 48
Well Depth (feet TOIC): 20
Screen Interval (feet BGS): 15.4-20.4
Casing Inner Diameter (inches): 2 inches
Initial OVA Reading (ppm): 0

Time	pH	Temperature (°C)	Conductivity (µs/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Water Level (ft TOIC)	DO (%)	Comments	Flow Rate (mL/min)
8:05	7.65	11.21	390.00	100	5.92	5.1	9.48	50.9	Water is	100
8:10	7.38	11.68	386.00	100	3.20	-85.4	9.48	29.4	initially	
8:15	7.33	11.92	387.00	68	2.98	-95.5	9.48	27.5	Clear,	
8:20	7.31	12.05	385.00	56	2.49	-97.9	9.48	23.1	waiting	
8:25	7.30	12.03	385.00	44	2.46	-99.4	9.48	22.8	for parameters	
8:30	7.27	11.98	385.00	43	2.47	-101.1	9.48	22.8	to stabilize	
8:35	7.27	11.95	385.00	48	2.42	-101.6	9.48	22.3	Begin	
									sampling	

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D 2000 SI and 2002 SI Survey Data

TEST LOCATIONS AND ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME, NY

PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC
PREPARED BY; LAFAVE WHITE AND MCGIVERN LS PC
DATED MAY 19, 2000

T NO	NORTHING	EASTING	ELEV	DESCRIPTION
101	1171273.83	1134355.52		BS-A
102	1170948.96	1134734.88		BS-B
103	1171024.85	1134800.02		BS-C
104	1171350.48	1134420.59		BS-D
1815	1183465.43	1135764.78		EOD-B
1816	1183461.59	1135864.71		EOD-C
1820	1183565.18	1135768.44		EOD-A
1821	1183561.52	1135868.37		EOD-D
2034	1179193.9	1126835.09	470.38	PC120NS04
2035	1179180.77	1126831.71	469.25	PC120NS03
2036	1179172.45	1126844.41	472.36	PC120NS05
2037	1179156.43	1126829.1	468.36	PC120NS02
2038	1179140.43	1126839.09	471.6	PC120NS02
2039	1177297.75	1133290.94	472.71	G469NS01
2040	1177326.18	1133286.79	472.6	G469NS02
2041	1177334.31	1133300.73	472.88	G469NS03
2042	1177323.51	1133312.6	472.67	G469NS04
2043	1177332.03	1133325.13	472.67	G469NS05
2044	1177325.75	1133337.59	472.73	G469NS06
2045	1177332.57	1133349	472.48	G469NS07
2046	1177324.95	1133362.29	472.86	G469NS08
2047	1177335.14	1133374.54	472.44	G469NS09
2048	1177325.82	1133389.2	472.49	G469NS10
2049	1177334.3	1133402.12	472.14	G469NS11
2050	1177326.89	1133412.71	471.88	G469NS12
2051	1177330.11	1133428.27	471.82	G469NS13
2052	1177313.53	1133425.33	471.94	G469NS15
2053	1177313.79	1133396.72	471.5	G469NS14
2054	1177302.37	1133393.83	471.82	G469NS16
2055	1177276.11	1133395.95	472.25	G469NS19
2056	1177301.14	1133413.02	471.64	G469NS17
2057	1177289.41	1133423.36	471.31	G469NS18
2058	1177275.67	1133424.11	471.47	G469NS20
2059	1177248.9	1133412.97	472.12	G469NS22
2060	1177232.49	1133394.87	472.69	G469NS21B
2061	1181725.83	1137224.89	577.62	SWGRIDCORN
2062	1181711.42	1137384.2	567.56	SEGRID CORN
2063	1181703.11	1137368.38	569.56	WIRE FL
2064	1181915.61	1137346.41	561.27	FENCE FORN
2065	1181932.36	1137370.11	556.99	NE GRID CORN
2066	1181888.95	1137344.68	BASE 563.03/ RISER 564.63	MWSS03
2067	1181878.88	1137347.45	563.03	NS05
2068	1181884.64	1137325.06	563.31	NS06
2069	1181855.77	1137320.85	564.92	NS02
2070	1181848.25	1137324.83	564.99	NS01
2071	1181896.46	1137298.57	BASE 564.77 / RIASER 566.47	MWSS02

TEST LOCATIONS AND ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME, NY

PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC
PREPARED BY; LAFAVE WHITE AND MCGIVERN LS PC
DATED MAY 19, 2000

2072	1181911.25	1137296.56	564.37	NS03
2073	1181924.72	1137220.98	568.87	NWGRIDCORN
2074	1181900.47	1137191.87	572.81	WIRE FL
2075	1181798.18	1137282.57	ASE 570.81 / RISERPVC 572.91	MWSS01
2076	1171099.81	1134668.63	465.04	G007SS08
2077	1171106.41	1134742.15	BASE 462.08 / RISER 463.54	G007MW03
2078	1171010.98	1134719.19	464.94	G007SS09
2079	1171131.82	1134562.02	467.19	G007SS07
2080	1171226.45	1134597.04	BASE 465.82 / RISER 467.45	G007MW02
2081	1171233.31	1134517.58	469.34	G007SS06
2082	1171258.88	1134405.74	470.32	G007SS05
2083	1171096.38	1134320.36	BASE 471.41 / RISER 472.83	G007MW01
2084	1183485.43	1136112.9	545.97	EOD2SW03
2085	1183557.32	1135968.38	547.1	EOD2SS05
2087	1183559.36	1135918.64	546.92	EOD2SS04
2088	1183563.28	1135818.11	548.4	EOD2SS02
2089	1183567.2	1135718.59	547.87	EOD2SS01
2090	1183516.79	1135719.48	545.9	EOD2SS10
2091	1183435.93	1135574.52	548.67	EOD2SS21
2093	1183415.51	1135763.51	543.54	EOD2SS23
2094	1183525.87	1135770.55	547.47	EOD2SS07
2095	1183542.72	1135748.38	547.7	EOD2SS06
2097	1183513.52	1135782.22	546.86	EOD2SS11
2098	1183462.78	1135814.97	547.21	EOD2SS18
2099	1183512.44	1135816.72	547.89	EOD2SS12
2100	1183538.59	1135857.6	547.26	EOD2SS08
2101	1183537.67	1135886.61	546.56	EOD2SS09
2102	1183561.61	1135868.49	547.26	EOD2SS03
2103	1183504.26	1135904.5	546.01	EOD2SS14
2104	1183507.39	1135868.56	547.02	EOD2SS13
2105	1183487.79	1135854.8	546.75	EOD2SS15
2106	1183461.7	1135865.23	546.14	EOD2SS19
2107	1183477.73	1135908.98	545.6	EOD2SS16
2108	1183459.95	1135914.8	545.77	EOD2SS20
2109	1183410.76	1135863.48	544.42	EOD2SS24
2110	1183464.61	1135765.06	546.55	EOD2SS17
2111	1183432.63	1135595.45	548.07	EOD2SS22
2112	1183258.78	1135653.73	539.83	EOD2SW01
2113	1183244.3	1135865.72	539.77	EOD2SW2
2114	1183250.59	1136002.25	541.48	EOD2SW4
2115	1180198.23	1135971	BASE 520.37 / RISER 521.88	WSAMW8
2116	1180025.65	1135981.39	520.27	WSAGP01
2117	1179929.78	1135978.78	518.91	WSAGP14
2118	1179835.29	1135976.75	514.59	WSAGP15
2119	1179981.33	1135879.57	516.09	WSAGP03
2120	1180171.7	1136156.86	526.91	WSAGP36
2121	1180364.36	1136013	530.57	WSAGP34
2122	1180089.72	1135873.6	517.78	WSAGP02

TEST LOCATIONS AND ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME; NY
PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC
PREPARED BY; LAFAVE WHITE AND MCGIVERN LS PC
DATED MAY 19, 2000

2123	1180034.61	1135778.8	513.95	WSAGP28
2124	1180082.55	1135693.01	514.57	WSAGP29
2125	1179878.66	1135878.18	511.57	WSAGP05
2126	1179943.53	1135785.51	512.48	WSAGP04
2127	1180078.07	1135484.56	508.88	WSAGP13
2128	1180041.57	1135581.91	511.24	WSAGP ?
2129	1179935.3	1135575.79	506.72	WSAGP30
2130	1179883.76	1135569.32	505.76	LAWMW9
2131	1179836.88	1135567.41	506.35	WSA GP ?
2132	1179786.62	1135654.8	509.36	WSAGP09
2133	1179894.16	1135661.78	509.69	WSAGP31
2134	1179834.58	1135778.75	512.85	WSAGP10
2135	1179778.61	1135875.49	514.54	WSAGP24
2136	1179721.47	1135974.38	509.62	WSAGP16
2137	1179680.82	1135874.95	517.97	WSAGP23
2138	1179591.97	1135860.54	516.55	WSAGP ?
2139	1179604.58	1135811.51	517.97	WSAGP32
2140	1179686.29	1135641.15	509.36	WSAGP08
2141	1179733.39	1135563.86	507.73	WSAGP27
2142	1179586.32	1135631.05	507.3	WSAGP26
2143	1179487.2	1135564.4	495.93	WSAGP33
2144	1179587.23	1135449.35	495.04	WSAGP06
2145	1179628.21	1135554.25	504.51	WSAGP07
2146	1179701.88	1135433.99	502.28	WSAGP11
2147	1179887.49	1135470.72	505.87	WSAGP12
2148	1179815.05	1135368.13	501.29	WSAGP20
2149	1180006.18	1135378.56	503.69	WSAGP19
2150	1179533.27	1135085.25	477.79	WSAGP21
2151	1179372.07	1135287.37	477.68	WSAGP22
2152	1179250.33	1135309.9	479.56	WSAGP25
2153	1179245.51	1135314	BASE 479.76 / RISER 481.07	WSAMW10
2154	1179454.19	1135370.27	481.17	WSA GP17DRY
2155	1179466.5	1135390.14	482.52	WSAGP17
2156	1179468.66	1135387.24	BASE 482.60 / RISER 484.19	WSAMW9
2157	1180237.19	1136095.14	530.43	WSAGP35
2158	1181870.57	1137307.46	564.84	OTH5485NS04
~~2159~~	~~1181238.52~~	~~1134469.46~~	~~520.65~~	[illegible]
~~2160~~	~~[illegible]1259.05~~	~~1134488.66~~	~~523.17~~	~~AOC9T[illegible]A~~
~~2161~~	~~1181158.[illegible]~~	~~1134747.87~~	~~531.55~~	~~AOC9DTP06A~~
~~2162~~	~~1181159.52~~	~~[illegible]4800.19~~	~~536.[illegible]~~	~~AOC9DTP06A~~
~~2163~~	~~1181530.47~~	~~113440[illegible]~~	~~530.25~~	~~AOC9GP41~~
~~2164~~	~~1181686.65~~	~~1134231.5[illegible]~~	~~526.74~~	~~AOC9GP39~~
~~2165~~	~~1181523.71~~	~~11[illegible]206.77~~	~~514.[illegible]~~	~~AOC9TP05B~~
~~2166~~	~~1181532.74~~	~~1134226.55~~	~~521.82~~	~~AOC9TP05A~~
~~2167~~	~~11817[illegible].67~~	~~1133925.22~~	~~507.64~~	~~[illegible]C9SW18~~
~~2168~~	~~1181753.9~~	~~1133930.38~~	~~508.45~~	~~AOC9[illegible]19~~
~~2169~~	~~1181930.53~~	~~1134136.12~~	~~536.33~~	~~AOC9GP36~~
~~2170~~	~~1181987.14~~	~~1134111.52~~	~~533.47~~	~~AOC9SW20~~

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TEST LOCATIONS AND ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME, NY
PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC
PREPARED BY; LAFAVE WHITE AND MCGIVERN LS PC
DATED MAY 19, 2000

2171	1182157.33	1133972.6	539.79	AOC9GP38
2172	1182117.92	1133780.87	535.48	AOC9GP32
2173	1181949.5	1133727.84	526.11	AOC9GP33
2174	1181949.51	1133754.46	526.98	AOCDTP01A
2175	1181949.61	1133789.68	527.19	AOC9DTP01B
2176	1181830.99	1133888.39	BASE 514.28 / RISER 515.54	AOC9MW08/GP28
2177	1181624.16	1133958.46	523.79	AOC9DTP02B
2178	1181569.44	1134012.01	523.97	AOC9DTP02A
2179	1181008.85	1134473.41	521.93	AOC9DTP05B
2180	1181116.27	1134415.69	522.71	AOC9DTP05A
2181	1181173.89	1134125.04	514.65	AOCDTP04A
2182	1181162.1	1134075.87	510.63	AOCDTP04B
2183	1181398.98	1134080.02	521.4	AOCTP04B
2184	1181381.14	1134060.53	519.44	AOC9TP04A
2185	1181398.31	1133993.21	516.99	AOC9DTP03A
2186	1181389.48	1133945.41	514.77	AOC9DTP03B
2187	1181753.72	1134030.54	530.19	AOC9SW16
2188	1181651.88	1134079.31	532.85	AOCGP34
2189	1181862.77	1134045.72	534.33	AOCGP29
2190	1182000.93	1133903.49	524.43	AOCGP30
2191	1181678.27	1133867.38	516.91	AOC9SW15
2192	1181723.32	1133813.4	517.85	AOC9GP27
2193	1181739.19	1133722.72	513.42	AOC9TP03A
2194	1181750.36	1133745.79	513.36	AOCTP03B
2195	1181739.96	1133746.28	513.54	AOC9HYD-1
2196	1181729.92	1133752.28	513.1	AOC9SW14
2197	1181688.64	1133672.54	509.62	AOC9SW17
2198	1181691.55	1133636.75	510.46	AOC9GP12
2199	1181616.4	1133571.58	505.8	AOC9GP16
2200	1181588.61	1133417.27	502.62	AOC9GP23
2201	1181686.49	1133478.36	503.82	AOC9GP24
2202	1181399.71	1133562.06	498.35	AOC9GP06
2203	1181413.79	1133599.95	498.33	AOC9SW13
2204	1181337.38	1133661.04	498.85	AOC9GP19
2205	1181229.26	1133725.86	494.38	AOC9SWSD11
2206	1181040.2	1133886.95	493.51	AOC9SWSD12
2207	1181343.04	1133729.8	499.5	AOC9GP20
2208	1181407.65	1133655.07	500.52	AOC9GP04
2209	1181483.94	1133721.6	507.54	AOC9GP02
2210	1181419.15	1133796.56	505.2	AOC9GP21
2211	1181453.01	1133861.14	514.1	AOC9GP22
2212	1181493.82	1133801.76	511.14	AOC9TP01B
2213	1181517.91	1133767.73	511.08	AOC9TP01A
2214	1181560.95	1133785.78	512.53	AOC9GP01
2215	1181636.02	1133722.76	514.93	AOC9TP02A
2216	1181643.3	1133704.34	511.21	AOC9TP02B
2217	1181615.3	1133700.35	510.22	AOC9GP11
2218	1181035.53	1133815.84	497.97	AOC9GP25/MW6

TEST LOCATIONS AND ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME, NY
PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC
PREPARED BY; LAFAVE WHITE AND MCGIVERN LS PC
DATED MAY 19, 2000

~~2219~~	~~1181235.58~~	~~1133635.64~~	~~498.29~~	~~AOC9GP17~~
~~2220~~	~~1181235.36~~	~~1133566.85~~	~~498.18~~	~~AOC9GP08~~
~~2221~~	~~1181572.13~~	~~1133232.21~~	~~503.66~~	~~AOC9GP26~~
~~2222~~	[illegible]	~~1133422.85~~	~~501.3~~	~~AOC9GP18~~
~~2223~~	~~1181373.97~~	~~1133423.87~~	[illegible]	~~AOC9GP07~~
~~2224~~	~~1180955.61~~	~~1133596.18~~	~~496.8~~	~~AOCGP31~~
~~2225~~	~~1181123.49~~	[illegible]	~~493.2~~	~~AOC9GP10~~
~~2226~~	~~1181171.85~~	~~1133372.26~~	~~498.11~~	~~AOC9GP9/MW5~~
~~2227~~	~~1181334.42~~	[illegible]	~~494.59~~	~~AOC9GP13~~
~~2228~~	~~1181637.29~~	~~1133354.54~~	~~496.47~~	~~AOC9SW5SD09~~
~~2229~~	~~1181535.44~~	~~1133501.53~~	[illegible]	~~AOC9GP15~~
~~2230~~	[illegible]	~~1133458.31~~	~~500.88~~	~~AOC9HYD-2~~
~~2231~~	[illegible]	~~1133481.04~~	~~495.85~~	~~AOC9SWSD10~~
~~2232~~	~~1181463.77~~	~~1133507.16~~	~~499.39~~	~~AOC9GP14~~
~~2233~~	~~1181437.34~~	~~1133545.46~~	~~498.52~~	~~AOC9MW07~~
~~2234~~	~~1181469.95~~	~~1133577.36~~	~~500.5~~	~~AOC9GP05~~
~~2236~~	~~1181549.72~~	~~1133645.72~~	~~506.8~~	~~AOC9GP03~~
2237	1182302.61	1134393.32	523.65	AOC9GP35
2238	1182260.05	1134064.62	525.73	AOC9GP42
2239	1181818.44	1134318.05	522.52	AOC9GP37
2240	1181935.38	1134427.64	526.78	AOC9GP43
2241	1182108.11	1134303.9	522.65	AOC9GP40
2260	1175743.32	1130649.17	471.92	G102NS07
2261	1175722.47	1130628.74	471.53	G102NS08
2262	1175774.21	1130622.39	472.02	G102NS09
2263	1175802.46	1130654.78	471.96	G102NS10
2264	1175774.45	1130660.3	471.83	G102NS05
2265	1175743.47	1130681.96	471.47	G102NS06
2269	1183808	1132037.83	498.74	G431-NS01

TEST LOCATIONS NAD ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME, NY
PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC.
PREPARED BY: LAFAVE WHITE MCGIVERN LS PC
DATED MAY 19, 2000 REVISED AUGUST 29, 2000(ELEV. PTS 2159-2236)

PT#	NORTHING	EASTING	ELEVATION	DESCRIPTION
12159	1181238.52	1134469.46	515.5	AOC9-TP06B
12160	1181259.05	1134488.66	518.02	AOC9-TP06A
12161	1181158.86	1134747.87	526.4	AOC9-DTP06A
12162	1181159.52	1134800.19	531.7	AOC9-DTP06A
12163	1181530.47	1134401.74	525.1	AOC9-GP41
12164	1181686.65	1134231.56	521.59	AOC9-GP39
12165	1181523.71	1134206.77	509.42	AOC9-TP05B
12166	1181532.74	1134226.55	516.67	AOC9-TP05A
12167	1181749.67	1133925.22	502.49	AOC9-SW18
12168	1181753.9	1133930.38	503.3	AOC9-SW19
12169	1181930.53	1134136.12	520.52	AOC9-GP36
12170	1181987.14	1134111.52	517.67	AOC9-SW20
12171	1182157.33	1133972.6	523.98	AOC9-GP38
12172	1182117.92	1133780.87	519.68	AOC9-GP32
12173	1181949.5	1133727.84	510.3	AOC9-GP33
12174	1181949.51	1133754.46	511.17	AOC9-DTP01A
12175	1181949.61	1133789.68	511.39	AOC9-DTP01B
12176	1181830.99	1133888.39	513.91	AOC9-MW08-GP28
12177	1181624.16	1133958.46	507.99	AOC9-DTP02B
12178	1181569.44	1134012.01	508.16	AOC9-DTP02A
12179	1181008.85	1134473.41	506.12	AOC9-DTP05B
12180	1181116.27	1134415.69	506.9	AOC9-DTP05A
12181	1181173.89	1134125.04	498.84	AOC9-DTP04A
12182	1181162.1	1134075.87	494.83	AOC9-DTP04B
12183	1181398.98	1134080.02	505.6	AOC9-TP04B
12184	1181381.14	1134060.53	503.64	AOC9-TP04A
12185	1181398.31	1133993.21	501.19	AOC9-DTP03A
12186	1181389.48	1133945.41	498.97	AOC9-DTP03B
12187	1181753.72	1134030.54	514.39	AOC9-SW16
12188	1181651.88	1134079.31	517.04	AOC9-GP34
12189	1181862.77	1134045.72	518.52	AOC9-GP29
12190	1182000.93	1133903.49	518.63	AOC9-GP30
12191	1181678.27	1133867.38	501.11	AOC9-SW15
12192	1181723.32	1133813.4	502.05	AOC9-GP27
12193	1181739.19	1133722.72	497.61	AOC9-TP03A
12194	1181750.36	1133745.79	497.55	AOC9-TP03B
12195	1181739.96	1133746.28	497.74	AOC9-YHD-1
12196	1181729.92	1133752.28	497.29	AOC9-SW14
12197	1181688.64	1133672.54	493.81	AOC9-SW17
12198	1181691.55	1133636.75	494.66	AOC9-GP12
12199	1181616.4	1133571.58	490	AOC9-GP16
12200	1181588.61	1133417.27	486.82	AOC9-GP23
12201	1181686.49	1133478.36	488.02	AOC9-GP24
12202	1181399.71	1133582.06	482.54	AOC9-GP06
12203	1181413.79	1133599.95	482.52	AOC9-SW13
12204	1181337.38	1133661.04	483.04	AOC9-GP19
12205	1181229.26	1133725.86	478.58	AOC9-SWSD11
12206	1181040.2	1133886.95	477.71	AOC9-SWSD12

TEST LOCATIONS NAD ELEVATIONS
GRIFFISS AIR FORCE BASE, ROME, NY
PREPARED FOR ECOLOGY AND ENVIRONMENTAL, INC.
PREPARED BY: LAFAVE WHITE MCGIVERN LS PC
DATED MAY 19, 2000 REVISED AUGUST 29, 2000(ELEV. PTS 2159-2236)

12207	1181343.04	1133729.8	483.7	AOC9-GP20
12208	1181407.65	1133655.07	484.71	AOC9-GP04
12209	1181483.94	1133721.6	491.74	AOC9-GP02
12210	1181419.15	1133796.56	489.39	AOC9-GP21
12211	1181493.01	1133861.14	498.29	AOC9-GP22
12212	1181493.82	1133801.76	495.33	AOC9-TP01B
12213	1181517.91	1133767.73	495.28	AOC9-TP01A
12214	1181560.95	1133785.78	496.73	AOC9-GP01
12215	1181636.02	1133722.76	499.12	AOC9-TP02A
12216	1181643.3	1133704.34	495.4	AOC9-TP02B
12217	1181615.3	1133700.35	494.41	AOC9-GP11
12218	1181035.53	1133815.84	482.17	AOC9-GP25-MW6
12219	1181235.58	1133635.64	482.49	AOC9-GP17
12220	1181235.36	1133566.85	482.38	AOC9-GP08
12221	1181572.13	1133232.21	487.85	AOC9-GP26
12222	1181444.08	1133422.85	485.49	AOC9-GP18
12223	1181373.97	1133423.87	484.1	AOC9-GP07
12224	1180955.61	1133596.18	481	AOC9-GP31
12225	1181123.49	1133537.99	477.39	AOC9-GP10
12226	1181171.85	1133372.26	482.3	AOC9-GP9-MW5
12227	1181334.42	1133310.3	478.78	AOC9-GP13
12228	1181637.29	1133354.54	480.66	AOC9-SWSD09
12229	1181535.44	1133501.53	486.93	AOC9-GP15
12230	1181520.49	1133458.31	485.07	AOC9-HYD-2
12231	1181467.93	1133481.04	480.04	AOC9-SWSD10
12232	1181463.77	1133507.16	483.58	AOC9-GP14
12233	1181437.34	1133545.46	482.72	AOC9-MW07
12234	1181469.95	1133577.36	484.7	AOC9-GP05
12236	1181549.72	1133645.72	490.99	AOC9-GP03

TEST LOCATIONS AT GRIFFISS AIR FORCE BASE, ROME, NY
PREPARED FOR ECOLOGY ENVIRONMENTAL INC.
PREPARED BY LAFAVE WHITE MCGIVERN LS PC
DATED AUGUST 14, 2002

PT NO	NORTH	EAST	ELEV	DESCRIPTION
2500	1181809.79	1133864.99	510.49	AOC9-GP47
2501	1181852.70	1133867.75	513.29	AOC9-GP48
2502	1181810.06	1133909.18	515.07	AOC9-GP44
2503	1181786.24	1133934.72	516.26	AOC9-GP49
2504	1181720.70	1134032.56	517.84	AOC9-SS01
2505	1181818.25	1133954.60	516.22	AOC9-GP50
2506	1181825.30	1133923.06	515.09	AOC9-SS02
2507	1181850.40	1133909.72	513.83	AOC9-GP46
2508	1181870.07	1133932.82	514.32	AOC9-GP45
2509	1181889.52	1133956.42	515.14	AOC9-GP51
2510	1181918.88	1133987.17	518.56	AOC9-GP52
2511	1181502.58	1133776.21	495.56	AOC9-GWTP01
2512	1181722.98	1133740.37	497.49	AOC9-GWTP03
2513	1182048.83	1134060.02	523.11	AOC9-GP57
2514	1182006.75	1134120.89	523.82	AOC9-GP56
2515	1181984.79	1134014.93	520.11	AOC9-GP53
2516	1182022.61	1133972.77	521.21	AOC9-GP54
2517	1182052.28	1133939.86	521.79	AOC9-GP55
2518	1181260.24	1134471.99	517.88	AOC9-GWTP06
2519	1181380.29	1134042.00	503.38	AOC9-GWTP04
2520	1181175.50	1134106.31	497.23	AOC9-GWDTP04
610	1181343.92	1134268.36	511.07	CONTROL STA
7050	1182080.29	1133922.11	522.94	CONTROL STA

E 2000 SI On-site Laboratory Results

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP01S	AOC9-GP01I	AOC9-GP01D	AOC9-GP02S	AOC9-GP02I	AOC9-GP02D	AOC9-GP03S
		Sample Date:	03/15/2000	03/15/2000	03/13/2000	03/15/2000	03/15/2000	03/13/2000	03/15/2000
		Depth (ft):	6.5-8.5	11.5-13.5	17.5-19.5	5.0-7.0	10.0-12.0	16.5-20.5	4.9-6.9
Test: VOCs - 8021B	**Units**	**PQL**							
Vinyl Chloride	µg/L	1	2.7 J	ND	2.1 J	ND	ND	1.8	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	Trace
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	1.9
Benzene	µg/L	1	ND	1.3	Trace	ND	ND	Trace	ND
Trichloroethene	µg/L	1	1.2	1.3	Trace	ND	1.1	1.3	ND
Toluene	µg/L	1	1.2	1.6	1.1	ND	ND	1.1	ND
Tetrachloroethene	µg/L	1	ND	Trace	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	1.0	3.8
Ethylbenzene	µg/L	1	ND	1.1	1.0	ND	ND	Trace	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	1.1	ND	ND	Trace	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	Trace	ND
tert-Butylbenzene	µg/L	1	ND	ND	Trace	ND	ND	Trace	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	1.1	Trace	ND	ND	ND	1.2
1,2-Dichlorobenzene	µg/L	1	ND	Trace	ND	ND	Trace	1.2	1.6
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
Naphthalene	µg/L	2	2.3 U	3.5 U	2.2 U	2.4 U	2.5 U	2.1 U	2.1 U
S-Fluorobenzene	%R		105	NA	NA	NA	NA	NA	102
S-Bromochlorobenzene	%R		96	102	71	104	100	85	94

Source: Ecology and Environment, Inc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP03I	AOC9-GP03D	AOC9-GP04S	AOC9-GP04I	AOC9-GP04D	AOC9-GP05S	AOC9-GP05D
		Sample Date:	03/15/2000	03/13/2000	03/20/2000	03/15/2000	03/13/2000	03/16/2000	03/16/2000
		Depth (ft):	10.0-12.0	14.8-16.8	0.5-2.5	5.0-7.0	10.5-12.5	5.0-7.0	10.0-12.0
Test: VOCs - 8021B	**Units**	**PQL**							
Vinyl Chloride	µg/L	1	63.7	ND	ND	ND	3.1 J	23.1	7.5 J
trans-Dichloroethene	µg/L	1	3.8	Trace	ND	ND	ND	2.3	1.1
cis-Dichloroethene	µg/L	1	227.2	10.5	ND	ND	1.4	51.5	39.0
Benzene	µg/L	1	4.3	1.4	ND	ND	1.0	3.2	5.3
Trichloroethene	µg/L	1	14.9	22.6	ND	2.0	5.7	1.2	66.9
Toluene	µg/L	1	1.3	1.2	1.4	ND	1.0	ND	ND
Tetrachloroethene	µg/L	1	ND	6.3	ND	ND	Trace	ND	173.3
Chlorobenzene	µg/L	1	647.4	14.6	1.2	ND	1.1	506.9	719.0
Ethylbenzene	µg/L	1	ND	1.2	1.1	ND	ND	2.7	ND
Isopropylbenzene	µg/L	1	2.1	ND	ND	ND	ND	1.4	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	1.0	1.1	1.0
1,3,5-Trimethylbenzene	µg/L	1	1.6	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	5.4	ND	ND	ND	ND	1.7	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	1.5	1.4
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	6.9	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	102.4	1.0	ND	ND	Trace	27.1	95.6
1,2-Dichlorobenzene	µg/L	1	191.3	6.4	ND	ND	Trace	93.3	414.2
n-Butylbenzene	µg/L	1	ND	1.9	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	2.2 U	2.5 U	2.0 U	2.0 U	2.5 U	2.4 U	2.3 U
S-Fluorobenzene	%R		103	NA	93	86	NA	106	99
S-Bromochlorobenzene	%R		93	104	85	78	102	97	89

Source: Ecology and Environm ıc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP05S DUP	AOC9-GP06S	AOC9-GP06S DUP	AOC9-GP06I	AOC9-GP06D	AOC9-GP07D	AOC9-GP08S
		Sample Date:	03/16/2000	03/16/2000	03/16/2000	03/16/2000	03/16/2000	03/13/2000	03/16/2000
PARAMETER		Depth (ft):	10.0-12.0	2.0-4.0	2.0-4.0	7.9-9.0	11.9-13.9	9.1-11.1	7.0-9.0
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	20.2	ND	ND	10.3 J	ND	3.5 J	ND
trans-Dichloroethene	µg/L	1	2.1	ND	ND	Trace	Trace	ND	1.8
cis-Dichloroethene	µg/L	1	71.3	1.2	1.1	34.5	24.3	2.5	6.4
Benzene	µg/L	1	3.0	ND	ND	1.5	1.5	1.1	ND
Trichloroethene	µg/L	1	1.2	1.0	Trace	9.8	23.8	6.9	8.6
Toluene	µg/L	1	ND	ND	ND	1.3	1.2	1.2	ND
Tetrachloroethene	µg/L	1	ND	ND	ND	2.7	8.9	1.2	3.5
Chlorobenzene	µg/L	1	530.0	ND	ND	217.2	205.2	2.4	ND
Ethylbenzene	µg/L	1	2.6	ND	ND	2.6	ND	1.0	ND
Isopropylbenzene	µg/L	1	1.3	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	1.2	ND	ND	ND	ND	1.0	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	1.9	ND	ND	ND	2.1	ND	ND
sec-Butylbenzene	µg/L	1	1.6	ND	ND	ND	ND	1.2	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	1.9	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	25.1	Trace	Trace	ND	21.1	Trace	Trace
1,2-Dichlorobenzene	µg/L	1	96.2	1.6	1.6	89.6	110.5	Trace	1.0
n-Butylbenzene	µg/L	1	ND	ND	ND	16.7	ND	ND	ND
Naphthalene	µg/L	2	2.4 U	2.0 U	ND	2.0 U	ND	2.5 U	ND
S-Fluorobenzene	%R		100	100	102	100	97	NA	99
S-Bromochlorobenzene	%R		96	85	88	82	89	114	77

Source: Ecology and Environment, Inc. 2000

Table 3.2-7
COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL,
YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP08D	AOC9-GP09S	AOC9-GP09I	AOC9-GP09D	AOC9-GP10S	AOC9-GP10I	AOC9-GP10D
		Sample Date:	03/14/2000	03/16/2000	03/16/2000	03/14/2000	03/20/2000	03/20/2000	03/14/2000
		Depth (ft):	11.8-13.8	5.5-7.5	10.2-12.2	15.0-17.0	1.6-3.6	6.5-8.5	11.5-13.5
Test: VOCs - 8021B	**Units**	**PQL**							
Vinyl Chloride	μg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	μg/L	1	ND	ND	ND	ND	Trace	ND	ND
cis-Dichloroethene	μg/L	1	5.9	ND	ND	ND	2.5	ND	ND
Benzene	μg/L	1	ND	ND	ND	1.0	ND	ND	ND
Trichloroethene	μg/L	1	21.2	ND	ND	ND	3.1	ND	ND
Toluene	μg/L	1	ND	ND	ND	1.3	ND	ND	ND
Tetrachloroethene	μg/L	1	2.5	ND	ND	ND	ND	ND	ND
Chlorobenzene	μg/L	1	2.0	ND	1.5	ND	1.8	ND	ND
Ethylbenzene	μg/L	1	ND	ND	Trace	Trace	Trace	ND	ND
Isopropylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	μg/L	1	Trace	ND	Trace	ND	ND	ND	Trace
1,2-Dichlorobenzene	μg/L	1	1.5	ND	1.2	ND	1.2	ND	Trace
n-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
Naphthalene	μg/L	2	2.3 U	ND	ND	2.0 U	2.0 U	ND	2.6 U
S-Fluorobenzene	%R		NA	97	100	NA	95	107	NA
S-Bromochlorobenzene	%R		130	78	84	95	85	102	68

Source: Ecology and Environm c. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP10D DUP	AOC9-GP11I	AOC9-GP12I	AOC9-GP13I	AOC9-GP14S	AOC9-GP14I	AOC9-GP14D
		Sample Date:	03/14/2000	03/21/2000	03/21/2000	03/21/2000	05/25/2000	03/24/2000	05/25/2000
		Depth (ft):	11.5-13.5	11.1-13.1	11.1-13.1	7.0-9.0	3.0-5.0	7.0-9.0	10.8-12.8
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	17.8	ND	ND	12.7 J	ND (10 X)	7.04 J
trans-Dichloroethene	µg/L	1	ND	1.5	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
cis-Dichloroethene	µg/L	1	ND	141.5	1.1	ND	33.3	36.3	37.2
Benzene	µg/L	1	ND	1.9	Trace	ND	7.29 J	12.6	7.92 J
Trichloroethene	µg/L	1	ND	19.7	Trace	ND	ND (5 X)	ND (10 X)	17.9 J
Toluene	µg/L	1	ND	Trace	Trace	Trace	ND (5 X)	ND (10 X)	ND (5 X)
Tetrachloroethene	µg/L	1	ND	8.1	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
Chlorobenzene	µg/L	1	ND	300.4	1.9	ND	909	1147.1	795
Ethylbenzene	µg/L	1	ND	1.8	ND	ND	ND (5 X)	Trace	ND (5 X)
Isopropylbenzene	µg/L	1	ND	Trace	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
n-Propylbenzene	µg/L	1	ND	Trace	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
1,3,5-Trimethylbenzene	µg/L	1	ND	Trace	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND (5 X)	Trace	ND (5 X)
1,3-Dichlorobenzene	µg/L	1	ND	6.9	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
1,4-Dichlorobenzene	µg/L	1	Trace	69.0	ND	ND	15.2 J	24.8	21.5 J
1,2-Dichlorobenzene	µg/L	1	Trace	239.2	ND	ND	76.3	96.7	103
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND (5 X)	ND (10 X)	ND (5 X)
Naphthalene	µg/L	2	2.7 U	ND	ND	ND	ND (2.5 X)	ND (10 X)	ND (2.5 X)
S-Fluorobenzene	%R		NA	102	99	94		106	
S-Bromochlorobenzene	%R		104	116	115	108		110	

Source: Ecology and Environment, Inc. 2000

Table 3.2-7
COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL,
YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP15S	AOC9-GP16I	AOC9-GP17I	AOC9-GP18D	AOC9-GP19D	AOC9-GP20D	AOC9-GP20D DUP
		Sample Date:	03/22/2000	03/22/2000	03/22/2000	03/22/2000	03/22/2000	03/22/2000	03/22/2000
PARAMETER		Depth (ft):	5.2-7.5	9.5-11.5	9.0-11.0	9.0-11.0	7.8-9.8	12.0-14.0	12.0-14.0
Test: VOCs - 8021B	**Units**	**PQL**							
Vinyl Chloride	µg/L	1	1.3 J	ND (10 X)	ND	1.8 J	ND	ND	ND
trans-Dichloroethene	µg/L	1	Trace	ND (10 X)	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	6.4	Trace	ND	2.4	ND	ND	ND
Benzene	µg/L	1	2.6	Trace	ND	Trace	Trace	Trace	Trace
Trichloroethene	µg/L	1	Trace	ND (10 X)	2.2	5.3	1.8	Trace	Trace
Toluene	µg/L	1	Trace	ND (10 X)	Trace	Trace	Trace	Trace	Trace
Tetrachloroethene	µg/L	1	Trace	ND (10 X)	ND	Trace	ND	ND	ND
Chlorobenzene	µg/L	1	773.4	189.7	2.2	76.9	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND (10 X)	11.7	4.3	ND	Trace	ND
Isopropylbenzene	µg/L	1	ND	ND (10 X)	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND (10 X)	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND (10 X)	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	Trace	ND (10 X)	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	1.2	ND (10 X)	ND	1.1	ND	ND	ND
sec-Butylbenzene	µg/L	1	Trace	ND (10 X)	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	Trace	ND (10 X)	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	Trace	ND (10 X)	ND	Trace	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	10.1	18.5	ND	4.6	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	17.6	51.5	ND	18.9	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND (10 X)	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND (10 X)	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		106	111	108	92	96	95	95
S-Bromochlorobenzene	%R		111	112	111	109	113	117	117

Source: Ecology and Environme . 2000
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Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP21D	AOC9-GP22D	AOC9-GP22D DUP	AOC9-GP23I	AOC9-GP24I	AOC9-GP25D	AOC9-GP26D
		Sample Date:	03/22/2000	03/22/2000	03/22/2000	03/23/2000	3/23/00	03/24/2000	03/24/2000
		Depth (ft):	14.7-16.7	17.3-19.3	17.3-19.3	7.0-9.0	9.7-11.7	11.5-13.5	15.0-17.0
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	1.2	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	Trace	ND	ND	1.6
Benzene	µg/L	1	ND	ND	ND	1.1	ND	Trace	Trace
Trichloroethene	µg/L	1	ND	1.9	Trace	Trace	ND	Trace	3.1
Toluene	µg/L	1	ND	Trace	Trace	1.0	ND	Trace	Trace
Tetrachloroethene	µg/L	1	Trace	1.3	ND	Trace	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	Trace	1.1	ND	Trace	ND
Ethylbenzene	µg/L	1	ND	1.6	Trace	ND	Trace	Trace	ND
Isopropylbenzene	µg/L	1	ND	Trace	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	1.6	Trace	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	1.2	1.2	Trace	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	3.2	Trace	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	Trace	2.4	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	Trace	Trace	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	Trace	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	1.6	1.5	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	1.1	Trace	1.1	ND	Trace	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	Trace	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	2.3 U	ND	2.0 U	ND
S-Fluorobenzene	%R		90	99	107	108	104	94	94
S-Bromochlorobenzene	%R		40	122	116	114	94	95	95

Source: Ecology and Environment, Inc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP27S	AOC9-GP27I	AOC9-GP27D	AOC9-GP28S	AOC9-GP28SDUP	AOC9-GP28I	AOC9-GP28D
		Sample Date:	05/05/2000	03/24/2000	05/05/2000	05/03/2000	05/03/2000	05/03/2000	03/28/2000
PARAMETER		Depth (ft):	6.18-8.18	12.9-14.9	15.2-17.2	11.1-13.1	16.5-18.5	16.5-18.5	23.04-25.04
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	ND	1.8 J
trans-Dichloroethene	µg/L	1	ND (25 X)	1.0	ND (25 X)	Trace	ND (50 X)	ND	Trace
cis-Dichloroethene	µg/L	1	39.8	14.9	Trace	6.2	ND (50 X)	2.6	6.6
Benzene	µg/L	1	ND (25 X)	1.5	ND (25 X)	4.0	ND (50 X)	7.3	1.9
Trichloroethene	µg/L	1	28.6	13.2	Trace	9.7	ND (50 X)	27.0	23.9
Toluene	µg/L	1	ND (25 X)	ND	ND (25 X)	Trace	ND (50 X)	1.1	Trace
Tetrachloroethene	µg/L	1	ND (25 X)	19.6	Trace	Trace	ND (50 X)	10.9	ND
Chlorobenzene	µg/L	1	2352.0	495.7	574.6	820.5	705.7	2151.4	415.9
Ethylbenzene	µg/L	1	33.0	2.5	Trace	5.2	ND (50 X)	50.3	ND
Isopropylbenzene	µg/L	1	Trace	ND	ND (25 X)	1.8	ND (50 X)	22.8	ND
n-Propylbenzene	µg/L	1	Trace	ND	ND (25 X)	Trace	ND (50 X)	14.0	ND
1,3,5-Trimethylbenzene	µg/L	1	Trace	ND	ND (25 X)	1.4	ND (50 X)	34.4	ND
1,3,4-Trimethylbenzene	µg/L	1	68.8	Trace	ND (25 X)	ND	ND (50 X)	ND	ND
tert-Butylbenzene	µg/L	1	ND (25 X)	Trace	ND (25 X)	ND	ND (50 X)	ND	ND
sec-Butylbenzene	µg/L	1	Trace	ND	ND (25 X)	1.2	ND (50 X)	10.2	ND
p-Isopropyl toluene	µg/L	1	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	2.4	ND
1,3-Dichlorobenzene	µg/L	1	Trace	5.1	ND (25 X)	7.3	ND (50 X)	6.1	4.5
1,4-Dichlorobenzene	µg/L	1	198.0	19.4	46.7	157.0	132.9	214.9	81.8
1,2-Dichlorobenzene	µg/L	1	Trace	261.9	432.1	273.1	243.0	40.1	341.4
n-Butylbenzene	µg/L	1	40.1	ND	ND (25 X)	1.5	ND (50 X)	48.1	ND
Naphthalene	µg/L	2	ND (25 X)	2.1 U	ND (25 X)	ND	ND (50 X)	28.3	ND
S-Fluorobenzene	%R		86	74	93	108	96	103	90
S-Bromochlorobenzene	%R		83	90	94	105	106	94	91

Source: Ecology and Environm c. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP29S	AOC9-GP29I	AOC9-GP29D	AOC9-GP30S	AOC9-GP30D	AOC9-GP31S	AOC9-GP32S
		Sample Date:	04/28/2000	04/28/2000	03/29/2000	04/28/2000	03/29/2000	03/31/2000	04/28/2000
		Depth (ft):	13.0-15.0	18.0-20.0	22.8-24.8	13.0-15.0	19.34-20.34	6.2-8.2	13.0-15.0
Test: VOCs - 8021B	**Units**	**PQL**							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	6.9	2.0	ND	ND	ND	ND
Toluene	µg/L	1	ND	ND	Trace	ND	ND	Trace	Trace
Tetrachloroethene	µg/L	1	Trace	10.2	3.4	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	117.6	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		104	103	91	103	92	99	99
S-Bromochlorobenzene	%R		91	89	91	93	93	106	92

Source: Ecology and Environment, Inc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP32D	AOC9-GP33S	AOC9-GP33I	AOC9-GP33D	AOC9-GP34S	AOC9-GP34D	AOC9-GP35S
		Sample Date:	04/28/2000	04/28/2000	04/28/2000	04/28/2000	05/01/2000	05/01/2000	04/28/2000
PARAMETER		Depth (ft):	15.8-17.8	8.0-10.0	15.0-17.0	21.5-23.5	10.0-12.0	13.5-15.5	10.0-12.0
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	Trace
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	ND	1.3	Trace	ND
Toluene	µg/L	1	Trace	ND	ND	Trace	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	ND	Trace	Trace	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		100	103	104	100	97	97	102
S-Bromochlorobenzene	%R		88	93	91	88	79	86	90

Source: Ecology and Environm c. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP35I	AOC9-GP35D	AOC9-GP35D DUP	AOC9-GP36S	AOC9-GP36I	AOC9-GP36D	AOC9-GP36D DUP
		Sample Date:	04/28/2000	04/28/2000	04/28/2000	05/02/2000	05/02/2000	05/02/2000	05/02/2000
PARAMETER		Depth (ft):	14.0-16.0	19.0-21.0	19.0-21.0	11.9-13.9	17.7-19.7	24.4-26.4	24.4-26.4
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	Trace	1.2	1.8	2.5
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	6.8	Trace	Trace	Trace
Toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	Trace	ND	ND	3.4	Trace	Trace	Trace
Chlorobenzene	µg/L	1	ND	ND	ND	ND	10.0	2.3	2.2
Ethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	1.2	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	2.7	Trace	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	5.2	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		104	100	103	94	100	99	98
S-Bromochlorobenzene	%R		94	89	93	80	86	84	110

Source: Ecology and Environment, Inc. 2000

Table 3.2-7
COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP37S	AOC9-GP37I	AOC9-GP37D	AOC9-GP38S	AOC9-GP38I	AOC9-GP38I DUP	AOC9-GP38D
		Sample Date:	05/02/2000	05/02/2000	05/02/2000	05/03/2000	05/03/2000	05/03/2000	05/03/2000
PARAMETER		Depth (ft):	12.0-14.0	18.6-20.6	24.4-26.4	16.64-18.64	21.11-23.11	21.11-23.11	27.15-29.15
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		98	102	96	103	100	97	104
S-Bromochlorobenzene	%R		86	88	78	94	98	107	104

Source: Ecology and Environm

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP38D DUP	AOC9-GP39S	AOC9-GP39I	AOC9-GP39D	AOC9-GP40S	AOC9-GP40I	AOC9-GP40D
		Sample Date:	05/03/2000	05/02/2000	05/02/2000	05/02/2000	05/03/2000	05/03/2000	05/03/2000
PARAMETER		Depth (ft):	27.15-29.15	14.0-16.0	20.9-22.9	28.7-30.7	11.0-13.0	18.04-20.04	22.64-24.64
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
Trichloroethene	µg/L	1	ND	6.4	ND	ND	ND	ND	ND
Toluene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
Tetrachloroethene	µg/L	1	ND	Trace	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	12.1	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	5.2	ND	Trace
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	6.9	ND	Trace
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		94	99	98	100	86	96	100
S-Bromochlorobenzene	%R		104	83	86	88	83	99	101

Source: Ecology and Environment, Inc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP41S	AOC9-GP41I	AOC9-GP41D	AOC9-GP42S	AOC9-GP42I	AOC9-GP42D	AOC9-GP43D
		Sample Date:	05/04/2000	05/04/2000	05/04/2000	05/04/2000	05/04/2000	05/04/2000	05/04/2000
PARAMETER		Depth (ft):	13.9-15.9	16.65-18.65	18.82-20.82	16.7-18.7	23.32-25.32	28.42-30.42	14.96-16.96
Test: VOCs - 8021B	Units	PQL							
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	2.7	Trace	ND	ND	ND	ND	Trace
Toluene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND
Tetrachloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	Trace
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		98	95	94	93	93	91	93
S-Bromochlorobenzene	%R		82	96	100	101	103	102	104

Source: Ecology and Environm ıc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-SW13	AOC9-SW14	AOC9-SW15	AOC9-SW16	AOC9-SW17	AOC9-SW18	AOC9-SW18 DUP
		Sample Date:	03/27/2000	03/27/2000	03/27/2000	03/29/2000	05/02/2000	05/02/2000	05/02/2000
PARAMETER		Depth (ft):							
Test: VOCs - 8021B	**Units**	**PQL**							
Vinyl Chloride	μg/L	1	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	μg/L	1	2.3	ND	9.7	ND	ND	Trace	1.1
Benzene	μg/L	1	ND	ND	Trace	ND	ND	ND	ND
Trichloroethene	μg/L	1	Trace	ND	4.1	ND	ND	2.3	2.5
Toluene	μg/L	1	ND	ND	ND	ND	8.6	ND	ND
Tetrachloroethene	μg/L	1	Trace	ND	1.9	ND	ND	3.0	3.4
Chlorobenzene	μg/L	1	ND	41.3	10.6	ND	2.2	3.1	8.3
Ethylbenzene	μg/L	1	ND	ND	Trace	ND	ND	ND	ND
Isopropylbenzene	μg/L	1	ND	ND	Trace	ND	ND	ND	ND
n-Propylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	μg/L	1	ND	ND	Trace	ND	Trace	ND	ND
1,3,4-Trimethylbenzene	μg/L	1	ND	ND	Trace	ND	ND	ND	ND
tert-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	μg/L	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	μg/L	1	ND	6.0	ND	ND	Trace	ND	ND
1,2-Dichlorobenzene	μg/L	1	ND	Trace	1.4	ND	ND	ND	ND
n-Butylbenzene	μg/L	1	ND	4.1	ND	ND	ND	ND	ND
Naphthalene	μg/L	2	ND	ND	ND	ND	ND	ND	ND
S-Fluorobenzene	%R		89	88	90	82	94	103	94
S-Bromochlorobenzene	%R		90	92	93	78	88	103	100

Source: Ecology and Environment, Inc. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL,
YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-SW19	AOC9-SW20
		Sample Date:	05/02/2000	05/02/2000
		Depth (ft):		
Test: VOCs - 8021B	Units	PQL		
Vinyl Chloride	µg/L	1	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND
Benzene	µg/L	1	ND	ND
Trichloroethene	µg/L	1	ND	ND
Toluene	µg/L	1	ND	ND
Tetrachloroethene	µg/L	1	ND	ND
Chlorobenzene	µg/L	1	ND	ND
Ethylbenzene	µg/L	1	ND	ND
Isopropylbenzene	µg/L	1	ND	ND
n-Propylbenzene	µg/L	1	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND
n-Butylbenzene	µg/L	1	ND	ND
Naphthalene	µg/L	2	ND	ND
S-Fluorobenzene	%R		100	99
S-Bromochlorobenzene	%R		96	96

Source: Ecology and Environme :. 2000

Table 3.2-7

COMPLETE ANALYTICAL SUMMARY FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Key:

Qualifiers:

J	estimated
U	not detected
UJ	not detected; estimated detection limit reported

Surrogate Limits:

Analysis	Media	Surrogates	Recovery Range
VOCs - SW8021B	Water	S-Fluorobenzene	50 - 150 %
		S-Bromochlorobenzene	50 - 150 %

Units:

µg/L = micrograms per liter
%R = Percent Recovery

Test and Sample Information:

VOCs = Volatile Organic Compounds
NA = Not analyzed
DUP = Field Duplicate

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Units	Sample ID:	AOC9-GP01S	AOC9-GP01I	AOC9-GP01D	AOC9-GP02S	AOC9-GP02I	AOC9-GP02D	AOC9-GP03S	AOC9-GP03I
		Sample Date:	03/15/2000	03/15/2000	03/13/2000	03/15/2000	03/15/2000	03/13/2000	03/15/2000	03/15/2000
		Depth (ft):	6.5-8.5	11.5-13.5	17.5-19.5	5.0-7.0	10.0-12.0	16.5-20.5	4.9-6.9	10.0-12.0
Test: VOCs - 8021B		PQL								
Vinyl Chloride	µg/L	1	2.7 J	ND	2.1 J	ND	ND	1.8	ND	63.7
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	Trace	3.8
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	1.9	227.2
Benzene	µg/L	1	ND	1.3	Trace	ND	ND	Trace	ND	4.3
Trichloroethene	µg/L	1	1.2	1.3	Trace	ND	1.1	1.3	ND	14.9
Toluene	µg/L	1	1.2	1.6	1.1	ND	ND	1.1	ND	1.3
Tetrachloroethene	µg/L	1	ND	Trace	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	1.0	3.8	647.4
Ethylbenzene	µg/L	1	ND	1.1	1.0	ND	ND	Trace	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	2.1
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	1.1	ND	ND	Trace	ND	ND	1.6
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	Trace	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	Trace	ND	ND	Trace	ND	5.4
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	6.9
1,4-Dichlorobenzene	µg/L	1	ND	1.1	Trace	ND	ND	ND	1.2	102.4
1,2-Dichlorobenzene	µg/L	1	ND	Trace	ND	ND	Trace	1.2	1.6	191.3
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
Naphthalene	µg/L	2	2.3 U	3.5 U	2.2 U	2.4 U	2.5 U	2.1 U	2.1 U	2.2 U

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP03D	AOC9-GP04S	AOC9-GP04I	AOC9-GP04D	AOC9-GP05S	AOC9-GP05D	AOC9-GP05S DUP	AOC9-GP06S
		Sample Date:	03/13/2000	03/20/2000	03/15/2000	03/13/2000	03/16/2000	03/16/2000	03/16/2000	03/16/2000
PARAMETER		Depth (ft):	14.8-16.8	0.5-2.5	5.0-7.0	10.5-12.5	5.0-7.0	10.0-12.0	5.0-7.0	2.0-4.0
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	ND	ND	3.1 J	23.1	7.5 J	20.2	ND
trans-Dichloroethene	µg/L	1	Trace	ND	ND	ND	2.3	1.1	2.1	ND
cis-Dichloroethene	µg/L	1	10.5	ND	ND	1.4	51.5	39.0	71.3	1.2
Benzene	µg/L	1	1.4	ND	ND	1.0	3.2	5.3	3.0	ND
Trichloroethene	µg/L	1	22.6	ND	2.0	5.7	1.2	66.9	1.2	1.0
Toluene	µg/L	1	1.2	1.4	ND	1.0	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	6.3	ND	ND	Trace	ND	173.3	ND	ND
Chlorobenzene	µg/L	1	14.6	1.2	ND	1.1	506.9	719.0	530.0	ND
Ethylbenzene	µg/L	1	1.2	1.1	ND	ND	2.7	ND	2.6	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	1.4	ND	1.3	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	1.0	1.1	1.0	1.2	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	1.7	ND	1.9	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	1.5	1.4	1.6	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	1.0	ND	ND	Trace	27.1	95.6	25.1	Trace
1,2-Dichlorobenzene	µg/L	1	6.4	ND	ND	Trace	93.3	414.2	96.2	1.6
n-Butylbenzene	µg/L	1	1.9	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	2.5 U	2.0 U	2.0 U	2.5 U	2.4 U	2.3 U	2.4 U	2.0 U

Source: Ecology and Environm :. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP06S DUP	AOC9-GP06I	AOC9-GP06D	AOC9-GP07D	AOC9-GP08S	AOC9-GP08D	AOC9-GP09S	AOC9-GP09I
		Sample Date:	03/16/2000	03/16/2000	03/16/2000	03/13/2000	03/16/2000	03/14/2000	03/16/2000	03/16/2000
PARAMETER		Depth (ft):	2.0-4.0	7.9-9.0	11.9-13.9	9.1-11.1	7.0-9.0	11.8-13.8	5.5-7.5	10.2-12.2
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	10.3 J	ND	3.5 J	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	Trace	Trace	ND	1.8	ND	ND	ND
cis-Dichloroethene	µg/L	1	1.1	34.5	24.3	2.5	6.4	5.9	ND	ND
Benzene	µg/L	1	ND	1.5	1.5	1.1	ND	ND	ND	ND
Trichloroethene	µg/L	1	Trace	9.8	23.8	6.9	8.6	21.2	ND	ND
Toluene	µg/L	1	ND	1.3	1.2	1.2	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	2.7	8.9	1.2	3.5	2.5	ND	ND
Chlorobenzene	µg/L	1	ND	217.2	205.2	2.4	ND	2.0	ND	1.5
Ethylbenzene	µg/L	1	ND	2.6	ND	1.0	ND	ND	ND	Trace
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	1.0	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	2.1	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	1.2	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	1.9	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	Trace	ND	21.1	Trace	Trace	Trace	ND	Trace
1,2-Dichlorobenzene	µg/L	1	1.6	89.6	110.5	Trace	1.0	1.5	ND	1.2
n-Butylbenzene	µg/L	1	ND	16.7	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	2.0 U	ND	2.5 U	ND	2.3 U	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP09D	AOC9-GP10S	AOC9-GP10I	AOC9-GP10D	AOC9-GP10D DUP	AOC9-GP11I	AOC9-GP12I	AOC9-GP13I
		Sample Date:	03/14/2000	03/20/2000	03/20/2000	03/14/2000	03/14/2000	03/21/2000	03/21/2000	03/21/2000
		Depth (ft):	15.0-17.0	1.6-3.6	6.5-8.5	11.5-13.5	11.5-13.5	11.1-13.1	11.1-13.1	7.0-9.0
Test: VOCs - 8021B	**Units**	**PQL**								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	17.8	ND	ND
trans-Dichloroethene	µg/L	1	ND	Trace	ND	ND	ND	1.5	ND	ND
cis-Dichloroethene	µg/L	1	ND	2.5	ND	ND	ND	141.5	1.1	ND
Benzene	µg/L	1	1.0	ND	ND	ND	ND	1.9	Trace	ND
Trichloroethene	µg/L	1	ND	3.1	ND	ND	ND	19.7	Trace	ND
Toluene	µg/L	1	1.3	ND	ND	ND	ND	Trace	Trace	Trace
Tetrachloroethene	µg/L	1	ND	ND	ND	ND	ND	8.1	ND	ND
Chlorobenzene	µg/L	1	ND	1.8	ND	ND	ND	300.4	1.9	ND
Ethylbenzene	µg/L	1	Trace	Trace	ND	ND	ND	1.8	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	6.9	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	Trace	Trace	69.0	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	1.2	ND	Trace	Trace	239.2	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	2.0 U	2.0 U	ND	2.6 U	2.7 U	ND	ND	ND

Source: Ecology and Environm ıc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP14S	AOC9-GP14I	AOC9-GP14D	AOC9-GP15S	AOC9-GP16I	AOC9-GP17I	AOC9-GP18D	AOC9-GP19D
		Sample Date:	05/25/2000	03/24/2000	05/25/2000	03/22/2000	03/22/2000	03/22/2000	03/22/2000	03/22/2000
PARAMETER		Depth (ft):	3.0-5.0	7.0-9.0	10.8-12.8	5.2-7.5	9.5-11.5	9.0-11.0	9.0-11.0	7.8-9.8
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	12.7 J	ND (10 X)	7.04 J	1.3 J	ND (10 X)	ND	1.8 J	ND
trans-Dichloroethene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
cis-Dichloroethene	µg/L	1	33.3	36.3	37.2	6.4	Trace	ND	2.4	ND
Benzene	µg/L	1	7.29 J	12.6	7.92 J	2.6	Trace	ND	Trace	Trace
Trichloroethene	µg/L	1	ND (5 X)	ND (10 X)	17.9 J	Trace	ND (10 X)	2.2	5.3	1.8
Toluene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	Trace	Trace	Trace
Tetrachloroethene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	Trace	ND
Chlorobenzene	µg/L	1	909	1147.1	795	773.4	189.7	2.2	76.9	ND
Ethylbenzene	µg/L	1	ND (5 X)	Trace	ND (5 X)	ND	ND (10 X)	11.7	4.3	ND
Isopropylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
n-Propylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	1.2	ND (10 X)	ND	1.1	ND
sec-Butylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND (5 X)	Trace	ND (5 X)	Trace	ND (10 X)	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	Trace	ND (10 X)	ND	Trace	ND
1,4-Dichlorobenzene	µg/L	1	15.2 J	24.8	21.5 J	10.1	18.5	ND	4.6	ND
1,2-Dichlorobenzene	µg/L	1	76.3	96.7	103	17.6	51.5	ND	18.9	ND
n-Butylbenzene	µg/L	1	ND (5 X)	ND (10 X)	ND (5 X)	ND	ND (10 X)	ND	ND	ND
Naphthalene	µg/L	2	ND (2.5 X)	ND (10 X)	ND (2.5 X)	ND	ND (10 X)	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP20D	AOC9-GP20D DUP	AOC9-GP21D	AOC9-GP22D	AOC9-GP22D DUP	AOC9-GP23I	AOC9-GP24I	AOC9-GP25D
		Sample Date:	03/22/2000	03/22/2000	03/22/2000	03/22/2000	03/22/2000	03/23/2000	3/23/00	03/24/2000
		Depth (ft):	12.0-14.0	12.0-14.0	14.7-16.7	17.3-19.3	17.3-19.3	7.0-9.0	9.7-11.7	11.5-13.5
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	1.2	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Benzene	µg/L	1	Trace	Trace	ND	ND	ND	1.1	ND	Trace
Trichloroethene	µg/L	1	Trace	Trace	ND	1.9	Trace	Trace	ND	Trace
Toluene	µg/L	1	Trace	Trace	ND	Trace	Trace	1.0	ND	Trace
Tetrachloroethene	µg/L	1	ND	ND	Trace	1.3	ND	Trace	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	Trace	1.1	ND	Trace
Ethylbenzene	µg/L	1	Trace	ND	ND	1.6	Trace	ND	Trace	Trace
Isopropylbenzene	µg/L	1	ND	ND	ND	Trace	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	1.6	Trace	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	1.2	1.2	Trace	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	3.2	Trace	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	Trace	2.4	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	Trace	Trace	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	1.6	1.5	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	1.1	Trace	1.1	ND	Trace
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	2.3 U	ND	2.0 U

Source: Ecology and Environm

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM
AOC 9 WSA LANDFILL,
YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP26D	AOC9-GP27S	AOC9-GP27I	AOC9-GP27D	AOC9-GP28S	AOC9-GP28SDUP	AOC9-GP28I	AOC9-GP28D
		Sample Date:	03/24/2000	05/05/2000	03/24/2000	05/05/2000	05/03/2000	05/03/2000	05/03/2000	03/28/2000
PARAMETER		Depth (ft):	15.0-17.0	6.18-8.18	12.9-14.9	15.2-17.2	11.1-13.1	11.1-13.1	16.5-18.5	23.04-25.04
Test: VOCs - 8021B	**Units**	**PQL**								
Vinyl Chloride	µg/L	1	ND	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	ND	1.8 J
trans-Dichloroethene	µg/L	1	ND	ND (25 X)	1.0	ND (25 X)	Trace	ND (50 X)	ND	Trace
cis-Dichloroethene	µg/L	1	1.6	39.8	14.9	Trace	6.2	ND (50 X)	2.6	6.6
Benzene	µg/L	1	Trace	ND (25 X)	1.5	ND (25 X)	4.0	ND (50 X)	7.3	1.9
Trichloroethene	µg/L	1	3.1	28.6	13.2	Trace	9.7	ND (50 X)	27.0	23.9
Toluene	µg/L	1	Trace	ND (25 X)	ND	ND (25 X)	Trace	ND (50 X)	1.1	Trace
Tetrachloroethene	µg/L	1	ND	ND (25 X)	19.6	Trace	Trace	ND (50 X)	10.9	ND
Chlorobenzene	µg/L	1	ND	2352.0	495.7	574.6	820.5	705.7	2151.4	415.9
Ethylbenzene	µg/L	1	ND	33.0	2.5	Trace	5.2	ND (50 X)	50.3	ND
Isopropylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	1.8	ND (50 X)	22.8	ND
n-Propylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	Trace	ND (50 X)	14.0	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	1.4	ND (50 X)	34.4	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	68.8	Trace	ND (25 X)	ND	ND (50 X)	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND (25 X)	Trace	ND (25 X)	ND	ND (50 X)	ND	ND
sec-Butylbenzene	µg/L	1	ND	Trace	ND	ND (25 X)	1.2	ND (50 X)	10.2	ND
p-Isopropyl toluene	µg/L	1	ND	ND (25 X)	ND	ND (25 X)	ND	ND (50 X)	2.4	ND
1,3-Dichlorobenzene	µg/L	1	ND	Trace	5.1	ND (25 X)	7.3	ND (50 X)	6.1	4.5
1,4-Dichlorobenzene	µg/L	1	ND	198.0	19.4	46.7	157.0	132.9	214.9	81.8
1,2-Dichlorobenzene	µg/L	1	ND	Trace	261.9	432.1	273.1	243.0	40.1	341.4
n-Butylbenzene	µg/L	1	ND	40.1	ND	ND (25 X)	1.5	ND (50 X)	48.1	ND
Naphthalene	µg/L	2	ND	ND (25 X)	2.1 U	ND (25 X)	ND	ND (50 X)	28.3	ND

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP29S	AOC9-GP29I	AOC9-GP29D	AOC9-GP30S	AOC9-GP30D	AOC9-GP31S	AOC9-GP32S	AOC9-GP32D
		Sample Date:	04/28/2000	04/28/2000	03/29/2000	04/28/2000	03/29/2000	03/31/2000	04/28/2000	04/28/2000
PARAMETER		Depth (ft):	13.0-15.0	18.0-20.0	22.8-24.8	13.0-15.0	19.34-20.34	6.2-8.2	13.0-15.0	15.8-17.8
Test: VOCs - 8021B	**Units**	**PQL**								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	6.9	2.0	ND	ND	ND	ND	ND
Toluene	µg/L	1	ND	ND	Trace	ND	ND	Trace	Trace	Trace
Tetrachloroethene	µg/L	1	Trace	10.2	3.4	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	117.6	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environm

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP33S	AOC9-GP33I	AOC9-GP33D	AOC9-GP34S	AOC9-GP34D	AOC9-GP35S	AOC9-GP35I	AOC9-GP35D
		Sample Date:	04/28/2000	04/28/2000	04/28/2000	05/01/2000	05/01/2000	04/28/2000	04/28/2000	04/28/2000
		Depth (ft):	8.0-10.0	15.0-17.0	21.5-23.5	10.0-12.0	13.5-15.5	10.0-12.0	14.0-16.0	19.0-21.0
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	1.3	Trace	ND	ND	ND
Toluene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	Trace	Trace	ND	ND	ND	Trace	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP35D DUP	AOC9-GP36S	AOC9-GP36I	AOC9-GP36D	AOC9-GP36D DUP	AOC9-GP37S	AOC9-GP37I	AOC9-GP37D
		Sample Date:	04/28/2000	05/02/2000	05/02/2000	05/02/2000	05/02/2000	05/02/2000	05/02/2000	05/02/2000
		Depth (ft):	19.0-21.0	11.9-13.9	17.7-19.7	24.4-26.4	24.4-26.4	12.0-14.0	18.6-20.6	24.4-26.4
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	Trace	1.2	1.8	2.5	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	6.8	Trace	Trace	Trace	ND	ND	ND
Toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	3.4	Trace	Trace	Trace	Trace	ND	ND
Chlorobenzene	µg/L	1	ND	ND	10.0	2.3	2.2	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	1.2	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	2.7	Trace	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	5.2	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	Trace	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environm c. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP38S	AOC9-GP38I	AOC9-GP38I DUP	AOC9-GP38D	AOC9-GP38D DUP	AOC9-GP39S	AOC9-GP39I	AOC9-GP39D
		Sample Date:	05/03/2000	05/03/2000	05/03/2000	05/03/2000	05/03/2000	05/02/2000	05/02/2000	05/02/2000
PARAMETER		Depth (ft):	16.64-18.64	21.11-23.11	21.11-23.11	27.15-29.15	27.15-29.15	14.0-16.0	20.9-22.9	28.7-30.7
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	ND	ND	6.4	ND	ND
Toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	ND	ND	ND	ND	Trace	ND	ND
Chlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM
AOC 9 WSA LANDFILL,
YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID:	AOC9-GP40S	AOC9-GP40I	AOC9-GP40D	AOC9-GP41S	AOC9-GP41I	AOC9-GP41D	AOC9-GP42S	AOC9-GP42I
		Sample Date:	05/03/2000	05/03/2000	05/03/2000	05/04/2000	05/04/2000	05/04/2000	05/04/2000	05/04/2000
		Depth (ft):	11.0-13.0	18.04-20.04	22.64-24.64	13.9-15.9	16.65-18.65	18.82-20.82	16.7-18.7	23.32-25.32
Test: VOCs - 8021B	**Units**	**PQL**								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	µg/L	1	ND	ND	ND	2.7	Trace	ND	ND	ND
Toluene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	µg/L	1	12.1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,4-Trimethylbenzene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	Trace	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	5.2	ND	Trace	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	1	6.9	ND	Trace	ND	ND	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environme

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

		Sample ID:	AOC9-GP42D	AOC9-GP43D	AOC9-SW13	AOC9-SW14	AOC9-SW15	AOC9-SW16	AOC9-SW17	AOC9-SW18
		Sample Date:	05/04/2000	05/04/2000	03/27/2000	03/27/2000	03/27/2000	03/29/2000	05/02/2000	05/02/2000
PARAMETER		Depth (ft):	28.42-30.42	14.96-16.96						
Test: VOCs - 8021B	Units	PQL								
Vinyl Chloride	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-Dichloroethene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
cis-Dichloroethene	µg/L	1	ND	ND	2.3	ND	9.7	ND	ND	Trace
Benzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
Trichloroethene	µg/L	1	ND	Trace	Trace	ND	4.1	ND	ND	2.3
Toluene	µg/L	1	Trace	ND	ND	ND	ND	ND	8.6	ND
Tetrachloroethene	µg/L	1	ND	Trace	Trace	ND	1.9	ND	ND	3.0
Chlorobenzene	µg/L	1	ND	ND	ND	41.3	10.6	ND	2.2	3.1
Ethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
Isopropylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
n-Propylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	Trace	ND
1,3,4-Trimethylbenzene	µg/L	1	ND	ND	ND	ND	Trace	ND	ND	ND
tert-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyl toluene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	µg/L	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	µg/L	1	ND	ND	ND	6.0	ND	ND	Trace	ND
1,2-Dichlorobenzene	µg/L	1	ND	ND	ND	Trace	1.4	ND	ND	ND
n-Butylbenzene	µg/L	1	ND	ND	ND	4.1	ND	ND	ND	ND
Naphthalene	µg/L	2	ND	ND	ND	ND	ND	ND	ND	ND

Source: Ecology and Environment, Inc. 2000

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER		Sample ID: Sample Date: Depth (ft):	AOC9-SW18 DUP 05/02/2000
Test: VOCs - 8021B	**Units**	**PQL**	
Vinyl Chloride	µg/L	1	ND
trans-Dichloroethene	µg/L	1	ND
cis-Dichloroethene	µg/L	1	1.1
Benzene	µg/L	1	ND
Trichloroethene	µg/L	1	2.5
Toluene	µg/L	1	ND
Tetrachloroethene	µg/L	1	3.4
Chlorobenzene	µg/L	1	8.3
Ethylbenzene	µg/L	1	ND
Isopropylbenzene	µg/L	1	ND
n-Propylbenzene	µg/L	1	ND
1,3,5-Trimethylbenzene	µg/L	1	ND
1,3,4-Trimethylbenzene	µg/L	1	ND
tert-Butylbenzene	µg/L	1	ND
sec-Butylbenzene	µg/L	1	ND
p-Isopropyl toluene	µg/L	1	ND
1,3-Dichlorobenzene	µg/L	1	ND
1,4-Dichlorobenzene	µg/L	1	ND
1,2-Dichlorobenzene	µg/L	1	ND
n-Butylbenzene	µg/L	1	ND
Naphthalene	µg/L	2	ND

Source: Ecology and Environm

Table 3.2-13

ANALYTICAL DATA SUMMARY OF POSITIVE HITS FOR ON-SITE LABORATORY RESULTS OF GROUNDWATER AND SURFACE WATER SAMPLES FROM AOC 9 WSA LANDFILL, YEAR 2000 SI, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Key:

Qualifiers:

J	estimated
U	not detected
UJ	not detected; estimated detection limit reported

Units:

μg/L = micrograms per liter

%R = Percent Recovery

Test and Sample Information:

VOCs = Volatile Organic Compounds

NA = Not analyzed

DUP = 'ield Duplicate

Source: Ecology and Environment, Inc. 2000

Table 3.2-15
FIELD DUPLICATE RESULTS FOR GROUNDWATER AND SURFACE WATER SAMPLES FROM ONSITE LABORATORY FOR AOC 9: WSA LANDFILL, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Method	Analyte	Units	PQL	AOC9-GP05S	AOC9-GP05S DUP	RPD	RPD Rating	AOC9-GP05S DIL	AOC9-GP05S DUP DIL	RPD	RPD Rating
SW8021B	Vinyl Chloride	µg/L	1	23.137	20.162	13.7%	Good	20.445	20.6225	0.9%	Good
SW8021B	trans-Dichloroethene	µg/L	1	2.3308	2.0758	11.6%	Good	Trace	Trace	NC	
SW8021B	cis-Dichloroethene	µg/L	1	51.4504	47.4524	8.1%	Good	68.7825	71.3	3.6%	Good
SW8021B	Benzene	µg/L	1	3.181	3.0102	5.5%	Good	ND	ND	NC	
SW8021B	Trichloroethene	µg/L	1	1.1694	1.1982	2.4%	Good	Trace	ND	NC	
SW8021B	Toluene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Tetrachloroethene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Chlorobenzene	µg/L	1	393.3132	359.27	9.0%	Good	506.8875	530	4.5%	Good
SW8021B	Ethylbenzene	µg/L	1	2.7066	2.566	5.3%	Good	ND	ND	NC	
SW8021B	Isopropylbenzene	µg/L	1	1.3534	1.3436	0.7%	Good	ND	ND	NC	
SW8021B	n-Propylbenzene	µg/L	1	1.1478	1.158	0.9%	Good	ND	ND	NC	
SW8021B	1,3,5-Trimethylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,3,4-Trimethylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	tert-Butylbenzene	µg/L	1	1.715	1.8876	9.6%	Good	ND	Trace	NC	
SW8021B	sec-Butylbenzene	µg/L	1	1.5388	1.5696	2.0%	Good	ND	Trace	NC	
SW8021B	p-Isopropyl toluene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,3-Dichlorobenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,4-Dichlorobenzene	µg/L	1	27.0616	25.0824	7.6%	Good	41.06	41.155	0.2%	Good
SW8021B	1,2-Dichlorobenzene	µg/L	1	72	67.1166	7.0%	Good	93.335	96.23	3.1%	Good
SW8021B	n-Butylbenzene	µg/L	1	ND	ND	NC		15.135	13.28	13.1%	Good
SW8021B	Naphthalene	µg/L	2	2.4 U	2.4 U	NC		43.0425	26.34	48.1%	Good

Note: Blank spaces indicate analytes was not analyzed or ND.

Key:
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference

Source: Ecology and En ent, Inc.

Table 3.2-15

FIELD DUPLICATE RESULTS FOR GROUNDWATER AND SURFACE WATER SAMPLES FROM ONSITE LABORATORY FOR AOC 9: WSA LANDFILL, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Method	Analyte	Units	PQL	AOC9-GP10D	AOC9-GP10D DUP	RPD	RPD Rating	AOC9-GP22D	AOC9-GP22D DUP	RPD	RPD Rating
SW8021B	Vinyl Chloride	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	trans-Dichloroethene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	cis-Dichloroethene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Benzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Trichloroethene	µg/L	1	ND	ND	NC		1.932	Trace	NC	
SW8021B	Toluene	µg/L	1	ND	ND	NC		Trace	Trace	NC	
SW8021B	Tetrachloroethene	µg/L	1	ND	ND	NC		1.304	ND	NC	
SW8021B	Chlorobenzene	µg/L	1	ND	ND	NC		ND	Trace	NC	
SW8021B	Ethylbenzene	µg/L	1	ND	ND	NC		1.6112	Trace	NC	
SW8021B	Isopropylbenzene	µg/L	1	ND	ND	NC		Trace	ND	NC	
SW8021B	n-Propylbenzene	µg/L	1	ND	ND	NC		1.5568	Trace	NC	
SW8021B	1,3,5-Trimethylbenzene	µg/L	1	ND	ND	NC		1.179	1.1772	0.2%	Good
SW8021B	1,3,4-Trimethylbenzene	µg/L	1	ND	ND	NC		3.2142	Trace	NC	
SW8021B	tert-Butylbenzene	µg/L	1	ND	ND	NC		Trace	2.4224	NC	
SW8021B	sec-Butylbenzene	µg/L	1	ND	ND	NC		Trace	Trace	NC	
SW8021B	p-Isopropyl toluene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,3-Dichlorobenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,4-Dichlorobenzene	µg/L	1	Trace	Trace	NC		1.6166	1.4982	7.6%	Good
SW8021B	1,2-Dichlorobenzene	µg/L	1	Trace	Trace	NC		1.0972	Trace	NC	
SW8021B	n-Butylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Naphthalene	µg/L	2	2.6 U	2.7 U	NC		ND	ND	NC	

Note: Blank spaces indicate analytes was not analyzed or ND.

Key:

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PQL = Practical Quantitation Limit

RPD = Relative Percent Difference

Source: Ecology and Environment, Inc.

Table 3.2-15
FIELD DUPLICATE RESULTS FOR GROUNDWATER AND SURFACE WATER SAMPLES FROM ONSITE LABORATORY FOR AOC 9: WSA LANDFILL, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Method	Analyte	Units	PQL	AOC9-GP28SDIL	AOC9-GP28SDUP DIL	RPD	RPD Rating	AOC9-GP36D	AOC9-GP36D DUP	RPD	RPD Rating
SW8021B	Vinyl Chloride	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	trans-Dichloroethene	µg/L	1	ND	ND	NC		ND	. ND	NC	
SW8021B	cis-Dichloroethene	µg/L	1	ND	ND	NC		1.7844	2.4802	32.6%	Good
SW8021B	Benzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Trichloroethene	µg/L	1	ND	ND	NC		Trace	Trace	NC	
SW8021B	Toluene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Tetrachloroethene	µg/L	1	ND	ND	NC		Trace	Trace	NC	
SW8021B	Chlorobenzene	µg/L	1	820.54	705.66	15.1%	Good	2.2606	2.1562	4.7%	Good
SW8021B	Ethylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Isopropylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	n-Propylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,3,5-Trimethylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,3,4-Trimethylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	tert-Butylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	sec-Butylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	p-Isopropyl toluene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,3-Dichlorobenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	1,4-Dichlorobenzene	µg/L	1	157.02	132.93	16.6%	Good	Trace	ND	NC	
SW8021B	1,2-Dichlorobenzene	µg/L	1	273.12	243.03	11.7%	Good	ND	ND	NC	
SW8021B	n-Butylbenzene	µg/L	1	ND	ND	NC		ND	ND	NC	
SW8021B	Naphthalene	µg/L	2	ND	ND	NC		ND	ND	NC	

Note: Blank spaces indicate analytes was not analyzed or ND.

Key:

NC = Not Calculated

ND = Not Detected

PQL = Practical Quantitation Limit

RPD = Relative Percent Difference

Source: Ecology and En ent, Inc.

Table 3.2-15
FIELD DUPLICATE RESULTS FOR GROUNDWATER AND SURFACE WATER SAMPLES FROM ONSITE LABORATORY FOR AOC 9: WSA LANDFILL, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Method	Analyte	Units	PQL	AOC9-SW18	AOC9-SW18 DUP	RPD	RPD Rating
SW8021B	Vinyl Chloride	µg/L	1	ND	ND	NC	
SW8021B	trans-Dichloroethene	µg/L	1	ND	ND	NC	
SW8021B	cis-Dichloroethene	µg/L	1	Trace	1.072	NC	
SW8021B	Benzene	µg/L	1	ND	ND	NC	
SW8021B	Trichloroethene	µg/L	1	2.3436	2.5466	8.3%	Good
SW8021B	Toluene	µg/L	1	ND	ND	NC	
SW8021B	Tetrachloroethene	µg/L	1	3.038	3.4168	11.7%	Good
SW8021B	Chlorobenzene	µg/L	1	3.0684	8.2754	91.8%	Poor
SW8021B	Ethylbenzene	µg/L	1	ND	ND	NC	
SW8021B	Isopropylbenzene	µg/L	1	ND	ND	NC	
SW8021B	n-Propylbenzene	µg/L	1	ND	ND	NC	
SW8021B	1,3,5-Trimethylbenzene	µg/L	1	ND	ND	NC	
SW8021B	1,3,4-Trimethylbenzene	µg/L	1	ND	ND	NC	
SW8021B	tert-Butylbenzene	µg/L	1	ND	ND	NC	
SW8021B	sec-Butylbenzene	µg/L	1	ND	ND	NC	
SW8021B	p-Isopropyl toluene	µg/L	1	ND	ND	NC	
SW8021B	1,3-Dichlorobenzene	µg/L	1	ND	ND	NC	
SW8021B	1,4-Dichlorobenzene	µg/L	1	ND	ND	NC	
SW8021B	1,2-Dichlorobenzene	µg/L	1	ND	ND	NC	
SW8021B	n-Butylbenzene	µg/L	1	ND	ND	NC	
SW8021B	Naphthalene	µg/L	2	ND	ND	NC	

Note: Blank spaces indicate analytes was not analyzed or ND.

Key:

NC = Not Calculated

ND = Not Detected

PQL = Practical Quantitation Limit

RPD = Relative Percent Difference

Source: Ecology and Environment, Inc.

ONSITE LABORATORY DATA CONFIRMATION DATA

Analyte	Units	PQL	AOC9-GP03I	AOC9-GP03I	RPD		AOC9-GP05S	AOC9-GP05S	RPD
	Laboratory		ASC	ASC			ASC	ASC	
	Method		SW8021B	SW8260B			SW8021B	SW8260B	
	Sample Date		15-Mar-00	15-Mar-00			16-Mar-00	16-Mar-00	
	Analysis Date		18-Mar-00	22-Mar-00			18-Mar-00	22-Mar-00	
		DF	1	50			1	50	
Vinyl Chloride	µg/L	1	63.7	47.1	30%		23.1	15.0	43%
trans-Dichloroethene	µg/L	1	3.8	<50			2.3	<50	
cis-Dichloroethene	µg/L	1	227.2	240.0	5%		51.5	41.5	21%
Benzene	µg/L	1	4.3	<50			3.2	<50	
Trichloroethene	µg/L	1	14.9	15.0	1%		1.2	<50	
Toluene	µg/L	1	1.3	<50			ND	<50	
Tetrachloroethene	µg/L	1	ND	<50			ND	<50	
Chlorobenzene	µg/L	1	647.4	744.0	14%		393.3	442.0	12%
Ethylbenzene	µg/L	1	ND	<50			2.7	<50	
Isopropylbenzene	µg/L	1	2.1	<50			1.4	<50	
n-Propylbenzene	µg/L	1	ND	<50			1.1	<50	
1,3,5-Trimethylbenzene	µg/L	1	1.6	<50			ND	<50	
1,3,4-Trimethylbenzene	µg/L	1	ND	<50			ND	<50	
tert-Butylbenzene	µg/L	1	5.4	<50			1.7	<50	
sec-Butylbenzene	µg/L	1	ND	<50			1.5	<50	
p-Isopropyl toluene	µg/L	1	ND	<50			ND	<50	
1,3-Dichlorobenzene	µg/L	1	ND	<50			ND	<50	
1,4-Dichlorobenzene	µg/L	1	ND	105.0			ND	26.0	
1,2-Dichlorobenzene	µg/L	1	ND	213.0			ND	73.7	
n-Butylbenzene	µg/L	1	ND	<50			ND	<50	
Naphthalene	µg/L	2	2.2	<50			2.4	<50	

F 2000 SI Off-site Laboratory Results

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
PARAMETER **Depth (ft):**	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
Test : Anions - 300		**Units:** mg/L				
Chloride	0.1 U	NA	0.1 U	NA	0.1 U	NA
Nitrogen, Nitrate (As N)	0.0672 J	NA	0.615	NA	0.1 U	NA
Nitrogen, Nitrite	0.1 U	NA	0.1 U	NA	0.1 U	NA
Phosphorus, Dissolved Orthophosphate	0.370	NA	0.1 U	NA	0.1 U	NA
Sulfate	9.21	NA	14.0	NA	15.9	NA
Test : **Dissolved Organic Carbon - SM 5310B**		**Units:** mg/L				
Total Organic Carbon, TOC	1.51	NA	1.39	NA	3.45	NA
Test : **MEE - Headspace GC-FID analysis**		**Units:** µg/L				
Ethane	3.7 U	NA	3.7 U	NA	3.7 U	NA
Ethene	3.4 U	NA	3.4 U	NA	3.4 U	NA
Methane	9.3 U	NA	5.7 U	NA	1800	NA
Propane	5.4 U	NA	5.4 U	NA	5.4 U	NA
Test : **PCBs - SW 8082**		**Units:** µg/L				
Aroclor 1016	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1221	1 U	NA	1 U	NA	1 U	NA
Aroclor 1232	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1242	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1248	0.5 U	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
Aroclor 1254	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1260	0.5 U	NA	0.5 U	NA	0.5 U	NA
Test : PCBs - SW 8082 - Surrogates		**Units: %**				
Decachlorobiphenyl-s	54	NA	76	NA	66	NA
Tetrachloro-m-xylene-s	89	NA	91	NA	85	NA
Test : Pesticides - SW 8081A		**Units: µg/L**				
4,4´-DDD	0.05 U	NA	0.05 U	NA	0.05 U	NA
4,4´-DDE	0.05 U	NA	0.05 U	NA	0.05 U	NA
4,4´-DDT	0.05 U	NA	0.05 U	NA	0.05 U	NA
Aldrin	0.025 U	NA	0.025 U	NA	0.025 U	NA
alpha-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
alpha-Chlordane	0.025 U	NA	0.025 U	NA	0.025 U	NA
beta-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
delta-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
Dieldrin	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan I	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan II	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan sulfate	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endrin	0.05 U	NA	0.05 U	NA	0.05 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
PARAMETER Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
Endrin aldehyde	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endrin ketone	0.05 U	NA	0.05 U	NA	0.05 U	NA
gamma-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
gamma-Chlordane	0.025 U	NA	0.025 U	NA	0.025 U	NA
Heptachlor	0.025 U	NA	0.025 U	NA	0.025 U	NA
Heptachlor epoxide	0.025 U	NA	0.025 U	NA	0.025 U	NA
Methoxychlor	0.25 U	NA	0.25 U	NA	0.25 U	NA
Toxaphene	1 U	NA	1 U	NA	1 U	NA
Test : Pesticides - SW 8081A - Surrogates		**Units: %**				
Decachlorobiphenyl-s	52	NA	76	NA	65	NA
Tetrachloro-m-xylene-s	73	NA	77	NA	70	NA
Test : Semivolatiles - 525.2		**Units: µg/L**				
2,3-Dichlorobiphenyl	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
2,4,5-Trichlorobiphenyl	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
2,4,5-Trichlorophenol	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
2,4,6-Trichlorophenol	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
2,4-Dichlorophenol	1 UJ	NA	1 U	NA	1 U	NA
2-Chlorobiphenyl	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
2-Methylnaphthalene	0.34 UJ	NA	0.28 UJ	NA	0.28 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW05 5/10/00 4 - 14	AOC9-MW05-F 5/10/00 4 - 14	AOC9-MW06 5/8/00 4.2 - 14.2	AOC9-MW06-F 5/8/00 4.2 - 14.2	AOC9-MW07 5/10/00 4.2 - 9.2	AOC9-MW07-F 5/10/00 4.2 - 9.2
2-Nitrophenol	UNK UR	NA	UNK UR	NA	UNK UR	NA
3,3'-Dichlorobenzidine	1 UJ	NA	1 U	NA	1 U	NA
4-Chloro-3-methylphenol	1 UJ	NA	1 U	NA	1 U	NA
Acenaphthene	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Acenaphthylene	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Alachlor	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Anthracene	1 UJ	NA	1 U	NA	1 U	NA
Atrazine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Azobenzene(1,2-Diphenylhydrazine)	0.12 UJ	NA	0.5 U	NA	0.5 U	NA
Benzidine	UNK UR	NA	UNK UR	NA	UNK UR	NA
Benzo(a)anthracene	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Benzo(a)pyrene	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Benzo(b)fluoranthene	0.21 UJ	NA	0.5 U	NA	0.5 U	NA
Benzo(g,h,i)perylene	0.15 UJ	NA	0.5 U	NA	0.5 U	NA
Benzo(k)fluoranthene	0.2 UJ	NA	0.5 U	NA	0.13 UJ	NA
Bis(2-ethylhexyl)adipate	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Bis(2-ethylhexyl)phthalate	1 J	NA	0.5 U	NA	0.92 J	NA
Butachlor	0.23 UJ	NA	0.5 U	NA	0.5 U	NA
Butylbenzylphthalate	0.44 UJ	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID: Sample Date: Depth (ft):	AOC9-MW05 5/10/00 4 - 14	AOC9-MW05-F 5/10/00 4 - 14	AOC9-MW06 5/8/00 4.2 - 14.2	AOC9-MW06-F 5/8/00 4.2 - 14.2	AOC9-MW07 5/10/00 4.2 - 9.2	AOC9-MW07-F 5/10/00 4.2 - 9.2
Captan		0.5 UR	NA	0.5 UR	NA	0.5 UR	NA
Chrysene		0.19 UJ	NA	0.5 U	NA	0.5 U	NA
Di-n-butylphthalate		12 J	NA	0.22 UJ	NA	0.41 UJ	NA
Di-n-octylphthalate		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Dibenz(a,h)anthracene		0.18 UJ	NA	0.5 U	NA	0.11 UJ	NA
Dibenzofuran		0.24 UJ	NA	0.5 U	NA	0.5 U	NA
Diethylphthalate		4.8 J	NA	0.5 U	NA	0.5 U	NA
Fluoranthene		0.25 UJ	NA	0.5 U	NA	0.5 U	NA
Fluorene		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
g-BHC(Lindane)		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Heptachlorobiphenyl		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Hexachlorobenzene		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Hexachlorobiphenyl		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Hexachlorocyclopentadiene		1 UJ	NA	1 U	NA	1 U	NA
Indeno(1,2,3-c,d)pyrene		0.15 UJ	NA	0.5 U	NA	0.5 U	NA
Methoxychlor		0.23 UJ	NA	1 U	NA	1 U	NA
Metolachlor		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Metribuzin		0.5 UJ	NA	0.5 U	NA	0.5 U	NA
N-Nitroso-di-n-butylamine		0.5 UJ	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
PARAMETER Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
N-Nitroso-di-n-propylamine	0.8 UJ	NA	0.8 U	NA	0.8 U	NA
N-Nitrosodiphenylamine	1 UJ	NA	1 UJ	NA	1 UJ	NA
Naphthalene	0.19 UJ	NA	0.23 UJ	NA	0.29 UJ	NA
o-Toluidine	UNK UR	NA	UNK UR	NA	UNK UR	NA
Octachlorobiphenyl	0.12 UJ	NA	0.5 U	NA	0.5 U	NA
Pentachlorobiphenyl	0.11 UJ	NA	0.5 U	NA	0.5 U	NA
Pentachlorophenol	0.7 UJ	NA	0.7 UJ	NA	0.7 UJ	NA
Phenanthrene	0.6 J	NA	0.5 U	NA	0.5 U	NA
Propachlor	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Propham	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Pyrene	0.18 UJ	NA	0.5 U	NA	0.5 U	NA
Simazine	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Tetrachlorobiphenyl	0.5 UJ	NA	0.5 U	NA	0.5 U	NA
Test : Semivolatiles - 525.2 - Surrogates		**Units: %**				
1,3-Dimethyl-2-Nitrobenzene-s	99	NA	100	NA	101	NA
Perylene-d12-s	94	NA	95	NA	103	NA
Terphenyl-d14-s	117	NA	90	NA	90	NA
Triphenylphosphate-s	109	NA	112	NA	136	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
PARAMETER Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
Test : Sulfide - 376.1		**Units: mg/L**				
Sulfide	1 U	NA	1 U	NA	1 U	NA
Test : TAL Metals - SW6010B/7471A/7470A		**Units: µg/L**				
Aluminum	587	35.0 U	72.6 U	21.3 U	2770	26.4 U
Antimony	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	10 U	10 U	10 U	10 U	10 U	10 U
Barium	44.8	39.0	16.3 J	15.1 J	109	51.9
Beryllium	5 U	0.222 J	5 U	5 U	5 U	5 U
Cadmium	0.994 J	0.753 J	5 U	5 U	0.964 J	5 U
Calcium	35200	36400	63100	70000	77000	81700
Chromium	1.58 J	10 U	10 U	10 U	3.80 J	10 U
Cobalt	20 U	20 U	20 U	20 U	3.73 J	0.903 J
Copper	6.98 J	20 U	20 U	20 U	13.6 J	20 U
Iron	10800	9140	178	14.2 U	8610	398
Lead	5 U	5 U	5 U	2.12 U	3.32 J	5 U
Magnesium	3290	3210	7370	7950	8760	8330
Manganese	1500	1370	128	154	6810	5710
Mercury	0.2 U	NA	0.2 U	NA	0.0303 UJ	NA
Nickel	20 U	20 U	20 U	20 U	12.4 J	3.40 J

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID: Sample Date: **PARAMETER** Depth (ft):	AOC9-MW05 5/10/00 4 - 14	AOC9-MW05-F 5/10/00 4 - 14	AOC9-MW06 5/8/00 4.2 - 14.2	AOC9-MW06-F 5/8/00 4.2 - 14.2	AOC9-MW07 5/10/00 4.2 - 9.2	AOC9-MW07-F 5/10/00 4.2 - 9.2
Potassium	1310	1050	1660	1770	2100	978 J
Selenium	12.2	14.6	17.0	19.3	16.4	18.0
Silver	10 U	4.59 J	10 U	10 U	10 U	10 U
Sodium	1330	1410	4420	4960	4420	4410
Thallium	10 U	10 U	10 U	10 U	7.46 J	6.20 J
Vanadium	2.37 J	20 U	20 U	20 U	6.37 J	20 U
Zinc	6.73 J	7.85 J	6.40 J	3.56 J	19.9	5.79 J
Test : Volatiles - 524.2		**Units: µg/L**				
1,1,1,2-Tetrachloroethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,1,1-Trichloroethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,1,2,2-Tetrachloroethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,1,2-Trichloroethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,1-Dichloroethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,1-Dichloroethene	0.5 U	NA	0.5 U	NA	50 U	NA
1,1-Dichloropropene	0.5 U	NA	0.5 U	NA	50 U	NA
1,2,3-Trichlorobenzene	0.5 U	NA	0.5 U	NA	50 U	NA
1,2,3-Trichloropropane	0.5 U	NA	0.5 U	NA	50 U	NA
1,2,4-Trichlorobenzene	0.5 U	NA	0.5 U	NA	50 U	NA
1,2,4-Trimethylbenzene	0.5 U	NA	0.5 U	NA	50 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
PARAMETER Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
1,2-Dibromo-3-chloropropane	0.5 U	NA	0.5 U	NA	50 U	NA
1,2-Dibromoethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,2-Dichlorobenzene	0.5 U	NA	0.5 U	NA	373	NA
1,2-Dichloroethane	0.5 U	NA	0.5 U	NA	50 U	NA
1,2-Dichloropropane	0.5 U	NA	0.5 U	NA	50 U	NA
1,3,5-Trimethylbenzene	0.5 U	NA	0.5 U	NA	50 U	NA
1,3-Dichlorobenzene	0.5 U	NA	0.5 U	NA	50 U	NA
1,3-Dichloropropane	0.5 U	NA	0.5 U	NA	50 U	NA
1,4-Dichlorobenzene	0.5 U	NA	0.5 U	NA	84.3	NA
2,2-Dichloropropane	0.5 U	NA	0.5 U	NA	50 U	NA
2-Chlorotoluene	0.5 U	NA	0.5 U	NA	50 U	NA
4-Chlorotoluene	0.5 U	NA	0.5 U	NA	50 U	NA
4-Isopropyltoluene	0.5 U	NA	0.5 U	NA	50 U	NA
Benzene	0.5 U	NA	0.5 U	NA	50 U	NA
Bromobenzene	0.5 U	NA	0.5 U	NA	50 U	NA
Bromochloromethane	0.5 U	NA	0.5 U	NA	50 U	NA
Bromodichloromethane	0.5 U	NA	0.5 U	NA	50 U	NA
Bromoform	0.5 U	NA	0.5 U	NA	50 U	NA
Bromomethane	0.5 U	NA	0.5 U	NA	50 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
	Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
	Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
Carbon tetrachloride		0.5 U	NA	0.5 U	NA	50 U	NA
Chlorobenzene		0.5 U	NA	0.5 U	NA	940	NA
Chloroethane		0.5 U	NA	0.5 U	NA	50 U	NA
Chloroform		0.5 U	NA	0.5 U	NA	50 U	NA
Chloromethane		0.5 U	NA	0.5 U	NA	50 U	NA
cis-1,2-Dichloroethene		0.5 U	NA	0.5 U	NA	30.9 J	NA
cis-1,3-Dichloropropene		0.5 U	NA	0.5 U	NA	50 U	NA
Dibromochloromethane		0.5 U	NA	0.5 U	NA	50 U	NA
Dibromomethane		0.5 U	NA	0.5 U	NA	50 U	NA
Ethylbenzene		0.5 U	NA	0.5 U	NA	50 U	NA
Hexachlorobutadiene		0.5 U	NA	0.5 U	NA	50 U	NA
Isopropylbenzene		0.5 U	NA	0.5 U	NA	50 U	NA
m,p-Xylene		0.5 U	NA	0.5 U	NA	50 U	NA
Methylene chloride		0.5 U	NA	0.5 U	NA	72.6	NA
n-Butylbenzene		0.5 U	NA	0.5 U	NA	50 U	NA
n-Propylbenzene		0.5 U	NA	0.5 U	NA	50 U	NA
Naphthalene		0.5 U	NA	0.5 U	NA	50 U	NA
o-Xylene		0.5 U	NA	0.5 U	NA	50 U	NA
sec-Butylbenzene		0.5 U	NA	0.5 U	NA	50 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW05	AOC9-MW05-F	AOC9-MW06	AOC9-MW06-F	AOC9-MW07	AOC9-MW07-F
Sample Date:	5/10/00	5/10/00	5/8/00	5/8/00	5/10/00	5/10/00
PARAMETER Depth (ft):	4 - 14	4 - 14	4.2 - 14.2	4.2 - 14.2	4.2 - 9.2	4.2 - 9.2
Styrene	0.5 U	NA	0.5 U	NA	50 U	NA
tert-Butylbenzene	0.5 U	NA	0.5 U	NA	50 U	NA
Tetrachloroethene	0.5 U	NA	0.5 U	NA	50 U	NA
Toluene	0.5 U	NA	0.5 U	NA	50 U	NA
trans-1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	50 U	NA
trans-1,3-Dichloropropene	0.5 U	NA	0.5 U	NA	50 U	NA
Trichloroethene	0.5 U	NA	0.854	NA	50 U	NA
Trichlorofluoromethane	NA	NA	0.5 U	NA	NA	NA
Vinyl chloride	0.5 U	NA	0.5 U	NA	50 U	NA
Xylenes, Total	0.5 U	NA	0.5 U	NA	50 U	NA
Test : Volatiles - 524.2 - Surrogates		**Units: %**				
1,2-Dichlorobenzene-d4-s	96	NA	104	NA	94	NA
4-Bromofluorobenzene-s	91	NA	101	NA	91	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
Test : Anions - 300		**Units: mg/L**				
Chloride	0.1 U	NA	0.1 U	NA	0.1 U	NA
Nitrogen, Nitrate (As N)	0.0372 J	NA	0.1 U	NA	0.226	NA
Nitrogen, Nitrite	0.1 U	NA	0.1 U	NA	0.1 U	NA
Phosphorus, Dissolved Orthophosphate	0.1 U	NA	0.1 U	NA	0.1 U	NA
Sulfate	3.56	NA	3.60	NA	16.4	NA
Test : Dissolved Organic Carbon - SM 5310B		**Units: mg/L**				
Total Organic Carbon, TOC	2.5	NA	3.0	NA	1.14	NA
Test : MEE - Headspace GC-FID analysis		**Units: µg/L**				
Ethane	3.7 U	NA	3.7 U	NA	3.7 U	NA
Ethene	3.4 U	NA	3.4 U	NA	3.4 U	NA
Methane	2800	NA	2700	NA	41 B	NA
Propane	5.4 U	NA	5.4 U	NA	5.4 U	NA
Test : PCBs - SW 8082		**Units: µg/L**				
Aroclor 1016	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1221	1 U	NA	1 U	NA	1 U	NA
Aroclor 1232	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1242	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1248	0.5 U	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW08 5/25/00 15.4 - 20.4	AOC9-MW08-F 5/25/00 15.4 - 20.4	AOC9-MW08/D 5/25/00 15.4 - 20.4	AOC9-MW08/D-F 5/25/00 15.4 - 20.4	G009-MW01 5/11/00 4 - 9	G009-MW01-F 5/11/00 4 - 9
Aroclor 1254	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1260	0.5 U	NA	0.5 U	NA	0.5 U	NA
Test : PCBs - SW 8082 - Surrogates		**Units: %**				
Decachlorobiphenyl-s	62	NA	60	NA	118	NA
Tetrachloro-m-xylene-s	58	NA	63	NA	114	NA
Test : Pesticides - SW 8081A		**Units: µg/L**				
4,4´-DDD	0.05 U	NA	0.05 U	NA	0.05 U	NA
4,4´-DDE	0.05 U	NA	0.05 U	NA	0.05 U	NA
4,4´-DDT	0.05 U	NA	0.05 U	NA	0.05 U	NA
Aldrin	0.025 U	NA	0.025 U	NA	0.025 U	NA
alpha-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
alpha-Chlordane	0.025 U	NA	0.025 U	NA	0.025 U	NA
beta-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
delta-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
Dieldrin	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan I	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan II	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan sulfate	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endrin	0.05 U	NA	0.05 U	NA	0.05 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

	Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
	Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER	Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
Endrin aldehyde		0.05 U	NA	0.05 U	NA	0.05 U	NA
Endrin ketone		0.05 U	NA	0.05 U	NA	0.05 U	NA
gamma-BHC		0.025 U	NA	0.025 U	NA	0.025 U	NA
gamma-Chlordane		0.025 U	NA	0.025 U	NA	0.025 U	NA
Heptachlor		0.025 U	NA	0.025 U	NA	0.025 U	NA
Heptachlor epoxide		0.025 U	NA	0.025 U	NA	0.025 U	NA
Methoxychlor		0.25 U	NA	0.25 U	NA	0.25 U	NA
Toxaphene		1 U	NA	1 U	NA	1 U	NA
Test : Pesticides - SW 8081A - Surrogates			**Units: %**				
Decachlorobiphenyl-s		75	NA	77	NA	165	NA
Tetrachloro-m-xylene-s		59	NA	66	NA	149	NA
Test : Semivolatiles - 525.2			**Units: µg/L**				
2,3-Dichlorobiphenyl		0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2,4,5-Trichlorobiphenyl		0.5 UJ	NA	0.5 UJ	NA	0.13 UJ	NA
2,4,5-Trichlorophenol		0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2,4,6-Trichlorophenol		0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2,4-Dichlorophenol		1 UJ	NA	1 UJ	NA	1 UJ	NA
2-Chlorobiphenyl		0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2-Methylnaphthalene		0.57 J	NA	0.63 J	NA	0.42 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
2-Nitrophenol	UNK UJ	NA	UNK UJ	NA	UNK UR	NA
3,3'-Dichlorobenzidine	1 UJ	NA	1 UJ	NA	1 UJ	NA
4-Chloro-3-methylphenol	1 UJ	NA	1 UJ	NA	1 UJ	NA
Acenaphthene	0.15 UJ	NA	0.16 UJ	NA	0.11 UJ	NA
Acenaphthylene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Alachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Anthracene	1 UJ	NA	1 UJ	NA	1 UJ	NA
Atrazine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Azobenzene(1,2-Diphenylhydrazine)	0.5 UJ	NA	0.13 UJ	NA	0.16 UJ	NA
Benzidine	UNK UJ	NA	UNK UJ	NA	UNK UR	NA
Benzo(a)anthracene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Benzo(a)pyrene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Benzo(b)fluoranthene	0.5 UJ	NA	0.5 UJ	NA	0.22 UJ	NA
Benzo(g,h,i)perylene	0.5 UJ	NA	0.5 UJ	NA	0.19 UJ	NA
Benzo(k)fluoranthene	0.5 UJ	NA	0.5 UJ	NA	0.19 UJ	NA
Bis(2-ethylhexyl)adipate	1.2 J	NA	0.68 J	NA	0.5 UJ	NA
Bis(2-ethylhexyl)phthalate	1.7 J	NA	1 J	NA	0.5 UJ	NA
Butachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Butylbenzylphthalate	0.61 J	NA	0.43 UJ	NA	0.5 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
Captan	0.5 UR	NA	0.5 UR	NA	0.5 UR	NA
Chrysene	0.5 UJ	NA	0.5 UJ	NA	0.2 UJ	NA
Di-n-butylphthalate	12 J	NA	13 J	NA	13 J	NA
Di-n-octylphthalate	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Dibenz(a,h)anthracene	0.5 UJ	NA	0.5 UJ	NA	0.15 UJ	NA
Dibenzofuran	0.16 UJ	NA	0.19 UJ	NA	0.24 UJ	NA
Diethylphthalate	3.6 J	NA	3.9	NA	4.6 J	NA
Fluoranthene	0.1 UJ	NA	0.5 UJ	NA	0.31 UJ	NA
Fluorene	0.14 UJ	NA	0.13 UJ	NA	0.5 UJ	NA
g-BHC(Lindane)	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Heptachlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.18 UJ	NA
Hexachlorobenzene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Hexachlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.16 UJ	NA
Hexachlorocyclopentadiene	1 UJ	NA	1 UJ	NA	1 UJ	NA
Indeno(1,2,3-c,d)pyrene	0.5 UJ	NA	0.5 UJ	NA	0.14 UJ	NA
Methoxychlor	1 UJ	NA	1 UJ	NA	0.23 UJ	NA
Metolachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Metribuzin	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
N-Nitroso-di-n-butylamine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
N-Nitroso-di-n-propylamine	0.8 UJ	NA	0.8 UJ	NA	0.8 UJ	NA
N-Nitrosodiphenylamine	1 UJ	NA	1 UJ	NA	1 UJ	NA
Naphthalene	6.4	NA	6.6	NA	0.25 UJ	NA
o-Toluidine	UNK UJ	NA	UNK UJ	NA	UNK UR	NA
Octachlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.18 UJ	NA
Pentachlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.18 UJ	NA
Pentachlorophenol	0.7 UJ	NA	0.7 UJ	NA	0.7 UJ	NA
Phenanthrene	0.61 J	NA	0.63 J	NA	0.6 J	NA
Propachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Propham	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Pyrene	0.5 UJ	NA	0.5 UJ	NA	0.25 UJ	NA
Simazine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Tetrachlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Test : Semivolatiles - 525.2 - Surrogates		**Units: %**				
1,3-Dimethyl-2-Nitrobenzene-s	115	NA	127	NA	97	NA
Perylene-d12-s	93	NA	90	NA	94	NA
Terphenyl-d14-s	96	NA	94	NA	90	NA
Triphenylphosphate-s	107	NA	104	NA	108	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW08 5/25/00 15.4 - 20.4	AOC9-MW08-F 5/25/00 15.4 - 20.4	AOC9-MW08/D 5/25/00 15.4 - 20.4	AOC9-MW08/D-F 5/25/00 15.4 - 20.4	G009-MW01 5/11/00 4 - 9	G009-MW01-F 5/11/00 4 - 9
Test : Sulfide - 376.1		**Units:** mg/L				
Sulfide	1 U	NA	1 U	NA	1 U	NA
Test : TAL Metals - SW6010B/7471A/7470A		**Units:** µg/L				
Aluminum	100 U	100 U	100 U	100 U	100 U	9.08 U
Antimony	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	10 U	10 U	10 U	10 U	10 U	10 U
Barium	41.3	44.2	40.4	40.3	8.39 J	8.05 J
Beryllium	5 U	5 U	0.204 J	5 U	5 U	5 U
Cadmium	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	101000	97500	99700	95800	66500	74200
Chromium	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	1.22 J	20 U	0.902 J	20 U	20 U	20 U
Copper	4.13 J	20 U	20 U	20 U	20 U	20 U
Iron	1420	1540	1500	1510	16.1 U	50 U
Lead	5 U	5 U	5 U	5 U	5 U	5 U
Magnesium	5410	5410	5540	5300	5650	6120
Manganese	2240	2170	2200	2140	6.55 U	4.21 J
Mercury	0.2 UJ	NA	0.2 UJ	NA	0.168 U	NA
Nickel	20 U	20 U	20 U	20 U	20 U	20 U

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
Potassium	1860	1800	1910	1790	799 J	839 J
Selenium	10 U	10 U	10 U	10 U	10 U	21.7
Silver	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	4250	4050	4150	3930	4500	5300
Thallium	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium	20 U	20 U	20 U	20 U	20 U	20 U
Zinc	5.11 J	8.78 U	10 U	3.87 U	3.04 J	3.78 J
Test : Volatiles - 524.2		**Units: µg/L**				
1,1,1,2-Tetrachloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,1-Trichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,2,2-Tetrachloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,2-Trichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1-Dichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1-Dichloroethene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1-Dichloropropene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,3-Trichlorobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,3-Trichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,4-Trichlorobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,4-Trimethylbenzene	42.3	NA	46.0	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1

COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-MW08 5/25/00 15.4 - 20.4	AOC9-MW08-F 5/25/00 15.4 - 20.4	AOC9-MW08/D 5/25/00 15.4 - 20.4	AOC9-MW08/D-F 5/25/00 15.4 - 20.4	G009-MW01 5/11/00 4 - 9	G009-MW01-F 5/11/00 4 - 9
1,2-Dibromo-3-chloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2-Dibromoethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2-Dichlorobenzene	172	NA	180	NA	0.363 J	NA
1,2-Dichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2-Dichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,3,5-Trimethylbenzene	10.7	NA	10.9	NA	0.5 U	NA
1,3-Dichlorobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,3-Dichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,4-Dichlorobenzene	187	NA	200	NA	0.5 U	NA
2,2-Dichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
2-Chlorotoluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
4-Chlorotoluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
4-Isopropyltoluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Benzene	3.87	NA	3.95	NA	0.5 U	NA
Bromobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromochloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromodichloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromoform	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromomethane	0.5 U	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
Carbon tetrachloride	0.5 U	NA	0.5 U	NA	0.5 U	NA
Chlorobenzene	1250	NA	1320	NA	0.5 U	NA
Chloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Chloroform	0.5 U	NA	0.5 U	NA	0.5 U	NA
Chloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
cis-1,2-Dichloroethene	3.86	NA	3.97	NA	0.5 U	NA
cis-1,3-Dichloropropene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Dibromochloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Dibromomethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Dichlorodifluoromethane	0.5 U	NA	0.5 U	NA	NA	NA
Ethylbenzene	6.28	NA	6.53	NA	0.5 U	NA
Hexachlorobutadiene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Isopropylbenzene	9.64	NA	10.1	NA	0.5 U	NA
m,p-Xylene	15.6	NA	16.4	NA	0.5 U	NA
Methylene chloride	0.5 U	NA	0.5 U	NA	0.5 U	NA
n-Butylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
n-Propylbenzene	4.64	NA	4.76	NA	0.5 U	NA
Naphthalene	7.51	NA	7.92	NA	0.5 U	NA
o-Xylene	9.57	NA	10.0	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-MW08	AOC9-MW08-F	AOC9-MW08/D	AOC9-MW08/D-F	G009-MW01	G009-MW01-F
Sample Date:	5/25/00	5/25/00	5/25/00	5/25/00	5/11/00	5/11/00
PARAMETER Depth (ft):	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	15.4 - 20.4	4 - 9	4 - 9
sec-Butylbenzene	3.72	NA	3.93	NA	0.5 U	NA
Styrene	0.5 U	NA	0.5 U	NA	0.5 U	NA
tert-Butylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Tetrachloroethene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Toluene	0.304 J	NA	0.320 J	NA	0.5 U	NA
trans-1,2-Dichloroethene	0.5 U	NA	0.5 U	NA	0.5 U	NA
trans-1,3-Dichloropropene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Trichloroethene	4.06	NA	4.23	NA	0.869	NA
Trichlorofluoromethane	0.5 U	NA	0.5 U	NA	NA	NA
Vinyl chloride	2.72	NA	2.79	NA	0.5 U	NA
Xylenes, Total	0.5 U	NA	0.5 U	NA	0.5 U	NA
Test : Volatiles - 524.2 - Surrogates		**Units: %**				
1,2-Dichlorobenzene-d4-s	0	NA	0	NA	99	NA
4-Bromofluorobenzene-s	116	NA	116	NA	93	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Test : Anions - 300		**Units: mg/L**				
Chloride	24.1	NA	12.8	NA	0.1 U	NA
Nitrogen, Nitrate (As N)	0.592	NA	0.237	NA	1.76	NA
Nitrogen, Nitrite	0.1 U	NA	0.1 U	NA	0.1 U	NA
Phosphorus, Dissolved Orthophosphate	0.1 U	NA	0.1 U	NA	0.1 U	NA
Sulfate	9.11	NA	12.5	NA	24.5	NA
Test : Dissolved Organic Carbon - SM 5310B		**Units: mg/L**				
Total Organic Carbon, TOC	0.968 J	NA	0.848 J	NA	1.32	NA
Test : MEE - Headspace GC-FID analysis		**Units: µg/L**				
Ethane	3.7 U	NA	3.7 U	NA	3.7 U	NA
Ethene	3.4 U	NA	3.4 U	NA	3.4 U	NA
Methane	37	NA	410 B	NA	480 B	NA
Propane	5.4 U	NA	5.4 U	NA	5.4 U	NA
Test : PCBs - SW 8082		**Units: µg/L**				
Aroclor 1016	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1221	1 U	NA	1 U	NA	1 U	NA
Aroclor 1232	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1242	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1248	0.5 U	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Aroclor 1254	0.5 U	NA	0.5 U	NA	0.5 U	NA
Aroclor 1260	0.5 U	NA	0.5 U	NA	0.5 U	NA
Test : PCBs - SW 8082 - Surrogates		**Units: %**				
Decachlorobiphenyl-s	89	NA	92	NA	89	NA
Tetrachloro-m-xylene-s	82	NA	80	NA	88	NA
Test : Pesticides - SW 8081A		**Units: µg/L**				
4,4´-DDD	0.05 U	NA	0.05 U	NA	0.05 U	NA
4,4´-DDE	0.05 U	NA	0.05 U	NA	0.05 U	NA
4,4´-DDT	0.05 U	NA	0.05 U	NA	0.05 U	NA
Aldrin	0.025 U	NA	0.025 U	NA	0.025 U	NA
alpha-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
alpha-Chlordane	0.025 U	NA	0.025 U	NA	0.025 U	NA
beta-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
delta-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
Dieldrin	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan I	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan II	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endosulfan sulfate	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endrin	0.05 U	NA	0.05 U	NA	0.05 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Endrin aldehyde	0.05 U	NA	0.05 U	NA	0.05 U	NA
Endrin ketone	0.05 U	NA	0.05 U	NA	0.05 U	NA
gamma-BHC	0.025 U	NA	0.025 U	NA	0.025 U	NA
gamma-Chlordane	0.025 U	NA	0.025 U	NA	0.025 U	NA
Heptachlor	0.025 U	NA	0.025 U	NA	0.025 U	NA
Heptachlor epoxide	0.025 U	NA	0.025 U	NA	0.025 U	NA
Methoxychlor	0.25 U	NA	0.25 U	NA	0.25 U	NA
Toxaphene	1 U	NA	1 U	NA	1 U	NA
Test : Pesticides - SW 8081A - Surrogates		**Units: %**				
Decachlorobiphenyl-s	94	NA	98	NA	91	NA
Tetrachloro-m-xylene-s	80	NA	73	NA	79	NA
Test : Semivolatiles - 525.2		**Units: µg/L**				
2,3-Dichlorobiphenyl	0.5 UJ	NA	0.12 UJ	NA	0.5 UJ	NA
2,4,5-Trichlorobiphenyl	0.5 UJ	NA	0.2 UJ	NA	0.5 UJ	NA
2,4,5-Trichlorophenol	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2,4,6-Trichlorophenol	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2,4-Dichlorophenol	1 UJ	NA	1 UJ	NA	1 UJ	NA
2-Chlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
2-Methylnaphthalene	0.36 UJ	NA	0.41 UJ	NA	0.36 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER — Sample ID: Sample Date: Depth (ft):	G009-MW02 5/11/00 4 - 9	G009-MW02-F 5/11/00 4 - 9	G009-MW03 5/11/00 4 - 9	G009-MW03-F 5/11/00 4 - 9	G009-MW04 5/11/00 6.7 - 16.7	G009-MW04-F 5/11/00 6.7 - 16.7
2-Nitrophenol	UNK UR	NA	UNK UR	NA	UNK UR	NA
3,3'-Dichlorobenzidine	1 UJ	NA	1 UJ	NA	1 UJ	NA
4-Chloro-3-methylphenol	1 UJ	NA	1 UJ	NA	1 UJ	NA
Acenaphthene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Acenaphthylene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Alachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Anthracene	1 UJ	NA	1 UJ	NA	1 UJ	NA
Atrazine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Azobenzene(1,2-Diphenylhydrazine)	0.5 UJ	NA	0.15 UJ	NA	0.5 UJ	NA
Benzidine	UNK UR	NA	UNK UR	NA	UNK UR	NA
Benzo(a)anthracene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Benzo(a)pyrene	0.5 UJ	NA	0.23 UJ	NA	0.5 UJ	NA
Benzo(b)fluoranthene	0.5 UJ	NA	0.25 UJ	NA	0.5 UJ	NA
Benzo(g,h,i)perylene	0.5 UJ	NA	0.22 UJ	NA	0.5 UJ	NA
Benzo(k)fluoranthene	0.5 UJ	NA	0.24 UJ	NA	0.5 UJ	NA
Bis(2-ethylhexyl)adipate	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Bis(2-ethylhexyl)phthalate	0.5 UJ	NA	0.76 J	NA	0.69 J	NA
Butachlor	0.5 UJ	NA	0.4 UJ	NA	0.5 UJ	NA
Butylbenzylphthalate	0.5 UJ	NA	0.68 J	NA	0.5 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1

COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Captan	0.5 UR	NA	0.5 UR	NA	0.5 UR	NA
Chrysene	0.5 UJ	NA	0.28 UJ	NA	0.5 UJ	NA
Di-n-butylphthalate	14 J	NA	14 J	NA	15 J	NA
Di-n-octylphthalate	0.5 UJ	NA	0.23 UJ	NA	0.5 UJ	NA
Dibenz(a,h)anthracene	0.5 UJ	NA	0.2 UJ	NA	0.5 UJ	NA
Dibenzofuran	0.24 UJ	NA	0.26 UJ	NA	0.22 UJ	NA
Diethylphthalate	4.7 J	NA	4.8 J	NA	4.5 J	NA
Fluoranthene	0.5 UJ	NA	0.35 UJ	NA	0.5 UJ	NA
Fluorene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
g-BHC(Lindane)	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Heptachlorobiphenyl	0.5 UJ	NA	0.14 UJ	NA	0.5 UJ	NA
Hexachlorobenzene	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Hexachlorobiphenyl	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Hexachlorocyclopentadiene	1 UJ	NA	1 UJ	NA	1 UJ	NA
Indeno(1,2,3-c,d)pyrene	0.5 UJ	NA	0.2 UJ	NA	0.5 UJ	NA
Methoxychlor	1 UJ	NA	0.35 UJ	NA	1 UJ	NA
Metolachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Metribuzin	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
N-Nitroso-di-n-butylamine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
N-Nitroso-di-n-propylamine	0.8 UJ	NA	0.8 UJ	NA	0.8 UJ	NA
N-Nitrosodiphenylamine	1 UJ	NA	1 UJ	NA	1 UJ	NA
Naphthalene	0.19 UJ	NA	0.31 UJ	NA	0.3 UJ	NA
o-Toluidine	UNK UR	NA	UNK UR	NA	UNK UR	NA
Octachlorobiphenyl	0.5 UJ	NA	0.18 UJ	NA	0.5 UJ	NA
Pentachlorobiphenyl	0.5 UJ	NA	0.21 UJ	NA	0.5 UJ	NA
Pentachlorophenol	0.7 UJ	NA	0.7 UJ	NA	0.7 UJ	NA
Phenanthrene	0.56 J	NA	0.67 J	NA	0.59 J	NA
Propachlor	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Propham	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Pyrene	0.5 UJ	NA	0.3 UJ	NA	0.5 UJ	NA
Simazine	0.5 UJ	NA	0.5 UJ	NA	0.5 UJ	NA
Tetrachlorobiphenyl	0.5 UJ	NA	0.22 UJ	NA	0.5 UJ	NA
Test : Semivolatiles - 525.2 - Surrogates		**Units: %**				
1,3-Dimethyl-2-Nitrobenzene-s	107	NA	95	NA	95	NA
Perylene-d12-s	96	NA	93	NA	92	NA
Terphenyl-d14-s	92	NA	100	NA	82	NA
Triphenylphosphate-s	117	NA	153	NA	168	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Test : Sulfide - 376.1		**Units: mg/L**				
Sulfide	1 U	NA	1 U	NA	1 U	NA
Test : TAL Metals - SW6010B/7471A/7470A		**Units: µg/L**				
Aluminum	141 U	9.71 U	200 U	100 U	55.2 U	21.8 U
Antimony	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	10 U	10 U	10 U	10 U	10 U	10 U
Barium	158	19.3 J	10.7 J	10.1 J	16.5 J	18.5 J
Beryllium	5 U	0.111 J	5 U	5 U	5 U	0.120 J
Cadmium	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	82800	94800	85000	94000	70600	81200
Chromium	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	20 U	20 U	20 U	20 U	20 U	20 U
Copper	20 U	20 U	20 U	20 U	20 U	20 U
Iron	420	34.7 U	721	12.9 U	240	22.8 U
Lead	5 U	5 U	5 U	5 U	5 U	5 U
Magnesium	4040	4440	6120	6440	8570	9590
Manganese	200	157	3430	3620	561	616
Mercury	0.178 U	NA	0.192 U	NA	0.178 U	NA
Nickel	20 U	20 U	20 U	20 U	20 U	20 U

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Potassium	1320	1490	1210	1310	1140	1300
Selenium	10 U	23.2	10 U	22.5	10 U	16.6
Silver	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	12600	15000	7190	8420	7010	8210
Thallium	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium	20 U	20 U	20 U	20 U	20 U	20 U
Zinc	4.15 J	5.48 J	3.49 J	10 U	3.59 J	3.75 J
Test : Volatiles - 524.2		**Units: µg/L**				
1,1,1,2-Tetrachloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,1-Trichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,2,2-Tetrachloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,2-Trichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1-Dichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1-Dichloroethene	0.5 U	NA	0.605	NA	0.5 U	NA
1,1-Dichloropropene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,3-Trichlorobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,3-Trichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,4-Trichlorobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,4-Trimethylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
1,2-Dibromo-3-chloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2-Dibromoethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2-Dichlorobenzene	0.5 U	NA	82.5	NA	44.1	NA
1,2-Dichloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2-Dichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,3,5-Trimethylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,3-Dichlorobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,3-Dichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,4-Dichlorobenzene	0.5 U	NA	31.4	NA	10.3	NA
2,2-Dichloropropane	0.5 U	NA	0.5 U	NA	0.5 U	NA
2-Chlorotoluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
4-Chlorotoluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
4-Isopropyltoluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Benzene	0.5 U	NA	0.650	NA	2.15	NA
Bromobenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromochloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromodichloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromoform	0.5 U	NA	0.5 U	NA	0.5 U	NA
Bromomethane	0.5 U	NA	0.5 U	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Carbon tetrachloride	0.5 U	NA	0.5 U	NA	0.5 U	NA
Chlorobenzene	0.5 U	NA	146	NA	235	NA
Chloroethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Chloroform	0.5 U	NA	0.5 U	NA	0.5 U	NA
Chloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
cis-1,2-Dichloroethene	0.5 U	NA	34.9	NA	17.9	NA
cis-1,3-Dichloropropene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Dibromochloromethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Dibromomethane	0.5 U	NA	0.5 U	NA	0.5 U	NA
Ethylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Hexachlorobutadiene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Isopropylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
m,p-Xylene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Methylene chloride	0.5 U	NA	0.5 U	NA	0.5 U	NA
n-Butylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
n-Propylbenzene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Naphthalene	0.5 U	NA	0.5 U	NA	0.5 U	NA
o-Xylene	0.5 U	NA	0.5 U	NA	0.5 U	NA
sec-Butylbenzene	0.5 U	NA	0.882	NA	0.5 U	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	G009-MW02	G009-MW02-F	G009-MW03	G009-MW03-F	G009-MW04	G009-MW04-F
Sample Date:	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00	5/11/00
PARAMETER Depth (ft):	4 - 9	4 - 9	4 - 9	4 - 9	6.7 - 16.7	6.7 - 16.7
Styrene	0.5 U	NA	0.5 U	NA	0.5 U	NA
tert-Butylbenzene	0.5 U	NA	0.348 J	NA	0.5 U	NA
Tetrachloroethene	0.5 U	NA	1.70	NA	2.41	NA
Toluene	0.5 U	NA	0.5 U	NA	0.5 U	NA
trans-1,2-Dichloroethene	0.5 U	NA	0.345 J	NA	0.527	NA
trans-1,3-Dichloropropene	0.5 U	NA	0.5 U	NA	0.5 U	NA
Trichloroethene	0.888	NA	6.57	NA	17.7	NA
Vinyl chloride	0.5 U	NA	11.7	NA	4.84	NA
Xylenes, Total	0.5 U	NA	0.5 U	NA	0.5 U	NA
Test : Volatiles - 524.2 - Surrogates		**Units: %**				
1,2-Dichlorobenzene-d4-s	97	NA	0	NA	98	NA
4-Bromofluorobenzene-s	93	NA	104	NA	96	NA

Source: Ecology and Environment, Inc., October 2000

Table F-1
COMPLETE ANALYTICAL DATA SUMMARY FOR THE GROUNDWATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Key:

Qualifiers:

B	detected in blank
J	estimated
U	not detected
UJ	not detected; estimated detection limit reported
UR	not detected; rejected sample

Surrogate Limits:

Analysis	Media	Surrogates	Recovery Range
PCBs by Method 8082	Water	Decachlorobiphenyl-s	18 - 112%
		Tetrachloro-m-xylene-s	32 - 110%
Pesticides by Method 8081A		Decachlorobiphenyl-s	12 - 132%
		Tetrachloro-m-xylene-s	31 - 122%
SVOCs by GCMS Method 525		1,3-Dimethyl-2-Nitrobenzene	60 - 130%
		Perylene-d12	60 - 130%
		Terphenyl-d14-s	60 - 130%
		Triphenylphosphate	60 - 130%
VOCs by GCMS Method 524.2		1,2-Dichlorobenzene-d4-s	80 - 120%
		4-Bromofluorobenzene-s	80 - 120%

Units:

mg/L = milligrams per liter
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
µg/kg = micrograms per kilogram

Test and Sample Information:

PCBs = polychlorinated biphenyls
TAL = Target Analyte List
/D = duplicate sample
NA = not analyzed
UNK = unknown
-F = filtered sample

Source: Ecology and Environment, Inc., Octobe

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID: Sample Date: **PARAMETER** Depth (ft):	AOC9-SW09 5/10/00 0 - 0	AOC9-SW10 5/10/00 0 - 0	AOC9-SW10/D 5/10/00 0 - 0	AOC9-SW11 5/10/00 0 - 0	AOC9-SW12 5/10/00 0 - 0	
Test : Hardness - EPA 130.2		**Units: mg/L**				
Hardness (As CaCO3)	64.00	66.00	66.00	78.00	66.00	
Test : PCBs - SW 8082		**Units: µg/L**				
Aroclor 1016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1221	1 U	1 U	1 U	1 U	1 U	
Aroclor 1232	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1242	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1248	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1254	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1260	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Test : PCBs - SW 8082 - Surrogates		**Units: %**				
Decachlorobiphenyl-s	89	91	81	80	88	
Tetrachloro-m-xylene-s	87	90	79	84	75	
Test : Pesticides - SW 8081A		**Units: µg/L**				
4,4´-DDD	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
4,4´-DDE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
4,4´-DDT	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Aldrin	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
alpha-BHC	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-SW09 5/10/00 0 - 0	AOC9-SW10 5/10/00 0 - 0	AOC9-SW10/D 5/10/00 0 - 0	AOC9-SW11 5/10/00 0 - 0	AOC9-SW12 5/10/00 0 - 0	
alpha-Chlordane	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
beta-BHC	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
delta-BHC	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
Dieldrin	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Endosulfan I	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Endosulfan II	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Endosulfan sulfate	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Endrin	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Endrin aldehyde	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Endrin ketone	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
gamma-BHC	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
gamma-Chlordane	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
Heptachlor	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
Heptachlor epoxide	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	
Methoxychlor	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	
Toxaphene	1 U	1 U	1 U	1 U	1 U	
Test : Pesticides - SW 8081A - Surrogates		**Units: %**				
Decachlorobiphenyl-s	95	92	85	89	92	
Tetrachloro-m-xylene-s	74	72	66	74	63	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	
Test : Semivolatiles - 525.2		**Units: µg/L**				
2,3-Dichlorobiphenyl	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
2,4,5-Trichlorobiphenyl	<0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
2,4,5-Trichlorophenol	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
2,4,6-Trichlorophenol	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
2,4-Dichlorophenol	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
2-Chlorobiphenyl	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
2-Methylnaphthalene	0.97 UJ	0.81 UJ	0.59 UJ	0.72 UJ	0.48 UJ	
2-Nitrophenol	UNK UR	UNK UR	UNK UR	UNK UR	UNK UR	
3,3'-Dichlorobenzidine	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
4-Chloro-3-methylphenol	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
Acenaphthene	0.26 UJ	0.24 UJ	0.15 UJ	0.16 UJ	0.13 UJ	
Acenaphthylene	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Alachlor	<0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Anthracene	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
Atrazine	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Azobenzene(1,2-Diphenylhydrazine)	0.5 UJ	0.15 UJ	0.5 UJ	0.5 UJ	0.16 UJ	
Benzidine	UNK UR	UNK UR	UNK UR	UNK UR	UNK UR	
Benzo(a)anthracene	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	
	Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
	Depth (ft):	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	
Benzo(a)pyrene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Benzo(b)fluoranthene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Benzo(g,h,i)perylene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Benzo(k)fluoranthene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Bis(2-ethylhexyl)adipate		0.44 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Bis(2-ethylhexyl)phthalate		1.4 J	0.72 J	0.57 J	1.8 J	2.1 J	
Butachlor		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Butylbenzylphthalate		0.5 UJ	0.5 UJ	0.48 UJ	0.5 UJ	0.5 UJ	
Captan		0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	
Chrysene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Di-n-butylphthalate		16 UJ	16 UJ	15 UJ	16 UJ	15 UJ	
Di-n-octylphthalate		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Dibenz(a,h)anthracene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Dibenzofuran		0.38 UJ	0.33 UJ	0.32 UJ	0.4 UJ	0.33 UJ	
Diethylphthalate		5.7 J	5.8 J	5.4 J	6.3 J	5.8 J	
Fluoranthene		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Fluorene		0.18 UJ	0.16 UJ	0.15 UJ	0.21 UJ	0.16 UJ	
g-BHC(Lindane)		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Heptachlorobiphenyl		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	
Hexachlorobenzene	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Hexachlorobiphenyl	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Hexachlorocyclopentadiene	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
Indeno(1,2,3-c,d)pyrene	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Methoxychlor	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
Metolachlor	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Metribuzin	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
N-Nitroso-di-n-butylamine	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
N-Nitroso-di-n-propylamine	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	
N-Nitrosodiphenylamine	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	
Naphthalene	0.65 UJ	0.47 UJ	0.35 UJ	0.43 UJ	0.3 UJ	
o-Toluidine	UNK UR	UNK UR	UNK UR	UNK UR	UNK UR	
Octachlorobiphenyl	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Pentachlorobiphenyl	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Pentachlorophenol	0.7 UJ	0.7 UJ	0.7 UJ	0.7 UJ	0.7 UJ	
Phenanthrene	0.8	0.77 J	0.74	0.76	0.69	
Propachlor	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Propham	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Pyrene	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-SW09 5/10/00 0 - 0	AOC9-SW10 5/10/00 0 - 0	AOC9-SW10/D 5/10/00 0 - 0	AOC9-SW11 5/10/00 0 - 0	AOC9-SW12 5/10/00 0 - 0	
Simazine	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Tetrachlorobiphenyl	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	
Test : Semivolatiles - 525.2 - Surrogates		**Units: %**				
1,3-Dimethyl-2-Nitrobenzene-s	106	99	100	120	110	
Perylene-d12-s	108	104	97	93	102	
Terphenyl-d14-s	96	80	106	110	109	
Triphenylphosphate-s	106	121	125	144	123	
Test : TAL Metals - SW6010B/7471A/7470A		**Units: µg/L**				
Aluminum	172	152	131	149	162	
Antimony	10 U	10 U	10 U	10 U	10 U	
Arsenic	10 U	10 U	10 U	10 U	10 U	
Barium	12.4 J	12.8 J	12.3 J	12.3 J	12.3 J	
Beryllium	5 U	5 U	5 U	5 U	5 U	
Cadmium	5 U	5 U	5 U	5 U	5 U	
Calcium	22000	20300	21400	27500	23000	
Chromium	10 U	10 U	10 U	10 U	10 U	
Cobalt	20 U	20 U	20 U	20 U	20 U	
Copper	3.06 J	3.07 J	20 U	3.16 J	4.19 J	
Iron	712	655	588	650	757	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID: Sample Date: PARAMETER Depth (ft):	AOC9-SW09 5/10/00 0 - 0	AOC9-SW10 5/10/00 0 - 0	AOC9-SW10/D 5/10/00 0 - 0	AOC9-SW11 5/10/00 0 - 0	AOC9-SW12 5/10/00 0 - 0	
Lead	5 UJ	5 UJ	5 UJ	5 UJ	2.13 J	
Magnesium	3160	3200	3160	3310	3450	
Manganese	169	163	154	140	158	
Mercury	0.0339 UJ	0.0360 UJ	0.0481 UJ	0.0346 UJ	0.0360 UJ	
Nickel	20 U	5.27 J	20 U	20 U	20 U	
Potassium	1580	1640	1490	1730	1430	
Selenium	10 U	10 U	10 U	10 U	10 U	
Silver	10 U	10 U	10 U	10 U	10 U	
Sodium	6360	6410	6590	6170	6710	
Thallium	10 U	10 U	10 U	10 U	10 U	
Vanadium	20 U	20 U	20 U	20 U	20 U	
Zinc	5.02 J	5.16 J	8.41 J	4.83 J	9.76 J	
Test : Volatiles - 524.2		**Units: µg/L**				
1,1,1,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,1,1-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,1,2,2-Tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,1,2-Trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,1-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,1-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	
1,1-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2,3-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2,3-Trichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2,4-Trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2,4-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2-Dibromo-3-chloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2-Dibromoethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2-Dichlorobenzene	0.5 U	0.406 J	0.5 U	0.5 U	0.5 U	
1,2-Dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,3,5-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,3-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,3-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,4-Dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2,2-Dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
4-Chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
4-Isopropyltoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	
Bromobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Bromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Chlorobenzene	0.5 U	0.835	0.816	0.236 J	0.268 J	
Chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Chloroform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
cis-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
cis-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Dibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Hexachlorobutadiene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Isopropylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
m,p-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Methylene chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SW09	AOC9-SW10	AOC9-SW10/D	AOC9-SW11	AOC9-SW12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	
n-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
n-Propylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Naphthalene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
sec-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
tert-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Tetrachloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
trans-1,2-Dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
trans-1,3-Dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Vinyl chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Xylenes, Total	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Test : Volatiles - 524.2 - Surrogates		**Units: %**				
1,2-Dichlorobenzene-d4-s	95	94	96	95	95	
4-Bromofluorobenzene-s	91	92	93	92	93	

Source: Ecology and Environment, Inc., October 2000

Table F-2
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SURFACE WATER SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Key:

Qualifiers:

J	estimated
U	not detected
UJ	not detected; estimated detection limit reported
UR	not detected; rejected sample

Surrogate Limits:

Analysis	Media	Surrogates	Recovery Range
PCBs by Method 8082	Water	Decachlorobiphenyl-s	18 - 112%
		Tetrachloro-m-xylene-s	32 - 110%
Pesticides by Method 8081A		Decachlorobiphenyl-s	12 - 132%
		Tetrachloro-m-xylene-s	31 - 122%
SVOCs by GCMS Method 525		1,3-Dimethyl-2-Nitrobenzene	60 - 130%
		Perylene-d12	60 - 130%
		Terphenyl-d14-s	60 - 130%
		Triphenylphosphate	60 - 130%
VOCs by GCMS Method 524.2		1,2-Dichlorobenzene-d4-s	80 - 120%
		4-Bromofluorobenzene-s	80 - 120%

Units:

mg/L = milligrams per liter
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
µg/kg = micrograms per kilogram

Test and Sample Information:

PCBs = polychlorinated biphenyls
TAL = Target Analyte List
/D = duplicate sample
NA = not analyzed
UNK = unknown
-F = filtered sample
WSA = Weapons Storage Area

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
Test : PCBs - SW 8082		**Units: µg/kg**				
Aroclor 1016	29.8 U	32.2 U	33.8 U	37.2 U	34.4 U	
Aroclor 1221	59.6 U	64.4 U	67.7 U	74.4 U	68.9 U	
Aroclor 1232	29.8 U	32.2 U	33.8 U	37.2 U	34.4 U	
Aroclor 1242	29.8 U	32.2 U	33.8 U	37.2 U	34.4 U	
Aroclor 1248	29.8 U	32.2 U	33.8 U	37.2 U	34.4 U	
Aroclor 1254	29.8 U	32.2 U	33.8 U	37.2 U	34.4 U	
Aroclor 1260	29.8 U	32.2 U	33.8 U	37.2 U	34.4 U	
Test : PCBs - SW 8082 - Surrogates		**Units: %**				
Decachlorobiphenyl-s	107	115	99	115	106	
Tetrachloro-m-xylene-s	105	115	98	108	102	
Test : Percent Moisture - D2216		**Units: %**				
Percent Moisture	33.9	42.3	45.2	48.4	43.7	
Test : Pesticides - SW 8081A		**Units: µg/kg**				
4,4´-DDD	2.98 U	3.22 U	3.38 U	3.72 U	3.44 UJ	
4,4´-DDE	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
4,4´-DDT	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Aldrin	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	
alpha-BHC	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
alpha-Chlordane	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	
beta-BHC	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	
delta-BHC	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	
Dieldrin	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Endosulfan I	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Endosulfan II	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Endosulfan sulfate	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Endrin	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Endrin aldehyde	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Endrin ketone	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
gamma-BHC	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	
gamma-Chlordane	1.49 U	1.61 U	1.69 U	1.86 U	1.72 U	
Heptachlor	2.98 U	3.22 U	3.38 U	3.72 U	3.44 U	
Heptachlor epoxide	2.98 U	2.28 J	3.38 U	3.72 U	1.72 J	
Methoxychlor	14.9 U	16.1 U	16.9 U	18.6 U	17.2 U	
Toxaphene	74.5 U	80.5 U	84.6 U	93 U	86.1 U	
Test : Pesticides - SW 8081A - Surrogates		**Units: %**				
Decachlorobiphenyl-s	111	108	91	132	94	
Tetrachloro-m-xylene-s	94	101	92	100	85	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER **Depth (ft):**	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
Test : Semivolatiles - SW 8270C		**Units: µg/kg**				
1,2,4-Trichlorobenzene	499 U	572 U	602 U	640 U	586 U	
1,2-Dichlorobenzene	499 U	572 U	602 U	640 U	586 U	
1,3-Dichlorobenzene	499 U	572 U	602 U	640 U	586 U	
1,4-Dichlorobenzene	499 U	572 U	602 U	640 U	586 U	
2,4,5-Trichlorophenol	1260 U	1440 U	1510 U	1610 U	1470 U	
2,4,6-Trichlorophenol	499 U	572 U	602 U	640 U	586 U	
2,4-Dichlorophenol	499 U	572 U	602 U	640 U	586 U	
2,4-Dimethylphenol	499 U	572 U	602 U	640 U	586 U	
2,4-Dinitrophenol	499 U	572 U	602 U	640 U	586 U	
2,4-Dinitrotoluene	499 U	572 U	602 U	640 U	586 U	
2,6-Dinitrotoluene	499 U	572 U	602 U	640 U	586 U	
2-Chloronaphthalene	499 U	572 U	602 U	640 U	586 U	
2-Chlorophenol	499 U	572 U	602 U	640 U	586 U	
2-Methylnaphthalene	499 U	572 U	602 U	640 U	586 U	
2-Methylphenol	499 U	572 U	602 U	640 U	586 U	
2-Nitroaniline	1260 U	1440 U	1510 U	1610 U	1470 U	
2-Nitrophenol	499 U	572 U	602 U	640 U	586 U	
3,3´-Dichlorobenzidine	998 U	1140 U	1200 U	1280 U	1170 U	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
3-Nitroaniline	1260 U	1440 U	1510 U	1610 U	1470 U	
4,6-Dinitro-2-methylphenol	1260 U	1440 U	1510 U	1610 U	1470 U	
4-Bromophenyl phenyl ether	499 U	572 U	602 U	640 U	586 U	
4-Chloro-3-methylphenol	499 U	572 U	602 U	640 U	586 U	
4-Chloroaniline	499 U	572 U	602 U	640 U	586 U	
4-Chlorophenyl phenyl ether	499 U	572 U	602 U	640 U	586 U	
4-Methylphenol	499 U	572 U	602 U	640 U	586 U	
4-Nitroaniline	1260 U	1440 U	1510 U	1610 U	1470 U	
4-Nitrophenol	1260 U	1440 U	1510 U	1610 U	1470 U	
Acenaphthene	499 U	572 U	602 U	640 U	586 U	
Acenaphthylene	499 U	572 U	602 U	640 U	586 U	
Anthracene	499 U	572 U	602 U	640 U	586 U	
Benz(a)anthracene	499 U	572 U	602 U	640 U	586 U	
Benzo(a)pyrene	499 U	572 U	602 U	640 U	586 U	
Benzo(b)fluoranthene	499 U	572 U	602 U	640 U	586 U	
Benzo(g,h,i)perylene	499 U	572 U	602 U	640 U	586 U	
Benzo(k)fluoranthene	499 U	572 U	602 U	640 U	586 U	
Benzoic acid	1260 U	1440 U	1510 U	1610 U	1470 U	
Benzyl alcohol	499 U	572 U	602 U	640 U	586 U	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
Bis(2-chloroethoxy)methane	499 U	572 U	602 U	640 U	586 U	
Bis(2-chloroethyl)ether	499 U	572 U	602 U	640 U	586 U	
Bis(2-chloroisopropyl)ether	499 U	572 U	602 U	640 U	586 U	
Bis(2-ethylhexyl)phthalate	499 U	572 U	602 U	640 U	586 U	
Butyl benzyl phthalate	499 U	572 U	602 U	640 U	586 U	
Carbazole	499 U	572 U	602 U	640 U	586 U	
Chrysene	499 U	572 U	602 U	640 U	586 U	
Di-n-butyl phthalate	499 U	572 U	602 U	640 U	586 U	
Di-n-octyl phthalate	499 U	572 U	602 U	640 U	586 U	
Dibenz(a,h)anthracene	499 U	572 U	602 U	640 U	586 U	
Dibenzofuran	499 U	572 U	602 U	640 U	586 U	
Diethyl phthalate	499 U	572 U	602 U	640 U	586 U	
Dimethyl phthalate	499 U	572 U	602 U	640 U	586 U	
Fluoranthene	499 U	125 J	84.5 J	640 U	586 U	
Fluorene	499 U	572 U	602 U	640 U	586 U	
Hexachlorobenzene	499 U	572 U	602 U	640 U	586 U	
Hexachlorobutadiene	499 U	572 U	602 U	640 U	586 U	
Hexachlorocyclopentadiene	1260 U	1440 U	1510 U	1610 U	1470 U	
Hexachloroethane	499 U	572 U	602 U	640 U	586 U	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-SD09 5/10/00 0 - 0.17	AOC9-SD10 5/10/00 0 - 0.17	AOC9-SD10/D 5/10/00 0 - 0.17	AOC9-SD11 5/10/00 0 - 0.17	AOC9-SD12 5/10/00 0 - 0.17	
Indeno(1,2,3-cd)pyrene	499 U	572 U	602 U	640 U	586 U	
Isophorone	499 U	572 U	602 U	640 U	586 U	
N-Nitrosodi-n-propylamine	499 U	572 U	602 U	640 U	586 U	
N-Nitrosodimethylamine	499 U	572 U	602 U	640 U	586 U	
N-Nitrosodiphenylamine	499 U	572 U	602 U	640 U	586 U	
Naphthalene	499 U	572 U	602 U	640 U	586 U	
Nitrobenzene	499 U	572 U	602 U	640 U	586 U	
Pentachlorophenol	1260 U	1440 U	1510 U	1610 U	1470 U	
Phenanthrene	499 U	79.0 J	602 U	640 U	586 U	
Phenol	499 U	572 U	602 U	640 U	586 U	
Pyrene	499 U	100 J	75.0 J	640 U	586 U	
Test : Semivolatiles - SW 8270C - Surrogates		**Units: %**				
2,4,6-Tribromophenol-s	84	78	90	93	93	
2-Fluorobiphenyl-s	87	72	88	87	82	
2-Fluorophenol-s	95	80	93	93	88	
Nitrobenzene-d5-s	86	71	86	84	76	
Phenol-d5-s	90	82	92	95	89	
Terphenyl-d14-s	66	65	71	72	68	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
Test : TAL Metals - SW6010B/7471A/7470A		Units: mg/kg				
Aluminum	8600	3120	6890	6220	7010	
Antimony	1.08 J	0.645 J	1.14 J	0.932 J	0.826 J	
Arsenic	3.08	1.78	2.79	3.53	3.18	
Barium	40.7	18.3	33.7	48.7	40.1	
Beryllium	0.536 J	0.239 J	0.458 J	0.420 J	0.535 J	
Cadmium	1.56	0.994	1.78	2.08	1.77	
Calcium	3620	2030	3830	4450	4100	
Chromium	13.0	5.09	10.4	9.85	10.7	
Cobalt	6.86	3.17	6.29	7.21	6.59	
Copper	16.6	8.81	18.3	17.6	19.1	
Iron	15300	9930	17800	21200	17400	
Lead	13.7	6.90	12.2	11.8	13.2	
Magnesium	3240	1420	2970	2990	2930	
Manganese	689	367	382	3290	632	
Mercury	0.274	0.0623	0.0638	0.0699	0.144	
Nickel	14.1	6.81	14.1	17.9	14.1	
Potassium	735	331	636	665	675	
Selenium	4.40	2.43	5.03	5.36	4.54	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
Silver	1.24 UJ	1.73 UJ	1.43 UJ	1.45 UJ	1.78 UJ	
Sodium	138 U	135 U	169 U	161 U	178 U	
Thallium	1.38 U	1.35 U	1.69 U	1.15 J	1.78 U	
Vanadium	17.7	6.84	13.8	12.7	14.7	
Zinc	44.5	28.5	49.0	44.9	51.9	
Test : Total Organic Carbon - Lloyd Kahn		**Units: mg/kg**				
Total Organic Carbon	33800	15900	24900	54600	34000	
Test : Volatiles - SW 8260B		**Units: µg/kg**				
1,1,1-Trichloroethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,1,2,2-Tetrachloroethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,1,2-Trichloroethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,1-Dichloroethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,1-Dichloroethene	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,2-Dichlorobenzene	7.1 U	78.9	129	8.91 U	8.59 U	
1,2-Dichloroethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,2-Dichloroethene, Total	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,2-Dichloropropane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,3-Dichlorobenzene	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
1,4-Dichlorobenzene	7.1 U	20.3	32.2	8.91 U	8.59 U	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-SD09	AOC9-SD10	AOC9-SD10/D	AOC9-SD11	AOC9-SD12	
Sample Date:	5/10/00	5/10/00	5/10/00	5/10/00	5/10/00	
PARAMETER Depth (ft):	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	0 - 0.17	
2-Butanone	14.2 U	17 U	15.0 J	17.8 U	17.2 U	
2-Chloroethyl vinyl ether	14.2 U	17 U	17.3 U	17.8 U	17.2 U	
2-Hexanone	14.2 U	17 U	17.3 U	17.8 U	17.2 U	
4-Methyl-2-pentanone	14.2 U	17 U	17.3 U	17.8 U	17.2 U	
Acetone	15.8	32.7	58.5	50.7	9.87 J	
Benzene	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Bromodichloromethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Bromoform	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Bromomethane	14.2 U	17 U	17.3 U	17.8 U	17.2 U	
Carbon disulfide	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Carbon tetrachloride	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Chlorobenzene	7.1 U	157	284	8.91 U	8.59 U	
Chloroethane	14.2 U	17 U	17.3 U	17.8 U	17.2 U	
Chloroform	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Chloromethane	14.2 U	17 U	17.3 U	17.8 U	17.2 U	
cis-1,2-Dichloroethene	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
cis-1,3-Dichloropropene	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Dibromochloromethane	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Ethylbenzene	7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID: Sample Date: Depth (ft):	AOC9-SD09 5/10/00 0 - 0.17	AOC9-SD10 5/10/00 0 - 0.17	AOC9-SD10/D 5/10/00 0 - 0.17	AOC9-SD11 5/10/00 0 - 0.17	AOC9-SD12 5/10/00 0 - 0.17	
m,p-Xylene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Methylene chloride		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
o-Xylene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Styrene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Tetrachloroethene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Toluene		7.1 U	8.48 U	4.06 J	8.91 U	8.59 U	
trans-1,2-Dichloroethene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
trans-1,3-Dichloropropene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Trichloroethene		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Trichlorofluoromethane		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Vinyl acetate		14.2 U	17 U	17.3 U	17.8 U	17.2 U	
Vinyl chloride		14.2 U	17 U	17.3 U	17.8 U	17.2 U	
Xylenes, Total		7.1 U	8.48 U	8.64 U	8.91 U	8.59 U	
Test :	**Volatiles - SW 8260B - Surrogates**		**Units:** %				
1,2-Dichloroethane-d4-s		102	94	96	99	99	
4-Bromofluorobenzene-s		117	116	114	116	121	
Dibromofluoromethane-s		101	96	94	98	96	
Toluene-d8-s		104	106	106	109	112	

Source: Ecology and Environment, Inc., October 2000

Table F-3
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SEDIMENT SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Key:

Qualifiers:

J	estimated
U	not detected
UJ	not detected; estimated detection limit reported

Surrogate Limits:

Analysis	Media	Surrogates	Recovery Range
PCBs by Method 8082	Soil	Decachlorobiphenyl-s	52 - 115%
		Tetrachloro-m-xylene-s	39 - 125%
Pesticides by Method 8081A		Decachlorobiphenyl-s	39 - 135%
		Tetrachloro-m-xylene-s	47 - 140%
Semivolatile Organics by Method 8270C		2,4,6-Tribromophenol-s	32 - 130%
		2-Fluorobiphenyl-s	27 - 123%
		2-Fluorophenol-s	36 - 135%
		Nitrobenzene-d5-s	25 - 122%
		Phenol-d5-s	36 - 128%
		Terphenyl-d14-s	51 - 116%
Volatile Organic Compounds by Method 8260B		1,2-Dichloroethane-d4-s	77 - 119%
		4-Bromofluorobenzene-s	88 - 124%
		Dibromofluoromethane-s	83 - 117%
		Toluene-d8-s	84 - 119%

Units:

mg/L = milligrams per liter
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
µg/kg = micrograms per kilogram

Test and Sample Information:

PCBs = polychlorinated biphenyls
TAL = Target Analyte List
/D = duplicate sample
NA = not analyzed

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
Test : PCBs - SW 8082		**Units: µg/kg**				
Aroclor 1016	25.3 U	21.9 U	24 U	22.5 U	23.9 U	23.4 U
Aroclor 1221	50.6 U	43.8 U	48 U	45 U	47.7 U	46.8 U
Aroclor 1232	25.3 U	21.9 U	24 U	22.5 U	23.9 U	23.4 U
Aroclor 1242	25.3 U	21.9 U	24 U	22.5 U	23.9 U	23.4 U
Aroclor 1248	25.3 U	21.9 U	24 U	22.5 U	23.9 U	23.4 U
Aroclor 1254	25.3 U	21.9 U	24 U	22.5 U	23.9 U	23.4 U
Aroclor 1260	25.3 U	21.9 U	24 U	22.5 U	23.9 U	23.4 U
Test : PCBs - SW 8082 - Surrogates		**Units: %**				
Decachlorobiphenyl-s	99	93	107	116	91	92
Tetrachloro-m-xylene-s	100	0	79	98	98	79
Test : Percent Moisture - D2216		**Units: %**				
Percent Moisture	26.7	18.1	17.6	15.1	18.4	21.5
Test : Pesticides - SW 8081A		**Units: µg/kg**				
4,4´-DDD	2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
4,4´-DDE	2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
4,4´-DDT	2.53 UJ	2.19 UJ	2.4 UJ	2.25 UJ	2.39 UJ	2.34 UJ
Aldrin	1.27 U	1.1 U	1.26	1.13 U	1.19 U	1.17 U
alpha-BHC	1.27 U	1.1 U	1.05 J	1.13 U	1.19 U	1.17 U

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID: Sample Date: Depth (ft):	AOC9-TP01 3/20/00 0 - 10	AOC9-TP02 3/20/00 0 - 6.5	AOC9-TP03 3/21/00 0 - 6	AOC9-TP04 3/21/00 0 - 6	AOC9-TP05 3/21/00 0 - 10	AOC9-TP06 3/21/00 0 - 9
alpha-Chlordane		1.27 U	1.1 U	1.2 U	1.13 U	1.19 U	1.17 U
beta-BHC		1.27 U	1.1 U	1.2 U	1.13 U	1.19 U	1.17 U
delta-BHC		1.27 U	1.1 U	1.2 U	1.13 U	1.19 U	1.17 U
Dieldrin		2.53 U	2.19 U	59.4	2.25 U	2.39 U	2.34 U
Endosulfan I		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Endosulfan II		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Endosulfan sulfate		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Endrin		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Endrin aldehyde		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Endrin ketone		2.53 U	2.19 U	3.20	2.25 U	2.39 U	2.34 U
gamma-BHC		1.27 U	1.1 U	1.2 U	1.13 U	1.19 U	1.17 U
gamma-Chlordane		1.27 U	1.1 U	1.2 U	1.13 U	1.19 U	1.17 U
Heptachlor		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Heptachlor epoxide		2.53 U	2.19 U	2.4 U	2.25 U	2.39 U	2.34 U
Methoxychlor		12.7 U	11 U	12 U	11.3 U	11.9 U	11.7 U
Toxaphene		63.3 U	54.8 U	60 U	56.3 U	59.7 U	58.5 U
Test : **Pesticides - SW 8081A - Surrogates**			**Units:** %				
Decachlorobiphenyl-s		92	81	114	135	80	79
Tetrachloro-m-xylene-s		89	93	84	80	78	68

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
Test : Semivolatiles - SW 8270C		**Units:** µg/kg				
1,2,4-Trichlorobenzene	404 U	402 U	366 U	361 U	396 U	380 U
1,2-Dichlorobenzene	404 U	402 U	366 U	361 U	396 U	380 U
1,3-Dichlorobenzene	404 U	402 U	366 U	361 U	396 U	380 U
1,4-Dichlorobenzene	404 U	402 U	366 U	361 U	396 U	380 U
2,4,5-Trichlorophenol	1020 U	1010 U	920 U	907 U	996 U	955 U
2,4,6-Trichlorophenol	404 U	402 U	366 U	361 U	396 U	380 U
2,4-Dichlorophenol	404 U	402 U	366 U	361 U	396 U	380 U
2,4-Dimethylphenol	404 U	402 U	366 U	361 U	396 U	380 U
2,4-Dinitrophenol	404 U	402 U	366 U	361 U	396 U	380 U
2,4-Dinitrotoluene	404 U	402 U	366 U	361 U	396 U	380 U
2,6-Dinitrotoluene	404 U	402 U	366 U	361 U	396 U	380 U
2-Chloronaphthalene	404 U	402 U	366 U	361 U	396 U	380 U
2-Chlorophenol	404 U	402 U	366 U	361 U	396 U	380 U
2-Methylnaphthalene	404 U	402 U	219 J	361 U	396 U	380 U
2-Methylphenol	404 U	402 U	366 U	361 U	396 U	380 U
2-Nitroaniline	1020 U	1010 U	920 U	907 U	996 U	955 U
2-Nitrophenol	404 U	402 U	366 U	361 U	396 U	380 U
3,3′-Dichlorobenzidine	807 U	804 U	731 U	722 U	792 U	759 U

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
PARAMETER Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
3-Nitroaniline	1020 U	1010 U	920 U	907 U	996 U	955 U
4,6-Dinitro-2-methylphenol	1020 U	1010 U	920 U	907 U	996 U	955 U
4-Bromophenyl phenyl ether	404 U	402 U	366 U	361 U	396 U	380 U
4-Chloro-3-methylphenol	404 U	402 U	366 U	361 U	396 U	380 U
4-Chloroaniline	404 U	402 U	366 U	361 U	396 U	380 U
4-Chlorophenyl phenyl ether	404 U	402 U	366 U	361 U	396 U	380 U
4-Methylphenol	404 U	402 U	366 U	361 U	396 U	380 U
4-Nitroaniline	1020 U	1010 U	920 U	907 U	996 U	955 U
4-Nitrophenol	1020 U	1010 U	920 U	907 U	996 U	955 U
Acenaphthene	404 U	402 U	579	361 U	396 U	380 U
Acenaphthylene	404 U	402 U	366 U	361 U	396 U	380 U
Anthracene	404 U	402 U	1440	361 U	396 U	380 U
Benz(a)anthracene	404 U	402 U	2170 J	163 J	396 U	380 U
Benzo(a)pyrene	404 U	402 U	1400	87.3 J	396 U	380 U
Benzo(b)fluoranthene	404 U	402 U	1510 J	161 J	396 U	380 U
Benzo(g,h,i)perylene	404 U	402 U	520	361 U	396 U	380 U
Benzo(k)fluoranthene	404 U	402 U	1800	133 J	396 U	380 U
Benzoic acid	1020 U	1010 U	920 U	907 U	996 U	955 U
Benzyl alcohol	404 U	402 U	366 U	361 U	396 U	380 U

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
PARAMETER Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
Bis(2-chloroethoxy)methane	404 U	402 U	366 U	361 U	396 U	380 U
Bis(2-chloroethyl)ether	404 U	402 U	366 U	361 U	396 U	380 U
Bis(2-chloroisopropyl)ether	404 U	402 U	366 U	361 U	396 U	380 U
Bis(2-ethylhexyl)phthalate	404 U	402 U	366 U	361 U	396 U	380 U
Butyl benzyl phthalate	404 U	402 U	366 U	361 U	396 U	380 U
Carbazole	404 U	402 U	536	361 U	396 U	380 U
Chrysene	404 U	402 U	1900 J	168 J	396 U	380 U
Di-n-butyl phthalate	404 U	402 U	366 U	361 U	396 U	380 U
Di-n-octyl phthalate	404 U	402 U	366 U	361 U	396 U	380 U
Dibenz(a,h)anthracene	404 U	402 U	225 J	361 U	396 U	380 U
Dibenzofuran	404 U	402 U	520	361 U	396 U	380 U
Diethyl phthalate	404 U	402 U	366 U	361 U	396 U	380 U
Dimethyl phthalate	404 U	402 U	366 U	361 U	396 U	380 U
Fluoranthene	404 U	402 U	6110	280 J	396 U	380 U
Fluorene	404 U	402 U	741	361 U	396 U	380 U
Hexachlorobenzene	404 U	402 U	366 U	361 U	396 U	380 U
Hexachlorobutadiene	404 U	402 U	366 U	361 U	396 U	380 U
Hexachlorocyclopentadiene	1020 U	1010 U	920 U	907 U	996 U	955 U
Hexachloroethane	404 U	402 U	366 U	361 U	396 U	380 U

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
PARAMETER Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
Indeno(1,2,3-ed)pyrene	404 U	402 U	283 J	361 U	396 U	380 U
Isophorone	404 U	402 U	366 U	361 U	396 U	380 U
N-Nitrosodi-n-propylamine	404 U	402 U	366 U	361 U	396 U	380 U
N-Nitrosodimethylamine	404 U	402 U	366 U	361 U	396 U	380 U
N-Nitrosodiphenylamine	404 U	402 U	366 U	361 U	396 U	380 U
Naphthalene	404 U	402 U	601	361 U	396 U	380 U
Nitrobenzene	404 U	402 U	366 U	361 U	396 U	380 U
Pentachlorophenol	1020 U	1010 U	920 U	907 U	996 U	955 U
Phenanthrene	404 U	402 U	7110	116 J	396 U	380 U
Phenol	404 U	402 U	366 U	361 U	396 U	380 U
Pyrene	404 U	402 U	5390	308 J	396 U	380 U
Test : Semivolatiles - SW 8270C - Surrogates		**Units: %**				
2,4,6-Tribromophenol-s	50	67	73	80	85	86
2-Fluorobiphenyl-s	42	65	69	78	78	85
2-Fluorophenol-s	45	67	74	79	81	88
Nitrobenzene-d5-s	43	58	62	75	76	82
Phenol-d5-s	42	61	64	74	73	82
Terphenyl-d14-s	47	75	76	107	109	114

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
Test : TAL Metals - SW6010B/7471A/7470A		Units: mg/kg				
Aluminum	5310	7110	6550	7170	3360	7260
Antimony	0.947 U	0.86 U	0.809 U	0.841 U	0.688 U	1.08 U
Arsenic	0.905 J	1.05	0.981	0.995	1.22	2.39
Barium	15.2	28.1	23.3	20.7	10.0	23.1
Beryllium	0.325 J	0.294 J	0.331 J	0.245 J	0.158 J	0.355 J
Cadmium	1.47	1.70	1.41	1.52	0.959	2.17
Calcium	1360	1830	11300	994	879	18300
Chromium	7.84	8.18	8.54	9.43	4.81	9.51
Cobalt	3.64	3.64	3.71	3.67	2.84	5.66
Copper	17.4	9.74	10.7	8.96	8.57	21.0
Iron	12700	13200	11800	11300	8220	18900
Lead	2.70	11.1	3.22	20.4	1.45	5.34
Magnesium	2220	1810	1920	2100	1640	3520
Manganese	173	531	374	142	242	546
Mercury	0.045 U	0.0403 U	0.04 U	0.0389 U	0.0404 U	0.042 U
Nickel	8.96	7.04	8.00	9.09	6.30	12.7
Potassium	827	485	715	486	632	869
Selenium	0.947 U	0.86 U	0.651 J	0.841 U	0.688 U	1.08 U

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM
AOC 9: WSA LANDFILL,
YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER	Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
	Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
	Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
Silver		0.947 U	0.86 U	0.809 U	0.841 U	0.284 J	1.08 U
Sodium		28.5 J	86 U	32.9 J	84.1 U	68.8 U	42.8 J
Thallium		0.947 U	0.86 U	0.809 U	0.841 U	0.688 U	1.08 U
Vanadium		10.8	13.5	12.1	11.7	6.53	12.5
Zinc		29.7	34.9	27.2	35.8	16.4	43.6
Test : Volatiles - SW 8260B			**Units: µg/kg**				
1,1,1-Trichloroethane		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,1,2,2-Tetrachloroethane		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,1,2-Trichloroethane		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,1-Dichloroethane		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,1-Dichloroethene		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,2-Dichlorobenzene		7.68 U	7.41 U	11.1	6.51 U	6.09 U	6.36 U
1,2-Dichloroethane		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,2-Dichloroethene, Total		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,2-Dichloropropane		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,3-Dichlorobenzene		7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
1,4-Dichlorobenzene		7.68 U	7.41 U	4.74 J	6.51 U	6.09 U	6.36 U
2-Butanone		15.4 U	14.8 U	3.80 J	13 U	12.2 U	12.7 U
2-Chloroethyl vinyl ether		15.4 U	14.8 U	13.2 UR	13 UR	12.2 UR	12.7 UR

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

PARAMETER Sample ID: Sample Date: Depth (ft):	AOC9-TP01 3/20/00 0 - 10	AOC9-TP02 3/20/00 0 - 6.5	AOC9-TP03 3/21/00 0 - 6	AOC9-TP04 3/21/00 0 - 6	AOC9-TP05 3/21/00 0 - 10	AOC9-TP06 3/21/00 0 - 9
2-Hexanone	15.4 U	14.8 U	13.2 U	13 U	12.2 U	12.7 U
4-Methyl-2-pentanone	15.4 U	14.8 U	13.2 U	13 U	12.2 U	12.7 U
Acetone	15.4 U	14.8 U	18.8	13 U	12.2 U	9.45 J
Benzene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Bromodichloromethane	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Bromoform	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Bromomethane	15.4 U	14.8 U	13.2 U	13 U	12.2 U	12.7 U
Carbon disulfide	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Carbon tetrachloride	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Chlorobenzene	7.68 U	7.41 U	2.37 J	6.51 U	6.09 U	6.36 U
Chloroethane	15.4 U	14.8 U	13.2 UJ	13 UJ	12.2 UJ	12.7 UJ
Chloroform	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Chloromethane	15.4 U	14.8 U	13.2 U	13 U	12.2 U	12.7 U
cis-1,2-Dichloroethene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
cis-1,3-Dichloropropene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Dibromochloromethane	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Ethylbenzene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
m,p-Xylene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Methylene chloride	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Sample ID:	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP05	AOC9-TP06
Sample Date:	3/20/00	3/20/00	3/21/00	3/21/00	3/21/00	3/21/00
PARAMETER Depth (ft):	0 - 10	0 - 6.5	0 - 6	0 - 6	0 - 10	0 - 9
o-Xylene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Styrene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Tetrachloroethene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Toluene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
trans-1,2-Dichloroethene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
trans-1,3-Dichloropropene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Trichloroethene	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Trichlorofluoromethane	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Vinyl acetate	15.4 U	14.8 U	13.2 U	13 U	12.2 U	12.7 U
Vinyl chloride	15.4 U	14.8 U	13.2 U	13 U	12.2 U	12.7 U
Xylenes, Total	7.68 U	7.41 U	6.62 U	6.51 U	6.09 U	6.36 U
Test : Volatiles - SW 8260B - Surrogates		**Units: %**				
1,2-Dichloroethane-d4-s	103	99	109	109	99	101
4-Bromofluorobenzene-s	120	117	120	118	101	101
Dibromofluoromethane-s	100	103	105	106	99	102
Toluene-d8-s	106	104	106	105	98	98

Source: Ecology and Environment, Inc., October 2000

Table F-4
COMPLETE ANALYTICAL DATA SUMMARY FOR THE SOIL SAMPLES FROM AOC 9: WSA LANDFILL, YEAR 2000 SUPPLEMENTAL INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Key:

Qualifiers:

J	estimated
U	not detected
UJ	not detected; estimated detection limit reported
UR	not detected; rejected sample

Surrogate Limits:

Analysis	Media	Surrogates	Recovery Range
PCBs by Method 8082	Soil	Decachlorobiphenyl-s	52 - 115%
		Tetrachloro-m-xylene-s	39 - 125%
Pesticides by Method 8081A		Decachlorobiphenyl-s	39 - 135%
		Tetrachloro-m-xylene-s	47 - 140%
Semivolatile Organics by Method 8270C		2,4,6-Tribromophenol-s	32 - 130%
		2-Fluorobiphenyl-s	27 - 123%
		2-Fluorophenol-s	36 - 135%
		Nitrobenzene-d5-s	25 - 122%
		Phenol-d5-s	36 - 128%
		Terphenyl-d14-s	51 - 116%
Volatile Organic Compounds by Method 8260B		1,2-Dichloroethane-d4-s	77 - 119%
		4-Bromofluorobenzene-s	88 - 124%
		Dibromofluoromethane-s	83 - 117%
		Toluene-d8-s	84 - 119%

Units:

mg/L = milligrams per liter
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
µg/kg = micrograms per kilogram

Test and Sample Information:

PCBs = polychlorinated biphenyls
TAL = Target Analyte List
/D = duplicate sample

Source: Ecology and Environment, Inc., October 2000

G

2002 SI Screening Criteria

Table G-1

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL UPDATED SCREENING CRITERIA FOR GROUNDWATER FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Compound	Federal Primary MCL (a) (μg/L)	Federal Secondary MCL (a) (μg/L)	Federal MCLG (a) (μg/L)	New York Sanitary Code (b) (μg/L)	New York Groundwater Standard (c) (μg/L)	New York Groundwater Guidance (c) (μg/L)
Acetone	-	-	-		50	-
Aldrin	-	-	-		ND	-
Aluminum	-	50-200	-	-	-	-
Barium	2000	-	2000	2000	1000	-
Benzene	5	-	0	5 (d)	1.0	-
Beryllium	4	-	4	4	-	3
Bis(2-ethylhexyl)adipate	400	-	400	-	20	-
Bis(2-ethylhexyl)phthalate	6	-	0	50	5	-
Butyl benzyl phthalate	-	-	-	100	-	50
sec-butylbenzene	-	-	-	-	5	-
tert-butylbenzene	-	-	-	-	5	-
Cadmium	5	-	5	50	10	-
Calcium	-	-	-	-	-	-
Chloride	-	250,000	-	250,000	250,000	-
Chlorobenzene	100	-	100	5 (d)	5	-
Chlorofrom	80	-	0	100	7	-
Chromium	100	-	100	100	50	-
Cobalt	-	-	-	-	-	-
Copper	1,300 AL	1,000	1,300	1,000	200	-
1,1-Dichloroethylene	7	-	7	5 (d)	5	-
cis-1,2-dichloroethylene	70	-	70	5 (d)	5	-
trans-1,2-dichloroethylene	100	-	100	5 (d)	5	-
Dichlorobenzene (o-)	600	-	600	5 (d)	3	-
Dichlorobenzene (p-)	75	-	75	5 (d)	3	-
Dieldrin	-	-	-		0.004	-
Diethyl phthalate	-	-	-	-	-	50
Di-n-butyl phthalate	-	-	-	50	50	-
Ethylbenzene	700	-	700	5	5	-
Iron	-	300	-	300	300 (e)	-

Table G-1

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL
UPDATED SCREENING CRITERIA FOR GROUNDWATER
FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Compound	Federal Primary MCL (a) (µg/L)	Federal Secondary MCL (a) (µg/L)	Federal MCLG (a) (µg/L)	New York Sanitary Code (b) (µg/L)	New York Groundwater Standard (c) (µg/L)	New York Groundwater Guidance (c) (µg/L)
Isopropylbenzene	-	-	-	5 (d)	5	-
Lead	15 AL	-	0	-	25	-
Magnesium	-	-	-	-	-	35,000
Manganese	-	50	-	-	300 (e)	-
2-Methylnaphthalene	-	-	-	-	-	-
Methylene chloride	5	-	0	5 (d)	5	-
Naphthalene	-	-	-	-	-	10
Nickel	-	-	-	-	100	-
Nitrate	10,000	-	10,000	10,000	10,000	-
Phenanthrene	-	-	-	-	-	50
Phosphorus	-	-	-	-	-	-
Potassium	-	-	-	-	-	-
n-propylbenzene	-	-	-	-	5	-
Selenium	50	-	50		10	-
Silver	-	100	-		50	-
Sodium	-	-	-	20,000-270,000 (f)	20,000	-
Sulfate	-	250,000	-	250,000	250,000	-
1,1,1-Trichloroethane	200	-	200	5 (d)	5	-
1,2,4-Trimethylbenzene	-	-	-	-	5	5
1,3,5-Trimethylbenzene	-	-	-	-	5	5
Tetrachloroethylene	5	-	0	5	5	-
Thallium	5	-	0.5	2	-	0.5
Toluene	1,000	-	1,000	5 (d)	5	-
Trichloroethylene	5	-	0	5 (d)	5	-
Vanadium	-	-	-	-	-	-
Vinyl chloride	2	-	0	2	2	-
Xylenes	10,000	-	10,000	-	-	-
1,2-Xylene (o-)	-	-	-	5 (d)	5	-
1,3-Xylene (m-)	-	-	-	5 (d)	5	-

Table G-1

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL UPDATED SCREENING CRITERIA FOR GROUNDWATER FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Compound	Federal Primary MCL (a) (µg/L)	Federal Secondary MCL (a) (µg/L)	Federal MCLG (a) (µg/L)	New York Sanitary Code (b) (µg/L)	New York Groundwater Standard (c) (µg/L)	New York Groundwater Guidance (c) (µg/L)
1,4-Xylene (p-)	-	-	-	5 (d)	5	-
Vanadium	-	-	-	-	-	-
Zinc	-	5,000	-	5,000	2,000	-

Note: This table presents groundwater screening criteria that have been updated since the RI. Parameters that were not detected in groundwater samples during the Year 2002 SI or parameters for which groundwater screening criteria have not changed are not included in this table.

(a) Drinking water regulations and Health Advisories, Office of Water, EPA, Summer 2002.
(b) New York State Sanitary Code: Drinking Water Supplies Subpart 5-1, Public Water Systems, April 25, 2001.
(c) New York State Department of Environmental Conservation: Water Quality Standards and Guidance Values, June 1998.
(d) Listed Principal Organic Contaminant
(e) If iron and manganese are present, the total concentration of both should not exceed 0.5 mg/L
(f) Water containing more than 20mg/L of sodium should not be used for drinking by people in severely restricted sodium diets. Water containing more than 270mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.

Key:

AL = action level
MCL = maximum contaminant level
MCLG = maximum contaminant level goal (MCLGs are set at 0 for chemicals that there is evidence that they may cause cancer and there is no dose below which the chemical is considered safe.)
µg/L = micrograms per liter
SI = Supplemental Investigation
RI = Remedial Investigation
WSA = Weapons Storage Area
- = no criteria available
☐ most stringent concentration (except zero-MCLGs)

Table G-2

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL UPDATED SCREENING CRITERIA FOR SEDIMENT FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Compound	State Sediment Criteria For Protection of (a)				NOAA (b)		State Sediment Criteria for Metals	
		Benthic Aquatic Life (Fresh Water)						
	Wildlife Bioaccumulation (µg/g oc)	Acute (µg/g oc)	Chronic (µg/g oc)	Human Health Bioaccumulation	ER-L (mg/kg)	ER-M (mg/kg)	LEL (mg/kg)	SEL (mg/kg)
Acetone	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Antimony	-	-	-	-	-	-	2	25
Arsenic	-	-	-	-	8.2	70	6	33
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	1.2	9.6	0.6	9
Calcium	-	-	-	-	-	-	-	-
Chlorobenzene	-	550.74-861.54 (c)	55.75-87.15 (c)	-	-	-	-	-
Chromium	-	-	-	-	81	370	26	110
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	34	270	16	110
1,2-Dichlorobenzene	190.8-298.8 (c)	-	190.8-298.8 (c)	-	-	-	-	-
1,4-Dichlorobenzene	190.8-298.8 (c)	-	190.8-298.8 (c)	-	-	-	-	-
4,4´-DDD	15.9-55.6 (d)	17,490-61,160	15.9-55.6 (d)	0.159-0.556 (d)	0.002	0.020	-	-
4,4´-DDT	15.9-55.6 (d)	17,490-61,160	15.9-55.6 (d)	0.159-0.556 (d)	0.001	0.007	-	-
Fluoranthene	-	-	16,218-23,398 (c)	-	0.6	5.1	-	-
Heptachlor	0.477-1.02 (c)	208.29-445.4 (c)	1.59-3.4 (c)	0.0127-0.044 (c)	-	-		
Heptachlor Epoxide	0.477-1.02 (c)	208.29-445.4 (c)	1.59-3.4 (c)	0.0127-0.044 (c)	-	-	-	-
Iron	-	-	-	-	-	-	20000	40000
Lead	-	-	-	-	46.7	218	31	110
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	460	1100
Mercury	-	-	-	-	0.15	0.71	0.15	1.3
Nickel	-	-	-	-	20.9	51.6	16	50
Phenanthrene	-	-	1908 (c)	-	0.24	1.5	-	-

Table G-2

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL
UPDATED SCREENING CRITERIA FOR SEDIMENT
FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

	State Sediment Criteria For Protection of (a)				NOAA (b)		State Sediment Criteria for Metals	
		Benthic Aquatic Life (Fresh Water)						
Compound	Wildlife Bioaccumulation (µg/g oc)	Acute (µg/g oc)	Chronic (µg/g oc)	Human Health Bioaccumulation	ER-L (mg/kg)	ER-M (mg/kg)	LEL (mg/kg)	SEL (mg/kg)
Potassium	-	-	-	-	-	-	-	-
Pyrene	-	139,522.5-218,497 (c)	15,279.9-23,928.8 (c)	-	0.665	2.6	-	-
Selenium	-	-	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-
Toluene	-	5851.15 (c)	1220.1 (c)	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	150	410	120	270

Note: This table presents sediment screening criteria that have been updated since the RI. Parameters that were not detected in sediment samples during the either the Year 2000 or Year 2002 SI or parameters for which sediment screening criteria have not changed are not included in this table.

(a) NYSDEC, 1999. Technical Guidance for Screening Contaminated Sediments, Albany, NY: New York State Department of Environmental Conservation Division of Fish and Wildlife and Division of Marine Resources. January 1999.

(b) NOAA, 1999. Quick Reference Cards: Screening Guidelines for Inorganics and Organics. Seattle, WA: National Oceanic and Atmospheric Administration, Office of Ocean Resources Conservation and Assessment. September 1999.

(c) The NYSDEC standards for heptachlor epoxide, phenanthrene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, and toluene were calculated based on the total organic carbon concentration; therefore the concentrations of these compounds are compared to sample-specific standards for each sample. The range or value shown represents the criteria calculated only for the samples with positive hits of these compounds

Key:

ER-L = effects range low concentration
ER-M = effect range median concentration
LEL = lowest effect level
µg/g oc = micrograms per gram organic carbon
mg/kg = milligrams per kilogram
▭ most stringent concentration

SEL = severe effect level
SI = Supplemental Investigation
RI = Remedial Investigation
- = not applicable/available

Table G-3

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL UPDATED SCREENING CRITERIA FOR SOIL FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Region III Risk Based Concentrations Industrial Soil (c) (mg/kg)	Proposed RCRA Corrective Action Levels (d) (mg/kg)	EPA Reg. III Soil Screening Levels – Transfer from Soil to Air (e) (mg/kg)
Acenaphthene	50	-	120,000 n	-	120 s
Acetone	0.2	-	200,000 n	8000	62,000
Aldrin	0.041	-	0.34 c	0.04	0.5
alpha-BHC	0.11	-	0.91 c	0.1	0.9
Aluminum	SB	-	2,000,000 n	-	-
Anthracene	50	-	610,000 n	-	6.8 s
Antimony	SB		820 n		0
Arsenic	7.5 or SB	-	3.8 c	80	380 c
Barium	300 or SB	-	140,000 n	4000	350,000
Benz(a)anthracene	0.224 or MDL	-	7.8 c	-	27 s
Benzo(a)pyrene	0.061 or MDL	-	0.78 c	-	11 s
Benzo(b)fluoranthene	1.1	-	7.8 c	-	23 s
Benzo(g,h,i)perylene	50	-	-	-	-
Benzo(k)fluoranthene	1.1	-	78 c	-	-
Beryllium	0.16 or SB	-	4,100 n	0.2	690
2-Butanone	0.3	-	1,200,000 n	-	-
Cadmium	1.0 or SB	-	1,000 n	40	920
Calcium	SB	-	-	-	-
Carbazole	-	-	290 c		11 s
Chlorobenzene	1.7	-	41,000 n	2000	94
Chromium	10 or SB	-	3,100,000 (Cr^{+3})	-	140
Chrysene	0.4	-	780 c	-	3.6 s
Cobalt	30 or SB	-	41,000 n	-	-
Copper	25 or SB	-	82,000 n	-	-
4,4'-DDT	2.1		17 c		80
1,2-Dichlorobenzene	7.9	-	180,000 n	-	300
1,4-Dichlorobenzene	8.5	-	240 c	-	7,700
Dibenz(a,h)anthracene	0.014 or MDL	-	0.78 c	-	7.2 s
Dibenzofuran	6.2	-	8200 n	-	120 s
Dieldrin	0.044	-	0.36 c	0.04	2
Endrin Ketone	-	-	-	-	-
Fluoranthene	50	-	82,000 n	-	68 s
Fluorene	50	-	82,000 n	-	89 s
Indeno(1,2,3-cd)pyrene	3.2	-	7.8 c	-	280 s
Iron	2,000 or SB	-	610,000 n	-	-
Lead	SB	-	-	-	-
2-Methylnaphthalene	36.4	-	41,000 n	-	-
Magnesium	SB	-	-	-	-
Manganese	SB	-	41,000 n	-	-
Mercury	0.1		-		7
Naphthalene	13	-	41,000 n	-	180 s
Nickel	13 or SB	-	41,000 n	2000	6900
Phenanthrene	50	-	-	-	-
Potassium	SB	-	-	-	-

Table G-3

YEAR 2002 SUPPLEMENTAL INVESTIGATION, AOC 9: WSA LANDFILL UPDATED SCREENING CRITERIA FOR SOIL FORMER GRIFFISS AIR FORCE BASE, ROME, NEW YORK

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Region III Risk Based Concentrations Industrial Soil (c) (mg/kg)	Proposed RCRA Corrective Action Levels (d) (mg/kg)	EPA Reg. III Soil Screening Levels – Transfer from Soil to Air (e) (mg/kg)
Pyrene	50	-	61,000 n	-	56 s
Selenium	2 or SB	-	10,000 n	-	-
Silver	SB	-	10,000 n	200	-
Sodium	SB	-	-	-	-
Tetrachloroethene	1.4	-	110 c	-	11
Thallium	SB	-	140 n	-	0
Trichloroethene	0.7	-	14 c	-	3
Vanadium	150 or SB	-	14,000 n	-	-
Zinc	20 or SB	-	610,000 n	-	-

Note: This table presents soil screening criteria that have been updated since the RI. Parameters that were not detected in soil samples during the Year 2000 SI or 2002 SI or parameters for which soil screening criteria have not changed are not included in this table.

(a) NYSDEC Division of Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels. NYSDEC, 1994.
(b) 40 CFR Part 761.125
(c) U.S. EPA Region III Technical Support Section. Risk Based Concentration Table (industrial soils), April 2002.
(d) Proposed Rules, RECRA Subpart S. 40 CFR Section 264.521 (a)(2)(i-iv). Federal Register, Vol. 55, No. 145. 27 July, 1990; April 13, 2000; Cleanup for Industrial Soil.
(e) U.S. EPA Region III Technical Support Section. Risk Based Concentration Table. November 1996, Soil Screening Levels, Transfers from Soil to Air.

Key:

c = As carcinogen.
mg/kg = Milligrams per kilogram.
MDL = Method detection limit.
n = As non-carcinogen.
s = Soil saturation concentration.
SB = Site background.
SI = Supplemental Investigation.
RI = Remedial Investigation.
WSA = Weapons Storage Area.
- = Criteria not applicable/available.
☐ Most stringent concentration.

1998 ESI Screening Criteria

Table 2-1

SOIL SCREENING CRITERIA FOR THE EXPANDED SITE INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME NEW YORK

Compound	NYSDEC TAGM 4046[a]	EPA Region III RBCs - Industrial[b]	Background[c]
Volatiles (SW8260) (µg/kg) (Total Volatiles < 100 mg/kg)			
Acetone	200	200,000,000	NA
2-Butanone (MEK)	300	1,000,000,000	NA
Chlorobenzene	1,700	41,000,000	NA
Methylene Chloride	100	760,000	NA
Toluene	1,500	410,000,000	NA
Total Xylenes	1,200	1,000,000,000	NA
Trichloroethene (TCE)	700	520,000	NA
Semivolatiles (SW8270) (µg/kg) (Total Semivolatiles < 500 mg/kg)			
1,2-Dichlorobenzene	7,900	180,000,000	NA
1,4-Dichlorobenzene	8,500	240,000	NA
Benzoic Acid	2,700	1,000,000,000	NA
Benzyl Alcohol	—	610,000,000	NA
bis(2-Ethylhexyl)phthalate (DEHP)	50,000	410,000	NA
Butylbenzylphthalate	50,000	410,000,000	NA
Di-n-butylphthalate[d]	8,100	200,000,000	NA
Dibenzofuran	6,200	8,200,000	NA
Carbazole	—	290,000	NA
2-Methylnaphthalene	36,400	—	NA
Acenaphthylene	41,000	—	NA
Acenaphthene	50,000	120,000,000	NA
Anthracene	50,000	610,000,000	NA
Benzo(a)anthracene	224 or MDL	7,800	NA
Benzo(a)pyrene	61 or MDL	780	NA
Benzo(b)fluoranthene	1,100	7,800	NA
Benzo(k)fluoranthene	1,100	78,000	NA
Benzo(g,h,i)perylene	50,000	—	NA
Chrysene	400	780,000	NA
Dibenz(a,h)anthracene	14 or MDL	780	NA

Key at end of table.

Table 2-1

SOIL SCREENING CRITERIA FOR THE EXPANDED SITE INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME NEW YORK

Compound	NYSDEC TAGM 4046[a]	EPA Region III RBCs - Industrial[b]	Background[c]
Fluoranthene	50,000	82,000,000	NA
Fluorene	50,000	82,000,000	NA
Indeno(1,2,3-cd)pyrene	3,200	7,800	NA
Naphthalene	13,000	82,000,000	NA
Phenanthrene	50,000	—	NA
Pyrene	50,000	61,000,000	NA
TRPH (418.1) (mg/kg)			
TRPH	—	—	—
Pesticide/PCB (SW8081) (µg/kg)			
Aldrin	41	340	NA
Chlordane	540	4,400	NA
Dieldrin	44	360	NA
gamma-BHC (Lindane)	60	4,400	NA
Heptachlor Epoxide	20	630	NA
4,4'-DDE	2,100	17,000	NA
4,4'-DDD	2,900	24,000	NA
4,4'-DDT	2,100	17,000	NA
Aroclor 1260	1,000[e]	740[g]	NA
	10,000[f]		
TAL Metals (SW6010/SW7000) (mg/kg)			
Aluminum	18,306	1,000,000	18,306
Antimony	3.4	820	3.4
Arsenic	7.5 or SB	3.8[h]	4.9
Barium	300 or SB	140,000	71
Beryllium	0.16 or SB	1.3	0.73
Cadmium	1 or SB	1,000	1.1
Calcium	23,821	NA	23,821
Chromium	10 or SB	10,000[i]	22.6
Cobalt	30 or SB	120,000	19

Key at end of table.

Table 2-1

SOIL SCREENING CRITERIA FOR THE EXPANDED SITE INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME NEW YORK

Compound	NYSDEC TAGM 4046[a]	EPA Region III RBCs - Industrial[b]	Background[c]
Copper	25 or SB	82,000	43
Iron	2,000 or SB	610,000	47,350
Lead	200[j]	400[k]	36
Magnesium	7,175	NA	7,175
Manganese	2,106	47,000	2,106
Mercury	0.1	610[l]	0.1
Nickel	13 or SB	41,000	46
Phosphorus	—	—	—
Potassium	1,993	NA	1,993
Selenium	2 or SB	10,000	0.340
Silver	1.1	10,000	1.1
Sodium	259	NA	259
Vanadium	150 or SB	14,000	36
Zinc	20 or SB	610,000	120
Thallium GFAA (SW7841) (mg/kg)			
Thallium	0.45	140[m]	0.45

[a] NYSDEC (1994). Technical and Administrative Guidance Memorandum (TAGM) 4046.

[b] EPA (July 15, 1996), Region III Risk-Based Concentration Table.

[c] Twice the arithmetic mean of eight sample results from off base monitoring well borings OBMW-21 and OBMW-29 (Draft RI, Law, 1995).

[d] Dibutylphthalate.

[e] TAGM 4046 guidance value for total PCBs in surface soils.

[f] TAGM 4046 guidance value for total PCBs in subsurface soils.

[g] RBC for total PCBs.

[h] RBC for arsenic as carcinogen.

[i] RBC for chromium III.

[j] Lead background levels reported in TAGM 4046 (4-61 μg/kg [rural] and 200-500 mg/kg [suburban and near highways]).

[k] Screening criterion recommended for lead in soil in a residential setting (EPA OSWER # 9355.4-12, July 1994).

[l] RBC for inorganic mercury.

[m] From RBCs of thallium salts adjusted for molecular weight.

Key:

— = No criteria available.
EPA = Environmental Protection Agency.
MDL = Method detection limit.
mg/kg = Milligrams per kilogram.
μg/kg = Micrograms per kilogram.
NA = Not applicable.
NYSDEC = New York State Department of Environmental Conservation.
PCB = Polychlorinated biphenyl.
RBC = Risk-based concentration.
SB = Site background.
TRPH = Total recoverable petroleum hydrocarbons.

Table 2-2

GROUNDWATER SCREENING CRITERIA FOR THE EXPANDED SITE INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME NEW YORK

Compound	NYSDEC Class GA Groundwater Standards[a]	Federal MCL Value[b]	EPA Region III RBC for Tap Water[c]
Volatiles (SW8260) (µg/L)			
1,2-Dichloroethane	5	5	0.12
1,2 Dichloroethene (total)	5	70[d]	55
Acetone	50[e]	—	3,700
Benzene	0.7	5	0.36
Chloroform	7	100[f]	0.15
Chlorobenzene	5	100[g]	39
Tetrachloroethene	5	5	1.1
1,1,1-Trichloroethane	5	200	790
Trichloroethene	5	5	1.6
Semivolatiles (SW8270) (µg/L)			
1,2-Dichlorobenzene	4.7	600	270
1,3-Dichlorobenzene	5	—	540
1,4-Dichlorobenzene	4.7	75	0.44
bis(2-Ethylhexyl)phthalate	50	6	4.8
TAL Metals (SW6010/SW7000) (µg/L)			
Aluminum	—	50 to 200[i]	37,000
Arsenic	25	50	0.045[h]
Barium	1,000	2,000	2,600
Calcium	—	—	—
Chromium[l]	11	100	180
Copper	200	1,300[j]	1,500
Iron	300	300[i]	11,000
Lead	25	15[k]	—
Magnesium	35,000[e]	—	—
Manganese	300	50[i]	840
Mercury	2	2	11
Potassium	—	—	—
Sodium	20,000	—	—

Key at end of table.

Table 2-2

GROUNDWATER SCREENING CRITERIA FOR THE EXPANDED SITE INVESTIGATION, FORMER GRIFFISS AIR FORCE BASE, ROME NEW YORK

Compound	NYSDEC Class GA Groundwater Standards[a]	Federal MCL Value[b]	EPA Region III RBC for Tap Water[c]
Thallium	4[e]	2	2.5[k]
Zinc	300	5,000[i]	11,000

[a] NYSDEC (1994), Technical and Administrative Guidance Memorandum (TAGM) 4046.

[b] EPA (1995), Drinking Water regulations and Health Advisories.

[c] EPA (July 15, 1996), Region III Risk-Based Concentration Table.

[d] MCL value for -cis isomer only.

[e] TAGM 4046 guidance value.

[f] MCL value for trihalomethanes.

[g] MCL value for monochlorobenzene.

[h] RBC for arsenic as a carcinogen.

[i] Secondary MCL (based on aesthetic qualities, not health considerations).

[j] Action Level for tap water in lieu of MCL.

[k] From RBCs of thallium salts adjusted for molecular weight.

[l] Standard for chromium IV.

Key:

— = No criteria available.
EPA = Environmental Protection Agency.
MCL = Maximum contaminant level.
µg/L = Micrograms per liter.
NYSDEC = New York State Department of Environmental Conservation.
RBC = Risk-based concentration.

Table 2-3

SCREENING CRITERIA
SURFACE WATER

Compound	NYSDEC Class C Ambient Water Quality Standards (µg/L)
Semivolatiles (SW8270)	
Butyl benzyl phthalate	—
TAL Metals (SW6010/SW7000)	
Aluminum	100
Arsenic (dissolved)	190
Barium	—
Calcium	—
Chromium (hexavlent)	11
Cobalt	—
Copper	—
Iron	300
Lead	—
Magnesium	—
Manganese	—
Nickel	—
Potassium	—
Sodium	—
Vanadium	14
Zinc	30

Table 2-4

NYSDEC TECHNICAL GUIDANCE FOR SCREENING CONTAMINATED SEDIMENTS NON-POLAR ORGANIC CONTAMINANTS

Compound	Log K_{ow}	Human Bioaccumulation		Wildlife Bioaccumulation		Benthic Aquatic Life - Chronic	
		Water Quality Criteria (µg/L)	Sediment Criteria (µg/gOC)	Water Quality Criteria (µg/L)	Sediment Criteria (µg/gOC)	Water Quality Criteria (µg/L)	Sediment Criteria (µg/gOC)
Volatiles (SW 8260)							
2-Butanone	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	2.84	NA	NA	NA	NA	5.0	3.5
Methylene chloride	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA
Semivolatiles (SW 8270)							
Bis(2-ethylhexyl)phthalate	5.3	NA	NA	NA	NA	0.6	199.5
1,2-Dichlorobenzene	3.38	NA	NA	NA	NA	5.0	12.0
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	6.04	0.0012	1.3	NA	NA	NA	NA
Benzo(a)pyrene	6.04	0.0012	1.3	NA	NA	NA	NA
Benzo(b)fluoranthene	6.04	0.0012	1.3	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA
Chrysene	6.04	0.0012	1.3	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	5.19	NA	NA	NA	NA	NA	1,020[a] E

Table 2-4

NYSDEC TECHNICAL GUIDANCE FOR SCREENING CONTAMINATED SEDIMENTS
NON-POLAR ORGANIC CONTAMINANTS

Compound	Log K_{ow}	Human Bioaccumulation		Wildlife Bioaccumulation		Benthic Aquatic Life - Chronic	
		Water Quality Criteria (μg/L)	Sediment Criteria (μg/gOC)	Water Quality Criteria (μg/L)	Sediment Criteria (μg/gOC)	Water Quality Criteria (μg/L)	Sediment Criteria (μg/gOC)
Semivolatiles (SW 8270)							
Fluorene	NA	NA	NA	NA	NA	NA	NA
Ideno(1,2,3-cd)pyrene	6.04	0.0012	1.3	NA	NA	NA	NA
Phenanthrene	4.45	NA	NA	NA	NA	120^{a} E	
Pyrene	NA	NA	NA	NA	NA	NA	NA
Pesticide/PCBs (SW 8081)							
Aldrin	5.0	0.001	0.1	0.0077 P	0.77	NA	NA
Heptclor Epoxide	4.4	0.0003 P	0.0008	0.001	0.003	0.0038^{a} E	0.1

[a] EPA proposed sediment quality criterion for the protection of benthic organisms.

Key:

E = EPA criterion for water quality.
EPA = Environmental Protection Agency.
μg/kg = micrograms per kilogram.
μg/L = micrograms per liter.
μg/g OC = micrograms per gram of organic carbon.
NA = Not available.
NYSDEC = New York State Department of Environmental Conservation.
P = Proposed criterion value.
PCB = Polychlorinated biphenyls.

Table 2-5

NYSDEC TECHNICAL GUIDANCE FOR SCREENING CONTAMINATED SEDIMENTS METALS

Metals	Lowest Effect Level (ppm)	Severe Effect Level (ppm)
Aluminum	NA	NA
Antimony	2 L	25 L
Arsenic	6 P	33 P
Barium	NA	NA
Calcium	NA	NA
Chromium	26 P	110 P
Cobalt	NA	NA
Copper	16 P	110 P
Iron (%)	2 P	4 P
Lead	31 P	110 L
Magnesium	NA	NA
Manganese	460 P	1,100 L
Nickel	16 P	50 L
Potassium	NA	NA
Selenium	NA	NA
Sodium	NA	NA
Vanadium	NA	NA
Zinc	120 P/L	270 L

Key:

L = Criterion was taken from Long and Morgan (1990).
NA = Not available.
NYSDEC = New York State Department of Environmental Conservation.
P = Criterion was taken from Persaud et al. (1992).
ppm = Parts per million.

RI Screening Criteria (LAW 1996)

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Federal Primary MCL (a) (μg/L)	Status	Federal Secondary MCL (a) (μg/L)	Status	Federal MCLG (a) (μg/L)	Status	New York Primary MCL (b) (μg/L)	New York Secondary MCL (b) (μg/L)	New York Ground-water Standard (c) (μg/L)	New York Ground-water Guidance (c) (μg/L)
Acenathphene	--		--		--		--	--	--	20
Acetone	--		--		--		--	--	--	50
Acrolein	--		--		--		5 (d)	--	5	--
Acrylic acid	--		--		--		--	--	--	50
Acrylamide	--		--		--		5 (d)	--	5	--
Acrylonitrile	--		--		0		--	--	5	--
Adipate (diethylhexyl)	400	F	--		400	F	--	--	50	--
Alachlor	2	F	--		0	F	50	--	35	--
Aldicarb	7	D	--		7	D	50	--	--	--
Aldicarb sulfone	7	D	--		7	D	50	--	--	2
Aldicarb sulfoxide	7	D	--		7	D	50	--	--	4
Aldicarb & Methomyl	--		--		--		--	--	0.35	--
Aldrin	--		--		--		--	--	ND	--
Alkyl dimethyl benzyl ammonium chloride	--		--		--		--	--	--	50
Alkyl diphenyl oxide sulfonates	--		--		--		--	--	--	50
Allyl chloride	--		--		--		5 (d)	--	5	--
Aluminum	--		50 - 200	F	--		--	--	--	--
Ametryn	--		--		--		50	--	50	--
Aminocresols	--		--		--		--	--	1	--
Ammonia & Ammonium	--		--		--		2,000	--	2,000	--
4-Aminobyphenyl	--		--		--		5 (d)	--	5	--
Aminomethylene phosphonic acid salts	--		--		--		--	--	--	50
Aminopyridines	--		--		--		--	--	--	1
3-Aminotoluene	--		--		--		5 (d)	--	5	--
Aniline	--		--		--		5	--	5	--
Antimony	6	F	--		6	F	3	--	--	3
Anthracene	--		--		--		--	--	--	50
Arsenic	50	R	--		--		50	--	25	--
Asbestos (fibers/L > 10 um length)	7,000,000		--		7,000,000		--	--	--	--
Aryltriazoles	--		--		--		--	--	--	50
Atrazine	3	F	--		3	F	50	--	7.5	--
Azinophosmethyl	--		--		--		50	--	4.4	--
Azobenzene	--		--		--		5	--	5	--
Barium	2,000	F	--		2,000	F	1000	--	1,000	--
Benefin	--		--		--		50	--	35	--
Benzene	5	F	--		0	F	5	--	0.7	--
Bentazon	--		--		20	T	--	--	--	--

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Federal Primary MCL (a) (µg/L)	Status	Federal Secondary MCL (a) (µg/L)	Status	Federal MCLG (a) (µg/L)	Status	New York Primary MCL (b) (µg/L)	New York Secondary MCL (b) (µg/L)	New York Ground-water Standard (c) (µg/L)	New York Ground-water Guidance (c) (µg/L)
Benzidine	--		--		--		5	--	5	--
Benzo[a]pyrene	0.2	F	--		0	F	50	--	ND	--
Benzo[b]fluoranthene	0.2	P	--		0	P	50	--	--	0.002
Benzo[k]fluoranthene	0.2	P	--		0	P	50	--	--	0.002
Benz[a]anthracene	0.1	P	--		0	P	50	--	--	0.002
Benzisothiazole	--		--		--		--	--	--	50
Beryllium	4	F	--		4	F	--	--	ND	--
Beta and photon activity (mrem/yr)	4	P	--		0	P	4	--	--	--
Beta activity, gross (pCi/L) (e)	--		--		--		--	--	1,000	--
bis(2-Chloroethyl)ether	--		--		--		5	--	1.0	--
bis(2-Ethylhexyl)phthalate	6		--		0		50	--	50	--
bis(2-Chloroethoxy)methane	--		--		--		5 (d)	--	5	--
bis(2-Chloromethyl)ether	--		--		--		5 (d)	--	5	--
bis(2-Chloro-1-methyl)ether	--		--		--		5 (d)	--	5	--
Boric acid, Borates & Metaborates	--		--		--		--	--	--	125
Boron	--		--		--		1,000	--	1,000	--
Bromacil	--		--		--		50	--	4.4	--
Bromide	--		--		--		--	--	--	2,000
Bromochloromethane	--		--		--		--	--	5	--
Bromodichloromethane	100	T	--		0	T	100	--	--	50
Bromoform	100	T	--		0	T	100	--	--	50
Bromobenzene	--		--		--		--	--	5	--
Bromomethane	--		--		--		--	--	5	--
Butachlor	--		--		--		50	--	3.5	--
cis-2-Butenal	--		--		--		5 (d)	--	5	--
trans-2-Butenal	--		--		--		5 (d)	--	5	--
cis-2-Butenenitrile	--		--		--		5 (d)	--	5	--
trans-2-Butenenitrile	--		--		--		5 (d)	--	5	--
Butyl benzyl phthalate	100	P	--		0	P	100	--	--	50
Butyl isopropylphthalate	--		--		--		--	--	--	50
Butoxyethoxyethanol	--		--		--		--	--	--	50
Butoxypropanol	--		--		--		--	--	--	50
Butylate	--		--		--		50	--	50	--
n-Butylbenzene	--		--		--		--	--	5	--
sec-Butylbenzene	--		--		--		--	--	5	--
tert-Butylbenzene	--		--		--		--	--	5	--
1,1'-Biphenyl	--		--		--		5 (d)	--	5	--
Cadmium	5	F	--		5	F	10	--	10	--

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Federal Primary MCL$^{(a)}$	Status	Federal Secondary MCL$^{(a)}$	Status	Federal MCLG (a)	Status	New York Primary MCL $^{(b)}$	New York Secondary MCL $^{(b)}$	New York Ground-water Standard $^{(c)}$	New York Ground-water Guidance $^{(c)}$
	(µg/L)		(µg/L)		(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)
Captan	--		--		--		50	--	18	--
Carbaryl	--		--		--		5	--	29	--
Carbofuran	40	F	--		40	F	50	--	--	15
Carbon tetrachloride	5	F	--		0	F	5.	--	5	--
Carboxin	--		--		--		50	--	50	--
Chloral hydrate	60	T	--		40	T	--	--	--	--
Chloramben	--		--		--		50	--	50	--
Chloramine, as free chlorine	4,000	T	--		4,000	T	--	--	--	--
Chloranil	--		--		--		5 $^{(d)}$	--	5	--
2-Chloraniline	--		--		--		5 $^{(d)}$	--	5	--
3-Chloraniline	--		--		--		5 $^{(d)}$	--	5	--
4-Chloraniline	--		--		--		5 $^{(d)}$	--	5	--
1-Chlorobutane	--		--		--		5 $^{(d)}$	--	5	--
Chlordane	2	F	--		0	F	5	--	0.1	--
Chloride	--		250,000	F	--		--	250,000	--	--
Chlorine	4,000	P	--		4,000	P	--	--	--	--
Chlorine dioxide	800	T	--		300	T	--	--	--	--
Chlorobenzene	100	F	--		100	F	5	--	5	--
Chlorobenzotrifluoride, 4-	--		--		--		50	--	5	--
Chlorodibromomethane	100	T	--		60	T	100	--	--	--
Chloroethane	--		--		--		--	--	5	--
Chloroform	100	T	--		0	T	100	--	7	--
2-Chloronaphthalene	--		--		--		--	--	--	10
2-Chloronitrobenzene	--		--		--		5 $^{(d)}$	--	5	--
3-Chloronitrobenzene	--		--		--		5 $^{(d)}$	--	5	--
4-Chloronitrobenzene	--		--		--		5 $^{(d)}$	--	5	--
Chloromethane	--		--		--		5 $^{(d)}$	--	--	--
Chloromethyl methyl ether	--		--		--		--	--	5	--
Chloroprene	--		--		--		5 $^{(d)}$	--	5	--
Chlorothalonil	--		--		--		5 $^{(d)}$	--	5	--
2-Chlorotoluene	--		--		--		5 $^{(d)}$	--	5	--
3-Chlorotoluene	--		--		--		--	--	5	--
4-Chlorotoluene	--		--		--		5 $^{(d)}$	--	5	--
4-Chloro-o-toluidine	--		--		--		5 $^{(d)}$	--	5	--
5-Chloro-o-toluidine	--		--		--		5	--	5	--
3-Chloro-1,1,1-trifluoropropane	--		--		--		5 $^{(d)}$	--	5	--
Chromium	100	F	--		100	F	50	--	50	--
Chromium (hexavalent)	--		--		--		--	--	50	--

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Federal Primary MCL(a) (µg/L)	Status	Federal Secondary MCL(a) (µg/L)	Status	Federal MCLG (a) (µg/L)	Status	New York Primary MCL (b) (µg/L)	New York Secondary MCL (b) (µg/L)	New York Ground-water Standard (c) (µg/L)	New York Ground-water Guidance (c) (µg/L)
Chrysene	0.2	P	--		0	P	50	--	--	0.002
Copper	1,300	AL	1,000 F		1,300	F	--	1,000	200	--
Cyanide	200	P	--		200	P	--	--	100	--
Cyanogen bromide	--		--		--		5 (d)	--	5	--
Cyanogen chloride	--		--		--		5 (d)	--	5	--
Cyanazine	--		--		1	T	--	--	--	--
1,2-Dibromobenzene	--		--		--		5 (d)	--	5	--
1,3-Dibromobenzene	--		--		--		5 (d)	--	5	--
1,4-Dibromobenzene	--		--		--		5 (d)	--	5	--
1,1-Dichloroethane	--		--		--		5 (d)	--	5	--
1,1-Dichloroethylene	7	F	--		7	F	5 (d)	--	5	--
1,1-Dichloropropene	--		--		--		5 (d)	--	5	--
1,2-Dibromo-3-chloropropane	--		--		--		--	--	5	--
1,2-Dichloroethane	5	F	--		0	F	5 (d)	--	5	--
1,2-Dichloroethylene (cis-)	70	F	--		70	F	5 (d)	--	5	--
1,2-Dichloroethylene (trans-)	100	F	--		100	F	5 (d)	--	5	--
1,2-Dichloropropane	5	F	--		0	F	5 (d)	--	5	--
1,3-Dichloropropene (cis-)	--		--		0	T	5 (d)	--	5	--
1,3-Dichloropropene (trans-)	--		--		0	T	5 (d)	--	5	--
1,4-Dichloro-2-butene (cis-)	--		--		--		5 (d)	--	5	--
1,4-Dichloro-2-butene (trans-)	--		--		--		5 (d)	--	5	--
2,2-Dibromo-3-nitrilopropionamide & Dibromoacetonitrile (sum)	--		--		--		--	--	--	50
2,4-Dichlorophenol	--		--		--		50	--	1	--
2,4-Dichlorophenoxyacitic acid (2,4-D)	70	F	--		70	F	50	--	4.4	--
2,4-Dichlorotoluene	--		--		--		--	--	5	--
2,5-Dichlorotoluene	--		--		--		--	--	5	--
2,6-Dichlorotoluene	--		--		--		--	--	5	--
1,2-Difluoro-1,1,2,2-tetrachloroethane	--		--		--		5 (d)	--	5	--
1,2-Di-isopropylbenzene	--		--		--		5 (d)	--	5	--
1,3-Di-isopropylbenzene	--		--		--		5 (d)	--	5	--
1,4-Di-isopropylbenzene	--		--		--		5 (d)	--	5	--
2,3-Dimethylaniline	--		--		--		5 (d)	--	5	--
2,4-Dimethylaniline	--		--		--		5 (d)	--	5	--
2,5-Dimethylaniline	--		--		--		5 (d)	--	5	--
2,6-Dimethylaniline	--		--		--		5 (d)	--	5	--
3,4-Dimethylaniline	--		--		--		5 (d)	--	5	--
3,5-Dimethylaniline	--		--		--		5 (d)	--	5	--

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Federal Primary MCL(a) (µg/L)	Status	Federal Secondary MCL(a) (µg/L)	Status	Federal MCLG (a) (µg/L)	Status	New York Primary MCL (b) (µg/L)	New York Secondary MCL (b) (µg/L)	New York Ground-water Standard (c) (µg/L)	New York Ground-water Guidance (c) (µg/L)
3,3'-Dimethylbenzidine	--		--		--		5 (d)	--	5	--
4,4'-Dimethylbibenzyl	--		--		--		5 (d)	--	5	--
4,4'-Dimethyldiphenylmethane	--		--		--		5 (d)	--	5	--
alpha,alpha-Dimethyl phenethylamine	--		--		--		5 (d)	--	5	--
1,3-Dinitrobenzene	--		--		--		5 (d)	--	5	--
2,3-Dinitrotoluene	--		--		--		5 (d)	--	5	--
2,4-Dinitrotoluene	--		--		--		5 (d)	--	5	--
2,5-Dinitrotoluene	--		--		--		5 (d)	--	5	--
3,4-Dinitrotoluene	--		--		--		5 (d)	--	5	--
3,5-Dinitrotoluene	--		--		--		5 (d)	--	5	--
2,6-Dinitrotoluene	--		--		--		5	--	5	--
3,3'-Dichlorobenzidine	--		--		--		5 (d)	--	5	--
3,4-Dichlorobenzotrifluoride	--		--		--		--	--	5	--
3,4-Dichlorotoluene	--		--		--		--	--	5	--
3,5-Dichlorotoluene	--		--		--		--	--	5	--
Dalapon	200	F	--		200	F	50	--	50	--
DDT, DDD & DDE	--		--		--		--	--	ND	--
Dechlorane Plus	--		--		--		--	--	5	--
Diazinon	--		--		--		50	--	0.7	--
Dibenz[a,h]anthracene	0.3	P	--		0	P	--	--	--	--
Dibromochloromethane	--		--		--		--	--	--	50
Dibromochloropropane (DBCP)	0.2	F	--		0	F	--	--	5	--
Dibromodichloromethane	--		--		--		--	--	5	--
Dibromomethane	--		--		--		5 (d)	--	5	--
Dicamba	--		--		--		50	--	0.44	--
Dichloro acetic acid	60	T	--		0	T	--	--	--	--
o-Dichlorobenzene & p-Dichlorobenzene (sum)	--		--		--		--	--	4.7	--
Dichlorobenzene, m-	600	F	--		600	F	5 (d)	--	5	--
Dichlorobenzene, o-	600	F	--		600	F	5 (d)	--	--	--
Dichlorobenzene, p-	75	F	--		75	F	5 (d)	--	--	--
Dichlorodifluoromethane	--		--		--		5 (d)	--	5	--
Dichlorofluoromethane	--		--		--		5	--	5	--
Dichloromethane	5	F	--		0	F	--	--	--	--
Dichloropropanes (each isomer)	--		--		--		--	--	5	--
Dieldrin	--		--		--		--	--	ND	--
Diethyl phthalate	--		--		--		--	--	--	50
Diethylhexyl phthalate	6	F	--		0	F	--	--	50	--
Disulfoton	--		--		--		50	--	--	--
Dimethyl phthalate	--		--		--		--	--	--	50

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
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Dimethyl tetrachloroterephthalate	--		--		--		50	--	50	--
Dimethylformamide	--		--		--		--	--	--	50
Dinoseb	7	F	--		7	F	50	--	1	--
Diphenamid	--		--		--		50	--	50	--
Diphenylhydrazines	--		--		--		--	--	ND	--
Diquat dibromide	20	F	--		20	F	50	--	--	20
Di(2−Ethylhexyl)adipate	400	F	--		400	F	50	--	--	50
Di−n−butyl phthalate	--		--		--		50	--	50	--
Di−n−octyl phthalate	--		--		--		--	--	--	50
Diphenylamine	--		--		--		5 (d)	--	5	--
Dodecylguanidine acetate &	--		--		--		--	--	--	50
Dodecylguanidine hydrochloride (sum)	--		--		--		--	--	--	--
Dyphylline	--		--		--		--	--	--	50
n,n−Dimethyl aniline	--		--		--		--	--	5	--
Endothall	100	F	--		100	F	50	--	--	50
Endrin	2	F	--		2	F	0.2	--	ND	--
Endrin aldehyde	--		--		--		5 (d)	--	5	--
Endrin ketone	--		--		--		5 (d)	--	5	--
Epichlorohydrin	TT	F	--		0	F	--	--	--	--
Ethylbenzene	700	F	--		700	F	5	--	5	--
Ethylene chlorohydrin	--		--		--		--	--	--	50
Ethylene dibromide (EDB)	0.05	F	--		0	F	50	--	5	--
Ethylene glycol	--		--		--		--	--	--	50,000
Ethylene oxide	--		--		--		--	--	--	0.05
Ethylenethiourea	--		--		--		50	--	ND	--
Ferbam	--		--		--		50	--	4.2	--
Fluometuron	--		--		--		--	--	50	--
Fluoranthene	--		--		--		--	--	--	50
Fluorene	--		--		--		--	--	--	50
Fluoride	4,000	F,R	2,000	F,R	4,000	F,R	2,200	--	1,500	--
Foaming agents	--		500	F	--		--	--	500	--
Folpet	--		--		--		50	--	50	--
Glyphosate	700	F	--		700	F	--	--	--	50
Gross alpha particle activity (pCi/L)(g)	15	P	--		0	P	15	--	15	--
Guaifenesin	--		--		--		--	--	--	50
2−Hexanone	--		--		--		--	--	--	50
1−Hydroxyethylidene−1,1−diphosphonic acid	--		--		--		--	--	--	50

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2-(2-Hydroxy-3,5-di-tert-pentylphenyl)-benzotriazole	--		--		--		--	--	--	50
Heptachlor	0.4	F	--		0	F	5	--	--	--
Heptachlor epoxide	0.2	F	--		0	F	5	--	--	--
Heptachlor & Heptachlor epoxide (sum)	--		--		--		--	--	--	ND
Hexachlorobenzene	1	F	--		0	F	5	--	0.35	--
Hexachlorobutadiene	--		--		1	T	5 (d)	--	5	--
Hexachlorocyclopentadiene	50	F	--		50	F	5	--	5	--
Hexachlorocylcohexanes (sum)	--		--		--		--	--	ND	--
Hexachloroethane	--		--		--		5 (d)	--	5	--
Hexachlorophene	--		--		--		5 (d)	--	5	--
Hexachloropropene	--		--		--		5 (d)	--	5	--
Hexazinone	--		--		--		50	--	50	--
Hydrogen sulfide (as H_2S)	--		--		--		--	--	--	50
Hydroquinone	--		--		--		--	--	1	--
Hypochlorite (regulated as chlorine)	--		--		4,000	P	--	--	--	--
Hypochlorous acid (regulated as chlorine)	--		--		4,000	P	--	--	--	--
Indeno[1,2,3-cd]pyrene	0.4	P	--		0	P	50	--	--	0.002
Iron	--		300	F	--		--	300	300	--
Iron & Manganese (sum)	--		--		--		--	500	500	--
Isohydrin	--		--		--		5 (d)	--	5	--
Isophorone	--		--		--		--	--	--	50
Isopropalin	--		--		--		5 (d)	--	5	--
Isopropylbenzene	--		--		--		5 (d)	--	5	--
2-Isopropyltoluene	--		--		--		5 (d)	--	5	--
3-Isopropyltoluene	--		--		--		5 (d)	--	5	--
4-Isopropyltoluene	--		--		--		--	--	5	--
Kepone	--		--		--		--	--	ND	--
Lead	15	F;TT; at tap	--		0	F, at tap	50	--	25	--
Lindane (gamma-HCH)	0.2	F	--		0.2	F	4	--	--	--
2-Methylethyl-1,3-dioxolane	--		--		--		--	--	--	50
2-Methylstryene	--		--		--		--	--	5	--
4-Methylstryene	--		--		--		5 (d)	--	5	--
2-Methyl-4-chlorophenoxyacethc acid	--		--		--		--	--	0.44	--
3-Methylstryene	--		--		--		--	--	5	--
4-(1-Methylethoxy)-1-butanol	--		--		--		--	--	--	50
4,4-Methylene-bis-(2-chloroaniline)	--		--		--		5 (d)	--	5	--
4,4-Methylene-bis-(N-methyl)aniline	--		--		--		5 (d)	--	5	--

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4,4-Methylene-bis-(N,N'-dimethyl)aniline	--		--		--		5 (d)	--	5	--
Magnesium	--		--		--		--	--	--	35,000
Malathion	--		--		--		50	--	7.0	--
Mancozeb	--		--		--		--	--	1.8	--
Maneb	--		--		--		50	--	1.8	--
Manganese	--		50	F	--		--	300	300	--
Mercaptobenzothiazole	--		--		--		--	--	--	50
Mercury	2	F	--		2	F	2	--	2	--
N-Methylaniline	--		--		--		5 (d)	--	5	--
Methacrylic acid	--		--		--		--	--	--	50
Methacrylonitrile	--		--		--		5 (d)	--	5	--
Methoxychlor	40	F	--		40	F	50	--	35	--
Methyl chloride	--		--		--		5	--	5	--
Methyl ethyl ketone	--		--		--		--	--	--	50
Methyl iodide	--		--		--		5 (d)	--	5	--
Methyl methacrylate	--		--		--		50	--	50	--
Methyl parathion	--		--		--		50	--	1.5	--
alpha-Methylstryene	--		--		--		5 (d)	--	5	--
Methylbenz(a)anthracenes	--		--		--		--	--	--	0.002
Methylene chloride	--		--		--		5 (d)	--	5	--
Methyloene bisthiocyanate	--		--		--		--	--	--	50
Metribuzin	--		--		--		50	--	50	--
Mirex	--		--		--		5	--	5	--
(1-Methoxyethyl)benzene	--		--		--		--	--	--	50
(2-Methoxyethyl)benzene	--		--		--		--	--	--	50
Naphthalene	--		--		--		--	--	--	10
Nibam	--		--		--		--	--	1.8	--
Niacinamide	--		--		--		--	--	--	500
Nickel	100	F	--		100	F	--	--	--	--
Nitralin	--		--		--		50	--	35	--
Nitrate, as N	10,000	F	--		10,000	F	10,000	--	--	--
Nitrate + Nitrite (as N) (sum)	10,000	F	--		10,000	F	10,000	--	10,000	--
Nitrilotriacetic acid	--		--		--		50	--	3	--
Nitrite, as N	1,000	F	--		1,000	F	--	--	--	--
2-Nitroaniline	--		--		--		5 (d)	--	5	--
3-Nitroaniline	--		--		--		5 (d)	--	5	--
4-Nitroaniline	--		--		--		5 (d)	--	5	--
Nitrobenzene	--		--		--		5	--	5	--

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N–Nitrosodiphenylamine	--		--		--		--	--	--	50
2–Nitrotoluene	--		--		--		5[d]	--	5	--
3–Nitrotoluene	--		--		--		5[d]	--	5	--
4–Nitrotoluene	--		--		--		5[d]	--	5	--
5–Nitrotoluene	--		--		--		5[d]	--	5	--
5–Nitro–o–toluidine	--		--		--		5[d]	--	5	--
Oxamyl (Vydate)	200	F	--		200	F	50	--	50	--
1–Phenyl–1–propene (cis)	--		--		--		--	--	5	--
1–Phenyl–1–propene (trans)	--		--		--		--	--	5	--
1,2–Phenylenediamine	--		--		--		5[d]	--	5	--
1,3–Phenylenediamine	--		--		--		5[d]	--	5	--
1,4–Phenylenediamine	--		--		--		5[d]	--	5	--
3–Phenyl–1–propene	--		--		--		--	--	5	--
n–Propylbenzene	--		--		--		--	--	5	--
Paraquat	--		--		--		50	--	3.0	--
Parathion & Methyl Parathion (sum)	--		--		--		--	--	1.5	--
Pendimethalin	--		--		--		5[d]	--	5	--
Pentachlorobenzene	--		--		--		5[d]	--	5	--
Pentachloroethane	--		--		--		5[d]	--	5	--
Pentachloronitrobenzene	--		--		--		--	--	ND	--
Pentachlorophenol	1	F	--		0	F	5	--	1	--
pH (pH units)	--		6.5 – 8.5		--		--	--	--	--
Phenanthrene	--		--		--		--	--	--	50
Phenol	--		--		--		50	--	--	--
Phenolic compounds (total phenols)	--		--		--		1	--	1	--
Phenols, total chlorinated	--		--		--		1	--	1	--
Phenyl ether	--		--		--		--	--	--	10
Phenylhydrazine	--		--		--		5[d]	--	5	--
Phenylpropanolamine	--		--		--		--	--	--	50
Phorate	--		--		--		50	--	--	--
Phorate & Disulfoton (sum)	--		--		--		--	--	ND	--
Picloram	500		--		1,000		5	--	50	--
Polybrominated biphenyls (each congener)	--		--		--		5[d]	--	5	--
Polychlorinated biphenyls (PCBs)	0.5	F	--		0	F	50	--	0.1	--
Principal Organic Contaminant (d)	--		--		--		5	--	5	--
Prometon	--		--		--		50	--	50	--
Propachlor	--		--		--		50	--	35	--
Propanil	--		--		--		50	--	7.0	--

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Propazine	--		--		--		50	--	16	--
Propham	--		--		--		5,000	--	50	--
Pyrene	--		--		--		--	--	--	50
Pyridine	--		--		--		--	--	--	50
Radium-226 (pCi/L)	20	P	--		0	P	3,000 3?	--	3	--
Radium-226 & Radium-228(pCi/L) (sum)	--		--		--		--	--	5	--
Radium-228 (pCi/L)	20	P	--		0	P	5,000 5?	--	--	--
Radon (pCi/L)	300	P	--		0	P	--	--	--	--
Selenium	50	F	--		50	F	10	--	10	--
Silver	--		100	F	--		50	--	50	--
Simazine	4	F	--		4	F	50	--	50	--
Sodium	--		--		--		--	20,000-270,000	20,000	--
Styrene	100	F	--		100	F	5	--	5	--
Sulfate	--		250,000	F	--		--	250,000	250,000	--
Sulfides, total (as H_2S)	--		--		--		--	--	--	50
1,1,1,2-Tetrachloroethane	--		--		--		5 (d)	--	5	--
1,1,1-Trichloroethane	200	F	--		200	F	5 (d)	--	5	--
1,1,2,2-Tetrachloroethane	--		--		--		5 (d)	--	5	--
1,1,2-Trichloroethane	5	F	--		3	F	5 (d)	--	5	--
1,1,2-Trichloropropane	--		--		--		--	--	5	--
1,2,3,4-Tetrachlorobenzene	--		--		--		--	--	5	--
1,2,3,5-Tetrachlorobenzene	--		--		--		--	--	5	--
1,2,3-Trichlorobenzene	--		--		--		5 (d)	--	5	--
1,2,3-Trichloropropane	--		--		--		5 (d)	--	5	--
1,2,3-Trichloropropene (cis)	--		--		--		--	--	5	--
1,2,3-Trichloropropene (trans)	--		--		--		--	--	5	--
1,2,3-Trimethylbenzene	--		--		--		--	--	5	--
1,2,4,5-Tetrachlorobenzene	--		--		--		--	--	5	--
1,2,4-Tribromobenzene	--		--		--		--	--	5	--
2,4,6-Trichloroaniline	--		--		--		5 (d)	--	5	--
1,2,4-Trichlorobenzene	70	F	--		70	F	5 (d)	--	5	--
1,2,4-Trimethylbenzene	--		--		--		--	--	5	--
1,3,5-Trimethylbenzene	--		--		--		--	--	5	--
1,3,5-Trichlorobenzene	--		--		--		--	--	5	--
2,3,4-Trichlorotoluene	--		--		--		--	--	5	--
2,3,5-Trichlorotoluene	--		--		--		--	--	5	--
2,3,6-Trichlorotoluene	--		--		--		--	--	5	--

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2,3,6-Trimethylpyridine	--		--		--		--	--	--	50
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.00003	F	--		0	F	5	--	0.000035	--
2,4,5-TP (Silvex)	50	F	--		50	F	10	--	0.26	--
2,4,5-Trichlorophenoxyacetic acid	--		--		--		50	--	35	--
2,4,5-Trichlorotoluene	--		--		--		--	--	5	--
2,4,6-Trichloroaniline	--		--		--		--	--	5	--
2,4,6-Trimethylpyridine	--		--		--		--	--	--	50
alpha, 2,4-Trichlorotoluene	--		--		--		--	--	5	--
alpha, 2,6-Trichlorotoluene	--		--		--		--	--	5	--
alpha, 3,4-Trichlorotoluene	--		--		--		--	--	5	--
alpha,alpha,2-Trichlorotoluene	--		--		--		--	--	5	--
alpha,alpha,4-Trichlorotoluene	--		--		--		--	--	5	--
alpha,alpha,alpha,4-Tetrachlorotoluene	--		--		--		5 [d]	--	5	
o-Toluidine	--		--		--		5	--	5	--
Tebuthiuron	--		--		--		50	--	50	--
Terbacil	--		--		--		50	--	50	--
Terbufos	--		--		--		--	--	--	0.09
Tetrachloroethylene	5	F	--		0	F	5 [d]	--	5	--
Tetrachloroterephthalic acid	--		--		--		--	--	50	--
Tetrahydrofuran	--		--		--		--	--	--	50
Tetrachlorobenzenes	--		--		--		--	--	--	10
Thallium	2	F	--		0.5	F	--	--	--	4
Theophylline	--		--		--		--	--	--	40
Thiram	--		--		--		50	--	1.8	--
Toluene	1,000	F	--		1,000	F	5 [d]	--	5	--
Toluene-2,4-diamine	--		--		--		--	--	5	--
Toluene-2,5-diamine	--		--		--		--	--	5	--
Toluene-2,6-diamine	--		--		--		--	--	5	--
Tolytriazole	--		--		--		--	--	--	50
Toxaphene	3	F	--		0	F	5	--	ND	--
Tributyltin oxide	--		--		--		--	--	--	50
Trichloroacetic acid	60	T	--		300	T	--	--	--	--
Trichlorobenzenes	--		--		--		5	--	--	10
Trichloroethylene	5	F	--		0	F	5 [d]	--	5	--
Trichlorofluoromethane	--		--		--		5 [d]	--	5	--
Trichlorotrifluoroethanes	--		--		--		--	--	5	--
Trichlorotrifluoroethanes	--		--		--		5	--	--	--
Trifluralin	--		--		--		50	--	35	--

Table 1.5: New York State and Federal ARARs and TBCs for Ground Water
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Federal Primary MCL$^{(a)}$ (µg/L)	Status	Federal Secondary MCL$^{(a)}$ (µg/L)	Status	Federal MCLG (a) (µg/L)	Status	New York Primary MCL $^{(b)}$ (µg/L)	New York Secondary MCL $^{(b)}$ (µg/L)	New York Ground−water Standard $^{(c)}$ (µg/L)	New York Ground−water Guidance $^{(c)}$ (µg/L)
Trihalomethanes	−−		−−		−−		100	−−	−−	−−
Trimethylbenzenes	−−		−−		−−		5 $^{(d)}$	−−	5	−−
Trinitrobenzene (sum)	−−		−−		−−		−−	−−	5	−−
sym−Trinitrotoluene	−−		−−		−−		5 $^{(d)}$	−−	5	−−
2,3,4−Trinitrotoluene	−−		−−		−−		5 $^{(d)}$	−−	5	−−
2,3,6−Trinitrotoluene	−−		−−		−−		5 $^{(d)}$	−−	5	−−
2,4,5−Trinitrotoluene	−−		−−		−−		5 $^{(d)}$	−−	5	−−
2,4,6−Trinitrotoluene	−−		−−		−−		5 $^{(d)}$	−−	5	−−
3,4,5−Trinitrotoluene	−−		−−		−−		5 $^{(d)}$	−−	5	−−
Triphenyl phosphate	−−		−−		−−		−−	−−	−−	50
Uranium	20	P	−−		0	P	−−	−−	−−	−−
Uranyl ion	−−		−−		−−		−−	−−	5,000	−−
Vinyl chloride	2	F	−−		0	F	2	−−	2	−−
Xylenes	10,000	F	−−		10,000	F	−−	−−	−−	−−
1,2−Xylene (o−)	−−		−−		−−		5 $^{(d)}$	−−	5	−−
1,3−Xylene (m−)	−−		−−		−−		5 $^{(d)}$	−−	5	−−
1,4−Xylene (p−)	−−		−−		−−		5 $^{(d)}$	−−	5	−−
Zinc	−−		5,000	F	−−		−−	5,000	300	−−
Zineb	−−		−−		−−		50	−−	1.8	−−
Ziram	−−		−−		−−		50	−−	4.2	−−

NOTES:

Most stringent concentration (except zero−MCLGs)

pCi/L − Picocuries per liter
f/L − Fibers per liter
mg/L = milligrams per liter
µg/L = micrograms per liter
mrem/yr = millirems per year
AL = Action level
P = Proposed standard
T = Tentative standard
D = Draft standard
R = Standard under review
ND = Not detected
THM = Trihalomethanes
TT − Treatment Technique
MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal
(a) − Drinking Water Regulations and Health Advisories, Office of Water, EPA, May 1994.
(b) − New York State Sanitary Code: Drinking Water Supplies
Subpart 5−1, Public Water Systems, March 11, 1992.
(c) − New York State Department of Environmental Conservation:
Water Quality Standards and Guidance Values, October 1993.
(d) Listed Principal Organic Contaminant
(f) Gross beta activity excluding Strontium−90 and alpha emittors
(g) Gross alpha activity excluding radon and uranium activity, but including radium−226 activity

PREPARED/DATE: KLA 5/14/95
CHECKED/DATE: LAS 6/23/95

Table 1.7: New York State and Federal TBCs for Soils
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk-Based Concentrations Industrial Soil (c) (mg/kg)		Proposed RCRA Corrective Action Levels (d) (mg/kg)
4-Aminopyridine	--	--	41	(n)	--
Acenaphthene	50	--	120.000	(n)	--
Acenaphthylene	41	--	--		--
Acetone	0.2	--	200.000	(n)	8.000
Acetone cyanohydrin	--	--	140.000	(n)	--
Acetonitrile	--	--	12.000	(n)	500
Acetophenone	--	--	200.000	(n)	8.000
Acrylamide	--	--	1.3	(C)	0.2
Acrylic acid	--	--	1.000.000	(n)	--
Acrylonitrile	--	--	11	(C)	1.0
Alachlor	--	--	72	(C)	--
Aldicarb	--	--	2.000	(n)	100
Aldrin	0.041	--	0.34	(C)	0.04
Allyl alchol	--	--	10.000	(n)	400
Allyl chloride	--	--	100.000	(n)	--
alpha-BHC (Hexachlorocyclohexane)	0.11	--	0.91	(C)	0.1
Aluminum	SB (f)	--	--		--
Aluminum phosphide	--	--	820	(n)	30
Ametryn	--	--	18.000	(n)	--
Aniline	0.1	--	1.000	(C)	100
Anthracene	50	--	610.000	(n)	--
Antimony	SB (f)	--	820	(n)	30
Aramite	--	--	230	(C)	--
Arochlor 1016	--	--	140	(n)	--
Arochlor 1254	--	--	41	(n)	--
Arsenic	7.5 or SB	--	3.3	(C)	80
Atrazine	--	--	26	(C)	--
Azobenzene	--	--	52	(C)	--
1.1-Biphenyl	--	--	100.000	(n)	--
1-Butanol	--	--	200.000	(n)	--
2-Butanone	0.3	--	--		--
Barium	300 or SB (f)	--	140.000	(n)	4.000
Barium cyanide	--	--	200.000	(n)	6.000
Benefin	--	--	610.000	(n)	--
Benzaldehyde	--	--	200.000	(n)	--
Benzene	0.06	--	200	(C)	--
Benzidine	--	--	0.025	(C)	0.003
Benzoic acid	2.7	--	1.000.000	(n)	--
Benzotrichloride	--	--	0.44	(C)	--
Benzo(ghi)perylene	50	--	--		--
Benzo[a]anthracene	0.224 or MDL	--	7.8	(C)	--
Benzo[a]pyrene	0.061 or MDL	--	0.78	(C)	--
Benzo[b]fluoranthene	1.1	--	7.8	(C)	--
Benzo[k]fluoranthene	1.1	--	7.8	(C)	--
Benzyl alchol	--	--	610.000	(n)	--
Benzyl chloride	--	--	34	(C)	--
Beryllium	0.16 or SB	--	1.3	(C)	0.2
beta-BHC	0.2	--	3.2	(C)	4.0
Bisphenol A	--	--	100.000	(n)	--
bis(2-Chloro-1-methylethyl)ether	--	--	82	(C)	--
bis(2-Ethylhexyl)phthalate	50	--	410	(C)	50.0
bis(Chloroethyl)ether	--	--	5.2	(C)	0.6
bis(Chloromethyl)ether	--	--	0.26	(C)	--
bis(Pentabromophenyl)ether	--	--	--		--
Boron	--	--	180.000	(n)	--
Bromodichloromethane	--	--	92	(C)	0.5
Bromoform	--	--	720	(C)	2.000
Bromomethane	--	--	2.900	(n)	100
Bromophos	--	--	10.000	(n)	--
Bromoxynil	--	--	41.000	(n)	--

Table 1.7: New York State and Federal TBCs for Soils
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk-Based Concentrations Industrial Soil (c) (mg/kg)		Proposed RCRA Corrective Action Levels (d) (mg/kg)
Butyl benzyl phthalate	50	--	410.000	(n)	20.000
Butylate	--	--	100.000	(n)	--
1-Chlorobutane	--	--	820.000	(n)	--
1-Chloro-2.3-epoxypropane	--	--	--		--
2-Chlorophenol	0.8	--	10.000	(n)	400
2-Chlorotoluene	--	--	41.000	(n)	--
4-Chloraniline	0.220 or MDL	--	--		--
4-Chlorobenzotrifluoride	--	--	41.000	(n)	--
4-Chlorophenyl phenyl ether	--	--	--		--
4-Chloro-3-methylphenol	0.240 or MDL	--	--		--
4-Chloro-o-toluidine	--	--	--		--
4-Chloro-o-toluidine hydrochloride	--	--	--		--
o-Chloronitrobenzene	--	--	230	(C)	--
Cadmium	1.0 or SB (f)	--	1.000	(n)	40
Cadodylic acid	--	--	6.100	(n)	--
Calcium	SB (f)	--	--		--
Calcium cyanide	--	--	82.000	(n)	3.000
Caprolactam	--	--	1.000.000	(n)	--
Captafol	--	--	670	(C)	--
Captan	--	--	1.600	(C)	--
Carbaryl	--	--	200.000	(n)	--
Carbazole	--	--	290	(C)	--
Carbofuran	--	--	10.000	(n)	--
Carbon disulfide	2.7	--	200.000	(n)	8.000
Carbon tetrachloride	0.6	--	44	(C)	5.0
Chloral	--	--	4.100	(n)	200
Chloranil	--	--	14	(C)	--
Chlordane	0.54	--	4.4	(C)	0.5
Chlorine cyanide	--	--	--		4.000
Chloroacetic acid	--	--	4.100	(n)	--
Chlorobenzene	1.7	--	41.000	(n)	2.000
Chlorobenzilate	--	--	21	(C)	--
Chloroethane	1.9	--	820.000	(n)	--
Chloroform	0.3	--	940	(C)	100
Chloromethyl methyl ether	--	--	--		--
Chloropyrifos	--	--	6.100	(n)	--
Chromium	10 or SB (f)	--	--		--
Chromium. hexavalent	--	--	10.000	(n)	400
Chromium. trivalent	--	--	1.000.000	(n)	--
Chrysene	0.4	--	--		--
Cobalt	30 or SB (f)	--	--		--
Copper	25 or SB (f)	--	--		--
Copper cyanide	--	--	10.000	(n)	400
o-Cresol	--	--	100.000	(n)	4.000
Cresols	--	--	-- nn		--
Crotonaldehyde	--	--	3	(C)	--
Cyanazine	--	--	6.8	(C)	--
Cyanide	--	--	41.000	(n)	2.000
Cyanogen	--	--	82.000	(n)	3.000
Cyanogen bromide	--	--	180.000	(n)	7.000
Cyclohexylamide	--	--	410.000	(n)	--
1.1-Dichloroethane	0.2	--	200.000	(n)	--
1.1-Dichloroethylene	0.4	--	9.5	(C)	10
1.1-Dimethylhydrazine	--	--	2.20	(C)	--
1.2-Dibromoethane	--	--	0.067	(C)	--
1.2-Dibromo-3-chloropropane	--	--	4.1	(C)	--
1.2-Dichlorobenzene (o-)	7.9	--	180.000	(n)	--
1.2-Dichloroethane	0.1	--	63	(C)	8
1.2-Dichloroethene	0.3	--	--		--
1.2-Dichloropropane	--	--	84	(C)	--
1.2-Dimethylhydrazine	--	--	0.15	(C)	--
1.2-Diphenylhydrazine	--	--	7.2	(C)	0.9

Table 1.7: New York State and Federal TBCs for Soils
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk-Based Concentrations Industrial Soil (c) (mg/kg)		Proposed RCRA Corrective Action Levels (d) (mg/kg)
1.3-Dichlorobenzene	1.6	--	--		--
1.3-Dichloropropane	0.3	--	33	(C)	20
1.3-Dichloropropene	--	--	--		20
1.3-Dinitrobenzene (m-)	--	--	200	(n)	8.0
1.4-Dibromobenzene	--	--	20.000	(n)	--
1.4-Dichlorobenzene (p-)	8.5	--	240	(C)	--
1.4-Dioxane	--	--	520	(C)	60
1-2-Dibromoethane	--	--	0.067	(C)	--
2.3-Dinitrotoluene	--	--	--		1.0
2.4-D	0.5	--	--		--
2.4-Dichlorophenol	0.4	--	6.100	(n)	200
2.4-Dichlorophenoxyacetic acid (2.4-D)	0.5	--	20.000	(n)	800
2.4-Dimethylaniline	--	--	7.6	(C)	--
2.4-Dimethylphenol	--	--	41.000	(n)	--
2.4-Dinitrophenol	0.2 or MDL	--	4.100	(n)	200
2.4-Dinitrotoluene	--	--	4.100	(n)	--
2.6-Dimethylphenol	--	--	1.200	(n)	--
2.6-Dinitrotoluene	1	--	2.000	(n)	1.0
3.3'-Dichlorobenzidine	--	--	13	(C)	2
3.4-Dimethylphenol	--	--	2.000	(n)	--
4.4-DDD	2.9	--	24	(C)	3
4.4-DDE	2.1	--	17	(C)	2.0
4.4-DDT	2.1	--	17	(C)	2.0
4.6-Dinitro-o-cresol	--	--	--		--
cis-1.2-Dichloroethylene	--	--	200.000	(n)	--
Dacthal	--	--	20.000	(n)	--
Dalapon	--	--	61.000	(n)	--
Delta-BHC	0.3	--	--		--
Diallate	--	--	94	(C)	--
Diazinon	--	--	1.800	(n)	--
Dibenzofuran	6.2	--	--		--
Dibenz[a.h]anthracene	0.014 or MDL	--	0.78	(C)	--
Dibromochloromethane	--	--	--		--
Dibromodichloromethane	--	--	--		--
Dibutylnitrosamine	--	--	--		0.1
Dichlorodifluoromethane	--	--	410.000	(n)	20.000
Dicyclopentadiene	--	--	61.000	(n)	--
Dieldrin	0.044	--	0.36	(C)	0.04
Diethylene glycol monoethyl ether	--	--	1.000.000	(n)	--
Diethylformamide	--	--	22.000	(n)	--
Diethylnitrosoamine	--	--	--		0.005
Diethylphthalate	7.1	--	1.000.000	(n)	60.000
Diethylstilbestrol (DES)	--	--	0.0012	(C)	--
Dimethoate	--	--	410	(n)	2.000
Dimethylnitrosoamine	--	--	--		0.01
Dimethylphthalate	2.0	--	1.000.000	(n)	--
Dinoseb (DNBP)	--	--	2.000	(n)	--
Diphenylamine	--	--	51.000	(n)	2.000
Disulfoton	--	--	82	(n)	3.0
Di-n-butyl phthalate	8.1	--	410	(C)	8.000
Di-n-octyl phthalate	50	--	41.000	(n)	--
2-Ethoxyethanol	--	--	820.000	(n)	--
2-Ethoxyethanol acetate	--	--	610.000	(n)	--
Endosulfan	0.9	--	12.000	(n)	4.0
Endosulfan sulfate	1.0	--	--		--
Endothall	--	--	41.000	(n)	2.000
Endrin	0.1	--	610	(n)	20
Epichlorhydrin	--	--	580	(C)	70
Ethyl acetate	--	--	1.000.000	(n)	--
Ethyl di-n-propylthiocarbomate (EPTC)	--	--	51.000	(n)	--
Ethyl ether	--	--	410.000	(n)	--
Ethyl methacrylate	--	--	180.000	(n)	--

Table 1.7: New York State and Federal TBCs for Soils
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk-Based Concentrations Industrial Soil (c) (mg/kg)	Proposed RCRA Corrective Action Levels (d) (mg/kg)
Ethylbenzene	5.5	--	200.000 (n)	8.000
Ethylene cyanohydrin	--	--	610.000 (n)	--
Ethylene diamine	--	--	41.000 (n)	--
Ethylene dibromide	--	--	--	0.0080
Ethylene glycol	--	--	1.000.000 (n)	--
Ethylene oxide	--	--	5.6 (C)	--
Ethylene thiourea	--	--	48 (C)	--
Fluoranthene	50	--	82.000 (n)	--
Fluorene	50	--	82.000 (n)	--
Fluorides	--	--	120.000 (n)	--
Folpet	--	--	1.600 (C)	--
Formaldehyde	--	--	410.000 (n)	--
Formic acid	--	--	1.000.000 (n)	200.000
Furan	--	--	2.000 (n)	--
Furazolidone	--	--	1.5 (C)	--
Furfural	--	--	6.100 (n)	--
Furium	--	--	0.11 (C)	--
Glycidaldehyde	--	--	820 (n)	30
Heptachlor	0.1	--	1.3 (C)	0.2
Heptachlor epoxide	0.02	--	0.63 (C)	0.08
Hexabromobenzene	--	--	4.100 (n)	--
Hexachlorobenzene	0.41	--	3.6 (C)	--
Hexachlorobutadiene	--	--	73 (C)	90
Hexachlorocyclopentadiene	--	--	14.000 (n)	600
Hexachlorodibenzo-p-dioxin	--	--	0.0009 (C)	0.0001
Hexachloroethane	--	--	410 (C)	80
Hexachlorophene	--	--	610 (n)	20
n-Hexane	--	--	120.000 (n)	--
Hydrazine	--	--	1.9 (C)	0.2
Hydrazine sulfate	--	--	1.9 (C)	--
Hydrogen cyanide	--	--	41.000 (n)	2.000
Hydrogen sulfide	--	--	6.100 (n)	--
Hydrogen sulfite	--	--	--	200
Hydroquinone	--	--	82.000 (n)	--
Indeno(1.2.3-cd)pyrene	3.2	--	--	--
Iron	2.000 or SB (f)	--	--	--
Isobutyl alchol	--	--	610.000 (n)	20.000
Isophorone	4.4	--	6.000 (C)	2.000
Isopropalin	--	--	31.000 (n)	--
Isopropylbenzene (cumene)	--	--	82.000 (n)	--
Lead	SB (f)	--	--	--
Lindane (gamma-BHC)	0.06	--	4.4 (C)	0.5
Linuron	--	--	4.100 (n)	--
2-Methlnaphthalene	36.4	--	--	--
2-Methoxyethanol	--	--	2.000 (n)	--
2-Methoxy-5-nitroaniline	--	--	120 (C)	--
2-Methylaniline	--	--	24 (C)	--
2-Methylaniline hydrochloride	--	--	32 (C)	--
2-Methylphenol	0.100 or MDL	--	--	--
2-Methyl-5-nitroaniline	--	--	170 (C)	--
3-Methylcholanthrene	--	--	--	--
4.4'-Methylene bis (2-Chloroaniline)	--	--	44 (C)	--
4.4'-Methylene bis(N.N-dimethyl) aniline	--	--	120 (C)	--
4-Methylphenol	0.9	--	--	--
4-Methyl-2-pentanone	1.0	--	--	--
Magnesium	SB (f)	--		--
Malathion	--	--	41.000 (n)	--
Maleic anhydride	--	--	200.000 (n)	8.000
Maleic hydrazide	--	--	1.000.000 (n)	40.000
Malononitrile	--	--	41 (n)	--
Mancozeb	--	--	61.000 (n)	--

Table 1.7: New York State and Federal TBCs for Soils
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Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk–Based Concentrations Industrial Soil (c) (mg/kg)		Proposed RCRA Corrective Action Levels (d) (mg/kg)
Maneb	--	--	10.000	(n)	--
Manganese	SB (f)	--	10.000	(n)	--
Mercury	0.1	--	610	(n)	20
Methacrylonitrile	--	--	200	(n)	8.0
Methanol	--	--	1.000.000	(n)	--
Methomyl	--	--	51.000	(n)	2.000
Methoxychlor	--	--	10.000	(n)	--
Methyl acrylate	--	--	61.000	(n)	--
Methyl chloride (chloromethane)	--	--	440	(C)	--
Methyl ethyl ketone	0.3	--	1.000.000	(n)	4.000
Methyl isobutyl ketone	--	--	160.000	(n)	4.000
Methyl mercury	--	--	610	(n)	--
Methyl methacrylate	--	--	160.000	(n)	--
Methyl parathion	--	--	510	(n)	20
Methyl styrene	--	--	12.000	(n)	--
Methylene chloride	0.1	--	--		90
Mirex	--	--	3.2	(C)	--
Molinate	--	--	4.100	(n)	--
Molybdenum	--	--	10.000	(n)	--
m–Aminophenol	--	--	140.000	(n)	--
m–Cresol	--	--	100.000	(n)	4.000
m–Phenylenediamine	--	--	12.000	(n)	500
n.n–Dimethylaniline	--	--	4.100	(n)	--
2–Nitroaniline	0.43 or MDL	--	--		--
4–Nitrophenol	0.100 or MDL	--	--		--
2–Nitrophenol	0.33 or MDL	--	--		--
Naphthalene	13	--	82.000	(n)	--
Nickel	13 or SB (f)	--	4.100	(n)	2.000
Nitric oxide	--	--	200.000	(n)	8.000
Nitrite	--	--	200.000	(n)	--
Nitrobenzene	0.2 or MDL	--	1.000	(n)	40
Nitrofurantoin	--	--	140.000	(n)	--
Nitrofurazone	--	--	3.8	(C)	--
Nitrogen dioxide	--	--	1.000.000	(n)	80.000
Nitrotoluenes	--	--	20.000	(n)	--
N–Nitrosodiethanolamine	--	--	2	(C)	--
N–Nitrosodiethylamine	--	--	0.038	(C)	--
N–Nitrosodimethylamine	--	--	0.11	(C)	--
N–Nitrosodiphenylamine	--	--	1.200	(C)	100
N–Nitrosodipropylamine	--	--	0.82	(C)	0.1
N–Nitrosodi–n–butylamine	--	--	1.1	(C)	0.1
N–Nitrosopyrrolidine	--	--	2.7	(C)	0.3
N–Nitroso–n–methyl urea	--	--	--		--
N–Nitroso–n–methylethylamine	--	--	0.26	(C)	0.03
Octamethylpyrophosphoramide	--	--	4.100	(n)	--
Osmium tetroxide	--	--	--		0.8
p.alpha.alpha.alpha.alpha–Tetrachlorotoluene	--	--	0.29	(C)	--
Parathion	1.2	--	12.000	(n)	500
Pebulate	--	--	100.000	(n)	--
Pendimethalin	--	--	82.000	(n)	--
Pentachlorobenzene	--	--	1.600	(n)	60
Pentachloronitrobenzene	--	--	22	(C)	200
Pentachlorophenol	1.0 or MDL	--	48	(C)	2.000
Pesticides, total	10	--	--		--
Phenanthrene	50	--	--		--
Phenol	0.03 or MDL	--	1.000.000	(n)	50.000
Phenyl mercuric acetate	--	--	160	(n)	6.0
Phosphine	--	--	610	(n)	20
Phthalic anhydride	--	--	1.000.000	(n)	200.000
Polybrominated biphenyls (PBB's)	--	--	0.64	(C)	--
Polychlorinated biphenyls (PCB's)	1	--	0.74	(C)	0.09

Table 1.7: New York State and Federal TBCs for Soils
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk-Based Concentrations Industrial Soil (c) (mg/kg)		Proposed RCRA Corrective Action Levels (d) (mg/kg)
PCB's – subsurface	10.0	--	--		--
PCB's – surface	1.0	--	--		--
PCB's – Outdoor substations	--	25 – 50	--		--
PCB's – Other Restricted Access	--	25	--		--
PCB's – Non–Restricted Access	--	10	--		--
Potassium	SB (f)	--	--		--
Potassium cyanide	--	--	100,000	(n)	4,000
Potassium silver cyanide	--	--	410,000	(n)	20,000
Profluralin	--	--	12,000	(n)	--
Pronamide	--	--	150,000	(n)	6,000
Propachlor	--	--	27,000	(n)	--
Propazine	--	--	41,000	(n)	--
Propylene glycol	--	--	1,000,000	(n)	--
Propylene glycol monoethyl ether	--	--	1,000,000	(n)	--
Propylene glycol monomethyl ether	--	--	1,000,000	(n)	--
Propylene oxide	--	--	24	(C)	--
Pyrene	50	--	61,000	(n)	--
Pyridine	--	--	2,000	(n)	80
p–Chlorobenzoic acid	--	--	410,000	(n)	--
p–Chloronitrobenzene	--	--	320	(C)	--
p–Cresol	--	--	10,000	(n)	4,000
p–Phenylenediamine	--	--	390,000	(n)	--
Quinoline	--	--	0.48	(C)	--
RDX (cyclonite)	--	--	--		--
Reserpine	50	--	--		--
Ronnel	--	--	100,000	(n)	--
Selenious acid	--	--	10,000	(n)	200
Selenium	2 or SB (f)	--	--		--
Selenourea	--	--	10,000	(n)	400
Silver	SB (f)	--	10,000	(n)	200
Silver cyanide	--	--	200,000	(n)	8,000
Simazine	--	--	48	(C)	--
Sodium	SB (f)	--	--		--
Sodium cyanide	--	--	82,000	(n)	3,000
Sodium diethyldithiocarbamate	--	--	21	(C)	--
Sodium metavandate	--	--	2,000	(n)	--
Strychnine & salts	--	--	610	(n)	20
Styrene	--	--	410,000	(n)	20,000
1,1,1,2–Tetrachloroethane	--	--	220	(C)	300
1,1,1–Trichloroethane	0.8	--	180,000	(n)	7,000
1,1,2,2–Tetrachloroethane	0.6	--	29	(C)	40
1,1,2–Trichloroethane	--	--	100	(C)	100
1,1,2–Trichloropropane	--	--	10,000	(n)	--
1,1,2–Trichloro–1,2,2–trifluoroethane	6	--	1,000,000	(n)	--
1,2,3–Trichloropropane	0.4	--	0.82	(C)	500
1,2,3–Trichloropropene	0.4	--	10,000	(n)	--
1,2,4,5–Tetrachlorobenzene	--	--	610	(n)	20
1,2,4–Tribromobenzene	--	--	10,000	(n)	--
1,2,4–Trichlorobenzene	3.4	--	20,000	(n)	2,000
2,3,4,6–Tetrachlorophenol	--	--	61,000	(n)	2,000
2,3,7,8–Tetrachlorodibenzo–p–dioxin	--	--	0.00004	(C)	--
2,4–Toluenediamine	--	--	1.8	(C)	--
2,5–Toluenediamine	--	--	1,000,000	(n)	--
2,6–Toluenediamine	--	--	410,000	(n)	--
1,3,5–Trinitrobenzene (sym–)	--	--	100	(n)	--
2,4,5–TP (Silvex)	0.7	--	16,000	(n)	800
2,4,5–Trichlorophenol	0.1	--	200,000	(n)	8000
2,4,5–Trichlorophenoxyacetic acid (2,4,5–T)	1.9	--	20,000	(n)	800
2,4,6–Trichloroaniline	--	--	170	(C)	--
2,4,6–Trichloroaniline hydrochloride	--	--	200	(C)	--
2,4,6–Trichlorophenol	--	--	520	(C)	40
2,4,6–Trinitrotoluene (TNT)	--	--	190	(C)	--

Table 1.7: New York State and Federal TBCs for Soils
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	Recommended State Soil Cleanup Objectives (a) (mg/kg)	TSCA Cleanup Standards (b) (mg/kg)	EPA Reg. III Risk-Based Concentrations Industrial Soil (c) (mg/kg)		Proposed RCRA Corrective Action Levels (d) (mg/kg)
2-(Thiocyanomethylthio)benzothiozole (TCMB	--	--	61,000	(n)	--
Tetrachloroethylene	1.4	--	110	(C)	10
Tetraethyl dithiopyrophosphate (Sulfotepp)	--	--	1,000	(n)	40
Tetraethyl lead	--	--	0.2	(n)	0.008
Thallic oxide	--	--	140	(n)	6.0
Thallium	SB (f)	--	--		--
Thallium acetate	--	--	180	(n)	7.0
Thallium carbonate	--	--	160	(n)	6.0
Thallium chloride	--	--	160	(n)	6.0
Thallium nitrate	--	--	180	(n)	7.0
Thallium selenate	--	--	180	(n)	--
Thallium sulfate	--	--	160	(n)	6.0
Thiofanox	--	--	610	(n)	--
Thiosemicarbazide	--	--	--		500
Thiourea	--	--	--		--
Thiram	--	--	10,000	(n)	400
Tin	--	--	1,000,000	(n)	--
Toluene	1.5	--	410,000	(n)	20,000
p-Toluidine	--	--	30	(C)	--
Toxaphene	--	--	5.2	(C)	0.6
trans-1,2-Dichloroethylene	0.3	--	41,000	(n)	--
Triallate	--	--	27,000	(n)	--
Trichloroethylene	0.7	--	520	(C)	60
Trichlorofluoromethane (freon 11)	--	--	610,000	(n)	20,000
Trifluralin	--	--	740	(C)	--
Trimethyl phosphate	--	--	150	(C)	--
Vanadium	150 or SB (f)	--	14,000	(n)	--
Vanadium pentoxide	--	--	18,000	(n)	700
Vanadyl sulfate	--	--	41,000	(n)	--
Vernolate	--	--	--		--
Vinyl acetate	--	--	1,000,000	(n)	--
Vinyl chloride	0.2	--	3	(C)	--
Warfarin	--	--	610	(n)	--
m-Xylene	--	--	1,000,000	(n)	200,000
o-Xylene	--	--	1,000,000	(n)	200,000
Xylenes (total)	1.2	--	1,000,000	(n)	200,000
Zinc	20 or SB (f)	--	610,000	(n)	--
Zinc cyanide	--	--	100,000	(n)	4,000
Zinc phosphide	--	--	610	(n)	20
Zineb	--	--	100,000	(n)	--

NOTES:

Most stringent concentration

mg/kg = milligrams per kilogram
TBD = To be Determined (No criterion at this time)
MDL = Method Detection Limit
(n) - as noncarcinogen
(C) - as carcinogen
- = Not Applicable
SB = Soil Background

PREPARED/DATE: KLA 5/14/95
CHECKED/DATE: LAS 6/23/95

References:
(a) NYSDEC Division of Technical and Administrative Guidance Memorandum:
Determination of Soil Cleanup Objectives and Cleanup Levels. NYSDEC. 1994.
(b) 40 CFR Part 761.125
(c) U.S. EPA Region III. Technical Support Section. Risk Based Concentration Table. January - June 1995. March 7, 1
(d) Proposed Rules. RECRA Subpart S. 40 CFR Section 264.521(a)(2)(i-iv). Federal Register. Vol. 55. No. 145. 27 July.
(e) NYSDEC. Division of Construction Management. Bureau of Spill Prevention and Response.
STARS Memo #1 - Petroleum-Contaminated Soil Guidance Policy. August 1992.
(f) Background concentrations for soils are summarized on Table 5.1.

Table 1.8: New York State and Federal TBCs for Sediments
Remedial Investigation
Griffiss Air Force Base, Rome, New York

	State Sediment Criteria for Protection of: (a)						
	Benthic Aquatic Life (Fresh Water)		Human Health Bioaccumulation	NOAA(b)		State Sediment Criteria for Metals	
Compound	Acute (mg/kg)	Chronic (mg/kg)	(mg/kg)	ER-L (mg/kg)	ER-M (mg/kg)	LEL (mg/kg)	SEL (mg/kg)
Endosulfan	0.0078	0.0003	--	--	--	--	--
Endrin	--	0.04	0.008	--	--	--	--
Fluoranthene	--	10.2	--	0.6	5.1	--	--
Fluorene	--	--	--	0.019	0.54	--	--
Heptachlor	0.13	0.001	0.000008	--	--	--	--
Heptachlor epoxide	0.13	0.001	0.000008	--	--	--	--
Hexachlorobenzene	9.08	55.7	0.0015	--	--	--	--
Hexachlorobutadiene	0.55	0.055	0.003	--	--	--	--
Hexachlorocyclohexanes	0.126	0.0006	0.0006	--	--	--	--
Hexachlorocyclopentadiene	0.44	0.044	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	--	--	0.013	--	--	--	--
Isodecyldiphenyl phosphate	55.26	4.27	--	--	--	--	--
Lead	--	--	--	46.7	218	31	110
Linear alkylbenzene sulfonates	--	3.73	--	--	--	--	--
Malathion	--	0.0002	--	--	--	--	--
Manganese	--	--	--	--	--	460	1100
Mercury	--	--	--	0.15	0.71	0.15	1.3
Methoxychlor	--	0.006	--	--	--	--	--
Methyl parathion	0.0002	0.00003	--	--	--	--	--
Methylbenz[a]anthracene	--	--	0.013	--	--	--	--
2-Methylnaphthalene	--	--	--	0.07	0.67	--	--
Mirex	--	0.007	0.0007	--	--	--	--
Naphthalene	--	--	--	0.16	2.1	--	--
Nickel	--	--	--	20.9	51.6	16	50
PAH, total	--	--	--	4	45	--	--
Parathion	0.0002	0.00003	--	--	--	--	--
Pentachlorophenol	1	0.4	--	--	--	--	--
Phenanthrene	--	1.2	--	0.24	1.5	--	--
Phenols, total chlorinated	--	0.006	--	--	--	--	--
Phenols, total unchlorinated	--	0.005	--	--	--	--	--
Polychlorinated biphenyls (PCB's)	27.6	0.193	0.000008	0.0227	0.18	--	--
Pyrene	--	--	--	0.665	2.6	--	--
Silver	--	--	--	1	3.7	1	2.2
2,3,7,8-Tetrachlorodibenzo-p-dioxin	--	--	0.0001	--	--	--	--
1,1,2,2-Tetrachloroethane	--	--	0.003	--	--	--	--
Tetrachloroethylene	--	--	0.008	--	--	--	--

Table 1.8: New York State and Federal TBCs for Sediments
Remedial Investigation
Griffiss Air Force Base, Rome, New York

Compound	State Sediment Criteria for Protection of: (a)			NOAA(b)		State Sediment Criteria for Metals	
	Benthic Aquatic Life (Fresh Water)		Human Health Bioaccumulation				
	Acute (mg/kg)	Chronic (mg/kg)	(mg/kg)	ER-L (mg/kg)	ER-M (mg/kg)	LEL (mg/kg)	SEL (mg/kg)
Toxaphene	0.032	0.0001	0.0002	--	--	--	--
Trichlorobenzenes	9.1	0.91	--	--	--	--	--
1,1,2-Trichloroethane	--	--	0.006	--	--	--	--
Trichloroethylene	--	--	0.02	--	--	--	--
Triphenyl phosphate	15.56	1.56	--	--	--	--	--
Vinyl chloride	--	--	0.0007	--	--	--	--
Zinc	--	--	--	150	410	120	270

NOTES:

Most stringent concentration

mg/kg = milligrams per kilogram
ER-L/ER-M – Effects Range Low Concentrations/Effects Range Median Concentrations
LEL/SEL – Lowest Effect Level/Severe Effect Level
-- Not Applicable

(a) Assumes an organic carbon content of 1 percent.
NYSDEC, 1994. Technical Guidance for Screening Contaminated Sediments. Albany, NY: New York State Department of Environmental Conservation, Division of Fish and Wildlife and Division of Marine Resources. July, 1994

(b) NOAA, 1994. Quick Reference Cards: Screening Guidelines for Inorganics and Organics. Seattle, WA: National Oceanic and Atmospheric Administration, Office of Ocean Resources Conservations and Assessment. January 5, 1994.

PREPARED/DATE: KLA 5/14/95
CHECKED/DATE: LAS 6/23/95

Table 5.1: Background Soil Screening Levels
Remedial Investigation
Griffiss Air Force Base, Rome, New York

PARAMETER	OBMW-21B	OBMW-21C	OBMW-21D	OBMW-21E	OBMW-21F	OBMW-29B	OBMW-29C	OBMW-29D	Arithemtic Mean Conc [a]	Background Screening Level [b]
METALS (mg/kg)										
Aluminum	10300	8610	7640	5710	5960	11900	12100	11000	9153	18306
Antimony	3.3 U	3.4 U	3.4 U	3.3 U	3.3 UJ	3.4 U	3.2 U	3.6 U	3.4 U	6.8 U
Arsenic	3.0	2.1	3.0	1.8	2.2 J	2.8	2.4	2.3	2.5	4.9
Barium	23.0	17.7	18.9	15.6	14.3	93.0	43.9	56.5	35.4	71
Beryllium	0.33	0.34	0.34	0.33 U	0.33 U	0.45	0.43	0.36	0.36	0.73
Cadmium	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	2.2 U
Calcium	2670	563	1760	34900	51300	1510	749	1830	11910	23821
Chromium	11.2	9.1	9.1	7.6	7.8	13.2	321	21.1	11.3 (c)	22.6
Cobalt	9.8	8.5	10.6	7.7	7.4	13.4	10.2	9.5	9.6	19
Copper	17.8-	21.0	25.2	19.0	20.2	11.2	30.1	30.8	21.9	43
Chromium, hexavalent	0.43	0.39	0.23 U	0.22 U	0.28 J	0.24 U	0.22 U	0.26	0.28	0.57
Iron	22500	20100	23400	16600	17400	25700	31300	32400	23675	47350
Lead	17.3	16.2	19.6	15.0	12.7	26.7	19.0	18.3	18.1	36
Magnesium	3320	2680	2780	2900	4700	3560	4550	4210	3588	7175
Manganese	609	477	717	418	444 J	1760	1700	2300	1053	2106
Mercury	0.098 U	0.10 U	0.10 U	0.11 U	0.1 UJ	0.12 U	0.11 U	0.10 U	0.10 U	0.20 U
Molybdenum	5.6 U	5.7 U	5.6 U	5.6 U	5.5 U	5.7 U	5.4 U	6.0 U	5.6 U	11 U
Nickel	15.9	18.7	23.3	17.1	17.3	24.4	33.2	34.6	23.1	46
Potassium	991	1020	1180	987	1040	860	1040	855	997	1993
Selenium	0.34 UJ	0.33 UJ	0.34 UJ	0.33 UJ	0.32 UJ	0.35 UJ	0.33 UJ	0.35 UJ	0.34 U	0.68 U
Silver	1.1 U	1.1 U	1.1 U	1.1 U	1.1 UJ	1.1 U	1.1 U	1.2 U	1.1 U	2.2 U
Sodium	124 J	118 J	123 J	142 J	157 J	116 J	109 J	146 J	129	259
Strontium	7.5	2.8	9.0	78.0	108 J	4.5	3.2	5.7	27.3	55
Thallium	0.46 U	0.44 U	0.45 U	0.44 U	0.44 U	0.47 U	0.44 U	0.46 U	0.45 U	0.9 U
Vanadium	19.6	15.4	16.9	12.2	13.5	21.0	22.8	21.9	17.9	36
Zinc	54.3	46.2	51.6	47.1	47.9	72.6	85.4	75.8	60.1	120
WET CHEMISTRY ANALYSIS (mg/kg)										
Cyanide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U

mg/kg = milligrams per kilogram
J = Estimated concentration
U = Analyte not detected; value shown is sample quantitation limit (SQL)
(a) SQLs were used for non-detect values in calculations of the arithmetic mean
(b) Background screening level is twice the arithmetic mean
(c) Arithmetic mean for chromium does not include analytical result for sample OBMW-29c which was anomalously high

PREPARED/DATE: BLG 8/11/95
CHECKED/DATE: LAS 8/17/95

1995 Group I AOI Screening Tables

TABLE 3.2-2

Analytical Results Summary for Soils
AOI 9: Weapons Storage Area (WSA) Landfill
Griffiss Air Force Base, Rome, New York

	SITE-SPECIFIC STATISTICS			PRELIMINARY SCREENING							FINAL SCREENING		
Metals mg/kg	Number of Positive Hits (#S=5)	Maximum	Minimum	Background Value	Number Exceeding Background Value	NYSDEC Guidance	Number Exceeding NYSDEC Guidance	Shacklette & Boerngen 90th Percentile	Exceeding Shacklette & Boerngen 90th Percentile	All Preliminary Criteria Exceeded	EPA-RIII RBC Soil Ingestion (Industrial)	Number Exceeding RBC Soil Ingestion	Preliminary and Final Criteria Exceeded
Aluminum	5	10,000	3,500	18,306	0	33,000	0	128,000	0		1,000,000	0	
Arsenic	5	2.9	1.7	4.9	0	7.5	0	16	0		3.8	0	
Barium	5	28	9.5	71	0	300	0	867	0		140,000	0	
Beryllium	2	0.76	0.61	0.73	1	0.16	2	1.81	0		1.3	0	
Calcium	5	8,200	1,500	23,821	0	35,000	0	14,400	0		NA	NA	
Chromium Total	5	12	3.5	22.6	0	10	1	112	0		1,000,000	0	
Cobalt	5	14	4.9	19	0	30	0	19.8	0		120,000	0	
Copper	5	46	11	43	1	25	1	48.7	0		82,000	0	
Iron	5	27,000	9,500	47,350	0	2,000	5	54,100	0		610,000	0	
Lead	5	11	2.8	36	0	(SB)	NA	33	0		400	0	
Magnesium	5	5,400	2,000	7,175	0	5,000	1	10,700	0		NA	NA	
Manganese	5	450	220	2,106	0	5,000	0	1,450	0		280,000 (a)	0	
Nickel	5	28	10	46	0	13	4	38.2	0		41,000	0	
Potassium	5	860	350	1993	0	43,000	0	23.5	5		NA	NA	
Silver	4	1.7	1.2	1.1	4	(SB)	NA	NA	NA	P	10,000	0	
Vanadium	5	12	4.5	38	0	150	0	140	0		14,000	0	
Zinc	5	47	21	120	0	20	5	104	0		610,000	0	
Semivolatiles (ug/kg)													
Bis(2-ethylhexyl)phthalate	1	48	48	---	---	50,000	0	---	---		410,000	0	
Di-n-butyl-phthalate	1	42	42	---	---	8,100	0	---	---		2.00E+08	0	
Volatile Organics (ug/kg)													
Trichloroethene	3	2.8	1.6	---	---	700	0	---	---		520,000	0	

Key:

(#S) = Total number of soil samples (including duplicates) taken for this AOI.
Background Value = Background concentration determined during Remedial Investigation (Law Environmental, 1995); eight samples from two off-base wells.
NYSDEC = New York State Department of Environmental Conservation.
NYSDEC Guidance = Screening criteria as established in Technical and Administrative Guidance Memorandum (TAGM) 4046. [For metals = provided values only.]
Shacklette and Boerngen = Background metals concentrations from Shacklette and Boerngen 1984 study (Eastern United States - 90th Percentile).
EPA RIII RBC = Environmental Protection Agency Region III Risk-Based Concentration.
(SB) = (Site Background). TAGM 4046 provides no alternate, nor "Eastern USA" background value for antimony, lead, silver, and thallium.

PAHs = Polyaromatic hydrocarbons.
PCBs = Polychlorinated biphenyls.
TRPH = Total recoverable petroleum hydrocarbons.
NA = No criteria available for this parameter.
--- = Background screening criteria not applicable to volatiles, semivolatiles, PAHs, and TRPH.
mg/kg = Milligrams per kilogram.
ug/kg = Micrograms per kilogram.
(a) = Manganese RBC based on revised reference dose of 0.14 (Integrated Risk Information System 11/1/96)

P = All available preliminary criteria exceeded.
F = Final criteria exceeded.

TABLE 3.2-3

Analytical Results Summary for Sediment
AOI 9: Weapons Storage Area (WSA) Landfill
Griffiss Air Force Base, Rome, New York

	SITE-SPECIFIC STATISTICS			SCREENING CRITERIA					
Metals mg/kg	Number of Positive Hits (#S=4)	Maximum	Minimum	Lowest Effect Level (ppm)	Number Exceeding Lowest Effect Level	Exceeds Lower Effect Level (LE)	Severe Effect Level (ppm)	Number Exceeding Severe Effect Level	Esceeds Severe Effect Level (SE)
Aluminum	4	8,100	2,800	NA			NA		
Arsenic	4	17	2.6	6	1	LE	33		
Barium	4	270	31	NA			NA		
Cadmium	2	1.6	0.8	0.6	2	LE	9		
Calcium	4	220,000	2,400	NA			NA		
Chromium Total	2	6.3	5.2	26			110		
Cobalt	4	16	7.5	NA			NA		
Copper	4	27	7.3	16	2	LE	110		
Iron	4	43,000	13,000	2 %	1	LE	4%	1	SE
Lead	4	34	10	31	1	LE	110		
Magnesium	4	2,400	1,200	NA			NA		
Manganese	4	24,000	420	460	3	LE	1100	2	SE
Nickel	4	26	13	16	2	LE	50		
Potassium	4	1,200	360	NA			NA		
Selenium	2	0.5	0.5	NA			NA		
Silver	1	4.9	4.9	1	1	LE	2.2	1	SE
Sodium	1	260	260	NA			NA		
Vanadium	2	11	9.1	NA			NA		
Zinc	2	76	44	120			270		

Key:

(#S) = Total number of soil samples (including duplicates) taken for this AOI.
NYSDEC = New York State Department of Environmental Conservation.
NYSDEC Guidance =Technical Guidance for Screening Contaminated Sediments (November 1993).

NA = No criteria available for this parameter.
mg/kg = Milligrams per kilogram.
LE = Exceeds lower effect level.
SE = exceeds severe effect level

TABLE 3.2-4

Analytical Results Summary for Groundwater
AOI 9: Weapons Storage Area (WSA) Landfill
Griffiss Air Force Base, Rome, New York

	SITE-SPECIFIC STATISTICS			PRELIMINARY SCREENING					FINAL SCREENING		
Metals (ug/L)	Number of Positive Hits (#S=8)	Maximum	Minimum	NYSDEC Guidance	Number Exceeding NYSDEC Guidance	Federal MCL	Number Exceeding Federal MCL	Lowest Preliminary Criteria Exceeded	EPA-RIII RBC Tap Water	Number Exceeding EPA-RIII RBC Tap Water	Preliminary and Final Criteria Exceeded
Aluminum	5	7,300	170	NA	NA	50	5	P	37,000	0	
Barium	3	78	26	1,000	0	2,000	0		2,600	0	
Calcium	8	80,000	48,000	NA	NA	NA	NA		NA	NA	
Chromium Total	3	21	10	50	0	100	0		37,000	0	
Copper	2	27	24	200	0	1,300	0		1,500	0	
Iron	8	14,000	250	300	6	300	6	P	11,000	1	F
Lead	3	11	5.1	25	0	15	0		NA	NA	
Magnesium	8	14,000	6,300	35,000	0	NA	0		NA	NA	
Manganese	8	1,500	130	300	7	50	8	P	5,000 (a)	0	
Nickel	4	26	20	NA	NA	100	0		730	0	
Potassium	8	6,000	1,300	NA	NA	NA	NA		NA	NA	
Sodium	8	9,800	4,600	20,000	0	NA	NA		NA	NA	
Zinc	5	61	13	300	0	5,000	0		11,000	0	
Volatile Organics (ug/L)											
Chlorobenzene	1	60	60	5	1	100	0		39	1	
Chloroform	1	1.3	1.3	7	0	100	0		0.15	1	
Tetrachloroethene	1	5.5	5.5	5	1	5	1	P	1.1	1	F
Trichloroethene	1	32	32	5	1	5	1	P	1.6	1	F

Key:

(#S) = Total number of groundwater samples (including duplicates, filtered and unfiltered samples) taken for this AOI.
NYSDEC = New York State Department of Environmental Conservation.
NYSDEC Guidance = NYSDEC Class GA groundwater standard, (or guidance value when no standard was available).
MCL = Maximum Contaminant Level.
EPA RIII RBC = Environmental Protection Agency, Region III, Risk-Based Concentration.

PAHs = Polyaromatic hydrocarbons.
PCBs = Polychlorinated biphenyls.
TRPH = Total recoverable petroleum hydrocarbons.
NA = No criteria available for this parameter.
ug/L = Micrograms per liter.
(a) = Manganese RBC based on revised reference dose of 0.14 (Integrated Risk Information System 11/1/96)

P = All available preliminary criteria exceeded.
▨ F = Final criteria exceeded.
[Note: Results from both filtered and unfiltered groundwater samples are included in this summary table.]

TABLE 3.2-5

Analytical Results Summary for Surface Water
AOI 9: Weapons Storage Area (WSA) Landfill
Griffiss Air Force Base, Rome, New York

	SITE-SPECIFIC STATISTICS			PRELIMINARY SCREENING		
Metals (ug/L)	Number of Positive Hits (#S=4)	Maximum	Minimum	NYSDEC Class C Surface Water Criteria	Number Exceeding NYSDEC Class C Criteria	Preliminary Criteria Exceeded
Aluminum	3	120,000	4,100	100	3	P
Arsenic	2	47	20	190	0	
Barium	3	960	190	NA	NA	
Beryllium	1	8	7.6	1100	0	
Cadmium	1	12	12	7.2	1	P
Calcium	4	450,000	83,000	NA	NA	
Chromium Total	1	62	62	1,424.49	0	
Cobalt	3	110	20	5	3	P
Copper	2	250	31	88.5	1	P
Iron	4	230,000	540	300	4	P
Lead	2	190	29	63.5	1	P
Magnesium	4	37,000	6,200	NA	NA	
Manganese	4	46,000	200	NA	NA	
Mercury - Water	1	0.59	0.59	0.2	1	P
Nickel	3	160	24	572.4	0	
Potassium	4	9,600	2,000	NA	NA	
Silver	2	20	10	0.1	2	P
Sodium	4	9,800	5,400	NA	NA	
Vanadium	1	150	150	14	1	P
Zinc	3	580	75	30	3	P
Volatile Organics (ug/L)						
Chlorobenzene	1	7.1	7.1	5	1	P

NOTE: Where calculations were necessary, they were based on the average hardness of surface water samples collected at this AOI.

Key:

(#S) = Total number of surface water samples (including duplicates) taken for this AOI.
NYSDEC = New York State Department of Environmental Conservation.
NYSDEC Guidance = NYSDEC Class C surface water criteria.
NA = No criteria available for this parameter
ug/L = Micrograms per liter.
P = All available preliminary criteria exceed

H

2002 SI Test Pit Logs

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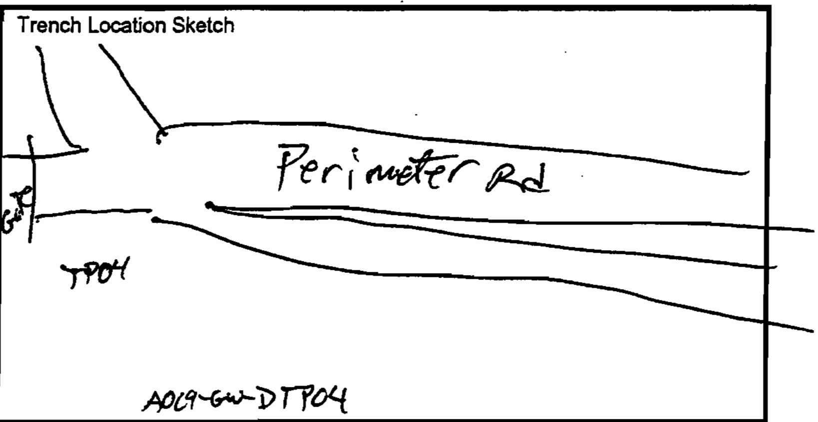
TRENCH LOG FOR AOC9-GW-DTP04

Project Name	Griffiss WAD9 - AOC9
Job Number	001002UK10.0202
Site Location	AOC9
Date Started/Finished	7-19-02/7-19-02
Contractor	Zebra
Equipment	Backhoe
Logger's Name	Bob Meyers
Final Length/Depth	8'/5'
Photos Taken	Disk2 #14 Soil Pile, North #15 Pit, North

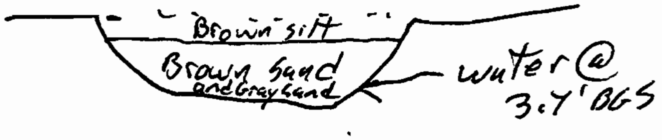
Description Key

Trace	0 - 10%
Few	10 - 20%
Little	20 - 35%
Some	35 - 50%
Most	> 50%

Trench Location Sketch



Trench Cross-Section



Depth (Feet)	Sample Number	HNU / OVA (ppm)	Description / Comments
0		0 ppm in BZ	0 - 1.2' BGS light brown silt and Cobbles with little VF to Coarse sand.
1			1.2' to 4.0', med. Sand w/little fine Sand and few cobbles (hole collapsing as water comes in @ 3.7' BGS), and Gray Sand layers (1-piece of steel band seen)
2			
3	AOC9-GW-DTP04 with Dup. + Splite		
4			Water @ 3.7' BGS
5	B.O.H		No sheen or odor
6			
7			
8			
9			
10			

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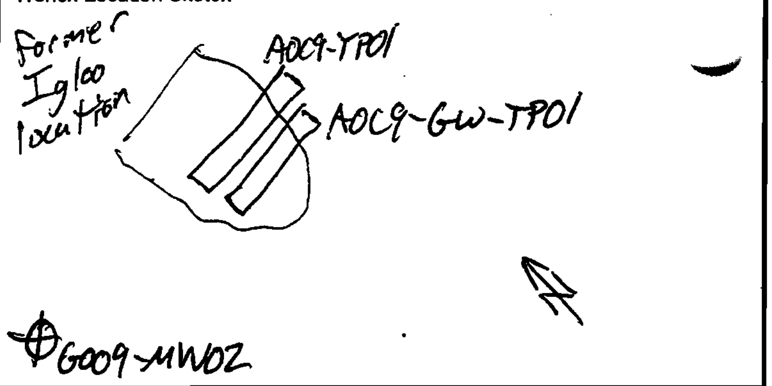
TRENCH LOG FOR AOC9-GW-TP01

Project Name	Griffiss WAD9-AOC9
Job Number	001002UK10.02.02
Site Location	AOC9
Date Started/Finished	7-19-02 / 7-19-02
Contractor	Zebra
Equipment	Backhoe
Logger's Name	Bob Meyers
Final Length/Depth	9' / 12'
Photos Taken Disk2 #49 TP01 Soil Pile	Disk3 #20, TP01 Southwest

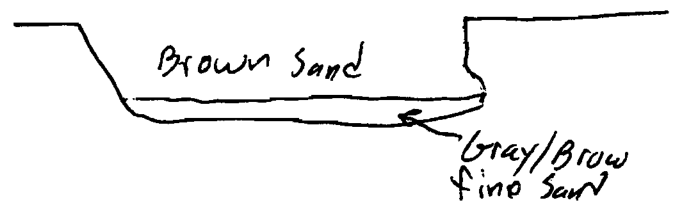
Description Key

Trace	0 - 10%
Few	10 - 20%
Little	20 - 35%
Some	35 - 50%
Most	> 50%

Trench Location Sketch



Trench Cross-Section



Depth (Feet)	Sample Number	HNU / OVA (ppm)	Description / Comments
0		0 ppm	0'-9' Brown sand (dry to moist) VF to Coarse with Some Gravel/Cobbles
1		↓	
2			
3			
4			Trace debris throughout (i.e. metal fragments, t-piece wire)
5			
6			
7			
8			water @ 9' BGS
9	▽		9'-12' Gray brown Saturated Fine Sand and Cobbles.
10	AOC9-GW-TP01	B.O.H	No sheen OR odor

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TRENCH LOG FOR AOC9-GW-TP03

Project Name Griffiss WAD9, AOC9

Job Number 001002UK10.02.02

Site Location AOC9

Date Started/Finished 7-19-02 / 7-19-02

Contractor Zebra

Equipment Backhoe

Logger's Name Bob Meyers

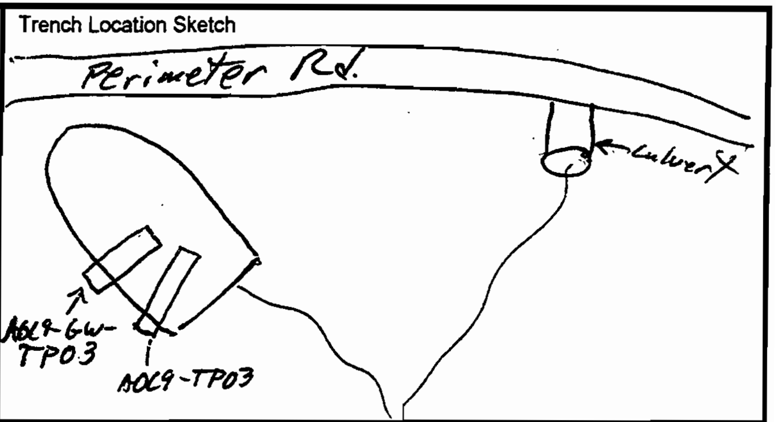
Final Length/Depth 10' / 4' (But it Caved in)

Photos Taken Disk3
#21, Sand Pile, South #22 TP03 facing East

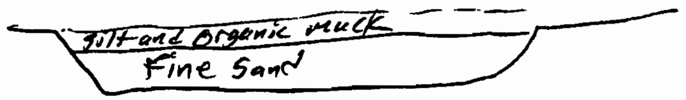
Description Key

Trace	0 - 10%
Few	10 - 20%
Little	20 - 35%
Some	35 - 50%
Most	> 50%

Trench Location Sketch



Trench Cross-Section



Depth (Feet)	Sample Number	HNU / OVA (ppm)	Description / Comments
0		0 ppm	0' to 1.4', Organic Muck + Silt, black with Orange brown staining (iron) on Ground Surface
1	▽		
2	AOC9-GW-TP03, MS/MSD		water @ 1,8' (No Sheen/odor)
3		0ppm	1.4' to 4.0' Fine brown Sand (uniform)
4			
5			
6			
7			
8			
9			
10			

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TRENCH LOG FOR AOC9-GW-TP04

Project Name Griffis WAD9- AOC9

Job Number 001002-UK10.02.02

Site Location AOC9

Date Started/Finished 7-19-02/7-19-02

Contractor Zebra

Equipment Backhoe

Logger's Name Bob Meyers

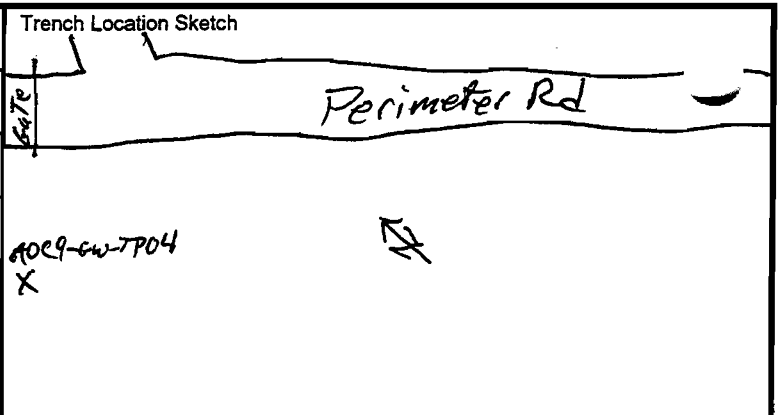
Final Length/Depth 7'/4'

Photos Taken Disk2 East
#16=Excavated Black layer, #17=Excavated Sand, North
#18=Side of TP04 showing black layer, North

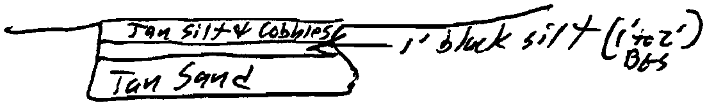
Description Key

Trace 0 - 10%
Few 10 - 20%
Little 20 - 35%
Some 35 - 50%
Most > 50%

Trench Location Sketch



Trench Cross-Section



Depth (Feet)	Sample Number	HNU / OVA (ppm)	Description / Comments
0		-0 ppm	0'-1', Tan dry silt + sand w/little Cobbles
1	AOC9-TP04 Soil Sample w/Dup Split + MS/MSD	0ppm	1' to 2' (thickness varied from 0.7' to 1.1') Black Silt with little fine sand and trace iron debris and staining.
2			
3		0ppm	★ No odor or sheen on water @ 4' BGS.
4	AOC9-GW-TP04		2' to 4' Uniform med. light brown sand, with trace gravel.
5			
6			
7			
8			
9			
10			

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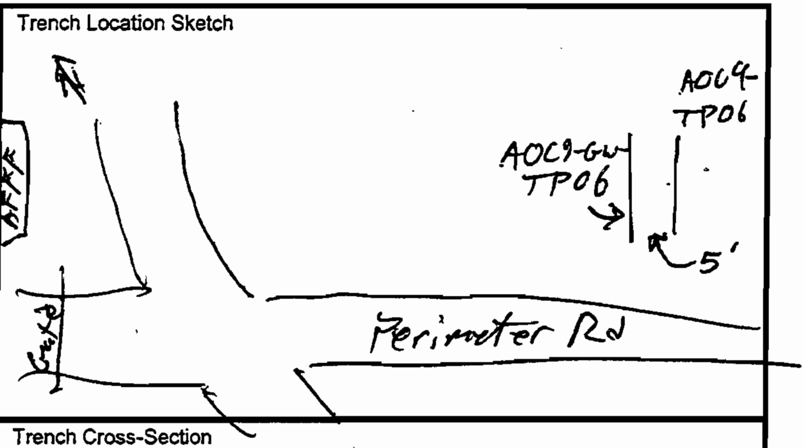
TRENCH LOG FOR AOC9-GW-TP06

Project Name	GAFB-WAD9, AOC9
Job Number	001002 UK10:02.02
Site Location	AOC 9
Date Started/Finished	7-19-02/7-19-02
Contractor	Zebra
Equipment	Backhoe
Logger's Name	Bob Meyers
Final Length/Depth	9 feet/10' BGS
Photos Taken	Disk 2, #12 & 13 #12 = Soil Pile facing N, #13 = TP facing East

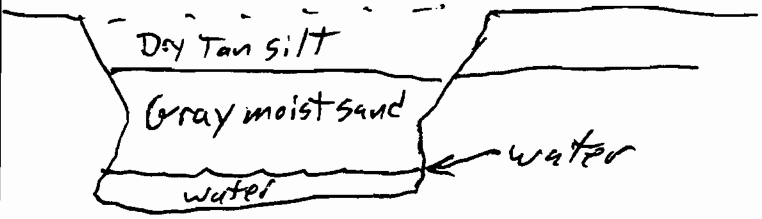
Description Key

Trace	0 - 10%
Few	10 - 20%
Little	20 - 35%
Some	35 - 50%
Most	> 50%

Trench Location Sketch



Trench Cross-Section



Depth (Feet)	Sample Number	HNU / OVA (ppm)	Description / Comments
0			Dry to Moist Tan Silt w/little VF to Coarse sand & Gravel, and little rounded Cobbles.
1		0 ppm	
2			
3			
4			Moist to Wet Gray Med. Sand w/little VF to Coarse Sand & Gravel. Tr. Cobbles & debris (i.e. 1-piece Glass & 1-piece wire)
5		0 ppm	
6			
7			
8	8.4' ⇒ AOC9-GW-TP06		Water @ 8.4' BGS, No sheen
9			
10			

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2002 SI Laboratory Results

Table I-1
Summary of Complete Analytical Results for Groundwater Samples from Test Pits, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GW-DTP04	AOC9-GW-DTP04/D	AOC9-GW-TP01	AOC9-GW-TP03	AOC9-GW-TP04	AOC9-GW-TP06
Method	Analyte	Date:	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02
SVOCs by Method 8270C (µg/L)								
SW8270C	1,2,4-Trichlorobenzene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	1,2-Dichlorobenzene	µg/L	10.0 U	10.0 U	10.0 U	23.9	10.0 U	10.0 U
SW8270C	1,3-Dichlorobenzene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	1,4-Dichlorobenzene	µg/L	10.0 U	10.0 U	10.0 U	21.4	10.0 U	10.0 U
SW8270C	2,4,5-Trichlorophenol	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	2,4,6-Trichlorophenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2,4-Dichlorophenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2,4-Dimethylphenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2,4-Dinitrophenol	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	2,4-Dinitrotoluene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2,6-Dinitrotoluene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2-Chloronaphthalene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2-Chlorophenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2-Methylnaphthalene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2-Methylphenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2-Nitroaniline	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	2-Nitrophenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	3,3´-Dichlorobenzidine	µg/L	20.0 U	20.0 U	20.0 U	20.0 UR	20.0 U	20.0 U
SW8270C	3-Nitroaniline	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	4,6-Dinitro-2-methylphenol	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	4-Bromophenyl phenyl ether	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	4-Chloro-3-methylphenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	4-Chloroaniline	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	4-Chlorophenyl phenyl ether	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	4-Methylphenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	4-Nitroaniline	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	4-Nitrophenol	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	Acenaphthene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Acenaphthylene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Anthracene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Benz(a)anthracene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Benzo(a)pyrene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Benzo(b)fluoranthene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Benzo(g,h,i)perylene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Benzo(k)fluoranthene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

Table I-1

Summary of Complete Analytical Results for Groundwater Samples from Test Pits, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GW-DTP04	AOC9-GW-DTP04/D	AOC9-GW-TP01	AOC9-GW-TP03	AOC9-GW-TP04	AOC9-GW-TP06
Method	Analyte	Date:	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02
SW8270C	Benzoic acid	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	Benzyl alcohol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Bis(2-chloroethoxy)methane	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Bis(2-chloroethyl)ether	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Bis(2-chloroisopropyl)ether	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Bis(2-ethylhexyl)phthalate	µg/L	7.76 J	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Butyl benzyl phthalate	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Carbazole	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Chrysene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Dibenz(a,h)anthracene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Dibenzofuran	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Diethyl phthalate	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Dimethyl phthalate	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Di-n-butyl phthalate	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Di-n-octyl phthalate	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Fluoranthene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Fluorene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Hexachlorobenzene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Hexachlorobutadiene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Hexachlorocyclopentadiene	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	Hexachloroethane	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Indeno(1,2,3-cd)pyrene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Isophorone	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Naphthalene	µg/L	10.0 U	10.0 U	10.0 U	4.35 J	10.0 U	10.0 U
SW8270C	Nitrobenzene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	N-Nitrosodimethylamine	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	N-Nitrosodi-n-propylamine	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	N-Nitrosodiphenylamine	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Pentachlorophenol	µg/L	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U	25.0 U
SW8270C	Phenanthrene	µg/L	10.0 U	10.0 U	10.0 U	3.72 J	10.0 U	10.0 U
SW8270C	Phenol	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	Pyrene	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8270C	2,4,6-Tribromophenol	µg/L	82 %	77 %	82 %	92 %	77 %	66 %
SW8270C	2-Fluorobiphenyl	µg/L	70 %	61 %	66 %	80 %	70 %	57 %
SW8270C	2-Fluorophenol	µg/L	73 %	62 %	75 %	87 %	69 %	58 %
SW8270C	Nitrobenzene-d5	µg/L	87 %	74 %	84 %	100 %	87 %	64 %

Table I-1
Summary of Complete Analytical Results for Groundwater Samples from Test Pits, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GW-DTP04	AOC9-GW-DTP04/D	AOC9-GW-TP01	AOC9-GW-TP03	AOC9-GW-TP04	AOC9-GW-TP06
Method	Analyte	Date:	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02
SW8270C	Phenol-d5	µg/L	106 %	90 %	107 %	130 %	102 %	85 %
SW8270C	Terphenyl-d14	µg/L	45 %	46 %	33 %	46 %	56 %	54 %
PCBs by Method 8082 (µg/L)								
SW8082	Aroclor 1016	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
SW8082	Aroclor 1221	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8082	Aroclor 1232	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
SW8082	Aroclor 1242	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
SW8082	Aroclor 1248	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
SW8082	Aroclor 1254	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
SW8082	Aroclor 1260	µg/L	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
SW8082	Decachlorobiphenyl	µg/L	67 %	69 %	84 %	58 %	58 %	82 %
SW8082	Tetrachloro-m-xylene	µg/L	66 %	64 %	92 %	60 %	64 %	75 %
Pesticides by Method 8081A (µg/L)								
SW8081A	4,4´-DDD	µg/L	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
SW8081A	4,4´-DDE	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	4,4´-DDT	µg/L	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U
SW8081A	Aldrin	µg/L	0.0500 U	0.0500 U	0.0500 U	0.573 J	0.0500 U	0.0500 U
SW8081A	alpha-BHC	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	alpha-Chlordane	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	beta-BHC	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	delta-BHC	µg/L	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
SW8081A	Dieldrin	µg/L	0.0500 U	0.0500 U	0.0500 U	0.327 J	0.0500 U	0.0500 U
SW8081A	Endosulfan I	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	Endosulfan II	µg/L	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
SW8081A	Endosulfan sulfate	µg/L	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
SW8081A	Endrin	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	Endrin aldehyde	µg/L	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U
SW8081A	Endrin ketone	µg/L	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
SW8081A	gamma-BHC	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	gamma-Chlordane	µg/L	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
SW8081A	Heptachlor	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	Heptachlor epoxide	µg/L	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
SW8081A	Methoxychlor	µg/L	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U
SW8081A	Toxaphene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8081A	Decachlorobiphenyl	µg/L	75 %	66 %	81 %	55 %	56 %	78 %
SW8081A	Tetrachloro-m-xylene	µg/L	71 %	62 %	82 %	56 %	61 %	70 %

Table I-1

Summary of Complete Analytical Results for Groundwater Samples from Test Pits, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GW-DTP04	AOC9-GW-DTP04/D	AOC9-GW-TP01	AOC9-GW-TP03	AOC9-GW-TP04	AOC9-GW-TP06
Method	Analyte	Date:	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02
SW8015B	Diesel Range Organics	mg/L	0.100 U	0.100 U	0.100 U	0.260	0.100 U	0.100 U
SW8015B	Gasoline Range Organics	mg/L	0.100 U	0.100 U	0.100 U	0.123	0.100 U	0.100 U
SW8015B	1,2-Dichlorobenzene	mg/L	99 %	103 %	98 %	118 %	97 %	100 %
SW8015B	o-Terphenyl	mg/L	91 %	103 %	102 %	96 %	103 %	108 %
TPH by Method 8015B (mg/L)								
SW8015B	Diesel Range Organics	mg/L	0.100 U	0.100 U	0.100 U	0.260	0.100 U	0.100 U
SW8015B	Gasoline Range Organics	mg/L	0.100 U	0.100 U	0.100 U	0.123	0.100 U	0.100 U
SW8015B	1,2-Dichlorobenzene	mg/L	99 %	103 %	98 %	118 %	97 %	100 %
SW8015B	o-Terphenyl	mg/L	91 %	103 %	102 %	96 %	103 %	108 %
VOC by Method 8260B (µg/L)								
SW8260B	1,1,1-Trichloroethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,1-Dichloroethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,1-Dichloroethene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	5.00 U	5.00 U	5.00 U	16.8	5.00 U	5.00 U
SW8260B	1,2-Dichloroethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,2-Dichloropropane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,4-Dichlorobenzene	µg/L	5.00 U	5.00 U	5.00 U	17.3	5.00 U	5.00 U
SW8260B	2-Butanone	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	2-Chloroethyl vinyl ether	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	2-Hexanone	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	4-Methyl-2-pentanone	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	Acetone	µg/L	10.0 U	10.0 U	10.0 U	3.49 J	5.43 J	10.0 U
SW8260B	Benzene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Bromodichloromethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Bromoform	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Bromomethane	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	Carbon disulfide	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Chlorobenzene	µg/L	5.00 U	5.00 U	5.00 U	101	5.00 U	5.00 U
SW8260B	Chloroethane	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	Chloroform	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Chloromethane	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

Table I-1

Summary of Complete Analytical Results for Groundwater Samples from Test Pits, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-GW-DTP04	AOC9-GW-DTP04/D	AOC9-GW-TP01	AOC9-GW-TP03	AOC9-GW-TP04	AOC9-GW-TP06
Method	Analyte	Date:	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02	07/19/02
SW8260B	cis-1,2-Dichloroethene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	cis-1,3-Dichloropropene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Dibromochloromethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Ethylbenzene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	m,p-Xylene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Methylene chloride	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	o-Xylene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Styrene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Tetrachloroethene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Toluene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	trans-1,2-Dichloroethene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Trichloroethene	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Trichlorofluoromethane	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Vinyl acetate	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	Vinyl chloride	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
SW8260B	Xylenes, Total	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	100 %	100 %	98 %	99 %	100 %	100 %
SW8260B	4-Bromofluorobenzene	µg/L	104 %	104 %	104 %	101 %	103 %	103 %
SW8260B	Dibromofluoromethane	µg/L	102 %	103 %	102 %	102 %	100 %	101 %
SW8260B	Toluene-d8	µg/L	97 %	99 %	99 %	97 %	97 %	96 %

Note:

% REC = Units of %REC indicate that the compound is a surrogate spike.

Key:

J = Estimated value. The reported value is below the quantitation limit or estimated due to variance from quality control limits.

µg/L = Micrograms per liter.

mg/L = Milligrams per liter.

PCBs = Polychlorinated Biphenyls.

SVOCs = Semivolatile Organic Compounds.

TPH = Total petroleum hydrocarbons (Diesel and gasoline organics).

U = Analyte was not detected or not present above background levels. The reported value is the quantitation limit or value elevated due to background.

UR = The PQL for this analyte is not usable. The actual PQL should be higher, but that level cannot be determined.

VOCs = Volatile Organic Compounds.

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP44D1 07/17/02	AOC9-GP44D2 07/15/02	AOC9-GP44I 07/17/02	AOC9-GP44I/D 07/17/02	AOC9-GP44S1 07/17/02	AOC9-GP44S2 07/17/02	AOC9-GP45D1 07/17/02	AOC9-GP45D2 07/16/02	AOC9-GP45I 07/17/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	1,1,1-Trichloroethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,1,2-Trichloroethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,1-Dichloroethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,1-Dichloroethene	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,2-Dichlorobenzene	µg/L	153	11.3	44.5 J	513 J	12.1	31.6 J	18.2 J	3.97	22.4 J
SW8260B	1,2-Dichloroethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,2-Dichloroethene, Total	µg/L	26.2 J	10.8	40.0 U	71.2	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,2-Dichloropropane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	1,3-Dichlorobenzene	µg/L	6.64 J	1.00 U	3.92 J	40.0 U	1.36 J	7.32 J	2.84 J	0.339 J	2.78 J
SW8260B	1,4-Dichlorobenzene	µg/L	109	1.66	91.2 J	151 J	35.1	111	70.4	7.31	67.8
SW8260B	2-Butanone	µg/L	200 U	0.945 J	200 U	200 U	50.0 U	200 U	200 U	5.00 U	125 U
SW8260B	2-Hexanone	µg/L	200 U	5.00 U	200 U	200 U	50.0 U	200 U	200 U	5.00 U	125 U
SW8260B	4-Methyl-2-pentanone	µg/L	200 U	5.00 U	200 U	200 U	50.0 U	200 U	200 U	5.00 U	125 U
SW8260B	Acetone	µg/L	200 U	94.5 U	200 U	200 U	50.0 U	200 U	200 U	24.5	125 U
SW8260B	Benzene	µg/L	5.36 J	2.46	40.0 U	12.6 J	10.0 U	4.20 J	40.0 U	0.156 J	25.0 U
SW8260B	Bromodichloromethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Bromoform	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Bromomethane	µg/L	80.0 U	2.00 U	80.0 U	80.0 U	20.0 U	80.0 U	80.0 U	2.00 U	50.0 U
SW8260B	Carbon disulfide	µg/L	200 U	5.00 U	200 U	200 U	50.0 U	200 U	200 U	5.00 U	125 U
SW8260B	Carbon tetrachloride	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Chlorobenzene	µg/L	1630	52.0	996 J	1610 J	315	2150	902	45.2	689
SW8260B	Chloroethane	µg/L	80.0 U	2.00 U	80.0 U	80.0 U	20.0 U	80.0 U	80.0 U	2.00 U	50.0 U
SW8260B	Chloroform	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Chloromethane	µg/L	80.0 U	2.00 U	80.0 U	80.0 U	20.0 U	80.0 U	80.0 U	2.00 U	50.0 U
SW8260B	cis-1,2-Dichloroethene	µg/L	25.8 J	10.7	40.0 U	70.0	10.0 U	40.0 U	40.0 U	0.136 J	25.0 U
SW8260B	cis-1,3-Dichloropropene	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Dibromochloromethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Ethylbenzene	µg/L	34.7 J	0.317 J	32.3 J	21.9 J	7.31 J	59.6	40.0 U	0.118 J	25.0 U
SW8260B	m,p-Xylene	µg/L	104	0.880 J	100	73.0	3.80 J	197	40.0 U	1.00 U	25.0 U
SW8260B	Methylene chloride	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	o-Xylene	µg/L	8.08 J	0.104 J	3.92 J	3.24 J	3.91 J	19.7 J	40.0 U	1.00 U	25.0 U
SW8260B	Styrene	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Tetrachloroethene	µg/L	40.0 U	0.235 J	40.0 U	5.24 J	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP44D1 07/17/02	AOC9-GP44D2 07/15/02	AOC9-GP44I 07/17/02	AOC9-GP44I/D 07/17/02	AOC9-GP44S1 07/17/02	AOC9-GP44S2 07/17/02	AOC9-GP45D1 07/17/02	AOC9-GP45D2 07/16/02	AOC9-GP45I 07/17/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	Toluene	µg/L	4.00 J	0.466 J	3.40 J	40.0 U	10.0 U	3.92 J	40.0 U	0.145 J	25.0 U
SW8260B	trans-1,2-Dichloroethene	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	trans-1,3-Dichloropropene	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Trichloroethene	µg/L	40.0 U	1.18	4.60 J	10.3 J	1.04 J	40.0 U	40.0 U	0.347 J	25.0 U
SW8260B	Trichlorofluoromethane	µg/L	40.0 U	1.00 U	40.0 U	40.0 U	10.0 U	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Vinyl acetate	µg/L	200 U	5.00 U	200 U	200 U	50.0 U	200 U	200 U	5.00 U	125 U
SW8260B	Vinyl chloride	µg/L	6.32 J	1.36	11.5 J	13.1 J	5.35 J	40.0 U	40.0 U	1.00 U	25.0 U
SW8260B	Xylenes, Total	µg/L	113	0.990 J	105	76.9	7.68 J	218	40.0 U	1.00 U	25.0 U
SW8260B	1,2-Dichloroethane-d4	µg/L	94 %	95 %	94 %	95 %	95 %	96 %	97 %	95 %	96 %
SW8260B	4-Bromofluorobenzene	µg/L	99 %	97 %	96 %	97 %	99 %	98 %	105 %	97 %	103 %
SW8260B	Dibromofluoromethane	µg/L	94 %	96 %	95 %	96 %	94 %	95 %	96 %	96 %	95 %
SW8260B	Toluene-d8	µg/L	93 %	95 %	95 %	94 %	94 %	95 %	92 %	95 %	94 %

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP45S1 07/17/02	AOC9-GP45S2 07/17/02	AOC9-GP46D1 07/17/02	AOC9-GP46D2 07/16/02	AOC9-GP46I 07/17/02	AOC9-GP46I/D 07/17/02	AOC9-GP46S1 07/17/02	AOC9-GP46S2 07/17/02	AOC9-GP47D1 07/16/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	2.48	6.76	15.3	1.44 J	7.65 J	17.6 J	1.01	5.46 J	2.90
SW8260B	1,2-Dichloroethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	0.255 J	1.07	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,2-Dichloropropane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	0.277 J	20.0 U	0.174 J
SW8260B	1,4-Dichlorobenzene	µg/L	15.0	46.2	42.8	1.06 J	21.4	49.8	3.91	29.3	3.51
SW8260B	2-Butanone	µg/L	5.00 U	5.00 U	50.0 U	10.0 U	50.0 U	50.0 U	5.00 U	100 U	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U	5.00 U	50.0 U	10.0 U	50.0 U	50.0 U	5.00 U	100 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U	5.00 U	50.0 U	10.0 U	50.0 U	50.0 U	5.00 U	100 U	5.00 U
SW8260B	Acetone	µg/L	5.00 U	5.00 U	50.0 U	94.6	50.0 U	50.0 U	5.00 U	100 U	23.4
SW8260B	Benzene	µg/L	0.238 J	1.18	10.0 U	2.00 U	1.12 J	1.99 J	1.00 U	20.0 U	1.00 U
SW8260B	Bromodichloromethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Bromoform	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U	2.00 U	20.0 U	4.00 U	20.0 U	20.0 U	2.00 U	40.0 U	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U	5.00 U	50.0 U	10.0 U	50.0 U	50.0 U	5.00 U	100 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Chlorobenzene	µg/L	118	664	409	4.48	309 J	394 J	40.8	431	25.4
SW8260B	Chloroethane	µg/L	2.00 U	2.00 U	20.0 U	4.00 U	20.0 U	20.0 U	2.00 U	40.0 U	2.00 U
SW8260B	Chloroform	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Chloromethane	µg/L	2.00 U	2.00 U	20.0 U	4.00 U	20.0 U	20.0 U	2.00 U	40.0 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	0.259 J	1.09	10.0 U	2.00 U	10.0 U	10.0 U	0.0970 J	20.0 U	0.0900 J
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Ethylbenzene	µg/L	0.0790 J	0.706 J	0.840 J	2.00 U	10.0 U	1.52 J	1.00 U	20.0 U	1.00 U
SW8260B	m,p-Xylene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Methylene chloride	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	o-Xylene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Styrene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Tetrachloroethene	µg/L	0.294 J	0.175 J	10.0 U	2.00 U	10.0 U	10.0 U	0.808 J	20.0 U	1.00 U

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP45S1 07/17/02	AOC9-GP45S2 07/17/02	AOC9-GP46D1 07/17/02	AOC9-GP46D2 07/16/02	AOC9-GP46I 07/17/02	AOC9-GP46I/D 07/17/02	AOC9-GP46S1 07/17/02	AOC9-GP46S2 07/17/02	AOC9-GP47D1 07/16/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	Toluene	µg/L	1.00 U	0.0860 J	10.0 U	2.00 U	10.0 U	0.670 J	1.00 U	20.0 U	0.108 J
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Trichloroethene	µg/L	0.797 J	0.601 J	1.30 J	0.448 J	1.65 J	1.36 J	2.23	20.0 U	0.861 J
SW8260B	Trichlorofluoromethane	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U	5.00 U	50.0 U	10.0 U	50.0 U	50.0 U	5.00 U	100 U	5.00 U
SW8260B	Vinyl chloride	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	Xylenes, Total	µg/L	1.00 U	1.00 U	10.0 U	2.00 U	10.0 U	10.0 U	1.00 U	20.0 U	1.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	99 %	97 %	96 %	97 %	102 %	99 %	96 %	94 %	97 %
SW8260B	4-Bromofluorobenzene	µg/L	107 %	118 %	106 %	104 %	106 %	105 %	106 %	104 %	101 %
SW8260B	Dibromofluoromethane	µg/L	108 %	106 %	104 %	97 %	106 %	106 %	103 %	102 %	96 %
SW8260B	Toluene-d8	µg/L	109 %	116 %	107 %	94 %	107 %	108 %	108 %	106 %	94 %

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP47D2 07/16/02	AOC9-GP47I 07/16/02	AOC9-GP47S1 07/16/02	AOC9-GP47S2 07/16/02	AOC9-GP48D1 07/18/02	AOC9-GP48D2 07/16/02	AOC9-GP48I 07/18/02	AOC9-GP48I/D 07/18/02	AOC9-GP48S1 07/18/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	1.00 U	65.4	2.07 J	8.74 J	14.0	10.9	11.2	11.5	0.228 J
SW8260B	1,2-Dichloroethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	0.229 J	50.0 U	5.00 U	20.0 U	0.638 J	0.604 J	0.549 J	0.539 J	1.00 U
SW8260B	1,2-Dichloropropane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	1.00 U	50.0 U	0.465 J	1.54 J	0.980 J	0.518 J	0.715 J	0.748 J	1.00 U
SW8260B	1,4-Dichlorobenzene	µg/L	1.00 U	82.4	12.0	41.5	14.9	7.49	10.4	11.1	0.194 J
SW8260B	2-Butanone	µg/L	5.00 U	250 U	25.0 U	100 U	5.00 U	1.53 J	5.00 U	5.00 U	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U	250 U	25.0 U	100 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U	250 U	25.0 U	100 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Acetone	µg/L	10.9	352	60.9	285	5.00 U	5.20	5.00 U	5.00 U	5.00 U
SW8260B	Benzene	µg/L	1.00 U	50.0 U	5.00 U	3.06 J	1.23	0.980 J	1.04	1.02	1.00 U
SW8260B	Bromodichloromethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromoform	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U	100 U	10.0 U	40.0 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U	250 U	25.0 U	100 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Chlorobenzene	µg/L	0.458 J	1350	98.9	475	42.7	13.4	30.6	32.1	1.00 U
SW8260B	Chloroethane	µg/L	2.00 U	100 U	10.0 U	40.0 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	Chloroform	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	0.110 J	0.0760 J	1.00 U	1.00 U
SW8260B	Chloromethane	µg/L	2.00 U	100 U	10.0 U	40.0 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	0.226 J	50.0 U	5.00 U	20.0 U	0.648 J	0.594 J	0.557 J	0.548 J	0.159 J
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Ethylbenzene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	m,p-Xylene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Methylene chloride	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	o-Xylene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Styrene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Tetrachloroethene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	0.121 J	1.00 U	1.00 U	1.00 U	0.224 J

Table I-2
Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID:	AOC9-GP47D2	AOC9-GP47I	AOC9-GP47S1	AOC9-GP47S2	AOC9-GP48D1	AOC9-GP48D2	AOC9-GP48I	AOC9-GP48I/D	AOC9-GP48S1
		Date:	07/16/02	07/16/02	07/16/02	07/16/02	07/18/02	07/16/02	07/18/02	07/18/02	07/18/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	Toluene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	0.334 J	0.349 J	0.194 J	0.189 J	1.00 U
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Trichloroethene	µg/L	1.00 U	50.0 U	0.950 J	20.0 U	0.411 J	0.233 J	0.152 J	0.166 J	0.702 J
SW8260B	Trichlorofluoromethane	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U	250 U	25.0 U	100 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Vinyl chloride	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	0.188 J	1.00 U	1.00 U	1.00 U
SW8260B	Xylenes, Total	µg/L	1.00 U	50.0 U	5.00 U	20.0 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	97 %	96 %	97 %	98 %	98 %	94 %	99 %	96 %	97 %
SW8260B	4-Bromofluorobenzene	µg/L	106 %	104 %	102 %	103 %	105 %	100 %	106 %	107 %	105 %
SW8260B	Dibromofluoromethane	µg/L	96 %	97 %	98 %	96 %	107 %	94 %	107 %	104 %	105 %
SW8260B	Toluene-d8	µg/L	94 %	94 %	94 %	93 %	107 %	94 %	108 %	108 %	108 %

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP48S2 07/18/02	AOC9-GP49D1 07/18/02	AOC9-GP49D2 07/19/02	AOC9-GP49I 07/18/02	AOC9-GP49S1 07/19/02	AOC9-GP49S2 07/19/02	AOC9-GP50D1 07/19/02	AOC9-GP50D2 07/19/02	AOC9-GP50I 07/19/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	4.12	0.163 J	0.0720 J	0.493 J	0.233 J	1.00 U	0.444 J	0.204 J	0.117 J
SW8260B	1,2-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	0.498 J	1.39	0.300 J	2.20	0.315 J	1.00 U	3.21	1.94	1.48
SW8260B	1,2-Dichloropropane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	0.270 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,4-Dichlorobenzene	µg/L	3.43	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	2-Butanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Acetone	µg/L	5.00 U	5.00 U	11.3	5.00 U	5.00 U	5.00 U	5.00 U	9.24	5.00 U
SW8260B	Benzene	µg/L	0.480 J	0.115 J	0.123 J	0.118 J	0.116 J	1.00 U	0.318 J	0.156 J	1.00 U
SW8260B	Bromodichloromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromoform	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Chlorobenzene	µg/L	8.54	0.163 J	1.00 U	0.555 J	1.00 U	1.00 U	0.631 J	0.623 J	1.00 U
SW8260B	Chloroethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	Chloroform	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	0.0830 J	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Chloromethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	0.506 J	1.41	0.305 J	2.24	0.320 J	1.00 U	3.26	1.97	1.50
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Ethylbenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	m,p-Xylene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Methylene chloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	o-Xylene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Styrene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Tetrachloroethene	µg/L	0.113 J	15.4	11.4	12.6	9.65	6.21	11.3	7.70	12.2

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP48S2 07/18/02	AOC9-GP49D1 07/18/02	AOC9-GP49D2 07/19/02	AOC9-GP49I 07/18/02	AOC9-GP49S1 07/19/02	AOC9-GP49S2 07/19/02	AOC9-GP50D1 07/19/02	AOC9-GP50D2 07/19/02	AOC9-GP50I 07/19/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	Toluene	µg/L	1.00 U	0.0800 J	0.141 J	0.0980 J	0.0930 J	0.0880 J	1.00 U	1.00 U	1.00 U
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Trichloroethene	µg/L	0.393 J	5.37	4.55	5.41	8.83	7.35	6.12	8.64	7.42
SW8260B	Trichlorofluoromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Vinyl chloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Xylenes, Total	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	97 %	95 %	94 %	92 %	96 %	95 %	92 %	92 %	93 %
SW8260B	4-Bromofluorobenzene	µg/L	105 %	107 %	107 %	105 %	106 %	107 %	108 %	110 %	106 %
SW8260B	Dibromofluoromethane	µg/L	105 %	102 %	104 %	101 %	103 %	103 %	101 %	101 %	101 %
SW8260B	Toluene-d8	µg/L	107 %	107 %	107 %	108 %	107 %	108 %	110 %	108 %	109 %

Table I-2
Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP50I/D 07/19/02	AOC9-GP50S1 07/19/02	AOC9-GP50S2 07/19/02	AOC9-GP51D1 07/22/02	AOC9-GP51D2 07/19/02	AOC9-GP51I 07/22/02	AOC9-GP51S1 07/22/02	AOC9-GP51S2 07/22/02	AOC9-GP52D1 07/22/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	0.105 J	1.00 U	0.164 J	12.8 J	8.77 J	17.5 J	1.02 J	5.20 J	14.4
SW8260B	1,2-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	1.52	1.00 U	2.44	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.49
SW8260B	1,2-Dichloropropane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	2.08 J	10.0 U	2.60 J	0.244 J	1.24 J	2.58
SW8260B	1,4-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	59.3	29.3	72.5	6.53	32.6	61.6
SW8260B	2-Butanone	µg/L	5.00 U	5.00 U	5.00 U	100 U	50.0 U	200 U	10.0 U	50.0 U	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U	5.00 U	5.00 U	100 U	50.0 U	200 U	10.0 U	50.0 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U	5.00 U	5.00 U	100 U	50.0 U	200 U	10.0 U	50.0 U	5.00 U
SW8260B	Acetone	µg/L	5.00 U	5.00 U	5.00 U	100 U	50.0 U	200 U	10.0 U	50.0 U	5.00 U
SW8260B	Benzene	µg/L	1.00 U	1.00 U	0.107 J	20.0 U	1.27 J	40.0 U	2.00 U	10.0 U	1.73
SW8260B	Bromodichloromethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Bromoform	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U	2.00 U	2.00 U	40.0 U	20.0 U	80.0 U	4.00 U	20.0 U	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U	5.00 U	5.00 U	100 U	50.0 U	200 U	10.0 U	50.0 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Chlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	717	316	881	63.1	371	776
SW8260B	Chloroethane	µg/L	2.00 U	2.00 U	2.00 U	40.0 U	20.0 U	80.0 U	4.00 U	20.0 U	2.00 U
SW8260B	Chloroform	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Chloromethane	µg/L	2.00 U	2.00 U	2.00 U	40.0 U	20.0 U	80.0 U	4.00 U	20.0 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	1.54	1.00 U	2.48	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.47
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Ethylbenzene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	0.930 J	2.43
SW8260B	m,p-Xylene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	0.268 J
SW8260B	Methylene chloride	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	o-Xylene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	0.296 J
SW8260B	Styrene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Tetrachloroethene	µg/L	11.7	4.67	9.63	20.0 U	10.0 U	40.0 U	0.528 J	10.0 U	0.228 J

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP50I/D 07/19/02	AOC9-GP50S1 07/19/02	AOC9-GP50S2 07/19/02	AOC9-GP51D1 07/22/02	AOC9-GP51D2 07/19/02	AOC9-GP51I 07/22/02	AOC9-GP51S1 07/22/02	AOC9-GP51S2 07/22/02	AOC9-GP52D1 07/22/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	Toluene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	0.606 J
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Trichloroethene	µg/L	6.76	8.38	8.41	20.0 U	10.0 U	40.0 U	1.21 J	1.04 J	0.615 J
SW8260B	Trichlorofluoromethane	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U	5.00 U	5.00 U	100 U	50.0 U	200 U	10.0 U	50.0 U	5.00 U
SW8260B	Vinyl chloride	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	0.813 J
SW8260B	Xylenes, Total	µg/L	1.00 U	1.00 U	1.00 U	20.0 U	10.0 U	40.0 U	2.00 U	10.0 U	0.561 J
SW8260B	1,2-Dichloroethane-d4	µg/L	95 %	94 %	90 %	94 %	90 %	96 %	95 %	95 %	94 %
SW8260B	4-Bromofluorobenzene	µg/L	106 %	106 %	106 %	108 %	107 %	106 %	104 %	105 %	99 %
SW8260B	Dibromofluoromethane	µg/L	104 %	103 %	99 %	95 %	99 %	97 %	95 %	95 %	94 %
SW8260B	Toluene-d8	µg/L	109 %	110 %	108 %	94 %	110 %	95 %	94 %	95 %	106 %

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP52D2 07/22/02	AOC9-GP52I 07/22/02	AOC9-GP52I/D 07/22/02	AOC9-GP52S1 07/23/02	AOC9-GP52S2 07/23/02	AOC9-GP53D1 07/23/02	AOC9-GP53D2 07/24/02	AOC9-GP53I 07/24/02	AOC9-GP53S1 07/23/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	1,1,1-Trichloroethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	0.920 J	10.5	11.1	1.25 J	1.40 J	6.23	7.64	2.43	0.775 J
SW8260B	1,2-Dichloroethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	5.00 U	1.43	1.51	2.50 U	5.00 U	0.714 J	0.382 J	1.00	0.674 J
SW8260B	1,2-Dichloropropane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	5.00 U	2.22	2.26	0.380 J	0.360 J	0.332 J	0.582 J	0.176 J	1.00 U
SW8260B	1,4-Dichlorobenzene	µg/L	7.14	47.1	49.3	8.12	8.99	8.99	13.6	3.04	0.576 J
SW8260B	2-Butanone	µg/L	25.0 U	5.00 U	5.00 U	12.5 U	25.0 U	4.22 J	10.0 U	5.00 U	5.00 U
SW8260B	2-Hexanone	µg/L	25.0 U	5.00 U	5.00 U	12.5 U	25.0 U	10.0 U	10.0 U	5.00 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	25.0 U	5.00 U	5.00 U	12.5 U	25.0 U	10.0 U	10.0 U	5.00 U	5.00 U
SW8260B	Acetone	µg/L	25.0 U	5.00 U	5.00 U	12.5 U	25.0 U	14.0	10.0 U	5.00 U	5.00 U
SW8260B	Benzene	µg/L	5.00 U	1.43	1.51	2.50 U	5.00 U	1.64 J	2.73	0.157 J	1.00 U
SW8260B	Bromodichloromethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Bromoform	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Bromomethane	µg/L	10.0 U	2.00 U	2.00 U	5.00 U	10.0 U	4.00 U	4.00 U	2.00 U	2.00 U
SW8260B	Carbon disulfide	µg/L	25.0 U	5.00 U	5.00 U	12.5 U	25.0 U	10.0 U	10.0 U	5.00 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Chlorobenzene	µg/L	86.3	796	781	60.6	113	47.5	65.8	6.57	2.71
SW8260B	Chloroethane	µg/L	10.0 U	2.00 U	2.00 U	5.00 U	10.0 U	4.00 U	4.00 U	2.00 U	2.00 U
SW8260B	Chloroform	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Chloromethane	µg/L	10.0 U	2.00 U	2.00 U	5.00 U	10.0 U	4.00 U	4.00 U	2.00 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	5.00 U	1.41	1.48	2.50 U	5.00 U	0.702 J	0.376 J	1.02	0.685 J
SW8260B	cis-1,3-Dichloropropene	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Ethylbenzene	µg/L	5.00 U	2.25	2.51	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	m,p-Xylene	µg/L	5.00 U	0.275 J	0.295 J	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Methylene chloride	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	o-Xylene	µg/L	5.00 U	0.272 J	0.286 J	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Styrene	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Tetrachloroethene	µg/L	0.390 J	0.247 J	0.252 J	0.235 J	5.00 U	2.00 U	2.00 U	0.0870 J	0.139 J

Table I-2
Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP52D2 07/22/02	AOC9-GP52I 07/22/02	AOC9-GP52I/D 07/22/02	AOC9-GP52S1 07/23/02	AOC9-GP52S2 07/23/02	AOC9-GP53D1 07/23/02	AOC9-GP53D2 07/24/02	AOC9-GP53I 07/24/02	AOC9-GP53S1 07/23/02
Low Level VOCs by Method 8260B (µg/L)											
SW8260B	Toluene	µg/L	5.00 U	0.798 J	0.823 J	2.50 U	5.00 U	0.328 J	0.170 J	1.00 U	1.00 U
SW8260B	trans-1,2-Dichloroethene	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Trichloroethene	µg/L	0.780 J	0.729 J	0.753 J	0.420 J	0.635 J	0.214 J	2.00 U	0.846 J	0.615 J
SW8260B	Trichlorofluoromethane	µg/L	5.00 U	1.00 U	1.00 U	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	Vinyl acetate	µg/L	25.0 U	5.00 U	5.00 U	12.5 U	25.0 U	10.0 U	10.0 U	5.00 U	5.00 U
SW8260B	Vinyl chloride	µg/L	5.00 U	0.946 J	0.978 J	2.50 U	5.00 U	0.470 J	0.504 J	1.00 U	1.00 U
SW8260B	Xylenes, Total	µg/L	5.00 U	0.544 J	0.578 J	2.50 U	5.00 U	2.00 U	2.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	95 %	93 %	93 %	96 %	93 %	94 %	94 %	95 %	93 %
SW8260B	4-Bromofluorobenzene	µg/L	106 %	98 %	98 %	107 %	107 %	104 %	103 %	106 %	106 %
SW8260B	Dibromofluoromethane	µg/L	96 %	94 %	91 %	95 %	94 %	94 %	93 %	102 %	99 %
SW8260B	Toluene-d8	µg/L	94 %	105 %	106 %	94 %	95 %	95 %	94 %	108 %	107 %

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP54D1 07/23/02	AOC9-GP54D2 07/23/02	AOC9-GP54I 07/23/02	AOC9-GP54I/D 07/23/02	AOC9-GP54S1 07/23/02	AOC9-GP55I 07/24/02	AOC9-GP56I 07/24/02	AOC9-GP57I 01/00/00
Low Level VOCs by Method 8260B (µg/L)										
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.92 J	1.15
SW8260B	1,2-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	0.188 J
SW8260B	1,2-Dichloropropane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	0.195 J
SW8260B	1,4-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	14.4	0.665 J
SW8260B	2-Butanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	5.00 U
SW8260B	Acetone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	3.27 J	25.0 U	5.00 U
SW8260B	Benzene	µg/L	1.00 U	0.187 J	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	0.549 J
SW8260B	Bromodichloromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Bromoform	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	10.0 U	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	0.201 J
SW8260B	Carbon tetrachloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Chlorobenzene	µg/L	0.181 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	161	25.0
SW8260B	Chloroethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	10.0 U	2.00 U
SW8260B	Chloroform	µg/L	1.00 U	0.0730 J	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Chloromethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	10.0 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	1.00 U	0.108 J	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	0.191 J
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Ethylbenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	m,p-Xylene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Methylene chloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	o-Xylene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Styrene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Tetrachloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U

Table I-2

Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-GP54D1 07/23/02	AOC9-GP54D2 07/23/02	AOC9-GP54I 07/23/02	AOC9-GP54I/D 07/23/02	AOC9-GP54S1 07/23/02	AOC9-GP55I 07/24/02	AOC9-GP56I 07/24/02	AOC9-GP57I 01/00/00
Low Level VOCs by Method 8260B (µg/L)										
SW8260B	Toluene	µg/L	1.00 U	0.0780 J	1.00 U	1.00 U	1.00 U	0.104 J	5.00 U	0.149 J
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Trichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Trichlorofluoromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	25.0 U	5.00 U
SW8260B	Vinyl chloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	Xylenes, Total	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	5.00 U	1.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	93 %	94 %	95 %	96 %	96 %	95 %	92 %	96 %
SW8260B	4-Bromofluorobenzene	µg/L	111 %	105 %	111 %	111 %	114 %	113 %	109 %	106 %
SW8260B	Dibromofluoromethane	µg/L	95 %	100 %	95 %	97 %	96 %	95 %	99 %	101 %
SW8260B	Toluene-d8	µg/L	93 %	107 %	95 %	95 %	94 %	94 %	107 %	107 %

Table I-2
Summary of Complete Analytical Results for Groundwater Samples from Temporary Geoprobe Wells, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

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Note:

% REC = Units of %REC indicate that the compound is a surrogate spike.

Key:

J = Estimated value. The reported value is below the quantitation limit or estimated due to variance from quality control limits.
JB = Estimated value that may be bias high due to laboratory or field background contamination.
µg/L = Micrograms per liter.
NA = Not analyzed or reported.
U = Analyte was not detected or not present above background levels. The reported value is the quantitation limit or value elevated due to background.
UR = The PQL for this analyte is not usable. The actual PQL should be higher, but that level cannot be determined.
VOCs = Volatile Organic Compounds.

Table I-3
Summary of Complete Analytical Results for Sediment Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AFFF-SD01	AFFF-SD01/D	AFFF-SD02
Method	Analyte	Date:	07/15/02	07/15/02	07/15/02
SVOCs by Method 8270C (µg/Kg)					
SW8270C	1,2,4-Trichlorobenzene	µg/Kg	467 U	414 U	384 U
SW8270C	1,2-Dichlorobenzene	µg/Kg	467 U	414 U	384 U
SW8270C	1,3-Dichlorobenzene	µg/Kg	467 U	414 U	384 U
SW8270C	1,4-Dichlorobenzene	µg/Kg	467 U	414 U	384 U
SW8270C	2,4,5-Trichlorophenol	µg/Kg	1180 U	1040 U	967 U
SW8270C	2,4,6-Trichlorophenol	µg/Kg	467 U	414 U	384 U
SW8270C	2,4-Dichlorophenol	µg/Kg	467 U	414 U	384 U
SW8270C	2,4-Dimethylphenol	µg/Kg	467 U	414 U	384 U
SW8270C	2,4-Dinitrophenol	µg/Kg	467 U	414 U	384 U
SW8270C	2,4-Dinitrotoluene	µg/Kg	467 U	414 U	384 U
SW8270C	2,6-Dinitrotoluene	µg/Kg	467 U	414 U	384 U
SW8270C	2-Chloronaphthalene	µg/Kg	467 U	414 U	384 U
SW8270C	2-Chlorophenol	µg/Kg	467 U	414 U	384 U
SW8270C	2-Methylnaphthalene	µg/Kg	467 U	414 U	384 U
SW8270C	2-Methylphenol	µg/Kg	467 U	414 U	384 U
SW8270C	2-Nitroaniline	µg/Kg	1180 U	1040 U	967 U
SW8270C	2-Nitrophenol	µg/Kg	467 U	414 U	384 U
SW8270C	3,3´-Dichlorobenzidine	µg/Kg	935 UR	827 UR	769 U
SW8270C	3-Nitroaniline	µg/Kg	1180 U	1040 U	967 U
SW8270C	4,6-Dinitro-2-methylphenol	µg/Kg	1180 U	1040 U	967 U
SW8270C	4-Bromophenyl phenyl ether	µg/Kg	467 U	414 U	384 U
SW8270C	4-Chloro-3-methylphenol	µg/Kg	467 U	414 U	384 U
SW8270C	4-Chloroaniline	µg/Kg	467 U	414 U	384 U
SW8270C	4-Chlorophenyl phenyl ether	µg/Kg	467 U	414 U	384 U
SW8270C	4-Methylphenol	µg/Kg	467 U	414 U	384 U
SW8270C	4-Nitroaniline	µg/Kg	1180 U	1040 U	967 U
SW8270C	4-Nitrophenol	µg/Kg	1180 U	1040 U	967 U
SW8270C	Acenaphthene	µg/Kg	467 U	414 U	384 U
SW8270C	Acenaphthylene	µg/Kg	467 U	414 U	384 U
SW8270C	Anthracene	µg/Kg	467 U	414 U	384 U
SW8270C	Benz(a)anthracene	µg/Kg	467 U	414 U	384 U
SW8270C	Benzo(a)pyrene	µg/Kg	467 U	414 U	384 U
SW8270C	Benzo(b)fluoranthene	µg/Kg	467 U	414 U	384 U
SW8270C	Benzo(g,h,i)perylene	µg/Kg	467 U	414 U	384 U
SW8270C	Benzo(k)fluoranthene	µg/Kg	467 U	414 U	384 U
SW8270C	Benzoic acid	µg/Kg	1180 U	1040 U	967 U
SW8270C	Benzyl alcohol	µg/Kg	467 U	414 U	384 U
SW8270C	Bis(2-chloroethoxy)methane	µg/Kg	467 U	414 U	384 U
SW8270C	Bis(2-chloroethyl)ether	µg/Kg	467 U	414 U	384 U
SW8270C	Bis(2-chloroisopropyl)ether	µg/Kg	467 U	414 U	384 U
SW8270C	Bis(2-ethylhexyl)phthalate	µg/Kg	467 U	414 U	384 U
SW8270C	Butyl benzyl phthalate	µg/Kg	467 U	414 U	384 U
SW8270C	Carbazole	µg/Kg	467 U	414 U	384 U
SW8270C	Chrysene	µg/Kg	467 U	414 U	384 U
SW8270C	Dibenz(a,h)anthracene	µg/Kg	467 U	414 U	384 U
SW8270C	Dibenzofuran	µg/Kg	467 U	414 U	384 U
SW8270C	Diethyl phthalate	µg/Kg	467 U	414 U	384 U
SW8270C	Dimethyl phthalate	µg/Kg	467 U	414 U	384 U

Table I-3

Summary of Complete Analytical Results for Sediment Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AFFF-SD01	AFFF-SD01/D	AFFF-SD02
Method	Analyte	Date:	07/15/02	07/15/02	07/15/02
SW8270C	Di-n-butyl phthalate	µg/Kg	467 U	414 U	384 U
SW8270C	Di-n-octyl phthalate	µg/Kg	467 U	414 U	384 U
SW8270C	Fluoranthene	µg/Kg	467 U	414 U	384 U
SW8270C	Fluorene	µg/Kg	467 U	414 U	384 U
SW8270C	Hexachlorobenzene	µg/Kg	467 U	414 U	384 U
SW8270C	Hexachlorobutadiene	µg/Kg	467 U	414 U	384 U
SW8270C	Hexachlorocyclopentadiene	µg/Kg	1180 UR	1040 UR	967 U
SW8270C	Hexachloroethane	µg/Kg	467 U	414 U	384 U
SW8270C	Indeno(1,2,3-cd)pyrene	µg/Kg	467 U	414 U	384 U
SW8270C	Isophorone	µg/Kg	467 U	414 U	384 U
SW8270C	Naphthalene	µg/Kg	467 U	414 U	384 U
SW8270C	Nitrobenzene	µg/Kg	467 U	414 U	384 U
SW8270C	N-Nitrosodimethylamine	µg/Kg	467 U	414 U	384 U
SW8270C	N-Nitrosodi-n-propylamine	µg/Kg	467 U	414 U	384 U
SW8270C	N-Nitrosodiphenylamine	µg/Kg	467 U	414 U	384 U
SW8270C	Pentachlorophenol	µg/Kg	1180 U	1040 U	967 U
SW8270C	Phenanthrene	µg/Kg	467 U	414 U	384 U
SW8270C	Phenol	µg/Kg	467 U	414 U	384 U
SW8270C	Pyrene	µg/Kg	467 U	414 U	44.7 J
SW8270C	2,4,6-Tribromophenol	µg/Kg	111 %	97 %	94 %
SW8270C	2-Fluorobiphenyl	µg/Kg	70 %	74 %	71 %
SW8270C	2-Fluorophenol	µg/Kg	83 %	79 %	77 %
SW8270C	Nitrobenzene-d5	µg/Kg	78 %	71 %	70 %
SW8270C	Phenol-d5	µg/Kg	112 %	111 %	109 %
SW8270C	Terphenyl-d14	µg/Kg	78 %	106 %	102 %
PCBs by Method 8082 (µg/Kg)					
SW8082	Aroclor 1016	µg/Kg	29.9 U	26.2 U	22.1 U
SW8082	Aroclor 1221	µg/Kg	59.9 U	52.5 U	44.2 U
SW8082	Aroclor 1232	µg/Kg	29.9 U	26.2 U	22.1 U
SW8082	Aroclor 1242	µg/Kg	29.9 U	26.2 U	22.1 U
SW8082	Aroclor 1248	µg/Kg	29.9 U	26.2 U	22.1 U
SW8082	Aroclor 1254	µg/Kg	29.9 U	26.2 U	22.1 U
SW8082	Aroclor 1260	µg/Kg	29.9 U	26.2 U	22.1 U
SW8082	Decachlorobiphenyl	µg/Kg	101 %	101 %	99 %
SW8082	Tetrachloro-m-xylene	µg/Kg	85 %	85 %	86 %
Pesticides by Method 8081A (µg/Kg)					
SW8081A	4,4´-DDD	µg/Kg	1.14 J	0.801 J	3.32 U
SW8081A	4,4´-DDE	µg/Kg	4.49 U	3.93 U	3.32 U
SW8081A	4,4´-DDT	µg/Kg	0.743 J	5.25 U	4.42 U
SW8081A	Aldrin	µg/Kg	5.99 U	5.25 U	4.42 U
SW8081A	alpha-BHC	µg/Kg	4.49 U	3.93 U	3.32 U
SW8081A	alpha-Chlordane	µg/Kg	1.50 U	1.31 U	1.11 U
SW8081A	beta-BHC	µg/Kg	5.99 U	5.25 U	4.42 U
SW8081A	delta-BHC	µg/Kg	2.99 U	2.62 U	2.21 U
SW8081A	Dieldrin	µg/Kg	7.48 U	6.56 U	5.53 U
SW8081A	Endosulfan I	µg/Kg	7.48 U	6.56 U	5.53 U
SW8081A	Endosulfan II	µg/Kg	4.49 U	3.93 U	3.32 U
SW8081A	Endosulfan sulfate	µg/Kg	8.98 U	7.87 U	6.64 U
SW8081A	Endrin	µg/Kg	5.99 U	5.25 U	4.42 U
SW8081A	Endrin aldehyde	µg/Kg	15.0 U	13.1 U	11.1 U

Table I-3
Summary of Complete Analytical Results for Sediment Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AFFF-SD01	AFFF-SD01/D	AFFF-SD02
Method	**Analyte**	**Date:**	**07/15/02**	**07/15/02**	**07/15/02**
SW8081A	Endrin ketone	µg/Kg	4.49 U	3.93 U	3.32 U
SW8081A	gamma-BHC	µg/Kg	2.99 U	2.62 U	2.21 U
SW8081A	gamma-Chlordane	µg/Kg	2.99 U	2.62 U	2.21 U
SW8081A	Heptachlor	µg/Kg	0.805 J	0.960 J	3.32 U
SW8081A	Heptachlor epoxide	µg/Kg	7.48 U	6.56 U	5.53 U
SW8081A	Methoxychlor	µg/Kg	59.9 U	52.5 U	44.2 U
SW8081A	Toxaphene	µg/Kg	150 U	131 U	111 U
SW8081A	Decachlorobiphenyl	µg/Kg	100 %	100 %	100 %
SW8081A	Tetrachloro-m-xylene	µg/Kg	96 %	99 %	92 %
VOCs by Method 8260B (µg/Kg)					
SW8260B	1,1,1-Trichloroethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,1,2-Trichloroethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,1-Dichloroethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,1-Dichloroethene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,2-Dichlorobenzene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,2-Dichloroethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,2-Dichloroethene, Total	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,2-Dichloropropane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,3-Dichlorobenzene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,4-Dichlorobenzene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	2-Butanone	µg/Kg	7.01 J	6.53 J	4.17 J
SW8260B	2-Chloroethyl vinyl ether	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	2-Hexanone	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	4-Methyl-2-pentanone	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	Acetone	µg/Kg	47.0 U	43.2 U	37.7 U
SW8260B	Benzene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Bromodichloromethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Bromoform	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Bromomethane	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	Carbon disulfide	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Carbon tetrachloride	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Chlorobenzene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Chloroethane	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	Chloroform	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Chloromethane	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	cis-1,2-Dichloroethene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	cis-1,3-Dichloropropene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Dibromochloromethane	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Ethylbenzene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	m,p-Xylene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Methylene chloride	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	o-Xylene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Styrene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Tetrachloroethene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Toluene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	trans-1,2-Dichloroethene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	trans-1,3-Dichloropropene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Trichloroethene	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	Trichlorofluoromethane	µg/Kg	7.92 U	7.04 U	6.43 U

Table I-3

Summary of Complete Analytical Results for Sediment Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AFFF-SD01	AFFF-SD01/D	AFFF-SD02
Method	Analyte	Date:	07/15/02	07/15/02	07/15/02
SW8260B	Vinyl acetate	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	Vinyl chloride	µg/Kg	15.8 U	14.1 U	12.9 U
SW8260B	Xylenes, Total	µg/Kg	7.92 U	7.04 U	6.43 U
SW8260B	1,2-Dichloroethane-d4	µg/Kg	105 %	108 %	109 %
SW8260B	4-Bromofluorobenzene	µg/Kg	113 %	108 %	98 %
SW8260B	Dibromofluoromethane	µg/Kg	103 %	107 %	110 %
SW8260B	Toluene-d8	µg/Kg	97 %	102 %	106 %
Metals/Mercury by Method 6010B/7471A (mg/Kg)					
SW6010B	Aluminum	mg/Kg	9580	6320	6760
SW6010B	Antimony	mg/Kg	3.23 U	2.66 U	2.51 J
SW6010B	Arsenic	mg/Kg	2.00 J	2.65 J	2.51 J
SW6010B	Barium	mg/Kg	43.9	26.8	24.5
SW6010B	Beryllium	mg/Kg	0.720 J	1.33 U	2.15 U
SW6010B	Cadmium	mg/Kg	6.46 U	5.32 U	8.59 U
SW6010B	Calcium	mg/Kg	2600	4060	2570
SW6010B	Chromium	mg/Kg	12.6	8.05	8.32 J
SW6010B	Cobalt	mg/Kg	6.98	4.54 J	4.48 J
SW6010B	Copper	mg/Kg	20.1	13.4	18.4
SW6010B	Iron	mg/Kg	17500	17400	14600
SW6010B	Lead	mg/Kg	16.2 J	6.86 J	8.16
SW6010B	Magnesium	mg/Kg	3350	2150	2770
SW6010B	Manganese	mg/Kg	390 J	377 J	477 J
SW7471A	Mercury	mg/Kg	0.0808 U	0.0705 U	0.0624 U
SW6010B	Nickel	mg/Kg	13.3	8.09	9.89
SW6010B	Potassium	mg/Kg	1100	769	737
SW6010B	Selenium	mg/Kg	8.08 U	6.65 U	4.30 U
SW6010B	Silver	mg/Kg	6.46 U	5.32 U	8.59 U
SW6010B	Sodium	mg/Kg	36.2 J	57.8 J	52.3 J
SW6010B	Thallium	mg/Kg	12.9 U	10.6 U	17.2 U
SW6010B	Vanadium	mg/Kg	13.4	8.46	7.67 J
SW6010B	Zinc	mg/Kg	54.3	33.7	46.0
Percent Moisture (wt%)					
ASTM_D2216	Percent Moisture	wt%	38.1	29.1	22.4

Note:

% REC = Units of %REC indicate that the compound is a surrogate spike.

Key:

J = Estimated value. The reported value is below the quantitation limit or estimated due to variance from quality control limits.

µg/Kg = Micrograms per kilogram.

mg/Kg = Milligrams per kilogram.

NA = Not analyzed or reported.

PCBs = Polychlorinated Biphenyls.

SVOCs = Semivolatile Organic Compounds.

U = Analyte was not detected or not present above background levels. The reported value is the quantitation limit or value elevated due to background.

UR = The PQL for this analyte is not usable. The actual PQL should be higher, but that level cannot be determined.

VOCs = Volatile Organic Compounds.

Table I-4

Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling,
Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10_5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
Method	Analyte	Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02
SVOCs by Method 8270C (µg/Kg)											
SW8270C	1,2,4-Trichlorobenzene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	1,2-Dichlorobenzene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	1,3-Dichlorobenzene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	1,4-Dichlorobenzene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2,4,5-Trichlorophenol	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	2,4,6-Trichlorophenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2,4-Dichlorophenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2,4-Dimethylphenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2,4-Dinitrophenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2,4-Dinitrotoluene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2,6-Dinitrotoluene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2-Chloronaphthalene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2-Chlorophenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2-Methylnaphthalene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2-Methylphenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	2-Nitroaniline	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	2-Nitrophenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	3,3'-Dichlorobenzidine	µg/Kg	693 U	684 U	768 U	726 U	NS	NS	NS	769 UR	761 UR
SW8270C	3-Nitroaniline	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	4,6-Dinitro-2-methylphenol	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	4-Bromophenyl phenyl ether	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	4-Chloro-3-methylphenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	4-Chloroaniline	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	4-Chlorophenyl phenyl ether	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	4-Methylphenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	4-Nitroaniline	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	4-Nitrophenol	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	Acenaphthene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Acenaphthylene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Anthracene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Benz(a)anthracene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Benzo(a)pyrene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Benzo(b)fluoranthene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ

Table I-4
Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10_5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
Method	Analyte	Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02
SW8270C	Benzo(g,h,i)perylene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Benzo(k)fluoranthene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Benzoic acid	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	Benzyl alcohol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Bis(2-chloroethoxy)methane	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Bis(2-chloroethyl)ether	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Bis(2-chloroisopropyl)ether	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Bis(2-ethylhexyl)phthalate	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Butyl benzyl phthalate	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Carbazole	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Chrysene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Dibenz(a,h)anthracene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Dibenzofuran	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Diethyl phthalate	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Dimethyl phthalate	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Di-n-butyl phthalate	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Di-n-octyl phthalate	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Fluoranthene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Fluorene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Hexachlorobenzene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Hexachlorobutadiene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Hexachlorocyclopentadiene	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 UR	957 UR
SW8270C	Hexachloroethane	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Indeno(1,2,3-cd)pyrene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Isophorone	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Naphthalene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Nitrobenzene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	N-Nitrosodimethylamine	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	N-Nitrosodi-n-propylamine	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	N-Nitrosodiphenylamine	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Pentachlorophenol	µg/Kg	871 U	860 U	965 U	914 U	NS	NS	NS	967 U	957 UJ
SW8270C	Phenanthrene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Phenol	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ
SW8270C	Pyrene	µg/Kg	346 U	342 U	384 U	363 U	NS	NS	NS	385 U	381 UJ

Table I-4
Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10_5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
Method	Analyte	Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02
SW8270C	2,4,6-Tribromophenol	µg/Kg	70 %	66 %	120 %	80 %	NS	NS	NS	65 %	90 %
SW8270C	2-Fluorobiphenyl	µg/Kg	71 %	68 %	77 %	69 %	NS	NS	NS	76 %	77 %
SW8270C	2-Fluorophenol	µg/Kg	82 %	74 %	162 %	84 %	NS	NS	NS	84 %	85 %
SW8270C	Nitrobenzene-d5	µg/Kg	87 %	82 %	115 %	85 %	NS	NS	NS	83 %	80 %
SW8270C	Phenol-d5	µg/Kg	119 %	108 %	259 %	117 %	NS	NS	NS	110 %	100 %
SW8270C	Terphenyl-d14	µg/Kg	59 %	59 %	71 %	58 %	NS	NS	NS	87 %	70 %
PCBs by Method 8082 (µg/Kg)											
SW8082	Aroclor 1016	µg/Kg	19.9 U	21.7 U	22.6 U	23.0 U	NS	NS	NS	23.8 U	23.1 U
SW8082	Aroclor 1221	µg/Kg	39.8 U	43.4 U	45.2 U	45.9 U	NS	NS	NS	47.7 U	46.3 U
SW8082	Aroclor 1232	µg/Kg	19.9 U	21.7 U	22.6 U	23.0 U	NS	NS	NS	23.8 U	23.1 U
SW8082	Aroclor 1242	µg/Kg	19.9 U	21.7 U	22.6 U	23.0 U	NS	NS	NS	23.8 U	23.1 U
SW8082	Aroclor 1248	µg/Kg	19.9 U	21.7 U	22.6 U	23.0 U	NS	NS	NS	23.8 U	23.1 U
SW8082	Aroclor 1254	µg/Kg	19.9 U	21.7 U	22.6 U	23.0 U	NS	NS	NS	23.8 U	23.1 U
SW8082	Aroclor 1260	µg/Kg	19.9 U	21.7 U	22.6 U	23.0 U	NS	NS	NS	23.8 U	23.1 U
SW8082	Decachlorobiphenyl	µg/Kg	87 %	85 %	46 %	83 %	NS	NS	NS	159 %	109 %
SW8082	Tetrachloro-m-xylene	µg/Kg	115 %	112 %	52 %	101 %	NS	NS	NS	100 %	100 %
Pesticides by Method 8081A (µg/Kg)											
SW8081A	4,4´-DDD	µg/Kg	2.98 U	3.26 U	3.39 U	3.45 U	NS	NS	NS	3.58 U	3.47 U
SW8081A	4,4´-DDE	µg/Kg	2.98 U	3.26 U	3.39 U	3.45 U	NS	NS	NS	3.58 U	3.47 U
SW8081A	4,4´-DDT	µg/Kg	3.98 U	4.34 U	4.52 U	4.59 U	NS	NS	NS	1.47 J	4.63 U
SW8081A	Aldrin	µg/Kg	3.98 U	4.34 U	4.52 U	4.59 U	NS	NS	NS	4.77 U	4.63 U
SW8081A	alpha-BHC	µg/Kg	2.98 U	3.26 U	3.39 U	3.45 U	NS	NS	NS	3.58 U	3.47 U
SW8081A	alpha-Chlordane	µg/Kg	0.995 U	1.09 U	1.13 U	1.15 U	NS	NS	NS	1.19 U	1.16 U
SW8081A	beta-BHC	µg/Kg	3.98 U	4.34 U	4.52 U	4.59 U	NS	NS	NS	4.77 U	4.63 U
SW8081A	delta-BHC	µg/Kg	1.99 U	2.17 U	2.26 U	2.30 U	NS	NS	NS	2.38 U	2.31 U
SW8081A	Dieldrin	µg/Kg	4.97 U	5.43 U	5.66 U	5.74 U	NS	NS	NS	5.96 U	5.78 U
SW8081A	Endosulfan I	µg/Kg	4.97 U	5.43 U	5.66 U	5.74 U	NS	NS	NS	5.96 U	5.78 U
SW8081A	Endosulfan II	µg/Kg	2.98 U	3.26 U	3.39 U	3.45 U	NS	NS	NS	3.58 U	3.47 U
SW8081A	Endosulfan sulfate	µg/Kg	5.97 U	6.51 U	6.79 U	6.89 U	NS	NS	NS	7.15 U	6.94 U
SW8081A	Endrin	µg/Kg	3.98 U	4.34 U	4.52 U	4.59 U	NS	NS	NS	4.77 U	4.63 U
SW8081A	Endrin aldehyde	µg/Kg	9.95 U	10.9 U	11.3 U	11.5 U	NS	NS	NS	11.9 U	11.6 U
SW8081A	Endrin ketone	µg/Kg	2.98 U	3.26 U	3.39 U	3.45 U	NS	NS	NS	3.58 U	3.47 U
SW8081A	gamma-BHC	µg/Kg	1.99 U	2.17 U	2.26 U	2.30 U	NS	NS	NS	2.38 U	2.31 U
SW8081A	gamma-Chlordane	µg/Kg	1.99 U	2.17 U	2.26 U	2.30 U	NS	NS	NS	2.38 U	2.31 U

Table I-4
Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10_5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
Method	Analyte	Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02
SW8081A	Heptachlor	µg/Kg	2.98 U	3.26 U	3.39 U	3.45 U	NS	NS	NS	3.58 U	3.47 U
SW8081A	Heptachlor epoxide	µg/Kg	4.97 U	5.43 U	5.66 U	5.74 U	NS	NS	NS	5.96 U	5.78 U
SW8081A	Methoxychlor	µg/Kg	39.8 U	43.4 U	45.2 U	45.9 U	NS	NS	NS	47.7 U	46.3 U
SW8081A	Toxaphene	µg/Kg	99.5 U	109 U	113 U	115 U	NS	NS	NS	119 U	116 U
SW8081A	Decachlorobiphenyl	µg/Kg	101 %	100 %	102 %	97 %	NS	NS	NS	148 %	106 %
SW8081A	Tetrachloro-m-xylene	µg/Kg	98 %	99 %	97 %	92 %	NS	NS	NS	84 %	85 %
TPH by Method 8015B (mg/Kg)											
SW8015B	Diesel Range Organics	mg/Kg	NS	NS	NS	NS	NS	NS	NS	13.9	14.3
SW8015B	Gasoline Range Organics	mg/Kg	NS	NS	NS	NS	NS	NS	NS	8.55 U	8.62 U
SW8015B	1,2-Dichlorobenzene	mg/Kg	NS	NS	NS	NS	NS	NS	NS	76 %	77 %
SW8015B	o-Terphenyl	mg/Kg	NS	NS	NS	NS	NS	NS	NS	96 %	82 %
VOCs by Method 8260B (µg/Kg)											
SW8260B	1,1,1-Trichloroethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,1,2-Trichloroethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,1-Dichloroethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,1-Dichloroethene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,2-Dichlorobenzene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,2-Dichloroethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,2-Dichloroethene, Total	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,2-Dichloropropane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,3-Dichlorobenzene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,4-Dichlorobenzene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	2-Butanone	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	3.07 J	11.8 U
SW8260B	2-Chloroethyl vinyl ether	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	2-Hexanone	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	4-Methyl-2-pentanone	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	Acetone	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	6.19 J	40.3 J	5.07 J
SW8260B	Benzene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Bromodichloromethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Bromoform	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Bromomethane	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	Carbon disulfide	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Carbon tetrachloride	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U

Table I-4
Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10_5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
Method	Analyte	Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02
SW8260B	Chlorobenzene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Chloroethane	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	Chloroform	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Chloromethane	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	cis-1,2-Dichloroethene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	cis-1,3-Dichloropropene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Dibromochloromethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Ethylbenzene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	m,p-Xylene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Methylene chloride	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	o-Xylene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Styrene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Tetrachloroethene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	1.51 J	5.71 U	5.88 U
SW8260B	Toluene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	trans-1,2-Dichloroethene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	trans-1,3-Dichloropropene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Trichloroethene	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	1.66 J	5.71 U	5.88 U
SW8260B	Trichlorofluoromethane	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	Vinyl acetate	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	Vinyl chloride	µg/Kg	11.3 U	11.3 U	12.2 U	11.7 U	10.3 U	10.2 U	10.6 U	11.4 U	11.8 U
SW8260B	Xylenes, Total	µg/Kg	5.65 U	5.64 U	6.09 U	5.83 U	5.13 U	5.10 U	5.30 U	5.71 U	5.88 U
SW8260B	1,2-Dichloroethane-d4	µg/Kg	99 %	99 %	98 %	101 %	103 %	101 %	101 %	105 %	107 %
SW8260B	4-Bromofluorobenzene	µg/Kg	104 %	105 %	107 %	114 %	102 %	105 %	111 %	102 %	110 %
SW8260B	Dibromofluoromethane	µg/Kg	100 %	101 %	100 %	100 %	102 %	102 %	102 %	112 %	112 %
SW8260B	Toluene-d8	µg/Kg	104 %	103 %	104 %	108 %	103 %	104 %	105 %	113 %	114 %

Table I-4
Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10 5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
		Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02
Metals/Mercury by Method 6010B/7471A (mg/Kg)											
SW6010B	Aluminum	mg/Kg	5080	4920	4660	11700	NS	NS	NS	7230	7650
SW6010B	Antimony	mg/Kg	4.94 J	4.24 J	2.35 J	4.07 J	NS	NS	NS	0.899 J	0.749 J
SW6010B	Arsenic	mg/Kg	13.6 U	3.35 J	1.48 J	12.5 U	NS	NS	NS	0.722 J	1.33 J
SW6010B	Barium	mg/Kg	18.8	17.9	12.9	50.1	NS	NS	NS	28.8	26.2
SW6010B	Beryllium	mg/Kg	2.73 U	2.49 U	1.23 U	2.50 U	NS	NS	NS	0.298 J	0.264 J
SW6010B	Cadmium	mg/Kg	10.9 U	9.97 U	4.91 U	10.0 U	NS	NS	NS	2.42 U	2.14 U
SW6010B	Calcium	mg/Kg	29100	27400	25000	3800	NS	NS	NS	1320	1330
SW6010B	Chromium	mg/Kg	6.83 J	6.55 J	5.80	13.0	NS	NS	NS	6.18	6.57
SW6010B	Cobalt	mg/Kg	3.84 J	3.67 J	3.05 J	7.73 J	NS	NS	NS	2.34 J	2.52
SW6010B	Copper	mg/Kg	18.9	16.5	13.2	28.2	NS	NS	NS	6.79	9.38
SW6010B	Iron	mg/Kg	13300	12300	11300	26900	NS	NS	NS	10300	11400
SW6010B	Lead	mg/Kg	4.40 J	3.66 J	3.16	13.8	NS	NS	NS	8.72	7.73
SW6010B	Magnesium	mg/Kg	2790	2780	2570	4410	NS	NS	NS	932	1380
SW6010B	Manganese	mg/Kg	545 J	522 J	300 J	1410 J	NS	NS	NS	182 J	251 J
SW7471A	Mercury	mg/Kg	0.0369 U	0.0386 U	0.0417 U	0.0154 J	NS	NS	NS	0.0439	0.0368 J
SW6010B	Nickel	mg/Kg	9.41 J	7.73 J	6.76	15.5	NS	NS	NS	3.38	4.46
SW6010B	Potassium	mg/Kg	1010	816	809	920	NS	NS	NS	268	271
SW6010B	Selenium	mg/Kg	27.3 U	24.9 U	12.3 U	25.0 U	NS	NS	NS	6.05 U	5.36 U
SW6010B	Silver	mg/Kg	10.9 UJ	9.97 UJ	4.91 UJ	10.0 UJ	NS	NS	NS	2.42 UJ	2.14 UJ
SW6010B	Sodium	mg/Kg	135 J	69.5 J	51.5 J	102 J	NS	NS	NS	27.0 J	19.5 J
SW6010B	Thallium	mg/Kg	5.66 J	4.70 J	2.49 J	4.45 J	NS	NS	NS	0.871 J	0.975 J
SW6010B	Vanadium	mg/Kg	5.63 J	4.97 J	5.30	15.2	NS	NS	NS	12.8	13.8
SW6010B	Zinc	mg/Kg	56.6	34.7	27.2	65.1	NS	NS	NS	26.3	24.4
Percent Moisture (wt%)											
ASTM_D2216	Percent Moisture	wt%	13.6	12.0	18.5	15.3	6.23	3.20	6.01	17.3	18.2

Table I-4

Summary of Complete Analytical Results for Soil Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-SS01(11_5-16)	AOC9-SS01(11_5-16)/D	AOC9-SS01(20-24)	AOC9-SS01(4-6)	AOC9-SS02(10-10_5)	AOC9-SS02(2-4)	AOC9-SS02(6-8)	AOC9-TP04	AOC9-TP04/D
Method	Analyte	Date:	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/24/02	07/19/02	07/19/02

Note:

% REC = Units of %REC indicate that the compound is a surrogate spike.

Key:

J = Estimated value. The reported value is below the quantitation limit or estimated due to variance from quality control limits.

JB = Estimated value that may be bias high due to laboratory or field background contamination.

µg/Kg = Micrograms per kilogram.

mg/Kg = Milligrams per kilogram.

NA = Not analyzed or reported.

PCBs = Polychlorinated Biphenyls.

SVOCs = Semivolatile Organic Compounds.

TPH = Total petroleum hydrocarbons (Diesel and gasoline organics).

U = Analyte was not detected or not present above background levels. The reported value is the quantitation limit or value elevated due to background.

UR = The PQL for this analyte is not usable. The actual PQL should be higher, but that level cannot be determined.

VOCs = Volatile Organic Compounds.

Table I-5

Summary of Complete Analytical Results for the Drilling Water Sample, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-DW01
Method	Analyte	Date:	07/18/02
SVOCs by Method 8270C (µg/L)			
SW8270C	1,2,4-Trichlorobenzene	µg/L	10.0 U
SW8270C	1,2-Dichlorobenzene	µg/L	10.0 U
SW8270C	1,3-Dichlorobenzene	µg/L	10.0 U
SW8270C	1,4-Dichlorobenzene	µg/L	10.0 U
SW8270C	2,4,5-Trichlorophenol	µg/L	25.0 U
SW8270C	2,4,6-Trichlorophenol	µg/L	10.0 U
SW8270C	2,4-Dichlorophenol	µg/L	10.0 U
SW8270C	2,4-Dimethylphenol	µg/L	10.0 U
SW8270C	2,4-Dinitrophenol	µg/L	25.0 U
SW8270C	2,4-Dinitrotoluene	µg/L	10.0 U
SW8270C	2,6-Dinitrotoluene	µg/L	10.0 U
SW8270C	2-Chloronaphthalene	µg/L	10.0 U
SW8270C	2-Chlorophenol	µg/L	10.0 U
SW8270C	2-Methylnaphthalene	µg/L	10.0 U
SW8270C	2-Methylphenol	µg/L	10.0 U
SW8270C	2-Nitroaniline	µg/L	25.0 U
SW8270C	2-Nitrophenol	µg/L	10.0 U
SW8270C	3,3´-Dichlorobenzidine	µg/L	20.0 U
SW8270C	3-Nitroaniline	µg/L	25.0 U
SW8270C	4,6-Dinitro-2-methylphenol	µg/L	25.0 U
SW8270C	4-Bromophenyl phenyl ether	µg/L	10.0 U
SW8270C	4-Chloro-3-methylphenol	µg/L	10.0 U
SW8270C	4-Chloroaniline	µg/L	10.0 U
SW8270C	4-Chlorophenyl phenyl ether	µg/L	10.0 U
SW8270C	4-Methylphenol	µg/L	10.0 U
SW8270C	4-Nitroaniline	µg/L	25.0 U
SW8270C	4-Nitrophenol	µg/L	25.0 U
SW8270C	Acenaphthene	µg/L	10.0 U
SW8270C	Acenaphthylene	µg/L	10.0 U
SW8270C	Anthracene	µg/L	10.0 U
SW8270C	Benz(a)anthracene	µg/L	10.0 U
SW8270C	Benzo(a)pyrene	µg/L	10.0 U
SW8270C	Benzo(b)fluoranthene	µg/L	10.0 U
SW8270C	Benzo(g,h,i)perylene	µg/L	10.0 U
SW8270C	Benzo(k)fluoranthene	µg/L	10.0 U
SW8270C	Benzoic acid	µg/L	25.0 U
SW8270C	Benzyl alcohol	µg/L	10.0 U
SW8270C	Bis(2-chloroethoxy)methane	µg/L	10.0 U
SW8270C	Bis(2-chloroethyl)ether	µg/L	10.0 U
SW8270C	Bis(2-chloroisopropyl)ether	µg/L	10.0 U
SW8270C	Bis(2-ethylhexyl)phthalate	µg/L	10.0 U
SW8270C	Butyl benzyl phthalate	µg/L	10.0 U
SW8270C	Carbazole	µg/L	10.0 U
SW8270C	Chrysene	µg/L	10.0 U
SW8270C	Dibenz(a,h)anthracene	µg/L	10.0 U
SW8270C	Dibenzofuran	µg/L	10.0 U
SW8270C	Diethyl phthalate	µg/L	10.0 U
SW8270C	Dimethyl phthalate	µg/L	10.0 U
SW8270C	Di-n-butyl phthalate	µg/L	10.0 U
SW8270C	Di-n-octyl phthalate	µg/L	10.0 U
SW8270C	Fluoranthene	µg/L	10.0 U

Table I-5
Summary of Complete Analytical Results for the Drilling Water Sample, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-DW01 07/18/02
SW8270C	Fluorene	µg/L	10.0 U
SW8270C	Hexachlorobenzene	µg/L	10.0 U
SW8270C	Hexachlorobutadiene	µg/L	10.0 U
SW8270C	Hexachlorocyclopentadiene	µg/L	25.0 U
SW8270C	Hexachloroethane	µg/L	10.0 U
SW8270C	Indeno(1,2,3-cd)pyrene	µg/L	10.0 U
SW8270C	Isophorone	µg/L	10.0 U
SW8270C	Naphthalene	µg/L	10.0 U
SW8270C	Nitrobenzene	µg/L	10.0 U
SW8270C	N-Nitrosodimethylamine	µg/L	10.0 U
SW8270C	N-Nitrosodi-n-propylamine	µg/L	10.0 U
SW8270C	N-Nitrosodiphenylamine	µg/L	10.0 U
SW8270C	Pentachlorophenol	µg/L	25.0 U
SW8270C	Phenanthrene	µg/L	10.0 U
SW8270C	Phenol	µg/L	10.0 U
SW8270C	Pyrene	µg/L	10.0 U
SW8270C	2,4,6-Tribromophenol	µg/L	73 %
SW8270C	2-Fluorobiphenyl	µg/L	63 %
SW8270C	2-Fluorophenol	µg/L	63 %
SW8270C	Nitrobenzene-d5	µg/L	75 %
SW8270C	Phenol-d5	µg/L	96 %
SW8270C	Terphenyl-d14	µg/L	65 %
PCBs by Method 8082 (µg/L)			
SW8082	Aroclor 1016	µg/L	0.500 U
SW8082	Aroclor 1221	µg/L	1.00 U
SW8082	Aroclor 1232	µg/L	0.500 U
SW8082	Aroclor 1242	µg/L	0.500 U
SW8082	Aroclor 1248	µg/L	0.500 U
SW8082	Aroclor 1254	µg/L	0.500 U
SW8082	Aroclor 1260	µg/L	0.500 U
SW8082	Decachlorobiphenyl	µg/L	68 %
SW8082	Tetrachloro-m-xylene	µg/L	59 %
Pesticides by Method 8081A (µg/L)			
SW8081A	4,4´-DDD	µg/L	0.100 U
SW8081A	4,4´-DDE	µg/L	0.0500 U
SW8081A	4,4´-DDT	µg/L	0.150 U
SW8081A	Aldrin	µg/L	0.0500 U
SW8081A	alpha-BHC	µg/L	0.0817
SW8081A	alpha-Chlordane	µg/L	0.0500 U
SW8081A	beta-BHC	µg/L	0.0500 U
SW8081A	delta-BHC	µg/L	0.100 U
SW8081A	Dieldrin	µg/L	0.0500 U
SW8081A	Endosulfan I	µg/L	0.0500 U
SW8081A	Endosulfan II	µg/L	0.100 U
SW8081A	Endosulfan sulfate	µg/L	0.100 U
SW8081A	Endrin	µg/L	0.0500 U
SW8081A	Endrin aldehyde	µg/L	0.150 U
SW8081A	Endrin ketone	µg/L	0.100 U
SW8081A	gamma-BHC	µg/L	0.0500 U
SW8081A	gamma-Chlordane	µg/L	0.100 U
SW8081A	Heptachlor	µg/L	0.0500 U

Table I-5
Summary of Complete Analytical Results for the Drilling Water Sample, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	AOC9-DW01
Method	**Analyte**	**Date:**	**07/18/02**
SW8081A	Heptachlor epoxide	µg/L	0.0500 U
SW8081A	Methoxychlor	µg/L	0.150 U
SW8081A	Toxaphene	µg/L	1.00 U
SW8081A	Decachlorobiphenyl	µg/L	76 %
SW8081A	Tetrachloro-m-xylene	µg/L	64 %
TPH by Method 8015B (mg/L)			
SW8015B	Diesel Range Organics	mg/L	0.363
SW8015B	Gasoline Range Organics	mg/L	0.100 U
SW8015B	1,2-Dichlorobenzene	mg/L	93 %
SW8015B	o-Terphenyl	mg/L	103 %
VOC by Method 8260B (µg/L)			
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	1.00 U
SW8260B	1,2-Dichloroethane	µg/L	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	1.00 U
SW8260B	1,2-Dichloropropane	µg/L	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	1.00 U
SW8260B	1,4-Dichlorobenzene	µg/L	1.00 U
SW8260B	2-Butanone	µg/L	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U
SW8260B	Acetone	µg/L	5.00 U
SW8260B	Benzene	µg/L	0.100 J
SW8260B	Bromodichloromethane	µg/L	2.70
SW8260B	Bromoform	µg/L	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U
SW8260B	Carbon tetrachloride	µg/L	1.00 U
SW8260B	Chlorobenzene	µg/L	1.00 U
SW8260B	Chloroethane	µg/L	2.00 U
SW8260B	Chloroform	µg/L	44.0
SW8260B	Chloromethane	µg/L	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	1.00 U
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U
SW8260B	Dibromochloromethane	µg/L	0.117 J
SW8260B	Ethylbenzene	µg/L	0.0710 J
SW8260B	m,p-Xylene	µg/L	0.397 J
SW8260B	Methylene chloride	µg/L	1.00 U
SW8260B	o-Xylene	µg/L	0.189 J
SW8260B	Styrene	µg/L	1.00 U
SW8260B	Tetrachloroethene	µg/L	1.00 U
SW8260B	Toluene	µg/L	0.464 J
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U
SW8260B	Trichloroethene	µg/L	1.00 U
SW8260B	Trichlorofluoromethane	µg/L	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U

Table I-5
Summary of Complete Analytical Results for the Drilling Water Sample, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

Method	Analyte	Sample ID: Date:	AOC9-DW01 07/18/02
SW8260B	Vinyl chloride	µg/L	1.00 U
SW8260B	Xylenes, Total	µg/L	0.586 J
SW8260B	1,2-Dichloroethane-d4	µg/L	93 %
SW8260B	4-Bromofluorobenzene	µg/L	107 %
SW8260B	Dibromofluoromethane	µg/L	103 %
SW8260B	Toluene-d8	µg/L	109 %
Metals/Mercury by Method 6010B/7470A (µg/L)			
SW6010B	Aluminum	µg/L	200 U
SW6010B	Antimony	µg/L	10.0 U
SW6010B	Arsenic	µg/L	25.0 U
SW6010B	Barium	µg/L	14.9 J
SW6010B	Beryllium	µg/L	5.00 U
SW6010B	Cadmium	µg/L	5.00 U
SW6010B	Calcium	µg/L	12800
SW6010B	Chromium	µg/L	10.0 U
SW6010B	Cobalt	µg/L	20.0 U
SW6010B	Copper	µg/L	38.6
SW6010B	Iron	µg/L	3430
SW6010B	Lead	µg/L	5.00 U
SW6010B	Magnesium	µg/L	3540
SW6010B	Manganese	µg/L	54.6
SW7470A	Mercury	µg/L	0.400 U
SW6010B	Nickel	µg/L	20.0 U
SW6010B	Potassium	µg/L	452 J
SW6010B	Selenium	µg/L	20.0 U
SW6010B	Silver	µg/L	10.0 U
SW6010B	Sodium	µg/L	4650
SW6010B	Thallium	µg/L	20.0 U
SW6010B	Vanadium	µg/L	20.0 U
SW6010B	Zinc	µg/L	196

Note:

% REC = Units of %REC indicate that the compound is a surrogate spike.

Key:

J = Estimated value. The reported value is below the quantitation limit or estimated due to variance from

µg/L = Micrograms per liter.

mg/L = Milligrams per liter.

NA = Not analyzed or reported.

PCBs = Polychlorinated Biphenyls.

SVOCs = Semivolatile Organic Compounds.

TPH = Total petroleum hydrocarbons (Diesel and gasoline organics)

U = Analyte was not detected or not present above background levels. The reported value is the quantitation limit or value elevated due to background.

VOCs = Volatile Organic Compounds.

Table I-6
Summary of Complete Analytical Results for Trip Blank Water Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	FIELDQC-TB9-GW1	FIELDQC-TB9-GW2	FIELDQC-TB9-GW3	FIELDQC-TB9-GW4	FIELDQC-TB9-GW5	FIELDQC-TB9-GW6	FIELDQC-TB9-GW7	FIELDQC-TB9-GW8
Method	Analyte	Date:	07/15/02	07/16/02	07/17/02	07/18/02	07/19/02	07/22/02	07/23/02	07/24/02
Low Level VOCs by Method 8260B (µg/L)										
SW8260B	1,1,1-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1,2,2-Tetrachloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1,2-Trichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,1-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethene, Total	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloropropane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,3-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,4-Dichlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	2-Butanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	2-Hexanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	4-Methyl-2-pentanone	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Acetone	µg/L	32.8	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Benzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromodichloromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromoform	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Bromomethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	Carbon disulfide	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Carbon tetrachloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Chlorobenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Chloroethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	Chloroform	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Chloromethane	µg/L	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
SW8260B	cis-1,2-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	cis-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Dibromochloromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Ethylbenzene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	m,p-Xylene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Methylene chloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	o-Xylene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Styrene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U

Table I-6

Summary of Complete Analytical Results for Trip Blank Water Samples, Year 2002 SI Additional Sampling, Former Griffiss Air Force Base, Rome, New York

		Sample ID:	FIELDQC-TB9-GW1	FIELDQC-TB9-GW2	FIELDQC-TB9-GW3	FIELDQC-TB9-GW4	FIELDQC-TB9-GW5	FIELDQC-TB9-GW6	FIELDQC-TB9-GW7	FIELDQC-TB9-GW8
Method	Analyte	Date:	07/15/02	07/16/02	07/17/02	07/18/02	07/19/02	07/22/02	07/23/02	07/24/02
SW8260B	Tetrachloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Toluene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	trans-1,2-Dichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	trans-1,3-Dichloropropene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Trichloroethene	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Trichlorofluoromethane	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Vinyl acetate	µg/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
SW8260B	Vinyl chloride	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	Xylenes, Total	µg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
SW8260B	1,2-Dichloroethane-d4	µg/L	96 %	97 %	96 %	92 %	96 %	95 %	97 %	93 %
SW8260B	4-Bromofluorobenzene	µg/L	108 %	106 %	107 %	105 %	106 %	114 %	114 %	106 %
SW8260B	Dibromofluoromethane	µg/L	95 %	96 %	95 %	102 %	103 %	95 %	97 %	100 %
SW8260B	Toluene-d8	µg/L	94 %	94 %	94 %	109 %	109 %	96 %	95 %	106 %

Note:

% REC = Units of %REC indicate that the compound is a surrogate spike.

Key:

J = Estimated value. The reported value is below the quantitation limit or estimated due to variance from quality control limits.

µg/L = Micrograms per liter.

U = Analyte was not detected or not present above background levels. The reported value is the quantitation limit or value elevated due to background.

VOCs = Volatile Organic Compounds.

J AOC 9 Bedrock Groundwater Study

AOC 9 Bedrock Groundwater Study
Former Griffiss Air Force Base
Rome, New York

Contract No.: DACW41-99-D-0005
Task Order No. 001
WAD 04 - Feasibility Study

August 2002

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
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Lancaster, New York 14086

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List of Abbreviations and Acronyms

1,1,1-TCA	1,1,1-trichloroethane
1,1-DCA	1,1-dichloroethane
1,2-DCA	1,2-dichloroethane
1,2-DCB	1,2-dichlorobenzene
AAI	American Auger, Inc.
AFB	Air Force Base
AOC	Area of concern
ASC	Analytical Services Center
ATV	all-terrain vehicle
B775	Building 775
B817/WSA	Building 817, south of the Weapons Storage Area
BGS	below ground surface
cis-1,2-DCE	dichloroethene
cm/sec	centimeters per second
DCE	dichloroethene
DO	dissolved oxygen
DOC	dissolved organic carbon
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
ERDC	United States Army Engineer Research and Development Center Quality

List of Abbreviations and Acronyms (cont.)

	Assurance Laboratory
FS	Feasibility Study
FSP	Field Sampling Plan
ft/ft	feet per foot
GPM	gallons per minute
HASP	Health and Safety Plan
HSA	hollow stem auger
ID	inner diameter
IDW	investigation-derived waste
IRP	Installation Restoration Program
K	hydraulic conductivity
LF6	Landfill 6
MCL	Maximum Contaminant Level
MEE	methane, ethane, ethene
mg/L	milligrams per liter
MTBE	methyl tert-butyl ether
µg/L	micrograms per liter
NYSDEC	New York State Department of Environmental Conservation
ORP	oxygen reduction potential
PCE	tetrachloroethene
QAPP	Quality Assurance Project Plan
QCP	Quality Control Plan
RI	Remedial Investigation
SI	Supplemental Investigation

List of Abbreviations and Acronyms (cont.)

TCE	trichloroethene
TOGS	Technical and Operational Guidance Series
USACE	United States Army Corps of Engineers-Kansas City District
VOC	volatile organic compound
WAD	Work Authorization Directive
WSA	Weapons Storage Area

1

Introduction

Ecology and Environment, Inc. (E & E), under contract with the United States Army Corps of Engineers (USACE), Kansas City District, Contract No. DACW41-99-D-0005, Work Authorization Directive (WAD) 04, performed a Bedrock Groundwater Study at the Landfill 6 (LF6) and Building 775 (B775) Areas of Concern (AOCs), AOC 9, and the On-Base Groundwater AOC near Building 817, south of the Weapons Storage Area (B817/WSA), at the Former Griffiss Air Force Base (Griffiss AFB) in Rome, New York (see Figures 1-1, 1-2, and 1-3). Only the text sections, tables, and figures of the *Landfill 6, Building 775, AOC 9, and Building 817/WSA Technical Memorandum No.1: Bedrock Groundwater Study, Former Griffiss Air Force Base, Rome New York*, (August 2002), which apply to AOC 9 are included in this appendix.

Field investigations were performed between February 18 and May 8, 2002, by E & E field personnel. Borings were drilled and monitoring wells were installed by American Auger, Inc. (AAI) under the supervision of an E & E geologist and site safety officer. Laboratory analyses for this study were conducted by E & E's Analytical Services Center (ASC) located in Lancaster, New York. Split samples were analyzed by the United States Army Engineer Research and Development Center Quality Assurance Laboratory (ERDC) located in Omaha, Nebraska. Additional analyses were performed on AOC 9 Treatability Bench-Scale water and soil samples by In-situ Oxidative Technologies, Inc., located in West Windsor, New Jersey. Although these samples were collected during the bedrock investigation, they will actually be used for the upcoming groundwater treatability studies that will be performed at this site. Therefore, results from the bench-scale test will be reported in a separate document. A boring/well location survey was conducted by LaFave, White, and McGivern, L.S., P.C., located in Boonville, New York. Descriptions of the work performed are presented in Section 2 of this technical memorandum.

1.1 Purpose of Investigation

AOC 9 contains a chlorinated ethene plume in the overburden immediately above bedrock. The contamination includes a mixed plume of chlorobenzene and TCE and their breakdown products at AOC 9. The purpose of this investigation was to determine if contamination has migrated into the bedrock at the AOC 9 site.

1.2 Background Information

Groundwater at Griffiss AFB and the surrounding area of Rome, New York occurs in both the overburden and bedrock. The overburden is typically composed of poorly sorted sands, silts, and gravels. The uppermost unit of bedrock is Utica Shale. It is approximately 300 feet thick and is composed of black-to-gray, carbonaceous, and highly fissile-to-massive shale.

Prior to this study, the depth to bedrock at Griffiss AFB was believed to vary from the surface to approximately 20 feet below ground surface (BGS) on the north side of the base, to approximately 130 feet BGS on the south side. However, a thick till zone (up to 34 feet) consisting of sand, silt, gravel, and clay was encountered beneath the LF6 and B775 sites, where depth of bedrock is 150 feet BGS. Most historical groundwater investigation work has focused on overburden groundwater. However, four overburden/bedrock interface wells (all at Landfill 1) were installed by Roy F. Weston under the Installation Restoration Program (IRP) Phase II -Problem Confirmation and Quantification Study (Weston 1985), and eight bedrock monitoring wells (one at each of the following AOC sites: Landfills 1, 2/3, and 6; Coal Storage Yard; Lot 69; T-9 Storage Area; On-Base Groundwater [near intersection of Mohawk Drive and Hill Road]; and Off-Base Groundwater [near intersection of Ellsworth Road and Fort Craven Drive across from the former mobile home park]) were installed by Law Environmental, Inc. under the Remedial Investigation (RI) (Law 1996). In addition, seven well borings (one at each of the following sites: Hydrologic Study Areas 1, 2, 3, 4, 6, 7, and 8) were drilled into the bedrock by UNC Geotech; however, the wells were completed in the overburden (UNC Geotech 1991). In general, the bedrock wells had low yields.

Although bedrock groundwater is not being used as a potable water source at Griffiss AFB or by the City of Rome and its surrounding areas, there are two other possible receptors in the Griffiss AFB area. First, bedrock groundwater could flow off base and discharge into surface water (New York State Barge Canal and the Mohawk River). Second, although there are no known uses, bedrock groundwater could flow off base and potentially affect residences that may use bedrock groundwater for drinking or irrigation. In order to affect private wells, a plume would have to flow off base at least 1 to 2 miles. Over this distance, a plume would continue to disperse and attenuate. Therefore, it is unlikely that bedrock groundwater (if contaminated) from the base would adversely impact public health or the environment.

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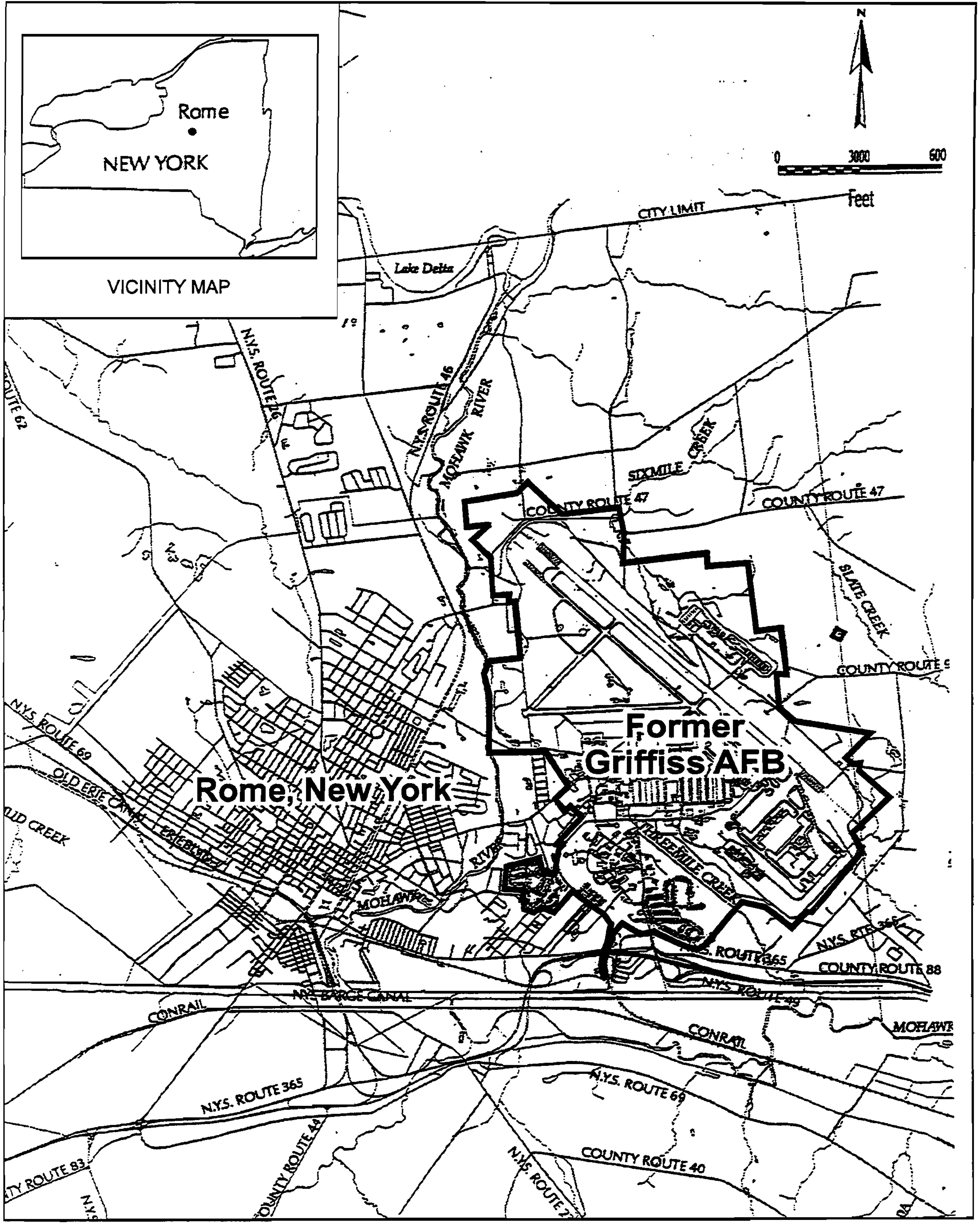

Figure 1-1 FORMER GRIFFISS AFB - SITE LOCATION MAP

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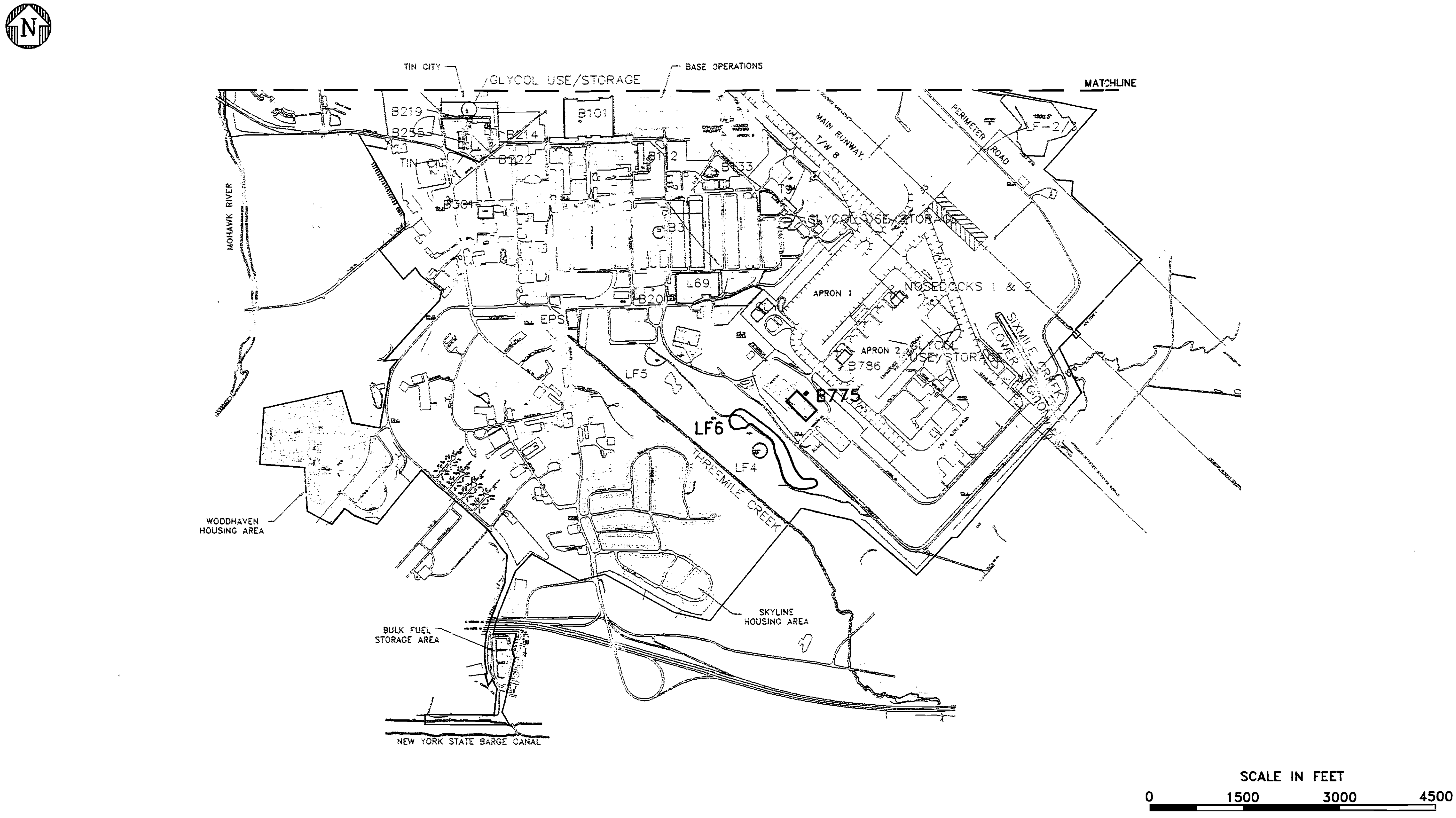
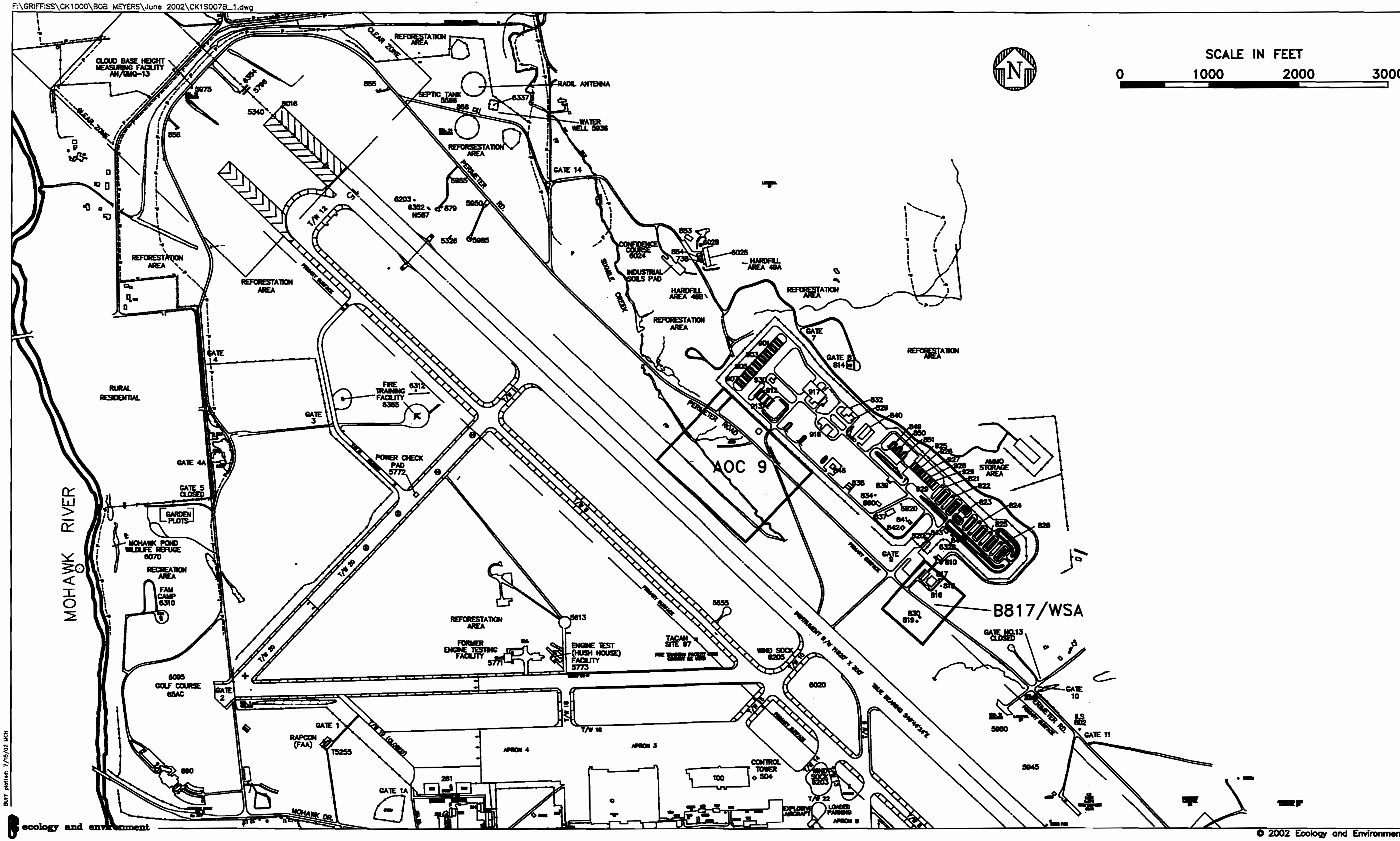


BUFF plotted 7/15/02 UGH

ecology and environment

FIGURE 1-2 LF6 AND B775
LOCATION MAP
FORMER GRIFFISS AIR FORCE BASE

F:\GRIFFISS\CK1000\BOB MEYERS\June 2002\CK1S007B_1.dwg



BUFF plotted: 7/15/02 MCN

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FIGURE 1–3 AOC9 & B817/WSA
LOCATION MAP
FORMER GRIFFISS AIR FORCE BASE

2

Field Activities AOC-9 Groundwater Study

All work at AOC 9 was performed in accordance with the February 2002 USACE-approved Final Work Plan (E & E 2002), which incorporated similar methodologies used during the RI (Law 1996) and Supplemental Investigations (SI) (E & E 1998); the September 1999 Quality Control Plan (QCP) (E & E 1999a); and the Groundwater Study at the Landfill 6 and Building 775 AOCs (E & E 1999b). The Field Sampling Plan (E & E 1999b) for the LF6 and B775 Groundwater Study included the site-specific Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), and the QCP that guided the bedrock study.

2.1 AOC 9

The groundwater study at AOC 9 consisted of drilling, installation, development, sampling, and slug testing of three new bedrock wells (AOC9-MW9Br, AOC9-MW10Br, and AOC9-MW11Br) and one overburden borehole (AOC9-SB8) (see Tables 2-1 and 2-2; Figure 2-2 in this appendix; and Appendices B, C, D, E, and F which are provided in the *Landfill 6, Building 775, AOC 9, and Building 817/WSA Technical Memorandum No.1: Bedrock Groundwater Study, Former Griffiss Air Force Base, Rome New York*, (August 2002).

Bedrock Wells

The locations of the wells indicated on Figure 2-2 were chosen to determine whether contamination is present in the bedrock. The bedrock boreholes were advanced through the overburden using a 7 7/8-inch Ken Claw roller bit via mud rotary drilling techniques with either a Foremost CT 250 truck-mounted (AOC9-MW11Br), or a Mobile B-57 ATV drill rig (AOC9-MW9Br and AOC9-MW10Br). Drilling extended through the weathered bedrock zone to approximately 5 feet into competent bedrock, and a 4-inch carbon-steel casing was grouted into place to prevent cross-contamination between overburden and bedrock groundwater. The grout was allowed to set for a minimum of 24 hours prior to HX coring into the bedrock. Upon completion of the first 10-foot run, water was removed from the coreholes to determine whether the bedrock would produce sufficient water (i.e., at least 0.5 GPM). The AOC9-MW9Br and AOC9-MW10Br coreholes were purged with a Grunfos submersible pump and their recharge was monitored. The AOC9-MW11Br corehole was purged by forcing air into the open hole using the drill rig compressor and monitoring its recharge. AOC9-MW10Br was completed after the first 10 feet of rock were cored; however, because sufficient water was not obtained from the AOC9-MW9Br and the AOC9-MW11Br coreholes, an additional 10 feet was cored in each well for a total of 20 feet of rock coring. All wells were completed by fully screening the open portion of the bedrock with a 2-inch ID PVC 0.010-inch machine slotted screen followed by PVC casing. A sand filter pack was placed around each well screen from the bottom of the borehole to 2 feet above the top of the screen, followed by 1 foot of fine sand. The fine sand was then followed by a granular high solids, polymer-free, single component, bentonite grout (benseal) to the surface. The wells were screened with PVC to prevent potential corehole collapse from the fractured zones encountered (see Figure 2-1).

Overburden Borehole

In addition to the three bedrock wells, one overburden borehole was also drilled at this site to provide a soil sample for the groundwater treatability bench-scale study. The borehole was advanced through the overburden with 4 1/4-inch hollow stem augers using the Foremost CT 250 truck-mounted drill rig. The AOC9-SB8 borehole was drilled to 19.5 feet BGS in order to collect subsurface soil samples for the treatability study and it was afterwards backfilled with the soil cuttings produced from drilling the borehole.

The overburden encountered during bedrock drilling ranged in thickness from 16.5 to 33 feet. It consisted predominantly of silty fine sand followed by a till zone approximately 1 foot thick lying on top of bedrock. During drilling, one hydropunch sample was collected from the overburden zone immediately above the top of the till zone at the AOC9-MW11Br bedrock borehole and was submitted to the ASC for VOCs analysis. One soil sample was collected from borehole AOC9-MW9Br and two from AOC9-SB8 from the silty sands above the till zone using a 3-inch split-spoon sampler. These soil samples were collected for the treatability bench-scale pilot study and were submitted to the ASC for baseline chemical analysis and to In-situ Oxidative Technologies, Inc. laboratory for the bench-scale tests. Sample results related to the bench-scale treatability study will be presented in a separate report.

All newly installed monitoring wells were developed no sooner than 48 hours following well completion using a gas displacement pump (see Table 2-3). Temperature, pH, conductivity, turbidity, and DO were recorded to monitor the progress of development. Development was performed on all the wells until all monitored parameters stabilized and at least three times the volume of water lost down the borehole during drilling was removed. Development logs are included in Appendix C.

The new wells underwent low-flow sampling and were tested in the field for pH, temperature, specific conductance, DO, ORP, turbidity, alkalinity, and ferrous iron. These wells were also tested in an off-site laboratory for VOCs, MEE, DOC, and anions (chloride, nitrate/nitrite, sulfate, and sulfide). Groundwater samples were also collected from selected wells for the Fenton's reagent bench-scale groundwater treatability pilot study. Results from the treatability study will be presented in a separate report.

2.2 Aquifer Testing

Each new well was aquifer-tested using the slug test method. Slug testing is performed in order to determine the horizontal conductivity (K value) of the aquifer immediately adjacent to the sand filter-pack or open corehole of each well. For each well, a falling-head test was performed. The falling-head slug tests involved displacing the water in the wells by inserting a slug of water of known volume. Data collection was initiated at the time of slug insertion with an In-Situ, Inc. Hermit 2000 data logger and pressure transducer system. Water-level measurements were collected at predetermined time intervals on a logarithmic scale as the water level fell to its initial static level. The slug test is completed when the water level has returned to at least 95% of the static water level or when no significant change in head is recorded over a period of approximately one-half hour. Slug test data were downloaded to a computer using the data transfer software by In-Situ, Inc. The raw data were then processed and interpreted using Aqtesolve (Duffield 1998). The interpretation methods of Bouwer and Rice (1976) were used for all piezometers.

2.3 IDW Handling

Investigation-derived waste (IDW) was handled as described in the February 2002 USACE-approved Field Sampling Plan. Drill cuttings with no visible staining or organic vapors detected were spread on the ground adjacent to the borehole where they were generated. Drill cuttings from boreholes located in contaminated areas or where organic vapors were detected were containerized as per the work plan and were staged at the decon pad area on wooden pallets. All development and purge water was discharged on the ground near the wells, except for the wells located in contaminated areas. This water was containerized as per the work plan and staged at the decon pad area on wooden pallets. The decontamination pad plastic and any associated personnel protective equipment were placed in a 55-gallon drum and stored with the other IDW containers.

2.4 Surveying

A ground survey was performed by LaFave, White, and McGrivern to obtain horizontal and vertical locations of all the new borings/monitoring wells at AOC9. The fieldwork for this survey was performed between May 1 and 13, 2002, utilizing existing benchmarks located on the former Griffiss AFB. Survey results were used to plot new well locations on the report figures and calculate groundwater elevations.

Table 2-1 Boring and Monitoring Well Summary, LF6/B775/AOC 9/B817/WSA Bedrock Groundwater Study, Former Griffiss AFB, Rome New York

AOC	Boring/Well Number	Boring or Well (B/W)	Date Started	Date Completed	Drilling Company	Date Development Started	Date Development Completed	Date Sampled	Steel Surface Casing I.D.	PVC Well Casing/Screen I.D.	Depth Drilled (Feet BGS)	Number of Hydropunch Samples	Number of Split Spoon Samples	Total Casing Depth (Feet TOIC)	TOIC Casing Elevation (Feet AMSL)	Ground Elevation (Feet AMSL)	Screened or Open Hole (0.010 slot) Interval (Feet BGS)	Sand Interval (Feet BGS)	Benseal Interval (Feet BGS)	Stickup or Flush (S/F)
LF6	LF6MW-12	W	2-20-02	2-22-02	AAI	2-25-05	4-17-02	4-25-02	4	2	53	1	1	52.98	457.59	455.61	41-51	38-53	NA	S
	LF6MW-12RBr	W	3-5-02	3-29-02	AAI	4-2-02	4-17-02	4-24-02	4	2	116.6	1	1	117.87	455.94	454.47	96.5-116.4	93-116.6	90-93	S
	LF6MW-14Br	W	3-13-02	3-14-02	AAI	3-19-02	4-9-02	4-24-02	4	2	112.5	1	1	114.94	456.61	454.17	102.5-112.5	98.5-112.5	97-98.5	S
B775	775MW-20	W	4-1-02	4-1-02	AAI	4-3-02	4-16-02	4-18-02	4	2	120.5	1	1	122.71	520.35	518.14	110.5-120.5	107-120.5	106-107	S
	775MW-20D	W	3-11-02	3-18-02	AAI	4-9-02	4-9-02	4-18-02	4	2	139	1	1	139.86	519.48	518.62	134-139	131-139	130-131	S
	775MW-20RBr	W	3-1-02	3-19-02	AAI	3-19-02	4-15-02	4-25-02	4	2	170	1	1	170.92	519.5	518.58	160-170	157-170	155-157	S
	775MW-22D	W	2-18-02	2-21-02	AAI	2-21-02	4-16-02	4-23-02	4	2	126.6	1	1	128.36	501.28	499.52	116.6-126.6	113.6-126.6	112-113.6	S
	775MW-22Br	W	2-25-02	2-27-02	AAI	2-28-02	4-10-02	4-24-02	4	2	165	1	1	165.98	499.95	498.97	145-165	143-165	141.5-143	S
AOC 9	AOC9-SB8	B	3-4-02	3-4-02	AAI	NA	NA	NA	4	NA	19.5	1	1	NA	NA	514.36	NA	NA	NA	NA
	AOC9-MW9Br	W	3-21-02	3-26-02	AAI	4-3-02	4-11-02	4-23-02	4	2	43.5	1	1	44.88	482.59	481.21	23.5-43.5	20-43.5	NA	S
	AOC9-MW10Br	W	3-20-02	3-28-02	AAI	3-27-02	4-12-02	4-19-02	4	2	33	1	1	33.7	482.1	481.4	23-33	20-33	NA	S
	AOC9-MW11Br	W	3-27-02	3-28-02	AAI	4-2-02	4-12-02	4-22-02	4	2	57.8	1	1	59.44	525.85	524.21	37.8-57.8	33.5-57.8	30-33.5	S
B817/WSA	WSA-MW11	W	2-28-02	2-28-02	AAI	3-4-02	4-12-02	4-26-02	4	2	12.5	1	1	14.25	513.89	512.14	7.5-12.5	6-12.5	4-6	S
	WSA-MW12Br	W	2-20-02	2-26-02	AAI	3-20-02	4-10-02	4-19-02	4	4	42	1	1	44.12	502.13	500.01	32-42[1]	NA	NA	S
	WSA-MW13Br	W	2-26-02	2-27-02	AAI	2-27-02	4-11-02	4-22-02	4	4	43	1	1	45.09	485.17	483.08	23-43[1]	NA	NA	S
	WSA-MW14Br	W	3-6-02	3-20-02	AAI	3-25-02	4-11-02	4-25-02	4	2	35	1	1	36.47	522.01	520.54	25-35	22-35	21-22	S

[1] Open Hole.

Key:

AAI = American Auger and Ditching Co., Inc.
AMSL = Above mean sea level.
B = Boring.
BGS = Below ground surface.
F = Flush.

I.D. = Inner diameter.
NA = Not applicable.
S = Stickup.
TOIC = Top of inner casing.
W = Well.

Table 2-2 Sample Listing, Bedrock Groundwater Study, Former Griffiss Air Force Base, Rome, NY

									ANALYSES																	
Location	Date	Sample Number	Lab	Sample Depth	Matrix	WP	Stat	Type	Treatability Bench-Scale Tests Water	Treatability Bench-Scale Tests Soil	TCL VOCs -SW8260B	TCL VOCs -Low Level SW8260B	TCL VOCs -EPA 524.2	MEE	Anions [a]	Sulfide	Dissolved Organic Carbon	Total Organic Carbon	% Solids -ASTM_D2216	TCLP VOCs	TCLP SVOCs	TCL PCBs	TCLP Metals/Mercury	Ignitability	pH	Reactivity
LF6	2/20/2002	LF6MW-12-SO	ASC	40' - 42'	Subsurface Soil	Y	T	N			X							X	X							
	2/20/2002	LF6MW-12-SO-T	ENV	40' - 42'	Subsurface Soil	Y	T	N		X																
	-	LF6MW-12-T	ENV	-	Groundwater	Y	S	N	X																	
	4/25/2002	LF6MW-12	ASC	41' - 51'	Groundwater	Y	T	N					X	X	X	X	X									
	3/12/2002	LF6VMW-12R-T	ENV	31' - 51'	Groundwater	Y	T	N	X																	
	3/5/2002	LF6MW-12RBr-SO-T	ENV	45' - 47'	Subsurface Soil	Y	T	N		X																
	3/5/2002	LF6MW-12RBr-HP	ASC	68' - 69'	Groundwater	Y	T	N				X														
	4/24/2002	LF6MW-12RBr	ASC	96.5' - 116.4	Groundwater	Y	T	N					X	X	X	X	X									
	4/24/2002	LF6MW-12RBr (MS/MSD)	ASC	96.5' - 116.5	Groundwater/QC Matrix	Y	T	MS					X	X	X	X	X									
	3/13/2002	LF6MW-14Br-HP	ASC	80.5' - 84.5'	Groundwater	Y	T	N				X														
	4/24/2002	LF6MW-14Br	ASC	102.5' - 112.5'	Groundwater	Y	T	N					X	X	X	X	X									
B775	3/21/2002	B775VMW-7	ASC	68' - 78'	Groundwater	N	T	N				X														
	-	B775MW-20-SO	ASC	-	Subsurface Soil	Y	S	N			X							X	X							
	-	B775MW-20-SO-T	ENV	-	Subsurface Soil	Y	S	N		X																
	-	B775MW-20-T	ENV	-	Groundwater	Y	S	N	X																	
	4/18/2002	B775MW-20	ASC	110.5' - 120.5'	Groundwater	Y	T	N					X	X	X	X	X									
	4/18/2002	B775MW-20/D	ASC	110.5' - 120.5'	Groundwater	Y	T	FD					X	X	X	X	X									
	4/18/2002	B775MW-20/S	ERDC	110.5' - 120.5'	Groundwater	Y	T	FR					X	X	X	X	X									
	3/11/2002	B775MW-20D-SO	ASC	115' - 117'	Subsurface Soil	N	T	N			X							X	X							
	3/11/2002	B775MW-20D-SO-T	ENV	115' - 117'	Subsurface Soil	N	T	N		X																
	3/12/2002	B775MW-20D-T	ENV	117' - 120'	Groundwater	N	T	N	X																	
	3/11/2002	B775MW-20D-HP1	ASC	117' - 120'	Groundwater	N	T	N				X														
	3/21/2002	B775MW-20D-HP2	ASC	134' - 139'	Groundwater	N	T	N				X														
	4/18/2002	B775MW-20D	ASC	134' - 139'	Groundwater	N	T	N					X	X	X	X	X									
	3/1/2002	B775MW-20RBr-HP1	ASC	112' - 114'	Groundwater	Y	T	N				X														
	4/25/2002	B775MW-20RBr	ASC	160' - 170'	Groundwater	Y	T	N					X	X	X	X	X									
	2/19/2002	B775MW-22-T	ENV	94.5' - 104'	Groundwater	Y	T	N	X																	
	4/23/2002	B775MW-22D	ASC	116.6' - 126.6'	Groundwater	N	T	N					X	X	X	X	X									
	2/19/2002	B775MW-22D-HP	ASC	102.5' - 105'	Groundwater	N	T	N				X														
	2/19/2002	B775MW-22D-HP/D	ASC	102.5' - 105'	Groundwater	N	T	FD				X														
	2/19/2002	B775MW-22D-HP/S	ERDC	102.5' - 105'	Groundwater	N	T	FR				X														
	2/21/2002	B775MW-22D-HP2	ASC	116' - 126'	Groundwater	N	T	N				X														
	2/19/2002	B775MW-22Br-SO-T	ENV	101' - 102.5'	Subsurface Soil	Y	T	N		X																
	-	B775MW-22Br-HP	ASC	101' - 106'	Groundwater	Y	S	N					X	X	X	X	X									
	-	B775MW-22Br-HP/D	ASC	101' - 106'	Groundwater	Y	S	FD					X	X	X	X	X									
	-	B775MW-22Br-HP/S	ASC	101' - 106'	Groundwater	Y	S	FR					X	X	X	X	X									
	2/27/2002	B775MW-22BR-CW	ASC	-	Coring Water	N	T	N				X														
	2/28/2002	B775MW-22BR-PD	ASC	145' - 165'	Groundwater	N	T	N				X														
	4/24/2002	B775MW-22BR	ASC	145' - 165'	Groundwater	Y	T	N					X	X	X	X	X									

Key at the end of Table

Table 2-2 Sample Listing, Bedrock Groundwater Study, Former Griffiss Air Force Base, Rome, NY

									ANALYSES																	
Location	Date	Sample Number	Lab	Sample Depth	Matrix	WP	Stat	Type	Treatability Bench-Scale Tests Water	Treatability Bench-Scale Tests Soil	TCL VOCs -SW8260B	TCL VOCs -Low Level SW8260B	TCL VOCs -EPA 524.2	MEE	Anions [a]	Sulfide	Dissolved Organic Carbon	Total Organic Carbon	% Solids -ASTM_D2216	TCLP VOCs	TCLP SVOCs	TCL PCBs	TCLP Metals/Mercury	Ignitability	pH	Reactivity
AOC 9	3/5/2002	AOC9-MW5-T	ISO	4' - 14'	Groundwater	Y	T	N	X																	
	3/4/2002	AOC9-SB8-SO1	ASC	6.5' - 8.5'	Subsurface Soil	N	T	N			X															
	3/4/2002	AOC9-SB8-SO2	ASC	15.5' - 19.5'	Subsurface Soil	Y	T	N			X							X	X							
	3/4/2002	AOC9-SB8-SO2-T	ISO	15.5' - 19.5'	Subsurface Soil	Y	T	N		X																
	3/4/2002	AOC9-MW8-T	ISO	15.4' - 20.4'	Groundwater	Y	T	N	X																	
	-	AOC9-MW9Br-HP	ASC	-	Groundwater	Y	S	N				X														
	4/23/2002	AOC9-MW9Br	ASC	23.5' - 43.5'	Groundwater	Y	T	N					X	X	X	X	X									
	3/20/2002	AOC9-MW10Br-SO-T	ISO	9' - 12'	Subsurface Soil	Y	T	N		X																
	-	AOC9-MW10Br-HP	ASC	-	Groundwater	Y	S	N				X														
	4/19/2002	AOC9-MW10Br	ASC	23' - 33'	Groundwater	Y	T	N					X	X	X	X	X									
	3/27/2002	AOC9-MW11Br-HP	ASC	24' - 28.5'	Groundwater	Y	T	N				X														
	4/22/2002	AOC9-MW11Br	ASC	37.8' - 57.8'	Groundwater	Y	T	N					X	X	X	X	X									
	4/22/2002	AOC9-MW11Br (MS/MSD)	ASC	37.8' - 57.8'	Groundwater/QC Matrix	Y	T	MS					X	X	X	X	X									
B817/WSA	2/20/2002	WSA-MW10-T	ENV	5.4' - 15.4'	Groundwater	Y	T	N	X																	
	2/28/2002	WSA-MW11-SO	ASC	9' - 11'	Subsurface Soil	Y	T	N			X							X	X							
	2/28/2002	WSA-MW11-SO-T	ENV	9' - 11'	Subsurface Soil	Y	T	N		X																
	4/26/2002	WSA-MW11	ASC	7.5' - 12.5'	Groundwater	Y	T	N					X	X	X	X	X									
	3/4/2002	WSA-MW11-T	ASC	7.5' - 12.5'	Groundwater	Y	T	N	X																	
	2/20/2002	WSA-MW12Br-SO-T	ENV	9' - 11'	Subsurface Soil	Y	T	N		X																
	2/20/2002	WSA-MW12Br-HP	ASC	12' - 17'	Groundwater	Y	T	N				X														
	4/19/2002	WSA-MW12Br	ASC	31.7' - 42'	Groundwater	Y	T	N					X	X	X	X	X									
	2/26/2002	WSA-MW13Br-HP1	ASC	3.4' - 3.6'	Groundwater	Y	T	N				X														
	2/26/2002	WSA-MW13Br-HP1 (MS/MS	ASC	3.4' - 3.6'	Groundwater/QC Matrix	Y	T	MS				X														
	2/26/2002	WSA-MW13Br-HP2	ASC	7.5' - 8.5'	Groundwater	N	T	N				X														
	4/22/2002	WSA-MW13Br	ASC	23' - 43'	Groundwater	Y	T	N					X	X	X	X	X									
	3/6/2002	WSA-MW14Br-HP	ASC	18' - 19'	Groundwater	Y	T	N				X														
	4/25/2002	WSA-MW14Br	ASC	102.5' - 112.5'	Groundwater	Y	T	N					X	X	X	X	X									
	4/25/2002	WSA-MW14Br/D	ASC	102.5' - 112.5'	Groundwater	Y	T	FD					X	X	X	X	X									
	4/25/2002	WSA-MW14Br/S	ERDC	102.5' - 112.5'	Groundwater	Y	T	FR					X	X	X	X	X									

Key at the end of Table

Table 2-2 Sample Listing, Bedrock Groundwater Study, Former Griffiss Air Force Base, Rome, NY

									ANALYSES																	
Location	Date	Sample Number	Lab	Sample Depth	Matrix	WP	Stat	Type	Treatability Bench-Scale Tests Water	Treatability Bench-Scale Tests Soil	TCL VOCs -SW8260B	TCL VOCs -Low Level SW8260B	TCL VOCs -EPA 524.2	MEE	Anions ^{a}	Sulfide	Dissolved Organic Carbon	Total Organic Carbon	% Solids -ASTM_D2216	TCLP VOCs	TCLP SVOCs	TCL PCBs	TCLP Metals/Mercury	Ignitability	pH	Reactivity
All Sites - Hydropunch	3/6/2002	Hydropunch-RB1	ASC	-	Eqpt. Washwater	Y	T	RB				X														
	2/19/2002	ASC-TB1	ASC	-	DI Water	Y	T	TB				X														
	2/20/2002	ASC-TB2	ASC	-	DI Water	Y	T	TB				X														
	2/21/2002	ASC-TB3a	ASC	-	DI Water	Y	T	TB				X														
	2/26/2002	ASC-TB3b	ASC	-	DI Water	Y	T	TB				X														
	2/27/2002	ASC-TB3c	ASC	-	DI Water	Y	T	TB				X														
	2/28/2002	ASC-TB4	ASC	-	DI Water	Y	T	TB				X														
	3/1/2002	ASC-TB5	ASC	-	DI Water	Y	T	TB				X														
	3/5/2002	ASC-TB6	ASC	-	DI Water	Y	T	TB				X														
	3/6/2002	ASC-TB7	ASC	-	DI Water	Y	T	TB				X														
	3/11/2002	ASC-TB8	ASC	-	DI Water	Y	T	TB				X														
	3/21/2002	ASC-TB9	ASC	-	DI Water	Y	T	TB				X														
	3/27/2002	ASC-TB10	ASC	-	DI Water	Y	T	TB				X														
	2/19/2002	ERDC-TB01	ERDC	-	DI Water	Y	T	TB				X														
	3/4/2002	ISO-TB01	ISO	-	DI Water	N	T	TB				X														
	3/5/2002	ISO-TB02	ISO	-	DI Water	N	T	TB				X														
	3/6/2002	ISO-TB03	ISO	-	DI Water	N	T	TB				X														
	2/27/2002	Drill Water	ASC	-	Water/QC Matrix	Y	T	N				X														
	3/1/2002	Drill Water 2	ASC	-	Water/QC Matrix	N	T	N				X														
All Sites - Phase I	4/18/2002	ASC-TB11	ASC	-	DI Water	Y	T	TB					X													
	4/19/2002	ASC-TB12	ASC	-	DI Water	Y	T	TB					X													
	4/22/2002	ASC-TB13	ASC	-	DI Water	Y	T	TB					X													
	4/23/2002	ASC-TB14	ASC	-	DI Water	Y	T	TB					X													
	4/18/2002	ERDC-TB02	ERDC	-	DI Water	Y	T	TB					X													
	4/18/2002	ERDC-MEE-TB01	ERDC	-	DI Water	Y	T	TB						X												
	4/18/2002	MEE-TB01	ASC	-	DI Water	Y	T	TB						X												
	4/19/2002	MEE-TB02	ASC	-	DI Water	Y	T	TB						X												
	4/22/2002	MEE-TB03	ASC	-	DI Water	Y	T	TB						X												
	4/23/2002	MEE-TB04	ASC	-	DI Water	Y	T	TB						X												
All Sites - Phase II	4/24/2002	ASC-TB15	ASC	-	DI Water	Y	T	TB					X													
	4/25/2002	ASC-TB16	ASC	-	DI Water	Y	T	TB					X													
	-	ASC-TB17	ASC	-	DI Water	Y	S	TB					X													
	4/25/2002	ERDC-TB03	ERDC	-	DI Water	Y	T	TB					X													
	4/25/2002	ERDC-MEE-TB03	ERDC	-	DI Water	Y	T	TB						X												
	4/24/2002	MEE-TB05	ASC	-	DI Water	Y	T	TB						X												
	4/25/2002	MEE-TB06	ASC	-	DI Water	Y	T	TB						X												
	-	MEE-TB07	ASC	-	DI Water	Y	S	TB						X												

Key at the end of Table

Table 2-2 Sample Listing, Bedrock Groundwater Study, Former Griffiss Air Force Base, Rome, NY

Location	Date	Sample Number	Lab	Sample Depth	Matrix	WP	Stat	Type	ANALYSES																	
									Treatability Bench-Scale Tests Water	Treatability Bench-Scale Tests Soil	TCL VOCs -SW8260B	TCL VOCs -Low Level SW8260B	TCL VOCs -EPA 524.2	MEE	Anions [a]	Sulfide	Dissolved Organic Carbon	Total Organic Carbon	% Solids -ASTM_D2216	TCLP VOCs	TCLP SVOCs	TCL PCBs	TCLP Metals/Mercury	Ignitability	pH	Reactivity
All Sites - IDW	-	IDW-Soil	ASC	-	IDW	Y	D	N											X	X	X	X	X	X	X	X
	-	IDE-Water	ASC	-	IDW	Y	D	N												X	X	X	X	X	X	X

[c] The samples will be analyzed for the following anions: sulfate, chloride, nitrate, and nitrite

Key:

AOC 9 = Area of Concern 9.
ASC = E & E's Analytical Services Center.
B775 = Building 775.
B817 = Building 817.
Br = Bedrock well.
D = Duplicate.
DI =
Depth = Depth interval at which sample will be collected.
ENV = Envirox, LLC.
Eqpt. = Equipment.
ERDC = United States Army Engineer Research and Development Center.
FD = Field duplicate.
FR = Field split/replicate.
HP = Hydropunch sample.
IDW = Investigation derived waste.
ISO = In-Situ Oxidative Technologies, Inc.
LF6 = Landfill 6.
MEE = Methane, ethane, ethene.
MW = Monitoring well.

MS = Matrix spike.
MSD = Matrix spike duplicate
N = Original sample.
QC = Quality control sample.
PCB = Polychlorinated biphenyl.
RB = Rinsate blank.
/S = Split.
SB = Soil boring.
SO = Soil sample.
Stat = Status (O= Open, T= Taken, S= Skipped).
SVOCs = Semivolatile organic compounds.
T = Treatability Study.
TB = Trip blank.
TBD = To be determined.
TCL = Target compound list.
TCLP = Toxicity characteristic leachate procedure.
VOCs = Volatile organic compounds.
WP = Sample in work plan (Y= yes, N= no).
WSA = Weapons Storage Area.

Key at the end of Table

Table 2-3 Summary of Well Development Techniques, Bedrock Groundwater Study, Former Griffiss Air force Base, Rome, New York

Well Number	Date Development Started	Date Development Completed	Development Technique	Volume of Drill Water Lost During Drilling (Gal)	One Well Volume (Gal)	No. of Well Volumes Purged	Total Volume Purged (Gal)	Comments
LF6MW-12	4/16/2002	4/17/2002	Bladder Pump	40	19.0	9.5	180	Final Turbidity = 5.77 NTUs
LF6MW-12RBr	4/17/2002	4/17/2002	Bladder Pump	40	22.3	9.3	208	Final Turbidity = 3.64 NTUs
LF6MW-14Br	4/8/2002	4/19/2002	Bladder Pump	75	30.5	18.3	557	Final Turbidity = 2.47 NTUs
775MW-20D	4/9/2002	4/9/2002	Bladder Pump	50	20.8	10.2	211	Final Turbidity = 3.41 NTUs
775MW-20	4/15/2002	4/16/2002	Bladder Pump	15	11.9	6.8	81	Final Turbidity = 1.61 NTUs
775MW-20RBr	4/15/2002	4/15/2002	Bladder Pump	85	17.6	5.6	100	Development terminated early due to well going dry and slow recharge. Final Turbidity = >1,000 NTUs
775MW-22D	4/16/2002	4/16/2002	Bladder Pump	50	15.4	12.8	197	Final Turbidity = 8.65 NTUs
775MW-22Br	4/10/2002	4/10/2002	Bladder Pump	70	4.4	29.3	129	Development terminated early due to well going dry and slow recharge. Final Turbidity = 15.0 NTUs
AOC9-MW9RBr	4/11/2002	4/11/2002	Gas Displacement Pump	25	8.0	13.1	105	Final Turbidity = 17.2 NTUs
AOC9-MW10Br	4/12/2002	4/12/2002	Gas Displacement Pump	50	6.3	30.2	190	Final Turbidity = 34.2 NTUs
AOC9-MW11Br	4/11/2002	4/12/2002	Gas Displacement Pump	15	10.5	5.9	62	Development terminated early due to well going dry and slow recharge. Final Turbidity = >1,000 NYUs
WSAMW-11	4/12/2002	4/12/2002	Gas Displacement Pump	0	7.4	6.7	50	Final Turbidity = 30.8 NTUs
WSAMW-12Br	4/10/2002	4/10/2002	Bladder Pump	5	9.2	4.8	44	Final Turbidity = 44.1 NTUs
WSAMW-13Br	4/10/2002	4/11/2002	Bladder Pump	5	17.4	4.4	77	Final Turbidity = 3.26 NTUs
WSAMW-14B	4/11/2002	4/11/2002	Gas Displacement Pump	50	7.1	29.0	206	Final Turbidity = 1.34 NTUs

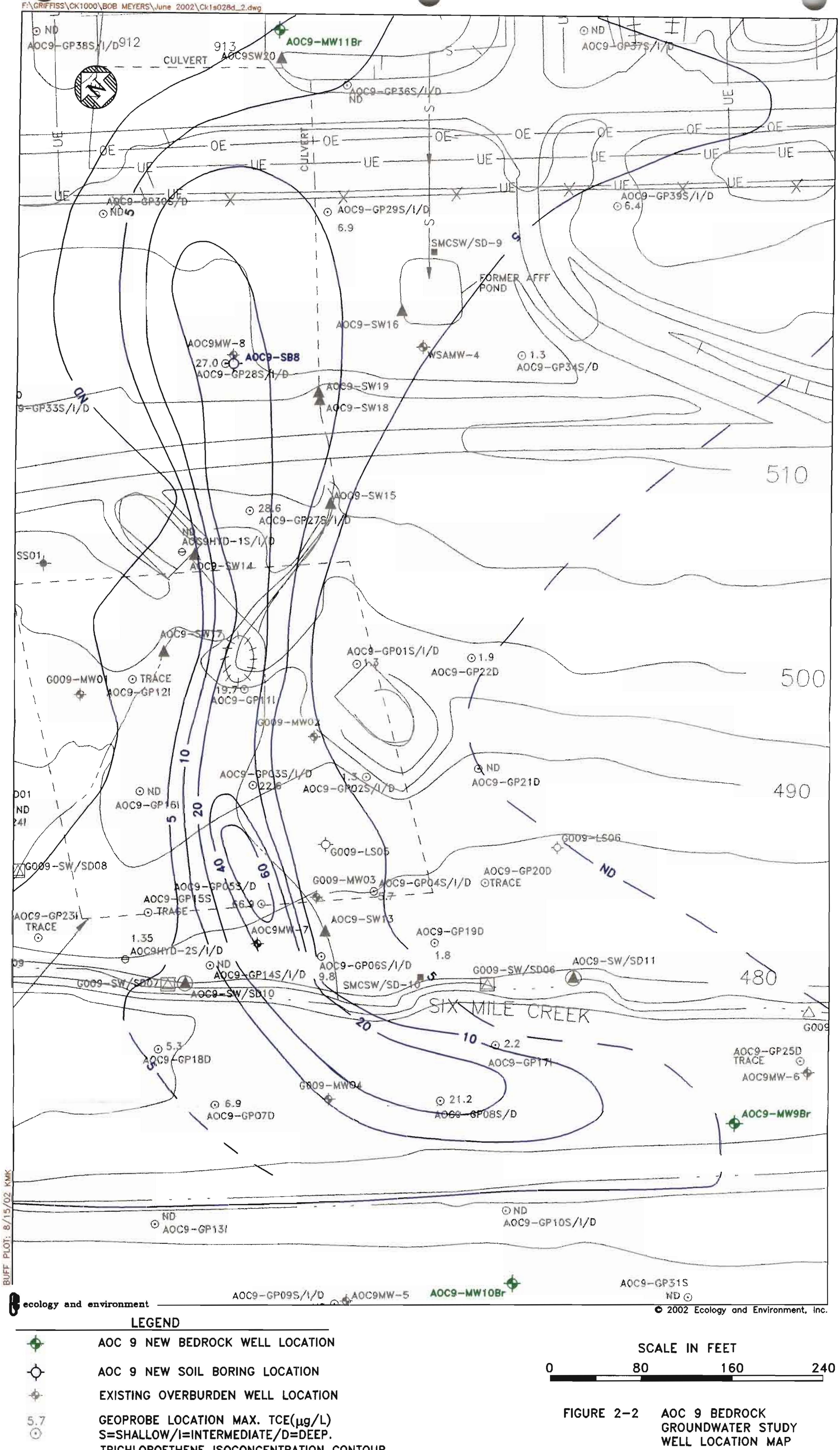
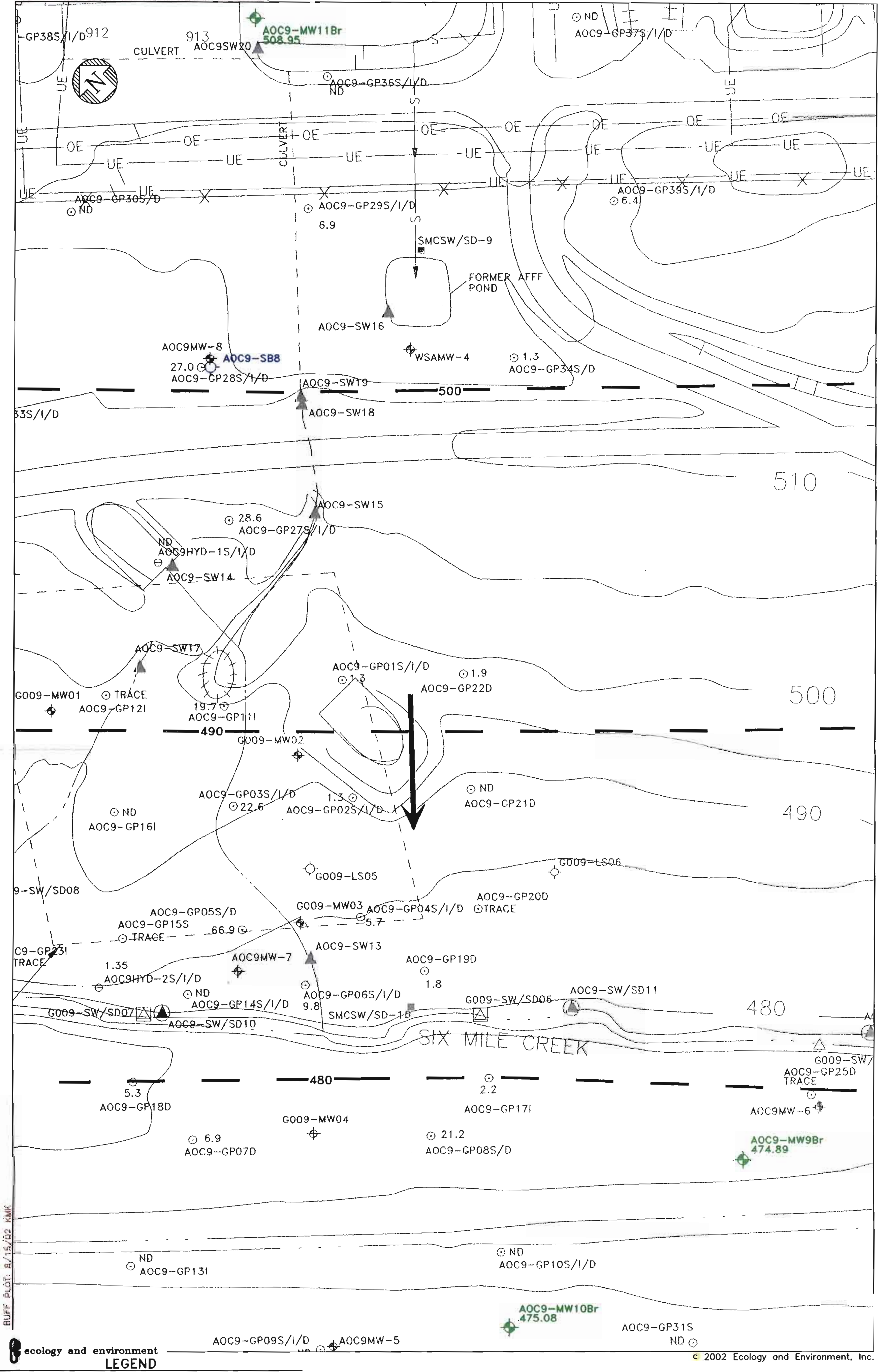


FIGURE 2-2 AOC 9 BEDROCK GROUNDWATER STUDY WELL LOCATION MAP

F:\GRIFFISS\CK1000\BOB MEYERS\JUNE 2002\Ck1s028d_3.dwg



ecology and environment

LEGEND

475.08 ⌖	AOC 9 NEW BEDROCK WELL LOCATION WITH GROUNDWATER ELEVATION MEASURED ON MAY 7, 2002
⌖	AOC 9 NEW SOIL BORING LOCATION
—	BEDROCK GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
→	APPROXIMATE DIRECTION OF GROUNDWATER FLOW
⌖	EXISTING OVERBURDEN WELL LOCATION
5.7 ⊙	GEOPROBE LOCATION MAX. TCE($\mu g/L$) S=SHALLOW/I=INTERMEDIATE/D=DEEP.

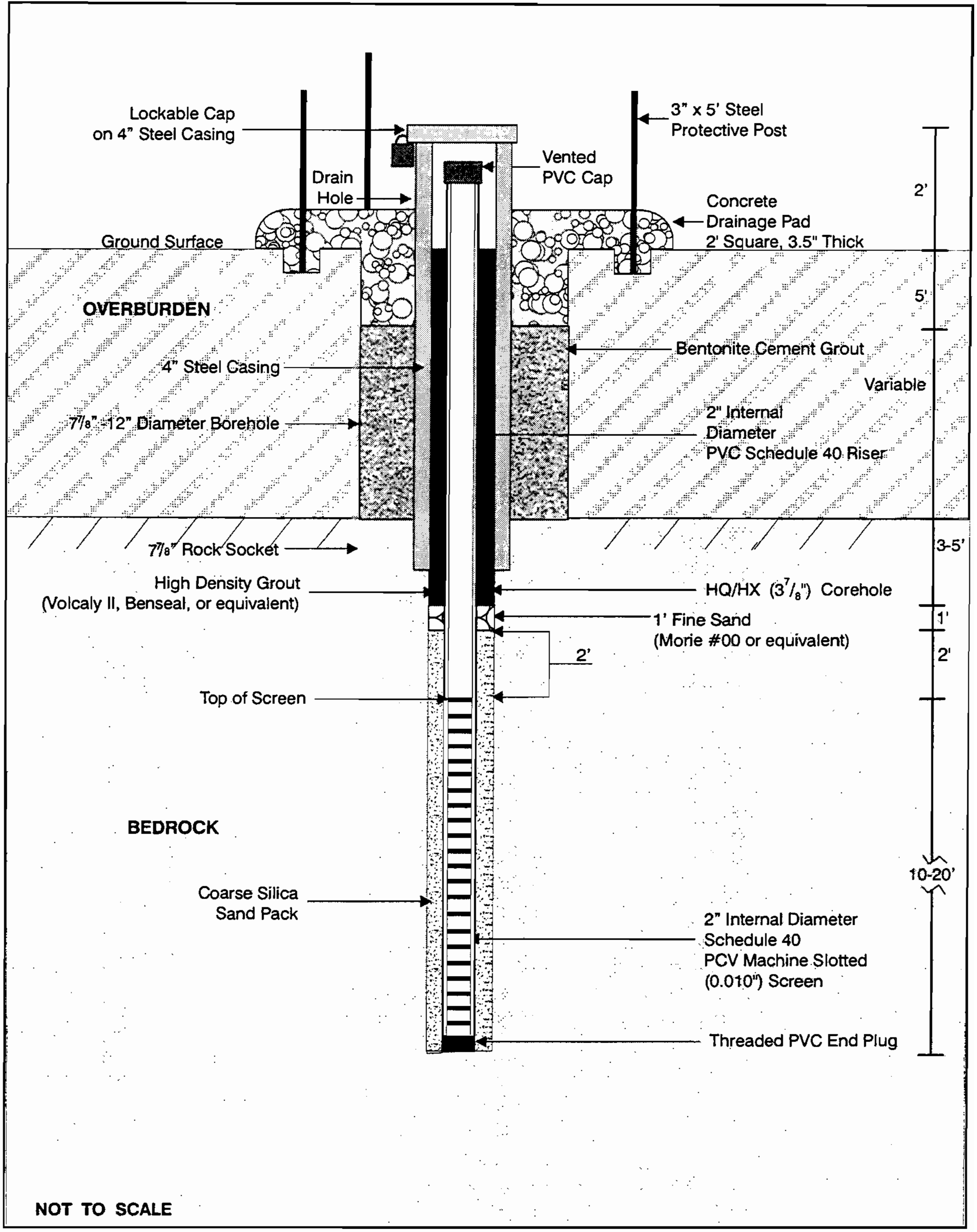
SCALE IN FEET

0 80 160 240

FIGURE 3-1 AOC 9
BEDROCK GROUNDWATER
CONTOUR MAP

BUFF PLOT 8/15/02 KMK

02: 001002_UK10_03_03-B0159
Fig2-1.CDR-10/25/02-GRA



SOURCE: Ecology and Environment, Inc., 2002

Figure 2-1 TYPICAL SCREENED BEDROCK WELL CONSTRUCTION

3

Summary of Results

All groundwater samples were compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1, Class GA Ambient Water Quality Standards and Guidance Values (NYSDEC 1998) and United States Environmental Protection Agency (EPA) National Primary and Secondary Drinking Water Standards (maximum concentration levels [MCLs]) (USEPA 1999).

Grab groundwater samples (including hydropunch samples, samples collected with bailers from boreholes and newly constructed wells prior to well development, and existing monitoring wells) were tested for low-level VOCs by Method SW8260B. Groundwater samples from newly installed and developed monitoring wells were collected using EPA low-flow sampling techniques and tested for VOCs by Method 524.2; for MEE by Method RSK 175; for anions (chloride, nitrate, nitrite, sulfate, and sulfide) by Methods 300 and 376.1; and for DOC by Method 5310B.

3.1 AOC 9

3.1.1 Groundwater Hydrology

Bedrock groundwater flow at AOC 9 is generally the same as overburden flow (i.e., predominantly to the southwest) (see Table 3-1 and Figure 3-1) and is characterized by a low horizontal gradient of 0.03 ft/ft. A slight downward vertical gradient was observed between the overburden and bedrock at AOC 9. Specifically, vertical gradient was measured at 9% at overburden/bedrock well pair AOC9-MW5/AOC9-MW10Br and 10% at AOC9-MW6/AOC9-MW9Br well pair. Hydraulic conductivities (K) calculated from slug tests performed on the newly constructed bedrock wells ranged between 10^{-4} and 10^{-6} cm/sec. These values are higher than those typically exhibited by shales (10^{-8} and 10^{-11} cm/sec) (Freeze and Cherry 1979; Domenico and Schwartz 1990); however, hydraulic conductivities of fractured sedimentary rocks, such as shale, often exceed the typical ranges listed in the literature by several orders of magnitude.

3.1.2 Geology

Geologic data collected from the new bedrock well locations were used to revise the existing AOC 9 cross section generated in the previous AOC 9 investigation;

AOC 9: Weapons Storage Area Landfill Supplemental Investigation (E & E 2001a). The revised cross sections are presented on Figures 4-4, 4-5, and 4-6 of the *2002 AOC 9: Weapons Storage Area (WSA) Landfill Supplemental Investigation Data Summary Report,* which includes this Bedrock Groundwater Study as Appendix J. The revision included the addition of the thin (less than 5 feet) weathered bedrock zone encountered during this investigation. Moreover, hollow stem auger (HSA) drilling and rock coring performed during this investigation revealed that the bedrock between locations AOC9-GP09 and AOC9-GP03 is up to 8 feet deeper than previously determined using Geoprobe technology.

3.1.3 Analytical Results

3.1.3.1 Overburden Groundwater

The very tight overburden encountered during drilling prevented collection of the hydropunch groundwater samples planned for locations AOC9-MW9Br and AOC9-MW10Br. Therefore, only one hydropunch groundwater sample (AOC9-MW11Br-HP) was collected during monitoring well drilling activities. A summary of the positive analytical results for the hydropunch groundwater sample as well as a comparison with the applicable NYSDEC standards and EPA MCLs is presented in Table 3.3.3-1.

VOCs

Low levels of four VOCs, 1,2-dichlorobenzene (1,2-DCB), chlorobenzene, toluene, and TCE were detected in the hydropunch groundwater sample collected at the base of the overburden. As expected, based on the year 2000 SI Geoprobe data, no VOCs were detected above the NYSDEC standards and EPA MCLs in the overburden groundwater at location AOC9-MW11Br.

3.1.3.2 Bedrock Groundwater

Groundwater samples were collected from each of the three newly installed wells (AOC9-MW9Br, AOC9-MW10Br, and AOC9-MW11Br). A summary of the positive analytical results for the hydropunch groundwater samples as well as a comparison with the NYSDEC standards and EPA MCLs are presented in Table 3.3.3-2.

VOCs

Four VOCs were detected in the bedrock groundwater samples: acetone, chloroform, methylene chloride, and toluene. No VOCs were detected in the sample collected from AOC9-MW10Br. The VOCs detected in the other two wells were found at concentrations well below the screening levels. Acetone, chloroform, methylene chloride, and toluene, especially at the low levels as those found in these wells, are considered field or laboratory artifacts.

Methane, Ethane, and Ethene

In general, the presence of methane suggests strong reducing conditions that are conducive to reductive dechlorination. Methane was detected in all three bedrock wells: AOC9-MW9Br (21,400 µg/L), AOC9-MW10Br (1,440 µg/L), and AOC9-MW11 (7,850 µg/L).

Anions (Chloride, Nitrate, Nitrite, Sulfate, Sulfide)

Chloride, often produced during reductive dechlorination, was present in all of the wells: AOC9-MW9Br (216 mg/L), AOC9-MW10Br (52.7 mg/L), and AOC9-MW11Br (6.64 mg/L). Nitrate, an electron acceptor under anaerobic conditions, was only present at a low level of 0.152 mg/L in well AOC9-MW11Br. In order for reductive dechlorination to occur, nitrate should be present at concentrations below 1 mg/L. Sulfate, also an electron acceptor during anaerobic conditions, was present in all three wells: AOC9-MW9Br (5.42 mg/L), AOC9-MW10Br (0.147 mg/L), and AOC9-MW11Br (3.34 mg/L). Sulfide was detected at well AOC9-MW10Br at a concentration of 10.6 mg/L. Levels of sulfide greater than 1 mg/L indicate sulfate reduction.

Dissolved Organic Carbon

DOC was detected in two wells: AOC9-MW (6.3 mg/L) and AOC9-MW10Br (5.3 mg/L). DOC is a typical electron donor and a concentration of 20 mg/L is generally considered a suitable source of electron donor material.

3.2 Summary and Conclusions

The results of this study have provided sufficient information to satisfy the project objective described in Section 1 of this memorandum. The following is a summary of the findings and general conclusions drawn from this study. Samples collected as part of the groundwater treatability studies will be discussed in a separate report.

3.2.1 Overburden Summary

AOC 9

- The till zone was determined to be 1 to 3 feet thick.

- No overburden groundwater samples were collected for this investigation.

3.2.2 Bedrock Summary

AOC 9

- Bedrock groundwater flow is the same relative direction as the overburden groundwater flow (i.e., predominantly to the southwest), with an extremely low horizontal gradient.

- Vertical gradient is slightly downward at both well pairs.

- Hydraulic conductivity is a few orders of magnitude higher than typical values for shale bedrock, probably due to the presence of weathering and fractures.
- The weathered zone is 1 to 5 feet thick.
- The bedrock was free of chlorinated organic contamination observed in the overlying overburden groundwater elsewhere at AOC 9.

3.2.3 Conclusions

Groundwater contamination at AOC 9 does not appear to have migrated downward into the underlying bedrock. Therefore, no further action regarding bedrock groundwater is recommended.

Table 3-1 AOC 9 Bedrock Study, Groundwater Elevations on May 7, 2002, Former Griffiss Air Force Base, Rome, New York

Well No.	Ground Elevation (Feet AMSL)	Top of Casing Elevation (Feet AMSL)	Groundwater Elevation (Feet AMSL)	Depth to Groundwater (Feet below TOIC)
AOC 9				
AOC9-MW5	482.72	484.11	476.85	7.26
AOC9-MW6	482.57	484.06	477.36	6.70
AOC9-MW9Br	481.21	482.59	474.89	7.70
AOC9-MW10Br	481.40	482.10	475.08	7.02
AOC9-MW11Br	524.21	525.85	508.95	16.9

Key:

AMSL = Above mean sea level.
TOIC = Top of inner casing.
NA = No criteria available.

Table 3.1.3-1

Summary of Positive Analytical Results for Hydropunch Groundwater Samples Bedrock Groundwater Study, Former Griffiss Air Force Base

Analyte	NYSDEC Standards[1]	EPA Standards [2]	Sample ID: Depth (ft): Date:	AOC9-MW11Br-HP 24 - 28.5 03/27/02
VOCs, Low Level, by Method 8260B (μg/L)				
1,2-Dichlorobenzene	3	600		0.465 J
Chlorobenzene	5	100		0.707 J
Toluene	5	1000		0.691 J
Trichloroethene	5	5		0.298 J

---

(1) New York State Department of Environmental Conservation, Technical and Operational Guidance Series #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998.

(2) EPA National Primary and Secondary Drinking Water Standards, 1999.

(g) Guidance value used.

Note: Shaded cells exceed screening criteria. Bolded values exceed the NYSDEC standards or guidance values and underlined values exceed the EPA MCLs.

Key:

AOC = Area of Concern.
ft = Feet.
EPA = Environmental Protection Agency.
J = Estimated value.
HP = Hydropunch groundwater sample.
MCL = Maximum Contaminant Level.
MW = Monitoring well.
NA = No criteria available.
NYSDEC = New York State Department of Environmental Conservation.
U = Not detected (practical quantitation limit listed).
VOC = Volatile organic compound.
μg/L = Micrograms per liter.

Table 3.1.3-2
Summary of Positive Analytical Results for Monitoring Well Groundwater Samples
Bedrock Groundwater Study, Former Griffiss Air Force Base

Analyte	NYSDEC Standards[1]	EPA Standards [2]	Sample ID: AOC9-MW9Br Date: 04/23/02	AOC9-MW10Br 04/19/02	AOC9-MW11Br 04/22/02
VOCs by Method EPA 524.2 (μg/L)					
Acetone	50 g	NA	5.86	5.00 U	5.00 U
Chloroform	7	100 (as TTHM)	0.627	0.500 U	0.500 U
Methylene chloride	5	5	0.116 J	0.500 U	0.500 U
Toluene	5	1000	0.500 U	0.500 U	0.236 J
Methane, Ethane, Ethene by Method RSK-175 (μg/L)					
Methane	NA	NA	21400	1440	7850
Anions by Ion Chromatography by Method 300/376.1 (mg/L)					
Chloride	250	250 s	216	52.7	6.64
Nitrogen, Nitrate (As N)	NA	10	0.100 U	0.100 U	0.152
Sulfate	250	250 s	5.42	0.147	3.34
Sulfide	50 g	NA	1.00 U	10.6	1.00 U
Dissolved Organic Carbon by method 5310B (mg/L)					
Dissolved Organic Carbon	NA	NA	6.3	5.3	1.0 U

(1) New York State Department of Environmental Conservation, Technical and Operational Guidance Series #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998.

(2) EPA National Primary and Secondary Drinking Water Standards, 1999.

(g) Guidance value used.

(s) Secondary drinking water standard used.

Note: Shaded cells exceed screening criteria. Bolded values exceed the NYSDEC standards or guidance values and underlined values exceed the EPA MCLs.

Key:

AOC = Area of Concern.
EPA = Environmental Protection Agency.
J = Estimated value.
mg/L = Milligrams per liter.
MCL = Maximum Contaminant Level.
MW = Monitoring well.
NA = No criteria available.
NYSDEC = New York State Department of Environmental Conservation.
TTHM = Total trihalomethanes.
U = Not detected (practical quantitation limit listed).
VOC = Volatile organic compound.
μg/L = Micrograms per liter.

Table 3-2 Summary of Slug Test Results, AOC 9 Bedrock Study, Former Griffiss AFB, Rome, New York

AOC	Well Number	Hydraulic Conductivity (K) (cm/sec)	Rising/Falling Head Test
Bedrock Wells			
AOC 9	AOC9-MW9Br	1.55 E^{-5}	Falling
	AOC9-MW10Br	1.36 E^{-4}	Falling
	AOC9-MW11Br	1.18 E^{-6}	Falling

Key:

AOC = Area of concern.
cm/sec = Centimeters per second.

4

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K 2002 Test Pit Photo Log

Test Pit Excavation- TP04 Water

2002 Supplemental Investigation
Former Griffiss Air Force Base, Area of Concern 9

Test Pit Excavation- TP01

2002 Supplemental Investigation
Former Griffiss Air Force Base, Area of Concern 9

Test Pit Excavation- TP03

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Test Pit Excavation- TP04 Blacksoil

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Test Pit Excavation- TP06

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Former Griffiss Air Force Base, Area of Concern 9

L Human Health Assessment Information

L-1
RAGS Part D Standard Tables

TABLE 0
SITE RISK ASSESSMENT IDENTIFICATION INFORMATION
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Site Name/OU:	GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)
Region:	2
EPA ID Number:	N/A
State:	NY
Status:	inactive
Federal Facility (Y/N):	Y
EPA Project Manager:	N/A
EPA Risk Assessor:	N/A
Prepared by (Organization):	ecology & environment, inc.
Prepared for (Organization):	USACE Kansas City District
Document Title:	Baseline Human Health Risk Assessment for...
Document Date:	Nov-02
Probabilistic Risk Assessment (Y/N):	N
Comments:	

TABLE 1

SELECTION OF EXPOSURE PATHWAYS

GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	On-Site	Recreational Visitor	Child	Ingestion	Quantitative	Visitors may contact contaminated surface soil.
						Dermal Absorption	Quantitative	Visitors may contact contaminated surface soil.
					Adult	Ingestion	Quantitative	Visitors may contact contaminated surface soil.
						Dermal Absorption	Quantitative	Visitors may contact contaminated surface soil.
					Adolescent	Ingestion	Quantitative	Visitors may contact contaminated surface soil.
						Dermal Absorption	Quantitative	Visitors may contact contaminated surface soil.
	Sediment	Sediment	Six Mile Creek, AFFF Pond	Recreational Visitor	Child	Ingestion	Quantitative	Visitors may contact contaminated sediment.
						Dermal Absorption	Quantitative	Visitors may contact contaminated sediment.
					Adult	Ingestion	Quantitative	Visitors may contact contaminated sediment.
						Dermal Absorption	Quantitative	Visitors may contact contaminated sediment.
					Adolescent	Ingestion	Quantitative	Visitors may contact contaminated sediment.
						Dermal Absorption	Quantitative	Visitors may contact contaminated sediment.
	Surface water	Surface water	Six Mile Creek, AFFF Pond, Drainage Ditches	Recreational Visitor	Child	Ingestion	Quantitative	Visitors may contact contaminated surface water.
						Dermal Absorption	Quantitative	Visitors may contact contaminated surface water.
					Adult	Ingestion	Quantitative	Visitors may contact contaminated surface water.
						Dermal Absorption	Quantitative	Visitors may contact contaminated surface water.
					Adolescent	Ingestion	Quantitative	Visitors may contact contaminated surface water.
						Dermal Absorption	Quantitative	Visitors may contact contaminated surface water.
		Fish	Six Mile Creek	Recreational Visitor	Child	Ingestion	Review	Risks estimated from fish data in the 1996 RI for Six Mile Creek.
					Adult	Ingestion	Review	Risks estimated from fish data in the 1996 RI for Six Mile Creek.
					Adolescent	Ingestion	Review	Risks estimated from fish data in the 1996 RI for Six Mile Creek.
Future	Surface Soil	Surface Soil	On-Site	Resident	Child	Ingestion	Quantitative	Future site residents may contact contaminated surface soil.
						Dermal Absorption	Quantitative	Future site residents may contact contaminated surface soil.
					Adult	Ingestion	Quantitative	Future site residents may contact contaminated surface soil.
						Dermal Absorption	Quantitative	Future site residents may contact contaminated surface soil.
				Commercial/Industrial Worker	Adult	Ingestion	Quantitative	Future site workers may contact contaminated surface soil.
						Dermal Absorption	Quantitative	Future site workers may contact contaminated surface soil.
		Air Particulates	On-Site	Resident	Child	Dust Inhalation	Quantitative	Wind erosion may raise dust from bare soil surface.
					Adult	Dust Inhalation	Quantitative	Wind erosion may raise dust from bare soil surface.
				Commercial/Industrial Worker	Adult	Dust Inhalation	Quantitative	Wind erosion may raise dust from bare soil surface.
	Sediment	Sediment	Six Mile Creek	Resident	Child	Ingestion	Quantitative	Residents may contact sediment, same as recreational visitors.
						Dermal Absorption	Quantitative	Residents may contact sediment, same as recreational visitors.
					Adult	Ingestion	Quantitative	Residents may contact sediment, same as recreational visitors.
						Dermal Absorption	Quantitative	Residents may contact sediment, same as recreational visitors.
	Surface water	Surface water	Six Mile Creek	Resident	Child	Ingestion	Quantitative	Residents may contact surface water, same as recreational visitors.
						Dermal Absorption	Quantitative	Residents may contact surface water, same as recreational visitors.
					Adult	Ingestion	Quantitative	Residents may contact surface water, same as recreational visitors.
						Dermal Absorption	Quantitative	Residents may contact surface water, same as recreational visitors.
	Subsurface Soil	Subsurface Soil	On-Site	Construction Worker	Adult	Ingestion	Quantitative	Future site workers may contact contaminated subsurface soils.
						Dermal Absorption	Quantitative	Future site workers may contact contaminated subsurface soils.
		Air Particulates	On-Site	Construction Worker		Dust Inhalation	Quantitative	Construction activities may lead to elevated airborne dust levels.
	Groundwater	Groundwater	On-Site Well – Tap Water	Resident	Child	Ingestion	Quantitative	Tapwater from on-site well could be contaminated
						Dermal Absorption	Quantitative	Tapwater from on-site well could be contaminated
					Adult	Ingestion	Quantitative	Tapwater from on-site well could be contaminated
						Dermal Absorption	Quantitative	Tapwater from on-site well could be contaminated
				Commercial/Industrial Worker	Adult	Ingestion	Quantitative	Tapwater from on-site well could be contaminated
						Dermal Absorption	Quantitative	Tapwater from on-site well could be contaminated
			On-Site Excavation	Construction Worker	Adult	Ingestion	None	Intermittent exposure or no exposure with use of protective clothing.
						Dermal Absorption	None	Intermittent exposure or no exposure with use of protective clothing.
		Air Vapors	Shower/Bath	Resident	Child	Inhalation	Quantitative	Volatile chemicals may be released to air from shower/bath water.
					Adult	Inhalation	Quantitative	Volatile chemicals may be released to air from shower/bath water.
			Shower	Commercial/Industrial Worker	Adult	Inhalation	Quantitative	Volatile chemicals may be released to air from shower/bath water.
		Air Vapors	On-site Indoors	Resident	Child	Inhalation	Quantitative	Vapors may infiltrate up from groundwater to indoor air.
					Adult	Inhalation	Quantitative	Vapors may infiltrate up from groundwater to indoor air.
			On-site Indoors	Commercial/Industrial Worker	Adult	Inhalation	Quantitative	Vapors may infiltrate up from groundwater to indoor air.
			On-Site Excavation	Construction Worker	Adult	Inhalation	Quantitative	Volatile chemicals may be released from groundwater to ambient air.

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
On Site AOC 9	7429-90-5	Aluminum	3360	19,000	mg/kg	G009-MW04-Z2-2	29 / 29		19,000	N/A	7,600 N	N/A	N/A	Y	ASL
	7440-36-0	Antimony	0.39	4.94 J	mg/kg	AOC9-SS01 (11.5-16)	16 / 42		4.94	N/A	3.1 N	N/A	N/A	Y	ASL
	7440-38-2	Arsenic	0.905 J	6.8	mg/kg	G009-MW04-Z2-2	41 / 42		6.8	N/A	0.39 C	N/A	N/A	Y	ASL
	7440-39-3	Barium	10	72	mg/kg	G009-MW04-Z1-2	42 / 42		72	N/A	540 N	N/A	N/A	N	BSL
	7440-41-7	Beryllium	0,158 J	0.94	mg/kg	G009-MW04-Z2-2	10 / 42	0.26 - 2.73	0.94	N/A	15 N	N/A	N/A	N	BSL
	7440-43-9	Cadmium	0.959	3.2	mg/kg	SBMW4 (2-4)	19 / 42	0.26 - 10.9	3.2	N/A	3.7 N	N/A	N/A	N	BSL
	7440-70-2	Calcium	879	30,000	mg/kg	G009-MW01-Z3	29 / 29		30,000	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	3.05	25	mg/kg	G009-MW04-Z2-2	42 / 42		25	N/A	210 C	N/A	N/A	N	BSL
	7440-48-4	Cobalt	2.52	14	mg/kg	G009-LS06-Z1	29 / 29		14	N/A	90 C	N/A	N/A	N	BSL
	7440-50-8	Copper	8.57	46	mg/kg	G009-LS06-Z1	42 / 42		46	N/A	310 N	N/A	N/A	N	BSL
	7439-89-6	Iron	8,220	29,000	mg/kg	G009-MW04-Z2-2	42 / 42		29,000	N/A	2,300 N	N/A	N/A	Y	ASL
	7439-92-1	Lead	1.45	39	mg/kg	G009-MW02-Z2	42 / 42		39	N/A	400 S (5)	N/A	N/A	N	BSL
	7439-95-4	Magnesium	300	6,700	mg/kg	G009-MW04-Z2-2	29 / 29		6,700	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	80 J	1410 J	mg/kg	AOC9-SS01 (4-6)	42 / 42		1,410	N/A	180 N	N/A	N/A	Y	ASL
	7487-94-7	Mercury	0.0154 J	0.33	mg/kg	SBMW4 (0.5-1)	12 / 42	0.021 - 0.17	0.33	N/A	2.3 N	N/A	N/A	N	BSL
	7440-02-0	Nickel	4.46	28	mg/kg	G009-LS06-Z1	42 / 42		28	N/A	160 N	N/A ·	N/A	N	BSL
	7440-09-7	Potassium	271	11,000	mg/kg	G009-MW02-Z1	29 / 29		11,000	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.651 J	6.5	mg/kg	G009-MW04-Z2-2	16 / 42	0.27 - 27.3	6.5	N/A	39 N	N/A	N/A	N	BSL
	7440-22-4	Silver	0.284 J	1.7	mg/kg	G009-LS06-Z1	4 / 42	0.57 - 10.9	1.7	N/A	39 N	N/A	N/A	N	BSL
	7440-23-5	Sodium	27 J	140	mg/kg	G009-MW04-Z2-2	20 / 29		140	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	Thallium	0.28	5.66 J	mg/kg	AOC9-SS01 (11_5-16)	7 / 42	0.11 - 10.9	5.66	N/A	0.52 N	N/A	N/A	Y	ASL
	7440-62-2	Vanadium	4.5	34	mg/kg	G009-MW04-Z2-2	29 / 29		34	N/A	55 N	N/A	N/A	N	BSL
	7440-66-6	Zinc	12.2	93	mg/kg	G009-MW04-Z1-2	42 / 42		93	N/A	2,300 N	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	0.53 J	5.6 J	ug/kg	G009-MW01-Z1	5 / 25	2.19 - 30.8	5.6	N/A	2,400 C	N/A	N/A	N	BSL
	72-55-9	4,4'-DDE	0.9 J	13	ug/kg	G009-MW02-Z2	8 / 25	2.19 - 30.8	13	N/A	1,700 C	N/A	N/A	N	BSL
	50-29-3	4,4'-DDT	1.47 J	15 J	ug/kg	G009-MW02-Z2	3 / 25	2.19 - 77	15	N/A	1,700 C	N/A	N/A	N	BSL
	309-00-2	Aldrin	1.26	1.26	ug/kg	AOC9-TP03 (0-6)	1 / 25	1.1 - 15	1.26	N/A	29 C	N/A	N/A	N	BSL
	319-84-6	alpha-BHC	1.05 J	1.05 J	ug/kg	AOC9-TP03 (0-6)	1 / 25	1.1 - 15	1.05	N/A	90 C	N/A	N/A	N	BSL
	60-57-1	Dieldrin	46	59.4	ug/kg	AOC9-TP03 (0-6)	2 / 25	2.19 - 31	59.4	N/A	30 C	N/A	N/A	Y	ASL
		Endrin ketone	3.2	3.2	ug/kg	AOC9-TP03 (0-6)	1 / 25	2.19 - 31	3.2	N/A	1,800 N (6)	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	900	900	ug/kg	G009-MW03-Z3	1 / 29	346 - 1,900	900	N/A	110,000 N	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	250 J	250 J	ug/kg	G009-MW03-Z3	1 / 29	346 - 1,900	250	N/A	3,400 C	N/A	N/A	N	BSL
	91-56-6	2-Methylnaphthalene	219 J	219 J	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	219	N/A	5,600 N (6)	N/A	N/A	N	BSL
	83-32-9	Acenaphthene	579	579	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	579	N/A	370,000 N	N/A	N/A	N	BSL
	120-12-7	Anthracene	39 J	1,440	ug/kg	AOC9-TP03 (0-6)	2 / 35	346 - 1,900	1,440	N/A	2,200,000 N	N/A	N/A	N	BSL
	56-55-3	Benzo(a)anthracene	43 J	2.170 J	ug/kg	AOC9-TP03 (0-6)	6 / 35	346 - 1,900	2.170	N/A	620 C	N/A	N/A	Y	ASL
	50-32-8	Benzo(a)pyrene	75 J	1,400	ug/kg	AOC9-TP03 (0-6)	5 / 35	346 - 1,900	1,400	N/A	62 C	N/A	N/A	Y	ASL
	205-99-2	Benzo(b)fluoranthene	76 J	1510 J	ug/kg	AOC9-TP03 (0-6)	5 / 35	346 - 1,900	1,510	N/A	620 C	N/A	N/A	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	520	520	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	520	N/A	230,000 N (6)	N/A	N/A	N	BSL
	207-08-9	Benzo(k)fluoranthene	71 J	1,600	ug/kg	AOC9-TP03 (0-6)	5 / 35	346 - 1,900	1,600	N/A	6,200 C	N/A	N/A	N	BSL
	65-85-0	Benzoic acid	38 J	38 J	ug/kg	WSASB3 (0-0.5)	1 / 35	871 - 9,300	38	N/A	24,000,000 N	N/A	N/A	N	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	48 J	260 J	ug/kg	G009-MW04-Z3-2	14 / 35	346 - 1,900	950	N/A	35,000 C	N/A	N/A	N	BSL
	85-68-7	Butylbenzylphthalate	44 J	81 J	ug/kg	G009-MW03-Z3	2 / 35	346 - 1,900	81	N/A	1,200,000 N	N/A	N/A	N	BSL
	86-74-8	Carbazole	173	536	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	536	N/A	24,000 C	N/A	N/A	N	BSL
	218-01-9	Chrysene	87 J	1900 J	ug/kg	AOC9-TP03 (0-6)	5 / 35	346 - 1,900	1,800	N/A	62,000 C	N/A	N/A	N	BSL
	53-70-3	Dibenz(a,h)anthracene	225 J	225 J	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	225	N/A	62 C	N/A	N/A	Y	ASL
	132-64-9	Dibenzofuran	520	520	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	520	N/A	29,000 N	N/A	N/A	N	BSL
	84-74-2	Di-n-butyl phthalate	42 J	42 J	ug/kg	G009-LS06-Z1	1 / 35	346 - 1,900	42	N/A	610,000 N	N/A	N/A	N	BSL
	206-44-0	Fluoranthene	150 J	6,110	ug/kg	AOC9-TP03 (0-6)	5 / 35	346 - 1,900	6,110	N/A	230,000 N	N/A	N/A	N	BSL
	86-73-7	Fluorene	741	741	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	741	N/A	270,000 N	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	283 J	283 J	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	283	N/A	620 C	N/A	N/A	N	BSL
	91-20-3	Naphthalene	601	601	ug/kg	AOC9-TP03 (0-6)	1 / 35	346 - 1,900	601	N/A	5,600 N	N/A	N/A	N	BSL
	85-01-8	Phenanthrene	116 J	7,110	ug/kg	AOC9-TP03 (0-6)	4 / 35	346 - 1,900	7,110	N/A	230,000 N (6)	N/A	N/A	N	BSL
	129-00-0	Pyrene	210 J	5,390	ug/kg	AOC9-TP03 (0-6)	5 / 35	346 - 1,900	5,390	N/A	230,000 N	N/A	N/A	N	BSL
	71-55-6	1,1,1-Trichloroethane	6.6 J	6.6 J	ug/kg	WSASB2 (0.5-1)	1 / 38	5.6 - 28	6.6	N/A	200,000 N	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	11.1	11.1	ug/kg	AOC9-TP03 (0-6)	1 / 38	5.6 - 28	11.1	N/A	110,000 N	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	4.74 J	4.74 J	ug/kg	AOC9-TP03 (0-6)	1 / 38	5.6 - 28	4.74	N/A	3,400 C	N/A	N/A	N	BSL
	78-93-3	2-Butanone	3.07 J	30	ug/kg	AOC9-TP03 (0-6)	6 / 38	5.6 - 56	30	N/A	730,000 N	N/A	N/A	N	BSL
	67-64-1	Acetone	6.19 J	130	ug/kg	AOC9-TP03 (0-6)	16 / 38	10.2 - 56	130	N/A	180,000 N	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	2.37 J	110	ug/kg	G009-MW03-Z3	3 / 38	5.6 - 28	110	N/A	15,000 N	N/A	N/A	N	BSL
	75-45-6	Chloromethane	28 J	28 J	ug/kg	WSASB2 (1-2)	1 / 38	10.2 - 56	28	N/A	1,200 C	N/A	N/A	N	BSL
	75-09-2	Methylene chloride	7.4 J	26 J	ug/kg	WSASB3 (1-2)	5 / 38	5.6 - 28	26	N/A	9.100 C	N/A	N/A	N	BSL
	127-18-4	Tetrachloroethene	1.51 J	1.51 J	ug/kg	AOC9-SS02 (6-6)	1 / 38	5.6 - 28	1.51	N/A	1,500 C	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	1.66 J	2.6 J	ug/kg	G009-LS05-Z1	5 / 38	5.6 - 28	2.6	N/A	53 C	N/A	N/A	N	BSL

(1) Maximum concentration used for screening.

(2) Background soil samples not collected.

(3) "Screening Toxicity Value" adapted from EPA Region 9 risk-based residential soil PRGs (EPA 2002a), unless indicated otherwise.
Screening concentrations calculated for target cancer risk of 1E-06 or target Hazard Index of 0.1.

(4) Rationale Codes:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

(5) Toxicity screening level for lead is the EPA-recommended screening level for lead in residential soil (EPA 1994c).

(6) PRG based on surrogate, as follows: Endrin for Endrin ketone; Naphthalene for 2-Methylnaphthalene; Pyrene for other noncarcinogenic PAHs.

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic

TABLE 2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Six Mile Creek near AOC 9 & AFFF pond	7429-90-5	Aluminum	2300	9,580	mg/kg	AFFF-SD01	22 / 22		9,580	N/A	7,600 N	N/A	N/A	Y	ASL
	7440-36-0	Antimony	0.58	2.51 J	mg/kg	AFFF-SD02	8 / 22	0.38 - 7	2.51	N/A	3.1 N	N/A	N/A	N	BSL
	7440-38-2	Arsenic	0.49	17	mg/kg	G009-SD03	21 / 22		17	N/A	0.39 C	N/A	N/A	Y	ASL
	7440-39-3	Barium	8.8	270	mg/kg	G009-SD01	22 / 22		270	N/A	540 N	N/A	N/A	N	BSL
	7440-41-7	Beryllium	0.42 J	0.72 J	mg/kg	AFFF-SD01	5 / 22	0.36 - 2.15	0.72	N/A	15 N	N/A	N/A	N	BSL
	7440-43-9	Cadmium	0.8	2.08	mg/kg	AOC9-SD11	6 / 22	0.63 - 8.59	2.08	N/A	3.7 N	N/A	N/A	N	BSL
	7440-70-2	Calcium	850	220,000	mg/kg	G009-SD01	22 / 22		220,000	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	3.2	13	mg/kg	AOC9-SD09	21 / 22		13	N/A	210 C	N/A	N/A	N	BSL
	7440-48-4	Cobalt	2.7	16	mg/kg	G009-SD03	22 / 22		16	N/A	90 C	N/A	N/A	N	BSL
	7440-50-8	Copper	2.3	27	mg/kg	G009-SD03	20 / 22		27	N/A	310 N	N/A	N/A	N	BSL
	7439-89-6	Iron	4,500	43,000	mg/kg	G009-SD03	22 / 22		43,000	N/A	2,300 N	N/A	N/A	Y	ASL
	7439-92-1	Lead	1.5	35.7	mg/kg	SMCSD - 8a (0-0.5)	22 / 22		36	N/A	400 S (5)	N/A	N/A	N	BSL
	7439-95-4	Magnesium	1,100	3,350	mg/kg	AFFF-SD01	22 / 22		3,350	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	63 J	24,000 J	mg/kg	G009-SD01	22 / 22		24,000	N/A	180 N	N/A	N/A	Y	ASL
	7487-94-7	Mercury	0.0638	0.274	mg/kg	AOC9-SD09	4 / 22	0.0624 - 0.34	0.274	N/A	2.3 N	N/A	N/A	N	BSL
	7439-98-7	Molybdenum	11.6	11.6	mg/kg	SMCSD - 8a (0-0.5)	1 / 8	6 - 7	11.6	N/A	39 N	N/A	N/A	N	BSL
	7440-02-0	Nickel	3.4 J	26	mg/kg	G009-SD03	22 / 22		26	N/A	160 N	N/A	N/A	N	BSL
	7440-09-7	Potassium	290	1,200	mg/kg	G009-SD02	22 / 22		1,200	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.5	5.36	mg/kg	AOC9-SD11	10 / 22	0.37 - 8.08	5.36	N/A	39 N	N/A	N/A	N	BSL
	7440-22-4	Silver	4.9	4.9	mg/kg	G009-SD01	1 / 22	1.2 - 8.59	4.9	N/A	39 N	N/A	N/A	N	BSL
	7440-23-5	Sodium	36.2 J	342	mg/kg	SMCSD - 8a (0-0.5)	12 / 22		342	N/A	N/A	N/A	N/A	N	NUT
	7440-24-6	Strontium	3.4	11.2	mg/kg	SMCSD - 8a (0-0.5)	8 / 8		11.2	N/A	4,700 N	N/A	N/A	N	BSL
	7440-28-0	Thallium	1.15 J	1.15 J	mg/kg	AOC9-SD11	1 / 22	0.16 - 17.2	1.15	N/A	0.52 N	N/A	N/A	Y	ASL
	7440-62-2	Vanadium	4.3	17.7	mg/kg	AOC9-SD09	20 / 22		17.7	N/A	55 N	N/A	N/A	N	BSL
	7440-66-6	Zinc	14	76	mg/kg	G009-SD03	20 / 22		76	N/A	2,300 N	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	1.14 J	1.14 J	ug/kg	AFFF-SD01	1 / 18	2.5 - 52	1.14	N/A	2,400 C	N/A	N/A	N	BSL
	50-29-3	4,4'-DDT	0.743 J	0.743 J	ug/kg	AFFF-SD01	2 / 18	2.96 - 130	0.743	N/A	1,700 C	N/A	N/A	N	BSL
	309-00-2	Aldrin	47	47	ug/kg	G009-SD08	3 / 18	1.3 - 26	47	N/A	29 C	N/A	N/A	Y	ASL
	76-44-8	Heptachlor	0.96 J	0.96 J	ug/kg	AFFF-SD01	4 / 18	1.3 - 26	0.96	N/A	110 C	N/A	N/A	N	BSL
	1024-57-3	Heptachlor epoxide	1.72 J	59	ug/kg	G009-SD08	2 / 18	1.3 - 26	59.0	N/A	53 C	N/A	N/A	Y	ASL
	75-99-0	Dalapon	7.2 J	20 J	ug/kg	SMCSD - 9a (0-0.5)	6 / 8	73 - 138	20.0	N/A	180,000 N	N/A	N/A	N	BSL
	1918-00-9	Dicamba	3.2 J	3.2 J	ug/kg	SMCSD - 8b (0.5-1)	1 / 8	4.4 - 8.3	3.2	N/A	180,000 N	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	59 J	72 J	ug/kg	G009-SD07	2 / 22	384 - 1,300	72	N/A	110,000 N	N/A	N/A	N	BSL
	91-58-6	2-Methylnaphthalene	180 J	180 J	ug/kg	G009-SD08	1 / 22	384 - 1,300	180	N/A	5,600 N (6)	N/A	N/A	N	BSL
	208-96-8	Acenaphthylene	90 J	180 J	ug/kg	G009-SD08	2 / 22	384 - 1,300	180	N/A	230,000 N (6)	N/A	N/A	N	BSL
	120-12-7	Anthracene	100 J	380 J	ug/kg	G009-SD08	2 / 22	384 - 1,300	380	N/A	2,200,000 N	N/A	N/A	N	BSL
	56-55-3	Benzo(a)anthracene	490	1,400	ug/kg	G009-SD08	2 / 22	384 - 1,300	1,400	N/A	620 C	N/A	N/A	Y	ASL
	50-32-8	Benzo(a)pyrene	74 J	1,300	ug/kg	G009-SD08	3 / 22	384 - 1,300	1,300	N/A	62 C	N/A	N/A	Y	ASL
	205-99-2	Benzo(b)fluoranthene	49	1,400	ug/kg	G009-SD08	3 / 22	384 - 1,300	1,400	N/A	620 C	N/A	N/A	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	170 J	750 J	ug/kg	G009-SD08	2 / 22	384 - 1,300	750	N/A	230,000 N (6)	N/A	N/A	N	BSL
	207-08-9	Benzo(k)fluoranthene	210 J	210 J	ug/kg	SMCSD - 11b	1 / 22	384 - 1,300	210	N/A	6,200 C	N/A	N/A	N	BSL
	65-85-0	Benzoic acid	9 J	130 J	ug/kg	SMCSD - 8a (0-0.5)	2 / 22		130	N/A	24,000,000 N	N/A	N/A	N	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	56 J	110 J	ug/kg	SMCSD - 11a (0-0.5)	8 / 22	384 - 1,300	110	N/A	35,000 C	N/A	N/A	N	BSL
	85-68-7	Butylbenzylphthalate	63 J	63 J	ug/kg	G009-SD04	1 / 22	384 - 1,300	63	N/A	1,200,000 N	N/A	N/A	N	BSL
	218-01-9	Chrysene	540	1,700	ug/kg	G009-SD08	2 / 22	384 - 1,300	1,700	N/A	62,000 C	N/A	N/A	N	BSL
	53-70-3	Dibenz(a,h)anthracene	66 J	440 J	ug/kg	G009-SD08	2 / 22	384 - 1,300	440	N/A	62 C	N/A	N/A	Y	ASL
	206-44-0	Fluoranthene	90 J	1,500	ug/kg	G009-SD08	5 / 22	384 - 1,300	1,500	N/A	230,000 N	N/A	N/A	N	BSL
	86-73-7	Fluorene	410 J	410 J	ug/kg	G009-SD08	1 / 22	384 - 1,300	410	N/A	270,000 N	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	140 J	890 J	ug/kg	G009-SD08	2 / 22	384 - 1,300	690	N/A	620 C	N/A	N/A	Y	ASL
	85-01-8	Phenanthrene	79 J	3,100	ug/kg	G009-SD08	5 / 22	384 - 1,300	3,100	N/A	230,000 N (6)	N/A	N/A	N	BSL
	129-00-0	Pyrene	44.7 J	5,700	ug/kg	G009-SD08	6 / 22	384 - 1,300	5,700	N/A	230,000 N	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	129	129	ug/kg	AOC9-SD10	1 / 22	6 - 17	129	N/A	110,000 N	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	32.2	32.2	ug/kg	AOC9-SD10	1 / 22	8 - 17	32.2	N/A	3,400 C	N/A	N/A	N	BSL
	78-93-3	2-Butanone	4.17 J	26	ug/kg	G009-SD05	5 / 22	12 - 34	28	N/A	730,000 N	N/A	N/A	N	BSL
	67-64-1	Acetone	6.2 J	58.5	ug/kg	AOC9-SD10	6 / 22	12 - 98	59	N/A	160,000 N	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	1 J	284	ug/kg	AOC9-SD10	4 / 22	6 - 17	284	N/A	15,000 N	N/A	N/A	N	BSL
	75-09-2	Methylene chloride	1.5 J	7.4 J	ug/kg	G009-SD02	5 / 22	8 - 17	7	N/A	9,100 C	N/A	N/A	N	BSL
	108-88-3	Toluene	1.7 J	6	ug/kg	SMCSD - 9a (0-0.5)	5 / 22	6 - 17	8	N/A	66,000 N	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	2 J	5 J	ug/kg	SMCSD - 8a (0-0.5)	3 / 22	6 - 17	5	N/A	53 C	N/A	N/A	N	BSL

(1) Maximum concentration used for screening.

(2) Background soil samples not collected.

(3) "Screening Toxicity Value" adapted from EPA Region 9 risk-based residential soil PRGs (EPA 2002a), unless indicated otherwise.
Screening concentrations calculated for target cancer risk of 1E-06 or target Hazard Index of 0.1.

(4) Rationale Codes:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

(5) Toxicity screening level for lead is the EPA-recommended screening level for lead in residential soil (EPA 1994c).

(6) PRG based on surrogate, as follows: Endrin for Endrin ketone; Naphthalene for 2-Methylnaphthalene; Pyrene for other noncarcinogenic PAHs.

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevent and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Surface water
Exposure Medium: Surface water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Six Mile Creek near AOC 9, drainage to creek, & AFFF pond	7429-90-5	Aluminum	130	120000 J	ug/L	G009-SW04 (seep)	12 / 16	90 - 100	120,000	N/A	3,600 N	N/A	N/A	Y	ASL
	7440-38-2	Arsenic	16	47	ug/L	G009-SW04 (seep)	3 / 12	5	47	N/A	0.045 C	N/A	N/A	Y	ASL
	7440-39-3	Barium	12.3 J	960	ug/L	G009-SW04 (seep)	9 / 16	20	960	N/A	260 N	N/A	N/A	Y	ASL
	7440-41-7	Beryllium	7.6	7.6	ug/L	G009-SW04 (seep)	1 / 12	5	7.6	N/A	7.3 N	N/A	N/A	Y	ASL
	7440-43-9	Cadmium	12	12	ug/L	G009-SW04 (seep)	1 / 12	5	12	N/A	1.8 N	N/A	N/A	Y	ASL
	7440-70-2	Calcium	14,400	450,000	ug/L	G009-SW04 (seep)	16 / 16		450,000	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	35	62	ug/L	G009-SW04 (seep)	2	10	62	N/A	11 N	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	20	110	ug/L	G009-SW04 (seep)	4	20	110	N/A	73 N	N/A	N/A	Y	ASL
	7440-50-8	Copper	3.06 J	250	ug/L	G009-SW04 (seep)	10	10 - 20	250	N/A	150 N	N/A	N/A	Y	ASL
	7439-89-6	Iron	350	230,000	ug/L	G009-SW04 (seep)	16 / 16		230,000	N/A	1,100 N	N/A	N/A	Y	ASL
	7439-92-1	Lead	2.13 J	190	ug/L	G009-SW04 (seep)	4	2 - 5	190	N/A	15 A	N/A	N/A	Y	ASL
	7439-95-4	Magnesium	590	37,000	ug/L	G009-SW04 (seep)	16 / 16		37,000	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	68	46,000	ug/L	G009-SW01)seep)	16 / 16		46,000	N/A	88 N	N/A	N/A	Y	ASL
	7487-94-7	Mercury	0.59	0.59	ug/L	G009-SW04 (seep)	1 / 16	0.034 - 0.2	0.59	N/A	1.1 N	N/A	N/A	N	BSL
	7440-02-0	Nickel	5.27 J	160	ug/L	G009-SW04 (seep)	5 / 12	20	160	N/A	73 N	N/A	N/A	Y	ASL
	7440-09-7	Potassium	600	9,600	ug/L	G009-SW04 (seep)	16 / 16		9,600	N/A	N/A	N/A	N/A	N	NUT
	7440-22-4	Silver	10	20	ug/L	G009-SW04 (seep)	2 / 12	10	20	N/A	18 N	N/A	N/A	Y	ASL
	7440-23-5	Sodium	2,600	9,800	ug/L	G009-SW04 (seep)	16 / 16		9,800	N/A	N/A	N/A	N/A	N	NUT
	7440-24-6	Strontium	47	85	ug/L	SMCSW - 11 (creek)	4 / 4		65	N/A	2,200 N	N/A	N/A	N	BSL
	7440-62-2	Vanadium	43	150	ug/L	G009-SW04 (seep)	2 / 12	20	150	N/A	26 N	N/A	N/A	Y	ASL
	7440-66-6	Zinc	4.83 J	580	ug/L	G009-SW04 (seep)	10 / 16	10	580	N/A	1,100 N	N/A	N/A	N	BSL
	57-12-5	Cyanide	38	110	ug/L	SMCSW - 9 (AFFF pond)	2 / 4	10	110	N/A	73 N	N/A	N/A	Y	ASL
	56-55-3	Benzo(a)anthracene	0.04 J	0.04 J	ug/L	SMCSW - 9 (AFFF pond)	1 / 16	0.5 - 10	0.04	N/A	0.092 C	N/A	N/A	N	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	0.72 J	29	ug/L	G009-SW02 (creek)	5 / 16	0.2 - 10	29	N/A	4.8 C	N/A	N/A	Y	ASL
	85-68-7	Butylbenzylphthalate	0.044 J	3.9 J	ug/L	G009-SW05 (creek)	4 / 16	0.5 - 10	3.9	N/A	730 N	N/A	N/A	N	BSL
	84-66-2	Diethylphthalate	0.04 J	6.3 J	ug/L	AOC9-SW11 (creek)	6 / 16	0.5 - 10	6.3	N/A	2,900 N	N/A	N/A	N	BSL
	84-74-2	Di-n-butyl phthalate	0.02 J	0.74 J	ug/L	SMCSW - 9 (AFFF pond)	4 / 16	10 - 16	0.74	N/A	360 N	N/A	N/A	N	BSL
	87-86-5	Pentachlorophenol	1	1	ug/L	SMCSW - 9 (AFFF pond)	1 / 16	0.7 - 50	1	N/A	0.56 C	N/A	N/A	Y	ASL
	85-01-8	Phenanthrene	0.03 J	0.8	ug/L	AOC9-SW09 (creek)	5 / 16	0.5 - 5	0.8	N/A	18 N (6)	N/A	N/A	N	BSL
	129-00-0	Pyrene	0.03 J	0.03 J	ug/L	SMCSW - 9 (AFFF pond)	1 / 16	0.5 - 5	0.03	N/A	18 N	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.406 J	2.30	ug/L	AOC9-SW14 (drainage)	3 / 24	0.5 - 5	2.30	N/A	37 N	N/A	N/A	N	BSL
	95-63-6	1,2,4-Trimethylbenzene	0.077 J	0.34 J	ug/L	SMCSW - 6 (creek)	3 / 24	0.5 - 5	0.34	N/A	1.2 N	N/A	N/A	N	BSL
	156-59-2	cis-1,2-Dichloroethene	2.33	9.70	ug/L	AOC9-SW15 (drainage)	3 / 24	0.5 - 5	9.70	N/A	6.1 N	N/A	N/A	Y	ASL
	108-67-8	1,3,5-Trimethylbenzene	0.12 J	2.23	ug/L	AOC9-SW15 (drainage)	3 / 24	0.5 - 5	2.23	N/A	1.2 N	N/A	N/A	Y	ASL
	106-46-7	1,4-Dichlorobenzene	0.16 J	6.02	ug/L	AOC9-SW14 (drainage)	3 / 24	0.5 - 10	6.02	N/A	0.5 C	N/A	N/A	Y	ASL
	67-64-1	Acetone	6.3 J	13	ug/L	G009-SW01)seep)	2 / 24	0.5 - 5	13	N/A	61 N	N/A	N/A	N	BSL
	71-43-2	Benzene	1.13	1.13	ug/L	AOC9-SW15 (drainage)	1 / 24	0.5 - 5	1.13	N/A	0.34 C	N/A	N/A	Y	ASL
	108-90-7	Chlorobenzene	0.073 J	41.3	ug/L	AOC9-SW14 (drainage)	13 / 24	0.5 - 5	41.3	N/A	11 N	N/A	N/A	Y	ASL
	100-41-4	Ethylbenzene	1.29	1.29	ug/L	AOC9-SW15 (drainage)	1 / 24	0.5 - 5	1.29	N/A	130 N	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	1.53	1.53	ug/L	AOC9-SW15 (drainage)	1 / 24	0.5 - 5	1.53	N/A	88 N	N/A	N/A	N	BSL
	104-51-8	n-Butylbenzene	4.15	4.15	ug/L	AOC9-SW14 (drainage)	1 / 24	0.5 - 5	4.15	N/A	24 N	N/A	N/A	N	BSL
	127-18-4	Tetrachloroethene	1.7	3.42	ug/L	AOC9-SW15 (drainage)	3 / 24	0.5 - 5	3.42	N/A	0.66 C	N/A	N/A	Y	ASL
	108-88-3	Toluene	0.28 J	6.62	ug/L	AOC9-SW17 (drainage)	3 / 24	0.5 - 5	6.62	N/A	72 N	N/A	N/A	N	BSL
	1330-20-7	Xylenes	0.09 J	0.35 J	ug/L	SMCSW - 6 (creek)	2 / 24	0.5 - 5	0.35	N/A	21 N	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	0.077 J	4,13	ug/L	AOC9-SW15 (drainage)	5 / 24	0.5 - 5	4.13	N/A	0.028 C	N/A	N/A	Y	ASL

(1) Maximum concentration used for screening.

(2) Background soil samples not collected.

(3) "Screening Toxicity Value" adapted from EPA Region 9 risk-based residential soil PRGs (EPA 2002a), unless indicated otherwise.
Screening concentrations calculated for target cancer risk of 1E-06 or target Hazard Index of 0.1.

(4) Rationale Codes:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

(5) Toxicity screening level for lead is the EPA action level for lead in tap water (EPA 1991c).

(6) PRG based on surrogate, as follows: Naphthalene for 2-Methylnaphthalene.

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered

J = Estimated Value
A = Action Level for Drinking Water
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.4

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Six Mile Creek drainage to creek, & AFFF pond	7429-90-5	Aluminum	120 B	7300 J	ug/L	G009-LS07-GW	8/16	55 - 210	7,300	N/A	3,600 N	100	NYS	Y	ASL
	7440-39-3	Barium	8.39 J	158	ug/L	G009-MW02	12/16	20	158	N/A	260 N	1000	NYS	N	BSL
	7440-41-7	Beryllium	0.204 J	0.204 J	ug/L	AOC9-MW08	1/16	5 - 10	0.20	N/A	7.3 N	3	NYG	N	BSL
	7440-43-9	Cadmium	0.964 J	0.994 J	ug/L	AOC9-MW05	2/16	5 - 10	0.99	N/A	1.8 N	5	NYS	N	BSL
	7440-70-2	Calcium	35,200	101,000	ug/L	AOC9-MW08	16/16		101,000	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	1.58 J	21	ug/L	G009-LS04-GW	5/16	10 - 20	21	N/A	11 N	50	NYS	Y	ASL
	7440-48-4	Cobalt	1.22 J	3.73 J	ug/L	AOC9-MW07	2/16	10 - 20	3.73	N/A	73 N	5	NYS	N	BSL
	7440-50-8	Copper	4.13 J	27	ug/L	G009-LS07-GW	5/16	10 - 20	27	N/A	150 N	200	NYS	N	BSL
	7439-89-6	Iron	130	14000 J	ug/L	G009-LS07-GW	15/16	16 - 20	14,000	N/A	1,100 N	300	NYS	Y	ASL
	7439-92-1	Lead	3.32 J	11	ug/L	G009-LS07-GW	4/16	5	11	N/A	15 A (5)	25	NYS	N	BSL
	7439-95-4	Magnesium	3,290	14,000	ug/L	G009-LS07-GW	16/16		14,000	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	77	6,610	ug/L	AOC9-MW07	15/16	6.5 - 10	6,610	N/A	88 N	300	NYS	Y	ASL
	7440-02-0	Nickel	12.4 J	26	ug/L	G009-LS04-GW	5/16	20 - 40	26	N/A	73 N	100	NYS	N	BSL
	7440-09-7	Potassium	799 J	6,000	ug/L	G009-LS05-GW	16/16		6,000	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	12.2	17	ug/L	AOC9-MW06	3/16	2 - 10	17	N/A	18 N	10	NYS	N	BSL
	7440-23-5	Sodium	1,330	12,600	ug/L	G009-MW02	16/16		12,600	N/A	N/A	20000	NYS	N	NUT
	7440-28-0	Thallium	7.46 J	7.46 J	ug/L	AOC9-MW07	1/16	1 - 10	7.46	N/A	0.24 N	0.5	NYG	Y	ASL
	7440-62-2	Vanadium	2.37 J	6.37 J	ug/L	AOC9-MW07	2/16	20	6.37	N/A	26 N	N/A	N/A	N	BSL
	7440-66-6	Zinc	3.04 J	61	ug/L	WSAMW4	12/16	10	125	N/A	1,100 N	5000	NYG	N	BSL
	91-56-6	2-Methylnaphthalene	0.63 J	0.63 J	ug/L	AOC9-MW08	1/16	0.5 - 10	0.63	N/A	0.62 N (6)	N/A	N/A	Y	ASL
	103-23-1	Bis(2-ethylhexyl)adipate	1.2 J	1.2 J	ug/L	AOC9-MW08	1/16	0.5 - 10	1.20	N/A	56 C	20	NYS	N	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	0.69 J	2.1 J	ug/L	WSAMW4	6/16	0.5 - 10	2.1	N/A	4.8 C	5	NYS	N	BSL
	85-68-7	Butylbenzylphthalate	0.61 J	0.68 J	ug/L	G009-MW03	2/16	0.5 - 10	0.68	N/A	730 N	50	NYG	N	BSL
	84-66-2	Diethylphthalate	3.9	4.8 J	ug/L	AOC9-MW05	8/16	0.5 - 10	4.8	N/A	2,900 N	50	NYG	N	BSL
	84-74-2	Di-n-butyl phthalate	12 J	15 J	ug/L	G009-MW04	6/16	0.5 - 10	15	N/A	360 N	50	NYS	N	BSL
	85-01-8	Phenanthrene	0.56 J	0.67 J	ug/L	G009-MW03	6/16	0.5 - 10	0.67	N/A	18 N (6)	50	NYG	N	BSL
	75-35-4	1,1-Dichloroethene	0.61	0.61	ug/L	G009-MW03	1/166	0.5 - 50	0.61	N/A	34 N	5	NYS	N	BSL
	95-63-6	1,2,4-Trimethylbenzene	1.62	68.8	ug/L	AOC9-GP27S	9/166	0.5 - 50	68.8	N/A	1.2 N	5	NYS	Y	ASL
	95-50-1	1,2-Dichlorobenzene	0.072 J	513 J	ug/L	AOC9-GP44I	98/166	0.5 - 50	513	N/A	37 N	3	NYS	Y	ASL
	107-06-2	1,2-Dichloroethane	3.2 J	3.2 J	ug/L	G009-MW04-GW	1/166	0.5 - 50	3.20	N/A	0.12 C	0.6	NYS	Y	ASL
	540-59-0	1,2-Dichloroethene, Total	0.188 J	71.2	ug/L	AOC9-GP44I	28/64	0.5 - 50	71.2	N/A	6.1 N (6)	5	NYS	Y	ASL
	108-67-8	1,3,5-Trimethylbenzene	1.10	34.4	ug/L	AOC9-GP28S	11/166	0.5 - 50	34.4	N/A	1.2 N	5	NYS	Y	ASL
	543-73-1	1,3-Dichlorobenzene	0.174 J	7.32 J	ug/L	AOC9-GP44S2	40/166	0.5 - 50	7.32	N/A	0.55 N	3	NYS	Y	ASL
	106-46-7	1,4-Dichlorobenzene	0.194 J	215	ug/L	AOC9-GP28S	82/166	0.5 - 50	215	N/A	0.5 C	3	NYS	Y	ASL
	78-93-3	2-Butanone	0.945 J	4.22 J	ug/L	AOC9-GP53D1	3/166	0.5 - 50	4.22	N/A	190 N	50	NYG	N	BSL
	67-64-1	Acetone	3.27 J	352	ug/L	AOC9-GP47I	13/166	0.5 - 50	352	N/A	61 N	51	NYG	Y	ASL
	71-43-2	Benzene	0.107 J	12.6	ug/L	AOC9-GP14I	62/166	0.5 - 50	12.6	N/A	0.34 C	1	NYS	Y	ASL
	75-15-0	Carbon disulfide	0.201 J	0.201 J	ug/L	AOC9-GP57I	1/166	0.5 - 50	0.201	N/A	100 N	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	0.163 J	2,352	ug/L	AOC9-GP27S	92/166	0.5 - 50	2,352	N/A	11 N	5	NYS	Y	ASL
	67-66-3	Chloroform	0.073 J	1.3 J	ug/L	G009-LS05-GW	5/166	0.5 - 50	1.3	N/A	0.62 N	7	NYS	Y	ASL
	156-59-2	cis-1,2-Dichloroethene	0.09 J	227	ug/L	G009-LS05-GW	66/156	0.5 - 50	227	N/A	6.1 N	5	NYS	Y	ASL
	100-41-4	Ethylbenzene	0.079 J	59.6	ug/L	AOC9-GP44S2	40/166	0.5 - 50	59.6	N/A	130 N	5	NYS	N	BSL
	98-82-8	Isopropylbenzene	1.35	22.8	ug/L	AOC9-GP28S	6/102	0.5 - 50	22.8	N/A	66 N	5	NYS	N	BSL
	75-09-2	Methylene chloride	72.6	72.6	ug/L	AOC9-MW07	1/166	0.5 - 50	72.6	N/A	4.3 C	5	NYS	Y	ASL
	91-20-3	Naphthalene	7.92	28.3	ug/L	AOC9-GP28S	2/111	0.5 - 50	28.3	N/A	0.62 N	10	NYG	Y	ASL
	104-51-8	n-Butylbenzene	1.40	48.1	ug/L	AOC9-GP28S	7/102	0.5 - 50	48.1	N/A	24 N	5	NYS	Y	ASL
	103-65-1	n-Propylbenzene	1.01	14.0	ug/L	AOC9-GP28S	10/102	0.5 - 50	14.0	N/A	24 N	5	NYS	N	BSL
	135-98-8	sec-Butylbenzene	0.88	10.2	ug/L	AOC9-GP28S	11/102	0.5 - 50	10.2	N/A	24 N	5	NYS	N	BSL
	98-06-6	tert-Butylbenzene	0.348 J	5.44	ug/L	AOC9-GP28S	11/102	0.5 - 50	5.44	N/A	24 N	5	NYS	N	BSL
	127-18-4	Tetrachloroethene	0.087 J	173	ug/L	AOC9-GP05D	60/166	0.5 - 50	173	N/A	0.66 C	5	NYS	Y	ASL
	108-88-3	Toluene	0.078 J	4.97	ug/L	AOC9-GP17I	58/166	0.5 - 50	4.97	N/A	72 N	5	NYS	N	BSL
	156-60-5	trans-1,2-Dichloroethene	0.345 J	3.81	ug/L	AOC9-GP03I	17/156	0.5 - 50	3.81	N/A	12 N	5	NYS	N	BSL
	79-01-6	Trichloroethene	0.166 J	66.9	ug/L	AOC9-GP05D	94/166	0.5 - 50	66.9	N/A	0.028 C	5	NYS	Y	ASL
	75-01-4	Vinyl Chloride	0.188 J	63.7	ug/L	AOC9-GP03I	27/166	0.5 - 50	63.7	N/A	0.02 C	2	NYS	Y	ASL
	1330-20-7	Xylenes	0.561 J	216	ug/L	AOC9-GP44S2	8/166	0.5 - 50	216	N/A	21 N	5	NYS	Y	ASL

(1) Maximum concentration used for screening.

(2) Background soil samples not collected.

(3) "Screening Toxicity Value" adapted from EPA Region 9 risk-based residential soil PRGs (EPA 2002a), unless indicated otherwise.
Screening concentrations calculated for target cancer risk of 1E-06 or target Hazard Index of 0.1.

(4) Rationale Codes:
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

(5) Toxicity screening level for lead is the EPA action level for lead in tap water (EPA 1991c).

(6) PRG based on surrogate, as follows: Naphthalene for 2-Methylnaphthalene; Pyrene for other noncarcinogenic PAHs; cis-1,2-Dichloroethene for total 1,2-Dichloroethene.

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
NYS = New York standard for Class GA groundwater (NYSDEC 1998).
NYS = New York standard for Class GA groundwater (NYSDEC 1998).
J = Estimated Value
A = Action Level for Drinking Water
C = Carcinogenic
N = Non-Carcinogenic

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM AND CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
On-Site	Aluminum	mg/kg	9,496	12,012 (T)	19,000	12,012	mg/kg	95% UCL - T	W-test (1)
	Antimony	mg/kg	1.19	1.99 (T)	3.16	1.99	mg/kg	95% UCL - T	W-test (1)
	Arsenic	mg/kg	3.42	4.13 (T)	6.8	4.13	mg/kg	95% UCL - T	W-test (1)
	Iron	mg/kg	15,923	18,295 (T)	29,000	18,295	mg/kg	95% UCL - T	W-test (1)
	Manganese	mg/kg	467	665 (T)	860 J	665	mg/kg	95% UCL - T	W-test (1)
	Thallium	mg/kg	0.260	0.330 (T)	0.975 J	0.330	mg/kg	95% UCL - T	W-test (1)
	Dieldrin	mg/kg	0.007	0.0174 (T)	0.046	0.0174	mg/kg	95% UCL - T	W-test (1)
	Benzo[a]anthracene	mg/kg	0.199	0.262 (T)	0.490 J	0.262	mg/kg	95% UCL - T	W-test (1)
	Benzo[a]pyrene	mg/kg	0.218	0.260 (T)	0.660 J	0.260	mg/kg	95% UCL - T	W-test (1)
	Benzo[b]fluoranthene	mg/kg	0.219	0.262 (T)	0.700 J	0.262	mg/kg	95% UCL - T	W-test (1)

Refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-81, May 1992 (EPA 1992b).

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration. For duplicate sample results, the average value was used in the calculation.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Shapiro-Wilk W Test indicates data are lognormally distributed.

J = Estimated Value
T = Transformed

TABLE 3.2
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
On-Site	Aluminum	mg/kg	6,339	7,424 (T)	11,700	7,424	mg/kg	95% UCL - T	W-test (1)
	Antimony	mg/kg	1.12	1.87 (T)	4.94 J	1.87	mg/kg	95% UCL - T	W-test (1)
	Arsenic	mg/kg	2.78	3.63 (T)	4.7	3.63	mg/kg	95% UCL - T	W-test (1)
	Iron	mg/kg	16,298	18,815 (T)	27,000	18,815	mg/kg	95% UCL - T	W-test (1)
	Manganese	mg/kg	504	655 (T)	1,410 J	655	mg/kg	95% UCL - T	W-test (1)
	Thallium	mg/kg	0.781	1.39 (T)	5.66 J	1.39	mg/kg	95% UCL - T	W-test (1)
	Dieldrin	mg/kg	0.0057	0.0077 (T)	0.0594	0.0077	mg/kg	95% UCL - T	W-test (1)
	Benzo[a]anthracene	mg/kg	0.304	0.350 (T)	2.17 J	0.350	mg/kg	95% UCL - T	W-test (1)
	Benzo[a]pyrene	mg/kg	0.257	0.308 (T)	1.4	0.308	mg/kg	95% UCL - T	W-test (1)
	Benzo[b]fluoranthene	mg/kg	0.268	0.311 (T)	1.51 J	0.311	mg/kg	95% UCL - T	W-test (1)
	Dibenz[a,h]ahanthracene	mg/kg	0.197	0.203 (T)	0.225 J	0.203	mg/kg	95% UCL - T	W-test (1)

Refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-81, May 1992 (EPA 1992b).

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration. For duplicate sample results, the average value was used in the calculation.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Shapiro-Wilk W Test indicates data are lognormally distributed.

J = Estimated Value
T = Transformed

TABLE 3.3
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM AND CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Six Mile Creek	Aluminum	mg/kg	5,484	6,312 (N)	9,580	6,312	mg/kg	95% UCL - N	W-test (1)
	Arsenic	mg/kg	3.25	5.31 (T)	17	5.31	mg/kg	95% UCL - T	W-test (2)
	Iron	mg/kg	15,161	19,112 (T)	43,000	19,112	mg/kg	95% UCL - T	W-test (2)
	Manganese	mg/kg	1,660	2,194 (T)	24,000 J	2,194	mg/kg	95% UCL - T	W-test (2)
	Thallium	mg/kg	1.036	N/A	1.15 J	1.15	mg/kg	Max	(3)
	Aldrin	mg/kg	0.0051	0.00793 (T)	0.047	0.00793	mg/kg	95% UCL - T	W-test (2)
	Heptachlor epoxide	mg/kg	0.0057	0.00714 (T)	0.059	0.00714	mg/kg	95% UCL - T	W-test (2)
	Benz[a]anthracene	mg/kg	0.334	0.392 (T)	1.40	0.392	mg/kg	95% UCL - T	W-test (2)
	Benzo[a]pyrene	mg/kg	0.315	0.389 (T)	1.30	0.389	mg/kg	95% UCL - T	W-test (2)
	Benzo[b]fluoranthene	mg/kg	0.318	0.409 (T)	1.40	0.409	mg/kg	95% UCL - T	W-test (2)
	Dibenz[a,h]ahanthracene	mg/kg	0.271	0.325 (T)	0.44 J	0.325	mg/kg	95% UCL - T	W-test (2)
	Indeno[1,2,3-cd]pyrene	mg/kg	0.285	0.329 (T)	0.69 J	0.329	mg/kg	95% UCL - T	W-test (2)

Refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-81, May 1992 (EPA 1992b).

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration. For duplicate sample results, the average value was used in the calculation.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).

(1) Shapiro-Wilk W Test indicates data are normally distributed.
(2) Shapiro-Wilk W Test indicates data are lognormally distributed.
(3) Single detected concentration is within the range of detection limits for the data set.

N/A = Not Applicable
J = Estimated Value
N = Normal
T = Transformed

TABLE 3.4

EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM AND CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Six Mile Creek/Seeps	Aluminum	ug/L	10,755	463,192 (T)	120,000 J	120,000 J	ug/L	Max	(1)
	Arsenic	ug/L	9.63	21.1 (T)	47	21.1	ug/L	95% UCL - T	W-test (2)
	Barium	ug/L	147	785 (T)	960	785	ug/L	95% UCL - T	W-test (2)
	Beryllium	ug/L	2.93	3.49 (T)	7.6	3.49	ug/L	95% UCL - T	W-test (2)
	Cadmium	ug/L	3.29	4.20 (T)	12	4.20	ug/L	95% UCL - T	W-test (2)
	Chromium	ug/L	12.3	21.8 (T)	62	21.8	ug/L	95% UCL - T	W-test (2)
	Cobalt	ug/L	21.8	34.2 (T)	110	34.2	ug/L	95% UCL - T	W-test (2)
	Copper	ug/L	33.5	83.4 (T)	250	83.4	ug/L	95% UCL - T	W-test (2)
	Iron	ug/L	28,728	755,787 (T)	230,000	230,000	ug/L	Max	(1)
	Lead	ug/L	20.4	64.9 (T)	190	64.9	ug/L	95% UCL - T	W-test (2)
	Manganese	ug/L	5,979	103,357 (T)	46,000	46,000	ug/L	Max	(1)
	Nickel	ug/L	27.5	53.4 (T)	160	53.4	ug/L	95% UCL - T	W-test (2)
	Silver	ug/L	6.67	8.53 (T)	20	8.53	ug/L	95% UCL - T	W-test (2)
	Vanadium	ug/L	24.4	40.4 (T)	150	40.4	ug/L	95% UCL - T	W-test (2)
	Cyanide	ug/L	16.0	N/A	38	38	ug/L	Max	(3)
	Bis[2-ethylhexyl]phthalate	ug/L	4.74	46.5 (T)	29	29	ug/L	Max	(1)
	1,3,5-Trimethylbenzene	ug/L	2.77	N/A	0.12 J	0.12	ug/L	Max	(5)
	1,4-Dichlorobenzene	ug/L	2.78	N/A	0.16 J	0.16	ug/L	Max	(5)
	Chlorobenzene	ug/L	2.00	2.77 (N)	7.1	2.77	ug/L	95% UCL - N	W-test (4)
	Trichloroethene	ug/L	1.43	N/A	0.081 J	0.081	ug/L	Max	(5)

Refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-81, May 1992 (EPA 1992b).
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration. For duplicate sample results, the greater detected value was used in the calculation.
Elevated quantitation limits (those greater than 3 times the highest detected concentrations) were omitted,
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).
(1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used.
(2) Shapiro-Wilk W Test indicates data are lognormally distributed.
(3) Small data set. UCL not calculated.
(4) Shapiro-Wilk W Test indicates data are normally distributed.
(5) st detected concentration is within the range of detection limits for the data set.

N/A = Not Applicable
J = Estimated Value
N = Normal
T = Transformed

TABLE 3.5

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM AND CENTRAL TENDENCY EXPOSURE

GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
AFFF Pond/ Drainage Ditches	Aluminum	ug/L	130	N/A	130	130	ug/L	Max	(1)
	Copper	ug/L	13	N/A	13	13	ug/L	Max	(1)
	Iron	ug/L	400	N/A	400	400	ug/L	Max	(1)
	Manganese	ug/L	68	N/A	68	68	ug/L	Max	(1)
	Cyanide	ug/L	110	N/A	110	110	ug/L	Max	(1)
	Pentachlorophenol	ug/L	1	N/A	1	1	ug/L	Max	(1)
	cis-1,2-Dichloroethene	ug/L	1.77	14.2 (T)	9.70	9.70	ug/L	Max	(2)
	1,3,5-Trimethylbenzene	ug/L	0.57	1.26 (T)	2.23	1.26	ug/L	95% UCL - T	W-test (3)
	1,4-Dichlorobenzene	ug/L	1.22	2.49	6.02	2.49	ug/L	95% UCL - N	W-test (4)
	Benzene	ug/L	0.35	N/A	1.13	1.13	ug/L	Max	(1)
	Chlorobenzene	ug/L	7.04	1624 (T)	41.3	41.3	ug/L	Max	(2)
	Tetrachloroethene	ug/L	0.945	1.65 (N)	3.42	1.65	ug/L	95% UCL - N	W-test (4)
	Trichloroethene	ug/L	1.35	2.40 (N)	4.13	2.40	ug/L	95% UCL - N	W-test (4)

Refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-81, May 1992 (EPA 1992b).
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration. For duplicate sample results, the greater detected value was used in the calculation.
Elevated quantitation limits (those greater than 3 times the highest detected concentrations) were omitted,
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).
(1) Single detected concentration reported.
(2) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used.
(3) Shapiro-Wilk W Test indicates data are lognormally distributed.
(4) Shapiro-Wilk W Test indicates data are normally distributed.

TABLE 3.6
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM AND CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: Weapons Storage area (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Detected Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Groundwater Plume	Aluminum	ug/L	1,372	50030 (T)	7300 J	7,300	ug/L	Max	(1)
	Chromium	ug/L	6.07	7.60 (T)	13 J	7.60	ug/L	95% UCL - T	W-test (2)
	Iron	ug/L	3,234	37440 (T)	14000 J	14,000	ug/L	Max	(1)
	Manganese	ug/L	2,186	8084 (T)	6810	6,810	ug/L	Max	(1)
	Thallium	ug/L	3.45	6.62 (T)	7.46 J	6.62	ug/L	95% UCL - T	W-test (2)
	2-Methylnaphthalene	ug/L	2.85	N/A	0.83 J	0.63	ug/L	Max	(3)
	1,2,4-Trimethylbenzene	ug/L	6.99	10.7 (T)	68.8	10.7	ug/L	95% UCL - T	W-test (2)
	1,2-Dichlorobenzene	ug/L	90.6	477 (T)	513 J	477	ug/L	95% UCL - T	W-test (2)
	1,2-Dichloroethane	ug/L	4.41	N/A	3.2 J	3.20	ug/L	Max	(3)
	1,3,5-Trimethylbenzene	ug/L	5.38	8.61 (T)	34.4	8.61	ug/L	95% UCL - T	W-test (2)
	1,3-Dichlorobenzene	ug/L	2.99	5.27 (T)	7.32 J	5.27	ug/L	95% UCL - T	W-test (2)
	1,4-Dichlorobenzene	ug/L	41.6	143 (T)	215 J	143	ug/L	95% UCL - T	W-test (2)
	Acetone	ug/L	19.2	27.1 (T)	352	27.1	ug/L	95% UCL - T	W-test (2)
	Benzene	ug/L	3.86	5.71 (T)	12.6	5.71	ug/L	95% UCL - T	W-test (2)
	Chlorobenzene	ug/L	458	28765 (T)	2352	2352	ug/L	Max	(1)
	Chloroform	ug/L	4.36	N/A	1.3 J	1.3	ug/L	Max	(3)
	cis-1,2-Dichloroethene	ug/L	19.8	44.7 (T)	227	44.7	ug/L	95% UCL - T	W-test (2)
	Methylene chloride	ug/L	5.50	7.76 (T)	72.6	7.76	ug/L	95% UCL - T	W-test (2)
	Naphthalene	ug/L	7.48	18.9 (T)	28.3	18.9	ug/L	95% UCL - T	W-test (2)
	n-Butylbenzene	ug/L	6.63	13.6 (T)	48.1	13.6	ug/L	95% UCL - T	W-test (2)
	Tetrachloroethene	ug/L	9.39	17.1 (T)	173.3	17.1	ug/L	95% UCL - T	W-test (2)
	Trichloroethene	ug/L	10.5	18.5 (T)	66.9	18.5	ug/L	95% UCL - T	W-test (2)
	Vinyl Chloride	ug/L	7.35	12.6 (T)	63.7	12.6	ug/L	95% UCL - T	W-test (2)
	Xylenes	ug/L	15.09	34.17 (T)	218	34.17	ug/L	95% UCL - T	W-test (2)

Refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-81, May 1992 (EPA 1992b).
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration. For duplicate sample results, the greater detected value was used in the calculation.
Elevated quantitation limits (those greater than 3 times the highest detected concentrations) were omitted,
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).
(1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used.
(2) Shapiro-Wilk W Test indicates data are lognormally distributed.
(3) Single detected concentration is within the range of detection limits for the data set.

N/A = Not Applicable
J = Estimated Value
T = Transformed

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	200	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2800	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	15	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5700	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3600	cm^2/day	EPA 1997 (3)	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise.

(1) Estimated high-end value for recreational exposure. EF of 175 days per year is approximately equivalent to daily exposure for half the year, or 3 to 4 days per week year-round.

(2) Mean body weight for age group 6 <12 years.

(3) Based on mean skin areas reported for ages 6 <12 years, approximately equivalent to area of head + hands + lower arms + lower legs.

(4) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.1.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1997	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA 1991	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
		Adolescent	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1991	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	2800	cm^2/day	EPA 2001	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	15	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	5700	cm^2/day	EPA 2001	
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	On-Site	CS	Chemical Concentration in Soil	Chemical-specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	3800	cm^2/day	EPA 1997 (3)	
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise.

(1) Estimated average value for recreational exposure. EF of 100 days per year is approximately equivalent to daily exposure for 4 days per week during the spring, summer, and fall months.

(2) Mean body weight for age group 6 <12 years.

(3) Based on mean skin areas reported for ages 6 <12 years, approximately equivalent to area of head + hands + lower arms + lower legs.

(4) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil/Sediment	200	mg/day	EPA 1991	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil/Sediment	100	mg/day	EPA 1991	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil/Sediment	100	mg/day	EPA 1991	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	2800	cm^2/day	EPA 2001	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	15	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	5700	cm^2/day	EPA 2001	
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	3,800	cm^2/day	EPA 1997 (3)	
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	–	EPA 2001 (4)	
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise. Recreational exposure to creek sediment also applies to future site residents.

(1) Estimated high-end value for recreational exposure. EF of 175 days per year is approximately equivalent to daily exposure for half the year, or 3 to 4 days per week year-round.

(2) Mean body weight for age group 6 <12 years.

(3) Based on mean skin areas reported for ages 6 <12 years, approximately equivalent to area of head + hands + lower arms + lower legs.

(4) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURE

GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil/Sediment	100	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil/Sediment	50	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
		Adolescent	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil/Sediment	100	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2800	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (4)	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5700	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (4)	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	Six Mile Creek	CS	Chemical Concentration in Sediment	Chemical-specific	mg/kg	See Table 3.3	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,600	cm^2/day	EPA 1997 (3)	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (4)	
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise. Recreational exposure to creek sediment also applies to future site residents.

(1) Estimated average value for recreational exposure. EF of 100 days per year is approximately equivalent to daily exposure for 4 days per week during the spring, summer, and fall months.

(2) Mean body weight for age group 6 <12 years.

(3) Based on mean skin areas reported for ages 6 <12 years, approximately equivalent to area of head + hands + lower arms + lower legs.

(4) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

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EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Water (creek/seeps)
Exposure Medium: Surface Water (creek/seeps)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	Creek/Seeps	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	100	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	Creek/Seeps	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	Creek/Seeps	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	175	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25650	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	Creek/Seeps	DA-event	Dermal Absorption per Event (3)	Chemical-specific	mg/cm^2-event	EPA2001 (3)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (4)	Chemical-specific	unitless	EPA2001 (4)	or
				SA	Skin Surface Area Available for Contact	2800	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	100	days/year	(1)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	Creek/Seeps	DA-event	Dermal Absorption per Event (3)	Chemical-specific	mg/cm^2-event	EPA2001 (3)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (4)	Chemical-specific	unitless	EPA2001 (4)	or
				SA	Skin Surface Area Available for Contact	6000	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	175	days/year	(1)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25650	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	Creek/Seeps	DA-event	Dermal Absorption per Event (3)	Chemical-specific	mg/cm^2-event	EPA2001 (3)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (4)	Chemical-specific	unitless	EPA2001 (4)	or
				SA	Skin Surface Area Available for Contact	3800	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	175	days/year	(1)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise. Recreational exposure to surface water also applies to future site residents.

(1) Estimated high-end value for recreational exposure. EF of 175 days per year is approximately equivalent to daily exposure for half the year, or 3 to 4 days per week year-round. IR and t-event values were selected by EPA Region 2.

(2) Mean body weight for age group 6 <12 years.

(3) See equations at right. Calculated values for DA-event/CW are listed in Table 4.DA.

(4) B = ratio of permeability through the stratum corneum relative to permeability through the epidermis. Refer to EPA 2001 (p.3-4 and Appendix B).

(5) Based on mean skin areas reported for age group for body parts that were assumed to be exposed to surface water, determined by EPA Region 2: For child, area below waist.; for adults and adolescents, area of feet + legs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.3.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Water (creek/seeps)
Exposure Medium: Surface Water (creek/seeps)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	Creek/Seeps	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	50	days/year	(1)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	Creek/Seeps	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	50	days/year	(1)	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
		Adolescent	Creek/Seeps	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	50	days/year	(1)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	Creek/Seeps	DA-event	Dermal Absorption per Event (3)	Chemical-specific	mg/cm^2-event	EPA2001 (3)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (4)	Chemical-specific	unitless	EPA2001 (4)	or
				SA	Skin Surface Area Available for Contact	2800	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	50	days/year	(1)	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	Creek/Seeps	DA-event	Dermal Absorption per Event (3)	Chemical-specific	mg/cm^2-event	EPA2001 (3)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (4)	Chemical-specific	unitless	EPA2001 (4)	or
				SA	Skin Surface Area Available for Contact	6000	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	50	days/year	(1)	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	9	years	EPA 1989	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
		Adolescent	Creek/Seeps	DA-event	Dermal Absorption per Event (3)	Chemical-specific	mg/cm^2-event	EPA2001 (3)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.4	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (4)	Chemical-specific	unitless	EPA2001 (4)	or
				SA	Skin Surface Area Available for Contact	3800	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	50	days/year	(1)	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				BW	Body Weight	31	kg	EPA 1997 (2)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise. Recreational exposure to surface water also applies to future site residents.

(1) Estimated average value for recreational exposure. EF of 50 days per year is approximately equivalent to daily exposure for 2 days per week during the spring, summer, and fall months.

(2) Mean body weight for age group 6 <12 years.

(3) See equations at right. Calculated values for DA-event/CW are listed in Table 4.DA.

(4) B = ratio of permeability through the stratum corneum relative to permeability through the epidermis. Refer to EPA 2001 (p.3-4 and Appendix B).

(5) Based on mean skin areas reported for age group for body parts that were assumed to be exposed to surface water, determined by EPA Region 2: For child, area below waist.; for adults and adolescents, area of feet + legs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Water (pond/ditches)
Exposure Medium: Surface Water (pond/ditches)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	AFFF pond/ Drainage Ditches	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	51	days/year	(2)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	AFFF pond/ Drainage Ditches	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	51	days/year	(2)	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	AFFF pond/ Drainage Ditches	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	51	days/year	(2)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	31	kg	EPA 1997 (3)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	AFFF pond/ Drainage Ditches	DA-event	Dermal Absorption per Event (4)	Chemical-specific	mg/cm^2-event	EPA2001 (4)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	--	
				CF2	Conversion Factor 2	0.001	L/cm^3	--	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (5)	Chemical-specific	unitless	EPA2001 (5)	or
				SA	Skin Surface Area Available for Contact	2800	cm^2/event	EPA 1997 (5)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	51	days/year	(2)	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	AFFF pond/ Dranage Ditches	DA-event	Dermal Absorption per Event (4)	Chemical-specific	mg/cm^2-event	EPA2001 (4)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	--	
				CF2	Conversion Factor 2	0.001	L/cm^3	--	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (5)	Chemical-specific	unitless	EPA2001 (5)	or
				SA	Skin Surface Area Available for Contact	6000	cm^2/event	EPA 1997 (6)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	51	days/year	(2)	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	AFFF pond/ Drainage Ditches	DA-event	Dermal Absorption per Event (4)	Chemical-specific	mg/cm^2-event	EPA2001 (4)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	--	
				CF2	Conversion Factor 2	0.001	L/cm^3	--	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (5)	Chemical-specific	unitless	EPA2001 (5)	or
				SA	Skin Surface Area Available for Contact	3800	cm^2/event	EPA 1997 (6)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	51	days/year	(2)	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				BW	Body Weight	31	kg	EPA 1997 (3)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise. Recreational exposure to surface water also applies to future site residents.

(1) Estimated high-end value for recreational exposure.

(2) EF assumed to be equal to number of significant precipitation events/year x 2 days/event x 1/2 year exposure, per agreement with EPA Region 2. Average number of significant precipitation events/ year is 51 (28 days of rain >0.5 inches + 23 days of snow >1.5 inches), from NOAA.

(3) Mean body weight for age group 6 <12 years.

(4) See equations at right. Calculated values for DA-event/CW are listed in Table 4.DA.

(5) B = ratio of permeability through the stratum corneum relative to permeability through the epidermis. Refer to EPA 2001 (p.3-4 and Appendix B).

(6) Based on mean skin areas reported for age group for body parts that were assumed to be exposed to surface water, determined by EPA Region 2: For child, area below waist.; for adults and adolescents, area of feet + legs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.4.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Medium: Surface Water (pond/ditches)
Exposure Medium: Surface Water (pond/ditches)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Visitor	Child	AFFF pond/	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
			Drainage Ditches	IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	50	days/year	(2)	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	-	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	AFFF pond/	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
			Drainage Ditches	IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	50	days/year	(2)	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	0.001	mg/ug	-	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
		Adolescent	AFFF pond/	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
			Drainage Ditches	IR-W	Ingestion Rate of Water	0.05	L/day	(1)	CS x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	50	days/year	(2)	
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				CF1	Conversion Factor	0.001	mg/ug	-	
				BW	Body Weight	31	kg	EPA 1997 (3)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
Dermal Absorption	Recreational Visitor	Child	AFFF pond/	DA-event	Dermal Absorption per Event (4)	Chemical-specific	mg/cm^2-event	EPA2001 (4)	Chronic Daily Absorbed Dose (mg/kg-day) =
			Drainage Ditches	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	-	
				CF2	Conversion Factor 2	0.001	L/cm^3	-	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (5)	Chemical-specific	unitless	EPA2001 (5)	or
				SA	Skin Surface Area Available for Contact	2800	cm^2/event	EPA 1997 (6)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	50	days/year	(2)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	AFFF pond/	DA-event	Dermal Absorption per Event (4)	Chemical-specific	mg/cm^2-event	EPA2001 (4)	Chronic Daily Absorbed Dose (mg/kg-day) =
			Drainage Ditches	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	-	
				CF2	Conversion Factor 2	0.001	L/cm^3	-	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (5)	Chemical-specific	unitless	EPA2001 (5)	or
				SA	Skin Surface Area Available for Contact	6000	cm^2/event	EPA 1997 (6)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	50	days/year	(2)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	9	years	EPA 1989	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
		Adolescent	AFFF pond/	DA-event	Dermal Absorption per Event (4)	Chemical-specific	mg/cm^2-event	EPA2001 (4)	Chronic Daily Absorbed Dose (mg/kg-day) =
			Drainage Ditches	CW	Chemical Concentration in Water	Chemical-specific	ug/L	See Table 3.5	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	-	
				CF2	Conversion Factor 2	0.001	L/cm^3	-	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	2	hr/event	(1)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (5)	Chemical-specific	unitless	EPA2001 (5)	or
				SA	Skin Surface Area Available for Contact	3600	cm^2/event	EPA 1997 (6)	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	event/day	(1)	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	50	days/year	(2)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	6	years	Ages 6 < 12 years	
				BW	Body Weight	31	kg	EPA 1997 (3)	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,850	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents, unless noted otherwise. Recreational exposure to surface water also applies to future site residents.

(1) Estimated high end value for recreational exposure.

(2) Estimated average value for recreational exposure. EF of 50 days per year is approximately equivalent to daily exposure for 2 days per week during the spring, summer, and fall months.

(3) Mean body weight for age group 6 <12 years.

(4) See equations at right. Calculated values for DA-event/CW are listed in Table 4.DA.

(5) B = ratio of permeability through the stratum corneum relative to permeability through the epidermis. Refer to EPA 2001 (p.3-4 and Appendix B).

(6) Based on mean skin areas reported for age group for body parts that were assumed to be exposed to surface water, determined by EPA Region 2: For child, area below waist.; for adults and adolescents, area of feet + legs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	200	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1991 (1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	25	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9125	days	EPA 1989	
Dermal Absorption	Resident	Child	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2800	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (2)	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5700	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (2)	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (2)	
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	25	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9,125	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Soil ingestion rate recommended for agricultural worker.

(2) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual. Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.5.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	226	days/year	(2)	
				ED	Exposure Duration	6.6	years	EPA 1997	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2409	days	EPA 1989	
Dermal Absorption	Resident	Child	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2800	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (1)	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5700	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (1)	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Absorbed Dose (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2/day	EPA 2001	CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001 (1)	
				EF	Exposure Frequency	226	days/year	(2)	
				ED	Exposure Duration	6.6	years	EPA 1997	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,409	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

(2) Assumes no exposure during vacations and holidays.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Airborne Dust

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	12	m³/day	EPA 1997 (1)	CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	3.07E+08	m³/kg	See Table 4.PEF.wind	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6E+00	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	20	m³/day	EPA 1991	CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	3.07E+08	m³/kg	See Table 4.PEF.wind	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	2E+01	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	20	m³/day	EPA 1991	CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	3.07E+08	m³/kg	See Table 4.PEF.wind	
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	3E+01	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9125	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Estimated high-end value is approximately 50% greater than mean long-term inhalation rate for ages 2-5 years.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

TABLE 4.8.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Airborne Dust

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	8.3	m³/day	EPA 1997	
				PEF	Particulate Emission Factor	1.07E+08	m³/kg	See Table 4.PEF.wind	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	12	m³/day	EPA 1991	
				PEF	Particulate Emission Factor	1.07E+08	m³/kg	See Table 4.PEF.wind	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	20	m³/day	EPA 1991	
				PEF	Particulate Emission Factor	1.07E+08	m³/kg	See Table 4.PEF.wind	
				EF	Exposure Frequency	225	days/year	(1)	
				ED	Exposure Duration	6.6	years	EPA 1997	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2409	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.
(1) Assumes no exposure during vacations and holidays

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.
EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	On-site excavation	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.2	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	330	mg/day	EPA 2001a	
				EF	Exposure Frequency	260	days/year	(1)	
				ED	Exposure Duration	0.5	years	(1)	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	183	days	EPA 1989	
Dermal Absorption	Construction Worker	Adult	On-site excavation	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.2	Chronic Daily Absorbed Dose (mg/kg-day) = CS x SA x SSAF x DABS x EF x ED x CF1 x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	3,300	cm^2/day	EPA 2001a	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001a	
				DABS	Dermal Absorption Factor (Solid)	Chemical-specific	--	EPA 2001b (2)	
				EF	Exposure Frequency	260	days/year	(1)	
				ED	Exposure Duration	0.5	years	(1)	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA 1997	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	183	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default vales for Commercial/Industrial Workers, unless noted otherwise.

(1) EF of 260 days/year with ED of 0.5 years represents a five days per week over a 26-week construction project.

(2) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.1 for pesticides, 0.13 for PAHs.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.
EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.
EPA 2001a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
EPA 2001b: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.8.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Airborne dust

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	On-site excavation	CS	Chemical Concentration in Soil	Chemical-Specific	mg/kg	See Table 3.2	Chronic Daily Intake (CDI) (mg/kg-day) = CS x (1/PEF) x IN x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	20	m^3/day	EPA 1991	
				PEF	Particulate Emission Factor	6.22E+06	m^3/kg	See Table 4.PEF.construction	
				EF	Exposure Frequency	260	days/year	(1)	
				ED	Exposure Duration	0.5	years	(1)	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	183	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default value for Commercial/Industrial Workers, unless noted otherwise.

(1) EF of 260 days/year with ED of 0.5 years represents a five days per week over a 26-week construction project.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

TABLE 4.9.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	House On-site	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Groundwater	1.5	L/day	EPA 1997 (1)	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	House On-site	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Groundwater	2.3	L/day	EPA 1997 (1)	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	-	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Groundwater	1.2	L/day	EPA 1997 (1)	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	25	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9125	days	EPA 1989	
Dermal Absorption	Resident	Child	House On-site Bath/Shower	DA-event	Dermal Absorption per Event (2)	Chemical-specific	mg/cm^2-event	EPA 2001 (2)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Shower/Bath Event Duration	1	hr/event	EPA 2001	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (3)	Chemical-specific	unitless	EPA 2001 (3)	or
				SA	Skin Surface Area Available for Contact	6800	cm^2/event	EPA 2001	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	events/day	EPA 2001	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	350	days/year	EPA 1991	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	House On-site Bath/Shower	DA-event	Dermal Absorption per Event (2)	Chemical-specific	mg/cm^2-event	EPA 2001 (2)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	-	
				CF2	Conversion Factor 2	0.001	L/cm^3	-	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	0.58	hr/event	EPA 2001	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (3)	Chemical-specific	unitless	EPA 2001 (3)	or
				SA	Skin Surface Area Available for Contact	18000	cm^2/event	EPA 2001	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	events/day	EPA 2001	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	350	days/year	EPA 1991	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-Site Shower	DA-event	Dermal Absorption per Event (2)	Chemical-specific	mg/cm^2-event	EPA 2001 (2)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	–	
				CF2	Conversion Factor 2	0.001	L/cm^3	–	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	0.33	hr/event	EPA 1997 (4)	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (3)	Chemical-specific	unitless	EPA 2001 (3)	or
				SA	Skin Surface Area Available for Contact	18000	cm^2/event	EPA 2001	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	events/day	EPA 2001	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	250	days/year	EPA 1991	x [t-event/(1+B) + 2 x tau-event x(1+3B+$3B^2$)/$(1+B)^2$]
				ED	Exposure Duration	25	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9,125	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) 90th percentile water ingestion rates used for residents. Worker ingestion rate is assumed to be approximately half the resident adult rate.

(2) See equations at right. Calculated values for DA-event/CW are listed in Table 4.DA.

(3) B = ratio of permeability through the stratum corneum relative to permeability through the epidermis. Refer to EPA 2001 (p.3-4 and Appendix B).

(4) Worker shower time is the 75% percentile time reported for shower/bath duration (20 minutes).

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.8.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	House On-site	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Groundwater	0.7	L/day	EPA 1997 (1)	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,190	days	EPA 1989	
		Adult	House On-site	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Groundwater	1	L/day	EPA 1997 (1)	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-site	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Groundwater	1.2	L/day	EPA 1997 (1)	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	226	days/year	EPA 1991	
				ED	Exposure Duration	6.6	years	EPA 1997	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2409	days	EPA 1989	
Dermal Absorption	Resident	Child	House On-site Bath/Shower	DA-event	Dermal Absorption per Event (2)	Chemical-specific	mg/cm^2-event	EPA 2001 (2)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	--	
				CF2	Conversion Factor 2	0.001	L/cm^3	--	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Shower/Bath Event Duration	0.14	hr/event	EPA 2001	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (3)	Chemical-specific	unitless	EPA 2001 (3)	or
				SA	Skin Surface Area Available for Contact	6600	cm^2/event	EPA 2001	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	events/day	EPA 2001	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	350	days/year	EPA 1991	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	House On-site Bath/Shower	DA-event	Dermal Absorption per Event (2)	Chemical-specific	mg/cm^2-event	EPA 2001 (2)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	--	
				CF2	Conversion Factor 2	0.001	L/cm^3	--	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	0.33	hr/event	EPA 2001	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (3)	Chemical-specific	unitless	EPA 2001 (3)	or
				SA	Skin Surface Area Available for Contact	18000	cm^2/event	EPA 2001	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	events/day	EPA 2001	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	350	days/year	EPA 1991	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	9	years	EPA 1989	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-Site Shower	DA-event	Dermal Absorption per Event (2)	Chemical-specific	mg/cm^2-event	EPA 2001 (2)	Chronic Daily Absorbed Dose (mg/kg-day) =
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				CF1	Conversion Factor 1	0.001	mg/ug	--	
				CF2	Conversion Factor 2	0.001	L/cm^3	--	where :
				Kp	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001	for inorganic chemicals:
				t-event	Event Duration	0.33	hr/event	EPA 1997	DA-event = (CW x CF1 x CF2) x Kp x t-event
				t*	Time to reach steady-state	Chemical-specific	hr/event	EPA 2001	and
				tau-event	Lag Time per Event	Chemical-specific	hr/event	EPA 2001	for organics, if t-event is less than t*
				FA	Fraction Absorbed	Chemical-specific	unitless	EPA 2001	DA-event = (CW x CF1 x CF2) x 2 x FA x Kp x SQRT(6 x tau-event x t-event/pi)
				B	Permeability Ratio (3)	Chemical-specific	unitless	EPA 2001 (3)	or
				SA	Skin Surface Area Available for Contact	18000	cm^2/event	EPA 2001	for organics, if t-event is greater than t*
				EV	Event Frequency per Day	1	events/day	EPA 2001	DA-event = (CW x CF1 x CF2) x FA x Kp
				EF	Exposure Frequency	226	days/year	(4)	x [t-event/(1+B) + 2 x tau-event x(1+3B+3B^2)/(1+B)^2]
				ED	Exposure Duration	6.6	years	EPA 1997	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2,409	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) 90th percentile water ingestion rates used for residents. Worker ingestion rate is assumed to be approximately half the resident adult rate.

(2) See equations at right. Calculated values for DA-event/CW are listed in Table 4.DA.

(3) B = ratio of permeability through the stratum corneum relative to permeability through the epidermis. Refer to EPA 2001 (p.3-4 and Appendix B).

(4) Assumes no exposure during vacations and holidays

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Vapors (shower)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	House On-site Bath/Shower	CA	Average Vapor Concentration in Shower Room Air	Modeled from CW	mg/m^3	Schaum et al 1994 (1)	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	1	m^3/hr	EPA 1997 (2)	CA x IN x EV x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure time for shower/bath	1.2	hr/event	t1 + t2	
				EV	Event Frequency per Day	1	event/day	EPA2001	
				EF	Exposure Frequency	350	days/year	EPA 1991	where :
				ED	Exposure Duration	6	years	EPA 1991	CA = ((t1 x Camax/2) + (t2 xCamax)) / (t1 + t2)
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	15	kg	EPA 1991	and:
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	Camax = maximum vapor concentration = CW x CF1 x f x Fw x t1 / Vs
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
				t1	Exposure time during shower/bath	1	hr/event	EPA 2001	
				t2	Exposure time after shower/bath	0.2	hr/event	Schaum et al 1994	
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	
				CF1	Conversion Factor	0.001	mg/ug	–	
				f	Fraction volatilized	0.75	unitless	Schaum et al 1994	
				Fw	Water flow rate	750	L/hr	Schaum et al 1994	
				Vs	Volume of shower/bath room	6	m^3	Schaum et al 1994	
		Adult	House On-site Bath/Shower	CA	Average Vapor Concentration in Shower Room Air	Modeled from CW	mg/m^3	Schaum et al 1994 (1)	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	1	m^3/hr	EPA 1997 (2)	CA x IN x EV x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure time for shower/bath	0.78	hr/event	t1 + t2	
				EV	Event Frequency per Day	1	event/day	EPA2001	
				EF	Exposure Frequency	350	days/year	EPA 1991	where :
				ED	Exposure Duration	24	years	EPA 1991	CA = ((t1 x Camax/2) + (t2 xCamax)) / (t1 + t2)
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	and:
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	Camax = maximum vapor concentration = CW x CF1 x f x Fw x t1 / Vs
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8760	days	EPA 1989	
				t1	Exposure time during shower/bath	0.58	hr/event	EPA 2001	
				t2	Exposure time after shower/bath	0.2	hr/event	Schaum et al 1994	
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	
				CF1	Conversion Factor	0.001	mg/ug	–	
				f	Fraction volatilized	0.75	unitless	Schaum et al 1994	
				Fw	Water flow rate	750	L/hr	Schaum et al 1994	
				Vs	Volume of shower/bath room	6	m^3	Schaum et al 1994	
	Commercial/Industrial Worker	Adult	On-Site Shower	CA	Average Vapor Concentration in Shower Room Air	Modeled from CW	mg/m^3	Schaum et al 1994 (1)	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	1	m^3/hr	EPA 1997 (2)	CA x IN x EV x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure time for shower/bath	0.53	hr/event	t1 + t2	
				EV	Event Frequency per Day	1	event/day	EPA2001	
				EF	Exposure Frequency	250	days/year	EPA 1991	where :
				ED	Exposure Duration	25	years	EPA 1991	CA = ((t1 x Camax/2) + (t2 xCamax)) / (t1 + t2)
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	and:
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	Camax = maximum vapor concentration = CW x CF1 x f x Fw x t1 / Vs
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9125	days	EPA 1989	
				t1	Exposure time during shower/bath	0.33	hr/event	EPA 1997 (3)	
				t2	Exposure time after shower/bath	0.2	hr/event	Schaum et al 1994	
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	
				CF1	Conversion Factor	0.001	mg/ug	–	
				f	Fraction volatilized	0.75	unitless	Schaum et al 1994	
				Fw	Water flow rate	750	L/hr	Schaum et al 1994	
				Vs	Volume of shower/bath room	6	m^3	Schaum et al 1994	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Vapor concentrations estimated using Andelman shower model as modified by Schaum (1994); see equations at right. Input values selected from recommended ranges.

(2) Short-term inhalation rate for light activity level.

(3) Worker shower time is the 75% percentile time reported for shower/bath duration (20 minutes).

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance. Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

Schaum et al 1994: "Estimating Dermal and Inhalation Exposure to Volatile Chemcials in Domestic Water", Water Contamination and Health, pp. 305-320.

TABLE 4.10.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Vapors (shower)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	House On-site Bath/Shower	CA	Average Vapor Concentration in Shower Room Air	Modeled from CW	mg/m^3	Schaum et al 1994 (1)	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	1	m^3/hr	EPA 1997 (2)	CA x IN x EV x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure time for shower/bath	0.33	hr/event	t1 + t2	
				EV	Event Frequency per Day	1	event/day	EPA2001	
				EF	Exposure Frequency	350	days/year	EPA 1991	where :
				ED	Exposure Duration	6	years	EPA 1991	CA = ((t1 x Camax/2) + (t2 xCamax)) / (t1 + t2)
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	15	kg	EPA 1991	and:
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	Camax = maximum vapor concentration = CW x CF1 x f x Fw x t1 / Vs
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
				t1	Exposure time during shower/bath	0.14	hr/event	EPA 2001	
				t2	Exposure time after shower/bath	0.19	hr/event	Schaum et al 1994	
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	
				CF1	Conversion Factor	0.001	mg/ug	--	
				f	Fraction volatilized	0.75	unitless	Schaum et al 1994	
				Fw	Water flow rate	750	L/hr	Schaum et al 1994	
				Vs	Volume of shower/bath room	6	m^3	Schaum et al 1994	
		Adult	House On-site Bath/Shower	CA	Average Vapor Concentration in Shower Room Air	Modeled from CW	mg/m^3	Schaum et al 1994 (1)	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	1	m^3/hr	EPA 1997 (2)	CA x IN x EV x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure time for shower/bath	0.25	hr/event	t1 + t2	
				EV	Event Frequency per Day	1	event/day	EPA2001	
				EF	Exposure Frequency	350	days/year	EPA 1991	where :
				ED	Exposure Duration	9	years	EPA 1989	CA = ((t1 x Camax/2) + (t2 xCamax)) / (t1 + t2)
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	and:
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25650	days	EPA 1989	Camax = maximum vapor concentration = CW x CF1 x f x Fw x t1 / Vs
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3285	days	EPA 1989	
				t1	Exposure time during shower/bath	0.1	hr/event	EPA 2001	
				t2	Exposure time after shower/bath	0.15	hr/event	Schaum et al 1994	
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	
				CF1	Conversion Factor	0.001	mg/ug	--	
				f	Fraction volatilized	0.75	unitless	Schaum et al 1994	
				Fw	Water flow rate	750	L/hr	Schaum et al 1994	
				Vs	Volume of shower/bath room	6	m^3	Schaum et al 1994	
	Commercial/Industrial Worker	Adult	On-Site Shower	CA	Average Vapor Concentration in Shower Room Air	Modeled from CW	mg/m^3	Schaum et al 1994 (1)	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	1	m^3/hr	EPA 1997 (2)	CA x IN x EV x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure time for shower/bath	0.25	hr/event	t1 + t2	
				EV	Event Frequency per Day	1	event/day	EPA2001	
				EF	Exposure Frequency	226	days/year	(3)	where :
				ED	Exposure Duration	6.6	years	EPA 1997	CA = ((t1 x Camax/2) + (t2 xCamax)) / (t1 + t2)
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	and:
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	Camax = maximum vapor concentration = CW x CF1 x f x Fw x t1 / Vs
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2409	days	EPA 1989	
				t1	Exposure time during shower/bath	0.1	hr/event	EPA 1997	
				t2	Exposure time after shower/bath	0.15	hr/event	Schaum et al 1994	
				CW	Chemical Concentration in Water	Chemical-Specific	ug/L	See Table 3.6	
				CF1	Conversion Factor	0.001	mg/ug	--	
				f	Fraction volatilized	0.75	unitless	Schaum et al 1994	
				Fw	Water flow rate	750	L/hr	Schaum et al 1994	
				Vs	Volume of shower/bath room	6	m^3	Schaum et al 1994	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Vapor concentrations estimated using Andelman shower model as modified by Schaum (1994); see equations at right. Input values selected from recommended ranges.

(2) Short-term inhalation rate for light activity level.

(3) Assumes no exposure during vacations and holidays

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

Schaum et al 1994: "Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water", Water Contamination and Health, pp. 305-320.

TABLE 4.11.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	On-Site Indoors	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				VFwesp	Volatilizion Factor, groundwater to enclosed space	Chemical-Specific	mg/m^3-air per mg/L-water	See Table 4.VF.indoor ASTM 1995 (1)	CW x VFwesp x IN x EF x ED x CF1 x 1/BW x 1/AT
				IN	Inhalation Rate	8.3	m^3/day	EPA 1997 (2)	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	On-Site Indoors	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				VFwesp	Volatilizion Factor, groundwater to enclosed space	Chemical-Specific	mg/m^3-air per mg/L-water	See Table 4.VF.indoor ASTM 1995 (1)	CW x VFwesp x IN x EF x ED x CF1 x 1/BW x 1/AT
				IN	Inhalation Rate	15	m^3/day	EPA 1991	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	8,760	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-Site Indoors	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				VFwesp	Volatilizion Factor, groundwater to enclosed space	Chemical-Specific	mg/m^3-air per mg/L-water	See Table 4.VF.indoor ASTM 1995 (1)	CW x VFwesp x IN x EF x ED x CF1 x 1/BW x 1/AT
				IN	Inhalation Rate	20	m^3/day	EPA 1997	
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	25	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	–	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	9125	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Equations used to calculate indoor air volatilization factor are based on vapor intrusion model of Johnson and Ettinger (1991); see Table 4.VF.indoor for chemical-specific input values and results.

(2) Mean daily inhalation rate reported for children 3-5 years old.

ASTM 1995: Standard Guide for Risk-based Corrective Action Applied at Petroleum Release Sites. E 1739.
EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.
EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.
EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.11.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURE

GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	On-Site Indoors	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				VFwesp	Volatilizion Factor, groundwater to enclosed space	Chemical-Specific	mg/m³-air per mg/L-water	See Table 4.VF.indoor ASTM 1995 (1)	CW x VF-wesp x IN x EF x ED x CF1 x 1/BW x 1/AT
				IN	Inhalation Rate	8.3	m³/day	EPA 1997 (2)	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2190	days	EPA 1989	
		Adult	On-Site Indoors	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				VFwesp	Volatilizion Factor, groundwater to enclosed space	Chemical-Specific	mg/m³-air per mg/L-water	See Table 4.VF.indoor ASTM 1995 (1)	CW x VF-wesp x IN x EF x ED x CF1 x 1/BW x 1/AT
				IN	Inhalation Rate	12	m³/day	EPA 1997	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1991	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25,550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	3,285	days	EPA 1989	
	Commercial/Industrial Worker	Adult	On-Site Indoors	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) =
				VFwesp	Volatilizion Factor, groundwater to enclosed space	Chemical-Specific	mg/m³-air per mg/L-water	See Table 4.VF.indoor ASTM 1995 (1)	CW x VF-wesp x IN x EF x ED x CF1 x 1/BW x 1/AT
				IN	Inhalation Rate	20	m³/day	EPA 1997	
				EF	Exposure Frequency	226	days/year	(3)	
				ED	Exposure Duration	6.6	years	EPA 1997	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	2409	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Equations used to calculate indoor air volatilization factor are based on vapor intrusion model of Johnson and Ettinger (1991); see Table 4.VF.indoor for chemical-specific input values and results.

(2) Mean daily inhalation rate reported for children 3-5 years old.

(3) Assumes no exposure during vacations and holidays

ASTM 1995: Standard Guide for Risk-based Corrective Action Applied at Petroleum Release Sites, E 1739.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 4.12.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	On-site Excavation	CW	Chemical Concentration in Groundwater	Chemical-Specific	ug/L	See Table 3.6	Chronic Daily Intake (CDI) (mg/kg-day) = CW x VFwamb x IN x EF x ED x CF1 x 1/BW x 1/AT
				VFwamb	Volatilizion Factor, groundwater to ambient air	Chemical-Specific	mg/m^3-air per mg/L-water	See Table 4.VF.outdoor ASTM 1995	
				IN	Inhalation Rate	20	m^3/day	EPA 1997 (1)	
				EF	Exposure Frequency	260	days/year	(2)	
				ED	Exposure Duration	0.5	years	(2)	
				CF1	Conversion Factor	0.001	mg/ug	--	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging time - Cancer (70 years x 365 days/year)	25550	days	EPA 1989	
				AT-N	Averaging time - Non-cancer (ED x 365 days/year)	182.5	days	EPA 1989	

Note: Input values for exposure factors are based on EPA-recommended default values for Residents or for Commercial/Industrial Workers, unless noted otherwise.

(1) Worker default inhalation rate of 20 m^3/day reflects 8 hours of heavy activity.

(2) EF of 260 days/year with ED of 0.5 years represents a five days per week over a 26-week construction project.

ASTM 1995: Standard Guide for Risk-based Corrective Action Applied at Petroleum Release Sites, E 1739.

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A. OERR. EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. EPA/600/P-95/002F.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual (Part E. Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Aluminum	Chronic	1.0E+00	(mg/kg/day)	0.05	5.0E-02	(mg/kg/day)	Offspring	100	NCEA	07/26/01
	Subchronic	1.0E+00	(mg/kg/day)	0.05	5.0E-02	(mg/kg/day)	Offspring	100	NCEA	07/26/01
Antimony	Chronic	4.0E-04	(mg/kg/day)	0.15	6.0E-05	(mg/kg/day)	Whole body, blood	1,000	IRIS	01/01/03
	Subchronic	4.0E-04	(mg/kg/day)	0.15	6.0E-05	(mg/kg/day)	Whole body, blood	1,000	IRIS (oral)	01/01/03
Arsenic	Chronic	3.0E-04	(mg/kg/day)	1	3.0E-04	(mg/kg/day)	Skin	3	IRIS	01/01/03
	Subchronic	5.0E-03	(mg/kg/day)	1	5.0E-03	(mg/kg/day)	Skin	10	NCEA	08/01/02
Barium	Chronic	7.0E-02	(mg/kg/day)	0.07	4.9E-03	(mg/kg/day)	ardiovascular system, kidn	3	IRIS	01/01/03
	Subchronic	7.0E-02	(mg/kg/day)	0.07	4.9E-03	(mg/kg/day)	Cardiovascular system	3	HEAST	07/01/97
Beryllium	Chronic	2.0E-03	(mg/kg/day)	0.007	1.4E-05	(mg/kg/day)	Intestine	300	IRIS	01/01/03
	Subchronic	2.0E-03	(mg/kg/day)	0.007	1.4E-05	(mg/kg/day)	Intestine	300	IRIS (chronic)	01/01/03
Cadmium	Chronic	5.0E-04	(mg/kg/day)	0.05	2.5E-05	(mg/kg/day)	Kidneys	10	IRIS	01/01/03
	Subchronic	5.0E-04	(mg/kg/day)	0.05	2.5E-05	(mg/kg/day)	Kidneys	10	IRIS (chronic)	01/01/03
Chromium(VI)	Chronic	3.0E-03	(mg/kg/day)	0.025	7.5E-05	(mg/kg/day)	None reported	900	IRIS	01/01/03
	Subchronic	2.0E-02	(mg/kg/day)	0.025	5.0E-04	(mg/kg/day)	None observed	100	HEAST	07/01/97
Cobalt	Chronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Blood	10	NCEA	01/15/02
	Subchronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Blood	10	NCEA	01/15/02
Copper	Chronic	4.0E-02	(mg/kg/day)	N/A	N/A	(mg/kg/day)	GI system	1	NCEA	04/29/97
	Subchronic	4.0E-02	(mg/kg/day)	N/A	N/A	(mg/kg/day)	GI system	1	NCEA	04/29/97
Iron	Chronic	3.0E-01	(mg/kg/day)	0.1	3.0E-02	(mg/kg/day)	Various organs	1	NCEA	11/14/01
	Subchronic	3.0E-01	(mg/kg/day)	0.1	3.0E-02	(mg/kg/day)	Various organs	1	NCEA (chronic)	11/14/01
Lead	Chronic	N/A	(mg/kg/day)	N/A	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg/day)	N/A	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
Manganese	Chronic	2.4E-02	(mg/kg/day)	0.04	9.6E-04	(mg/kg/day)	CNS	3	IRIS	01/01/03
	Subchronic	2.4E-02	(mg/kg/day)	0.04	9.6E-04	(mg/kg/day)	CNS	3	IRIS (chronic)	01/01/03
Nickel	Chronic	2.0E-02	(mg/kg/day)	0.04	8.0E-04	(mg/kg/day)	Whole body, organs	300	IRIS	01/01/03
	Subchronic	2.0E-02	(mg/kg/day)	0.04	8.0E-04	(mg/kg/day)	Whole body, major organs	300	HEAST	07/01/97
Silver	Chronic	5.0E-03	(mg/kg/day)	0.04	2.0E-04	(mg/kg/day)	Skin	3	IRIS	01/01/03
	Subchronic	5.0E-03	(mg/kg/day)	0.04	2.0E-04	(mg/kg/day)	Skin	3	HEAST	07/01/97
Thallium	Chronic	7.0E-05	(mg/kg/day)	1	7.0E-05	(mg/kg/day)	Liver, blood	3,000	IRIS (4)	01/01/03
	Subchronic	7.0E-04	(mg/kg/day)	1	7.0E-04	(mg/kg/day)	Liver, blood, hair	300	HEAST (4)	07/01/97
Vanadium	Chronic	7.0E-03	(mg/kg/day)	1	7.0E-03	(mg/kg/day)	Whole body	100	HEAST	07/01/97
	Subchronic	7.0E-03	(mg/kg/day)	1	7.0E-03	(mg/kg/day)	Whole body	100	HEAST	07/01/97
Cyanide, free	Chronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Whole body, thyroid, nerve	500	IRIS	01/01/03
	Subchronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Whole body, thyroid, nerve	500	HEAST	07/01/97
Aldrin	Chronic	3.0E-05	(mg/kg/day)	1	3.0E-05	(mg/kg/day)	Liver	1,000	IRIS	01/01/03
	Subchronic	3.0E-05	(mg/kg/day)	1	3.0E-05	(mg/kg/day)	Liver	1,000	HEAST	07/01/97
Dieldrin	Chronic	5.0E-05	(mg/kg/day)	1	5.0E-05	(mg/kg/day)	Liver	100	IRIS	01/01/03
	Subchronic	5.0E-05	(mg/kg/day)	1	5.0E-05	(mg/kg/day)	Liver	100	HEAST	07/01/97
Heptachlor epoxide	Chronic	1.3E-05	(mg/kg/day)	1	1.3E-05	(mg/kg/day)	Liver	1,000	IRIS	01/01/03
	Subchronic	1.3E-05	(mg/kg/day)	1	1.3E-05	(mg/kg/day)	Liver	1,000	HEAST	07/01/97
2-Methylnaphthalene	Chronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Lung	3,000	NCEA	08/01/00
	Subchronic	2.0E-01	(mg/kg/day)	1	2.0E-01	(mg/kg/day)	Lung	300	NCEA	08/01/00
Benzo[a]anthracene	Chronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Pyrene)	01/01/03
	Subchronic	3.0E-01	(mg/kg/day)	1	3.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Pyrene)	07/01/97
Benzo[a]pyrene	Chronic	N/A	(mg/kg/day)	N/A	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg/day)	N/A	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
Benzo[b]fluoranthene	Chronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Pyrene)	01/01/03
	Subchronic	3.0E-01	(mg/kg/day)	1	3.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Pyrene)	07/01/97
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-02	(mg/kg/day)	0.5	1.0E-02	(mg/kg/day)	Liver	1,000	IRIS	05/01/01
	Subchronic	2.0E-02	(mg/kg/day)	0.5	1.0E-02	(mg/kg/day)	Testes	3,000	NCEA	03/28/96
Dibenz[a,h]anthracene	Chronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Pyrene)	01/01/03
	Subchronic	3.0E-01	(mg/kg/day)	1	3.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Pyrene)	07/01/97
Indeno[1,2,3-cd]pyrene	Chronic	5.0E-02	(mg/kg/day)	1	5.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Bisphenol A	01/01/03
	Subchronic	6.0E-01	(mg/kg/day)	1	6.0E-01	(mg/kg/day)	N/A	N/A	EAST (Bisphenol	07/01/97
Pentachlorophenol	Chronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	Liver, kidney	100	IRIS	01/01/03
	Subchronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	Fetus	100	HEAST	07/01/97
cis-1,2-Dichloroethene	Chronic	1.0E-02	(mg/kg/day)	1	1.0E-02	(mg/kg/day)	Blood	3,000	HEAST	07/01/97
	Subchronic	1.0E-01	(mg/kg/day)	1	1.0E-01	(mg/kg/day)	Blood	300	HEAST	07/01/97

TABLE 5.1

NON-CANCER TOXICITY DATA – ORAL/DERMAL

GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units	(1)	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
1,2,4-Trimethylbenzene	Chronic	5.0E-02	(mg/kg/day)	1	5.0E-02	(mg/kg/day)	Whole body, kidney, liver	3,000	NCEA	06/30/99
	Subchronic	5.0E-01	(mg/kg/day)	1	5.0E-01	(mg/kg/day)	Whole body, kidney, liver	300	NCEA	06/30/99
1,3,5-Trimethylbenzene	Chronic	5.0E-02	(mg/kg/day)	1	5.0E-02	(mg/kg/day)	Whole body, kidney, liver	3,000	NCEA	09/19/02
	Subchronic	5.0E-01	(mg/kg/day)	1	5.0E-01	(mg/kg/day)	Whole body, kidney, liver	300	NCEA	09/19/02
1,2-Dichlorobenzene	Chronic	9.0E-02	(mg/kg/day)	1	9.0E-02	(mg/kg/day)	None	1,000	IRIS	01/01/03
	Subchronic	9.0E-02	(mg/kg/day)	1	9.0E-02	(mg/kg/day)	None	1,000	IRIS	01/01/03
1,2-Dichloroethane	Chronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	Liver, kidney	1,000	NCEA	04/05/93
	Subchronic	3.0E-01	(mg/kg/day)	1	3.0E-01	(mg/kg/day)	Liver, kidney	100	NCEA	04/05/93
1,3-Dichlorobenzene	Chronic	9.0E-04	(mg/kg/day)	1	9.0E-04	(mg/kg/day)	Blood, thyroid	10,000	NCEA	07/14/98
	Subchronic	9.0E-03	(mg/kg/day)	1	9.0E-03	(mg/kg/day)	Blood, thyroid	1,000	NCEA	07/14/98
1,4-Dichlorobenzene	Chronic	3.0E-02	(mg/kg/day)	1	3.0E-02	(mg/kg/day)	Offspring	1,000	NCEA	04/08/97
	Subchronic	3.0E-01	(mg/kg/day)	1	3.0E-01	(mg/kg/day)	Offspring	100	NCEA	04/08/97
Acetone	Chronic	1.0E-01	(mg/kg/day)	1	1.0E-01	(mg/kg/day)	Liver, kidney	1,000	IRIS	01/01/03
	Subchronic	1.0E+00	(mg/kg/day)	1	1.0E+00	(mg/kg/day)	Liver, kidney	100	HEAST	07/01/97
Benzene	Chronic	3.0E-03	(mg/kg/day)	1	3.0E-03	(mg/kg/day)	Blood, immune system	3,000	NCEA	07/02/96
	Subchronic	3.0E-03	(mg/kg/day)	1	3.0E-03	(mg/kg/day)	Blood, immune system	3,000	NCEA	07/02/96
Chlorobenzene	Chronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Liver	1,000	IRIS	01/01/03
	Subchronic	2.0E-01	(mg/kg/day)	1	2.0E-01	(mg/kg/day)	Liver	100	IRIS	01/01/03
Chloroform	Chronic	1.0E-02	(mg/kg/day)	1	1.0E-02	(mg/kg/day)	Liver	1,000	IRIS	01/01/03
	Subchronic	1.0E-02	(mg/kg/day)	1	1.0E-02	(mg/kg/day)	Liver	1,000	HEAST	07/01/97
Methylene chloride	Chronic	6.0E-02	(mg/kg/day)	1	6.0E-02	(mg/kg/day)	Liver	100	IRIS	01/01/03
	Subchronic	6.0E-02	(mg/kg/day)	1	6.0E-02	(mg/kg/day)	Liver	100	HEAST	07/01/97
Naphthalene	Chronic	2.0E-02	(mg/kg/day)	1	2.0E-02	(mg/kg/day)	Whole body	3,000	IRIS	01/01/03
	Subchronic	2.0E-01	(mg/kg/day)	1	2.0E-01	(mg/kg/day)	Whole body	300	IRIS	01/01/03
n-Butylbenzene	Chronic	4.0E-02	(mg/kg/day)	1	4.0E-02	(mg/kg/day)	Liver, kidney	3,000	NCEA	07/26/99
	Subchronic	4.0E-01	(mg/kg/day)	1	4.0E-01	(mg/kg/day)	Liver, kidney	300	NCEA	07/26/99
Tetrachloroethene	Chronic	1.0E-02	(mg/kg/day)	1	1.0E-02	(mg/kg/day)	Liver, Whole body	1,000	IRIS	01/01/03
	Subchronic	1.0E-01	(mg/kg/day)	1	1.0E-01	(mg/kg/day)	Liver	100	HEAST	07/01/97
Trichloroethene	Chronic	3.0E-04	(mg/kg/day)	1	3.0E-04	(mg/kg/day)	Liver, kidney, fetus	3,000	NCEA	08/01/01
	Subchronic	1.0E-03	(mg/kg/day)	1	1.0E-03	(mg/kg/day)	Liver, kidney, fetus	1,000	NCEA	08/01/01
Vinyl Chloride	Chronic	3.0E-03	(mg/kg/day)	1	3.0E-03	(mg/kg/day)	Liver	30	IRIS	01/01/03
	Subchronic	3.0E-03	(mg/kg/day)	1	3.0E-03	(mg/kg/day)	Liver	30	IRIS (chronic)	01/01/03
Xylenes	Chronic	2.0E-01	(mg/kg/day)	1	2.0E-01	(mg/kg/day)	Body weight	1,000	IRIS	02/21/03
	Subchronic	2.0E-01	(mg/kg/day)	1	2.0E-01	(mg/kg/day)	Body weight	1,000	IRIS (chronic)	02/21/03

(1) Source: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim, Section 4.2 and Exhibit 4-1.

(2) Absorbed RfD = Oral RfD x Oral Absorption Efficiency.

(3) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of the article provided by NCEA.

(4) RfD of thallium chloride, adjusted for molecular weight, used for thallium.

Definitions:
IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
N/A=Not Applicable
RfD = Reference Dose

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (2) (MM/DD/YYYY)
Aluminum	Chronic	5.0E-03	mg/m^3	1.4E-03	(mg/kg/day)	Nervous system	300	NCEA	07/26/01
	Subchronic	5.0E-03	mg/m^3	1.4E-03	(mg/kg/day)	Nervous system	300	NCEA (chronic)	07/26/01
Antimony	Chronic	1.4E-04	mg/m^3	4.0E-05	(mg/kg/day)	Lung	300	IRIS (3)	01/01/03
	Subchronic	4.0E-04	mg/m^3	1.1E-04	(mg/kg/day)	Lung	100	NCEA	07/26/99
Arsenic	Chronic	N/A	mg/m^3	3.0E-04	(mg/kg/day)	Skin	3	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	5.0E-03	(mg/kg/day)	Skin	10	NCEA (oral)	08/01/02
Barium	Chronic	5.0E-04	mg/m^3	1.4E-04	(mg/kg/day)	Fetus	1,000	HEAST, t. 2	07/01/97
	Subchronic	5.0E-03	mg/m^3	1.4E-03	(mg/kg/day)	Fetus	100	HEAST, t. 2	07/01/97
Beryllium	Chronic	2.0E-02	mg/m^3	5.7E-03	(mg/kg/day)	Lung	10	IRIS	01/01/03
	Subchronic	2.0E-02	mg/m^3	5.7E-03	(mg/kg/day)	Lung	10	IRIS (chronic)	01/01/03
Cadmium	Chronic	N/A	mg/m^3	5.0E-04	(mg/kg/day)	Kidneys	10	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	5.0E-04	(mg/kg/day)	Kidneys	10	IRIS (chronic oral)	01/01/03
Chromium(VI)	Chronic	1.0E-04	mg/m^3	2.9E-05	(mg/kg/day)	Respiratory tract	300	IRIS	01/01/03
	Subchronic	1.0E-03	mg/m^3	2.9E-04	(mg/kg/day)	Respiratory tract	30	IRIS	01/01/03
Cobalt	Chronic	2.0E-05	mg/m^3	5.7E-06	(mg/kg/day)	Respiratory tract	100	NCEA	01/15/02
	Subchronic	2.0E-05	mg/m^3	5.7E-06	(mg/kg/day)	Respiratory tract	100	NCEA	01/15/02
Copper	Chronic	N/A	mg/m^3	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
Iron	Chronic	N/A	mg/m^3	3.0E-01	(mg/kg/day)	Various organs	1	NCEA (oral)	11/14/01
	Subchronic	N/A	mg/m^3	3.0E-01	(mg/kg/day)	Various organs	1	NCEA (oral)	11/14/01
Lead	Chronic	N/A	mg/m^3	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	(mg/kg/day)	Nervous system	1,000	IRIS	01/01/03
	Subchronic	5.0E-05	mg/m^3	1.4E-05	(mg/kg/day)	Nervous system	1,000	IRIS (chronic)	01/01/03
Nickel	Chronic	N/A	mg/m^3	2.0E-02	(mg/kg/day)	Whole body, organs	300	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	2.0E-02	(mg/kg/day)	Whole body, major organs	300	HEAST (oral)	07/01/97
Silver	Chronic	1.0E-05	mg/m^3	2.9E-06	(mg/kg/day)	Eye, respiratory tract	1,000	NCEA	06/30/94
	Subchronic	1.0E-04	mg/m^3	2.9E-05	(mg/kg/day)	Eye, respiratory tract	100	NCEA	06/30/94
Thallium	Chronic	N/A	mg/m^3	7.0E-05	(mg/kg/day)	Liver, blood	3,000	IRIS (oral) (4)	01/01/03
	Subchronic	N/A	mg/m^3	7.0E-04	(mg/kg/day)	Liver, blood, hair	300	HEAST (oral) (4)	07/01/97
Vanadium	Chronic	N/A	mg/m^3	7.0E-03	(mg/kg/day)	Whole body	100	HEAST (oral)	07/01/97
	Subchronic	N/A	mg/m^3	7.0E-03	(mg/kg/day)	Whole body	100	HEAST (oral)	07/01/97
Cyanide, free	Chronic	N/A	mg/m^3	2.0E-02	(mg/kg/day)	Whole body, thyroid, nerves	500	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	2.0E-02	(mg/kg/day)	Whole body, thyroid, nerves	500	HEAST (oral)	07/01/97
Aldrin	Chronic	N/A	mg/m^3	3.0E-05	(mg/kg/day)	Liver	1,000	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	3.0E-05	(mg/kg/day)	Liver	1,000	HEAST (oral)	07/01/97
Dieldrin	Chronic	N/A	mg/m^3	5.0E-05	(mg/kg/day)	Liver	100	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	5.0E-05	(mg/kg/day)	Liver	100	HEAST (oral)	07/01/97
Heptachlor epoxide	Chronic	N/A	mg/m^3	1.3E-05	(mg/kg/day)	Liver	1,000	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	1.3E-05	(mg/kg/day)	Liver	1,000	HEAST (oral)	07/01/97
2-Methylnaphthalene	Chronic	3.0E-03	mg/m^3	8.6E-04	(mg/kg/day)	N/A	N/A	IRIS (Napththalene)	01/01/03
	Subchronic	3.0E-03	mg/m^3	8.6E-04	(mg/kg/day)	N/A	N/A	IRIS (Napththalene)	01/01/03
Benzo[a]anthracene	Chronic	N/A	mg/m^3	3.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Pyrene)	01/01/03
	Subchronic	N/A	mg/m^3	3.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Pyrene)	07/01/97
Benzo[a]pyrene	Chronic	N/A	mg/m^3	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg/day)	N/A	N/A	N/A	N/A
Benzo[b]fluoranthene	Chronic	N/A	mg/m^3	3.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Pyrene)	01/01/03
	Subchronic	N/A	mg/m^3	3.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Pyrene)	07/01/97
is(2-ethylhexyl)phthalat	Chronic	1.0E-02	mg/m^3	2.9E-03	(mg/kg/day)	Lung	1,000	NCEA	03/18/96
	Subchronic	1.0E-02	mg/m^3	2.9E-03	(mg/kg/day)	Lung	1,000	NCEA	03/18/96
Dibenz[a,h]anthracene	Chronic	N/A	mg/m^3	3.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Pyrene)	01/01/03
	Subchronic	N/A	mg/m^3	3.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Pyrene)	07/01/97
Indeno[1,2,3-cd]pyrene	Chronic	N/A	mg/m^3	5.0E-02	(mg/kg/day)	N/A	N/A	IRIS (Bisphenol A)	01/01/03
	Subchronic	N/A	mg/m^3	6.0E-01	(mg/kg/day)	N/A	N/A	HEAST (Bisphenol A)	07/01/97
Pentachlorophenol	Chronic	N/A	mg/m^3	3.0E-02	(mg/kg/day)	Liver, kidney	100	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	3.0E-02	(mg/kg/day)	Fetus	100	HEAST (oral)	07/01/97

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (2) (MM/DD/YYYY)
cis-1,2-Dichloroethene	Chronic	N/A	mg/m^3	1.0E-02	(mg/kg/day)	Blood	3,000	HEAST (oral)	07/01/97
	Subchronic	N/A	mg/m^3	1.0E-01	(mg/kg/day)	Blood	300	HEAST (oral)	07/01/97
1,2,4-Trimethylbenzene	Chronic	6.0E-03	mg/m^3	1.7E-03	(mg/kg/day)	CNS, respiratory tract, blood	3,000	NCEA	09/19/02
	Subchronic	6.0E-02	mg/m^3	1.7E-02	(mg/kg/day)	CNS, respiratory tract, blood	300	NCEA	09/19/02
1,3,5-Trimethylbenzene	Chronic	6.0E-03	mg/m^3	1.7E-03	(mg/kg/day)	CNS, respiratory tract, blood	3,000	NCEA	09/19/02
	Subchronic	6.0E-02	mg/m^3	1.7E-02	(mg/kg/day)	CNS, respiratory tract, blood	300	NCEA	09/19/02
1,2-Dichlorobenzene	Chronic	2.0E-01	mg/m^3	5.7E-02	(mg/kg/day)	Whole body	1,000	HEAST, t.2	07/01/97
	Subchronic	2.0E+00	mg/m^3	5.7E-01	(mg/kg/day)	Whole body	100	HEAST, t.2	07/01/97
1,2-Dichloroethane	Chronic	5.0E-03	mg/m^3	1.4E-03	(mg/kg/day)	GI system, liver, gallbladder	3,000	NCEA	04/05/93
	Subchronic	5.0E-02	mg/m^3	1.4E-02	(mg/kg/day)	GI system, liver, gallbladder	300	NCEA	04/05/93
1,3-Dichlorobenzene	Chronic	N/A	mg/m^3	9.0E-04	(mg/kg/day)	Blood, thyroid	10,000	NCEA (oral)	07/14/98
	Subchronic	N/A	mg/m^3	9.0E-04	(mg/kg/day)	Blood, thyroid	1,000	NCEA (oral)	07/14/98
1,4-Dichlorobenzene	Chronic	8.0E-01	mg/m^3	2.3E-01	(mg/kg/day)	Liver	100	IRIS	01/01/03
	Subchronic	2.5E+00	mg/m^3	7.1E-01	(mg/kg/day)	Liver	30	HEAST	07/01/97
Acetone	Chronic	N/A	mg/m^3	1.0E-01	(mg/kg/day)	Liver, kidney	1,000	IRIS (oral)	01/01/03
	Subchronic	N/A	mg/m^3	1.0E+00	(mg/kg/day)	Liver, kidney	100	HEAST (oral)	07/01/97
Benzene	Chronic	6.0E-03	mg/m^3	1.7E-03	(mg/kg/day)	Hematopoetic progenitor cells	1,000	NCEA	07/02/96
	Subchronic	6.0E-02	mg/m^3	1.7E-02	(mg/kg/day)	Hematopoetic progenitor cells	100	NCEA	07/02/96
Chlorobenzene	Chronic	6.0E-02	mg/m^3	1.7E-02	(mg/kg/day)	Liver	1,000	NCEA	09/18/98
	Subchronic	6.0E-01	mg/m^3	1.7E-01	(mg/kg/day)	Liver	100	NCEA	09/18/98
Chloroform	Chronic	5.0E-02	mg/m^3	1.4E-02	(mg/kg/day)	Kidney, liver	100	NCEA	01/22/03
	Subchronic	5.0E-02	mg/m^3	1.4E-02	(mg/kg/day)	Kidney, liver	100	NCEA	01/22/03
Methylene chloride	Chronic	3.0E+00	mg/m^3	8.6E-01	(mg/kg/day)	Liver	100	HEAST	07/01/97
	Subchronic	3.0E+00	mg/m^3	8.6E-01	(mg/kg/day)	Liver	100	HEAST	07/01/97
Naphthalene	Chronic	3.0E-03	mg/m^3	8.6E-04	(mg/kg/day)	Respiratory tract	3,000	IRIS	01/01/03
	Subchronic	3.0E-03	mg/m^3	8.6E-04	(mg/kg/day)	Respiratory tract	3,000	IRIS (chronic)	01/01/03
n-Butylbenzene	Chronic	1.0E+00	mg/m^3	2.9E-01	(mg/kg/day)	N/A	N/A	NCEA (ethylbenzene)	07/26/99
	Subchronic	1.0E+00	mg/m^3	2.9E-01	(mg/kg/day)	N/A	N/A	NCEA (ethylbenzene)	07/26/99
Tetrachloroethene	Chronic	4.0E-01	mg/m^3	1.1E-01	(mg/kg/day)	Liver, kidney	300	NCEA	06/20/97
	Subchronic	4.0E-01	mg/m^3	1.1E-01	(mg/kg/day)	Liver, kidney	300	NCEA	06/20/97
Trichloroethene	Chronic	4.0E-02	mg/m^3	1.1E-02	(mg/kg/day)	CNS, liver, endocrine system	1,000	NCEA	08/01/01
	Subchronic	4.0E-01	mg/m^3	1.1E-01	(mg/kg/day)	CNS, liver, endocrine system	100	NCEA	08/01/01
Vinyl Chloride	Chronic	1.0E-01	mg/m^3	2.9E-02	(mg/kg/day)	Liver	30	IRIS	01/01/03
	Subchronic	1.0E-01	mg/m^3	2.9E-02	(mg/kg/day)	Liver	30	IRIS (chronic)	01/01/03
Xylenes	Chronic	1.0E-01	mg/m^3	2.9E-02	(mg/kg/day)	CNS (motor function)	300	IRIS	02/21/03
	Subchronic	1.0E-01	mg/m^3	2.9E-02	(mg/kg/day)	CNS (motor function)	300	IRIS (chronic)	02/21/03

(1) Inhalation RfD = (RfC x 20 m^3/day) / 70 kg

(2) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of the article provided by NCEA.

(3) RfC/RfD of antimony trioxide, adjusted for molecular weight, used for antimony.

(4) RfD of thallium chloride, adjusted for molecular weight, used for thallium.

Definitions:
IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
N/A=Not Applicable
RfC = Reference Concentration.
RfD = Reference Dose

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (3) (MM/DD/YYYY)
Aluminum	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	NCEA	07/26/01
Antimony	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	B1	NCEA	07/26/99
Arsenic	1.5E+00	1/(mg/kg/day)	1	1.5E+00	1/(mg/kg/day)	A	IRIS	01/01/03
Barium	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Beryllium	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	B1	IRIS	01/01/03
Cadmium	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	B1	IRIS	01/01/03
Chromium(VI)	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Cobalt	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	B1	NCEA	01/15/02
Copper	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Iron	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	NCEA	11/14/01
Lead	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	B2	IRIS	01/01/03
Manganese	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Nickel	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	N/A	N/A	N/A
Silver	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Thallium	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Vanadium	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	N/A	N/A	N/A
Cyanide, free	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Aldrin	1.7E+01	1/(mg/kg/day)	1	1.7E+01	1/(mg/kg/day)	B2	IRIS	01/01/03
Dieldrin	1.6E+01	1/(mg/kg/day)	1	1.6E+01	1/(mg/kg/day)	B2	IRIS	01/01/03
Heptachlor epoxide	9.1E+00	1/(mg/kg/day)	1	9.1E+00	1/(mg/kg/day)	B2	IRIS	01/01/03
2-Methylnaphthalene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	N/A	N/A	N/A
Benzo[a]anthracene	7.3E-01	1/(mg/kg/day)	1	7.3E-01	1/(mg/kg/day)	B2	NCEA	07/01/93
Benzo[a]pyrene	7.3E+00	1/(mg/kg/day)	1	7.3E+00	1/(mg/kg/day)	B2	IRIS	01/01/03
Benzo[b]fluoranthene	7.3E-01	1/(mg/kg/day)	1	7.3E-01	1/(mg/kg/day)	B2	NCEA	07/01/93
Bis(2-ethylhexyl)phthalate	1.4E-02	1/(mg/kg/day)	0.5	2.8E-02	1/(mg/kg/day)	B2	IRIS	01/01/03
Dibenz[a,h]anthracene	7.3E+00	1/(mg/kg/day)	1	7.3E+00	1/(mg/kg/day)	B2	NCEA	07/01/93
Indeno[1,2,3-cd]pyrene	7.3E-01	1/(mg/kg/day)	1	7.3E-01	1/(mg/kg/day)	B2	NCEA	07/01/93
Pentachlorophenol	1.2E-01	1/(mg/kg/day)	1	1.2E-01	1/(mg/kg/day)	B2	IRIS	01/01/03
cis-1,2-Dichloroethene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
1,2,4-Trimethylbenzene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	N/A	N/A	N/A
1,3,5-Trimethylbenzene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	NCEA	09/19/02
1,2-Dichlorobenzene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
1,2-Dichloroethane	9.1E-02	1/(mg/kg/day)	1	9.1E-02	1/(mg/kg/day)	B2	IRIS	01/01/03
1,3-Dichlorobenzene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
1,4-Dichlorobenzene	2.4E-02	1/(mg/kg/day)	1	2.4E-02	1/(mg/kg/day)	C	HEAST	07/01/97
Acetone	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Benzene	5.5E-02	1/(mg/kg/day)	1	5.5E-02	1/(mg/kg/day)	A	IRIS	01/01/03
Chlorobenzene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Chloroform	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	B2	IRIS	01/01/03
Methylene chloride	7.5E-03	1/(mg/kg/day)	1	7.5E-03	1/(mg/kg/day)	B2	IRIS	01/01/03
Naphthalene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	C	IRIS	01/01/03
n-Butylbenzene	N/A	1/(mg/kg/day)	N/A	N/A	1/(mg/kg/day)	N/A	N/A	N/A
Tetrachloroethene	5.1E-02	1/(mg/kg/day)	1	5.1E-02	1/(mg/kg/day)	C-B2	EPA	04/25/03
Trichloroethene	4.0E-01	1/(mg/kg/day)	1	4.0E-01	1/(mg/kg/day)	C-B2	NCEA	08/01/01
Vinyl Chloride	1.4E+00	1/(mg/kg/day)	1	1.4E+00	1/(mg/kg/day)	A	IRIS	01/01/03

(1) Source: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim, Section 4.2 and Exhibit 4-1.

(2) Absorbed CSF = Oral CSF/Oral Absorption Efficiency.

(3) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of the article provided by NCEA.

Definitions:
IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
N/A=Not Applicable
CSF = Cancer Slope Factor

EPA Group:
A-Human carcinogen
B1-Probable human carcinogen-indicates limited human data are available.
B2-Probable human carcinogen- sufficient evidence in animals and inadequate or no evidence in humans
C-Possible human carcinogen
D-Not classifiable as a human carcinogen

TABLE 6.2
CANCER TOXICITY DATA – INHALATION
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Aluminum	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	NCEA	07/26/01
Antimony	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	B1	NCEA	07/26/99
Arsenic	4.3E-03	1/(ug/m^3)	1.5E+01	1/(mg/kg/day)	A	IRIS	01/01/03
Barium	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Beryllium	2.4E-03	1/(ug/m^3)	8.4E+00	1/(mg/kg/day)	B1	IRIS	01/01/03
Cadmium	1.8E-03	1/(ug/m^3)	6.3E+00	1/(mg/kg/day)	B1	IRIS	01/01/03
Chromium(VI)	1.2E-02	1/(ug/m^3)	4.1E+01	1/(mg/kg/day)	A	IRIS	01/01/03
Cobalt	2.8E-03	1/(ug/m^3)	9.8E+00	1/(mg/kg/day)	B1	NCEA	01/15/02
Copper	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Iron	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	NCEA	11/14/01
Lead	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	B2	IRIS	01/01/03
Manganese	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Nickel	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	NA	N/A	N/A
Silver	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Thallium	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Vanadium	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	NA	N/A	N/A
Cyanide, free	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Aldrin	4.9E-03	1/(ug/m^3)	1.7E+01	1/(mg/kg/day)	B2	IRIS	01/01/03
Dieldrin	4.6E-03	1/(ug/m^3)	1.6E+01	1/(mg/kg/day)	B2	IRIS	01/01/03
Heptachlor epoxide	2.6E-03	1/(ug/m^3)	9.1E+00	1/(mg/kg/day)	B2	IRIS	01/01/03
2-Methylnaphthalene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	NA	N/A	N/A
Benzo[a]anthracene	N/A	1/(ug/m^3)	3.1E-01	1/(mg/kg/day)	B2	NCEA (3)	11/18/94
Benzo[a]pyrene	8.8E-04	1/(ug/m^3)	3.1E+00	1/(mg/kg/day)	B2	NCEA	11/18/94
Benzo[b]fluoranthene	N/A	1/(ug/m^3)	3.1E-01	1/(mg/kg/day)	B2	NCEA (3)	11/18/94
Bis(2-ethylhexyl)phthalate	N/A	1/(ug/m^3)	1.4E-02	1/(mg/kg/day)	B2	IRIS (oral)	01/01/03
Dibenz[a,h]anthracene	N/A	1/(ug/m^3)	3.1E+00	1/(mg/kg/day)	B2	NCEA (3)	11/18/94
Indeno[1,2,3-cd]pyrene	N/A	1/(ug/m^3)	3.1E-01	1/(mg/kg/day)	B2	NCEA (3)	11/18/94
Pentachlorophenol	N/A	1/(ug/m^3)	1.2E-01	1/(mg/kg/day)	B2	IRIS (oral)	01/01/03
cis-1,2-Dichloroethene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
1,2,4-Trimethylbenzene	N/A	1/(ug/m^3)	1.8E-01	1/(mg/kg/day)	NA	N/A	N/A
1,3,5-Trimethylbenzene	N/A	1/(ug/m^3)	2.7E-01	1/(mg/kg/day)	D	NCEA	09/19/02
1,2-Dichlorobenzene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
1,2-Dichloroethane	2.6E-05	1/(ug/m^3)	9.1E-02	1/(mg/kg/day)	B2	IRIS	01/01/03
1,3-Dichlorobenzene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
1,4-Dichlorobenzene	N/A	1/(ug/m^3)	2.2E-02	1/(mg/kg/day)	C	NCEA	06/21/93
Acetone	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Benzene	7.8E-06	1/(ug/m^3)	2.7E-02	1/(mg/kg/day)	A	IRIS	01/01/03
Chlorobenzene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	D	IRIS	01/01/03
Chloroform	2.3E-05	1/(ug/m^3)	8.1E-02	1/(mg/kg/day)	B2	IRIS	01/01/03
Methylene chloride	4.7E-07	1/(ug/m^3)	1.6E-03	1/(mg/kg/day)	B2	IRIS	01/01/03
Naphthalene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	C	IRIS	01/01/03
n-Butylbenzene	N/A	1/(ug/m^3)	N/A	1/(mg/kg/day)	NA	N/A	N/A
Tetrachloroethene	5.9E-06	1/(ug/m3)	2.1E-02	1/(mg/kg/day)	C-B2	EPA	04/25/03
Trichloroethene	N/A	1/(ug/m^3)	4.0E-01	1/(mg/kg/day)	C-B2	NCEA	08/01/01
Vinyl Chloride	8.8E-06	1/(ug/m^3)	3.1E-02	1/(mg/kg/day)	A	IRIS	01/01/03

(1) Inhalation Cancer Slope Factor = Unit Risk x (70kg x 1000 ug/mg)/(20 m^3/day)

(2) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of the article provided by NCEA.

Definitions:
IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
N/A=Not Applicable
CSF = Cancer Slope Factor

EPA Group:
A-Human carcinogen
B1-Probable human carcinogen-indicates that limited human data are available
B2-Probable human carcinogen-indicates sufficient evidence in animals and inadequate or no evidence in humans
C-Possible human carcinogen
D-Not classifiable as a human carcinogen

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	6.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-02	mg/kg-day	1.0E+00	mg/kg-day	7.7E-02
				Antimony	1.99E+00	mg/kg	1.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-05	mg/kg-day	4.0E-04	mg/kg-day	3 2E-02
				Arsenic	4.13E+00	mg/kg	2.3E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.4E-06	2.6E-05	mg/kg-day	3.0E-04	mg/kg-day	8.8E-02
				Iron	1.83E+04	mg/kg	1.0E-02	mg/kg-day	--	1/(mg/kg-day)	--	1 2E-01	mg/kg-day	3.0E-01	mg/kg-day	3.9E-01
				Manganese	6.65E+02	mg/kg	3.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-03	mg/kg-day	2.4E-02	mg/kg-day	1.8E-01
				Thallium	3.30E-01	mg/kg	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	7.0E-05	mg/kg-day	3.0E-02
				Dieldrin	1.74E-02	mg/kg	9.6E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.5E-07	1.1E-07	mg/kg-day	5.0E-05	mg/kg-day	2 2E-03
				Benzo(a)anthracene	2.62E-01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.0E-07	1.7E-06	mg/kg-day	3.0E-02	mg/kg-day	5.6E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	1.4E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.0E-06	1.7E-06	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.0E-07	1.7E-06	mg/kg-day	3.0E-02	mg/kg-day	5.6E-05
			Exp. Route Total								4.8E-06					8.0E-01
			Dermal	Aluminum	1.20E+04	mg/kg	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-04	mg/kg-day	5.0E-02	mg/kg-day	4.3E-03
				Antimony	1.99E+00	mg/kg	3.1E-09	mg/kg-day	--	1/(mg/kg-day)	--	3.8E-08	mg/kg-day	5.0E-05	mg/kg-day	5.9E-04
				Arsenic	4.13E+00	mg/kg	1.9E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.9E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.4E-03
				Iron	1.83E+04	mg/kg	2.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-04	mg/kg-day	3.0E-02	mg/kg-day	1.1E-02
				Manganese	6.65E+02	mg/kg	1.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	1 2E-05	mg/kg-day	9.6E-04	mg/kg-day	1.2E-02
				Thallium	3.30E-01	mg/kg	5.1E-10	mg/kg-day	--	1/(mg/kg-day)	--	6.9E-09	mg/kg-day	7.0E-05	mg/kg-day	6.4E-05
				Dieldrin	1.74E-02	mg/kg	2.7E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	4.3E-08	3.1E-08	mg/kg-day	5.0E-05	mg/kg-day	6.2E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	5.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.6E-08	6.1E-07	mg/kg-day	3 0E-02	mg/kg-day	2.0E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	5.2E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.6E-07	6.0E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	5.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.6E-08	6.1E-07	mg/kg-day	3.00E-02	mg/kg-day	2.0E-05
			Exp. Route Total								7.8E-07					3.6E-02
		Exposure Point Total									5.6E-06					8.3E-01
	Exposure Medium Total										5.6E-06					8.3E-01
Surface Soil Total											5.6E-06					8.3E-01
Sediment	Sediment	Six Mile Creek	Ingestion	Aluminum	6.31E+03	mg/kg	3.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-02	mg/kg-day	1.0E+00	mg/kg-day	4.0E-02
				Arsenic	6.31E+00	mg/kg	2.9E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.4E-06	3.4E-05	mg/kg-day	3.0E-04	mg/kg-day	1.1E-01
				Iron	1.91E+04	mg/kg	1.0E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-01	mg/kg-day	3.0E-01	mg/kg-day	4.1E-01
				Manganese	2.19E+03	mg/kg	1.2E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-02	mg/kg-day	2.4E-02	mg/kg-day	5.6E-01
				Thallium	1.15E+00	mg/kg	6.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-05	mg/kg-day	7.0E-05	mg/kg-day	1.1E-01
				Aldrin	7.93E-03	mg/kg	4.3E-09	mg/kg-day	1.7E+01	1/(mg/kg-day)	7.4E-08	5.1E-08	mg/kg-day	3.0E-05	mg/kg-day	1.7E-03
				Heptachlor epoxide	7.14E-03	mg/kg	3.9E-09	mg/kg-day	9.1E+00	1/(mg/kg-day)	3.6E-08	4.6E-08	mg/kg-day	1.3E-05	mg/kg-day	3.5E-03
				Benzo(a)anthracene	3.92E-01	mg/kg	2.1E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.6E-07	2.6E-06	mg/kg-day	3.0E-02	mg/kg-day	8.4E-05
				Benzo(a)pyrene	3.89E-01	mg/kg	2.1E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.6E-06	2.5E-06	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	2.2E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.6E-07	2.6E-06	mg/kg-day	3.0E-02	mg/kg-day	8.7E-05
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	1 8E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.3E-09	2.1E-06	mg/kg-day	3.0E-02	mg/kg-day	6.9E-05
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	1.8E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.3E-07	2.1E-06	mg/kg-day	5.0E-02	mg/kg-day	4.2E-05
			Exp. Route Total								7.8E-06					1.3E+00
			Dermal	Aluminum	6.31E+03	mg/kg	9.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-04	mg/kg-day	5.0E-02	mg/kg-day	2.3E-03
				Arsenic	5.31E+00	mg/kg	2.4E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.7E-07	2.6E-06	mg/kg-day	3.0E-04	mg/kg-day	8.5E-03
				Iron	1.61E+04	mg/kg	2.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-04	mg/kg-day	3.0E-02	mg/kg-day	1.1E-02
				Manganese	2.19E+03	mg/kg	3.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-05	mg/kg-day	9.5E-04	mg/kg-day	4.1E-02
				Thallium	1.15E+00	mg/kg	1.8E-09	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-08	mg/kg-day	7.0E-05	mg/kg-day	2.9E-04
				Aldrin	7.93E-03	mg/kg	1.2E-09	mg/kg-day	1.7E+01	1/(mg/kg-day)	2.1E-08	1.4E-08	mg/kg-day	3.0E-05	mg/kg-day	4.7E-04
				Heptachlor epoxide	7.14E-03	mg/kg	1.1E-09	mg/kg-day	9.1E+00	1/(mg/kg-day)	1.0E-08	1.3E-08	mg/kg-day	1.3E-05	mg/kg-day	9.8E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	7.8E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	5.7E-08	9.1E-07	mg/kg-day	3.0E-02	mg/kg-day	3.0E-05
				Benzo(a)pyrene	3.89E-01	mg/kg	7.6E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	5.7E-07	9.0E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	8.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.0E-08	9.5E-07	mg/kg-day	3.0E-02	mg/kg-day	3.2E-05
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	6.5E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.7E-07	7.6E-07	mg/kg-day	3.0E-02	mg/kg-day	2.5E-05
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	6.6E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.8E-08	7.7E-07	mg/kg-day	5.00E-02	mg/kg-day	1.5E-05
			Exp. Route Total								1.6E-06					6.6E-02
		Exposure Point Total									9.4E-06					1.3E+00
	Exposure Medium Total										9.4E-06					1.3E+00
Sediment Total											9.4E-06					1.3E+00

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Creek/Seeps	Ingestion	Aluminum	1.20E+05	ug/L	9.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-01	mg/kg-day	1.0E+00	mg/kg-day	1.1E-01
				Arsenic	2.11E+01	ug/L	1.7E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.5E-06	1.9E-05	mg/kg-day	3.0E-04	mg/kg-day	6.4E-02
				Barium	7.85E+02	ug/L	6.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.2E-04	mg/kg-day	7.0E-02	mg/kg-day	1.0E-02
				Beryllium	3.49E+00	ug/L	2.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-06	mg/kg-day	2.0E-03	mg/kg-day	1.6E-03
				Cadmium	4.20E+00	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.8E-06	mg/kg-day	5.0E-04	mg/kg-day	7.7E-03
				Chromium(VI)	2.18E+01	ug/L	1.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-05	mg/kg-day	3.0E-03	mg/kg-day	6.6E-03
				Cobalt	3.42E+01	ug/L	2.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-05	mg/kg-day	2.0E-02	mg/kg-day	1.6E-03
				Copper	8.34E+01	ug/L	6.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-05	mg/kg-day	4.0E-02	mg/kg-day	1.9E-03
				Iron	2.30E+05	ug/L	1.8E-02	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-01	mg/kg-day	3.0E-01	mg/kg-day	7.0E-01
				Lead	6.49E+01	ug/L	5.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-05	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	3.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	4.2E-02	mg/kg-day	2.4E-02	mg/kg-day	1.8E+00
				Nickel	5.34E+01	ug/L	4.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.9E-05	mg/kg-day	2.0E-02	mg/kg-day	2.4E-03
				Silver	8.53E+00	ug/L	6.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.8E-06	mg/kg-day	5.0E-03	mg/kg-day	1.6E-03
				Vanadium	4.04E+01	ug/L	3.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-05	mg/kg-day	7.0E-03	mg/kg-day	5.3E-03
				Cyanide, free	3.80E+01	ug/L	3.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-05	mg/kg-day	2.0E-02	mg/kg-day	1.7E-03
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	2.3E-06	mg/kg-day	1.4E-02	1/(mg/kg-day)	3.2E-08	2.6E-05	mg/kg-day	2.0E-02	mg/kg-day	1.3E-03
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	9.4E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-07	mg/kg-day	5.0E-02	mg/kg-day	2.2E-06
				1,4-Dichlorobenzene	1.60E-01	ug/L	1.3E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	3.0E-10	1.5E-07	mg/kg-day	3.0E-02	mg/kg-day	4.9E-06
				Chlorobenzene	2.77E+00	ug/L	2.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-06	mg/kg-day	2.0E-02	mg/kg-day	1.3E-04
				Trichloroethene	8.10E-02	ug/L	6.3E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.5E-09	7.4E-08	mg/kg-day	3.0E-04	mg/kg-day	2.5E-04
			Exp. Route Total								2.5E-06					2.7E+00
			Dermal	Aluminum	1.20E+05	ug/L	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-02	mg/kg-day	5.0E-02	mg/kg-day	2.6E-01
				Arsenic	2.11E+01	ug/L	1.8E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.8E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.2E-03
				Barium	7.85E+02	ug/L	6.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.0E-05	mg/kg-day	4.9E-03	mg/kg-day	1.6E-02
				Beryllium	3.49E+00	ug/L	3.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-07	mg/kg-day	1.4E-05	mg/kg-day	2.5E-02
				Cadmium	4.20E+00	ug/L	3.7E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-07	mg/kg-day	2.5E-05	mg/kg-day	1.7E-02
				Chromium(VI)	2.18E+01	ug/L	3.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-06	mg/kg-day	7.5E-05	mg/kg-day	5.9E-02
				Cobalt	3.42E+01	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	2.0E-02	mg/kg-day	7.0E-05
				Copper	8.34E+01	ug/L	7.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.5E-06	mg/kg-day	--	mg/kg-day	--
				Iron	2.30E+05	ug/L	2.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-02	mg/kg-day	3.0E-02	mg/kg-day	7.8E-01
				Lead	6.49E+01	ug/L	5.7E-08	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-07	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	4.0E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.7E-03	mg/kg-day	9.6E-04	mg/kg-day	4.9E+00
				Nickel	5.34E+01	ug/L	9.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-06	mg/kg-day	8.0E-04	mg/kg-day	1.4E-03
				Silver	8.53E+00	ug/L	4.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-07	mg/kg-day	2.0E-04	mg/kg-day	2.6E-03
				Vanadium	4.04E+01	ug/L	3.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-06	mg/kg-day	7.0E-03	mg/kg-day	5.9E-04
				Cyanide, free	3.80E+01	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-06	mg/kg-day	2.0E-02	mg/kg-day	1.9E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	4.1E-05	mg/kg-day	2.8E-02	1/(mg/kg-day)	1.1E-06	4.7E-04	mg/kg-day	1.0E-02	mg/kg-day	4.7E-02
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	7.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-07	mg/kg-day	5.0E-02	mg/kg-day	1.6E-05
				1,4-Dichlorobenzene	1.60E-01	ug/L	9.7E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.3E-09	1.1E-06	mg/kg-day	3.0E-02	mg/kg-day	3.8E-05
				Chlorobenzene	2.77E+00	ug/L	9.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	5.3E-04
				Trichloroethene	8.10E-02	ug/L	1.3E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	5.1E-09	1.5E-07	mg/kg-day	3.0E-04	mg/kg-day	4.9E-04
			Exp. Route Total								1.4E-06					6.1E+00
		Exposure Point Total									3.9E-06					8.8E+00

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water (continued)		AFFF pond/ Drainage Ditches	Ingestion	Aluminum	1.30E+02	ug/L	5.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-05	mg/kg-day	1.0E+00	mg/kg-day	6.1E-05
				Copper	1.30E+01	ug/L	5.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-06	mg/kg-day	4.0E-02	mg/kg-day	1.5E-04
				Iron	4.00E+02	ug/L	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-04	mg/kg-day	3.0E-01	mg/kg-day	6.2E-04
				Manganese	6.80E+01	ug/L	2.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-05	mg/kg-day	2.4E-02	mg/kg-day	1.3E-03
				Cyanide, free	1.10E+02	ug/L	4.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-05	mg/kg-day	2.0E-02	mg/kg-day	2.6E-03
				Pentachlorophenol	1.00E+00	ug/L	4.0E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	4.8E-09	4.7E-07	mg/kg-day	3.0E-02	mg/kg-day	1.6E-05
				cis-1,2-Dichloroethene	9.70E+00	ug/L	3.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-06	mg/kg-day	1.0E-02	mg/kg-day	4.5E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	5.0E-08	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-07	mg/kg-day	5.0E-02	mg/kg-day	1.2E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	9.9E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.4E-09	1.2E-06	mg/kg-day	3.0E-02	mg/kg-day	3.9E-05
				Benzene	1.13E+00	ug/L	4.5E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.5E-09	5.3E-07	mg/kg-day	3.0E-03	mg/kg-day	1.8E-04
				Chlorobenzene	4.13E+01	ug/L	1.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-05	mg/kg-day	2.0E-02	mg/kg-day	9.6E-04
				Tetrachloroethene	1.65E+00	ug/L	6.6E-08	mg/kg-day	5.1E-02	1/(mg/kg-day)	3.4E-09	7.7E-07	mg/kg-day	1.0E-02	mg/kg-day	7.7E-05
				Trichloroethene	2.40E+00	ug/L	9.6E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	3.8E-08	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.7E-03
			Exp. Route Total								5.1E-08					1.0E-02
			Dermal	Aluminum	1.30E+02	ug/L	5.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.8E-06	mg/kg-day	5.0E-02	mg/kg-day	1.4E-04
				Copper	1.30E+01	ug/L	5.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-07	mg/kg-day	--	mg/kg-day	--
				Iron	4.00E+02	ug/L	1.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-05	mg/kg-day	3.0E-02	mg/kg-day	7.0E-04
				Manganese	6.80E+01	ug/L	3.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-06	mg/kg-day	9.6E-04	mg/kg-day	3.7E-03
				Cyanide, free	1.10E+02	ug/L	4.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.7E-06	mg/kg-day	2.0E-02	mg/kg-day	2.9E-04
				Pentachlorophenol	1.00E+00	ug/L	5.6E-06	mg/kg-day	1.2E-01	1/(mg/kg-day)	6.7E-07	6.5E-05	mg/kg-day	3.0E-02	mg/kg-day	2.2E-03
				cis-1,2-Dichloroethene	9.70E+00	ug/L	4.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.8E-06	mg/kg-day	1.0E-02	mg/kg-day	4.8E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	3.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-06	mg/kg-day	5.0E-02	mg/kg-day	8.8E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	7.7E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.8E-08	9.0E-06	mg/kg-day	3.0E-02	mg/kg-day	3.0E-04
				Benzene	1.13E+00	ug/L	8.0E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	4.4E-09	9.3E-07	mg/kg-day	3.0E-03	mg/kg-day	3.1E-04
				Chlorobenzene	4.13E+01	ug/L	6.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.0E-05	mg/kg-day	2.0E-02	mg/kg-day	4.0E-03
				Tetrachloroethene	1.65E+00	ug/L	4.6E-07	mg/kg-day	5.1E-02	1/(mg/kg-day)	2.3E-08	5.3E-06	mg/kg-day	1.0E-02	mg/kg-day	5.3E-04
				Trichloroethene	2.40E+00	ug/L	1.9E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	7.7E-08	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.5E-03
			Exp. Route Total								7.9E-07					2.0E-02
		Exposure Point Total									8.5E-07					3.0E-02
	Exposure Medium Total										4.8E-06					8.8E+00
Surface Water Total											4.8E-06					8.8E+00
							Total of Receptor Risks Across All Media				2.0E-05	Total of Receptor Hazards Across All Media				1.1E+01

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	1.9E-03	mg/kg-day	–	1/(mg/kg-day)	–	2.2E-02	mg/kg-day	1.0E+00	mg/kg-day	2.2E-02
				Antimony	1.99E+00	mg/kg	3.1E-07	mg/kg-day	–	1/(mg/kg-day)	–	3.6E-06	mg/kg-day	4.0E-04	mg/kg-day	9.1E-03
				Arsenic	4.13E+00	mg/kg	6.5E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	9.7E-07	7.5E-06	mg/kg-day	3.0E-04	mg/kg-day	2.5E-02
				Iron	1.83E+04	mg/kg	2.9E-03	mg/kg-day	–	1/(mg/kg-day)	–	3.3E-02	mg/kg-day	3.0E-01	mg/kg-day	1.1E-01
				Manganese	6.65E+02	mg/kg	1.0E-04	mg/kg-day	–	1/(mg/kg-day)	–	1.2E-03	mg/kg-day	2.4E-02	mg/kg-day	5.1E-02
				Thallium	3.30E-01	mg/kg	5.2E-08	mg/kg-day	–	1/(mg/kg-day)	–	6.0E-07	mg/kg-day	7.0E-05	mg/kg-day	8.6E-03
				Dieldrin	1.74E-02	mg/kg	2.7E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	4.4E-08	3.2E-08	mg/kg-day	5.0E-05	mg/kg-day	6.4E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	4.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.0E-08	4.8E-07	mg/kg-day	3.0E-02	mg/kg-day	1.6E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	4.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.0E-07	4.7E-07	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	2.62E-01	mg/kg	4.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.0E-08	4.8E-07	mg/kg-day	3.0E-02	mg/kg-day	1.6E-05
			Exp. Route Total								1.4E-06					2.3E-01
			Dermal	Aluminum	1.20E+04	mg/kg	1.1E-05	mg/kg-day	–	1/(mg/kg-day)	–	1.2E-04	mg/kg-day	5.0E-02	mg/kg-day	2.6E-03
				Antimony	1.99E+00	mg/kg	1.7E-09	mg/kg-day	–	1/(mg/kg-day)	–	2.0E-08	mg/kg-day	6.0E-05	mg/kg-day	3.4E-04
				Arsenic	4.13E+00	mg/kg	1.1E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.6E-07	1.3E-06	mg/kg-day	3.0E-04	mg/kg-day	4.2E-03
				Iron	1.83E+04	mg/kg	1.6E-05	mg/kg-day	–	1/(mg/kg-day)	–	1.9E-04	mg/kg-day	3.0E-02	mg/kg-day	6.2E-03
				Manganese	6.65E+02	mg/kg	5.8E-07	mg/kg-day	–	1/(mg/kg-day)	–	6.8E-06	mg/kg-day	9.6E-04	mg/kg-day	7.1E-03
				Thallium	3.30E-01	mg/kg	2.9E-10	mg/kg-day	–	1/(mg/kg-day)	–	3.4E-09	mg/kg-day	7.0E-05	mg/kg-day	4.8E-05
				Dieldrin	1.74E-02	mg/kg	1.5E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	2.4E-08	1.8E-08	mg/kg-day	5.0E-05	mg/kg-day	3.6E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	3.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.2E-08	3.5E-07	mg/kg-day	3.0E-02	mg/kg-day	1.2E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	3.0E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.2E-07	3.5E-07	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	2.62E-01	mg/kg	3.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.2E-08	3.5E-07	mg/kg-day	3.00E-02	mg/kg-day	1.2E-05
			Exp. Route Total								4.5E-07					2.1E-02
		Exposure Point Total									1.8E-06					2.5E-01
	Exposure Medium Total										1.8E-06					2.5E-01
Surface Soil Total											1.8E-06					2.5E-01
Sediment	Sediment	Six Mile Creek	Ingestion	Aluminum	6.31E+03	mg/kg	9.9E-04	mg/kg-day	–	1/(mg/kg-day)	–	1.2E-02	mg/kg-day	1.0E+00	mg/kg-day	1.2E-02
				Arsenic	5.31E+00	mg/kg	8.3E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.2E-06	9.7E-06	mg/kg-day	3.0E-04	mg/kg-day	3.2E-02
				Iron	1.91E+04	mg/kg	3.0E-03	mg/kg-day	–	1/(mg/kg-day)	–	3.5E-02	mg/kg-day	3.0E-01	mg/kg-day	1.2E-01
				Manganese	2.19E+03	mg/kg	3.4E-04	mg/kg-day	–	1/(mg/kg-day)	–	4.0E-03	mg/kg-day	2.4E-02	mg/kg-day	1.7E-01
				Thallium	1.15E+00	mg/kg	1.8E-07	mg/kg-day	–	1/(mg/kg-day)	–	2.1E-06	mg/kg-day	7.0E-05	mg/kg-day	3.0E-02
				Aldrin	7.93E-03	mg/kg	1.2E-09	mg/kg-day	1.7E+01	1/(mg/kg-day)	2.1E-08	1.4E-08	mg/kg-day	3.0E-05	mg/kg-day	4.8E-04
				Heptachlor epoxide	7.14E-03	mg/kg	1.1E-09	mg/kg-day	9.1E+00	1/(mg/kg-day)	1.0E-08	1.3E-08	mg/kg-day	1.3E-05	mg/kg-day	1.0E-03
				Benzo(a)anthracene	3.92E-01	mg/kg	6.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.5E-08	7.2E-07	mg/kg-day	3.0E-02	mg/kg-day	2.4E-05
				Benzo(a)pyrene	3.89E-01	mg/kg	6.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.4E-07	7.1E-07	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	4.09E-01	mg/kg	6.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.7E-08	7.5E-07	mg/kg-day	3.0E-02	mg/kg-day	2.5E-05
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	5.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.7E-07	5.9E-07	mg/kg-day	3.0E-02	mg/kg-day	2.0E-05
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	5.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.8E-08	6.0E-07	mg/kg-day	5.0E-02	mg/kg-day	1.2E-05
			Exp. Route Total								2.2E-06					3.6E-01
			Dermal	Aluminum	6.31E+03	mg/kg	5.5E-06	mg/kg-day	–	1/(mg/kg-day)	–	6.5E-05	mg/kg-day	5.0E-02	mg/kg-day	1.3E-03
				Arsenic	5.31E+00	mg/kg	1.4E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.1E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	5.4E-03
				Iron	1.91E+04	mg/kg	1.7E-05	mg/kg-day	–	1/(mg/kg-day)	–	2.0E-04	mg/kg-day	3.0E-02	mg/kg-day	6.5E-03
				Manganese	2.19E+03	mg/kg	1.9E-06	mg/kg-day	–	1/(mg/kg-day)	–	2.2E-05	mg/kg-day	9.6E-04	mg/kg-day	2.3E-02
				Thallium	1.15E+00	mg/kg	1.0E-09	mg/kg-day	–	1/(mg/kg-day)	–	1.2E-08	mg/kg-day	7.0E-05	mg/kg-day	1.7E-04
				Aldrin	7.93E-03	mg/kg	6.9E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	1.2E-08	8.1E-09	mg/kg-day	3.0E-05	mg/kg-day	2.7E-04
				Heptachlor epoxide	7.14E-03	mg/kg	6.3E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	5.7E-09	7.3E-09	mg/kg-day	1.3E-05	mg/kg-day	5.6E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	4.5E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.3E-08	5.2E-07	mg/kg-day	3.0E-02	mg/kg-day	1.7E-05
				Benzo(a)pyrene	3.89E-01	mg/kg	4.4E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.2E-07	5.2E-07	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	4.09E-01	mg/kg	4.7E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.4E-08	5.4E-07	mg/kg-day	3.0E-02	mg/kg-day	1.8E-05
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	3.7E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.7E-07	4.3E-07	mg/kg-day	3.0E-02	mg/kg-day	1.4E-05
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	3.8E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.7E-08	4.4E-07	mg/kg-day	5.00E-02	mg/kg-day	8.8E-06
			Exp. Route Total								9.2E-07					3.8E-02
		Exposure Point Total									3.1E-06					4.0E-01
	Exposure Medium Total										3.1E-06					4.0E-01
Sediment Total											3.1E-06					4.0E-01

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Creek/Seeps	Ingestion	Aluminum	1.20E+05	ug/L	4.7E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.5E-02	mg/kg-day	1.0E+00	mg/kg-day	5.5E-02
				Arsenic	2.11E+01	ug/L	6.3E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.2E-06	9.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.2E-02
				Barium	7.85E+02	ug/L	3.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-04	mg/kg-day	7.0E-02	mg/kg-day	5.1E-03
				Beryllium	3.49E+00	ug/L	1.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-06	mg/kg-day	2.0E-03	mg/kg-day	8.0E-04
				Cadmium	4.20E+00	ug/L	1.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-06	mg/kg-day	5.0E-04	mg/kg-day	3.8E-03
				Chromium(VI)	2.16E+01	ug/L	6.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.9E-06	mg/kg-day	3.0E-03	mg/kg-day	3.3E-03
				Cobalt	3.42E+01	ug/L	1.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-05	mg/kg-day	2.0E-02	mg/kg-day	7.8E-04
				Copper	6.34E+01	ug/L	3.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-05	mg/kg-day	4.0E-02	mg/kg-day	9.5E-04
				Iron	2.30E+05	ug/L	9.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-01	mg/kg-day	3.0E-01	mg/kg-day	3.5E-01
				Lead	6.49E+01	ug/L	2.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-05	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	1.8E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-02	mg/kg-day	2.4E-02	mg/kg-day	8.8E-01
				Nickel	5.34E+01	ug/L	2.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-05	mg/kg-day	2.0E-02	mg/kg-day	1.2E-03
				Silver	8.53E+00	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-06	mg/kg-day	5.0E-03	mg/kg-day	7.8E-04
				Vanadium	4.04E+01	ug/L	1.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-05	mg/kg-day	7.0E-03	mg/kg-day	2.6E-03
				Cyanide, free	3.60E+01	ug/L	1.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-05	mg/kg-day	2.0E-02	mg/kg-day	8.7E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	1.1E-06	mg/kg-day	1.4E-02	1/(mg/kg-day)	1.6E-08	1.3E-05	mg/kg-day	2.0E-02	mg/kg-day	6.6E-04
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	4.7E-09	mg/kg-day	--	1/(mg/kg-day)	--	5.5E-08	mg/kg-day	5.0E-02	mg/kg-day	1.1E-06
				1,4-Dichlorobenzene	1.60E-01	ug/L	6.3E-09	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.5E-10	7.3E-08	mg/kg-day	3.0E-02	mg/kg-day	2.4E-06
				Chlorobenzene	2.77E+00	ug/L	1.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-06	mg/kg-day	2.0E-02	mg/kg-day	6.3E-05
				Trichloroethene	8.10E-02	ug/L	3.2E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.3E-09	3.7E-08	mg/kg-day	3.0E-04	mg/kg-day	1.2E-04
			Exp. Route Total								1.3E-06					1.3E+00
			Dermal	Aluminum	1.20E+05	ug/L	5.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-03	mg/kg-day	5.0E-02	mg/kg-day	1.2E-01
				Arsenic	2.11E+01	ug/L	9.2E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.4E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.6E-03
				Barium	7.85E+02	ug/L	3.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-05	mg/kg-day	4.0E-03	mg/kg-day	8.2E-03
				Beryllium	3.49E+00	ug/L	1.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-07	mg/kg-day	1.4E-05	mg/kg-day	1.3E-02
				Cadmium	4.20E+00	ug/L	1.8E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-07	mg/kg-day	2.5E-05	mg/kg-day	8.6E-03
				Chromium(VI)	2.16E+01	ug/L	1.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-06	mg/kg-day	7.5E-05	mg/kg-day	3.0E-02
				Cobalt	3.42E+01	ug/L	6.0E-08	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-07	mg/kg-day	2.0E-02	mg/kg-day	3.5E-05
				Copper	6.34E+01	ug/L	3.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-06	mg/kg-day	--	mg/kg-day	--
				Iron	2.30E+05	ug/L	1.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-02	mg/kg-day	3.0E-02	mg/kg-day	3.9E-01
				Lead	6.49E+01	ug/L	2.8E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-07	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	2.0E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-03	mg/kg-day	9.6E-04	mg/kg-day	2.5E+00
				Nickel	5.34E+01	ug/L	4.7E-08	mg/kg-day	--	1/(mg/kg-day)	--	5.5E-07	mg/kg-day	8.0E-04	mg/kg-day	6.8E-04
				Silver	8.53E+00	ug/L	2.2E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-07	mg/kg-day	2.0E-04	mg/kg-day	1.3E-03
				Vanadium	4.04E+01	ug/L	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	7.0E-03	mg/kg-day	3.0E-04
				Cyanide, free	3.60E+01	ug/L	1.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-06	mg/kg-day	2.0E-02	mg/kg-day	9.7E-05
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	2.0E-05	mg/kg-day	2.8E-02	1/(mg/kg-day)	5.7E-07	2.4E-04	mg/kg-day	1.0E-02	mg/kg-day	2.4E-02
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	3.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-07	mg/kg-day	5.0E-02	mg/kg-day	8.2E-06
				1,4-Dichlorobenzene	1.60E-01	ug/L	4.9E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-09	5.7E-07	mg/kg-day	3.0E-02	mg/kg-day	1.9E-05
				Chlorobenzene	2.77E+00	ug/L	4.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.3E-06	mg/kg-day	2.0E-02	mg/kg-day	2.6E-04
				Trichloroethene	8.10E-02	ug/L	6.3E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.5E-09	7.4E-08	mg/kg-day	3.0E-04	mg/kg-day	2.5E-04
			Exp. Route Total								7.1E-07					3.1E+00
		Exposure Point Total									2.0E-06					4.4E+00

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water (continued)		AFFF pond/ Drainage Ditches	Ingestion	Aluminum	1.30E+02	ug/L	5.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-05	mg/kg-day	1.0E+00	mg/kg-day	5.9E-05
				Copper	1.30E+01	ug/L	5.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-06	mg/kg-day	4.0E-02	mg/kg-day	1.5E-04
				Iron	4.00E+02	ug/L	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-04	mg/kg-day	3.0E-01	mg/kg-day	6.1E-04
				Manganese	6.80E+01	ug/L	2.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-05	mg/kg-day	2.4E-02	mg/kg-day	1.3E-03
				Cyanide, free	1.10E+02	ug/L	4.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-05	mg/kg-day	2.0E-02	mg/kg-day	2.5E-03
				Pentachlorophenol	1.00E+00	ug/L	3.9E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	4.7E-09	4.5E-07	mg/kg-day	3.0E-02	mg/kg-day	1.5E-05
				cis-1,2-Dichloroethene	9.70E+00	ug/L	3.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-06	mg/kg-day	1.0E-02	mg/kg-day	4.4E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	4.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	5.7E-07	mg/kg-day	5.0E-02	mg/kg-day	1.1E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	9.7E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.3E-09	1.1E-06	mg/kg-day	3.0E-02	mg/kg-day	3.8E-05
				Benzene	1.13E+00	ug/L	4.4E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.4E-09	5.2E-07	mg/kg-day	3.0E-03	mg/kg-day	1.7E-04
				Chlorobenzene	4.13E+01	ug/L	1.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-05	mg/kg-day	2.0E-02	mg/kg-day	9.4E-04
				Tetrachloroethene	1.65E+00	ug/L	6.5E-08	mg/kg-day	5.1E-02	1/(mg/kg-day)	3.3E-09	7.6E-07	mg/kg-day	1.0E-02	mg/kg-day	7.6E-05
				Trichloroethene	2.40E+00	ug/L	9.4E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	3.8E-08	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.7E-03
			Exp. Route Total								5.0E-08					1.0E-02
			Dermal	Aluminum	1.30E+02	ug/L	5.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-06	mg/kg-day	5.0E-02	mg/kg-day	1.3E-04
				Copper	1.30E+01	ug/L	5.7E-08	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-07	mg/kg-day	--	mg/kg-day	--
				Iron	4.00E+02	ug/L	1.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-05	mg/kg-day	3.0E-02	mg/kg-day	6.8E-04
				Manganese	6.80E+01	ug/L	3.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-06	mg/kg-day	9.6E-04	mg/kg-day	3.6E-03
				Cyanide, free	1.10E+02	ug/L	4.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.6E-06	mg/kg-day	2.0E-02	mg/kg-day	2.8E-04
				Pentachlorophenol	1.00E+00	ug/L	5.5E-06	mg/kg-day	1.2E-01	1/(mg/kg-day)	6.6E-07	6.4E-05	mg/kg-day	3.0E-02	mg/kg-day	2.1E-03
				cis-1,2-Dichloroethene	9.70E+00	ug/L	3.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-06	mg/kg-day	1.0E-02	mg/kg-day	4.5E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	3.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-06	mg/kg-day	5.0E-02	mg/kg-day	8.6E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	7.6E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.8E-08	8.8E-06	mg/kg-day	3.0E-02	mg/kg-day	2.9E-04
				Benzene	1.13E+00	ug/L	7.8E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	4.3E-09	9.2E-07	mg/kg-day	3.0E-03	mg/kg-day	3.1E-04
				Chlorobenzene	4.13E+01	ug/L	6.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.8E-05	mg/kg-day	2.0E-02	mg/kg-day	3.9E-03
				Tetrachloroethene	1.65E+00	ug/L	4.5E-07	mg/kg-day	5.1E-02	1/(mg/kg-day)	2.3E-08	5.2E-06	mg/kg-day	1.0E-02	mg/kg-day	5.2E-04
				Trichloroethene	2.40E+00	ug/L	1.9E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	7.5E-08	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.3E-03
			Exp. Route Total								7.8E-07					2.0E-02
		Exposure Point Total									8.3E-07					3.0E-02
	Exposure Medium Total										2.8E-06					4.4E+00
Surface Water Total											2.8E-06					4.4E+00
										Total of Receptor Risks Across All Media	7.8E-06				Total of Receptor Hazards Across All Media	5.1E+00

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	2.8E-03	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-03	mg/kg-day	1.0E+00	mg/kg-day	8.2E-03
				Antimony	1.99E+00	mg/kg	4.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	4.0E-04	mg/kg-day	3.4E-03
				Arsenic	4.13E+00	mg/kg	9.7E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.5E-06	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	9.4E-03
				Iron	1.83E+04	mg/kg	4.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-02	mg/kg-day	3.0E-01	mg/kg-day	4.2E-02
				Manganese	6.65E+02	mg/kg	1.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.6E-04	mg/kg-day	2.4E-02	mg/kg-day	1.9E-02
				Thallium	3.30E-01	mg/kg	7.8E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-07	mg/kg-day	7.0E-05	mg/kg-day	3.2E-03
				Dieldrin	1.74E-02	mg/kg	4.1E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	6.6E-08	1.2E-08	mg/kg-day	5.0E-05	mg/kg-day	2.4E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	6.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.5E-08	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.0E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	6.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.4E-07	1.8E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.67E-01	mg/kg	6.1E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.5E-08	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.0E-06
			Exp. Route Total								2.1E-06					8.5E-02
			Dermal	Aluminum	1.20E+04	mg/kg	1.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-05	mg/kg-day	6.0E-02	mg/kg-day	5.5E-04
				Antimony	1.99E+00	mg/kg	1.9E-09	mg/kg-day	--	1/(mg/kg-day)	--	5.4E-09	mg/kg-day	6.0E-05	mg/kg-day	9.1E-05
				Arsenic	4.13E+00	mg/kg	1.2E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.7E-07	3.4E-07	mg/kg-day	3.0E-04	mg/kg-day	1.1E-03
				Iron	1.83E+04	mg/kg	1.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-05	mg/kg-day	3.0E-02	mg/kg-day	1.7E-03
				Manganese	6.65E+02	mg/kg	6.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-06	mg/kg-day	9.6E-04	mg/kg-day	1.9E-03
				Thallium	3.30E-01	mg/kg	3.1E-10	mg/kg-day	--	1/(mg/kg-day)	--	9.0E-10	mg/kg-day	7.0E-05	mg/kg-day	1.3E-05
				Dieldrin	1.74E-02	mg/kg	1.6E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	2.6E-08	4.8E-09	mg/kg-day	5.0E-05	mg/kg-day	9.6E-05
Subsurface Soil				Benzo(a)anthracene	2.62E-01	mg/kg	3.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.3E-08	9.3E-08	mg/kg-day	3.0E-02	mg/kg-day	3.1E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	3.2E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.3E-07	9.2E-08	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	3.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.3E-08	9.3E-08	mg/kg-day	3.00E-02	mg/kg-day	3.1E-06
			Exp. Route Total								4.8E-07					5.6E-03
		Exposure Point Total									2.5E-06					9.1E-02
	Exposure Medium Total										2.5E-06					9.1E-02
Surface Soil Total											2.6E-06					9.1E-02
Sediment	Sediment	Six Mile Creek	Ingestion	Aluminum	6.31E+03	mg/kg	1.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-03	mg/kg-day	1.0E+00	mg/kg-day	4.3E-03
				Arsenic	5.31E+00	mg/kg	1.2E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.9E-06	3.6E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				Iron	1.91E+04	mg/kg	4.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-02	mg/kg-day	3.0E-01	mg/kg-day	4.4E-02
				Manganese	2.19E+03	mg/kg	5.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-03	mg/kg-day	2.4E-02	mg/kg-day	6.3E-02
				Thallium	1.15E+00	mg/kg	2.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.9E-07	mg/kg-day	7.0E-05	mg/kg-day	1.1E-02
				Aldrin	7.93E-03	mg/kg	1.9E-09	mg/kg-day	1.7E+01	1/(mg/kg-day)	3.2E-08	5.4E-09	mg/kg-day	3.0E-05	mg/kg-day	1.8E-04
				Heptachlor epoxide	7.14E-03	mg/kg	1.7E-09	mg/kg-day	9.1E+00	1/(mg/kg-day)	1.5E-08	4.9E-09	mg/kg-day	1.3E-05	mg/kg-day	3.8E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	9.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.7E-08	2.7E-07	mg/kg-day	3.0E-02	mg/kg-day	8.9E-06
				Benzo(a)pyrene	3.89E-01	mg/kg	9.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	6.7E-07	2.7E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	9.6E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.0E-09	2.8E-07	mg/kg-day	3.0E-02	mg/kg-day	9.3E-06
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	7.6E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	5.6E-07	2.2E-07	mg/kg-day	3.0E-02	mg/kg-day	7.4E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	7.7E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.6E-08	2.3E-07	mg/kg-day	5.0E-02	mg/kg-day	4.5E-06
			Exp. Route Total								3.3E-06					1.3E-01
			Dermal	Aluminum	6.31E+03	mg/kg	5.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-05	mg/kg-day	5.0E-02	mg/kg-day	3.5E-04
				Arsenic	5.31E+00	mg/kg	1.5E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.2E-07	4.4E-07	mg/kg-day	3.0E-04	mg/kg-day	1.5E-03
				Iron	1.91E+04	mg/kg	1.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-05	mg/kg-day	3.0E-02	mg/kg-day	1.7E-03
				Manganese	2.19E+03	mg/kg	2.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.0E-06	mg/kg-day	9.6E-04	mg/kg-day	6.2E-03
				Thallium	1.15E+00	mg/kg	1.1E-09	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-09	mg/kg-day	7.0E-05	mg/kg-day	4.5E-05
				Aldrin	7.93E-03	mg/kg	7.4E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	1.3E-08	2.2E-09	mg/kg-day	3.0E-05	mg/kg-day	7.2E-05
				Heptachlor epoxide	7.14E-03	mg/kg	6.1E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	6.1E-09	2.0E-09	mg/kg-day	1.3E-05	mg/kg-day	1.5E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	4.8E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.5E-08	1.4E-07	mg/kg-day	3.0E-02	mg/kg-day	4.8E-06
				Benzo(a)pyrene	3.89E-01	mg/kg	4.7E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.5E-07	1.4E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	5.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.6E-08	1.5E-07	mg/kg-day	3.0E-02	mg/kg-day	4.8E-06
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	4.0E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.9E-07	1.2E-07	mg/kg-day	3.0E-02	mg/kg-day	3.9E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	4.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.9E-08	1.2E-07	mg/kg-day	5.00E-02	mg/kg-day	2.3E-06
			Exp. Route Total								9.8E-07					1.0E-02
		Exposure Point Total									4.3E-06					1.4E-01
	Exposure Medium Total										4.3E-06					1.4E-01
Sediment Total											4.3E-06					1.4E-01

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Creek/Seeps	Ingestion	Aluminum	1.20E+05	ug/L	1.4E-02	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-02	mg/kg-day	1.0E+00	mg/kg-day	4.1E-02
				Arsenic	2.11E+01	ug/L	2.5E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.7E-06	7.2E-06	mg/kg-day	3.0E-04	mg/kg-day	2.4E-02
				Barium	7.85E+02	ug/L	9.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-04	mg/kg-day	7.0E-02	mg/kg-day	3.8E-03
				Beryllium	3.49E+00	ug/L	4.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-06	mg/kg-day	2.0E-03	mg/kg-day	6.0E-04
				Cadmium	4.20E+00	ug/L	4.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	5.0E-04	mg/kg-day	2.9E-03
				Chromium(VI)	2.15E+01	ug/L	2.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-06	mg/kg-day	3.0E-03	mg/kg-day	2.5E-03
				Cobalt	3.42E+01	ug/L	4.0E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	5.9E-04
				Copper	8.34E+01	ug/L	9.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-05	mg/kg-day	4.0E-02	mg/kg-day	7.1E-04
				Iron	2.30E+05	ug/L	2.7E-02	mg/kg-day	--	1/(mg/kg-day)	--	7.9E-02	mg/kg-day	3.0E-01	mg/kg-day	2.5E-01
				Lead	6.49E+01	ug/L	7.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-05	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	5.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-02	mg/kg-day	2.4E-02	mg/kg-day	6.6E-01
				Nickel	5.34E+01	ug/L	6.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-05	mg/kg-day	2.0E-02	mg/kg-day	9.1E-04
				Silver	8.53E+00	ug/L	1.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-06	mg/kg-day	5.0E-03	mg/kg-day	5.8E-04
				Vanadium	4.04E+01	ug/L	4.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	7.0E-02	mg/kg-day	2.0E-03
				Cyanide, free	3.60E+01	ug/L	4.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-05	mg/kg-day	2.0E-02	mg/kg-day	6.5E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	3.4E-09	mg/kg-day	1.4E-02	1/(mg/kg-day)	4.8E-08	9.9E-06	mg/kg-day	2.0E-02	mg/kg-day	5.0E-04
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	1.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-08	mg/kg-day	5.0E-02	mg/kg-day	9.2E-07
				1,4-Dichlorobenzene	1.60E-01	ug/L	1.9E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	4.5E-10	5.5E-08	mg/kg-day	3.0E-02	mg/kg-day	1.8E-06
				Chlorobenzene	2.77E+00	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.5E-07	mg/kg-day	2.0E-02	mg/kg-day	4.8E-05
				Trichloroethene	9.10E-02	ug/L	9.5E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	3.8E-09	2.8E-08	mg/kg-day	3.0E-04	mg/kg-day	9.2E-05
			Exp. Route Total								3.8E-06					1.0E+00
			Dermal	Aluminum	1.20E+05	ug/L	3.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	9.9E-03	mg/kg-day	5.0E-02	mg/kg-day	2.0E-01
				Arsenic	2.11E+01	ug/L	5.9E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	8.9E-07	1.7E-06	mg/kg-day	3.0E-04	mg/kg-day	5.8E-03
				Barium	7.85E+02	ug/L	2.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-05	mg/kg-day	4.9E-03	mg/kg-day	1.3E-02
				Beryllium	3.49E+00	ug/L	9.8E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-07	mg/kg-day	1.4E-05	mg/kg-day	2.0E-02
				Cadmium	4.20E+00	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-07	mg/kg-day	2.5E-05	mg/kg-day	1.4E-02
				Chromium(VI)	2.18E+01	ug/L	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-06	mg/kg-day	7.5E-05	mg/kg-day	4.8E-02
				Cobalt	3.42E+01	ug/L	3.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	5.6E-05
				Copper	8.34E+01	ug/L	2.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.9E-06	mg/kg-day	--	mg/kg-day	--
				Iron	2.30E+05	ug/L	6.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-02	mg/kg-day	3.0E-02	mg/kg-day	6.3E-01
				Lead	6.49E+01	ug/L	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.3E-07	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	1.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.8E-03	mg/kg-day	9.6E-04	mg/kg-day	3.9E+00
				Nickel	5.34E+01	ug/L	3.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.8E-07	mg/kg-day	8.0E-04	mg/kg-day	1.1E-03
				Silver	8.53E+00	ug/L	1.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.2E-07	mg/kg-day	2.0E-04	mg/kg-day	2.1E-03
				Vanadium	4.04E+01	ug/L	1.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-06	mg/kg-day	7.0E-03	mg/kg-day	4.7E-04
				Cyanide, free	3.60E+01	ug/L	1.1E-09	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-06	mg/kg-day	2.0E-02	mg/kg-day	1.6E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	1.3E-04	mg/kg-day	2.6E-02	1/(mg/kg-day)	3.6E-06	3.0E-04	mg/kg-day	1.0E-02	mg/kg-day	3.0E-02
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	2.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-07	mg/kg-day	5.0E-02	mg/kg-day	1.3E-05
				1,4-Dichlorobenzene	1.60E-01	ug/L	3.1E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	7.5E-09	9.1E-07	mg/kg-day	3.0E-02	mg/kg-day	3.0E-05
				Chlorobenzene	2.77E+00	ug/L	2.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	8.5E-08	mg/kg-day	2.0E-02	mg/kg-day	4.2E-04
				Trichloroethene	8.10E-02	ug/L	4.1E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.6E-08	1.2E-07	mg/kg-day	3.0E-04	mg/kg-day	4.0E-04
			Exp. Route Total								4.6E-06					4.9E+00
		Exposure Point Total									8.3E-06					5.9E+00

TABLE 7.2 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water (continued)		AFFF pond/ Drainage Ditches	Ingestion	Aluminum	1.30E+02	ug/L	4.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-05	mg/kg-day	1.0E+00	mg/kg-day	1.3E-05
				Copper	1.30E+01	ug/L	4.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-06	mg/kg-day	4.0E-02	mg/kg-day	3.2E-05
				Iron	4.00E+02	ug/L	1.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-05	mg/kg-day	3.0E-01	mg/kg-day	1.3E-04
				Manganese	6.80E+01	ug/L	2.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.8E-06	mg/kg-day	2.4E-02	mg/kg-day	2.8E-04
				Cyanide, free	1.10E+02	ug/L	3.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	5.5E-04
				Pentachlorophenol	1.00E+00	ug/L	3.4E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	4.1E-09	1.0E-07	mg/kg-day	3.0E-02	mg/kg-day	3.3E-06
				cis-1,2-Dichloroethene	9.70E+00	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.7E-07	mg/kg-day	1.0E-02	mg/kg-day	9.7E-05
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	4.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-07	mg/kg-day	5.0E-02	mg/kg-day	2.5E-06
				1,4-Dichlorobenzene	2.49E+00	ug/L	8.5E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.0E-09	2.5E-07	mg/kg-day	3.0E-02	mg/kg-day	8.3E-06
				Benzene	1.13E+00	ug/L	3.9E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.1E-09	1.1E-07	mg/kg-day	3.0E-03	mg/kg-day	3.8E-05
				Chlorobenzene	4.13E+01	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-06	mg/kg-day	2.0E-02	mg/kg-day	2.1E-04
				Tetrachloroethene	1.65E+00	ug/L	5.7E-08	mg/kg-day	5.1E-02	1/(mg/kg-day)	2.9E-09	1.7E-07	mg/kg-day	1.0E-02	mg/kg-day	1.7E-05
				Trichloroethene	2.40E+00	ug/L	8.2E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	3.3E-08	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	8.0E-04
			Exp. Route Total								4.4E-08					2.2E-03
			Dermal	Aluminum	1.30E+02	ug/L	1.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-06	mg/kg-day	5.0E-02	mg/kg-day	6.2E-05
				Copper	1.30E+01	ug/L	1.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-07	mg/kg-day	--	mg/kg-day	--
				Iron	4.00E+02	ug/L	3.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.6E-06	mg/kg-day	3.0E-02	mg/kg-day	3.2E-04
				Manganese	6.80E+01	ug/L	5.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-06	mg/kg-day	9.6E-04	mg/kg-day	1.7E-03
				Cyanide, free	1.10E+02	ug/L	8.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-06	mg/kg-day	2.0E-02	mg/kg-day	1.3E-04
				Pentachlorophenol	1.00E+00	ug/L	1.0E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	1.2E-09	3.0E-05	mg/kg-day	3.0E-02	mg/kg-day	1.0E-03
				cis-1,2-Dichloroethene	9.70E+00	ug/L	7.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	1.0E-02	mg/kg-day	2.1E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	8.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-06	mg/kg-day	6.0E-02	mg/kg-day	4.0E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	1.4E-06	mg/kg-day	2.4E-02	1/(mg/kg-day)	3.4E-08	4.1E-06	mg/kg-day	3.0E-02	mg/kg-day	1.4E-04
				Benzene	1.13E+00	ug/L	1.5E-07	mg/kg-day	5.5E-02	1/(mg/kg-day)	9.1E-09	4.3E-07	mg/kg-day	3.0E-03	mg/kg-day	1.4E-04
				Chlorobenzene	4.13E+01	ug/L	1.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-05	mg/kg-day	2.0E-02	mg/kg-day	1.8E-03
				Tetrachloroethene	1.65E+00	ug/L	8.4E-07	mg/kg-day	5.1E-02	1/(mg/kg-day)	4.3E-08	2.4E-06	mg/kg-day	1.0E-02	mg/kg-day	2.4E-04
				Trichloroethene	2.40E+00	ug/L	3.5E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.4E-07	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.4E-03
			Exp. Route Total								1.5E-06					9.3E-03
		Exposure Point Total									1.5E-06					1.1E-02
	Exposure Medium Total										9.8E-06					5.9E+00
Surface Water Total											9.8E-06					5.9E+00
							Total of Receptor Risks Across All Media				1.7E-06	Total of Receptor Hazards Across All Media				6.2E+00

TABLE 7.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	3.0E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-03	mg/kg-day	1.0E+00	mg/kg-day	2.4E-03
				Antimony	1.99E+00	mg/kg	5.0E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-07	mg/kg-day	4.0E-04	mg/kg-day	9.7E-04
				Arsenic	4.13E+00	mg/kg	1.0E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.6E-07	8.1E-07	mg/kg-day	3.0E-04	mg/kg-day	2.7E-03
				Iron	1.83E+04	mg/kg	4.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-03	mg/kg-day	3.0E-01	mg/kg-day	1.2E-02
				Manganese	6.65E+02	mg/kg	1.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	2.4E-02	mg/kg-day	5.4E-03
				Thallium	3.30E-01	mg/kg	8.3E-09	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-08	mg/kg-day	7.0E-05	mg/kg-day	9.2E-04
				Dieldrin	1.74E-02	mg/kg	4.4E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	7.0E-09	3.4E-09	mg/kg-day	5.0E-05	mg/kg-day	6.8E-05
				Benzo(a)anthracene	2.62E-01	mg/kg	6.6E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.8E-09	5.1E-08	mg/kg-day	3.0E-02	mg/kg-day	1.7E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	6.5E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.8E-08	5.1E-08	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	6.6E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.8E-09	5.1E-08	mg/kg-day	3.0E-02	mg/kg-day	1.7E-06
			Exp. Route Total								2.2E-07					2.4E-02
			Dermal	Aluminum	1.20E+04	mg/kg	2.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-05	mg/kg-day	5.0E-02	mg/kg-day	3.8E-04
				Antimony	1.99E+00	mg/kg	4.0E-10	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-09	mg/kg-day	6.0E-05	mg/kg-day	5.2E-05
				Arsenic	4.13E+00	mg/kg	2.5E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.7E-08	1.9E-07	mg/kg-day	3.0E-04	mg/kg-day	6.5E-04
				Iron	1.83E+04	mg/kg	3.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-05	mg/kg-day	3.0E-02	mg/kg-day	9.5E-04
				Manganese	6.65E+02	mg/kg	1.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-06	mg/kg-day	9.6E-04	mg/kg-day	1.1E-03
				Thallium	3.30E-01	mg/kg	6.6E-11	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-10	mg/kg-day	7.0E-05	mg/kg-day	7.4E-06
				Dieldrin	1.74E-02	mg/kg	3.5E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	5.6E-09	2.7E-09	mg/kg-day	5.0E-05	mg/kg-day	5.4E-05
Subsurface Soil				Benzo(a)anthracene	2.62E-01	mg/kg	6.8E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	5.0E-09	5.3E-08	mg/kg-day	3.0E-02	mg/kg-day	1.8E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	6.5E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.8E-08	5.3E-08	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	6.8E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	5.0E-09	5.3E-08	mg/kg-day	3.00E-02	mg/kg-day	1.8E-06
			Exp. Route Total								1.0E-07					3.2E-03
		Exposure Point Total									3.2E-07					2.8E-02
	Exposure Medium Total										3.2E-07					2.8E-02
Surface Soil Total											3.2E-07					2.8E-02
Sediment	Sediment	Six Mile Creek	Ingestion	Aluminum	6.31E+03	mg/kg	1.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-03	mg/kg-day	1.0E+00	mg/kg-day	1.2E-03
				Arsenic	5.31E+00	mg/kg	1.3E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.0E-07	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.5E-03
				Iron	1.91E+04	mg/kg	4.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-03	mg/kg-day	3.0E-01	mg/kg-day	1.2E-02
				Manganese	2.19E+03	mg/kg	5.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-04	mg/kg-day	2.4E-02	mg/kg-day	1.8E-02
				Thallium	1.15E+00	mg/kg	2.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-07	mg/kg-day	7.0E-05	mg/kg-day	3.2E-03
				Aldrin	7.93E-03	mg/kg	2.0E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	3.4E-09	1.6E-09	mg/kg-day	3.0E-05	mg/kg-day	5.2E-05
				Heptachlor epoxide	7.14E-03	mg/kg	1.8E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	1.6E-09	1.4E-09	mg/kg-day	1.3E-05	mg/kg-day	1.1E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	9.9E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.2E-09	7.7E-08	mg/kg-day	3.0E-02	mg/kg-day	2.6E-06
				Benzo(a)pyrene	3.89E-01	mg/kg	9.8E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.1E-08	7.6E-08	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	1.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.5E-09	8.0E-08	mg/kg-day	3.0E-02	mg/kg-day	2.7E-06
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	8.2E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	6.0E-08	6.4E-08	mg/kg-day	3.0E-02	mg/kg-day	2.1E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	8.3E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.0E-09	6.4E-08	mg/kg-day	5.0E-02	mg/kg-day	1.3E-06
			Exp. Route Total								3.6E-07					3.8E-02
			Dermal	Aluminum	6.31E+03	mg/kg	1.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.9E-06	mg/kg-day	5.0E-02	mg/kg-day	2.0E-04
				Arsenic	5.31E+00	mg/kg	3.2E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.8E-08	2.5E-07	mg/kg-day	3.0E-04	mg/kg-day	8.3E-04
				Iron	1.91E+04	mg/kg	3.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-05	mg/kg-day	3.0E-02	mg/kg-day	9.9E-04
				Manganese	2.19E+03	mg/kg	4.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-06	mg/kg-day	9.6E-04	mg/kg-day	3.6E-03
				Thallium	1.15E+00	mg/kg	2.3E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-09	mg/kg-day	7.0E-05	mg/kg-day	2.6E-05
				Aldrin	7.93E-03	mg/kg	1.6E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	2.7E-09	1.2E-09	mg/kg-day	3.0E-05	mg/kg-day	4.1E-05
				Heptachlor epoxide	7.14E-03	mg/kg	1.4E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	1.3E-09	1.1E-09	mg/kg-day	1.3E-05	mg/kg-day	8.6E-05
				Benzo(a)anthracene	3.92E-01	mg/kg	1.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.5E-09	8.0E-08	mg/kg-day	3.0E-02	mg/kg-day	2.7E-06
				Benzo(a)pyrene	3.89E-01	mg/kg	1.0E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.4E-08	7.9E-08	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.8E-09	8.3E-08	mg/kg-day	3.0E-02	mg/kg-day	2.8E-06
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	8.5E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	6.2E-08	6.6E-08	mg/kg-day	3.0E-02	mg/kg-day	2.2E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	8.6E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.3E-09	6.7E-08	mg/kg-day	5.00E-02	mg/kg-day	1.3E-06
			Exp. Route Total								2.1E-07					5.8E-03
		Exposure Point Total									5.7E-07					4.4E-02
	Exposure Medium Total										5.7E-07					4.4E-02
Sediment Total											5.7E-07					4.4E-02

TABLE 7.2.CT

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Creek/Seeps	Ingestion	Aluminum	1.20E+05	ug/L	1.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-02	mg/kg-day	1.0E+00	mg/kg-day	1.2E-02
				Arsenic	2.11E+01	ug/L	2.7E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.0E-07	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	6.9E-03
				Barium	7.85E+02	ug/L	9.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-05	mg/kg-day	7.0E-02	mg/kg-day	1.1E-03
				Beryllium	3.49E+00	ug/L	4.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-07	mg/kg-day	2.0E-03	mg/kg-day	1.7E-04
				Cadmium	4.20E+00	ug/L	5.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-07	mg/kg-day	5.0E-04	mg/kg-day	8.2E-04
				Chromium(VI)	2.16E+01	ug/L	2.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	3.0E-03	mg/kg-day	7.1E-04
				Cobalt	3.42E+01	ug/L	4.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-06	mg/kg-day	2.0E-02	mg/kg-day	1.7E-04
				Copper	8.34E+01	ug/L	1.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-06	mg/kg-day	4.0E-02	mg/kg-day	2.0E-04
				Iron	2.30E+05	ug/L	2.8E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-02	mg/kg-day	3.0E-01	mg/kg-day	7.5E-02
				Lead	6.49E+01	ug/L	8.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.4E-06	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	5.8E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-03	mg/kg-day	2.4E-02	mg/kg-day	1.9E-01
				Nickel	5.34E+01	ug/L	6.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-06	mg/kg-day	2.0E-02	mg/kg-day	2.6E-04
				Silver	8.53E+00	ug/L	1.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.3E-07	mg/kg-day	5.0E-03	mg/kg-day	1.7E-04
				Vanadium	4.04E+01	ug/L	5.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-06	mg/kg-day	7.0E-03	mg/kg-day	5.6E-04
				Cyanide, free	3.60E+01	ug/L	4.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-06	mg/kg-day	2.0E-02	mg/kg-day	1.9E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	3.6E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	5.1E-09	2.8E-06	mg/kg-day	2.0E-02	mg/kg-day	1.4E-04
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	1.5E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-08	mg/kg-day	5.0E-02	mg/kg-day	2.3E-07
				1,4-Dichlorobenzene	1.60E-01	ug/L	2.0E-09	mg/kg-day	2.4E-02	1/(mg/kg-day)	4.8E-11	1.6E-08	mg/kg-day	3.0E-02	mg/kg-day	5.2E-07
				Chlorobenzene	2.77E+00	ug/L	3.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-07	mg/kg-day	2.0E-02	mg/kg-day	1.4E-05
				Trichloroethene	8.10E-02	ug/L	1.0E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	4.1E-10	7.9E-09	mg/kg-day	3.0E-04	mg/kg-day	2.6E-05
			Exp. Route Total								4.0E-07					2.9E-01
			Dermal	Aluminum	1.20E+05	ug/L	3.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-03	mg/kg-day	5.0E-02	mg/kg-day	5.6E-02
				Arsenic	2.11E+01	ug/L	6.4E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	9.6E-08	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	1.7E-03
				Barium	7.85E+02	ug/L	2.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-05	mg/kg-day	4.9E-03	mg/kg-day	3.8E-03
				Beryllium	3.49E+00	ug/L	1.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-08	mg/kg-day	1.4E-05	mg/kg-day	5.8E-03
				Cadmium	4.20E+00	ug/L	1.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	9.9E-08	mg/kg-day	2.5E-05	mg/kg-day	3.9E-03
				Chromium(VI)	2.16E+01	ug/L	1.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-06	mg/kg-day	7.5E-05	mg/kg-day	1.4E-02
				Cobalt	3.42E+01	ug/L	4.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-07	mg/kg-day	2.0E-02	mg/kg-day	1.6E-05
				Copper	8.34E+01	ug/L	2.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-06	mg/kg-day	--	mg/kg-day	--
				Iron	2.30E+05	ug/L	6.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.4E-03	mg/kg-day	3.0E-02	mg/kg-day	1.8E-01
				Lead	6.49E+01	ug/L	2.0E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-07	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	1.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-03	mg/kg-day	9.6E-04	mg/kg-day	1.1E+00
				Nickel	5.34E+01	ug/L	3.2E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-07	mg/kg-day	8.0E-04	mg/kg-day	3.1E-04
				Silver	8.53E+00	ug/L	1.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-07	mg/kg-day	2.0E-04	mg/kg-day	6.0E-04
				Vanadium	4.04E+01	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.5E-07	mg/kg-day	7.0E-03	mg/kg-day	1.4E-04
				Cyanide, free	3.60E+01	ug/L	1.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.9E-07	mg/kg-day	2.0E-02	mg/kg-day	4.5E-05
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	1.4E-05	mg/kg-day	2.8E-02	1/(mg/kg-day)	3.9E-07	1.1E-04	mg/kg-day	1.0E-02	mg/kg-day	1.1E-02
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	2.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-07	mg/kg-day	5.0E-02	mg/kg-day	3.8E-06
				1,4-Dichlorobenzene	1.60E-01	ug/L	3.3E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	8.0E-10	2.6E-07	mg/kg-day	3.0E-02	mg/kg-day	8.7E-06
				Chlorobenzene	2.77E+00	ug/L	3.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-06	mg/kg-day	2.0E-02	mg/kg-day	1.2E-04
				Trichloroethene	8.10E-02	ug/L	4.4E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.7E-09	3.4E-08	mg/kg-day	3.0E-04	mg/kg-day	1.1E-04
			Exp. Route Total								4.9E-07					1.4E+00
		Exposure Point Total									8.9E-07					1.7E+00

TABLE 7.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water (continued)		AFFF pond/ Drainage Ditches	Ingestion	Aluminum	1.30E+02	ug/L	1.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-05	mg/kg-day	1.0E+00	mg/kg-day	1.3E-05
				Copper	1.30E+01	ug/L	1.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-06	mg/kg-day	4.0E-02	mg/kg-day	3.2E-05
				Iron	4.00E+02	ug/L	5.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-05	mg/kg-day	3.0E-01	mg/kg-day	1.3E-04
				Manganese	8.80E+01	ug/L	8.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.7E-06	mg/kg-day	2.4E-02	mg/kg-day	2.8E-04
				Cyanide, free	1.10E+02	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	5.4E-04
				Pentachlorophenol	1.00E+00	ug/L	1.3E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	1.5E-09	9.8E-08	mg/kg-day	3.0E-02	mg/kg-day	3.3E-06
				cis-1,2-Dichloroethene	9.70E+00	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.5E-07	mg/kg-day	1.0E-02	mg/kg-day	9.5E-05
				1,3,5-Trimethylbenzene	1.28E+00	ug/L	1.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-07	mg/kg-day	5.0E-02	mg/kg-day	2.5E-06
				1,4-Dichlorobenzene	2.49E+00	ug/L	3.1E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	7.5E-10	2.4E-07	mg/kg-day	3.0E-02	mg/kg-day	8.1E-06
				Benzene	1.13E+00	ug/L	1.4E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	7.8E-10	1.1E-07	mg/kg-day	3.0E-03	mg/kg-day	3.7E-05
				Chlorobenzene	4.13E+01	ug/L	5.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-06	mg/kg-day	2.0E-02	mg/kg-day	2.0E-04
				Tetrachloroethene	1.65E+00	ug/L	2.1E-08	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.1E-09	1.6E-07	mg/kg-day	1.0E-02	mg/kg-day	1.6E-05
				Trichloroethene	2.40E+00	ug/L	3.0E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.2E-08	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	7.8E-04
			Exp. Route Total								1.6E-08					2.1E-03
			Dermal	Aluminum	1.30E+02	ug/L	3.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-06	mg/kg-day	5.0E-02	mg/kg-day	6.1E-05
				Copper	1.30E+01	ug/L	3.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-07	mg/kg-day	--	mg/kg-day	--
				Iron	4.00E+02	ug/L	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.4E-06	mg/kg-day	3.0E-02	mg/kg-day	3.1E-04
				Manganese	8.80E+01	ug/L	2.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-06	mg/kg-day	9.6E-04	mg/kg-day	1.7E-03
				Cyanide, free	1.10E+02	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-06	mg/kg-day	2.0E-02	mg/kg-day	1.3E-04
				Pentachlorophenol	1.00E+00	ug/L	3.8E-06	mg/kg-day	1.2E-01	1/(mg/kg-day)	4.6E-07	2.8E-05	mg/kg-day	3.0E-02	mg/kg-day	9.5E-04
				cis-1,2-Dichloroethene	9.70E+00	ug/L	2.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	1.0E-02	mg/kg-day	2.1E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	2.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-06	mg/kg-day	5.0E-02	mg/kg-day	4.0E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	5.2E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-08	4.0E-06	mg/kg-day	3.0E-02	mg/kg-day	1.3E-04
				Benzene	1.13E+00	ug/L	5.4E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	3.0E-09	4.2E-07	mg/kg-day	3.0E-03	mg/kg-day	1.4E-04
				Chlorobenzene	4.13E+01	ug/L	4.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-05	mg/kg-day	2.0E-02	mg/kg-day	1.8E-03
				Tetrachloroethene	1.65E+00	ug/L	3.1E-07	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.6E-08	2.4E-06	mg/kg-day	1.0E-02	mg/kg-day	2.4E-04
				Trichloroethene	2.40E+00	ug/L	1.3E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	5.2E-08	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.4E-03
			Exp. Route Total								5.4E-07					9.1E-03
		Exposure Point Total									5.5E-07					1.1E-02
	Exposure Medium Total										1.4E-06					1.7E+00
Surface Water Total											1.4E-06					1.7E+00
										Total of Receptor Risks Across All Media	2.3E-06				Total of Receptor Hazards Across All Media	1.8E+00

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	1.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-02	mg/kg-day	1.0E+00	mg/kg-day	1.9E-02
				Antimony	1.99E+00	mg/kg	2.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-06	mg/kg-day	4.0E-04	mg/kg-day	7.7E-03
				Arsenic	4.13E+00	mg/kg	5.5E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	8.2E-07	6.4E-06	mg/kg-day	3.0E-04	mg/kg-day	2.1E-02
				Iron	1.83E+04	mg/kg	2.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-02	mg/kg-day	3.0E-01	mg/kg-day	9.4E-02
				Manganese	6.65E+02	mg/kg	8.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-03	mg/kg-day	2.4E-02	mg/kg-day	4.3E-02
				Thallium	3.30E-01	mg/kg	4.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-07	mg/kg-day	7.0E-05	mg/kg-day	7.3E-03
				Dieldrin	1.74E-02	mg/kg	2.3E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	3.7E-08	2.7E-08	mg/kg-day	5.0E-05	mg/kg-day	5.4E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	3.5E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.5E-08	4.0E-07	mg/kg-day	3.0E-02	mg/kg-day	1.3E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	3.4E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.5E-07	4.0E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	3.5E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.5E-08	4.0E-07	mg/kg-day	3.0E-02	mg/kg-day	1.3E-05
			Exp. Route Total								1.2E-06					1.9E-01
			Dermal	Aluminum	1.20E+04	mg/kg	4.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.7E-05	mg/kg-day	5.0E-02	mg/kg-day	9.4E-04
				Antimony	1.99E+00	mg/kg	6.6E-10	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-09	mg/kg-day	6.0E-05	mg/kg-day	1.3E-04
				Arsenic	4.13E+00	mg/kg	4.1E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	6.2E-08	4.8E-07	mg/kg-day	3.0E-04	mg/kg-day	1.6E-03
				Iron	1.83E+04	mg/kg	6.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.1E-05	mg/kg-day	3.0E-02	mg/kg-day	2.4E-03
				Manganese	6.65E+02	mg/kg	2.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-06	mg/kg-day	9.6E-04	mg/kg-day	2.7E-03
				Thallium	3.30E-01	mg/kg	1.1E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-09	mg/kg-day	7.0E-05	mg/kg-day	1.9E-05
				Dieldrin	1.74E-02	mg/kg	5.8E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	9.3E-09	6.8E-09	mg/kg-day	5.0E-05	mg/kg-day	1.4E-04
Subsurface Soil				Benzo(a)anthracene	2.62E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	8.3E-09	1.3E-07	mg/kg-day	3.0E-02	mg/kg-day	4.4E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	1.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	8.2E-08	1.3E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	8.3E-09	1.3E-07	mg/kg-day	3.00E-02	mg/kg-day	4.4E-06
			Exp. Route Total								1.7E-07					7.9E-03
		Exposure Point Total									1.3E-06					2.0E-01
	Exposure Medium Total										1.3E-06					2.0E-01
Surface Soil Total											1.3E-06					2.0E-01
Sediment	Sediment	Six Mile Creek	Ingestion	Aluminum	6.31E+03	mg/kg	8.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	9.8E-03	mg/kg-day	1.0E+00	mg/kg-day	9.8E-03
				Arsenic	5.31E+00	mg/kg	7.0E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.1E-06	8.2E-06	mg/kg-day	3.0E-04	mg/kg-day	2.7E-02
				Iron	1.91E+04	mg/kg	2.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-02	mg/kg-day	3.0E-01	mg/kg-day	9.9E-02
				Manganese	2.18E+03	mg/kg	2.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-03	mg/kg-day	2.4E-02	mg/kg-day	1.4E-01
				Thallium	1.15E+00	mg/kg	1.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-06	mg/kg-day	7.0E-05	mg/kg-day	2.5E-02
				Aldrin	7.93E-03	mg/kg	1.1E-09	mg/kg-day	1.7E+01	1/(mg/kg-day)	1.8E-08	1.2E-08	mg/kg-day	3.0E-05	mg/kg-day	4.1E-04
				Heptachlor epoxide	7.14E-03	mg/kg	9.5E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	8.6E-09	1.1E-08	mg/kg-day	1.3E-05	mg/kg-day	8.5E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	5.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.8E-08	6.1E-07	mg/kg-day	3.0E-02	mg/kg-day	2.0E-05
				Benzo(a)pyrene	3.89E-01	mg/kg	5.2E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.8E-07	6.0E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	5.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.0E-08	6.3E-07	mg/kg-day	3.0E-02	mg/kg-day	2.1E-05
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	4.3E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.1E-07	5.0E-07	mg/kg-day	3.0E-02	mg/kg-day	1.7E-05
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	4.4E-08	mg/kg-day	7.3E-01	1/(mg/kgi-day)	3.2E-08	5.1E-07	mg/kg-day	5.0E-02	mg/kg-day	1.0E-05
			Exp. Route Total								1.9E-06					3.0E-01
			Dermal	Aluminum	6.31E+03	mg/kg	2.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-05	mg/kg-day	5.0E-02	mg/kg-day	4.9E-04
				Arsenic	5.31E+00	mg/kg	5.3E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	8.0E-08	6.2E-07	mg/kg-day	3.0E-04	mg/kg-day	2.1E-03
				Iron	1.91E+04	mg/kg	6.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-05	mg/kg-day	3.0E-02	mg/kg-day	2.5E-03
				Manganese	2.18E+03	mg/kg	7.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.5E-06	mg/kg-day	9.6E-04	mg/kg-day	8.9E-03
				Thallium	1.15E+00	mg/kg	3.8E-10	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-09	mg/kg-day	7.0E-05	mg/kg-day	6.4E-05
				Aldrin	7.93E-03	mg/kg	2.6E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	4.5E-09	3.1E-09	mg/kg-day	3.0E-05	mg/kg-day	1.0E-04
				Heptachlor epoxide	7.14E-03	mg/kg	2.4E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	2.2E-09	2.8E-09	mg/kg-day	1.3E-05	mg/kg-day	2.1E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	1.7E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.2E-08	2.0E-07	mg/kg-day	3.0E-02	mg/kg-day	6.6E-06
				Benzo(a)pyrene	3.89E-01	mg/kg	1.7E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.2E-07	2.0E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	1.8E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.3E-08	2.1E-07	mg/kg-day	3.0E-02	mg/kg-day	6.9E-06
				Dibenz(a,h)anthracene	3.25E-01	mg/kg	1.4E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.0E-07	1.6E-07	mg/kg-day	3.0E-02	mg/kg-day	5.5E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	1.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.0E-08	1.7E-07	mg/kg-day	5.00E-02	mg/kg-day	3.3E-06
			Exp. Route Total								3.5E-07					1.4E-02
		Exposure Point Total									2.2E-06					3.2E-01
	Exposure Medium Total										2.2E-06					3.2E-01
Sediment Total											2.2E-06					3.2E-01

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Creek/Seeps	Ingestion	Aluminum	1.20E+05	ug/L	8.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-02	mg/kg-day	1.0E+00	mg/kg-day	9.3E-02
				Arsenic	2.11E+01	ug/L	1.4E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.1E-06	1.6E-05	mg/kg-day	3.0E-04	mg/kg-day	5.4E-02
				Barium	7.85E+02	ug/L	5.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-04	mg/kg-day	7.0E-02	mg/kg-day	8.7E-03
				Beryllium	3.49E+00	ug/L	2.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-06	mg/kg-day	2.0E-03	mg/kg-day	1.3E-03
				Cadmium	4.20E+00	ug/L	2.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-06	mg/kg-day	5.0E-04	mg/kg-day	6.5E-03
				Chromium(VI)	2.16E+01	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-05	mg/kg-day	3.0E-03	mg/kg-day	5.6E-03
				Cobalt	3.42E+01	ug/L	2.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-05	mg/kg-day	2.0E-02	mg/kg-day	1.3E-03
				Copper	8.34E+01	ug/L	5.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-05	mg/kg-day	4.0E-02	mg/kg-day	1.6E-03
				Iron	2.30E+05	ug/L	1.5E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-01	mg/kg-day	3.0E-01	mg/kg-day	6.0E-01
				Lead	6.49E+01	ug/L	4.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-05	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	3.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-02	mg/kg-day	2.4E-02	mg/kg-day	1.5E+00
				Nickel	5.34E+01	ug/L	3.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-05	mg/kg-day	2.0E-02	mg/kg-day	2.1E-03
				Silver	8.53E+00	ug/L	5.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-06	mg/kg-day	5.0E-03	mg/kg-day	1.3E-03
				Vanadium	4.04E+01	ug/L	2.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-05	mg/kg-day	7.0E-03	mg/kg-day	4.5E-03
				Cyanide, free	3.80E+01	ug/L	2.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-05	mg/kg-day	2.0E-02	mg/kg-day	1.5E-03
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	1.9E-06	mg/kg-day	1.4E-02	1/(mg/kg-day)	2.7E-08	2.2E-05	mg/kg-day	2.0E-02	mg/kg-day	1.1E-03
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	8.0E-09	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-08	mg/kg-day	5.0E-02	mg/kg-day	1.9E-06
				1,4-Dichlorobenzene	1.60E-01	ug/L	1.1E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.5E-10	1.2E-07	mg/kg-day	3.0E-02	mg/kg-day	4.1E-06
				Chlorobenzene	2.77E+00	ug/L	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	2.0E-02	mg/kg-day	1.1E-04
				Trichloroethene	8.10E-02	ug/L	5.4E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.1E-09	6.3E-08	mg/kg-day	3.0E-04	mg/kg-day	2.1E-04
			Exp. Route Total								2.1E-06					2.3E+00
			Dermal	Aluminum	1.20E+05	ug/L	1.2E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-02	mg/kg-day	5.0E-02	mg/kg-day	2.8E-01
				Arsenic	2.11E+01	ug/L	2.1E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.2E-07	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	8.3E-03
				Barium	7.85E+02	ug/L	7.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.2E-05	mg/kg-day	4.9E-03	mg/kg-day	1.9E-02
				Beryllium	3.49E+00	ug/L	3.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-07	mg/kg-day	1.4E-05	mg/kg-day	2.9E-02
				Cadmium	4.20E+00	ug/L	4.2E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.9E-07	mg/kg-day	2.5E-05	mg/kg-day	2.0E-02
				Chromium(VI)	2.16E+01	ug/L	4.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-06	mg/kg-day	7.5E-05	mg/kg-day	6.8E-02
				Cobalt	3.42E+01	ug/L	1.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-06	mg/kg-day	2.0E-02	mg/kg-day	8.0E-05
				Copper	8.34E+01	ug/L	8.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.6E-06	mg/kg-day	--	mg/kg-day	--
				Iron	2.30E+05	ug/L	2.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-02	mg/kg-day	3.0E-02	mg/kg-day	9.0E-01
				Lead	6.49E+01	ug/L	6.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-07	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	4.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.4E-03	mg/kg-day	9.6E-04	mg/kg-day	5.6E+00
				Nickel	5.34E+01	ug/L	1.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-06	mg/kg-day	8.0E-04	mg/kg-day	1.6E-03
				Silver	8.53E+00	ug/L	5.2E-08	mg/kg-day	--	1/(mg/kg-day)	--	6.0E-07	mg/kg-day	2.0E-04	mg/kg-day	3.0E-03
				Vanadium	4.04E+01	ug/L	4.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.7E-06	mg/kg-day	7.0E-03	mg/kg-day	6.6E-04
				Cyanide, free	3.80E+01	ug/L	3.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-06	mg/kg-day	2.0E-02	mg/kg-day	2.2E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	4.7E-05	mg/kg-day	2.8E-02	1/(mg/kg-day)	1.3E-06	5.4E-04	mg/kg-day	1.0E-02	mg/kg-day	5.4E-02
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	8.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	9.5E-07	mg/kg-day	5.0E-02	mg/kg-day	1.9E-05
				1,4-Dichlorobenzene	1.60E-01	ug/L	1.1E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.7E-09	1.3E-06	mg/kg-day	3.0E-02	mg/kg-day	4.3E-05
				Chlorobenzene	2.77E+00	ug/L	1.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	6.1E-04
				Trichloroethene	8.10E-02	ug/L	1.5E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	5.8E-09	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	5.7E-04
			Exp. Route Total								1.6E-06					7.0E+00
		Exposure Point Total									3.8E-06					9.3E+00

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water (continued)		AFFF pond/ Drainage Ditches	Ingestion	Aluminum	1.30E+02	ug/L	2.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-05	mg/kg-day	1.0E+00	mg/kg-day	2.9E-05
				Copper	1.30E+01	ug/L	2.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-06	mg/kg-day	4.0E-02	mg/kg-day	7.3E-05
				Iron	4.00E+02	ug/L	7.7E-08	mg/kg-day	--	1/(mg/kg-day)	--	9.0E-05	mg/kg-day	3.0E-01	mg/kg-day	3.0E-04
				Manganese	6.60E+01	ug/L	1.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-05	mg/kg-day	2.4E-02	mg/kg-day	6.4E-04
				Cyanide, free	1.10E+02	ug/L	2.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-05	mg/kg-day	2.0E-02	mg/kg-day	1.2E-03
				Pentachlorophenol	1.00E+00	ug/L	1.9E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	2.3E-09	2.3E-07	mg/kg-day	3.0E-02	mg/kg-day	7.5E-06
				cis-1,2-Dichloroethene	9.70E+00	ug/L	1.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-06	mg/kg-day	1.0E-02	mg/kg-day	2.2E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	2.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-07	mg/kg-day	5.0E-02	mg/kg-day	5.7E-06
				1,4-Dichlorobenzene	2.49E+00	ug/L	4.9E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-09	5.6E-07	mg/kg-day	3.0E-02	mg/kg-day	1.9E-05
				Benzene	1.13E+00	ug/L	2.2E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.2E-09	2.6E-07	mg/kg-day	3.0E-03	mg/kg-day	8.5E-05
				Chlorobenzene	4.13E+01	ug/L	8.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-06	mg/kg-day	2.0E-02	mg/kg-day	4.7E-04
				Tetrachloroethene	1.65E+00	ug/L	3.2E-08	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.6E-09	3.7E-07	mg/kg-day	1.0E-02	mg/kg-day	3.7E-05
				Trichloroethene	2.40E+00	ug/L	4.8E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.9E-08	5.4E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
			Exp. Route Total								2.5E-08					4.9E-03
			Dermal	Aluminum	1.30E+02	ug/L	3.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-06	mg/kg-day	6.8E-02	mg/kg-day	6.6E-05
				Copper	1.30E+01	ug/L	3.8E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-07	mg/kg-day	--	mg/kg-day	--
				Iron	4.00E+02	ug/L	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-05	mg/kg-day	3.0E-02	mg/kg-day	4.6E-04
				Manganese	6.60E+01	ug/L	2.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-06	mg/kg-day	9.6E-04	mg/kg-day	2.4E-03
				Cyanide, free	1.10E+02	ug/L	3.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.8E-06	mg/kg-day	2.0E-02	mg/kg-day	1.9E-04
				Pentachlorophenol	1.00E+00	ug/L	3.7E-06	mg/kg-day	1.2E-01	1/(mg/kg-day)	4.4E-07	4.3E-05	mg/kg-day	3.0E-02	mg/kg-day	1.4E-03
				cis-1,2-Dichloroethene	9.70E+00	ug/L	2.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-06	mg/kg-day	1.0E-02	mg/kg-day	3.0E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	2.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-06	mg/kg-day	5.0E-02	mg/kg-day	5.6E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	5.1E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-08	5.9E-06	mg/kg-day	3.0E-02	mg/kg-day	2.0E-04
				Benzene	1.13E+00	ug/L	5.3E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.9E-09	9.1E-07	mg/kg-day	3.0E-03	mg/kg-day	2.0E-04
				Chlorobenzene	4.13E+01	ug/L	4.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-05	mg/kg-day	2.0E-02	mg/kg-day	2.6E-03
				Tetrachloroethene	1.65E+00	ug/L	3.0E-07	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.5E-08	3.5E-06	mg/kg-day	1.0E-02	mg/kg-day	3.5E-04
				Trichloroethene	2.40E+00	ug/L	1.3E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	5.0E-08	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	4.9E-03
			Exp. Route Total								5.2E-07					1.3E-02
		Exposure Point Total									5.5E-07					1.8E-02
	Exposure Medium Total										4.3E-06					9.3E+00
Surface Water Total											4.3E-06					9.3E+00
										Total of Receptor Risks Across All Media	7.9E-06				Total of Receptor Hazards Across All Media	9.8E+00

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	9.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-02	mg/kg-day	1.0E+00	mg/kg-day	1.1E-02
				Antimony	1.99E+00	mg/kg	1.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-06	mg/kg-day	4.0E-04	mg/kg-day	4.4E-03
				Arsenic	4.13E+00	mg/kg	3.1E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.7E-07	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				Iron	1.53E+04	mg/kg	1.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-02	mg/kg-day	3.0E-01	mg/kg-day	5.4E-02
				Manganese	6.65E+02	mg/kg	5.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-04	mg/kg-day	2.4E-02	mg/kg-day	2.4E-02
				Thallium	3.30E-01	mg/kg	2.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-07	mg/kg-day	7.0E-05	mg/kg-day	4.2E-03
				Dieldrin	1.74E-02	mg/kg	1.3E-08	mg/kg-day	1.6E+01	1/(mg/kg-day)	2.1E-08	1.5E-08	mg/kg-day	5.0E-05	mg/kg-day	3.1E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	2.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.4E-08	2.3E-07	mg/kg-day	3.0E-02	mg/kg-day	7.7E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	2.0E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.4E-07	2.3E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	2.0E-05	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.4E-08	2.3E-07	mg/kg-day	3.0E-02	mg/kg-day	7.7E-06
			Exp. Route Total								6.6E-07					1.1E-01
			Dermal	Aluminum	1.20E+04	mg/kg	2.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-05	mg/kg-day	5.0E-02	mg/kg-day	5.4E-04
				Antimony	1.99E+00	mg/kg	3.8E-10	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-09	mg/kg-day	6.0E-05	mg/kg-day	7.4E-05
				Arsenic	4.13E+00	mg/kg	2.4E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.5E-08	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	9.2E-04
				Iron	1.63E+04	mg/kg	3.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-05	mg/kg-day	3.0E-02	mg/kg-day	1.4E-03
				Manganese	6.65E+02	mg/kg	1.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-06	mg/kg-day	9.6E-04	mg/kg-day	1.5E-03
				Thallium	3.30E-01	mg/kg	6.3E-11	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-10	mg/kg-day	7.0E-05	mg/kg-day	1.1E-05
				Dieldrin	1.74E-02	mg/kg	3.3E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	5.3E-09	3.9E-09	mg/kg-day	5.0E-05	mg/kg-day	7.8E-05
Subsurface Soil				Benzo(a)anthracene	2.62E-01	mg/kg	6.5E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.7E-09	7.6E-08	mg/kg-day	3.0E-02	mg/kg-day	2.5E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	6.4E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.7E-08	7.5E-08	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	6.5E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.7E-09	7.6E-05	mg/kg-day	3.00E-02	mg/kg-day	2.5E-06
			Exp. Route Total								9.7E-08					4.5E-03
		Exposure Point Total									7.6E-07					1.1E-01
	Exposure Medium Total										7.6E-07					1.1E-01
Surface Soil Total											7.6E-07					1.1E-01
Sediment	Sediment	Six Mile Creek	Ingestion	Aluminum	6.31E+03	mg/kg	2.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-03	mg/kg-day	1.0E+00	mg/kg-day	2.8E-03
				Arsenic	6.31E+00	mg/kg	2.0E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	3 0E-07	2.3E-06	mg/kg-day	3.0E-04	mg/kg-day	7.8E-03
				Iron	1.91E+04	mg/kg	7.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.4E-03	mg/kg-day	3.0E-01	mg/kg-day	2.8E-02
				Manganese	2.19E+03	mg/kg	8.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	9.7E-04	mg/kg-day	2.4E-02	mg/kg-day	4.0E-02
				Thallium	1.16E+00	mg/kg	4.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-07	mg/kg-day	7.0E-05	mg/kg-day	7.3E-03
				Aldrin	7.93E-03	mg/kg	3.0E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	5.1E-09	3.5E-09	mg/kg-day	3.0E-05	mg/kg-day	1.2E-04
				Heptachlor epoxide	7.14E-03	mg/kg	2.7E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	2.5E-09	3.2E-09	mg/kg-day	1.3E-05	mg/kg-day	2.4E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	1.5E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.1E-09	1.7E-07	mg/kg-day	3.0E-02	mg/kg-day	5.6E-06
				Benzo(a)pyrene	3 89E-01	mg/kg	1.5E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.1E-07	1.7E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	1.5E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.1E-08	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.0E-06
				Dibenz(a,h)anthracene	3 25E-01	mg/kg	1 2E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	9.0E-08	1.4E-07	mg/kg-day	3.0E-02	mg/kg-day	4.8E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	1.2E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	9.1E-09	1.5E-07	mg/kg-day	5.0E-02	mg/kg-day	2.9E-06
			Exp. Route Total								5.4E-07					6.7E-02
			Dermal	Aluminum	6.31E+03	mg/kg	1.2E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-05	mg/kg-day	5.0E-02	mg/kg-day	2.8E-04
				Arsenic	5.31E+00	mg/kg	3.0E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.5E-08	3.5E-07	mg/kg-day	3.0E-04	mg/kg-day	1.2E-03
				Iron	1.91E+04	mg/kg	3.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-05	mg/kg-day	3.0E-02	mg/kg-day	1.4E-03
				Manganese	2.19E+03	mg/kg	4 2E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.9E-06	mg/kg-day	9.6E-04	mg/kg-day	5.1E-03
				Thallium	1.15E+00	mg/kg	2 2E-10	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-09	mg/kg-day	7.0E-05	mg/kg-day	3.7E-05
				Aldrin	7.93E-03	mg/kg	1.5E-10	mg/kg-day	1.7E+01	1/(mg/kg-day)	2.6E-09	1.8E-09	mg/kg-day	3.0E-05	mg/kg-day	5.9E-05
				Heptachlor epoxide	7.14E-03	mg/kg	1.4E-10	mg/kg-day	9.1E+00	1/(mg/kg-day)	1.2E-09	1.6E-09	mg/kg-day	1.3E-05	mg/kg-day	1.2E-04
				Benzo(a)anthracene	3.92E-01	mg/kg	9.7E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.1E-09	1.1E-07	mg/kg-day	3.0E-02	mg/kg-day	3.8E-06
				Benzo(a)pyrene	3.89E-01	mg/kg	9.6E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.0E-08	1.1E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	4.09E-01	mg/kg	1.0E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.4E-09	1.2E-07	mg/kg-day	3.0E-02	mg/kg-day	3.9E-06
				Dibenz(a,h)anthracene	3.23E-01	mg/kg	8.1E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	5.9E-08	9.4E-08	mg/kg-day	3.0E-02	mg/kg-day	3.1E-06
				Indeno(1,2,3-cd)pyrene	3.29E-01	mg/kg	8.2E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.0E-09	9.5E-08	mg/kg-day	5.00E-02	mg/kg-day	1.9E-06
			Exp. Route Total								2.0E-07					8.2E-03
		Exposure Point Total									7.4E-07					9.5E-02
	Exposure Medium Total										7.4E-07					9.5E-02
Sediment Total											7.4E-07					9.5E-02

TABLE 7.3 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Creek/Seeps	Ingestion	Aluminum	1.20E+05	ug/L	2.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-02	mg/kg-day	1.0E+00	mg/kg-day	2.7E-02
				Arsenic	2.11E+01	ug/L	4.0E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	6.0E-07	4.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.6E-02
				Barium	7.65E+02	ug/L	1.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-04	mg/kg-day	7.0E-02	mg/kg-day	2.5E-03
				Beryllium	3.49E+00	ug/L	6.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-07	mg/kg-day	2.0E-03	mg/kg-day	3.9E-04
				Cadmium	4.20E+00	ug/L	7.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-07	mg/kg-day	5.0E-04	mg/kg-day	1.9E-03
				Chromium(VI)	2.16E+01	ug/L	4.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.8E-06	mg/kg-day	3.0E-03	mg/kg-day	1.6E-03
				Cobalt	3.42E+01	ug/L	6.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-06	mg/kg-day	2.0E-02	mg/kg-day	3.8E-04
				Copper	8.34E+01	ug/L	1.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-05	mg/kg-day	4.0E-02	mg/kg-day	4.6E-04
				Iron	2.30E+05	ug/L	4.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-02	mg/kg-day	3.0E-01	mg/kg-day	1.7E-01
				Lead	6.49E+01	ug/L	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-05	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	8.7E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-02	mg/kg-day	2.4E-02	mg/kg-day	4.2E-01
				Nickel	5.34E+01	ug/L	1.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	5.9E-04
				Silver	8.53E+00	ug/L	1.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-06	mg/kg-day	5.0E-03	mg/kg-day	3.8E-04
				Vanadium	4.04E+01	ug/L	7.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.9E-06	mg/kg-day	7.0E-03	mg/kg-day	1.3E-03
				Cyanide, free	3.80E+01	ug/L	7.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.4E-06	mg/kg-day	2.0E-02	mg/kg-day	4.2E-04
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	5.5E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	7.7E-09	6.4E-06	mg/kg-day	2.0E-02	mg/kg-day	3.2E-04
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	2.3E-09	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-08	mg/kg-day	5.0E-02	mg/kg-day	6.3E-07
				1,4-Dichlorobenzene	1.60E-01	ug/L	3.0E-09	mg/kg-day	2.4E-02	1/(mg/kg-day)	7.3E-11	3.5E-08	mg/kg-day	3.0E-02	mg/kg-day	1.2E-06
				Chlorobenzene	2.77E+00	ug/L	5.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-07	mg/kg-day	2.0E-02	mg/kg-day	3.1E-05
				Trichloroethene	6.10E-02	ug/L	1.5E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	6.1E-10	1.8E-08	mg/kg-day	3.0E-04	mg/kg-day	6.0E-05
			Exp. Route Total								6.1E-07					6.5E-01
			Dermal	Aluminum	1.20E+05	ug/L	3.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-03	mg/kg-day	5.0E-02	mg/kg-day	8.1E-02
				Arsenic	2.11E+01	ug/L	6.1E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	9.1E-08	7.1E-07	mg/kg-day	3.0E-04	mg/kg-day	2.4E-03
				Barium	7.65E+02	ug/L	2.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-05	mg/kg-day	4.9E-03	mg/kg-day	5.4E-03
				Beryllium	3.49E+00	ug/L	1.0E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-07	mg/kg-day	1.4E-05	mg/kg-day	8.4E-03
				Cadmium	4.20E+00	ug/L	1.2E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-07	mg/kg-day	2.5E-05	mg/kg-day	5.6E-03
				Chromium(VI)	2.16E+01	ug/L	1.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-06	mg/kg-day	7.5E-05	mg/kg-day	1.9E-02
				Cobalt	3.42E+01	ug/L	3.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-07	mg/kg-day	2.0E-02	mg/kg-day	2.3E-05
				Copper	8.34E+01	ug/L	2.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-06	mg/kg-day	--	mg/kg-day	--
				Iron	2.30E+05	ug/L	6.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-03	mg/kg-day	3.0E-02	mg/kg-day	2.6E-01
				Lead	6.49E+01	ug/L	1.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-07	mg/kg-day	--	mg/kg-day	--
				Manganese	4.60E+04	ug/L	1.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-03	mg/kg-day	9.6E-04	mg/kg-day	1.6E+00
				Nickel	5.34E+01	ug/L	3.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-07	mg/kg-day	8.0E-04	mg/kg-day	4.5E-04
				Silver	8.53E+00	ug/L	1.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-07	mg/kg-day	2.0E-04	mg/kg-day	8.6E-04
				Vanadium	4.04E+01	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	7.0E-03	mg/kg-day	1.9E-04
				Cyanide, free	3.60E+01	ug/L	1.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-06	mg/kg-day	2.0E-02	mg/kg-day	6.4E-05
				Bis(2-ethylhexyl)phthalate	2.90E+01	ug/L	1.3E-05	mg/kg-day	2.8E-02	1/(mg/kg-day)	3.7E-07	1.6E-04	mg/kg-day	1.0E-02	mg/kg-day	1.6E-02
				1,3,5-Trimethylbenzene	1.20E-01	ug/L	2.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-07	mg/kg-day	5.0E-02	mg/kg-day	5.4E-06
				1,4-Dichlorobenzene	1.60E-01	ug/L	3.2E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	7.6E-10	3.7E-07	mg/kg-day	3.0E-02	mg/kg-day	1.2E-05
				Chlorobenzene	2.77E+00	ug/L	3.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-06	mg/kg-day	2.0E-02	mg/kg-day	1.7E-04
				Trichloroethene	6.10E-02	ug/L	4.2E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.7E-09	4.9E-08	mg/kg-day	3.0E-04	mg/kg-day	1.6E-04
			Exp. Route Total								4.7E-07					2.0E+00
		Exposure Point Total									1.1E-06					2.7E+00

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water (continued)		AFFF pond/ Drainage Ditches	Ingestion	Aluminum	1.30E+02	ug/L	2.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-05	mg/kg-day	1.0E+00	mg/kg-day	2.9E-05
				Copper	1.30E+01	ug/L	2.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-06	mg/kg-day	4.0E-02	mg/kg-day	7.2E-05
				Iron	4.00E+02	ug/L	7.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.8E-05	mg/kg-day	3.0E-01	mg/kg-day	2.9E-04
				Manganese	6.80E+01	ug/L	1.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-05	mg/kg-day	2.4E-02	mg/kg-day	6.3E-04
				Cyanide, free	1.10E+02	ug/L	2.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-05	mg/kg-day	2.0E-02	mg/kg-day	1.2E-03
				Pentachlorophenol	1.00E+00	ug/L	1.9E-08	mg/kg-day	1.2E-01	1/(mg/kg-day)	2.3E-09	2.2E-07	mg/kg-day	3.0E-02	mg/kg-day	7.4E-06
				cis-1,2-Dichloroethene	9.70E+00	ug/L	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	1.0E-02	mg/kg-day	2.1E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	2.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-07	mg/kg-day	5.0E-02	mg/kg-day	5.5E-06
				1,4-Dichlorobenzene	2.49E+00	ug/L	4.7E-08	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.1E-09	5.5E-07	mg/kg-day	3.0E-02	mg/kg-day	1.8E-05
				Benzene	1.13E+00	ug/L	2.1E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.2E-09	2.5E-07	mg/kg-day	3.0E-03	mg/kg-day	8.4E-05
				Chlorobenzene	4.13E+01	ug/L	7.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.1E-06	mg/kg-day	2.0E-02	mg/kg-day	4.6E-04
				Tetrachloroethene	1.65E+00	ug/L	3.1E-08	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.6E-09	3.7E-07	mg/kg-day	1.0E-02	mg/kg-day	3.7E-05
				Trichloroethene	2.40E+00	ug/L	4.6E-08	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.8E-08	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	1.8E-03
			Exp. Route Total								2.4E-08					4.8E-03
			Dermal	Aluminum	1.30E+02	ug/L	3.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-06	mg/kg-day	5.0E-02	mg/kg-day	8.7E-05
				Copper	1.30E+01	ug/L	3.7E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-07	mg/kg-day	--	mg/kg-day	--
				Iron	4.00E+02	ug/L	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-05	mg/kg-day	3.0E-02	mg/kg-day	4.5E-04
				Manganese	6.80E+01	ug/L	2.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-06	mg/kg-day	9.6E-04	mg/kg-day	2.4E-03
				Cyanide, free	1.10E+02	ug/L	3.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-06	mg/kg-day	2.0E-02	mg/kg-day	1.8E-04
				Pentachlorophenol	1.00E+00	ug/L	3.6E-06	mg/kg-day	1.2E-01	1/(mg/kg-day)	4.3E-07	4.2E-05	mg/kg-day	3.0E-02	mg/kg-day	1.4E-03
				cis-1,2-Dichloroethene	9.70E+00	ug/L	2.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-06	mg/kg-day	1.0E-02	mg/kg-day	3.0E-04
				1,3,5-Trimethylbenzene	1.26E+00	ug/L	2.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-06	mg/kg-day	5.0E-02	mg/kg-day	5.7E-05
				1,4-Dichlorobenzene	2.49E+00	ug/L	5.0E-07	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-08	5.8E-06	mg/kg-day	3.0E-02	mg/kg-day	1.9E-04
				Benzene	1.13E+00	ug/L	5.2E-08	mg/kg-day	5.6E-02	1/(mg/kg-day)	2.8E-09	6.0E-07	mg/kg-day	3.0E-03	mg/kg-day	2.0E-04
				Chlorobenzene	4.13E+01	ug/L	4.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-05	mg/kg-day	2.0E-02	mg/kg-day	2.6E-03
				Tetrachloroethene	1.65E+00	ug/L	2.9E-07	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.5E-08	3.4E-06	mg/kg-day	1.0E-02	mg/kg-day	3.4E-04
				Trichloroethene	2.40E+00	ug/L	1.2E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	4.9E-08	1.4E-06	mg/kg-day	3.0E-04	mg/kg-day	4.6E-03
			Exp. Route Total								5.1E-07					1.3E-02
		Exposure Point Total									5.4E-07					1.8E-02
	Exposure Medium Total										1.6E-06					2.7E+00
Surface Water Total											1.6E-06					2.7E+00
										Total of Receptor Risks Across All Media	3.1E-06				Total of Receptor Hazards Across All Media	2.9E+00

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	1.3E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-01	mg/kg-day	1.0E+00	mg/kg-day	1.5E-01
				Antimony	1.99E+00	mg/kg	2.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-05	mg/kg-day	4.0E-04	mg/kg-day	6.4E-02
				Arsenic	4.13E+00	mg/kg	4.5E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	6.8E-06	5.3E-05	mg/kg-day	3.0E-04	mg/kg-day	1.8E-01
				Iron	1.83E+04	mg/kg	2.0E-02	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-01	mg/kg-day	3.0E-01	mg/kg-day	7.8E-01
				Manganese	6.65E+02	mg/kg	7.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.5E-03	mg/kg-day	2.4E-02	mg/kg-day	3.5E-01
				Thallium	3.30E-01	mg/kg	3.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.2E-06	mg/kg-day	7.0E-05	mg/kg-day	6.0E-02
				Dieldrin	1.74E-02	mg/kg	1.9E-08	mg/kg-day	1.6E+01	1/(mg/kg-day)	3.1E-07	2.2E-07	mg/kg-day	5.0E-05	mg/kg-day	4.5E-03
				Benzo(a)anthracene	2.62E-01	mg/kg	2.9E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.1E-07	3.3E-06	mg/kg-day	3.0E-02	mg/kg-day	1.1E-04
				Benzo(a)pyrene	2.60E-01	mg/kg	2.6E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.1E-06	3.3E-06	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	2.9E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.1E-07	3.3E-06	mg/kg-day	3.0E-02	mg/kg-day	1.1E-04
			Exp. Route Total								9.6E-06					1.6E+00
			Dermal	Aluminum	1.20E+04	mg/kg	3.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-04	mg/kg-day	5.0E-02	mg/kg-day	8.6E-03
				Antimony	1.99E+00	mg/kg	6.1E-09	mg/kg-day	--	1/(mg/kg-day)	--	7.1E-08	mg/kg-day	6.0E-05	mg/kg-day	1.2E-03
				Arsenic	4.13E+00	mg/kg	3.8E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	5.7E-07	4.4E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				Iron	1.83E+04	mg/kg	5.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-04	mg/kg-day	3.0E-02	mg/kg-day	2.2E-02
				Manganese	6.65E+02	mg/kg	2.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-05	mg/kg-day	9.6E-04	mg/kg-day	2.5E-02
				Thallium	3.30E-01	mg/kg	1.0E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-08	mg/kg-day	7.0E-05	mg/kg-day	1.7E-04
				Dieldrin	1.74E-02	mg/kg	5.4E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	8.6E-08	6.2E-08	mg/kg-day	5.0E-05	mg/kg-day	1.2E-03
				Benzo(a)anthracene	2.62E-01	mg/kg	1.0E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.6E-08	1.2E-06	mg/kg-day	3.0E-02	mg/kg-day	4.1E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	1.0E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.6E-07	1.2E-06	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.0E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.6E-08	1.2E-06	mg/kg-day	3.00E-02	mg/kg-day	4.1E-05
			Exp. Route Total								1.6E-06					7.3E-02
		Exposure Point Total									1.1E-05					1.7E+00
	Exposure Medium Total										1.1E-05					1.7E+00
	Air Particulates	On-Site	Inhalation	Aluminum	1.20E+04	mg/kg	2.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-05	mg/kg-day	1.4E-03	mg/kg-day	2.1E-02
				Antimony	1.99E+00	mg/kg	4.3E-10	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-09	mg/kg-day	4.0E-05	mg/kg-day	1.2E-04
				Arsenic	4.13E+00	mg/kg	8.8E-10	mg/kg-day	1.5E+01	1/(mg/kg-day)	1.3E-08	1.0E-08	mg/kg-day	3.0E-04	mg/kg-day	3.4E-05
				Iron	1.83E+04	mg/kg	3.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.6E-05	mg/kg-day	3.0E-01	mg/kg-day	1.6E-04
				Manganese	6.65E+02	mg/kg	1.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-06	mg/kg-day	1.4E-05	mg/kg-day	1.2E-01
				Thallium	3.30E-01	mg/kg	7.1E-11	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-10	mg/kg-day	7.0E-05	mg/kg-day	1.2E-05
				Dieldrin	1.74E-02	mg/kg	3.7E-12	mg/kg-day	1.6E+01	1/(mg/kg-day)	6.0E-11	4.4E-11	mg/kg-day	5.0E-05	mg/kg-day	8.7E-07
				Benzo(a)anthracene	2.62E-01	mg/kg	5.6E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	1.7E-11	6.5E-10	mg/kg-day	3.0E-02	mg/kg-day	2.2E-08
				Benzo(a)pyrene	2.60E-01	mg/kg	5.6E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	1.7E-10	6.5E-10	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	5.6E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	1.7E-11	6.5E-10	mg/kg-day	3.0E-02	mg/kg-day	2.2E-08
			Exp. Route Total								1.4E-08					1.4E-01
		Exposure Point Total									1.4E-08					1.4E-01
	Exposure Medium Total										1.4E-08					1.4E-01
Surface Soil Total											1.1E-05					1.8E+00

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	On-site Tap Water	Ingestion	Aluminum	7.30E+03	ug/L	6.0E-02	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-01	mg/kg-day	1.0E+00	mg/kg-day	7.0E-01
				Chromium(VI)	7.60E+00	ug/L	6.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.3E-04	mg/kg-day	3.0E-03	mg/kg-day	2.4E-01
				Iron	1.40E+04	ug/L	1.2E-01	mg/kg-day	--	1/(mg/kg-day)	--	1.3E+00	mg/kg-day	3.0E-01	mg/kg-day	4.5E+00
				Manganese	6.81E+03	ug/L	5.6E-02	mg/kg-day	--	1/(mg/kg day)	--	6.5E-01	mg/kg-day	2.4E-02	mg/kg-day	2.7E+01
				Thallium	6.62E+00	ug/L	5.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.3E-04	mg/kg-day	7.0E-05	mg/kg-day	9.1E+00
				2-Methylnaphthalene	6.30E-01	ug/L	5.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.0E-05	mg/kg-day	2.0E-02	mg/kg-day	3.0E-03
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	8.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-03	mg/kg-day	5.0E-02	mg/kg-day	2.0E-02
				1,2-Dichlorobenzene	4.77E+02	ug/L	3.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	4.6E-02	mg/kg-day	9.0E-02	mg/kg-day	5.1E-01
				1,2-Dichloroethane	3.20E+00	ug/L	2.6E-05	mg/kg-day	9.1E-02	1/(mg/kg-day)	2.4E-06	3.1E-04	mg/kg-day	3.0E-02	mg/kg-day	1.0E-02
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	7.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	8.3E-04	mg/kg-day	5.0E-02	mg/kg-day	1.7E-02
				1,3-Dichlorobenzene	5.27E+00	ug/L	4.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-04	mg/kg-day	9.0E-04	mg/kg-day	5.6E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.2E-03	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.8E-05	1.4E-02	mg/kg-day	3.0E-02	mg/kg-day	4.6E-01
				Acetone	2.71E+01	ug/L	2.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-03	mg/kg-day	1.0E-01	mg/kg-day	2.6E-02
				Benzene	5.71E+00	ug/L	4.7E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.6E-06	5.5E-04	mg/kg-day	3.0E-03	mg/kg-day	1.8E-01
				Chlorobenzene	2.35E+03	ug/L	1.9E-02	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-01	mg/kg-day	2.0E-02	mg/kg-day	1.1E+01
				Chloroform	1.30E+00	ug/L	1.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-04	mg/kg-day	1.0E-02	mg/kg-day	1.2E-02
				cis-1,2-Dichloroethene	4.47E+01	ug/L	3.7E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-03	mg/kg-day	1.0E-02	mg/kg-day	4.3E-01
				Methylene chloride	7.76E+00	ug/L	6.4E-05	mg/kg-day	7.5E-03	1/(mg/kg-day)	4.8E-07	7.4E-04	mg/kg-day	6.0E-02	mg/kg-day	1.2E-02
				Naphthalene	1.89E+01	ug/L	1.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-03	mg/kg-day	2.0E-02	mg/kg-day	9.1E-02
				n-Butylbenzene	1.36E+01	ug/L	1.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-03	mg/kg-day	4.0E-02	mg/kg-day	3.3E-02
				Tetrachloroethene	1.71E+01	ug/L	1.4E-04	mg/kg-day	5.1E-02	1/(mg/kg-day)	7.2E-06	1.6E-03	mg/kg-day	1.0E-02	mg/kg-day	1.6E-01
				Trichloroethene	1.85E+01	ug/L	1.5E-04	mg/kg-day	4.0E-01	1/(mg/kg-day)	6.1E-05	1.8E-03	mg/kg-day	3.0E-04	mg/kg-day	5.9E+00
				Vinyl Chloride	1.26E+01	ug/L	1.0E-04	mg/kg-day	1.4E+00	1/(mg/kg-day)	1.5E-04	1.2E-03	mg/kg-day	3.0E-03	mg/kg-day	4.0E-01
				Xylenes	3.42E+01	ug/L	2.8E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-03	mg/kg-day	2.0E-01	mg/kg-day	1.6E-02
			Exp. Route Total								2.5E-04					6.2E+01
			Dermal	Aluminum	7.30E+03	ug/L	2.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-03	mg/kg-day	5.0E-02	mg/kg-day	6.2E-02
				Chromium(VI)	7.60E+00	ug/L	5.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.4E-06	mg/kg-day	7.5E-05	mg/kg-day	8.6E-02
				Iron	1.40E+04	ug/L	5.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-03	mg/kg-day	3.0E-02	mg/kg-day	2.0E-01
				Manganese	6.81E+03	ug/L	2.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-03	mg/kg-day	9.6E-04	mg/kg-day	3.0E+00
				Thallium	6.62E+00	ug/L	2.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-06	mg/kg-day	7.0E-05	mg/kg-day	4.0E-02
				2-Methylnaphthalene	6.30E-01	ug/L	2.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-05	mg/kg-day	2.0E-02	mg/kg-day	1.3E-03
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	3.7E-05	mg/kg-day	--	1/(mg/kg day)	--	4.3E-04	mg/kg-day	5.0E-02	mg/kg-day	8.5E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-02	mg/kg-day	9.0E-02	mg/kg-day	2.1E-01
				1,2-Dichloroethane	3.20E+00	ug/L	8.6E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	7.8E-08	1.0E-05	mg/kg-day	3.0E-02	mg/kg-day	3.3E-04
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	3.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-04	mg/kg-day	5.0E-02	mg/kg-day	6.9E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	2.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-04	mg/kg-day	9.0E-04	mg/kg-day	3.3E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	5.0E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-05	5.8E-03	mg/kg-day	3.0E-02	mg/kg-day	2.0E-01
				Acetone	2.71E+01	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-05	mg/kg-day	1.0E-01	mg/kg-day	1.7E-04
				Benzene	5.71E+00	ug/L	4.8E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.6E-07	5.6E-05	mg/kg-day	3.0E-03	mg/kg-day	1.9E-02
				Chlorobenzene	2.35E+03	ug/L	4.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-02	mg/kg-day	2.0E-02	mg/kg-day	2.6E+00
				Chloroform	1.30E+00	ug/L	6.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.3E-06	mg/kg-day	1.0E-02	mg/kg-day	7.3E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	2.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-04	mg/kg-day	1.0E-02	mg/kg-day	2.5E-02
				Methylene chloride	7.76E+00	ug/L	1.6E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.2E-08	1.9E-05	mg/kg-day	6.0E-02	mg/kg-day	3.1E-04
				Naphthalene	1.89E+01	ug/L	6.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-04	mg/kg-day	2.0E-02	mg/kg-day	3.8E-02
				n-Butylbenzene	1.36E+01	ug/L	4.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-04	mg/kg-day	4.0E-02	mg/kg-day	1.3E-02
				Tetrachloroethene	1.71E+01	ug/L	5.4E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	2.7E-06	6.3E-04	mg/kg-day	1.0E-02	mg/kg-day	6.3E-02
				Trichloroethene	1.85E+01	ug/L	1.7E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	6.8E-06	2.0E-04	mg/kg-day	3.0E-04	mg/kg-day	6.6E-01
				Vinyl Chloride	1.26E+01	ug/L	3.8E-06	mg/kg-day	1.4E+00	1/(mg/kg-day)	5.3E-06	4.4E-05	mg/kg-day	3.0E-03	mg/kg-day	1.5E-02
				Xylenes	3.42E+01	ug/L	1.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-03	mg/kg-day	2.0E-01	mg/kg-day	6.8E-03
			Exp. Route Total								2.7E-05					7.6E+00
		Exposure Point Total									2.7E-04					6.9E+01

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater (continued)	Vapors	On-site Bath/Shower	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	2.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-03	mg/kg-day	8.6E-04	mg/kg-day	3.1E+00
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	3.8E-03	mg/kg-day	1.8E-01	1/(mg/kg-day)	7.1E-04	4.5E-02	mg/kg-day	1.7E-03	mg/kg-day	2.6E+01
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.7E-01	mg/kg-day	--	1/(mg/kg-day)	--	2.0E+00	mg/kg-day	5.7E-02	mg/kg-day	3.5E+01
				1,2-Dichloroethane	3.20E+00	ug/L	1.2E-03	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.0E-04	1.3E-02	mg/kg-day	1.4E-03	mg/kg-day	9.4E+00
				1,3,5-Trimethylbenzene	6.81E+00	ug/L	3.1E-03	mg/kg-day	2.7E-01	1/(mg/kg-day)	8.4E-04	3.6E-02	mg/kg-day	1.7E-03	mg/kg-day	2.1E+01
				1,3-Dichlorobenzene	5.27E+00	ug/L	1.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-02	mg/kg-day	9.0E-04	mg/kg-day	2.5E+01
				1,4-Dichlorobenzene	1.43E+02	ug/L	5.1E-02	mg/kg-day	2.2E-02	1/(mg/kg-day)	1.1E-03	6.0E-01	mg/kg-day	2.3E-01	mg/kg-day	2.6E+00
				Acetone	2.71E+01	ug/L	9.7E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-01	mg/kg-day	1.0E-01	mg/kg-day	1.1E+00
				Benzene	5.71E+00	ug/L	2.1E-03	mg/kg-day	2.7E-02	1/(mg/kg-day)	5.8E-05	2.4E-02	mg/kg-day	1.7E-03	mg/kg-day	1.4E+01
				Chlorobenzene	2.35E+03	ug/L	8.5E-01	mg/kg-day	--	1/(mg/kg-day)	--	9.9E+00	mg/kg-day	1.7E-02	mg/kg-day	5.8E+02
				Chloroform	1.30E+00	ug/L	4.7E-04	mg/kg-day	8.1E-02	1/(mg/kg-day)	3.8E-05	5.5E-03	mg/kg-day	1.4E-02	mg/kg-day	3.8E-01
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.6E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-01	mg/kg-day	1.0E-02	mg/kg-day	1.9E+01
				Methylene chloride	7.76E+00	ug/L	2.8E-03	mg/kg-day	1.6E-03	1/(mg/kg-day)	4.8E-06	3.3E-02	mg/kg-day	8.6E-01	mg/kg-day	3.8E-02
				Naphthalene	1.69E+01	ug/L	6.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	7.9E-02	mg/kg-day	8.6E-04	mg/kg-day	9.3E+01
				n-Butylbenzene	1.36E+01	ug/L	4.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.7E-02	mg/kg-day	2.9E-01	mg/kg-day	2.0E-01
				Tetrachloroethene	1.71E+01	ug/L	6.1E-03	mg/kg-day	2.1E-02	1/(mg/kg-day)	1.3E-04	7.2E-02	mg/kg-day	1.1E-01	mg/kg-day	6.3E-01
				Trichloroethene	1.65E+01	ug/L	6.7E-03	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.7E-03	7.6E-02	mg/kg-day	1.1E-02	mg/kg-day	6.6E+00
				Vinyl Chloride	1.26E+01	ug/L	4.5E-03	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.4E-04	5.3E-02	mg/kg-day	2.9E-02	mg/kg-day	1.9E+00
				Xylenes	3.42E+01	ug/L	1.2E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-01	mg/kg-day	2.9E-02	mg/kg-day	4.9E+00
			Exp. Route Total								5.8E-03					8.4E+02
		Exposure Point Total									5.8E-03					8.4E+02
		On-Site Indoors	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	3.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-07	mg/kg-day	8.6E-04	mg/kg-day	4.2E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	4.4E-06	mg/kg-day	1.8E-01	1/(mg/kg-day)	8.1E-07	5.2E-05	mg/kg-day	1.7E-03	mg/kg-day	3.0E-02
				1,2-Dichlorobenzene	4.77E+02	ug/L	8.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	9.6E-04	mg/kg-day	5.7E-02	mg/kg-day	1.7E-02
				1,2-Dichloroethane	3.20E+00	ug/L	4.8E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	4.4E-08	5.6E-06	mg/kg-day	1.4E-03	mg/kg-day	3.9E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	4.6E-06	mg/kg-day	2.7E-01	1/(mg/kg-day)	1.2E-06	5.3E-05	mg/kg-day	1.7E-03	mg/kg-day	3.1E-02
				1,3-Dichlorobenzene	5.27E+00	ug/L	9.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	9.0E-04	mg/kg-day	1.2E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	3.0E-05	mg/kg-day	2.2E-02	1/(mg/kg-day)	6.5E-07	3.4E-04	mg/kg-day	2.3E-01	mg/kg-day	1.5E-03
				Acetone	2.71E+01	ug/L	2.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-06	mg/kg-day	1.0E-01	mg/kg-day	3.1E-05
				Benzene	5.71E+00	ug/L	2.8E-06	mg/kg-day	2.7E-02	1/(mg/kg-day)	7.7E-08	3.3E-05	mg/kg-day	1.7E-03	mg/kg-day	1.9E-02
				Chlorobenzene	2.35E+03	ug/L	7.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.3E-03	mg/kg-day	1.7E-02	mg/kg-day	4.9E-01
				Chloroform	1.30E+00	ug/L	5.3E-07	mg/kg-day	8.1E-02	1/(mg/kg-day)	4.3E-08	6.2E-06	mg/kg-day	1.4E-02	mg/kg-day	4.3E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-04	mg/kg-day	1.0E-02	mg/kg-day	1.6E-02
				Methylene chloride	7.76E+00	ug/L	2.2E-06	mg/kg-day	1.6E-03	1/(mg/kg-day)	3.6E-09	2.5E-05	mg/kg-day	8.6E-01	mg/kg-day	3.0E-05
				Naphthalene	1.69E+01	ug/L	9.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	8.6E-04	mg/kg-day	1.3E-02
				n-Butylbenzene	1.36E+01	ug/L	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	2.9E-01	mg/kg-day	4.7E-04
				Tetrachloroethene	1.71E+01	ug/L	1.9E-05	mg/kg-day	2.1E-02	1/(mg/kg-day)	3.9E-07	2.2E-04	mg/kg-day	1.1E-01	mg/kg-day	1.9E-03
				Trichloroethene	1.65E+01	ug/L	1.4E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	5.6E-06	1.6E-04	mg/kg-day	1.1E-02	mg/kg-day	1.4E-02
				Vinyl Chloride	1.26E+01	ug/L	2.7E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	9.2E-07	3.1E-04	mg/kg-day	2.9E-02	mg/kg-day	1.1E-02
				Xylenes	3.42E+01	ug/L	1.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-04	mg/kg-day	2.9E-02	mg/kg-day	6.7E-03
			Exp. Route Total								9.5E-06					6.7E-01
		Exposure Point Total									9.5E-06					6.7E-01
	Exposure Medium Total										5.8E-03					8.4E+02
Groundwater Total											6.1E-03					9.1E+02
										Total of Receptor Risks Across All Media	6.1E-03				Total of Receptor Hazards Across All Media	9.1E+02

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	6.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-02	mg/kg-day	1.0E+00	mg/kg-day	7.7E-02
				Antimony	1.99E+00	mg/kg	1.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-05	mg/kg-day	4.0E-04	mg/kg-day	3.2E-02
				Arsenic	4.13E+00	mg/kg	2.3E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.4E-06	2.6E-05	mg/kg-day	3.0E-04	mg/kg-day	8.8E-02
				Iron	1.83E+04	mg/kg	1.0E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-01	mg/kg-day	3.0E-01	mg/kg-day	3.9E-01
				Manganese	6.65E+02	mg/kg	3.8E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-03	mg/kg-day	2.4E-02	mg/kg-day	1.8E-01
				Thallium	3.30E-01	mg/kg	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-06	mg/kg-day	7.0E-05	mg/kg-day	3.0E-02
				Dieldrin	1.74E-02	mg/kg	9.6E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.5E-07	1.1E-07	mg/kg-day	5.0E-05	mg/kg-day	2.2E-03
				Benzo(a)anthracene	2.62E-01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.0E-07	1.7E-06	mg/kg-day	3.0E-02	mg/kg-day	5.8E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	1.4E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.0E-06	1.7E-06	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.0E-07	1.7E-06	mg/kg-day	3.0E-02	mg/kg-day	5.6E-05
			Exp. Route Total								4.8E-06					8.0E-01
			Dermal	Aluminum	1.20E+04	mg/kg	3.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-04	mg/kg-day	5.0E-02	mg/kg-day	8.6E-03
				Antimony	1.99E+00	mg/kg	6.1E-09	mg/kg-day	--	1/(mg/kg-day)	--	7.1E-08	mg/kg-day	6.0E-05	mg/kg-day	1.2E-03
				Arsenic	4.13E+00	mg/kg	3.8E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	5.7E-07	4.4E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
				Iron	1.83E+04	mg/kg	5.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-04	mg/kg-day	3.0E-02	mg/kg-day	2.2E-02
				Manganese	6.65E+02	mg/kg	2.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-05	mg/kg-day	9.6E-04	mg/kg-day	2.5E-02
				Thallium	3.30E-01	mg/kg	1.0E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-08	mg/kg-day	7.0E-05	mg/kg-day	1.7E-04
				Dieldrin	1.74E-02	mg/kg	5.4E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	8.6E-08	6.2E-08	mg/kg-day	5.0E-05	mg/kg-day	1.2E-03
				Benzo(a)anthracene	2.62E-01	mg/kg	1.0E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.6E-08	1.2E-06	mg/kg-day	3.0E-02	mg/kg-day	4.1E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	1.0E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.6E-07	1.2E-06	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.0E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	7.6E-08	1.2E-05	mg/kg-day	3.00E-02	mg/kg-day	4.1E-05
			Exp. Route Total								1.6E-06					7.3E-02
		Exposure Point Total									6.4E-06					8.7E-01
	Exposure Medium Total										6.4E-06					8.7E-01
	Air Particulates	On-Site	Inhalation	Aluminum	1.20E+04	mg/kg	1.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-05	mg/kg-day	1.4E-03	mg/kg-day	1.5E-02
				Antimony	1.99E+00	mg/kg	2.9E-10	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-09	mg/kg-day	4.0E-05	mg/kg-day	8.6E-05
				Arsenic	4.13E+00	mg/kg	6.1E-10	mg/kg-day	1.5E+01	1/(mg/kg-day)	9.2E-09	7.1E-09	mg/kg-day	3.0E-04	mg/kg-day	2.4E-05
				Iron	1.83E+04	mg/kg	2.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-05	mg/kg-day	3.0E-01	mg/kg-day	1.1E-04
				Manganese	6.65E+02	mg/kg	9.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-06	mg/kg-day	1.4E-05	mg/kg-day	8.0E-02
				Thallium	3.30E-01	mg/kg	4.9E-11	mg/kg-day	--	1/(mg/kg-day)	--	5.7E-10	mg/kg-day	7.0E-05	mg/kg-day	8.1E-06
				Dieldrin	1.74E-02	mg/kg	2.6E-12	mg/kg-day	1.6E+01	1/(mg/kg-day)	4.2E-11	3.0E-11	mg/kg-day	5.0E-05	mg/kg-day	6.0E-07
				Benzo(a)anthracene	2.62E-01	mg/kg	3.9E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	1.2E-11	4.5E-10	mg/kg-day	3.0E-02	mg/kg-day	1.5E-08
				Benzo(a)pyrene	2.60E-01	mg/kg	3.8E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	1.2E-10	4.5E-10	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	3.9E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	1.2E-11	4.5E-10	mg/kg-day	3.0E-02	mg/kg-day	1.5E-08
			Exp. Route Total								9.4E-09					9.5E-02
		Exposure Point Total									9.4E-09					9.5E-02
	Exposure Medium Total										9.4E-09					9.5E-02
Surface Soil Total											6.4E-06					9.6E-01

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	On-site Tap Water	Ingestion	Aluminum	7.30E+03	ug/L	2.8E-02	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-01	mg/kg-day	1.0E+00	mg/kg-day	3.3E-01
				Chromium(VI)	7.60E+00	ug/L	2.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-04	mg/kg-day	3.0E-03	mg/kg-day	1.1E-01
				Iron	1.40E+04	ug/L	5.4E-02	mg/kg-day	--	1/(mg/kg-day)	--	6.3E-01	mg/kg-day	3.0E-01	mg/kg-day	2.1E+00
				Manganese	6.61E+03	ug/L	2.6E-02	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-01	mg/kg-day	2.4E-02	mg/kg-day	1.3E+01
				Thallium	6.62E+00	ug/L	2.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-04	mg/kg-day	7.0E-05	mg/kg-day	4.2E+00
				2-Methylnaphthalene	6.30E-01	ug/L	2.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-05	mg/kg-day	2.0E-02	mg/kg-day	1.4E-03
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	4.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.8E-04	mg/kg-day	5.0E-02	mg/kg-day	9.6E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.8E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-02	mg/kg-day	9.0E-02	mg/kg-day	2.4E-01
				1,2-Dichloroethane	3.20E+00	ug/L	1.2E-05	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.1E-06	1.4E-04	mg/kg-day	3.0E-02	mg/kg-day	4.6E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	3.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-04	mg/kg-day	5.0E-02	mg/kg-day	7.7E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	2.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-04	mg/kg-day	9.0E-04	mg/kg-day	2.6E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	5.5E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.3E-05	6.4E-03	mg/kg-day	3.0E-02	mg/kg-day	2.1E-01
				Acetone	2.71E+01	ug/L	1.0E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-03	mg/kg-day	1.0E-01	mg/kg-day	1.2E-02
				Benzene	5.71E+00	ug/L	2.2E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.2E-06	2.6E-04	mg/kg-day	3.0E-03	mg/kg-day	8.6E-02
				Chlorobenzene	2.35E+03	ug/L	9.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-01	mg/kg-day	2.0E-02	mg/kg-day	5.3E+00
				Chloroform	1.30E+00	ug/L	5.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.8E-05	mg/kg-day	1.0E-02	mg/kg-day	5.8E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.7E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-03	mg/kg-day	1.0E-02	mg/kg-day	2.0E-01
				Methylene chloride	7.76E+00	ug/L	3.0E-05	mg/kg-day	7.5E-03	1/(mg/kg-day)	2.2E-07	3.5E-04	mg/kg-day	6.0E-02	mg/kg-day	5.8E-03
				Naphthalene	1.89E+01	ug/L	7.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	8.5E-04	mg/kg-day	2.0E-02	mg/kg-day	4.2E-02
				n-Butylbenzene	1.38E+01	ug/L	5.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-04	mg/kg-day	4.0E-02	mg/kg-day	1.5E-02
				Tetrachloroethene	1.71E+01	ug/L	6.6E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	3.3E-06	7.6E-04	mg/kg-day	1.0E-02	mg/kg-day	7.6E-02
				Trichloroethene	1.85E+01	ug/L	7.1E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.8E-05	8.3E-04	mg/kg-day	3.0E-04	mg/kg-day	2.8E+00
				Vinyl Chloride	1.28E+01	ug/L	4.8E-05	mg/kg-day	1.4E+00	1/(mg/kg-day)	6.8E-05	5.6E-04	mg/kg-day	3.0E-03	mg/kg-day	1.9E-01
				Xylenes	3.42E+01	ug/L	1.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-03	mg/kg-day	2.0E-01	mg/kg-day	7.6E-03
			Exp. Route Total								1.2E-04					2.9E+01
			Dermal	Aluminum	7.30E+03	ug/L	2.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-03	mg/kg-day	5.0E-02	mg/kg-day	6.2E-02
				Chromium(VI)	7.60E+00	ug/L	5.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.4E-06	mg/kg-day	7.5E-05	mg/kg-day	8.6E-02
				Iron	1.40E+04	ug/L	5.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-03	mg/kg-day	3.0E-02	mg/kg-day	2.0E-01
				Manganese	6.61E+03	ug/L	2.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-03	mg/kg-day	9.6E-04	mg/kg-day	3.0E+00
				Thallium	6.62E+00	ug/L	2.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-06	mg/kg-day	7.0E-05	mg/kg-day	4.0E-03
				2-Methylnaphthalene	6.30E-01	ug/L	2.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-05	mg/kg-day	2.0E-02	mg/kg-day	1.3E-03
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	3.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-04	mg/kg-day	5.0E-02	mg/kg-day	8.6E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-02	mg/kg-day	9.0E-02	mg/kg-day	2.1E-01
				1,2-Dichloroethane	3.20E+00	ug/L	8.6E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	7.8E-08	1.0E-05	mg/kg-day	3.0E-02	mg/kg-day	3.3E-04
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	3.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-04	mg/kg-day	5.0E-02	mg/kg-day	6.9E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	2.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-04	mg/kg-day	9.0E-04	mg/kg-day	3.3E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	5.0E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.2E-05	5.9E-03	mg/kg-day	3.0E-02	mg/kg-day	2.0E-01
				Acetone	2.71E+01	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-05	mg/kg-day	1.0E-01	mg/kg-day	1.7E-04
				Benzene	5.71E+00	ug/L	4.8E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.6E-07	5.6E-05	mg/kg-day	3.0E-03	mg/kg-day	1.9E-02
				Chlorobenzene	2.35E+03	ug/L	4.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-02	mg/kg-day	2.0E-02	mg/kg-day	2.6E+00
				Chloroform	1.30E+00	ug/L	6.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.3E-06	mg/kg-day	1.0E-02	mg/kg-day	7.3E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	2.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-04	mg/kg-day	1.0E-02	mg/kg-day	2.5E-02
				Methylene chloride	7.76E+00	ug/L	1.6E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.2E-08	1.9E-05	mg/kg-day	6.0E-02	mg/kg-day	3.1E-04
				Naphthalene	1.89E+01	ug/L	6.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.8E-04	mg/kg-day	2.0E-02	mg/kg-day	3.9E-02
				n-Butylbenzene	1.38E+01	ug/L	4.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-04	mg/kg-day	4.0E-02	mg/kg-day	1.3E-02
				Tetrachloroethene	1.71E+01	ug/L	5.4E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	2.7E-06	6.3E-04	mg/kg-day	1.0E-02	mg/kg-day	6.3E-02
				Trichloroethene	1.85E+01	ug/L	1.7E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	6.8E-06	2.0E-04	mg/kg-day	3.0E-04	mg/kg-day	6.6E-01
				Vinyl Chloride	1.28E+01	ug/L	3.8E-06	mg/kg-day	1.4E+00	1/(mg/kg-day)	5.3E-06	4.4E-05	mg/kg-day	3.0E-03	mg/kg-day	1.5E-02
				Xylenes	3.42E+01	ug/L	1.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-03	mg/kg-day	2.0E-01	mg/kg-day	6.8E-03
			Exp. Route Total								2.7E-05					7.6E+00
		Exposure Point Total									1.4E-04					3.6E+01

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater (continued)	Vapors	On-site Bath/Shower	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	1.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-04	mg/kg-day	8.6E-04	mg/kg-day	1.6E-01
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	2.0E-04	mg/kg-day	1.6E-01	1/(mg/kg-day)	3.7E-05	2.3E-03	mg/kg-day	1.7E-03	mg/kg-day	1.4E+00
				1,2-Dichlorobenzene	4.77E+02	ug/L	8.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-01	mg/kg-day	5.7E-02	mg/kg-day	1.8E+00
				1,2-Dichloroethane	3.20E+00	ug/L	6.0E-05	mg/kg-day	9.1E-02	1/(mg/kg-day)	5.4E-06	7.0E-04	mg/kg-day	1.4E-03	mg/kg-day	4.9E-01
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	1.6E-04	mg/kg-day	2.7E-01	1/(mg/kg-day)	4.4E-05	1.9E-03	mg/kg-day	1.7E-03	mg/kg-day	1.1E+00
				1,3-Dichlorobenzene	8.27E+00	ug/L	9.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-03	mg/kg-day	9.0E-04	mg/kg-day	1.3E+00
				1,4-Dichlorobenzene	1.43E+02	ug/L	2.7E-03	mg/kg-day	2.2E-02	1/(mg/kg-day)	5.9E-05	3.1E-02	mg/kg-day	2.3E-01	mg/kg-day	1.4E-01
				Acetone	2.71E+01	ug/L	5.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-03	mg/kg-day	1.0E-01	mg/kg-day	5.9E-02
				Benzene	5.71E+00	ug/L	1.1E-04	mg/kg-day	2.7E-02	1/(mg/kg-day)	2.9E-06	1.2E-03	mg/kg-day	1.7E-03	mg/kg-day	7.3E-01
				Chlorobenzene	2.35E+03	ug/L	4.4E-02	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-01	mg/kg-day	1.7E-02	mg/kg-day	3.0E+01
				Chloroform	1.30E+00	ug/L	2.4E-05	mg/kg-day	8.1E-02	1/(mg/kg-day)	2.0E-06	2.8E-04	mg/kg-day	1.4E-02	mg/kg-day	2.0E-02
				cis-1,2-Dichloroethene	4.47E+01	ug/L	8.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	9.8E-03	mg/kg-day	1.0E-02	mg/kg-day	9.8E-01
				Methylene chloride	7.76E+00	ug/L	1.5E-04	mg/kg-day	1.6E-03	1/(mg/kg-day)	2.4E-07	1.7E-03	mg/kg-day	8.6E-01	mg/kg-day	2.0E-03
				Naphthalene	1.69E+01	ug/L	3.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-03	mg/kg-day	8.6E-04	mg/kg-day	4.8E+00
				n-Butylbenzene	1.36E+01	ug/L	2.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-03	mg/kg-day	2.9E-01	mg/kg-day	1.0E-02
				Tetrachloroethene	1.71E+01	ug/L	3.2E-04	mg/kg-day	2.1E-02	1/(mg/kg-day)	6.6E-06	3.7E-03	mg/kg-day	1.1E-01	mg/kg-day	3.3E-02
				Trichloroethene	1.65E+01	ug/L	3.5E-04	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.4E-04	4.0E-03	mg/kg-day	1.1E-02	mg/kg-day	3.5E-01
				Vinyl Chloride	1.29E+01	ug/L	2.4E-04	mg/kg-day	3.1E-02	1/(mg/kg-day)	7.3E-06	2.7E-03	mg/kg-day	2.9E-02	mg/kg-day	9.6E-02
				Xylenes	3.42E+01	ug/L	6.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-03	mg/kg-day	2.9E-02	mg/kg-day	2.6E-01
			Exp. Route Total								3.0E-04					4.4E+01
		Exposure Point Total									3.0E-04					4.4E+01
		On-Site Indoors	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	3.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-07	mg/kg-day	8.6E-04	mg/kg-day	4.2E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	4.4E-06	mg/kg-day	1.6E-01	1/(mg/kg-day)	6.1E-07	5.2E-05	mg/kg-day	1.7E-03	mg/kg-day	3.0E-02
				1,2-Dichlorobenzene	4.77E+02	ug/L	8.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	9.6E-04	mg/kg-day	5.7E-02	mg/kg-day	1.7E-02
				1,2-Dichloroethane	3.20E+00	ug/L	4.6E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	4.4E-08	6.6E-06	mg/kg-day	1.4E-03	mg/kg-day	3.9E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	4.6E-06	mg/kg-day	2.7E-01	1/(mg/kg-day)	1.2E-06	5.3E-05	mg/kg-day	1.7E-03	mg/kg-day	3.1E-02
				1,3-Dichlorobenzene	8.27E+00	ug/L	9.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	9.0E-04	mg/kg-day	1.2E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	3.0E-05	mg/kg-day	2.2E-02	1/(mg/kg-day)	6.5E-07	3.4E-04	mg/kg-day	2.3E-01	mg/kg-day	1.5E-03
				Acetone	2.71E+01	ug/L	2.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-06	mg/kg-day	1.0E-01	mg/kg-day	3.1E-05
				Benzene	5.71E+00	ug/L	2.8E-06	mg/kg-day	2.7E-02	1/(mg/kg-day)	7.7E-08	3.3E-05	mg/kg-day	1.7E-03	mg/kg-day	1.9E-02
				Chlorobenzene	2.35E+03	ug/L	7.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.3E-03	mg/kg-day	1.7E-02	mg/kg-day	4.9E-01
				Chloroform	1.30E+00	ug/L	5.3E-07	mg/kg-day	8.1E-02	1/(mg/kg-day)	4.3E-08	6.2E-06	mg/kg-day	1.4E-02	mg/kg-day	4.3E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-04	mg/kg-day	1.0E-02	mg/kg-day	1.8E-02
				Methylene chloride	7.76E+00	ug/L	2.2E-06	mg/kg-day	1.6E-03	1/(mg/kg-day)	3.6E-09	2.5E-05	mg/kg-day	8.6E-01	mg/kg-day	3.0E-05
				Naphthalene	1.69E+01	ug/L	9.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	8.6E-04	mg/kg-day	1.3E-02
				n-Butylbenzene	1.36E+01	ug/L	1.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	2.9E-01	mg/kg-day	4.7E-04
				Tetrachloroethene	1.71E+01	ug/L	1.9E-05	mg/kg-day	2.1E-02	1/(mg/kg-day)	3.9E-07	2.2E-04	mg/kg-day	1.1E-01	mg/kg-day	1.9E-03
				Trichloroethene	1.65E+01	ug/L	1.4E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	5.5E-06	1.6E-04	mg/kg-day	1.1E-02	mg/kg-day	1.4E-02
				Vinyl Chloride	1.29E+01	ug/L	2.7E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	8.2E-07	3.1E-04	mg/kg-day	2.9E-02	mg/kg-day	1.1E-02
				Xylenes	3.42E+01	ug/L	1.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-04	mg/kg-day	2.9E-02	mg/kg-day	6.7E-03
			Exp. Route Total								9.6E-06					6.7E-01
		Exposure Point Total									9.5E-06					6.7E-01
	Exposure Medium Total										3.1E-04					4.4E+01
Groundwater Total											4.5E-04					8.1E+01
										Total of Receptor Risks Across All Media	4.6E-04				Total of Receptor Hazards Across All Media	8.2E+01

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	5.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-02	mg/kg-day	1.0E+00	mg/kg-day	1.6E-02
				Antimony	1.99E+00	mg/kg	9.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-06	mg/kg-day	4.0E-04	mg/kg-day	6.8E-03
				Arsenic	4.13E+00	mg/kg	1.9E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.9E-06	5.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.9E-02
				Iron	1.83E+04	mg/kg	8.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-02	mg/kg-day	3.0E-01	mg/kg-day	8.4E-02
				Manganese	8.65E+02	mg/kg	3.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	9.1E-04	mg/kg-day	2.4E-02	mg/kg-day	3.8E-02
				Thallium	3.30E-01	mg/kg	1.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-07	mg/kg-day	7.0E-05	mg/kg-day	6.5E-03
				Dieldrin	1.74E-02	mg/kg	8.2E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.3E-07	2.4E-08	mg/kg-day	5.0E-05	mg/kg-day	4.8E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	1.2E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	9.0E-08	3.6E-07	mg/kg-day	3.0E-02	mg/kg-day	1.2E-05
				Benzo(a)pyrene	2.60E-01	mg/kg	1.2E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	8.9E-07	3.6E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.2E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	9.0E-08	3.6E-07	mg/kg-day	3.0E-02	mg/kg-day	1.2E-05
			Exp. Route Total								4.1E-06					1.7E-01
			Dermal	Aluminum	1.20E+04	mg/kg	2.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-05	mg/kg-day	5.0E-02	mg/kg-day	1.3E-03
				Antimony	1.99E+00	mg/kg	3.7E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-08	mg/kg-day	6.0E-05	mg/kg-day	1.8E-04
				Arsenic	4.13E+00	mg/kg	2.3E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.5E-07	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	2.3E-03
				Iron	1.83E+04	mg/kg	3.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-04	mg/kg-day	3.0E-02	mg/kg-day	3.3E-03
				Manganese	8.65E+02	mg/kg	1.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-06	mg/kg-day	9.6E-04	mg/kg-day	3.8E-03
				Thallium	3.30E-01	mg/kg	6.2E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-09	mg/kg-day	7.0E-05	mg/kg-day	2.6E-05
				Dieldrin	1.74E-02	mg/kg	3.3E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	5.2E-08	9.6E-09	mg/kg-day	5.0E-05	mg/kg-day	1.9E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	6.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.7E-08	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.2E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	6.3E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.6E-07	1.6E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	6.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	4.7E-08	1.9E-07	mg/kg-day	3.00E-02	mg/kg-day	6.2E-06
			Exp. Route Total								9.8E-07					1.1E-02
		Exposure Point Total									5.1E-06					1.8E-01
	Exposure Medium Total										5.1E-06					1.8E-01
	Air Particulates	On-Site	Inhalation	Aluminum	1.20E+04	mg/kg	3.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-05	mg/kg-day	1.4E-03	mg/kg-day	7.5E-03
				Antimony	1.99E+00	mg/kg	6.1E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-09	mg/kg-day	4.0E-05	mg/kg-day	4.4E-05
				Arsenic	4.13E+00	mg/kg	1.3E-09	mg/kg-day	1.5E+01	1/(mg/kg-day)	1.8E-08	3.7E-09	mg/kg-day	3.0E-04	mg/kg-day	1.2E-05
				Iron	1.83E+04	mg/kg	5.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-05	mg/kg-day	3.0E-01	mg/kg-day	5.4E-05
				Manganese	8.65E+02	mg/kg	2.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-07	mg/kg-day	1.4E-05	mg/kg-day	4.2E-02
				Thallium	3.30E-01	mg/kg	1.0E-10	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-10	mg/kg-day	7.0E-05	mg/kg-day	4.2E-06
				Dieldrin	1.74E-02	mg/kg	5.3E-12	mg/kg-day	1.6E+01	1/(mg/kg-day)	8.6E-11	1.6E-11	mg/kg-day	5.0E-05	mg/kg-day	3.1E-07
				Benzo(a)anthracene	2.62E-01	mg/kg	8.0E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	2.5E-11	2.3E-10	mg/kg-day	3.0E-02	mg/kg-day	7.8E-09
				Benzo(a)pyrene	2.60E-01	mg/kg	7.9E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	2.4E-10	2.3E-10	mg/kg-day	--	mg/kg-day	--
				· Benzo(b)fluoranthene	2.62E-01	mg/kg	8.0E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	2.5E-11	2.3E-10	mg/kg-day	3.0E-02	mg/kg-day	7.8E-09
			Exp. Route Total								1.9E-08					4.9E-02
		Exposure Point Total									1.9E-08					4.9E-02
	Exposure Medium Total										1.9E-08					4.9E-02
Surface Soil Total											5.1E-06					2.3E-01

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	On-site Tap Water	Ingestion	Aluminum	7.30E+03	ug/L	7.9E-02	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-01	mg/kg-day	1.0E+00	mg/kg-day	2.3E-01
				Chromium(VI)	7.60E+00	ug/L	8.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-04	mg/kg-day	3.0E-03	mg/kg-day	8.0E-02
				Iron	1.40E+04	ug/L	1.5E-01	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-01	mg/kg-day	3.0E-01	mg/kg-day	1.5E+00
				Manganese	6.81E+03	ug/L	7.4E-02	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-01	mg/kg-day	2.4E-02	mg/kg-day	8.9E+00
				Thallium	6.62E+00	ug/L	7.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-04	mg/kg-day	7.0E-05	mg/kg-day	3.0E+00
				2-Methylnaphthalene	6.30E-01	ug/L	6.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-05	mg/kg-day	2.0E-02	mg/kg-day	9.9E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	1.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-04	mg/kg-day	5.0E-02	mg/kg-day	6.7E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	5.2E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-02	mg/kg-day	9.0E-02	mg/kg-day	1.7E-01
				1,2-Dichloroethane	3.20E+00	ug/L	3.5E-05	mg/kg-day	9.1E-02	1/(mg/kg-day)	3.1E-06	1.0E-04	mg/kg-day	3.0E-02	mg/kg-day	3.4E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	9.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.7E-04	mg/kg-day	5.0E-02	mg/kg-day	5.4E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	5.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-04	mg/kg-day	9.0E-04	mg/kg-day	1.8E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.5E-03	mg/kg-day	2.4E-02	1/(mg/kg-day)	3.7E-05	4.5E-03	mg/kg-day	3.0E-02	mg/kg-day	1.5E-01
				Acetone	2.71E+01	ug/L	2.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.5E-04	mg/kg-day	1.0E-01	mg/kg-day	8.5E-03
				Benzene	5.71E+00	ug/L	6.2E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	3.4E-06	1.8E-04	mg/kg-day	3.0E-03	mg/kg-day	6.0E-02
				Chlorobenzene	2.35E+03	ug/L	2.5E-02	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-02	mg/kg-day	2.0E-02	mg/kg-day	3.7E+00
				Chloroform	1.30E+00	ug/L	1.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-05	mg/kg-day	1.0E-02	mg/kg-day	4.1E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	4.8E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-03	mg/kg-day	1.0E-02	mg/kg-day	1.4E-01
				Methylene chloride	7.78E+00	ug/L	8.4E-05	mg/kg-day	7.5E-03	1/(mg/kg-day)	6.3E-07	2.4E-04	mg/kg-day	6.0E-02	mg/kg-day	4.1E-03
				Naphthalene	1.89E+01	ug/L	2.0E-04	mg/kg-day	--	1/(mg/kg-day)	--	6.0E-04	mg/kg-day	2.0E-02	mg/kg-day	3.0E-02
				n-Butylbenzene	1.38E+01	ug/L	1.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-04	mg/kg-day	4.0E-02	mg/kg-day	1.1E-02
				Tetrachloroethene	1.71E+01	ug/L	1.8E-04	mg/kg-day	5.1E-02	1/(mg/kg-day)	9.4E-06	5.4E-04	mg/kg-day	1.0E-02	mg/kg-day	5.4E-02
				Trichloroethene	1.85E+01	ug/L	2.0E-04	mg/kg-day	4.0E-01	1/(mg/kg-day)	8.0E-05	5.8E-04	mg/kg-day	3.0E-04	mg/kg-day	1.9E+00
				Vinyl Chloride	1.28E+01	ug/L	1.4E-04	mg/kg-day	1.4E+00	1/(mg/kg-day)	1.9E-04	4.0E-04	mg/kg-day	3.0E-03	mg/kg-day	1.3E-01
				Xylenes	3.42E+01	ug/L	3.7E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-03	mg/kg-day	2.0E-01	mg/kg-day	5.4E-03
			Exp. Route Total								3.2E-04					2.0E+01
			Dermal	Aluminum	7.30E+03	ug/L	3.8E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-03	mg/kg-day	5.0E-02	mg/kg-day	2.1E-02
				Chromium(VI)	7.60E+00	ug/L	7.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-05	mg/kg-day	7.5E-05	mg/kg-day	2.9E-02
				Iron	1.40E+04	ug/L	6.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-03	mg/kg-day	3.0E-02	mg/kg-day	6.7E-02
				Manganese	6.81E+03	ug/L	3.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	9.7E-04	mg/kg-day	9.6E-04	mg/kg-day	1.0E+00
				Thallium	6.62E+00	ug/L	3.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.5E-07	mg/kg-day	7.0E-05	mg/kg-day	1.4E-02
				2-Methylnaphthalene	6.30E-01	ug/L	3.9E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	5.8E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	6.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-04	mg/kg-day	5.0E-02	mg/kg-day	3.8E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	2.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	8.6E-03	mg/kg-day	9.0E-02	mg/kg-day	9.6E-02
				1,2-Dichloroethane	3.20E+00	ug/L	1.5E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.3E-07	4.3E-06	mg/kg-day	3.0E-02	mg/kg-day	1.4E-04
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	5.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-04	mg/kg-day	5.0E-02	mg/kg-day	3.1E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	4.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	9.0E-04	mg/kg-day	1.5E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	9.0E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.2E-05	2.6E-03	mg/kg-day	3.0E-02	mg/kg-day	8.7E-02
				Acetone	2.71E+01	ug/L	2.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-06	mg/kg-day	1.0E-01	mg/kg-day	7.0E-05
				Benzene	5.71E+00	ug/L	8.2E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	4.5E-07	2.4E-05	mg/kg-day	3.0E-03	mg/kg-day	8.0E-03
				Chlorobenzene	2.35E+03	ug/L	7.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-02	mg/kg-day	2.0E-02	mg/kg-day	1.2E+00
				Chloroform	1.30E+00	ug/L	1.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-06	mg/kg-day	1.0E-02	mg/kg-day	3.2E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	3.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-04	mg/kg-day	1.0E-02	mg/kg-day	1.1E-02
				Methylene chloride	7.78E+00	ug/L	2.7E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	2.1E-08	8.0E-06	mg/kg-day	6.0E-02	mg/kg-day	1.3E-04
				Naphthalene	1.89E+01	ug/L	1.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-04	mg/kg-day	2.0E-02	mg/kg-day	1.7E-02
				n-Butylbenzene	1.38E+01	ug/L	7.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-04	mg/kg-day	4.0E-02	mg/kg-day	5.6E-03
				Tetrachloroethene	1.71E+01	ug/L	9.6E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	4.9E-06	2.8E-04	mg/kg-day	1.0E-02	mg/kg-day	2.8E-02
				Trichloroethene	1.85E+01	ug/L	3.0E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.2E-05	8.8E-05	mg/kg-day	3.0E-04	mg/kg-day	2.9E-01
				Vinyl Chloride	1.28E+01	ug/L	6.3E-06	mg/kg-day	1.4E+00	1/(mg/kg-day)	8.8E-06	1.8E-05	mg/kg-day	3.0E-03	mg/kg-day	6.1E-03
				Xylenes	3.42E+01	ug/L	2.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-04	mg/kg-day	2.0E-01	mg/kg-day	3.0E-03
			Exp. Route Total								4.8E-05					3.0E+00
		Exposure Point Total									3.7E-04					2.3E+01

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater (continued)	Vapors	On-site Bath/Shower	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	7.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-04	mg/kg-day	8.6E-04	mg/kg-day	2.7E-01
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	1.3E-03	mg/kg-day	1.9E-01	1/(mg/kg-day)	2.5E-04	3.9E-03	mg/kg-day	1.7E-03	mg/kg-day	2.3E+00
				1,2-Dichlorobenzene	4.77E+02	ug/L	6.0E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-01	mg/kg-day	5.7E-02	mg/kg-day	3.0E+00
				1,2-Dichloroethane	3.20E+00	ug/L	4.0E-04	mg/kg-day	9.1E-02	1/(mg/kg-day)	3.6E-05	1.2E-03	mg/kg-day	1.4E-03	mg/kg-day	8.2E-01
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	1.1E-03	mg/kg-day	2.7E-01	1/(mg/kg-day)	2.9E-04	3.1E-03	mg/kg-day	1.7E-03	mg/kg-day	1.8E+00
				1,3-Dichlorobenzene	5.27E+00	ug/L	6.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-03	mg/kg-day	9.0E-04	mg/kg-day	2.1E+00
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.8E-02	mg/kg-day	2.2E-02	1/(mg/kg-day)	3.9E-04	5.2E-02	mg/kg-day	2.3E-01	mg/kg-day	2.3E-01
				Acetone	2.71E+01	ug/L	3.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	9.9E-03	mg/kg-day	1.0E-01	mg/kg-day	9.9E-02
				Benzene	5.71E+00	ug/L	7.1E-04	mg/kg-day	2.7E-02	1/(mg/kg-day)	1.9E-05	2.1E-03	mg/kg-day	1.7E-03	mg/kg-day	1.2E+00
				Chlorobenzene	2.35E+03	ug/L	2.9E-01	mg/kg-day	--	1/(mg/kg-day)	--	8.6E-01	mg/kg-day	1.7E-02	mg/kg-day	5.0E+01
				Chloroform	1.30E+00	ug/L	1.6E-04	mg/kg-day	8.1E-02	1/(mg/kg-day)	1.3E-05	4.7E-04	mg/kg-day	1.4E-02	mg/kg-day	3.3E-02
				cis-1,2-Dichloroethene	4.47E+01	ug/L	5.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-02	mg/kg-day	1.0E-02	mg/kg-day	1.6E+00
				Methylene chloride	7.76E+00	ug/L	9.7E-04	mg/kg-day	1.6E-03	1/(mg/kg-day)	1.6E-06	2.8E-03	mg/kg-day	8.6E-01	mg/kg-day	3.3E-03
				Naphthalene	1.89E+01	ug/L	2.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	6.9E-03	mg/kg-day	8.6E-04	mg/kg-day	8.1E+00
				n-Butylbenzene	1.36E+01	ug/L	1.7E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-03	mg/kg-day	2.9E-01	mg/kg-day	1.7E-02
				Tetrachloroethene	1.71E+01	ug/L	2.1E-03	mg/kg-day	2.1E-02	1/(mg/kg-day)	4.4E-05	6.2E-03	mg/kg-day	1.1E-01	mg/kg-day	5.5E-02
				Trichloroethene	1.85E+01	ug/L	2.3E-03	mg/kg-day	4.0E-01	1/(mg/kg-day)	9.3E-04	6.6E-03	mg/kg-day	1.1E-02	mg/kg-day	5.9E-01
				Vinyl Chloride	1.26E+01	ug/L	1.6E-03	mg/kg-day	3.1E-02	1/(mg/kg-day)	4.9E-05	4.6E-03	mg/kg-day	2.9E-02	mg/kg-day	1.6E-01
				Xylenes	3.42E+01	ug/L	4.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-02	mg/kg-day	2.9E-02	mg/kg-day	4.3E-01
			Exp. Route Total								2.0E-03					7.3E+01
		Exposure Point Total									2.0E-03					7.3E+01
		On-Site Indoors	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	4.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-07	mg/kg-day	8.6E-04	mg/kg-day	1.6E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	6.9E-06	mg/kg-day	1.9E-01	1/(mg/kg-day)	1.3E-06	2.0E-05	mg/kg-day	1.7E-03	mg/kg-day	1.2E-02
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-04	mg/kg-day	5.7E-02	mg/kg-day	6.5E-03
				1,2-Dichloroethane	3.20E+00	ug/L	7.4E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	6.8E-08	2.2E-06	mg/kg-day	1.4E-03	mg/kg-day	1.5E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	7.1E-06	mg/kg-day	2.7E-01	1/(mg/kg-day)	1.9E-06	2.1E-05	mg/kg-day	1.7E-03	mg/kg-day	1.2E-02
				1,3-Dichlorobenzene	5.27E+00	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-06	mg/kg-day	9.0E-04	mg/kg-day	4.6E-03
				1,4-Dichlorobenzene	1.43E+02	ug/L	4.6E-05	mg/kg-day	2.2E-02	1/(mg/kg-day)	1.0E-06	1.3E-04	mg/kg-day	2.3E-01	mg/kg-day	5.6E-04
				Acetone	2.71E+01	ug/L	4.1E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-06	mg/kg-day	1.0E-01	mg/kg-day	1.2E-05
				Benzene	5.71E+00	ug/L	4.4E-06	mg/kg-day	2.7E-02	1/(mg/kg-day)	1.2E-07	1.3E-05	mg/kg-day	1.7E-03	mg/kg-day	7.4E-03
				Chlorobenzene	2.35E+03	ug/L	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-03	mg/kg-day	1.7E-02	mg/kg-day	1.9E-01
				Chloroform	1.30E+00	ug/L	8.2E-07	mg/kg-day	8.1E-02	1/(mg/kg-day)	6.6E-08	2.4E-06	mg/kg-day	1.4E-02	mg/kg-day	1.7E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	2.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.1E-05	mg/kg-day	1.0E-02	mg/kg-day	7.1E-03
				Methylene chloride	7.76E+00	ug/L	3.4E-06	mg/kg-day	1.6E-03	1/(mg/kg-day)	5.6E-09	9.9E-06	mg/kg-day	8.6E-01	mg/kg-day	1.2E-05
				Naphthalene	1.89E+01	ug/L	1.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-06	mg/kg-day	8.6E-04	mg/kg-day	5.0E-03
				n-Butylbenzene	1.38E+01	ug/L	1.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.2E-05	mg/kg-day	2.9E-01	mg/kg-day	1.6E-04
				Tetrachloroethene	1.71E+01	ug/L	2.9E-05	mg/kg-day	2.1E-02	1/(mg/kg-day)	6.0E-07	8.5E-05	mg/kg-day	1.1E-01	mg/kg-day	7.5E-04
				Trichloroethene	1.85E+01	ug/L	2.1E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	8.4E-06	6.2E-05	mg/kg-day	1.1E-02	mg/kg-day	5.4E-03
				Vinyl Chloride	1.26E+01	ug/L	4.1E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.3E-06	1.2E-04	mg/kg-day	2.9E-02	mg/kg-day	4.2E-03
				Xylenes	3.42E+01	ug/L	2.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-05	mg/kg-day	2.9E-02	mg/kg-day	2.6E-03
			Exp. Route Total								1.5E-05					2.6E-01
		Exposure Point Total									1.5E-05					2.6E-01
	Exposure Medium Total										2.0E-03					7.3E+01
Groundwater Total											2.4E-03					9.7E+01
									Total of Receptor Risks Across All Media		2.4E-03	Total of Receptor Hazards Across All Media				9.7E+01

TABLE 7.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-03	mg/kg-day	1.0E+00	mg/kg-day	8.2E-03
				Antimony	1.99E+00	mg/kg	1.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	4.0E-04	mg/kg-day	3.4E-03
				Arsenic	4.13E+00	mg/kg	3.8E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	5.5E-07	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	9.4E-03
				Iron	1.83E+04	mg/kg	1.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-02	mg/kg-day	3.0E-01	mg/kg-day	4.2E-02
				Manganese	6.65E+02	mg/kg	6.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.6E-04	mg/kg-day	2.4E-02	mg/kg-day	1.9E-02
				Thallium	3.30E-01	mg/kg	2.9E-08	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-07	mg/kg-day	7.0E-05	mg/kg-day	3.2E-03
				Dieldrin	1.74E-02	mg/kg	1.5E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	2.5E-08	1.2E-08	mg/kg-day	5.0E-05	mg/kg-day	2.4E-04
				Benzo[a]anthracene	2.62E-01	mg/kg	2.3E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.7E-08	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.0E-06
				Benzo[a]pyrene	2.60E-01	mg/kg	2.3E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.7E-07	1.8E-07	mg/kg-day	--	mg/kg-day	--
				Benzo[b]fluoranthene	2.62E-01	mg/kg	2.3E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.7E-08	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.0E-06
			Exp. Route Total								7.7E-07					8.5E-02
			Dermal	Aluminum	1.20E+04	mg/kg	8.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.6E-05	mg/kg-day	5.0E-02	mg/kg-day	1.3E-03
				Antimony	1.99E+00	mg/kg	1.4E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-08	mg/kg-day	6.0E-05	mg/kg-day	1.8E-04
				Arsenic	4.13E+00	mg/kg	8.7E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.3E-07	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	2.3E-03
				Iron	1.83E+04	mg/kg	1.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-04	mg/kg-day	3.0E-02	mg/kg-day	3.3E-03
				Manganese	6.65E+02	mg/kg	4.7E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-06	mg/kg-day	9.6E-04	mg/kg-day	3.8E-03
				Thallium	3.30E-01	mg/kg	2.3E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-09	mg/kg-day	7.0E-05	mg/kg-day	2.6E-05
				Dieldrin	1.74E-02	mg/kg	1.2E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	2.0E-08	9.5E-09	mg/kg-day	5.0E-05	mg/kg-day	1.9E-04
				Benzo[a]anthracene	2.62E-01	mg/kg	2.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.7E-09	1.9E-07	mg/kg-day	3.0E-02	mg/kg-day	6.2E-06
				Benzo[a]pyrene	2.60E-01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.7E-07	1.8E-07	mg/kg-day	--	mg/kg-day	--
				Benzo[b]fluoranthene	2.62E-01	mg/kg	2.4E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.7E-08	1.9E-07	mg/kg-day	3.00E-02	mg/kg-day	6.2E-06
			Exp. Route Total								3.6E-07					1.1E-02
		Exposure Point Total									1.1E-06					9.6E-02
	Exposure Medium Total										1.1E-06					9.6E-02
	Air Particulates	On-Site	Inhalation	Aluminum	1.20E+04	mg/kg	8.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.4E-06	mg/kg-day	1.4E-03	mg/kg-day	4.5E-03
				Antimony	1.99E+00	mg/kg	1.4E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-09	mg/kg-day	4.0E-05	mg/kg-day	2.7E-05
				Arsenic	4.13E+00	mg/kg	2.8E-10	mg/kg-day	1.5E+01	1/(mg/kg-day)	4.3E-09	2.2E-09	mg/kg-day	3.0E-04	mg/kg-day	7.4E-06
				Iron	1.83E+04	mg/kg	1.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	9.8E-08	mg/kg-day	3.0E-01	mg/kg-day	3.3E-05
				Manganese	6.65E+02	mg/kg	4.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-07	mg/kg-day	1.4E-05	mg/kg-day	2.5E-02
				Thallium	3.30E-01	mg/kg	2.3E-11	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-10	mg/kg-day	7.0E-05	mg/kg-day	2.5E-06
				Dieldrin	1.74E-02	mg/kg	1.2E-12	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.9E-11	9.3E-12	mg/kg-day	5.0E-05	mg/kg-day	1.9E-07
				Benzo[a]anthracene	2.62E-01	mg/kg	1.8E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	5.5E-12	1.4E-10	mg/kg-day	3.0E-02	mg/kg-day	4.7E-09
				Benzo[a]pyrene	2.60E-01	mg/kg	1.8E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	5.5E-11	1.4E-10	mg/kg-day	--	mg/kg-day	--
				Benzo[b]fluoranthene	2.62E-01	mg/kg	1.8E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	5.5E-12	1.4E-10	mg/kg-day	3.0E-02	mg/kg-day	4.7E-09
			Exp. Route Total								4.4E-09					2.9E-02
		Exposure Point Total									4.4E-09					2.9E-02
	Exposure Medium Total										4.4E-09					2.9E-02
Surface Soil Total											1.1E-06					1.3E-01

TABLE 7.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	On-site Tap Water	Ingestion	Aluminum	7.30E+03	ug/L	1.3E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-01	mg/kg-day	1.0E+00	mg/kg-day	1.0E-01
				Chromium(VI)	7.60E+00	ug/L	1.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-04	mg/kg-day	3.0E-03	mg/kg-day	3.5E-02
				Iron	1.40E+04	ug/L	2.5E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-01	mg/kg-day	3.0E-01	mg/kg-day	6.4E-01
				Manganese	6.81E+03	ug/L	1.2E-02	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-02	mg/kg-day	2.4E-02	mg/kg-day	3.9E+00
				Thallium	6.62E+00	ug/L	1.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	9.1E-05	mg/kg-day	7.0E-05	mg/kg-day	1.3E+00
				2-Methylnaphthalene	6.30E-01	ug/L	1.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.6E-06	mg/kg-day	2.0E-02	mg/kg-day	4.3E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	1.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-04	mg/kg-day	5.0E-02	mg/kg-day	2.9E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	8.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-03	mg/kg-day	9.0E-02	mg/kg-day	7.3E-02
				1,2-Dichloroethane	3.20E+00	ug/L	5.6E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	5.1E-07	4.4E-05	mg/kg-day	3.0E-02	mg/kg-day	1.5E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	1.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-04	mg/kg-day	5.0E-02	mg/kg-day	2.4E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	9.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.2E-05	mg/kg-day	9.0E-04	mg/kg-day	8.0E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	2.5E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	6.0E-06	2.0E-03	mg/kg-day	3.0E-02	mg/kg-day	6.5E-02
				Acetone	2.71E+01	ug/L	4.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-04	mg/kg-day	1.0E-01	mg/kg-day	3.7E-03
				Benzene	5.71E+00	ug/L	1.0E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	5.5E-07	7.8E-05	mg/kg-day	3.0E-03	mg/kg-day	2.6E-02
				Chlorobenzene	2.35E+03	ug/L	4.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-02	mg/kg-day	2.0E-02	mg/kg-day	1.6E+00
				Chloroform	1.30E+00	ug/L	2.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-05	mg/kg-day	1.0E-02	mg/kg-day	1.8E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	7.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-04	mg/kg-day	1.0E-02	mg/kg-day	6.1E-02
				Methylene chloride	7.78E+00	ug/L	1.4E-05	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.0E-07	1.1E-04	mg/kg-day	6.0E-02	mg/kg-day	1.8E-03
				Naphthalene	1.89E+01	ug/L	3.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-04	mg/kg-day	2.0E-02	mg/kg-day	1.3E-02
				n-Butylbenzene	1.36E+01	ug/L	2.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-04	mg/kg-day	4.0E-02	mg/kg-day	4.7E-03
				Tetrachloroethene	1.71E+01	ug/L	3.0E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.5E-06	2.3E-04	mg/kg-day	1.0E-02	mg/kg-day	2.3E-02
				Trichloroethene	1.85E+01	ug/L	3.3E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.3E-05	2.5E-04	mg/kg-day	3.0E-04	mg/kg-day	8.5E-01
				Vinyl Chloride	1.26E+01	ug/L	2.2E-05	mg/kg-day	1.4E+00	1/(mg/kg-day)	3.1E-05	1.7E-04	mg/kg-day	3.0E-03	mg/kg-day	5.6E-02
				Xylenes	3.42E+01	ug/L	6.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.7E-04	mg/kg-day	2.0E-01	mg/kg-day	2.3E-03
			Exp. Route Total								5.3E-05					8.8E+00
			Dermal	Aluminum	7.30E+03	ug/L	1.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-03	mg/kg-day	5.0E-02	mg/kg-day	2.1E-02
				Chromium(VI)	7.60E+00	ug/L	2.8E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-06	mg/kg-day	7.5E-05	mg/kg-day	2.9E-02
				Iron	1.40E+04	ug/L	2.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-03	mg/kg-day	3.0E-02	mg/kg-day	6.7E-02
				Manganese	6.81E+03	ug/L	1.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	9.7E-04	mg/kg-day	9.6E-04	mg/kg-day	1.0E+00
				Thallium	6.62E+00	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.5E-07	mg/kg-day	7.0E-05	mg/kg-day	1.4E-02
				2-Methylnaphthalene	6.30E-01	ug/L	1.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	5.8E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	2.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-04	mg/kg-day	5.0E-02	mg/kg-day	3.8E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	8.6E-03	mg/kg-day	9.0E-02	mg/kg-day	9.5E-02
				1,2-Dichloroethane	3.20E+00	ug/L	5.5E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	5.0E-08	4.3E-06	mg/kg-day	3.0E-02	mg/kg-day	1.4E-04
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	2.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-04	mg/kg-day	5.0E-02	mg/kg-day	3.1E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	1.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	9.0E-04	mg/kg-day	1.5E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	3.4E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	8.1E-06	2.6E-03	mg/kg-day	3.0E-02	mg/kg-day	8.7E-02
				Acetone	2.71E+01	ug/L	9.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-06	mg/kg-day	1.0E-01	mg/kg-day	7.0E-05
				Benzene	5.71E+00	ug/L	3.1E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.7E-07	2.4E-05	mg/kg-day	3.0E-03	mg/kg-day	8.0E-03
				Chlorobenzene	2.35E+03	ug/L	3.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-02	mg/kg-day	2.0E-02	mg/kg-day	1.2E+00
				Chloroform	1.30E+00	ug/L	4.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-06	mg/kg-day	1.0E-02	mg/kg-day	3.2E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-04	mg/kg-day	1.0E-02	mg/kg-day	1.1E-02
				Methylene chloride	7.78E+00	ug/L	1.0E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	7.7E-09	8.0E-06	mg/kg-day	6.0E-02	mg/kg-day	1.3E-04
				Naphthalene	1.89E+01	ug/L	4.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-04	mg/kg-day	2.0E-02	mg/kg-day	1.7E-02
				n-Butylbenzene	1.36E+01	ug/L	2.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-04	mg/kg-day	4.0E-02	mg/kg-day	5.5E-03
				Tetrachloroethene	1.71E+01	ug/L	3.6E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	1.8E-06	2.8E-04	mg/kg-day	1.0E-02	mg/kg-day	2.8E-02
				Trichloroethene	1.85E+01	ug/L	1.1E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	4.8E-06	8.8E-05	mg/kg-day	3.0E-04	mg/kg-day	2.9E-01
				Vinyl Chloride	1.26E+01	ug/L	2.4E-06	mg/kg-day	1.4E+00	1/(mg/kg-day)	3.3E-09	1.8E-05	mg/kg-day	3.0E-03	mg/kg-day	6.1E-03
				Xylenes	3.42E+01	ug/L	7.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-04	mg/kg-day	2.0E-01	mg/kg-day	3.0E-03
			Exp. Route Total								1.8E-05					3.0E+00
		Exposure Point Total									7.1E-05					1.2E+01

TABLE 7.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater (continued)	Vapors	On-site Bath/Shower	Inhalation	2-Methylnaphthalene	8.30E-01	ug/L	2.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-05	mg/kg-day	8.6E-04	mg/kg-day	1.9E-02
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	3.5E-05	mg/kg-day	1.8E-01	1/(mg/kg-day)	6.5E-06	2.7E-04	mg/kg-day	1.7E-03	mg/kg-day	1.6E-01
				1,2-Dichlorobenzene	4 77E+02	ug/L	1.6E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-02	mg/kg-day	5.7E-02	mg/kg-day	2.1E-01
				1,2-Dichloroethane	3.20E+00	ug/L	1.1E-05	mg/kg-day	9.1E-02	1/(mg/kg-day)	9.6E-07	8.2E-05	mg/kg-day	1.4E-03	mg/kg-day	5.8E-02
				1,3,5-Trimethylbenzene	8.81E+00	ug/L	2.8E-05	mg/kg-day	2.7E-01	1/(mg/kg-day)	7.7E-06	2.2E-04	mg/kg-day	1.7E-03	mg/kg-day	1 3E-01
				1,3-Dichlorobenzene	5.27E+00	ug/L	1.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-04	mg/kg-day	9.0E-04	mg/kg-day	1.5E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	4.7E-04	mg/kg-day	2.2E-02	1/(mg/kg-day)	1.0E-05	3.7E-03	mg/kg-day	2.3E-01	mg/kg-day	1.6E-02
				Acetone	2.71E+01	ug/L	8.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-04	mg/kg-day	1.0E-01	mg/kg-day	7.0E-03
				Benzene	5.71E+00	ug/L	1.9E-05	mg/kg-day	2.7E-02	1/(mg/kg-day)	5.1E-07	1.5E-04	mg/kg-day	1.7E-03	mg/kg-day	8.5E-02
				Chlorobenzene	2.35E+03	ug/L	7.8E-03	mg/kg day	--	1/(mg/kg-day)	--	6.0E-02	mg/kg-day	1.7E-02	mg/kg-day	3.5E+00
				Chloroform	1.30E+00	ug/L	4.3E-06	mg/kg-day	8.1E-02	1/(mg/kg-day)	3.5E-07	3.3E-06	mg/kg-day	1.4E-02	mg/kg-day	2.3E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-03	mg/kg-day	1.0E-02	mg/kg-day	1.1E-01
				Methylene chloride	7.76E+00	ug/L	2.6E-05	mg/kg-day	1.6E-03	1/(mg/kg-day)	4.2E-08	2.0E-04	mg/kg-day	8.6E-01	mg/kg-day	2.3E-04
				Naphthalene	1.69E+01	ug/L	6.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.9E-04	mg/kg-day	8.6E-04	mg/kg-day	5.7E-01
				n-Butylbenzene	1.38E+01	ug/L	4.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-04	mg/kg-day	2.9E-01	mg/kg-day	1.2E-03
				Tetrachloroethene	1.71E+01	ug/L	5 6E-05	mg/kg-day	2.1E-02	1/(mg/kg-day)	1.2E-06	4.4E-04	mg/kg-day	1.1E-01	mg/kg-day	3.9E-03
				Trichloroethene	1.65E+01	ug/L	6.1E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.5E-05	4.8E-04	mg/kg-day	1.1E-02	mg/kg-day	4.2E-02
				Vinyl Chloride	1.29E+01	ug/L	4.2E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.3E-06	3.2E-04	mg/kg-day	2.8E-02	mg/kg-day	1.1E-02
				Xylenes	3.42E+01	ug/L	1.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.9E-04	mg/kg-day	2.9E-02	mg/kg-day	3.0E-02
			Exp. Route Total								5.3E-05					5.1E+00
		Exposure Point Total									5.3E-05					5.1E+00
		On-Site Indoors	Inhalation	2-Methylnaphthalene	8.30E-01	ug/L	1.4E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-07	mg/kg-day	8.6E-04	mg/kg-day	1.3E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	2.1E-06	mg/kg-day	1.8E-01	1/(mg/kg-day)	3.8E-07	1.6E-05	mg/kg-day	1.7E-03	mg/kg-day	9.3E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	3.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-04	mg/kg-day	5.7E-02	mg/kg-day	5.2E-03
				1,2-Dichloroethane	3.20E+00	ug/L	2.2E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	2.0E-08	1.7E-06	mg/kg-day	1.4E-03	mg/kg-day	1.2E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	2.1E-06	mg/kg-day	2.7E-01	1/(mg/kg-day)	5.8E-07	1.7E-05	mg/kg-day	1.7E-03	mg/kg-day	9.8E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	4.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-06	mg/kg-day	9.0E-04	mg/kg-day	3.6E-03
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.4E-05	mg/kg-day	2.2E-02	1/(mg/kg-day)	3.0E-07	1.1E-04	mg/kg-day	2.3E-01	mg/kg-day	4.7E-04
				Acetone	2.71E+01	ug/L	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	9.6E-07	mg/kg-day	1.0E-01	mg/kg-day	9.6E-06
				Benzene	5.71E+00	ug/L	1.3E-06	mg/kg-day	2 7E-02	1/(mg/kg-day)	3.6E-08	1.0E-05	mg/kg-day	1.7E-03	mg/kg-day	5.9E-03
				Chlorobenzene	2.35E+03	ug/L	3.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-03	mg/kg-day	1.7E-02	mg/kg-day	1.5E-01
				Chloroform	1.30E+00	ug/L	2.5E-07	mg/kg-day	8.1E-02	1/(mg/kg-day)	2.0E-08	1.9E-06	mg/kg-day	1.4E-02	mg/kg-day	1.3E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	7.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.7E-05	mg/kg-day	1.0E-02	mg/kg-day	5.7E-03
				Methylene chloride	7.76E+00	ug/L	1.0E-06	mg/kg-day	1 6E-03	1/(mg/kg-day)	1.7E-09	7.9E-06	mg/kg-day	5.6E-01	mg/kg-day	9.2E-06
				Naphthalene	1.69E+01	ug/L	4.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-06	mg/kg-day	8.6E-04	mg/kg-day	4.0E-03
				n-Butylbenzene	1.38E+01	ug/L	5.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.2E-05	mg/kg-day	2.9E-01	mg/kg-day	1.5E-04
				Tetrachloroethene	1.71E+01	ug/L	8.8E-06	mg/kg-day	2.1E-02	1/(mg/kg-day)	1.8E-07	6.9E-05	mg/kg-day	1.1E-01	mg/kg-day	6.0E-04
				Trichloroethene	1.55E+01	ug/L	6.3E-06	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.5E-06	4.9E-05	mg/kg-day	1.1E-02	mg/kg-day	4.3E-03
				Vinyl Chloride	1.26E+01	ug/L	1.2E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	3.8E-07	9.7E-05	mg/kg-day	2.9E-02	mg/kg-day	3.4E-03
				Xylenes	3.42E+01	ug/L	7.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.0E-05	mg/kg-day	2.9E-02	mg/kg-day	2.1E-03
			Exp. Route Total								4.4E-05					2.1E-01
		Exposure Point Total									4.4E-06					2.1E-01
	Exposure Medium Total										5.8E-05					5.3E+00
Groundwater Total											1.3E-04					1.7E+01
										Total of Receptor Risks Across All Media	1.3E-04				Total of Receptor Hazards Across All Media	1.7E+01

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	4.2E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-02	mg/kg-day	1.0E+00	mg/kg-day	1.2E-02
				Antimony	1.99E+00	mg/kg	6.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-06	mg/kg-day	4.0E-04	mg/kg-day	4.9E-03
				Arsenic	4.13E+00	mg/kg	1.4E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.2E-06	4.0E-06	mg/kg-day	3.0E-04	mg/kg-day	1.3E-02
				Iron	1.83E+04	mg/kg	6.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-02	mg/kg-day	3.0E-01	mg/kg-day	6.0E-02
				Manganese	6.65E+02	mg/kg	2.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-04	mg/kg-day	2.4E-02	mg/kg-day	2.7E-02
				Thallium	3.30E-01	mg/kg	1.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-07	mg/kg-day	7.0E-05	mg/kg-day	4.6E-03
				Dieldrin	1.74E-02	mg/kg	6.1E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	9.7E-08	1.7E-08	mg/kg-day	5.0E-05	mg/kg-day	3.4E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	9.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.7E-08	2.6E-07	mg/kg-day	3.0E-02	mg/kg-day	8.5E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	9.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	6.6E-07	2.5E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	9.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.7E-08	2.6E-07	mg/kg-day	3.0E-02	mg/kg-day	8.5E-06
			Exp. Route Total								3.1E-06					1.2E-01
			Dermal	Aluminum	1.20E+04	mg/kg	2.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.8E-05	mg/kg-day	5.0E-02	mg/kg-day	1.6E-03
				Antimony	1.99E+00	mg/kg	4.6E-09	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-08	mg/kg-day	6.0E-05	mg/kg-day	2.1E-04
				Arsenic	4.13E+00	mg/kg	2.9E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.3E-07	8.0E-07	mg/kg-day	3.0E-04	mg/kg-day	2.7E-03
				Iron	1.83E+04	mg/kg	4.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-04	mg/kg-day	3.0E-02	mg/kg-day	3.9E-03
				Manganese	6.65E+02	mg/kg	1.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-06	mg/kg-day	9.6E-04	mg/kg-day	4.5E-03
				Thallium	3.30E-01	mg/kg	7.6E-10	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-09	mg/kg-day	7.0E-05	mg/kg-day	3.0E-05
				Dieldrin	1.74E-02	mg/kg	4.0E-09	mg/kg-day	1.6E+01	1/(mg/kg-day)	6.4E-08	1.1E-08	mg/kg-day	5.0E-05	mg/kg-day	2.3E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	7.8E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	5.7E-08	2.2E-07	mg/kg-day	3.0E-02	mg/kg-day	7.3E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	7.8E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	5.7E-07	2.2E-07	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	7.8E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	5.7E-08	2.2E-07	mg/kg-day	3.00E-02	mg/kg-day	7.3E-06
			Exp. Route Total								1.2E-06					1.3E-02
		Exposure Point Total									4.2E-06					1.3E-01
	Exposure Medium Total										4.2E-06					1.3E-01
	Air Particulates	On-Site	Inhalation	Aluminum	1.20E+04	mg/kg	2.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.6E-06	mg/kg-day	1.4E-03	mg/kg-day	5.4E-03
				Antimony	1.99E+00	mg/kg	4.5E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-09	mg/kg-day	4.0E-05	mg/kg-day	3.2E-05
				Arsenic	4.13E+00	mg/kg	9.4E-10	mg/kg-day	1.5E+01	1/(mg/kg-day)	1.4E-08	2.6E-09	mg/kg-day	3.0E-04	mg/kg-day	8.8E-06
				Iron	1.83E+04	mg/kg	4.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-05	mg/kg-day	3.0E-01	mg/kg-day	3.9E-05
				Manganese	6.65E+02	mg/kg	1.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	4.2E-07	mg/kg-day	1.4E-05	mg/kg-day	3.0E-02
				Thallium	3.30E-01	mg/kg	7.5E-11	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-10	mg/kg-day	7.0E-05	mg/kg-day	3.0E-06
				Dieldrin	1.74E-02	mg/kg	4.0E-12	mg/kg-day	1.6E+01	1/(mg/kg-day)	6.4E-11	1.1E-11	mg/kg-day	5.0E-05	mg/kg-day	2.2E-07
				Benzo(a)anthracene	2.62E-01	mg/kg	5.9E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	1.8E-11	1.7E-10	mg/kg-day	3.0E-02	mg/kg-day	5.6E-09
				Benzo(a)pyrene	2.60E-01	mg/kg	5.9E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	1.8E-10	1.7E-10	mg/kg-day	--	mg/kg-day	--
				Benzo(b)fluoranthene	2.62E-01	mg/kg	6.0E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	1.8E-11	1.7E-10	mg/kg-day	3.0E-02	mg/kg-day	5.6E-09
			Exp. Route Total								1.4E-08					3.5E-02
		Exposure Point Total									1.4E-08					3.5E-02
	Exposure Medium Total										1.4E-08					3.5E-02
Surface Soil Total											4.2E-06					1.7E-01

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	On-site Tap Water	Ingestion	Aluminum	7.30E+03	ug/L	3.1E-02	mg/kg-day	--	1/(mg/kg-day)	--	8.6E-02	mg/kg-day	1.0E+00	mg/kg-day	8.6E-02
				Chromium(VI)	7.60E+00	ug/L	3.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	8.9E-05	mg/kg-day	3.0E-03	mg/kg-day	3.0E-02
				Iron	1.40E+04	ug/L	5.9E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-01	mg/kg-day	3.0E-01	mg/kg-day	5.5E-01
				Manganese	6.81E+03	ug/L	2.9E-02	mg/kg-day	--	1/(mg/kg-day)	--	8.0E-02	mg/kg-day	2.4E-02	mg/kg-day	3.3E+00
				Thallium	6.62E+00	ug/L	2.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.8E-05	mg/kg-day	7.0E-05	mg/kg-day	1.1E+00
				2-Methylnaphthalene	6.30E-01	ug/L	2.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-06	mg/kg-day	2.0E-02	mg/kg-day	3.7E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	4.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	5.0E-02	mg/kg-day	2.5E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	2.0E-03	mg/kg-day	--	1/(mg/kg-day)	--	5.6E-03	mg/kg-day	9.0E-02	mg/kg-day	6.2E-02
				1,2-Dichloroethane	3.20E+00	ug/L	1.3E-05	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.2E-06	3.8E-05	mg/kg-day	3.0E-02	mg/kg-day	1.3E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	3.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-04	mg/kg-day	5.0E-02	mg/kg-day	2.0E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	2.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.2E-05	mg/kg-day	9.0E-04	mg/kg-day	6.9E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	6.0E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	1.4E-05	1.7E-03	mg/kg-day	3.0E-02	mg/kg-day	5.6E-02
				Acetone	2.71E+01	ug/L	1.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-04	mg/kg-day	1.0E-01	mg/kg-day	3.2E-03
				Benzene	5.71E+00	ug/L	2.4E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.3E-06	6.7E-05	mg/kg-day	3.0E-03	mg/kg-day	2.2E-02
				Chlorobenzene	2.35E+03	ug/L	9.9E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.8E-02	mg/kg-day	2.0E-02	mg/kg-day	1.4E+00
				Chloroform	1.30E+00	ug/L	5.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-05	mg/kg-day	1.0E-02	mg/kg-day	1.5E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.2E-04	mg/kg-day	1.0E-02	mg/kg-day	5.2E-02
				Methylene chloride	7.76E+00	ug/L	3.3E-05	mg/kg-day	7.5E-03	1/(mg/kg-day)	2.4E-07	9.1E-05	mg/kg-day	6.0E-02	mg/kg-day	1.5E-03
				Naphthalene	1.86E+01	ug/L	7.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-04	mg/kg-day	2.0E-02	mg/kg-day	1.1E-02
				n-Butylbenzene	1.36E+01	ug/L	5.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-04	mg/kg-day	4.0E-02	mg/kg-day	4.0E-03
				Tetrachloroethene	1.71E+01	ug/L	7.2E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	3.7E-06	2.0E-04	mg/kg-day	1.0E-02	mg/kg-day	2.0E-02
				Trichloroethene	1.85E+01	ug/L	7.8E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	3.1E-05	2.2E-04	mg/kg-day	3.0E-04	mg/kg-day	7.3E-01
				Vinyl Chloride	1.26E+01	ug/L	5.3E-05	mg/kg-day	1.4E+00	1/(mg/kg-day)	7.4E-05	1.5E-04	mg/kg-day	3.0E-03	mg/kg-day	4.9E-02
				Xylenes	3.42E+01	ug/L	1.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-04	mg/kg-day	2.0E-01	mg/kg-day	2.0E-03
			Exp. Route Total								1.3E-04					7.6E+00
			Dermal	Aluminum	7.30E+03	ug/L	1.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.3E-04	mg/kg-day	5.0E-02	mg/kg-day	8.6E-03
				Chromium(VI)	7.60E+00	ug/L	3.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	8.9E-07	mg/kg-day	7.5E-05	mg/kg-day	1.2E-02
				Iron	1.40E+04	ug/L	2.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-04	mg/kg-day	3.0E-02	mg/kg-day	2.7E-02
				Manganese	6.81E+03	ug/L	1.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.0E-04	mg/kg-day	9.6E-04	mg/kg-day	4.2E-01
				Thallium	6.62E+00	ug/L	1.4E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-07	mg/kg-day	7.0E-05	mg/kg-day	5.5E-03
				2-Methylnaphthalene	6.30E-01	ug/L	2.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.2E-06	mg/kg-day	2.0E-02	mg/kg-day	3.1E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	3.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-04	mg/kg-day	5.0E-02	mg/kg-day	2.1E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.7E-03	mg/kg-day	--	1/(mg/kg-day)	--	4.6E-03	mg/kg-day	9.0E-02	mg/kg-day	5.1E-02
				1,2-Dichloroethane	3.20E+00	ug/L	8.3E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	7.6E-08	2.3E-06	mg/kg-day	3.0E-02	mg/kg-day	7.6E-05
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	3.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	8.3E-05	mg/kg-day	5.0E-02	mg/kg-day	1.7E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	2.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.2E-05	mg/kg-day	9.0E-04	mg/kg-day	8.0E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	5.1E-04	mg/kg-day	2.4E-07	1/(mg/kg-day)	1.2E-05	1.4E-03	mg/kg-day	3.0E-02	mg/kg-day	4.7E-02
				Acetone	2.71E+01	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.8E-06	mg/kg-day	1.0E-01	mg/kg-day	3.8E-05
				Benzene	5.71E+00	ug/L	4.6E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	2.5E-07	1.3E-05	mg/kg-day	3.0E-03	mg/kg-day	4.3E-03
				Chlorobenzene	2.35E+03	ug/L	4.5E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-02	mg/kg-day	2.0E-02	mg/kg-day	6.3E-01
				Chloroform	1.30E+00	ug/L	6.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-06	mg/kg-day	1.0E-02	mg/kg-day	1.8E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	2.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.9E-05	mg/kg-day	1.0E-02	mg/kg-day	5.9E-03
				Methylene chloride	7.76E+00	ug/L	1.5E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.2E-08	4.3E-06	mg/kg-day	6.0E-02	mg/kg-day	7.2E-05
				Naphthalene	1.86E+01	ug/L	6.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.9E-04	mg/kg-day	2.0E-02	mg/kg-day	9.3E-03
				n-Butylbenzene	1.36E+01	ug/L	4.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-04	mg/kg-day	4.0E-02	mg/kg-day	3.0E-03
				Tetrachloroethene	1.71E+01	ug/L	5.4E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	2.8E-06	1.5E-04	mg/kg-day	1.0E-02	mg/kg-day	1.5E-02
				Trichloroethene	1.85E+01	ug/L	1.7E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	6.8E-06	4.8E-05	mg/kg-day	3.0E-04	mg/kg-day	1.6E-01
				Vinyl Chloride	1.26E+01	ug/L	3.5E-06	mg/kg-day	1.4E+00	1/(mg/kg-day)	4.9E-06	9.7E-06	mg/kg-day	3.0E-03	mg/kg-day	3.2E-03
				Xylenes	3.42E+01	ug/L	1.2E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.3E-04	mg/kg-day	2.0E-01	mg/kg-day	1.6E-03
			Exp. Route Total								2.7E-05					1.5E+00
		Exposure Point Total									1.5E-04					9.1E+00

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater (continued)	Vapors	On-site Bath/Shower	Inhalation	2-Methylnaphthalene	8.30E-01	ug/L	2.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-05	mg/kg-day	8.6E-04	mg/kg-day	8.1E-02
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	4.2E-04	mg/kg-day	1.8E-01	1/(mg/kg-day)	7.7E-05	1.2E-03	mg/kg-day	1.7E-03	mg/kg-day	6.9E-01
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.9E-02	mg/kg-day	--	1/(mg/kg-day)	--	5.3E-02	mg/kg-day	5.7E-02	mg/kg-day	9.2E-01
				1,2-Dichloroethane	3.20E+00	ug/L	1.3E-04	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.1E-05	3.5E-04	mg/kg-day	1.4E-03	mg/kg-day	2.5E-01
				1,3,5-Trimethylbenzene	8.81E+00	ug/L	3.4E-04	mg/kg-day	2.7E-01	1/(mg/kg-day)	9.2E-05	9.5E-04	mg/kg-day	1.7E-03	mg/kg-day	5.6E-01
				1,3-Dichlorobenzene	5.27E+00	ug/L	2.1E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.8E-04	mg/kg-day	9.0E-04	mg/kg-day	6.5E-01
				1,4-Dichlorobenzene	1.43E+02	ug/L	5.6E-03	mg/kg-day	2.2E-02	1/(mg/kg-day)	1.2E-04	1.6E-02	mg/kg-day	2.3E-01	mg/kg-day	6.9E-02
				Acetone	2.71E+01	ug/L	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-03	mg/kg-day	1.0E-01	mg/kg-day	3.0E-02
				Benzene	5.71E+00	ug/L	2.3E-04	mg/kg-day	2.7E-02	1/(mg/kg-day)	6.1E-06	6.3E-04	mg/kg-day	1.7E-03	mg/kg-day	3.7E-01
				Chlorobenzene	2.35E+03	ug/L	9.3E-02	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-01	mg/kg-day	1.7E-02	mg/kg-day	1.5E+01
				Chloroform	1.30E+00	ug/L	5.1E-05	mg/kg-day	8.1E-02	1/(mg/kg-day)	4.1E-06	1.4E-04	mg/kg-day	1.4E-02	mg/kg-day	1.0E-02
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.8E-03	mg/kg-day	--	1/(mg/kg-day)	--	4.9E-03	mg/kg-day	1.0E-02	mg/kg-day	4.9E-01
				Methylene chloride	7.76E+00	ug/L	3.1E-04	mg/kg-day	1.6E-03	1/(mg/kg-day)	5.0E-07	8.6E-04	mg/kg-day	8.6E-01	mg/kg-day	1.0E-03
				Naphthalene	1.69E+01	ug/L	7.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-03	mg/kg-day	8.6E-04	mg/kg-day	2.4E+00
				n-Butylbenzene	1.36E+01	ug/L	5.4E-04	mg/kg-day	--	1/(mg/kg-day)	--	1.8E-03	mg/kg-day	2.9E-01	mg/kg-day	6.3E-03
				Tetrachloroethene	1.71E+01	ug/L	6.7E-04	mg/kg-day	2.1E-02	1/(mg/kg-day)	1.4E-05	1.9E-03	mg/kg-day	1.1E-01	mg/kg-day	1.7E-02
				Trichloroethene	1.65E+01	ug/L	7.3E-04	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.9E-04	2.0E-03	mg/kg-day	1.1E-02	mg/kg-day	1.8E-01
				Vinyl Chloride	1.26E+01	ug/L	5.0E-04	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.5E-05	1.4E-03	mg/kg-day	2.9E-02	mg/kg-day	4.9E-02
				Xylenes	3.42E+01	ug/L	1.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-03	mg/kg-day	2.9E-02	mg/kg-day	1.3E-01
			Exp. Route Total								6.4E-04					2.2E+01
		Exposure Point Total									6.4E-04					2.2E+01
		On-Site Indoors	Inhalation	2-Methylnaphthalene	8.30E-01	ug/L	4.8E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-07	mg/kg-day	8.6E-04	mg/kg-day	1.6E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	6.8E-06	mg/kg-day	1.8E-01	1/(mg/kg-day)	1.3E-06	1.9E-05	mg/kg-day	1.7E-03	mg/kg-day	1.1E-02
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.3E-04	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-04	mg/kg-day	5.7E-02	mg/kg-day	6.2E-03
				1,2-Dichloroethane	3.20E+00	ug/L	7.4E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	6.7E-08	2.1E-06	mg/kg-day	1.4E-03	mg/kg-day	1.4E-03
				1,3,5-Trimethylbenzene	8.81E+00	ug/L	7.0E-06	mg/kg-day	2.7E-01	1/(mg/kg-day)	1.9E-06	2.0E-05	mg/kg-day	1.7E-03	mg/kg-day	1.1E-02
				1,3-Dichlorobenzene	5.27E+00	ug/L	1.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-06	mg/kg-day	9.0E-04	mg/kg-day	4.3E-03
				1,4-Dichlorobenzene	1.43E+02	ug/L	4.5E-05	mg/kg-day	2.2E-02	1/(mg/kg-day)	1.0E-06	1.3E-04	mg/kg-day	2.3E-01	mg/kg-day	5.6E-04
				Acetone	2.71E+01	ug/L	4.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-06	mg/kg-day	1.0E-01	mg/kg-day	1.1E-05
				Benzene	5.71E+00	ug/L	4.3E-06	mg/kg-day	2.7E-02	1/(mg/kg-day)	1.2E-07	1.2E-05	mg/kg-day	1.7E-03	mg/kg-day	7.1E-03
				Chlorobenzene	2.35E+03	ug/L	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-03	mg/kg-day	1.7E-02	mg/kg-day	1.8E-01
				Chloroform	1.30E+00	ug/L	8.2E-07	mg/kg-day	8.1E-02	1/(mg/kg-day)	6.6E-08	2.3E-06	mg/kg-day	1.4E-02	mg/kg-day	1.6E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	2.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	6.8E-05	mg/kg-day	1.0E-02	mg/kg-day	6.8E-03
				Methylene chloride	7.76E+00	ug/L	3.4E-06	mg/kg-day	1.6E-03	1/(mg/kg-day)	5.5E-09	9.4E-06	mg/kg-day	8.6E-01	mg/kg-day	1.1E-05
				Naphthalene	1.69E+01	ug/L	1.5E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-06	mg/kg-day	8.6E-04	mg/kg-day	4.7E-03
				n-Butylbenzene	1.36E+01	ug/L	1.8E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-05	mg/kg-day	2.9E-01	mg/kg-day	1.7E-04
				Tetrachloroethene	1.71E+01	ug/L	2.9E-05	mg/kg-day	2.1E-02	1/(mg/kg-day)	6.0E-07	8.1E-05	mg/kg-day	1.1E-01	mg/kg-day	7.1E-04
				Trichloroethene	1.65E+01	ug/L	2.1E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	8.4E-06	5.9E-05	mg/kg-day	1.1E-02	mg/kg-day	5.1E-03
				Vinyl Chloride	1.26E+01	ug/L	4.1E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.3E-06	1.2E-04	mg/kg-day	2.9E-02	mg/kg-day	4.0E-03
				Xylenes	3.42E+01	ug/L	2.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.2E-05	mg/kg-day	2.9E-02	mg/kg-day	2.5E-03
			Exp. Route Total								1.5E-05					2.5E-01
		Exposure Point Total									1.5E-05					2.5E-01
	Exposure Medium Total										6.5E-04					2.2E+01
Groundwater Total											8.1E-04					3.1E+01
							Total of Receptor Risks Across All Media				8.1E-04	Total of Receptor Hazards Across All Media				3.2E+01

TABLE 7.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9. WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site	Ingestion	Aluminum	1.20E+04	mg/kg	5.0E-04	mg/kg-day	–	1/(mg/kg-day)	–	5.3E-03	mg/kg-day	1.0E+00	mg/kg-day	5.3E-03
				Antimony	1.99E+00	mg/kg	8.3E-08	mg/kg-day	–	1/(mg/kg-day)	–	8.8E-07	mg/kg-day	4.0E-04	mg/kg-day	2.2E-03
				Arsenic	4.13E+00	mg/kg	1.7E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.6E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	6.1E-03
				Iron	1.63E+04	mg/kg	7.6E-04	mg/kg-day	–	1/(mg/kg-day)	–	6.1E-03	mg/kg-day	3.0E-01	mg/kg-day	2.7E-02
				Manganese	6.65E+02	mg/kg	2.6E-05	mg/kg-day	–	1/(mg/kg-day)	–	2.9E-04	mg/kg-day	2.4E-02	mg/kg-day	1.2E-02
				Thallium	3.30E-01	mg/kg	1.4E-08	mg/kg-day	–	1/(mg/kg-day)	–	1.5E-07	mg/kg-day	7.0E-06	mg/kg-day	2.1E-03
				Dieldrin	1.74E-02	mg/kg	7.3E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.2E-08	7.7E-09	mg/kg-day	5.0E-05	mg/kg-day	1.5E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	8.0E-09	1.2E-07	mg/kg-day	3.0E-02	mg/kg-day	3.9E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	1.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.9E-08	1.1E-07	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	8.0E-09	1.2E-07	mg/kg-day	3.0E-02	mg/kg-day	3.9E-06
			Exp. Route Total								3.6E-07					5.5E-02
			Dermal	Aluminum	1.20E+04	mg/kg	6.6E-06	mg/kg-day	–	1/(mg/kg-day)	–	7.0E-05	mg/kg-day	5.0E-02	mg/kg-day	1.4E-03
				Antimony	1.99E+00	mg/kg	1.1E-09	mg/kg-day	–	1/(mg/kg-day)	–	1.2E-08	mg/kg-day	6.0E-05	mg/kg-day	1.9E-04
				Arsenic	4.13E+00	mg/kg	6.6E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.0E-07	7.2E-07	mg/kg-day	3.0E-04	mg/kg-day	2.4E-03
				Iron	1.83E+04	mg/kg	1.0E-05	mg/kg-day	–	1/(mg/kg-day)	–	1.1E-04	mg/kg-day	3.0E-02	mg/kg-day	3.6E-03
				Manganese	6.65E+02	mg/kg	3.7E-07	mg/kg-day	–	1/(mg/kg-day)	–	3.9E-06	mg/kg-day	9.6E-04	mg/kg-day	4.0E-03
				Thallium	3.30E-01	mg/kg	1.8E-10	mg/kg-day	–	1/(mg/kg-day)	–	1.9E-09	mg/kg-day	7.0E-05	mg/kg-day	2.8E-05
				Dieldrin	1.74E-02	mg/kg	9.8E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.5E-08	1.0E-08	mg/kg-day	5.0E-08	mg/kg-day	2 0E-04
				Benzo(a)anthracene	2.62E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.4E-08	2.0E-07	mg/kg-day	3.0E-02	mg/kg-day	6.6E-06
				Benzo(a)pyrene	2.60E-01	mg/kg	1.9E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.4E-07	2.0E-07	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.4E-08	2.0E-07	mg/kg-day	3.00E-02	mg/kg-day	6.6E-06
			Exp. Route Total								2.8E-07					1.2E-02
		Exposure Point Total									6.5E-07					6.7E-02
	Exposure Medium Total										6.5E-07					6.7E-02
	Air Particulates	On-Site	Inhalation	Aluminum	1.20E+04	mg/kg	6.5E-07	mg/kg-day	–	1/(mg/kg-day)	–	6.9E-06	mg/kg-day	1.4E-03	mg/kg-day	4.6E-03
				Antimony	1.99E+00	mg/kg	1.1E-10	mg/kg-day	–	1/(mg/kg-day)	–	1.1E-09	mg/kg-day	4.0E-05	mg/kg-day	2.9E-05
				Arsenic	4.13E+00	mg/kg	2 2E-10	mg/kg-day	1 5E+01	1/(mg/kg-day)	3.4E-09	2.4E-09	mg/kg-day	3.0E-04	mg/kg-day	7.9E-06
				Iron	1.63E+04	mg/kg	9.9E-07	mg/kg-day	–	1/(mg/kg-day)	–	1.1E-05	mg/kg-day	3.0E-01	mg/kg-day	3.5E-05
				Manganese	6.65E+02	mg/kg	3.6E-08	mg/kg-day	–	1/(mg/kg-day)	–	3.8E-07	mg/kg-day	1.4E-05	mg/kg-day	2.7E-02
				Thallium	3.30E-01	mg/kg	1.8E-11	mg/kg-day	–	1/(mg/kg-day)	–	1.9E-10	mg/kg-day	7.0E-05	mg/kg-day	2.7E-06
				Dieldrin	1.74E-02	mg/kg	9 5E-13	mg/kg-day	1.6E+01	1/(mg/kg-day)	1.5E-11	1.0E-11	mg/kg-day	5.0E-05	mg/kg-day	2.0E-07
				Benzo(a)anthracene	2 62E-01	mg/kg	1.4E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	4.4E-12	1.5E-10	mg/kg-day	3.0E-02	mg/kg-day	5.0E-09
				Benzo(a)pyrene	2.60E-01	mg/kg	1.4E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	4.3E-11	1.5E-10	mg/kg-day	–	mg/kg-day	–
				Benzo(b)fluoranthene	2.62E-01	mg/kg	1.4E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	4.4E-12	1.6E-10	mg/kg-day	3.0E-02	mg/kg-day	6.0E-09
			Exp. Route Total								3.4E-09					3.2E-02
		Exposure Point Total									3.4E-09					3.2E-02
	Exposure Medium Total										3.4E-09					3.2E-02
Surface Soil Total											6.5E-07					9.9E-02

TABLE 7.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	On-site Tap Water	Ingestion	Aluminum	7.30E+03	ug/L	7.3E-03	mg/kg-day	--	1/(mg/kg-day)	--	7.7E-02	mg/kg-day	1.0E+00	mg/kg-day	7.7E-02
				Chromium(VI)	7.60E+00	ug/L	7.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.1E-05	mg/kg-day	3.0E-03	mg/kg-day	2.7E-02
				Iron	1.40E+04	ug/L	1.4E-02	mg/kg-day	--	1/(mg/kg-day)	--	1.5E-01	mg/kg-day	3.0E-01	mg/kg-day	5.0E-01
				Manganese	6.81E+03	ug/L	6.8E-03	mg/kg-day	--	1/(mg/kg-day)	--	7.2E-02	mg/kg-day	2.4E-02	mg/kg-day	3.0E+00
				Thallium	6.62E+00	ug/L	6.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.0E-05	mg/kg-day	7.0E-05	mg/kg-day	1.0E+00
				2-Methylnaphthalene	6.30E-01	ug/L	6.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	6.7E-06	mg/kg-day	2.0E-02	mg/kg-day	3.3E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	1.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-04	mg/kg-day	5.0E-02	mg/kg-day	2.3E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	4.8E-04	mg/kg-day	--	1/(mg/kg-day)	--	5.1E-03	mg/kg-day	9.0E-02	mg/kg-day	5.6E-02
				1,2-Dichloroethane	3.20E+00	ug/L	3.2E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	2.9E-07	3.4E-05	mg/kg-day	3.0E-02	mg/kg-day	1.1E-03
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	8.6E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.1E-05	mg/kg-day	5.0E-02	mg/kg-day	1.8E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	5.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.6E-05	mg/kg-day	9.0E-04	mg/kg-day	6.2E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.4E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	3.4E-06	1.5E-03	mg/kg-day	3.0E-02	mg/kg-day	5.0E-02
				Acetone	2.71E+01	ug/L	2.7E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.9E-04	mg/kg-day	1.0E-01	mg/kg-day	2.9E-03
				Benzene	5.71E+00	ug/L	5.7E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	3.1E-07	6.1E-05	mg/kg-day	3.0E-03	mg/kg-day	2.0E-02
				Chlorobenzene	2.35E+03	ug/L	2.4E-03	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-02	mg/kg-day	2.0E-02	mg/kg-day	1.2E+00
				Chloroform	1.30E+00	ug/L	1.3E-06	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-05	mg/kg-day	1.0E-02	mg/kg-day	1.4E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	4.5E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.7E-04	mg/kg-day	1.0E-02	mg/kg-day	4.7E-02
				Methylene chloride	7.76E+00	ug/L	7.8E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	5.8E-08	8.2E-05	mg/kg-day	6.0E-02	mg/kg-day	1.4E-03
				Naphthalene	1.89E+01	ug/L	1.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-04	mg/kg-day	2.0E-02	mg/kg-day	1.0E-02
				n-Butylbenzene	1.36E+01	ug/L	1.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-04	mg/kg-day	4.0E-02	mg/kg-day	3.6E-03
				Tetrachloroethene	1.71E+01	ug/L	1.7E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	8.7E-07	1.8E-04	mg/kg-day	1.0E-02	mg/kg-day	1.8E-02
				Trichloroethene	1.85E+01	ug/L	1.9E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	7.4E-06	2.0E-04	mg/kg-day	3.0E-04	mg/kg-day	6.6E-01
				Vinyl Chloride	1.26E+01	ug/L	1.3E-05	mg/kg-day	1.4E+00	1/(mg/kg-day)	1.8E-05	1.3E-04	mg/kg-day	3.0E-03	mg/kg-day	4.5E-02
				Xylenes	3.42E+01	ug/L	3.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-04	mg/kg-day	2.0E-01	mg/kg-day	1.8E-03
			Exp. Route Total								3.0E-05					6.8E+00
			Dermal	Aluminum	7.30E+03	ug/L	3.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-04	mg/kg-day	5.0E-02	mg/kg-day	7.7E-03
				Chromium(VI)	7.60E+00	ug/L	7.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	8.1E-07	mg/kg-day	7.5E-05	mg/kg-day	1.1E-02
				Iron	1.40E+04	ug/L	7.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-04	mg/kg-day	3.0E-02	mg/kg-day	2.5E-02
				Manganese	6.81E+03	ug/L	3.4E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.6E-04	mg/kg-day	9.6E-04	mg/kg-day	3.6E-01
				Thallium	6.62E+00	ug/L	3.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-07	mg/kg-day	7.0E-05	mg/kg-day	5.0E-03
				2-Methylnaphthalene	6.30E-01	ug/L	5.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.6E-06	mg/kg-day	2.0E-02	mg/kg-day	2.8E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	8.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-05	mg/kg-day	5.0E-02	mg/kg-day	1.9E-03
				1,2-Dichlorobenzene	4.77E+02	ug/L	3.9E-04	mg/kg-day	--	1/(mg/kg-day)	--	4.2E-03	mg/kg-day	9.0E-02	mg/kg-day	4.7E-02
				1,2-Dichloroethane	3.20E+00	ug/L	2.0E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.8E-08	2.1E-06	mg/kg-day	3.0E-02	mg/kg-day	7.0E-05
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	7.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	7.5E-05	mg/kg-day	5.0E-02	mg/kg-day	1.5E-03
				1,3-Dichlorobenzene	5.27E+00	ug/L	6.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-05	mg/kg-day	9.0E-04	mg/kg-day	7.3E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.2E-04	mg/kg-day	2.4E-02	1/(mg/kg-day)	2.9E-06	1.3E-03	mg/kg-day	3.0E-02	mg/kg-day	4.3E-02
				Acetone	2.71E+01	ug/L	3.2E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.4E-06	mg/kg-day	1.0E-01	mg/kg-day	3.4E-05
				Benzene	5.71E+00	ug/L	1.1E-06	mg/kg-day	5.5E-02	1/(mg/kg-day)	6.1E-08	1.2E-05	mg/kg-day	3.0E-03	mg/kg-day	3.9E-03
				Chlorobenzene	2.35E+03	ug/L	1.1E-03	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-02	mg/kg-day	2.0E-02	mg/kg-day	5.7E-01
				Chloroform	1.30E+00	ug/L	1.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-06	mg/kg-day	1.0E-02	mg/kg-day	1.6E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	5.0E-06	mg/kg-day	--	1/(mg/kg-day)	--	5.3E-05	mg/kg-day	1.0E-02	mg/kg-day	5.3E-03
				Methylene chloride	7.76E+00	ug/L	3.7E-07	mg/kg-day	7.5E-03	1/(mg/kg-day)	2.8E-09	3.9E-06	mg/kg-day	6.0E-02	mg/kg-day	6.5E-05
				Naphthalene	1.89E+01	ug/L	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.7E-04	mg/kg-day	2.0E-02	mg/kg-day	8.4E-03
				n-Butylbenzene	1.36E+01	ug/L	1.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	1.1E-04	mg/kg-day	4.0E-02	mg/kg-day	2.8E-03
				Tetrachloroethene	1.71E+01	ug/L	1.3E-05	mg/kg-day	5.1E-02	1/(mg/kg-day)	6.6E-07	1.4E-04	mg/kg-day	1.0E-02	mg/kg-day	1.4E-02
				Trichloroethene	1.85E+01	ug/L	4.1E-06	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.6E-06	4.3E-05	mg/kg-day	3.0E-04	mg/kg-day	1.4E-01
				Vinyl Chloride	1.26E+01	ug/L	8.3E-07	mg/kg-day	1.4E+00	1/(mg/kg-day)	1.2E-06	8.8E-06	mg/kg-day	3.0E-03	mg/kg-day	2.9E-03
				Xylenes	3.42E+01	ug/L	2.9E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.0E-04	mg/kg-day	2.0E-01	mg/kg-day	1.5E-03
			Exp. Route Total								6.4E-06					1.3E+00
		Exposure Point Total									3.6E-05					8.2E+00

TABLE 7.6.C7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater (continued)	Vapors	On-site Bath/Shower	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	9.9E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-05	mg/kg-day	6.6E-04	mg/kg-day	1.2E-02
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	1.7E-05	mg/kg-day	1.6E-01	1/(mg/kg-day)	3.1E-09	1.6E-04	mg/kg-day	1.7E-03	mg/kg-day	1.0E-01
				1,2-Dichlorobenzene	4.77E+02	ug/L	7.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	7.9E-03	mg/kg-day	5.7E-02	mg/kg-day	1.4E-01
				1,2-Dichloroethane	3.20E+00	ug/L	5.0E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	4.6E-07	6.3E-05	mg/kg-day	1.4E-03	mg/kg-day	3.7E-02
				1,3,5-Trimethylbenzene	6.61E+00	ug/L	1.3E-05	mg/kg-day	2.7E-01	1/(mg/kg-day)	3.7E-06	1.4E-04	mg/kg-day	1.7E-03	mg/kg-day	6.3E-02
				1,3-Dichlorobenzene	5.27E+00	ug/L	6.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	8.7E-05	mg/kg-day	9.0E-04	mg/kg-day	9.7E-02
				1,4-Dichlorobenzene	1.43E+02	ug/L	2.2E-04	mg/kg-day	2.2E-02	1/(mg/kg-day)	4.9E-06	2.4E-03	mg/kg-day	2.3E-01	mg/kg-day	1.0E-02
				Acetone	2.71E+01	ug/L	4.2E-05	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-04	mg/kg-day	1.0E-01	mg/kg-day	4.5E-03
				Benzene	5.71E+00	ug/L	6.9E-06	mg/kg-day	2.7E-02	1/(mg/kg-day)	2.4E-07	9.5E-05	mg/kg-day	1.7E-03	mg/kg-day	5.6E-02
				Chlorobenzene	2.35E+03	ug/L	3.7E-03	mg/kg-day	--	1/(mg/kg-day)	--	3.9E-02	mg/kg-day	1.7E-02	mg/kg-day	2.3E+00
				Chloroform	1.30E+00	ug/L	2.0E-06	mg/kg-day	6.1E-02	1/(mg/kg-day)	1.6E-07	2.2E-05	mg/kg-day	1.4E-02	mg/kg-day	1.6E-03
				cis-1,2-Dichloroethene	4.47E+01	ug/L	7.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	7.4E-04	mg/kg-day	1.0E-02	mg/kg-day	7.4E-02
				Methylene chloride	7.76E+00	ug/L	1.2E-05	mg/kg-day	1.6E-03	1/(mg/kg-day)	2.0E-08	1.3E-04	mg/kg-day	6.6E-01	mg/kg-day	1.6E-04
				Naphthalene	1.69E+01	ug/L	3.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.1E-04	mg/kg-day	8.6E-04	mg/kg-day	3.7E-01
				n-Butylbenzene	1.36E+01	ug/L	2.1E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-04	mg/kg-day	2.9E-01	mg/kg-day	7.9E-04
				Tetrachloroethene	1.71E+01	ug/L	2.7E-05	mg/kg-day	2.1E-02	1/(mg/kg-day)	5.5E-07	2.8E-04	mg/kg-day	1.1E-01	mg/kg-day	2.5E-03
				Trichloroethene	1.65E+01	ug/L	2.9E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.2E-05	3.1E-04	mg/kg-day	1.1E-02	mg/kg-day	2.7E-02
				Vinyl Chloride	1.26E+01	ug/L	2.0E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	6.1E-07	2.1E-04	mg/kg-day	2.9E-02	mg/kg-day	7.3E-03
				Xylenes	3.42E+01	ug/L	5.3E-05	mg/kg-day	--	1/(mg/kg-day)	--	5.7E-04	mg/kg-day	2.9E-02	mg/kg-day	2.0E-02
			Exp. Route Total								2.5E-05					3.3E+00
		Exposure Point Total									2.5E-05					3.3E+00
		On-Site Indoors	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	1.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-07	mg/kg-day	8.6E-04	mg/kg-day	1.4E-04
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	1.6E-06	mg/kg-day	1.5E-01	1/(mg/kg-day)	3.0E-07	1.7E-05	mg/kg-day	1.7E-03	mg/kg-day	1.0E-02
				1,2-Dichlorobenzene	4.77E+02	ug/L	3.0E-05	mg/kg-day	--	1/(mg/kg-day)	--	3.2E-04	mg/kg-day	5.7E-02	mg/kg-day	5.6E-03
				1,2-Dichloroethane	3.20E+00	ug/L	1.6E-07	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.6E-08	1.9E-06	mg/kg-day	1.4E-03	mg/kg-day	1.3E-03
				1,3,5-Trimethylbenzene	6.61E+00	ug/L	1.7E-06	mg/kg-day	2.7E-01	1/(mg/kg-day)	4.6E-07	1.8E-05	mg/kg-day	1.7E-03	mg/kg-day	1.0E-02
				1,3-Dichlorobenzene	6.27E+00	ug/L	3.3E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.5E-06	mg/kg-day	9.0E-04	mg/kg-day	3.9E-03
				1,4-Dichlorobenzene	1.43E+02	ug/L	1.1E-05	mg/kg-day	2.2E-02	1/(mg/kg-day)	2.4E-07	1.2E-04	mg/kg-day	2.3E-01	mg/kg-day	5.0E-04
				Acetone	2.71E+01	ug/L	9.6E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-06	mg/kg-day	1.0E-01	mg/kg-day	1.0E-05
				Benzene	5.71E+00	ug/L	1.0E-06	mg/kg-day	2.7E-02	1/(mg/kg-day)	2.8E-08	1.1E-05	mg/kg-day	1.7E-03	mg/kg-day	6.4E-03
				Chlorobenzene	2.35E+03	ug/L	2.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.6E-03	mg/kg-day	1.7E-02	mg/kg-day	1.6E-01
				Chloroform	1.30E+00	ug/L	1.9E-07	mg/kg-day	8.1E-02	1/(mg/kg-day)	1.6E-08	2.1E-06	mg/kg-day	1.4E-02	mg/kg-day	1.4E-04
				cis-1,2-Dichloroethene	4.47E+01	ug/L	5.8E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-05	mg/kg-day	1.0E-02	mg/kg-day	6.1E-03
				Methylene chloride	7.76E+00	ug/L	6.0E-07	mg/kg-day	1.6E-03	1/(mg/kg-day)	1.3E-09	6.5E-06	mg/kg-day	6.6E-01	mg/kg-day	9.9E-06
				Naphthalene	1.69E+01	ug/L	3.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	3.7E-06	mg/kg-day	8.6E-04	mg/kg-day	4.3E-03
				n-Butylbenzene	1.36E+01	ug/L	4.2E-06	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-05	mg/kg-day	2.9E-01	mg/kg-day	1.6E-04
				Tetrachloroethene	1.71E+01	ug/L	6.9E-06	mg/kg-day	2.1E-02	1/(mg/kg-day)	1.4E-07	7.3E-05	mg/kg-day	1.1E-01	mg/kg-day	6.4E-04
				Trichloroethene	1.65E+01	ug/L	5.0E-06	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.0E-06	5.3E-05	mg/kg-day	1.1E-02	mg/kg-day	4.6E-03
				Vinyl Chloride	1.28E+01	ug/L	9.8E-06	mg/kg-day	3.1E-02	1/(mg/kg-day)	3.0E-07	1.0E-04	mg/kg-day	2.9E-02	mg/kg-day	3.6E-03
				Xylenes	3.42E+01	ug/L	6.1E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.5E-05	mg/kg-day	2.9E-02	mg/kg-day	2.2E-03
			Exp. Route Total								3.5E-06					2.2E-01
		Exposure Point Total									3.5E-06					2.2E-01
	Exposure Medium Total										2.9E-05					3.5E+00
Groundwater Total											6.5E-05					1.2E+01
							Total of Receptor Risks Across All Media				6.6E-05	Total of Receptor Hazards Across All Media				1.2E+01

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Costruction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	On-Site	Ingestion	Aluminum	7.42E+03	mg/kg	1.6E-04	mg/kg-day	--	1/(mg/kg-day)	--	2.5E-02	mg/kg-day	1.0E+00	mg/kg-day	2.5E-02
				Antimony	1.87E+00	mg/kg	4.5E-08	mg/kg-day	--	1/(mg/kg-day)	--	6.3E-06	mg/kg-day	4.0E-04	mg/kg-day	1.6E-02
				Arsenic	3.63E+00	mg/kg	8.7E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.3E-07	1.2E-05	mg/kg-day	5.0E-03	mg/kg-day	2.4E-03
				Iron	1.88E+04	mg/kg	4.5E-04	mg/kg-day	--	1/(mg/kg-day)	--	6.3E-02	mg/kg-day	3.0E-01	mg/kg-day	2.1E-01
				Manganese	6.55E+02	mg/kg	1.6E-05	mg/kg-day	--	1/(mg/kg-day)	--	2.2E-03	mg/kg-day	2.4E-02	mg/kg-day	9.2E-02
				Thallium	1.39E+00	mg/kg	3.3E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.7E-06	mg/kg-day	7.0E-04	mg/kg-day	6.7E-03
				Dieldrin	7.70E-03	mg/kg	1.8E-10	mg/kg-day	1.6E+01	1/(mg/kg-day)	3.0E-09	2.6E-08	mg/kg-day	5.0E-05	mg/kg-day	5.2E-04
				Benzo[a]anthracene	3.50E-01	mg/kg	8.4E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.1E-09	1.2E-06	mg/kg-day	3.0E-01	mg/kg-day	3.9E-06
				Benzo[a]pyrene	3.08E-01	mg/kg	7.4E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	5.4E-08	1.0E-06	mg/kg-day	--	mg/kg-day	--
				Benzo[b]fluoranthene	3.11E-01	mg/kg	7.5E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	5.4E-09	1.0E-06	mg/kg-day	3.0E-01	mg/kg-day	3.5E-06
				Dibenz[a,h]anthracene	2.03E-01	mg/kg	4.9E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.6E-08	6.8E-07	mg/kg-day	3.0E-01	mg/kg-day	2.3E-06
			Exp. Route Total								2.3E-07					3.5E-01
			Dermal	Aluminum	7.42E+03	mg/kg	3.6E-07	mg/kg-day	--	1/(mg/kg-day)	--	5.0E-05	mg/kg-day	5.0E-02	mg/kg-day	1.0E-03
				Antimony	1.87E+00	mg/kg	9.0E-11	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-08	mg/kg-day	6.0E-05	mg/kg-day	2.1E-04
				Arsenic	3.63E+00	mg/kg	5.2E-09	mg/kg-day	1.5E+00	1/(mg/kg-day)	7.8E-09	7.3E-07	mg/kg-day	5.0E-03	mg/kg-day	1.5E-04
				Iron	1.88E+04	mg/kg	9.0E-07	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-04	mg/kg-day	3.0E-02	mg/kg-day	4.2E-03
				Manganese	6.53E+02	mg/kg	3.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	4.4E-06	mg/kg-day	9.6E-04	mg/kg-day	4.6E-03
				Thallium	1.39E+00	mg/kg	6.7E-11	mg/kg-day	--	1/(mg/kg-day)	--	9.3E-09	mg/kg-day	7.0E-04	mg/kg-day	1.3E-05
				Dieldrin	7.70E-03	mg/kg	3.7E-11	mg/kg-day	1.6E+01	1/(mg/kg-day)	5.9E-10	5.2E-09	mg/kg-day	5.0E-05	mg/kg-day	1.0E-04
				Benzo[a]anthracene	3.50E-01	mg/kg	2.2E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.6E-09	3.1E-07	mg/kg-day	3.0E-01	mg/kg-day	1.0E-06
				Benzo[a]pyrene	3.08E-01	mg/kg	1.9E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.4E-08	2.7E-07	mg/kg-day	--	mg/kg-day	--
				Benzo[b]fluoranthene	3.11E-01	mg/kg	1.9E-09	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.4E-09	2.7E-07	mg/kg-day	3.0E-01	mg/kg-day	9.1E-07
				Dibenz[a,h]anthracene	2.03E-01	mg/kg	1.3E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	9.2E-09	1.8E-07	mg/kg-day	3.00E-01	mg/kg-day	5.9E-07
			Exp. Route Total								3.5E-08					1.0E-02
		Exposure Point Total									2.7E-07					3.6E-01
	Exposure Medium Total										2.7E-07					3.6E-01
	Air Particulates	On-Site	Inhalation	Aluminum	7.42E+03	mg/kg	1.7E-06	mg/kg-day	--	1/(mg/kg-day)	--	2.4E-04	mg/kg-day	1.4E-03	mg/kg-day	1.7E-01
				Antimony	1.67E+00	mg/kg	4.4E-10	mg/kg-day	--	1/(mg/kg-day)	--	6.1E-08	mg/kg-day	1.1E-04	mg/kg-day	5.4E-04
				Arsenic	3.63E+00	mg/kg	6.5E-10	mg/kg-day	1.5E+01	1/(mg/kg-day)	1.3E-08	1.2E-07	mg/kg-day	5.0E-03	mg/kg-day	2.4E-05
				Iron	1.68E+04	mg/kg	4.4E-06	mg/kg-day	--	1/(mg/kg-day)	--	6.2E-04	mg/kg-day	3.0E-01	mg/kg-day	2.1E-03
				Manganese	6.55E+02	mg/kg	1.5E-07	mg/kg-day	--	1/(mg/kg-day)	--	2.1E-05	mg/kg-day	1.4E-05	mg/kg-day	1.5E+00
				Thallium	1.39E+00	mg/kg	3.2E-10	mg/kg-day	--	1/(mg/kg-day)	--	4.5E-08	mg/kg-day	7.0E-04	mg/kg-day	6.5E-05
				Dieldrin	7.70E-03	mg/kg	1.8E-12	mg/kg-day	1.6E+01	1/(mg/kg-day)	2.9E-11	2.5E-10	mg/kg-day	5.0E-05	mg/kg-day	5.0E-06
				Benzo[a]anthracene	3.50E-01	mg/kg	8.2E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	2.5E-11	1.1E-08	mg/kg-day	3.0E-01	mg/kg-day	3.6E-08
				Benzo[a]pyrene	3.08E-01	mg/kg	7.2E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	2.2E-10	1.0E-08	mg/kg-day	--	mg/kg-day	--
				Benzo[b]fluoranthene	3.11E-01	mg/kg	7.3E-11	mg/kg-day	3.1E-01	1/(mg/kg-day)	2.2E-11	1.0E-08	mg/kg-day	3.0E-01	mg/kg-day	3.4E-08
				Dibenz[a,h]anthracene	2.03E-01	mg/kg	4.7E-11	mg/kg-day	3.1E+00	1/(mg/kg-day)	1.5E-10	6.6E-09	mg/kg-day	3.0E-01	mg/kg-day	2.2E-08
			Exp. Route Total								1.3E-08					1.7E+00
		Exposure Point Total									1.3E-08					1.7E+00
	Exposure Medium Total										1.3E-08					1.7E+00
ubsurface Soil Total											2.8E-07					2.0E+00

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Costruction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Vapors	On-site Excavation	Inhalation	2-Methylnaphthalene	6.30E-01	ug/L	8.5E-12	mg/kg-day	--	1/(mg/kg-day)	--	1.3E-09	mg/kg-day	8.6E-04	mg/kg-day	1.5E-06
				1,2,4-Trimethylbenzene	1.07E+01	ug/L	3.8E-10	mg/kg-day	1.8E-01	1/(mg/kg-day)	6.9E-11	5.3E-08	mg/kg-day	1.7E-02	mg/kg-day	3.1E-06
				1,2-Dichlorobenzene	4.77E+02	ug/L	1.0E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.4E-06	mg/kg-day	5.7E-01	mg/kg-day	2.5E-06
				1,2-Dichloroethane	3.20E+00	ug/L	7.6E-11	mg/kg-day	9.1E-02	1/(mg/kg-day)	7.0E-12	1.1E-08	mg/kg-day	1.4E-02	mg/kg-day	7.5E-07
				1,3,5-Trimethylbenzene	8.61E+00	ug/L	3.7E-10	mg/kg-day	2.7E-01	1/(mg/kg-day)	1.0E-10	5.2E-08	mg/kg-day	1.7E-02	mg/kg-day	3.0E-06
				1,3-Dichlorobenzene	5.27E+00	ug/L	1.1E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.6E-08	mg/kg-day	9.0E-04	mg/kg-day	1.8E-05
				1,4-Dichlorobenzene	1.43E+02	ug/L	3.4E-09	mg/kg-day	2.2E-02	1/(mg/kg-day)	7.4E-11	4.7E-07	mg/kg-day	7.1E-01	mg/kg-day	6.6E-07
				Acetone	2.71E+01	ug/L	5.6E-10	mg/kg-day	--	1/(mg/kg-day)	--	8.2E-08	mg/kg-day	1.0E+00	mg/kg-day	8.2E-08
				Benzene	5.71E+00	ug/L	2.5E-10	mg/kg-day	2.7E-02	1/(mg/kg-day)	6.8E-12	3.5E-08	mg/kg-day	1.7E-02	mg/kg-day	2.0E-06
				Chlorobenzene	2.35E+03	ug/L	7.1E-08	mg/kg-day	--	1/(mg/kg-day)	--	1.0E-05	mg/kg-day	1.7E-01	mg/kg-day	5.8E-05
				Chloroform	1.30E+00	ug/L	5.0E-11	mg/kg-day	8.1E-02	1/(mg/kg-day)	4.0E-12	7.0E-09	mg/kg-day	1.4E-02	mg/kg-day	4.9E-07
				cis-1,2-Dichloroethene	4.47E+01	ug/L	1.6E-09	mg/kg-day	--	1/(mg/kg-day)	--	2.3E-07	mg/kg-day	1.0E-01	mg/kg-day	2.3E-06
				Methylene chloride	7.76E+00	ug/L	2.6E-10	mg/kg-day	1.6E-03	1/(mg/kg-day)	4.3E-13	3.6E-08	mg/kg-day	8.6E-01	mg/kg-day	4.2E-08
				Naphthalene	1.69E+01	ug/L	2.9E-10	mg/kg-day	--	1/(mg/kg-day)	--	4.1E-08	mg/kg-day	8.6E-04	mg/kg-day	4.8E-05
				n-Butylbenzene	1.36E+01	ug/L	6.9E-10	mg/kg-day	--	1/(mg/kg-day)	--	1.2E-07	mg/kg-day	2.6E-01	mg/kg-day	4.4E-07
				Tetrachloroethene	1.71E+01	ug/L	1.4E-09	mg/kg-day	2.1E-02	1/(mg/kg-day)	2.9E-11	2.0E-07	mg/kg-day	1.1E-01	mg/kg-day	1.7E-06
				Trichloroethene	1.85E+01	ug/L	1.1E-09	mg/kg-day	4.0E-01	1/(mg/kg-day)	4.4E-10	1.5E-07	mg/kg-day	1.1E-01	mg/kg-day	1.3E-06
				Vinyl Chloride	1.26E+01	ug/L	1.9E-09	mg/kg-day	3.1E-02	1/(mg/kg-day)	5.8E-11	2.8E-07	mg/kg-day	2.9E-02	mg/kg-day	9.7E-06
				Xylenes	3.42E+01	ug/L	1.4E-09	mg/kg-day	--	1/(mg/kg-day)	--	2.0E-07	mg/kg-day	2.9E-02	mg/kg-day	6.8E-06
			Exp. Route Total								7.9E-10					1.6E-04
		Exposure Point Total									7.9E-10					1.6E-04
	Exposure Medium Total										7.9E-10					1.6E-04
Groundwater Total											7.9E-10					1.6E-04
							Total of Receptor Risks Across All Media				2.8E-07	Total of Receptor Hazards Across All Media				2.0E+00

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	7.7E-02	--	4.3E-03	8.1E-02
			Antimony	--	--	--	--	--	Whole body, blood	3.2E-02	--	5.9E-04	3.2E-02
			Arsenic	3.4E-06	--	2.9E-07	--	3.7E-06	Skin	8.8E-02	--	7.4E-03	9.5E-02
			Iron	--	--	--	--	--	Various organs	3.9E-01	--	1.1E-02	4.0E-01
			Manganese	--	--	--	--	--	CNS	1.8E-01	--	1.2E-02	1.9E-01
			Thallium	--	--	--	--	--	Liver, blood	3.0E-02	--	8.4E-05	3.0E-02
			Dieldrin	1.5E-07	--	4.3E-08	--	2.0E-07	Liver	2.2E-03	--	6.2E-04	2.9E-03
			Benzo[a]anthracene	1.0E-07	--	3.8E-08	--	1.4E-07	--	5.6E-05	--	2.0E-05	7.6E-05
			Benzo[a]pyrene	1.0E-06	--	3.8E-07	--	1.4E-06	--	--	--	--	--
			Benzo[b]fluoranthene	1.0E-07	--	3.8E-08	--	1.4E-07	--	5.6E-05	--	2.0E-05	7.6E-05
			Chemical Total	4.8E-06	--	7.8E-07	--	5.6E-06		8.0E-01	--	3.6E-02	8.3E-01
		Exposure Point Total						5.6E-06					8.3E-01
	Exposure Medium Total							5.6E-06					8.3E-01
Surface Soil Total								5.6E-06					8.3E-01
Sediment	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	4.0E-02	--	2.3E-03	4.3E-02
			Arsenic	4.4E-06	--	3.7E-07	--	4.7E-06	Skin	1.1E-01	--	9.5E-03	1.2E-01
			Iron	--	--	--	--	--	Various organs	4.1E-01	--	1.1E-02	4.2E-01
			Manganese	--	--	--	--	--	CNS	5.8E-01	--	4.1E-02	6.3E-01
			Thallium	--	--	--	--	--	Liver, blood	1.1E-01	--	2.9E-04	1.1E-01
			Aldrin	7.4E-08	--	2.1E-08	--	9.5E-08	Liver	1.7E-03	--	4.7E-04	2.2E-03
			Heptachlor epoxide	3.6E-08	--	1.0E-08	--	4.6E-08	Liver	3.5E-03	--	9.8E-04	4.5E-03
			Benzo[a]anthracene	1.6E-07	--	5.7E-08	--	2.1E-07	--	8.4E-05	--	3.0E-05	1.1E-04
			Benzo[a]pyrene	1.6E-06	--	5.7E-07	--	2.1E-06	--	--	--	--	--
			Benzo[b]fluoranthene	1.6E-07	--	6.0E-08	--	2.2E-07	--	8.7E-05	--	3.2E-05	1.2E-04
			Dibenz[a,h]anthracene	1.3E-06	--	4.7E-07	--	1.8E-06	--	6.9E-05	--	2.5E-05	9.5E-05
			Indeno[1,2,3-cd]pyrene	1.3E-07	--	4.8E-08	--	1.8E-07	--	4.2E-05	--	1.5E-05	5.7E-05
			Chemical Total	7.8E-06	--	1.6E-06	--	9.4E-06		1.3E+00	--	6.6E-02	1.3E+00
		Exposure Point Total						9.4E-06					1.3E+00
	Exposure Medium Total							9.4E-06					1.3E+00
Sediment Total								9.4E-06					1.3E+00

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	1.1E-01	--	2.5E-01	3.6E-01
			Arsenic	2.5E-06	--	2.8E-07	--	2.6E-06	Skin	6.4E-02	--	7.2E-03	7.1E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	1.0E-02	--	1.6E-02	2.7E-02
			Beryllium	--	--	--	--	--	Intestine	1.6E-03	--	2.5E-02	2.7E-02
			Cadmium	--	--	--	--	--	Kidneys	7.7E-03	--	1.7E-02	2.6E-02
			Chromium(VI)	--	--	--	--	--	None reported	6.6E-03	--	5.9E-02	6.6E-02
			Cobalt	--	--	--	--	--	Blood	1.6E-03	--	7.0E-05	1.6E-03
			Copper	--	--	--	--	--	GI system	1.9E-03	--	--	1.9E-03
			Iron	--	--	--	--	--	Various organs	7.0E-01	--	7.8E-01	1.5E+00
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	1.8E+00	--	4.9E+00	6.7E+00
			Nickel	--	--	--	--	--	Whole body, organs	2.4E-03	--	1.4E-03	3.8E-03
			Silver	--	--	--	--	--	Skin	1.6E-03	--	2.6E-03	4.2E-03
			Vanadium	--	--	--	--	--	Whole body	5.3E-03	--	5.9E-04	5.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.7E-03	--	1.9E-04	1.9E-03
			Bis(2-ethylhexyl)phthalate	3.2E-08	--	1.1E-06	--	1.2E-06	Liver	1.3E-03	--	4.7E-02	4.9E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.2E-06	--	1.6E-05	1.9E-05
			1,4-Dichlorobenzene	3.0E-10	--	2.3E-09	--	2.6E-09	Offspring	4.9E-06	--	3.8E-05	4.3E-05
			Chlorobenzene	--	--	--	--	--	Liver	1.3E-04	--	5.3E-04	6.6E-04
			Trichloroethene	2.5E-09	--	5.1E-09	--	7.6E-09	Liver, kidney, fetus	2.6E-04	--	4.9E-04	7.4E-04
			Chemical Total	2.6E-06	--	1.4E-06	--	3.9E-06		2.7E+00	--	6.1E+00	8.8E+00
		Exposure Point Total						3.9E-06					8.8E+00
			Aluminum	--	--	--	--	--	Offspring	6.1E-05	--	1.4E-04	2.0E-04
			Copper	--	--	--	--	--	GI system	1.5E-04	--	--	1.5E-04
			Iron	--	--	--	--	--	Various organs	6.2E-04	--	7.0E-04	1.3E-03
			Manganese	--	--	--	--	--	CNS	1.3E-03	--	3.7E-03	5.0E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	2.6E-03	--	2.9E-04	2.8E-03
			Pentachlorophenol	4.8E-09	--	6.7E-07	--	6.6E-07	Liver, kidney	1.6E-05	--	2.2E-03	2.2E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	4.5E-04	--	4.6E-04	9.2E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.2E-05	--	8.8E-05	1.0E-04
			1,4-Dichlorobenzene	2.4E-09	--	1.8E-08	--	2.1E-08	Offspring	3.9E-05	--	3.0E-04	3.4E-04
			Benzene	2.5E-09	--	4.4E-09	--	6.9E-09	Blood, immune system	1.8E-04	--	3.1E-04	4.9E-04
			Chlorobenzene	--	--	--	--	--	Liver	9.6E-04	--	4.0E-03	5.0E-03
			Tetrachloroethene	3.4E-09	--	2.3E-08	--	2.7E-08	Liver, Whole body	7.7E-05	--	5.3E-04	6.1E-04
			Trichloroethene	3.6E-08	--	7.7E-08	--	1.2E-07	Liver, kidney, fetus	3.7E-03	--	7.6E-03	1.1E-02
			Chemical Total	5.1E-08	--	7.9E-07	--	8.5E-07		1.0E-02	--	2.0E-02	3.0E-02
		Exposure Point Total						8.5E-07					3.0E-02
	Exposure Medium Total							4.8E-06					8.8E+00
Surface Water Total								4.8E-06					8.8E+00
Child Receptor Total							Receptor Cancer Risk Total	2E-05				Receptor HI Total	11

Total Nervous System HI Across All Media =	7
Total Unspecified Organs HI Across All Media =	2

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	2.2E-02	--	2.5E-03	2.4E-02
			Antimony	--	--	--	--	--	Whole body, blood	9.1E-03	--	3.4E-04	9.4E-03
			Arsenic	9.7E-07	--	1.6E-07	--	1.1E-06	Skin	2.5E-02	--	4.2E-03	2.9E-02
			Iron	--	--	--	--	--	Various organs	1.1E-01	--	6.2E-03	1.2E-01
			Manganese	--	--	--	--	--	CNS	5.1E-02	--	7.1E-03	5.8E-02
			Thallium	--	--	--	--	--	Liver, blood	8.6E-03	--	4.6E-05	8.7E-03
			Dieldrin	4.4E-08	--	2.4E-08	--	6.8E-08	Liver	6.4E-04	--	3.6E-04	9.9E-04
			Benzo[a]anthracene	3.0E-08	--	2.2E-08	--	5.2E-08	--	1.6E-05	--	1.2E-05	2.8E-05
			Benzo[a]pyrene	3.0E-07	--	2.2E-07	--	5.1E-07	--	--	--	--	--
			Benzo[b]fluoranthene	3.0E-08	--	2.2E-08	--	5.2E-08	--	1.6E-05	--	1.2E-05	2.8E-05
			Chemical Total	1.4E-06	--	4.5E-07	--	1.8E-06		2.3E-01	--	2.1E-02	2.5E-01
		Exposure Point Total						1.8E-06					2.5E-01
	Exposure Medium Total							1.6E-06					2.5E-01
Surface Soil Total								1.8E-06					2.5E-01
Sediment	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	1.2E-02	--	1.3E-03	1.3E-02
			Arsenic	1.2E-06	--	2.1E-07	--	1.5E-06	Skin	3.2E-02	--	5.4E-03	3.8E-02
			Iron	--	--	--	--	--	Various organs	1.2E-01	--	6.5E-03	1.2E-01
			Manganese	--	--	--	--	--	CNS	1.7E-01	--	2.3E-02	1.9E-01
			Thallium	--	--	--	--	--	Liver, blood	3.0E-02	--	1.7E-04	3.0E-02
			Aldrin	2.1E-08	--	1.2E-08	--	3.3E-08	Liver	4.8E-04	--	2.7E-04	7.5E-04
			Heptachlor epoxide	1.0E-08	--	5.7E-09	--	1.6E-08	Liver	1.0E-03	--	5.6E-04	1.6E-03
			Benzo[a]anthracene	4.5E-08	--	3.3E-08	--	7.7E-08	--	2.4E-05	--	1.7E-05	4.1E-05
			Benzo[a]pyrene	4.4E-07	--	3.2E-07	--	7.7E-07	--	--	--	--	--
			Benzo[b]fluoranthene	4.7E-08	--	3.4E-08	--	8.1E-08	--	2.5E-05	--	1.8E-05	4.3E-05
			Dibenz[a,h]anthracene	3.7E-07	--	2.7E-07	--	6.4E-07	--	2.0E-05	--	1.4E-05	3.4E-05
			Indeno[1,2,3-cd]pyrene	3.8E-08	--	2.7E-08	--	6.5E-08	--	1.2E-05	--	6.8E-06	2.1E-05
			Chemical Total	2.2E-06	--	9.2E-07	--	3.1E-06		3.6E-01	--	3.8E-02	4.0E-01
		Exposure Point Total						3.1E-06					4.0E-01
	Exposure Medium Total							3.1E-06					4.0E-01
Sediment Total								3.1E-06					4.0E-01

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	5.5E-02	--	1.2E-01	1.8E-01
			Arsenic	1.2E-06	--	1.4E-07	--	1.4E-06	Skin	3.2E-02	--	3.6E-03	3.6E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	5.1E-03	--	8.2E-03	1.3E-02
			Beryllium	--	--	--	--	--	Intestine	8.0E-04	--	1.3E-02	1.4E-02
			Cadmium	--	--	--	--	--	Kidneys	3.8E-03	--	6.6E-03	1.2E-02
			Chromium(VI)	--	--	--	--	--	None reported	3.3E-03	--	3.0E-02	3.3E-02
			Cobalt	--	--	--	--	--	Blood	7.6E-04	--	3.5E-05	8.2E-04
			Copper	--	--	--	--	--	GI system	9.5E-04	--	--	9.5E-04
			Iron	--	--	--	--	--	Various organs	3.5E-01	--	3.9E-01	7.4E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	8.8E-01	--	2.5E+00	3.3E+00
			Nickel	--	--	--	--	--	Whole body, organs	1.2E-03	--	6.8E-04	1.9E-03
			Silver	--	--	--	--	--	Skin	7.8E-04	--	1.3E-03	2.1E-03
			Vanadium	--	--	--	--	--	Whole body	2.6E-03	--	3.0E-04	2.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	8.7E-04	--	9.7E-05	9.6E-04
			Bis(2-ethylhexyl)phthalate	1.6E-08	--	6.7E-07	--	6.8E-07	Liver	6.6E-04	--	2.4E-02	2.4E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.1E-06	--	8.2E-06	9.3E-06
			1,4-Dichlorobenzene	1.5E-10	--	1.2E-09	--	1.3E-09	Offspring	2.4E-06	--	1.9E-05	2.1E-05
			Chlorobenzene	--	--	--	--	--	Liver	6.3E-05	--	2.6E-04	3.3E-04
			Trichloroethene	1.3E-09	--	2.5E-09	--	3.8E-09	Liver, kidney, fetus	1.2E-04	--	2.5E-04	3.7E-04
			Chemical Total	1.3E-06	--	7.1E-07	--	2.0E-06		1.3E+00	--	3.1E+00	4.4E+00
		Exposure Point Total						2.0E-06					4.4E+00
			Aluminum	--	--	--	--	--	Offspring	5.9E-05	--	1.3E-04	1.9E-04
			Copper	--	--	--	--	--	GI system	1.5E-04	--	--	1.5E-04
			Iron	--	--	--	--	--	Various organs	6.1E-04	--	6.8E-04	1.3E-03
			Manganese	--	--	--	--	--	CNS	1.3E-03	--	3.6E-03	4.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	2.5E-03	--	2.6E-04	2.8E-03
			Pentachlorophenol	4.7E-09	--	6.6E-07	--	6.6E-07	Liver, kidney	1.6E-05	--	2.1E-03	2.1E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	4.4E-04	--	4.6E-04	9.0E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.1E-05	--	8.6E-05	9.8E-05
			1,4-Dichlorobenzene	2.3E-09	--	1.8E-08	--	2.0E-08	Offspring	3.6E-05	--	2.9E-04	3.3E-04
			Benzene	2.4E-09	--	4.3E-09	--	6.8E-09	Blood, immune system	1.7E-04	--	3.1E-04	4.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	9.4E-04	--	3.9E-03	4.9E-03
			Tetrachloroethene	3.3E-09	--	2.3E-08	--	2.5E-08	Liver, Whole body	7.6E-05	--	5.2E-04	6.0E-04
			Trichloroethene	3.8E-08	--	7.5E-08	--	1.1E-07	Liver, kidney, fetus	3.7E-03	--	7.3E-03	1.1E-02
			Chemical Total	5.0E-08	--	7.8E-07	--	8.3E-07		1.0E-02	--	2.0E-02	3.0E-02
		Exposure Point Total						8.3E-07					3.0E-02
	Exposure Medium Total							2.8E-06					4.4E+00
Surface Water Total								2.8E-06					4.4E+00
Child Receptor Total							Receptor Cancer Risk Total	8E-06				Receptor HI Total	6.1E+00

Total Nervous System HI Across All Media =	3.6E+00
Total Unspecified Organs HI Across All Media =	9.9E-01

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	8.2E-03	--	6.6E-04	8.9E-03
			Antimony	--	--	--	--	--	Whole body, blood	3.4E-03	--	9.1E-05	3.5E-03
			Arsenic	1.5E-06	--	1.7E-07	--	1.6E-06	Skin	9.4E-03	--	1.1E-03	1.1E-02
			Iron	--	--	--	--	--	Various organs	4.2E-02	--	1.7E-03	4.3E-02
			Manganese	--	--	--	--	--	CNS	1.9E-02	--	1.9E-03	2.1E-02
			Thallium	--	--	--	--	--	Liver, blood	3.2E-03	--	1.3E-05	3.2E-03
			Dieldrin	6.6E-08	--	2.6E-08	--	9.2E-08	Liver	2.4E-04	--	9.5E-05	3.3E-04
			Benzo[a]anthracene	4.5E-08	--	2.3E-08	--	6.8E-08	--	6.0E-06	--	3.1E-06	3.3E-04
			Benzo[a]pyrene	4.4E-07	--	2.3E-07	--	6.8E-07	--	--	--	--	--
			Benzo[b]fluoranthene	4.5E-08	--	2.3E-08	--	6.8E-08	--	6.0E-06	--	3.1E-06	3.3E-04
			Chemical Total	2.1E-06	--	4.8E-07	--	2.5E-06		8.5E-02	--	5.6E-03	9.1E-02
		Exposure Point Total						2.5E-06					9.1E-02
	Exposure Medium Total							2.5E-06					9.1E-02
Surface Soil Total								2.5E-06					9.1E-02
Sediment	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	4.3E-03	--	3.5E-04	4.7E-03
			Arsenic	1.9E-06	--	2.2E-07	--	2.1E-06	Skin	1.2E-02	--	1.5E-03	1.4E-02
			Iron	--	--	--	--	--	Various organs	4.4E-02	--	1.7E-03	4.5E-02
			Manganese	--	--	--	--	--	CNS	6.3E-02	--	6.2E-03	6.9E-02
			Thallium	--	--	--	--	--	Liver, blood	1.1E-02	--	4.5E-05	1.1E-02
			Aldrin	3.2E-08	--	1.3E-08	--	4.4E-08	Liver	1.8E-04	--	7.2E-05	2.5E-04
			Heptachlor epoxide	1.5E-08	--	6.1E-09	--	2.1E-08	Liver	3.8E-04	--	1.5E-04	5.3E-04
			Benzo[a]anthracene	6.7E-08	--	3.5E-08	--	1.0E-07	--	8.9E-06	--	4.6E-06	1.4E-05
			Benzo[a]pyrene	6.7E-07	--	3.5E-07	--	1.0E-06	--	--	--	--	--
			Benzo[b]fluoranthene	7.0E-08	--	3.6E-08	--	1.1E-07	--	9.3E-06	--	4.8E-06	1.4E-05
			Dibenz[a,h]anthracene	5.6E-07	--	2.9E-07	--	8.5E-07	--	7.4E-06	--	3.9E-06	1.1E-05
			Indeno[1,2,3-cd]pyrene	5.6E-08	--	2.9E-08	--	8.6E-08	--	4.5E-06	--	2.3E-06	6.9E-06
			Chemical Total	3.3E-06	--	9.8E-07	--	4.3E-06		1.3E-01	--	1.0E-02	1.4E-01
		Exposure Point Total						4.3E-06					1.4E-01
	Exposure Medium Total							4.3E-06					1.4E-01
Sediment Total								4.3E-06					1.4E-01

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	4.1E-02	--	2.0E-01	2.4E-01
			Arsenic	3.7E-06	--	8.9E-07	--	4.6E-06	Skin	2.4E-02	--	5.8E-03	3.0E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	3.8E-03	--	1.3E-02	1.7E-02
			Beryllium	--	--	--	--	--	Intestine	6.0E-04	--	2.0E-02	2.1E-02
			Cadmium	--	--	--	--	--	Kidneys	2.9E-03	--	1.4E-02	1.7E-02
			Chromium(VI)	--	--	--	--	--	None reported	2.5E-03	--	4.8E-02	5.0E-02
			Cobalt	--	--	--	--	--	Blood	5.9E-04	--	5.6E-05	6.4E-04
			Copper	--	--	--	--	--	GI system	7.1E-04	--	--	7.1E-04
			Iron	--	--	--	--	--	Various organs	2.6E-01	--	6.3E-01	8.9E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	8.6E-01	--	3.9E+00	4.6E+00
			Nickel	--	--	--	--	--	Whole body, organs	9.1E-04	--	1.1E-03	2.0E-03
			Silver	--	--	--	--	--	Skin	5.8E-04	--	2.1E-03	2.7E-03
			Vanadium	--	--	--	--	--	Whole body	2.0E-03	--	4.7E-04	2.4E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	6.5E-04	--	1.6E-04	8.1E-04
			Bis(2-ethylhexyl)phthalate	4.8E-08	--	3.6E-06	--	3.7E-06	Liver	5.0E-04	--	3.8E-02	3.9E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	8.2E-07	--	1.3E-05	1.4E-05
			1,4-Dichlorobenzene	4.5E-10	--	7.5E-09	--	7.9E-09	Offspring	1.8E-06	--	3.0E-05	3.2E-05
			Chlorobenzene	--	--	--	--	--	Liver	4.8E-05	--	4.2E-04	4.7E-04
			Trichloroethene	3.8E-09	--	1.6E-08	--	2.0E-08	Liver, kidney, fetus	9.2E-05	--	4.0E-04	4.9E-04
			Chemical Total	3.8E-08	--	4.6E-06	--	8.3E-06		1.0E+00	--	4.9E+00	5.9E+00
		Exposure Point Total						8.3E-06					5.9E+00
			Aluminum	--	--	--	--	--	Offspring	1.3E-05	--	6.2E-05	7.5E-05
			Copper	--	--	--	--	--	GI system	3.2E-05	--	--	3.2E-05
			Iron	--	--	--	--	--	Various organs	1.3E-04	--	3.2E-04	4.5E-04
			Manganese	--	--	--	--	--	CNS	2.8E-04	--	1.7E-03	2.0E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	5.5E-04	--	1.3E-04	6.8E-04
			Pentachlorophenol	4.1E-09	--	1.2E-06	--	1.2E-06	Liver, kidney	3.3E-06	--	1.0E-03	1.0E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	9.7E-05	--	2.1E-04	3.1E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.5E-06	--	4.0E-05	4.3E-05
			1,4-Dichlorobenzene	2.0E-09	--	3.4E-08	--	3.6E-08	Offspring	9.3E-06	--	1.4E-04	1.5E-04
			Benzene	2.1E-09	--	8.1E-09	--	1.0E-08	Blood, immune system	3.6E-05	--	1.4E-04	1.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	2.1E-04	--	1.8E-03	2.0E-03
			Tetrachloroethene	2.9E-09	--	4.3E-08	--	4.6E-08	Liver, Whole body	1.7E-05	--	2.4E-04	2.6E-04
			Trichloroethene	3.3E-08	--	1.4E-07	--	1.7E-07	Liver, kidney, fetus	8.0E-04	--	3.4E-03	4.2E-03
			Chemical Total	4.4E-08	--	1.5E-06	--	1.5E-06		2.2E-03	--	9.3E-03	1.1E-02
		Exposure Point Total						1.5E-06					1.1E-02
	Exposure Medium Total							9.8E-06					5.9E+00
Surface Water Total								9.8E-06					5.9E+00
Adult Receptor Total							Receptor Cancer Risk Total	2E-05				Receptor HI Total	6

Child Receptor Total (from Table 9.1)	Receptor Cancer Risk Total	2E-05
Child/Adult Receptor Total	Receptor Lifetime Cancer Risk Total	4E-05

Total Nervous System HI Across All Media =	5
Total Unspecified Organs HI Across All Media =	1

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	2.4E-03	--	3.6E-04	2.7E-03
			Antimony	--	--	--	--	--	Whole body, blood	9.7E-04	--	5.2E-05	1.0E-03
			Arsenic	1.6E-07	--	3.7E-08	--	1.9E-07	Skin	2.7E-03	--	6.5E-04	3.3E-03
			Iron	--	--	--	--	--	Various organs	1.2E-02	--	9.5E-04	1.3E-02
			Manganese	--	--	--	--	--	CNS	5.4E-03	--	1.1E-03	6.5E-03
			Thallium	--	--	--	--	--	Liver, blood	9.2E-04	--	7.4E-06	9.3E-04
			Dieldrin	7.0E-09	--	5.6E-09	--	1.3E-08	Liver	6.8E-05	--	5.4E-05	1.2E-04
			Benzo[a]anthracene	4.8E-09	--	5.0E-09	--	9.8E-09	--	1.7E-06	--	1.8E-06	3.3E-04
			Benzo[a]pyrene	4.8E-08	--	4.9E-08	--	9.7E-08	--	--	--	--	--
			Benzo[b]fluoranthene	4.8E-09	--	5.0E-09	--	9.8E-09	--	1.7E-06	--	1.8E-06	3.3E-04
			Chemical Total	2.2E-07	--	1.0E-07	--	3.2E-07		2.4E-02	--	3.2E-03	2.8E-02
		Exposure Point Total						3.2E-07					2.8E-02
	Exposure Medium Total							3.2E-07					2.8E-02
Surface Soil Total								3.2E-07					2.8E-02
Sediment	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	1.2E-03	--	6.1E-06	1.2E-03
			Arsenic	1.9E-06	--	2.2E-07	--	2.1E-06	Skin	3.6E-03	--	--	3.5E-03
			Iron	--	--	--	--	--	Various organs	1.2E-02	--	3.1E-05	1.2E-02
			Manganese	--	--	--	--	--	CNS	1.8E-02	--	1.7E-04	1.8E-02
			Thallium	--	--	--	--	--	Liver, blood	3.2E-03	--	1.3E-05	3.2E-03
			Aldrin	3.2E-08	--	1.3E-08	--	4.4E-08	Liver	5.2E-05	--	9.8E-05	1.5E-04
			Heptachlor epoxide	1.5E-08	--	6.1E-09	--	2.1E-08	Liver	1.1E-04	--	2.1E-05	1.3E-04
			Benzo[a]anthracene	6.7E-08	--	3.5E-08	--	1.0E-07	--	2.6E-06	--	4.0E-06	6.5E-06
			Benzo[a]pyrene	6.7E-07	--	3.5E-07	--	1.0E-06	--	--	--	1.3E-05	--
			Benzo[b]fluoranthene	7.0E-08	--	3.6E-08	--	1.1E-07	--	2.7E-06	--	1.4E-05	1.7E-05
			Dibenz[a,h]anthracene	5.6E-07	--	2.9E-07	--	8.5E-07	--	2.1E-06	--	1.8E-04	1.8E-04
			Indeno[1,2,3-cd]pyrene	5.6E-08	--	2.9E-08	--	8.6E-08	--	1.3E-06	--	2.4E-05	2.6E-05
			Chemical Total	3.3E-06	--	9.8E-07	--	4.3E-06		3.8E-02	--	3.4E-04	3.9E-02
		Exposure Point Total						4.3E-06					3.9E-02
	Exposure Medium Total							4.3E-06					3.9E-02
Sediment Total								4.3E-06					3.9E-02

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	1.2E-02	--	5.6E-02	6.8E-02
			Arsenic	4.0E-07	--	9.6E-08	--	4.9E-07	Skin	6.9E-03	--	1.7E-03	8.5E-03
			Barium	--	--	--	--	--	Cardiovascular system, kidney	1.1E-03	--	3.8E-03	4.9E-03
			Beryllium	--	--	--	--	--	Intestine	1.7E-04	--	5.8E-03	6.0E-03
			Cadmium	--	--	--	--	--	Kidneys	8.2E-04	--	3.9E-03	4.8E-03
			Chromium(VI)	--	--	--	--	--	None reported	7.1E-04	--	1.4E-02	1.4E-02
			Cobalt	--	--	--	--	--	Blood	1.7E-04	--	1.6E-05	1.8E-04
			Copper	--	--	--	--	--	GI system	2.0E-04	--	--	2.0E-04
			Iron	--	--	--	--	--	Various organs	7.5E-02	--	1.8E-01	2.8E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	1.9E-01	--	1.1E+00	1.3E+00
			Nickel	--	--	--	--	--	Whole body, organs	2.6E-04	--	3.1E-04	5.7E-04
			Silver	--	--	--	--	--	Skin	1.7E-04	--	6.0E-04	7.7E-04
			Vanadium	--	--	--	--	--	Whole body	5.6E-04	--	1.4E-04	7.0E-04
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.9E-04	--	4.6E-05	2.3E-04
			Bis(2-ethylhexyl)phthalate	5.1E-09	--	3.9E-07	--	4.0E-07	Liver	1.4E-04	--	1.1E-02	1.1E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.3E-07	--	3.8E-06	4.0E-06
			1,4-Dichlorobenzene	4.8E-11	--	8.0E-10	--	8.5E-10	Offspring	6.2E-07	--	8.7E-06	9.2E-06
			Chlorobenzene	--	--	--	--	--	Liver	1.4E-05	--	1.2E-04	1.3E-04
			Trichloroethene	4.1E-10	--	1.7E-09	--	2.2E-09	Liver, kidney, fetus	2.6E-05	--	1.1E-04	1.4E-04
			Chemical Total	4.0E-07	--	4.9E-07	--	8.9E-07		2.9E-01	--	1.4E+00	1.7E+00
		Exposure Point Total						8.9E-07					1.7E+00
			Aluminum	--	--	--	--	--	Offspring	1.3E-05	--	6.1E-05	7.4E-05
			Copper	--	--	--	--	--	GI system	3.2E-05	--	--	3.2E-05
			Iron	--	--	--	--	--	Various organs	1.3E-04	--	3.1E-04	4.4E-04
			Manganese	--	--	--	--	--	CNS	2.8E-04	--	1.7E-03	1.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	5.4E-04	--	1.3E-04	6.7E-04
			Pentachlorophenol	1.5E-09	--	4.5E-07	--	4.6E-07	Liver, kidney	3.3E-06	--	9.8E-04	9.8E-04
			cis-1,2-Dichloroethena	--	--	--	--	--	Blood	9.5E-05	--	2.1E-04	3.0E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.5E-06	--	4.0E-05	4.2E-05
			1,4-Dichlorobenzene	7.5E-10	--	1.2E-08	--	1.3E-08	Offspring	8.1E-06	--	1.3E-04	1.4E-04
			Benzene	7.8E-10	--	3.0E-09	--	3.8E-09	Blood, immune system	3.7E-05	--	1.4E-04	1.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	2.0E-04	--	1.8E-03	2.0E-03
			Tetrachloroethene	1.1E-09	--	1.6E-08	--	1.7E-08	Liver, Whole body	1.6E-05	--	2.4E-04	2.6E-04
			Trichloroethene	1.2E-08	--	5.2E-08	--	6.4E-08	Liver, kidney, fetus	7.8E-04	--	3.4E-03	4.1E-03
			Chemical Total	1.6E-08	--	5.4E-07	--	5.5E-07		2.1E-03	--	9.1E-03	1.1E-02
		Exposure Point Total						5.5E-07					1.1E-02
	Exposure Medium Total							1.4E-06					1.7E+00
Surface Water Total								1.4E-06					1.7E+00
Adult Receptor Total							Receptor Cancer Risk Total	6E-06				Receptor HI Total	1.8E+00

Child Receptor Total (from Table 9.1)	Receptor Cancer Risk Total	8E-06
Child/Adult Receptor Total	Receptor Lifetime Cancer Risk Total	1E-05

Total Nervous System HI Across All Media =	1.3E+00
Total Unspecified Organs HI Across All Media =	2.8E-01

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	1.9E-02	--	9.4E-04	2.0E-02
			Antimony	--	--	--	--	--	Whole body, blood	7.7E-03	--	1.3E-04	7.8E-03
			Arsenic	8.2E-07	--	6.2E-08	--	8.8E-07	Skin	2.1E-02	--	1.6E-03	2.3E-02
			Iron	--	--	--	--	--	Various organs	9.4E-02	--	2.4E-03	9.7E-02
			Manganese	--	--	--	--	--	CNS	4.3E-02	--	2.7E-03	4.6E-02
			Thallium	--	--	--	--	--	Liver, blood	7.3E-03	--	1.8E-05	7.3E-03
			Dieldrin	3.7E-08	--	9.3E-09	--	4.6E-08	Liver	5.4E-04	--	1.4E-04	6.8E-04
			Benzo[a]anthracene	2.5E-08	--	8.3E-09	--	3.4E-08	--	1.3E-05	--	4.4E-06	1.8E-05
			Benzo[a]pyrene	2.5E-07	--	8.2E-08	--	3.3E-07	--	--	--	--	--
			Benzo[b]fluoranthene	2.5E-08	--	8.3E-09	--	3.4E-08	--	1.3E-05	--	4.4E-06	1.8E-05
			Chemical Total	1.2E-06	--	1.7E-07	--	1.3E-06		1.9E-01	--	7.9E-03	2.0E-01
		Exposure Point Total						1.3E-06					2.0E-01
	Exposure Medium Total							1.3E-06					2.0E-01
Surface Soil Total								1.3E-06					2.0E-01
Sediment	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	9.8E-03	--	4.9E-04	1.0E-02
			Arsenic	1.1E-06	--	8.0E-08	--	1.1E-06	Skin	2.7E-02	--	2.1E-03	2.9E-02
			Iron	--	--	--	--	--	Various organs	9.9E-02	--	2.5E-03	1.0E-01
			Manganese	--	--	--	--	--	CNS	1.4E-01	--	8.9E-03	1.5E-01
			Thallium	--	--	--	--	--	Liver, blood	2.5E-02	--	6.4E-05	2.5E-02
			Aldrin	1.8E-08	--	4.5E-09	--	2.2E-08	Liver	4.1E-04	--	1.0E-04	5.1E-04
			Heptachlor epoxide	8.6E-09	--	2.2E-09	--	1.1E-08	Liver	8.5E-04	--	2.1E-04	1.1E-03
			Benzo[a]anthracene	3.8E-08	--	1.2E-08	--	5.0E-08	--	2.0E-05	--	6.6E-06	2.7E-05
			Benzo[a]pyrene	3.8E-07	--	1.2E-07	--	5.0E-07	--	--	--	--	--
			Benzo[b]fluoranthene	4.0E-08	--	1.3E-08	--	5.3E-08	--	2.1E-05	--	6.9E-06	2.8E-05
			Dibenz[a,h]anthracene	3.1E-07	--	1.0E-07	--	4.2E-07	--	1.7E-05	--	5.5E-06	2.2E-05
			Indeno[1,2,3-cd]pyrene	3.2E-08	--	1.0E-08	--	4.2E-08	--	1.0E-05	--	3.3E-06	1.4E-05
			Chemical Total	1.9E-06	--	3.5E-07	--	2.2E-06		3.0E-01	--	1.4E-02	3.2E-01
		Exposure Point Total						2.2E-06					3.2E-01
	Exposure Medium Total							2.2E-06					3.2E-01
Sediment Total								2.2E-06					3.2E-01

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	9.3E-02	--	2.8E-01	3.7E-01
			Arsenic	2.1E-06	--	3.2E-07	--	2.4E-06	Skin	5.4E-02	--	8.3E-03	6.3E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	8.7E-03	--	1.9E-02	2.8E-02
			Beryllium	--	--	--	--	--	Intestine	1.3E-03	--	2.9E-02	3.1E-02
			Cadmium	--	--	--	--	--	Kidneys	6.5E-03	--	2.0E-02	2.6E-02
			Chromium(VI)	--	--	--	--	--	None reported	5.6E-03	--	6.8E-02	7.4E-02
			Cobalt	--	--	--	--	--	Blood	1.3E-03	--	8.0E-05	1.4E-03
			Copper	--	--	--	--	--	GI system	1.6E-03	--	--	1.6E-03
			Iron	--	--	--	--	--	Various organs	5.9E-01	--	9.0E-01	1.5E+00
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	1.5E+00	--	5.6E+00	7.1E+00
			Nickel	--	--	--	--	--	Whole body, organs	2.1E-03	--	1.6E-03	3.6E-03
			Silver	--	--	--	--	--	Skin	1.3E-03	--	3.0E-03	4.3E-03
			Vanadium	--	--	--	--	--	Whole body	4.5E-03	--	6.8E-04	5.1E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.5E-03	--	2.2E-04	1.7E-03
			Bis(2-ethylhexyl)phthalate	2.7E-08	--	1.3E-06	--	1.3E-06	Liver	1.1E-03	--	5.4E-02	5.5E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.9E-06	--	1.9E-05	2.1E-05
			1,4-Dichlorobenzene	2.5E-10	--	2.7E-09	--	2.9E-09	Offspring	4.1E-06	--	4.3E-05	4.7E-05
			Chlorobenzene	--	--	--	--	--	Liver	1.1E-04	--	6.1E-04	7.1E-04
			Trichloroethene	2.1E-09	--	5.8E-09	--	8.0E-09	Liver, kidney, fetus	2.1E-04	--	5.7E-04	7.8E-04
			Chemical Total	2.1E-06	--	1.6E-06	--	3.8E-06		2.3E+00	--	7.0E+00	9.3E+00
		Exposure Point Total						3.8E-06					9.3E+00
			Aluminum	--	--	--	--	--	Offspring	2.9E-05	--	8.9E-05	1.2E-04
			Copper	--	--	--	--	--	GI system	7.3E-05	--	--	7.3E-05
			Iron	--	--	--	--	--	Various organs	3.0E-04	--	4.6E-04	7.6E-04
			Manganese	--	--	--	--	--	CNS	6.4E-04	--	2.4E-03	3.1E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.2E-03	--	1.9E-04	1.4E-03
			Pentachlorophenol	2.3E-09	--	4.4E-07	--	4.4E-07	Liver, kidney	7.6E-06	--	1.4E-03	1.4E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	2.2E-04	--	3.0E-04	5.2E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	5.7E-06	--	5.8E-05	6.3E-05
			1,4-Dichlorobenzene	1.2E-09	--	1.2E-08	--	1.3E-08	Offspring	1.9E-05	--	2.0E-04	2.2E-04
			Benzene	1.2E-09	--	2.9E-09	--	4.1E-09	Blood, immune system	8.5E-05	--	2.0E-04	2.9E-04
			Chlorobenzene	--	--	--	--	--	Liver	4.7E-04	--	2.6E-03	3.1E-03
			Tetrachloroethene	1.6E-09	--	1.5E-08	--	1.7E-08	Liver, Whole body	3.7E-05	--	3.5E-04	3.9E-04
			Trichloroethene	1.9E-08	--	5.0E-08	--	6.9E-08	Liver, kidney, fetus	1.8E-03	--	4.9E-03	6.7E-03
			Chemical Total	2.5E-08	--	5.2E-07	--	5.5E-07		4.9E-03	--	1.3E-02	1.6E-02
		Exposure Point Total						5.5E-07					1.8E-02
	Exposure Medium Total							4.3E-06					9.3E+00
Surface Water Total								4.3E-06					9.3E+00
Receptor Total							Receptor Risk Total	6E-06				Receptor HI Total	10

Total Nervous System HI Across All Media =	7
Total Unspecified Organs HI Across All Media =	2

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	1.1E-02	--	5.4E-04	1.1E-02
			Antimony	--	--	--	--	--	Whole body, blood	4.4E-03	--	7.4E-05	4.5E-03
			Arsenic	4.7E-07	--	3.5E-08	--	5.0E-07	Skin	1.2E-02	--	9.2E-04	1.3E-02
			Iron	--	--	--	--	--	Various organs	5.4E-02	--	1.4E-03	5.5E-02
			Manganese	--	--	--	--	--	CNS	2.4E-02	--	1.5E-03	2.6E-02
			Thallium	--	--	--	--	--	Liver, blood	4.2E-03	--	1.1E-05	4.2E-03
			Dieldrin	2.1E-08	--	5.3E-09	--	2.6E-08	Liver	3.1E-04	--	7.8E-05	3.9E-04
			Benzo[a]anthracene	1.4E-08	--	4.7E-09	--	1.9E-08	--	7.7E-06	--	2.6E-06	1.0E-05
			Benzo[a]pyrene	1.4E-07	--	4.7E-08	--	1.9E-07	--	--	--	--	--
			Benzo[b]fluoranthene	1.4E-08	--	4.7E-09	--	1.9E-08	--	7.7E-06	--	2.5E-06	1.0E-05
			Chemical Total	6.6E-07	--	9.7E-08	--	7.6E-07		1.1E-01	--	4.6E-03	1.1E-01
		Exposure Point Total						7.6E-07					1.1E-01
	Exposure Medium Total							7.6E-07					1.1E-01
Surface Soil Total								7.6E-07					1.1E-01
Sediment	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	2.8E-03	--	2.8E-04	3.1E-03
			Arsenic	3.0E-07	--	4.6E-08	--	3.5E-07	Skin	7.8E-03	--	1.2E-03	9.0E-03
			Iron	--	--	--	--	--	Various organs	2.8E-02	--	1.4E-03	3.0E-02
			Manganese	--	--	--	--	--	CNS	4.0E-02	--	5.1E-03	4.5E-02
			Thallium	--	--	--	--	--	Liver, blood	7.3E-03	--	3.7E-05	7.3E-03
			Aldrin	5.1E-09	--	2.6E-09	--	7.7E-09	Liver	1.2E-04	--	5.9E-05	1.8E-04
			Heptachlor epoxide	2.5E-09	--	1.2E-09	--	3.7E-09	Liver	2.4E-04	--	1.2E-04	3.6E-04
			Benzo[a]anthracene	1.1E-08	--	7.1E-09	--	1.8E-08	--	5.8E-06	--	3.8E-06	9.6E-06
			Benzo[a]pyrene	1.1E-07	--	7.0E-08	--	1.8E-07	--	--	--	--	--
			Benzo[b]fluoranthene	1.1E-08	--	7.4E-09	--	1.9E-08	--	6.0E-06	--	3.9E-06	1.0E-05
			Dibenz[a,h]anthracene	9.0E-08	--	5.9E-08	--	1.5E-07	--	4.8E-06	--	3.1E-06	7.9E-06
			Indeno[1,2,3-cd]pyrene	9.1E-09	--	6.0E-09	--	1.5E-08	--	2.9E-06	--	1.9E-06	4.8E-06
			Chemical Total	5.4E-07	--	2.0E-07	--	7.4E-07		8.7E-02	--	8.2E-03	9.5E-02
		Exposure Point Total						7.4E-07					9.5E-02
	Exposure Medium Total							7.4E-07					9.5E-02
Sediment Total								7.4E-07					9.5E-02

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Current/Future
Receptor Population: Recreational Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	2.7E-02	--	8.1E-02	1.1E-01
			Arsenic	6.0E-07	--	9.1E-08	--	6.9E-07	Skin	1.6E-02	--	2.4E-03	1.8E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	2.5E-03	--	5.4E-03	7.9E-03
			Beryllium	--	--	--	--	--	Intestine	3.9E-04	--	8.4E-03	8.7E-03
			Cadmium	--	--	--	--	--	Kidneys	1.9E-03	--	5.6E-03	7.5E-03
			Chromium(VI)	--	--	--	--	--	None reported	1.6E-03	--	1.9E-02	2.1E-02
			Cobalt	--	--	--	--	--	Blood	3.8E-04	--	2.3E-05	4.0E-04
			Copper	--	--	--	--	--	GI system	4.6E-04	--	--	4.6E-04
			Iron	--	--	--	--	--	Various organs	1.7E-01	--	2.6E-01	4.3E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	4.2E-01	--	1.6E+00	2.0E+00
			Nickel	--	--	--	--	--	Whole body, organs	5.9E-04	--	4.5E-04	1.0E-03
			Silver	--	--	--	--	--	Skin	3.8E-04	--	8.6E-04	1.2E-03
			Vanadium	--	--	--	--	--	Whole body	1.3E-03	--	1.9E-04	1.5E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	4.2E-04	--	6.4E-05	4.8E-04
			Bis(2-ethylhexyl)phthalate	7.7E-09	--	3.7E-07	--	3.8E-07	Liver	3.2E-04	--	1.6E-02	1.6E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	5.3E-07	--	5.4E-06	5.9E-06
			1,4-Dichlorobenzene	7.3E-11	--	7.6E-10	--	8.4E-10	Offspring	1.2E-06	--	1.2E-05	1.4E-05
			Chlorobenzene	--	--	--	--	--	Liver	3.1E-05	--	1.7E-04	2.0E-04
			Trichloroethene	6.1E-10	--	1.7E-09	--	2.3E-09	Liver, kidney, fetus	6.0E-05	--	1.6E-04	2.2E-04
			Chemical Total	6.1E-07	--	4.7E-07	--	1.1E-06		6.5E-01	--	2.0E+00	2.7E+00
		Exposure Point Total						1.1E-06					2.7E+00
			Aluminum	--	--	--	--	--	Offspring	2.9E-05	--	8.7E-05	1.2E-04
			Copper	--	--	--	--	--	GI system	7.2E-05	--	--	7.2E-05
			Iron	--	--	--	--	--	Various organs	2.9E-04	--	4.5E-04	7.4E-04
			Manganese	--	--	--	--	--	CNS	6.3E-04	--	2.4E-03	3.0E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.2E-03	--	1.6E-04	1.4E-03
			Pentachlorophenol	2.3E-09	--	4.3E-07	--	4.3E-07	Liver, kidney	7.4E-06	--	1.4E-03	1.4E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	2.1E-04	--	3.0E-04	5.1E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	6.5E-06	--	5.7E-05	6.2E-05
			1,4-Dichlorobenzene	1.1E-09	--	1.2E-08	--	1.3E-08	Offspring	1.6E-05	--	1.9E-04	2.1E-04
			Benzene	1.2E-09	--	2.8E-09	--	4.0E-09	Blood, immune system	8.4E-05	--	2.0E-04	2.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	4.6E-04	--	2.6E-03	3.0E-03
			Tetrachloroethene	1.6E-09	--	1.5E-08	--	1.7E-08	Liver, Whole body	3.7E-05	--	3.4E-04	3.8E-04
			Trichloroethene	1.8E-08	--	4.9E-08	--	6.6E-08	Liver, kidney, fetus	1.8E-03	--	4.8E-03	6.6E-03
			Chemical Total	2.4E-08	--	5.1E-07	--	5.4E-07		4.8E-03	--	1.3E-02	1.8E-02
		Exposure Point Total						5.4E-07					1.8E-02
	Exposure Medium Total							1.6E-06					2.7E+00
Surface Water Total								1.6E-06					2.7E+00
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	2.9E+00

Total Nervous System HI Across All Media =	2.1E+00
Total Unspecified Organs HI Across All Media =	5.1E-01

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	1.5E-01	--	8.6E-03	1.6E-01
			Antimony	--	--	--	--	--	Whole body, blood	6.4E-02	--	1.2E-03	6.5E-02
			Arsenic	6.8E-06	--	5.7E-07	--	7.4E-06	Skin	1.8E-01	--	1.5E-02	1.9E-01
			Iron	--	--	--	--	--	Various organs	7.8E-01	--	2.2E-02	8.0E-01
			Manganese	--	--	--	--	--	CNS	3.5E-01	--	2.5E-02	3.8E-01
			Thallium	--	--	--	--	--	Liver, blood	6.0E-02	--	1.7E-04	6.0E-02
			Dieldrin	3.1E-07	--	8.6E-08	--	3.9E-07	Liver	4.5E-03	--	1.2E-03	5.7E-03
			Benzo[a]anthracene	2.1E-07	--	7.6E-08	--	2.9E-07	--	1.1E-04	--	4.1E-05	1.5E-04
			Benzo[a]pyrene	2.1E-06	--	7.6E-07	--	2.8E-06	--	--	--	--	--
			Benzo[b]fluoranthene	2.1E-07	--	7.6E-08	--	2.9E-07	--	1.1E-04	--	4.1E-05	1.5E-04
			Chemical Total	9.6E-06	--	1.6E-06	--	1.1E-05		1.6E+00	--	7.3E-02	1.7E+00
		Exposure Point Total						1.1E-05					1.7E+00
	Exposure Medium Total							1.1E-05					1.7E+00
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	2.1E-02	--	2.1E-02
			Antimony	--	--	--	--	--	Lung	--	1.2E-04	--	1.2E-04
			Arsenic	--	1.3E-08	--	--	1.3E-08	Skin	--	3.4E-05	--	3.4E-05
			Iron	--	--	--	--	--	Various organs	--	1.5E-04	--	1.5E-04
			Manganese	--	--	--	--	--	Nervous system	--	1.2E-01	--	1.2E-01
			Thallium	--	--	--	--	--	Liver, blood	--	1.2E-05	--	1.2E-05
			Dieldrin	--	6.0E-11	--	--	6.0E-11	Liver	--	8.7E-07	--	8.7E-07
			Benzo[a]anthracene	--	1.7E-11	--	--	1.7E-11	--	--	2.2E-08	--	2.2E-08
			Benzo[a]pyrene	--	1.7E-10	--	--	1.7E-10	--	--	--	--	--
			Benzo[b]fluoranthene	--	1.7E-11	--	--	1.7E-11	--	--	2.2E-08	--	2.2E-08
			Chemical Total	--	1.4E-08	--	--	1.4E-08		--	1.4E-01	--	1.4E-01
		Exposure Point Total						1.4E-08					1.4E-01
	Exposure Medium Total							1.4E-08					1.4E-01
Surface Soil Total								1.1E-05					1.8E+00
Sediment (exposures same as Recreational Visitor)	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	4.0E-02	--	2.3E-03	4.3E-02
			Arsenic	4.4E-06	--	3.7E-07	--	4.7E-06	Skin	1.1E-01	--	9.5E-03	1.2E-01
			Iron	--	--	--	--	--	Various organs	4.1E-01	--	1.1E-02	4.2E-01
			Manganese	--	--	--	--	--	CNS	5.8E-01	--	4.1E-02	6.3E-01
			Thallium	--	--	--	--	--	Liver, blood	1.1E-01	--	2.9E-04	1.1E-01
			Aldrin	7.4E-08	--	2.1E-08	--	9.5E-08	Liver	1.7E-03	--	4.7E-04	2.2E-03
			Heptachlor epoxide	3.6E-08	--	1.0E-08	--	4.6E-08	Liver	3.5E-03	--	9.8E-04	4.5E-03
			Benzo[a]anthracene	1.6E-07	--	5.7E-08	--	2.1E-07	--	8.4E-05	--	3.0E-05	1.1E-04
			Benzo[a]pyrene	1.6E-06	--	5.7E-07	--	2.1E-06	--	--	--	--	--
			Benzo[b]fluoranthene	1.6E-07	--	6.0E-08	--	2.2E-07	--	8.7E-05	--	3.2E-05	1.2E-04
			Dibenz[a,h]anthracene	1.3E-06	--	4.7E-07	--	1.8E-06	--	6.9E-05	--	2.5E-05	9.5E-05
			Indeno[1,2,3-cd]pyrene	1.3E-07	--	4.8E-08	--	1.8E-07	--	4.2E-05	--	1.5E-05	5.7E-05
			Chemical Total	7.8E-06	--	1.6E-06	--	9.4E-06		1.3E+00	--	6.6E-02	1.3E+00
		Exposure Point Total						9.4E-06					1.3E+00
	Exposure Medium Total							9.4E-06					1.3E+00
Sediment Total								9.4E-06					1.3E+00

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water (exposures same as Recreational Visitor)	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	1.1E-01	--	2.5E-01	3.6E-01
			Arsenic	2.5E-06	--	2.8E-07	--	2.8E-06	Skin	6.4E-02	--	7.2E-03	7.1E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	1.0E-02	--	1.6E-02	2.7E-02
			Beryllium	--	--	--	--	--	Intestine	1.6E-03	--	2.5E-02	2.7E-02
			Cadmium	--	--	--	--	--	Kidneys	7.7E-03	--	1.7E-02	2.5E-02
			Chromium(VI)	--	--	--	--	--	None reported	6.6E-03	--	5.9E-02	6.6E-02
			Cobalt	--	--	--	--	--	Blood	1.6E-03	--	7.0E-05	1.6E-03
			Copper	--	--	--	--	--	GI system	1.9E-03	--	--	1.9E-03
			Iron	--	--	--	--	--	Various organs	7.0E-01	--	7.8E-01	1.5E+00
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	1.8E+00	--	4.9E+00	6.7E+00
			Nickel	--	--	--	--	--	Whole body, organs	2.4E-03	--	1.4E-03	3.8E-03
			Silver	--	--	--	--	--	Skin	1.6E-03	--	2.6E-03	4.2E-03
			Vanadium	--	--	--	--	--	Whole body	5.3E-03	--	5.9E-04	5.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.7E-03	--	1.9E-04	1.9E-03
			Bis(2-ethylhexyl)phthala	3.2E-08	--	1.1E-06	--	1.2E-06	Liver	1.3E-03	--	4.7E-02	4.9E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.2E-06	--	1.8E-05	1.9E-05
			1,4-Dichlorobenzene	3.0E-10	--	2.3E-09	--	2.6E-09	Offspring	4.9E-06	--	3.6E-05	4.3E-05
			Chlorobenzene	--	--	--	--	--	Liver	1.3E-04	--	5.3E-04	6.5E-04
			Trichloroethene	2.5E-09	--	5.1E-09	--	7.6E-09	Liver, kidney, fetus	2.5E-04	--	4.9E-04	7.4E-04
			Chemical Total	2.5E-06	--	1.4E-06	--	3.9E-06		2.7E+00	--	6.1E+00	8.8E+00
		Exposure Point Total						3.9E-06					8.8E+00
			Aluminum	--	--	--	--	--	Offspring	6.1E-05	--	1.4E-04	2.0E-04
			Copper	--	--	--	--	--	GI system	1.5E-04	--	--	1.5E-04
			Iron	--	--	--	--	--	Various organs	6.2E-04	--	7.0E-04	1.3E-03
			Manganese	--	--	--	--	--	CNS	1.3E-03	--	3.7E-03	5.0E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	2.6E-03	--	2.9E-04	2.8E-03
			Pentachlorophenol	4.8E-09	--	6.7E-07	--	6.8E-07	Liver, kidney	1.6E-05	--	2.2E-03	2.2E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	4.5E-04	--	4.6E-04	9.2E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.2E-05	--	8.8E-05	1.0E-04
			1,4-Dichlorobenzene	2.4E-09	--	1.8E-08	--	2.1E-08	Offspring	3.9E-05	--	3.0E-04	3.4E-04
			Benzene	2.5E-09	--	4.4E-09	--	6.9E-09	Blood, Immune system	1.8E-04	--	3.1E-04	4.9E-04
			Chlorobenzene	--	--	--	--	--	Liver	9.6E-04	--	4.0E-03	6.0E-03
			Tetrachloroethene	3.4E-09	--	2.3E-08	--	2.7E-08	Liver, Whole body	7.7E-05	--	5.3E-04	6.1E-04
			Trichloroethene	3.8E-08	--	7.7E-08	--	1.2E-07	Liver, kidney, fetus	3.7E-03	--	7.5E-03	1.1E-02
			Chemical Total	5.1E-08	--	7.9E-07	--	8.5E-07		1.0E-02	--	2.0E-02	3.0E-02
		Exposure Point Total						8.5E-07					3.0E-02
	Exposure Medium Total							4.8E-06					8.8E+00
Surface Water Total								4.8E-06					8.8E+00

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-site Tap Water	Aluminum	--	--	--	--	--	Offspring	7.0E-01	--	6.2E-02	7.6E-01
			Chromium(VI)	--	--	--	--	--	None reported	2.4E-01	--	8.6E-02	3.3E-01
			Iron	--	--	--	--	--	Various organs	4.5E+00	--	2.0E-01	4.7E+00
			Manganese	--	--	--	--	--	CNS	2.7E+01	--	3.0E+00	3.0E+01
			Thallium	--	--	--	--	--	Liver, blood	9.1E+00	--	4.0E-02	9.1E+00
			2-Methylnaphthalene	--	--	--	--	--	Lung	3.0E-03	--	1.3E-03	4.3E-03
			1,2,4-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.0E-02	--	8.5E-03	2.9E-02
			1,2-Dichlorobenzene	--	--	--	--	--	None	5.1E-01	--	2.1E-01	7.2E-01
			1,2-Dichloroethane	2.4E-06	--	7.8E-08	--	2.5E-06	Liver, kidney	1.0E-02	--	3.3E-04	1.1E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.7E-02	--	6.9E-03	2.3E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	5.6E-01	--	3.3E-01	9.0E-01
			1,4-Dichlorobenzene	2.8E-05	--	1.2E-05	--	4.0E-05	Offspring	4.6E-01	--	2.0E-01	6.5E-01
			Acetone	--	--	--	--	--	Liver, kidney	2.6E-02	--	1.7E-04	2.6E-02
			Benzene	2.6E-06	--	2.6E-07	--	2.8E-06	Blood, Immune system	1.8E-01	--	1.9E-02	2.0E-01
			Chlorobenzene	--	--	--	--	--	Liver	1.1E+01	--	2.6E+00	1.4E+01
			Chloroform	--	--	--	--	--	Liver	1.2E-02	--	7.3E-04	1.3E-02
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	4.3E-01	--	2.5E-02	4.5E-01
			Methylene chloride	4.8E-07	--	1.2E-08	--	4.9E-07	Liver	1.2E-02	--	3.1E-04	1.3E-02
			Naphthalene	--	--	--	--	--	Whole body	9.1E-02	--	3.9E-02	1.3E-01
			n-Butylbenzene	--	--	--	--	--	Liver, kidney	3.3E-02	--	1.3E-02	4.5E-02
			Tetrachloroethene	7.2E-06	--	2.7E-06	--	9.9E-06	Liver, Whole body	1.6E-01	--	6.3E-02	2.3E-01
			Trichloroethene	6.1E-05	--	6.8E-06	--	6.8E-05	Liver, kidney, fetus	5.9E+00	--	6.6E-01	6.6E+00
			Vinyl Chloride	1.5E-04	--	5.3E-06	--	1.6E-04	Liver	4.0E-01	--	1.6E-02	4.2E-01
			Xylenes	--	--	--	--	--	Whole body	1.6E-02	--	6.6E-03	2.3E-02
			Chemical Total	2.6E-04	--	2.7E-05	--	2.7E-04		6.2E+01	--	7.6E+00	6.9E+01
		Exposure Point Total						2.7E-04					6.9E+01
	Exposure Medium Total							2.7E-04					6.9E+01
	Vapors	On-site Bath/Shower	2-Methylnaphthalene	--	--	--	--	--	--	--	3.1E+00	--	3.1E+00
			1,2,4-Trimethylbenzene	--	7.1E-04	--	--	7.1E-04	CNS, respiratory tract, blood	--	2.6E+01	--	2.6E+01
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	3.5E+01	--	3.5E+01
			1,2-Dichloroethane	--	1.0E-04	--	--	1.0E-04	GI system, liver, gallbladder	--	9.4E+00	--	9.4E+00
			1,3,5-Trimethylbenzene	--	8.4E-04	--	--	8.4E-04	CNS, respiratory tract, blood	--	2.1E+01	--	2.1E+01
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	2.5E+01	--	2.5E+01
			1,4-Dichlorobenzene	--	1.1E-03	--	--	1.1E-03	Liver	--	2.6E+00	--	2.6E+00
			Acetone	--	--	--	--	--	Liver, kidney	--	1.1E+00	--	1.1E+00
			Benzene	--	5.6E-05	--	--	5.6E-05	Hematopoetic progenitor cells	--	1.4E+01	--	1.4E+01
			Chlorobenzene	--	--	--	--	--	Liver	--	5.8E+02	--	5.8E+02
			Chloroform	--	3.8E-05	--	--	3.8E-05	Kidney, liver	--	3.8E-01	--	3.8E-01
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	1.9E+01	--	1.9E+01
			Methylene chloride	--	4.6E-06	--	--	4.6E-06	Liver	--	3.8E-02	--	3.8E-02
			Naphthalene	--	--	--	--	--	Respiratory tract	--	9.3E+01	--	9.3E+01
			n-Butylbenzene	--	--	--	--	--	--	--	2.0E-01	--	2.0E-01
			Tetrachloroethene	--	6.6E-05	--	--	6.6E-05	Liver, kidney	--	6.3E-01	--	6.3E-01
			Trichloroethene	--	2.7E-03	--	--	2.7E-03	CNS, liver, endocrine system	--	6.8E+00	--	6.8E+00
			Vinyl Chloride	--	1.4E-04	--	--	1.4E-04	Liver	--	1.9E+00	--	1.9E+00
			Xylenes	--	--	--	--	--	CNS	--	4.9E+00	--	4.9E+00
			Chemical Total	--	5.8E-03	--	--	5.8E-03		--	8.4E+02	--	8.4E+02
		Exposure Point Total						5.8E-03					8.4E+02

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater (continued)	Vapors (continued)	On-Site Indoors	2-Methylnaphthalene	--	--	--	--	--	--	--	4.2E-04	--	4.2E-04
			1,2,4-Trimethylbenzene	--	8.1E-07	--	--	8.1E-07	CNS, respiratory tract, blood	--	3.0E-02	--	3.0E-02
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	1.7E-02	--	1.7E-02
			1,2-Dichloroethane	--	4.4E-08	--	--	4.4E-08	GI system, liver, gallbladder	--	3.9E-03	--	3.9E-03
			1,3,5-Trimethylbenzene	--	1.2E-06	--	--	1.2E-06	CNS, respiratory tract, blood	--	3.1E-02	--	3.1E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	1.2E-02	--	1.2E-02
			1,4-Dichlorobenzene	--	6.5E-07	--	--	6.5E-07	Liver	--	1.5E-03	--	1.5E-03
			Acetone	--	--	--	--	--	Liver, kidney	--	3.1E-05	--	3.1E-05
			Benzene	--	7.7E-08	--	--	7.7E-08	Hematopoetic progenitor cells	--	1.9E-02	--	1.9E-02
			Chlorobenzene	--	--	--	--	--	Liver	--	4.9E-01	--	4.9E-01
			Chloroform	--	4.3E-08	--	--	4.3E-08	Kidney, liver	--	4.3E-04	--	4.3E-04
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	1.8E-02	--	1.8E-02
			Methylene chloride	--	3.6E-09	--	--	3.6E-09	Liver	--	3.0E-05	--	3.0E-05
			Naphthalene	--	--	--	--	--	Respiratory tract	--	1.3E-02	--	1.3E-02
			n-Butylbenzene	--	--	--	--	--	--	--	4.7E-04	--	4.7E-04
			Tetrachloroethene	--	2.0E-07	--	--	2.0E-07	Liver, kidney	--	1.9E-03	--	1.9E-03
			Trichloroethene	--	5.5E-06	--	--	5.5E-06	CNS, liver, endocrine system	--	1.4E-02	--	1.4E-02
			Vinyl Chloride	--	8.2E-07	--	--	8.2E-07	Liver	--	1.1E-02	--	1.1E-02
			Xylenes	--	--	--	--	--	CNS		6.7E-03		6.7E-03
			Chemical Total	--	9.4E-06	--	--	9.4E-06		--	6.7E-01	--	6.7E-01
		Exposure Point Total						9.4E-06					6.7E-01
	Exposure Medium Total							5.8E-03					8.4E+02
Groundwater Total								6.0E-03					9.1E+02
Child Receptor Total							Receptor Risk Total	6E-03				Receptor HI Total	921

Total Liver HI Across All Media =	630
Total Respiratory System HI Across All Media =	140
Total Blood HI Across All Media =	101
Total Nervous System HI Across All Media =	97
Total Whole Body HI Across All Media =	36
Total Thyroid HI Across All Media =	25
Total Hematopoietic System HI Across All Media =	14
Total GI System HI Across All Media =	9
Total Gallbladder HI Across All Media =	9
Total Kidney HI Across All Media =	9
Total Endocrine System HI Across All Media =	7

TABLE 9.4.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	7.7E-02	--	8.6E-03	8.5E-02
			Antimony	--	--	--	--	--	Whole body, blood	3.2E-02	--	1.2E-03	3.3E-02
			Arsenic	3.4E-06	--	5.7E-07	--	4.0E-06	Skin	8.8E-02	--	1.5E-02	1.0E-01
			Iron	--	--	--	--	--	Various organs	3.9E-01	--	2.2E-02	4.1E-01
			Manganese	--	--	--	--	--	CNS	1.8E-01	--	2.5E-02	2.0E-01
			Thallium	--	--	--	--	--	Liver, blood	3.0E-02	--	1.7E-04	3.0E-02
			Dieldrin	1.5E-07	--	8.6E-08	--	2.4E-07	Liver	2.2E-03	--	1.2E-03	3.5E-03
			Benzo[a]anthracene	1.0E-07	--	7.6E-08	--	1.8E-07	--	5.6E-05	--	4.1E-05	9.6E-05
			Benzo[a]pyrene	1.0E-06	--	7.6E-07	--	1.8E-06	--	--	--	--	--
			Benzo[b]fluoranthene	1.0E-07	--	7.6E-08	--	1.8E-07	--	5.6E-05	--	4.1E-05	9.6E-05
			Chemical Total	4.8E-06	--	1.6E-06	--	6.4E-06		8.0E-01	--	7.3E-02	8.7E-01
		Exposure Point Total						6.4E-06					8.7E-01
	Exposure Medium Total							6.4E-06					8.7E-01
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	1.5E-02	--	1.5E-02
			Antimony	--	--	--	--	--	Lung	--	8.6E-05	--	8.6E-05
			Arsenic	--	9.2E-09	--	--	9.2E-09	Skin	--	2.4E-05	--	2.4E-05
			Iron	--	--	--	--	--	Various organs	--	1.1E-04	--	1.1E-04
			Manganese	--	--	--	--	--	Nervous system	--	8.0E-02	--	8.0E-02
			Thallium	--	--	--	--	--	Liver, blood	--	8.1E-06	--	8.1E-06
			Dieldrin	--	4.2E-11	--	--	4.2E-11	Liver	--	6.0E-07	--	6.0E-07
			Benzo[e]anthracene	--	1.2E-11	--	--	1.2E-11	--	--	1.5E-08	--	1.5E-08
			Benzo[a]pyrene	--	1.2E-10	--	--	1.2E-10	--	--	--	--	--
			Benzo[b]fluoranthene	--	1.2E-11	--	--	1.2E-11	--	--	1.5E-08	--	1.5E-08
			Chemical Total	--	9.4E-09	--	--	9.4E-09		--	9.5E-02	--	9.5E-02
		Exposure Point Total						9.4E-09					9.5E-02
	Exposure Medium Total							9.4E-09					9.5E-02
Surface Soil Total								6.4E-06					9.6E-01
Sediment (exposures same as Recreational Visitor)	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	1.2E-02	--	1.3E-03	1.3E-02
			Arsenic	1.2E-06	--	2.1E-07	--	1.5E-06	Skin	3.2E-02	--	5.4E-03	3.8E-02
			Iron	--	--	--	--	--	Various organs	1.2E-01	--	6.5E-03	1.2E-01
			Manganese	--	--	--	--	--	CNS	1.7E-01	--	2.3E-02	1.9E-01
			Thallium	--	--	--	--	--	Liver, blood	3.0E-02	--	1.7E-04	3.0E-02
			Aldrin	2.1E-08	--	1.2E-08	--	3.3E-08	Liver	4.8E-04	--	2.7E-04	7.5E-04
			Heptachlor epoxide	1.0E-08	--	5.7E-09	--	1.6E-08	Liver	1.0E-03	--	5.6E-04	1.6E-03
			Benzo[a]anthracene	4.5E-08	--	3.3E-08	--	7.7E-08	--	2.4E-05	--	1.7E-05	4.1E-05
			Benzo[a]pyrene	4.4E-07	--	3.2E-07	--	7.7E-07	--	--	--	--	--
			Benzo[b]fluoranthene	4.7E-08	--	3.4E-08	--	8.1E-08	--	2.5E-05	--	1.8E-05	4.3E-05
			Dibenz[a,h]anthracene	3.7E-07	--	2.7E-07	--	6.4E-07	--	2.0E-05	--	1.4E-05	3.4E-05
			Indeno[1,2,3-cd]pyrene	3.8E-08	--	2.7E-08	--	6.5E-08	--	1.2E-05	--	8.8E-06	2.1E-05
			Chemical Total	2.2E-06	--	9.2E-07	--	3.1E-06		3.6E-01	--	3.6E-02	4.0E-01
		Exposure Point Total						3.1E-06					4.0E-01
	Exposure Medium Total							3.1E-06					4.0E-01
Sediment Total								3.1E-06					4.0E-01

TABLE 9.4.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water (exposures same as Recreational Visitor)	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	5.5E-02	--	1.2E-01	1.8E-01
			Arsenic	1.2E-06	--	1.4E-07	--	1.4E-06	Skin	3.2E-02	--	3.6E-03	3.6E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	5.1E-03	--	6.2E-03	1.3E-02
			Beryllium	--	--	--	--	--	Intestine	8.0E-04	--	1.3E-02	1.4E-02
			Cadmium	--	--	--	--	--	Kidneys	3.8E-03	--	8.6E-03	1.2E-02
			Chromium(VI)	--	--	--	--	--	None reported	3.3E-03	--	3.0E-02	3.3E-02
			Cobalt	--	--	--	--	--	Blood	7.8E-04	--	3.5E-05	8.2E-04
			Copper	--	--	--	--	--	GI system	9.5E-04	--	--	9.5E-04
			Iron	--	--	--	--	--	Various organs	3.5E-01	--	3.9E-01	7.4E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	8.8E-01	--	2.5E+00	3.3E+00
			Nickel	--	--	--	--	--	Whole body, organs	1.2E-03	--	6.8E-04	1.9E-03
			Silver	--	--	--	--	--	Skin	7.8E-04	--	1.3E-03	2.1E-03
			Vanadium	--	--	--	--	--	Whole body	2.6E-03	--	3.0E-04	2.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	8.7E-04	--	9.7E-05	9.6E-04
			Bis(2-ethylhexyl)phthala	1.6E-08	--	5.7E-07	--	5.8E-07	Liver	6.6E-04	--	2.4E-02	2.4E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.1E-06	--	8.2E-06	9.3E-06
			1,4-Dichlorobenzene	1.5E-10	--	1.2E-09	--	1.3E-09	Offspring	2.4E-06	--	1.9E-05	2.1E-05
			Chlorobenzene	--	--	--	--	--	Liver	6.3E-05	--	2.8E-04	3.3E-04
			Trichloroethene	1.3E-09	--	2.5E-09	--	3.8E-09	Liver, kidney, fetus	1.2E-04	--	2.5E-04	3.7E-04
			Chemical Total	1.3E-06	--	7.1E-07	--	2.0E-06		1.3E+00	--	3.1E+00	4.4E+00
		Exposure Point Total						2.0E-06					4.4E+00
			Aluminum	--	--	--	--	--	Offspring	5.9E-05	--	1.3E-04	1.9E-04
			Copper	--	--	--	--	--	GI system	1.5E-04	--	--	1.5E-04
			Iron	--	--	--	--	--	Various organs	6.1E-04	--	6.8E-04	1.3E-03
			Manganese	--	--	--	--	--	CNS	1.3E-03	--	3.6E-03	4.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	2.5E-03	--	2.8E-04	2.8E-03
			Pentachlorophenol	4.7E-09	--	6.6E-07	--	8.6E-07	Liver, kidney	1.5E-05	--	2.1E-03	2.1E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	4.4E-04	--	4.6E-04	9.0E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	1.1E-05	--	8.6E-05	9.8E-05
			1,4-Dichlorobenzene	2.3E-09	--	1.6E-08	--	2.0E-08	Offspring	3.8E-05	--	2.9E-04	3.3E-04
			Benzene	2.4E-09	--	4.3E-09	--	6.8E-09	Blood, immune system	1.7E-04	--	3.1E-04	4.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	9.4E-04	--	3.9E-03	4.9E-03
			Tetrachloroethene	3.3E-09	--	2.3E-08	--	2.6E-08	Liver, Whole body	7.8E-05	--	5.2E-04	6.0E-04
			Trichloroethene	3.8E-08	--	7.5E-08	--	1.1E-07	Liver, kidney, fetus	3.7E-03	--	7.3E-03	1.1E-02
			Chemical Total	5.0E-08	--	7.8E-07	--	8.3E-07		1.0E-02	--	2.0E-02	3.0E-02
		Exposure Point Total						8.3E-07					3.0E-02
	Exposure Medium Total							2.8E-06					4.4E+00
Surface Water Total								2.8E-06					4.4E+00

TABLE 9.4.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-site Tap Water	Aluminum	--	--	--	--	--	Offspring	3.3E-01	--	6.2E-02	3.9E-01
			Chromium(VI)	--	--	--	--	--	None reported	1.1E-01	--	6.6E-02	2.0E-01
			Iron	--	--	--	--	--	Various organs	2.1E+00	--	2.0E-01	2.3E+00
			Manganese	--	--	--	--	--	CNS	1.3E+01	--	3.0E+00	1.6E+01
			Thallium	--	--	--	--	--	Liver, blood	4.2E+00	--	4.0E-02	4.3E+00
			2-Methylnaphthalene	--	--	--	--	--	Lung	1.4E-03	--	1.3E-03	2.7E-03
			1,2,4-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	9.6E-03	--	6.5E-03	1.6E-02
			1,2-Dichlorobenzene	--	--	--	--	--	None	2.4E-01	--	2.1E-01	4.5E-01
			1,2-Dichloroethane	1.1E-06	--	7.8E-08	--	1.2E-06	Liver, kidney	4.8E-03	--	3.3E-04	5.1E-03
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	7.7E-03	--	6.9E-03	1.5E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	2.6E-01	--	3.3E-01	6.0E-01
			1,4-Dichlorobenzene	1.3E-05	--	1.2E-05	--	2.5E-05	Offspring	2.1E-01	--	2.0E-01	4.1E-01
			Acetone	--	--	--	--	--	Liver, kidney	1.2E-02	--	1.7E-04	1.2E-02
			Benzene	1.2E-06	--	2.6E-07	--	1.5E-06	Blood, immune system	8.5E-02	--	1.9E-02	1.0E-01
			Chlorobenzene	--	--	--	--	--	Liver	5.3E+00	--	2.6E+00	7.9E+00
			Chloroform	--	--	--	--	--	Liver	5.8E-03	--	7.3E-04	6.5E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	2.0E-01	--	2.5E-02	2.3E-01
			Methylene chloride	2.2E-07	--	1.2E-08	--	2.4E-07	Liver	5.8E-03	--	3.1E-04	6.1E-03
			Naphthalene	--	--	--	--	--	Whole body	4.2E-02	--	3.9E-02	8.1E-02
			n-Butylbenzene	--	--	--	--	--	Liver, kidney	1.5E-02	--	1.3E-02	2.8E-02
			Tetrachloroethene	3.3E-06	--	2.7E-06	--	6.1E-06	Liver, Whole body	7.6E-02	--	6.3E-02	1.4E-01
			Trichloroethene	2.8E-05	--	6.8E-06	--	3.5E-05	Liver, kidney, fetus	2.8E+00	--	6.6E-01	3.4E+00
			Vinyl Chloride	6.8E-05	--	5.3E-06	--	7.3E-05	Liver	1.9E-01	--	1.5E-02	2.0E-01
			Xylenes	--	--	--	--	--	Whole body	7.6E-03	--	6.6E-03	1.4E-02
			Chemical Total	1.2E-04	--	2.7E-05	--	1.4E-04		2.9E+01	--	7.6E+00	3.6E+01
		Exposure Point Total						1.4E-04					3.6E+01
	Exposure Medium Total							1.4E-04					3.6E+01
	Vapors	On-site Bath/Shower	2-Methylnaphthalene	--	--	--	--	--	--	--	1.6E-01	--	1.6E-01
			1,2,4-Trimethylbenzene	--	3.7E-05	--	--	3.7E-05	CNS, respiratory tract, blood	--	1.4E+00	--	1.4E+00
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	1.8E+00	--	1.8E+00
			1,2-Dichloroethane	--	5.4E-06	--	--	5.4E-06	GI system, liver, gallbladder	--	4.9E-01	--	4.9E-01
			1,3,5-Trimethylbenzene	--	4.4E-05	--	--	4.4E-05	CNS, respiratory tract, blood	--	1.1E+00	--	1.1E+00
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	1.3E+00	--	1.3E+00
			1,4-Dichlorobenzene	--	5.9E-05	--	--	5.9E-05	Liver	--	1.4E-01	--	1.4E-01
			Acetone	--	--	--	--	--	Liver, kidney	--	5.9E-02	--	5.9E-02
			Benzene	--	2.9E-06	--	--	2.9E-06	Hematopoetic progenitor cells	--	7.3E-01	--	7.3E-01
			Chlorobenzene	--	--	--	--	--	Liver	--	3.0E+01	--	3.0E+01
			Chloroform	--	2.0E-06	--	--	2.0E-06	Kidney, liver	--	2.0E-02	--	2.0E-02
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	9.8E-01	--	9.8E-01
			Methylene chloride	--	2.4E-07	--	--	2.4E-07	Liver	--	2.0E-03	--	2.0E-03
			Nephthalene	--	--	--	--	--	Respiratory tract	--	4.8E+00	--	4.6E+00
			n-Butylbenzene	--	--	--	--	--	--	--	1.0E-02	--	1.0E-02
			Tetrachloroethene	--	6.6E-06	--	--	6.6E-06	Liver, kidney	--	3.3E-02	--	3.3E-02
			Trichloroethene	--	1.4E-04	--	--	1.4E-04	CNS, liver, endocrine system	--	3.5E-01	--	3.5E-01
			Vinyl Chloride	--	7.3E-06	--	--	7.3E-06	Liver	--	9.6E-02	--	9.6E-02
			Xylenes	--	--	--	--	--	CNS	--	2.6E-01	--	2.6E-01
			Chemical Total	--	3.0E-04	--	--	3.0E-04		--	4.4E+01	--	4.4E+01
		Exposure Point Total						3.0E-04					4.4E+01

TABLE 9.4.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater (continued)	Vapors (continued)	On-Site Indoors	2-Methylnaphthalene	--	--	--	--	--	--	--	4.2E-04	--	4.2E-04
			1,2,4-Trimethylbenzene	--	8.1E-07	--	--	8.1E-07	CNS, respiratory tract, blood	--	3.0E-02	--	3.0E-02
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	1.7E-02	--	1.7E-02
			1,2-Dichloroethane	--	4.4E-08	--	--	4.4E-08	GI system, liver, gallbladder	--	3.9E-03	--	3.9E-03
			1,3,5-Trimethylbenzene	--	1.2E-06	--	--	1.2E-06	CNS, respiratory tract, blood	--	3.1E-02	--	3.1E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	1.2E-02	--	1.2E-02
			1,4-Dichlorobenzene	--	6.5E-07	--	--	6.5E-07	Liver	--	1.5E-03	--	1.5E-03
			Acetone	--	--	--	--	--	Liver, kidney	--	3.1E-05	--	3.1E-05
			Benzene	--	7.7E-08	--	--	7.7E-08	Hematopoetic progenitor cells	--	1.9E-02	--	1.9E-02
			Chlorobenzene	--	--	--	--	--	Liver	--	4.9E-01	--	4.9E-01
			Chloroform	--	4.3E-08	--	--	4.3E-08	Kidney, liver	--	4.3E-04	--	4.3E-04
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	1.8E-02	--	1.8E-02
			Methylene chloride	--	3.6E-09	--	--	3.6E-09	Liver	--	3.0E-05	--	3.0E-05
			Naphthalene	--	--	--	--	--	Respiratory tract	--	1.3E-02	--	1.3E-02
			n-Butylbenzene	--	--	--	--	--	--	--	4.7E-04	--	4.7E-04
			Tetrachloroethene	--	3.9E-07	--	--	3.9E-07	Liver, kidney	--	1.9E-03	--	1.9E-03
			Trichloroethene	--	5.5E-06	--	--	5.5E-06	CNS, liver, endocrine system	--	1.4E-02	--	1.4E-02
			Vinyl Chloride	--	8.2E-07	--	--	8.2E-07	Liver	--	1.1E-02	--	1.1E-02
			Xylenes	--	--	--	--	--	CNS		6.7E-03		6.7E-03
			Chemical Total	--	9.5E-06	--	--	9.5E-06		--	6.7E-01	--	6.7E-01
		Exposure Point Total						9.5E-06					6.7E-01
	Exposure Medium Total							3.1E-04					4.4E+01
Groundwater Total								4.5E-04					8.1E+01
Child Receptor Total							Receptor Risk Total	5E-04				Receptor HI Total	87

Total Liver HI Across All Media =	48
Total Respiratory System HI Across All Media =	7
Total Blood HI Across All Media =	10
Total Nervous System HI Across All Media =	23
Total Whole Body HI Across All Media =	2
Total Thyroid HI Across All Media =	2
Total Hematopoietic System HI Across All Media =	1
Total GI System HI Across All Media =	0.49
Total Gallbladder HI Across All Media =	0.49
Total Kidney HI Across All Media =	4
Total Endocrine System HI Across All Media =	0.37

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	1.6E-02	--	1.3E-03	1.8E-02
			Antimony	--	--	--	--	--	Whole body, blood	6.8E-03	--	1.8E-04	7.0E-03
			Arsenic	2.9E-06	--	3.5E-07	--	3.3E-06	Skin	1.9E-02	--	2.3E-03	2.1E-02
			Iron	--	--	--	--	--	Various organs	8.4E-02	--	3.3E-03	8.7E-02
			Manganese	--	--	--	--	--	CNS	3.8E-02	--	3.8E-03	4.2E-02
			Thallium	--	--	--	--	--	Liver, blood	6.5E-03	--	2.6E-05	6.5E-03
			Dieldrin	1.3E-07	--	5.2E-08	--	1.8E-07	Liver	4.8E-04	--	1.9E-04	6.7E-04
			Benzo[a]anthracene	9.0E-08	--	4.7E-08	--	1.4E-07	--	1.2E-05	--	6.2E-06	1.8E-05
			Benzo[a]pyrene	8.9E-07	--	4.6E-07	--	1.4E-06	--	--	--	--	--
			Benzo[b]fluoranthene	9.0E-08	--	4.7E-08	--	1.4E-07	--	1.2E-05	--	6.2E-06	1.8E-05
			Chemical Total	4.1E-06	--	9.6E-07	--	5.1E-06		1.7E-01	--	1.1E-02	1.8E-01
		Exposure Point Total						5.1E-06					1.8E-01
	Exposure Medium Total							5.1E-06					1.8E-01
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	7.5E-03	--	7.5E-03
			Antimony	--	--	--	--	--	Lung	--	4.4E-05	--	4.4E-05
			Arsenic	--	1.9E-06	--	--	1.9E-08	Skin	--	1.2E-05	--	1.2E-05
			Iron	--	--	--	--	--	Various organs	--	5.4E-05	--	5.4E-05
			Manganese	--	--	--	--	--	Nervous system	--	4.2E-02	--	4.2E-02
			Thallium	--	--	--	--	--	Liver, blood	--	4.2E-06	--	4.2E-06
			Dieldrin	--	8.6E-11	--	--	8.6E-11	Liver	--	3.1E-07	--	3.1E-07
			Benzo[a]anthracene	--	2.5E-11	--	--	2.5E-11	--	--	7.8E-09	--	7.8E-09
			Benzo[a]pyrene	--	2.4E-10	--	--	2.4E-10	--	--	--	--	--
			Benzo[b]fluoranthene	--	2.5E-11	--	--	2.5E-11	--	--	7.8E-09	--	7.8E-09
			Chemical Total	--	1.9E-08	--	--	1.9E-08		--	4.9E-02	--	4.9E-02
		Exposure Point Total						1.9E-08					4.9E-02
	Exposure Medium Total							1.9E-08					4.9E-02
Surface Soil Total								5.1E-06					2.3E-01
Sediment (exposures same as Recreational Visitor)	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	4.3E-03	--	3.6E-04	4.7E-03
			Arsenic	1.9E-06	--	2.2E-07	--	2.1E-06	Skin	1.2E-02	--	1.6E-03	1.4E-02
			Iron	--	--	--	--	--	Various organs	4.4E-02	--	1.7E-03	4.5E-02
			Manganese	--	--	--	--	--	CNS	6.3E-02	--	6.2E-03	6.9E-02
			Thallium	--	--	--	--	--	Liver, blood	1.1E-02	--	4.5E-05	1.1E-02
			Aldrin	3.2E-08	--	1.3E-08	--	4.4E-08	Liver	1.8E-04	--	7.2E-05	2.6E-04
			Heptachlor epoxide	1.5E-08	--	6.1E-09	--	2.1E-08	Liver	3.8E-04	--	1.6E-04	5.3E-04
			Benzo[a]anthracene	6.7E-08	--	3.5E-08	--	1.0E-07	--	8.9E-06	--	4.6E-06	1.4E-05
			Benzo[a]pyrene	8.7E-07	--	3.5E-07	--	1.0E-06	--	--	--	--	--
			Benzo[b]fluoranthene	7.0E-08	--	3.6E-08	--	1.1E-07	--	9.3E-06	--	4.8E-06	1.4E-05
			Dibenz[a,h]anthracene	5.6E-07	--	2.9E-07	--	8.5E-07	--	7.4E-06	--	3.9E-06	1.1E-05
			Indeno[1,2,3-cd]pyrene	5.6E-08	--	2.9E-08	--	8.6E-08	--	4.6E-06	--	2.3E-06	6.9E-06
			Chemical Total	3.3E-06	--	9.8E-07	--	4.3E-06		1.3E-01	--	1.0E-02	1.4E-01
		Exposure Point Total						4.3E-06					1.4E-01
	Exposure Medium Total							4.3E-06					1.4E-01
Sediment Total								4.3E-06					1.4E-01

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water (exposures same as Recreational Visitor)	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	4.1E-02	--	2.0E-01	2.4E-01
			Arsenic	3.7E-06	--	8.9E-07	--	4.6E-06	Skin	2.4E-02	--	5.6E-03	3.0E-02
			Barium	--	--	--	--	--	Cardiovascular system, kidney	3.8E-03	--	1.3E-02	1.7E-02
			Beryllium	--	--	--	--	--	Intestine	6.0E-04	--	2.0E-02	2.1E-02
			Cadmium	--	--	--	--	--	Kidneys	2.9E-03	--	1.4E-02	1.7E-02
			Chromium(VI)	--	--	--	--	--	None reported	2.5E-03	--	4.6E-02	5.0E-02
			Cobalt	--	--	--	--	--	Blood	5.9E-04	--	5.6E-05	6.4E-04
			Copper	--	--	--	--	--	GI system	7.1E-04	--	--	7.1E-04
			Iron	--	--	--	--	--	Various organs	2.6E-01	--	6.3E-01	8.9E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	6.6E-01	--	3.9E+00	4.6E+00
			Nickel	--	--	--	--	--	Whole body, organs	9.1E-04	--	1.1E-03	2.0E-03
			Silver	--	--	--	--	--	Skin	5.6E-04	--	2.1E-03	2.7E-03
			Vanadium	--	--	--	--	--	Whole body	2.0E-03	--	4.7E-04	2.4E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	6.5E-04	--	1.6E-04	8.1E-04
			Bis(2-ethylhexyl)phthala	4.8E-08	--	3.6E-06	--	3.7E-06	Liver	5.0E-04	--	3.8E-02	3.9E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	6.2E-07	--	1.3E-05	1.4E-05
			1,4-Dichlorobenzene	4.5E-10	--	7.5E-09	--	7.9E-09	Offspring	1.6E-06	--	3.0E-05	3.2E-05
			Chlorobenzene	--	--	--	--	--	Liver	4.8E-05	--	4.2E-04	4.7E-04
			Trichloroethene	3.8E-09	--	1.6E-08	--	2.0E-08	Liver, kidney, fetus	9.2E-05	--	4.0E-04	4.9E-04
			Chemical Total	3.8E-06	--	4.6E-06	--	8.3E-06		1.0E+00	--	4.9E+00	5.9E+00
		Exposure Point Total						8.3E-06					5.9E+00
			Aluminum	--	--	--	--	--	Offspring	1.3E-05	--	6.2E-05	7.5E-05
			Copper	--	--	--	--	--	GI system	3.2E-05	--	--	3.2E-05
			Iron	--	--	--	--	--	Various organs	1.3E-04	--	3.2E-04	4.5E-04
			Manganese	--	--	--	--	--	CNS	2.8E-04	--	1.7E-03	2.0E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	5.5E-04	--	1.3E-04	6.8E-04
			Pentachlorophenol	4.1E-09	--	1.2E-06	--	1.2E-06	Liver, kidney	3.3E-06	--	1.0E-03	1.0E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	9.7E-05	--	2.1E-04	3.1E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.5E-06	--	4.0E-05	4.3E-05
			1,4-Dichlorobenzene	2.0E-09	--	3.4E-08	--	3.6E-08	Offspring	8.3E-06	--	1.4E-04	1.5E-04
			Benzene	2.1E-09	--	8.1E-09	--	1.0E-08	Blood, immune system	3.8E-05	--	1.4E-04	1.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	2.1E-04	--	1.8E-03	2.0E-03
			Tetrachloroethene	2.9E-09	--	4.3E-08	--	4.6E-08	Liver, Whole body	1.7E-05	--	2.4E-04	2.8E-04
			Trichloroethene	3.3E-08	--	1.4E-07	--	1.7E-07	Liver, kidney, fetus	8.0E-04	--	3.4E-03	4.2E-03
			Chemical Total	4.4E-08	--	1.5E-06	--	1.5E-06		2.2E-03	--	9.3E-03	1.1E-02
		Exposure Point Total						1.5E-06					1.1E-02
	Exposure Medium Total							9.8E-06					5.9E+00
Surface Water Total								9.8E-06					5.9E+00

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-site Tap Water	Aluminum	--	--	--	--	--	Offspring	2.3E-01	--	2.1E-02	2.5E-01
			Chromium(VI)	--	--	--	--	--	None reported	8.0E-02	--	2.9E-02	1.1E-01
			Iron	--	--	--	--	--	Various organs	1.5E+00	--	8.7E-02	1.5E+00
			Manganese	--	--	--	--	--	CNS	8.9E+00	--	1.0E+00	1.0E+01
			Thallium	--	--	--	--	--	Liver, blood	3.0E+00	--	1.4E-02	3.0E+00
			2-Methylnaphthalene	--	--	--	--	--	Lung	9.9E-04	--	6.6E-04	1.6E-03
			1,2,4-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	6.7E-03	--	3.8E-03	1.1E-02
			1,2-Dichlorobenzene	--	--	--	--	--	None	1.7E-01	--	9.5E-02	2.6E-01
			1,2-Dichloroethane	3.1E-06	--	1.3E-07	--	3.3E-06	Liver, kidney	3.4E-03	--	1.4E-04	3.5E-03
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	5.4E-03	--	3.1E-03	8.5E-03
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	1.8E-01	--	1.5E-01	3.3E-01
			1,4-Dichlorobenzene	3.7E-05	--	2.2E-05	--	5.9E-05	Offspring	1.5E-01	--	8.7E-02	2.4E-01
			Acetone	--	--	--	--	--	Liver, kidney	8.5E-03	--	7.0E-05	8.6E-03
			Benzene	3.4E-06	--	4.5E-07	--	3.8E-06	Blood, immune system	6.0E-02	--	8.0E-03	6.8E-02
			Chlorobenzene	--	--	--	--	--	Liver	3.7E+00	--	1.2E+00	4.9E+00
			Chloroform	--	--	--	--	--	Liver	4.1E-03	--	3.2E-04	4.4E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	1.4E-01	--	1.1E-02	1.5E-01
			Methylene chloride	6.3E-07	--	2.1E-08	--	6.5E-07	Liver	4.1E-03	--	1.3E-04	4.2E-03
			Naphthalene	--	--	--	--	--	Whole body	3.0E-02	--	1.7E-02	4.7E-02
			n-Butylbenzene	--	--	--	--	--	Liver, kidney	1.1E-02	--	5.6E-03	1.6E-02
			Tetrachloroethene	9.4E-06	--	4.9E-06	--	1.4E-05	Liver, Whole body	5.4E-02	--	2.8E-02	8.2E-02
			Trichloroethene	8.0E-05	--	1.2E-05	--	9.2E-05	Liver, kidney, fetus	1.9E+00	--	2.9E-01	2.2E+00
			Vinyl Chloride	1.9E-04	--	8.9E-06	--	2.0E-04	Liver	1.3E-01	--	6.1E-03	1.4E-01
			Xylenes	--	--	--	--	--	Whole body	5.4E-03	--	3.0E-03	8.4E-03
			Chemical Total	3.2E-04	--	4.8E-05	--	3.7E-04		2.0E+01	--	3.0E+00	2.3E+01
		Exposure Point Total						3.7E-04					2.3E+01
	Exposure Medium Total							3.7E-04					2.3E+01
	Vapors	On-site Bath/Shower	2-Methylnaphthalene	--	--	--	--	--	--	--	2.7E-01	--	2.7E-01
			1,2,4-Trimethylbenzene	--	2.5E-04	--	--	2.5E-04	CNS, respiratory tract, blood	--	2.3E+00	--	2.3E+00
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	3.0E+00	--	3.0E+00
			1,2-Dichloroethane	--	3.6E-05	--	--	3.6E-05	GI system, liver, gallbladder	--	8.2E-01	--	8.2E-01
			1,3,5-Trimethylbenzene	--	2.9E-04	--	--	2.9E-04	CNS, respiratory tract, blood	--	1.8E+00	--	1.6E+00
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	2.1E+00	--	2.1E+00
			1,4-Dichlorobenzene	--	3.9E-04	--	--	3.9E-04	Liver	--	2.3E-01	--	2.3E-01
			Acetone	--	--	--	--	--	Liver, kidney	--	9.9E-02	--	9.9E-02
			Benzene	--	1.9E-05	--	--	1.9E-05	Hematopoetic progenitor cells	--	1.2E+00	--	1.2E+00
			Chlorobenzene	--	--	--	--	--	Liver	--	5.0E+01	--	5.0E+01
			Chloroform	--	1.3E-05	--	--	1.3E-05	Kidney, liver	--	3.3E-02	--	3.3E-02
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	1.6E+00	--	1.6E+00
			Methylene chloride	--	1.6E-06	--	--	1.6E-06	Liver	--	3.3E-03	--	3.3E-03
			Naphthalene	--	--	--	--	--	Respiratory tract	--	8.1E+00	--	8.1E+00
			n-Butylbenzene	--	--	--	--	--	--	--	1.7E-02	--	1.7E-02
			Tetrachloroethene	--	4.4E-05	--	--	4.4E-05	Liver, kidney	--	5.5E-02	--	5.5E-02
			Trichloroethene	--	9.3E-04	--	--	9.3E-04	CNS, liver, endocrine system	--	5.9E-01	--	5.9E-01
			Vinyl Chloride	--	4.9E-05	--	--	4.9E-05	Liver	--	1.6E-01	--	1.6E-01
			Xylenes	--	--	--	--	--	CNS		4.3E-01		4.3E-01
			Chemical Total	--	2.0E-03	--	--	2.0E-03		--	7.3E+01	--	7.3E+01
		Exposure Point Total						2.0E-03					7.3E+01

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater (continued)	Vapors (continued)	On-Site Indoors	2-Methylnaphthalene	--	--	--	--	--	--	--	1.6E-04	--	1.6E-04
			1,2,4-Trimethylbenzene	--	1.3E-06	--	--	1.3E-06	CNS, respiratory tract, blood	--	1.2E-02	--	1.2E-02
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	6.5E-03	--	6.5E-03
			1,2-Dichloroethane	--	6.8E-08	--	--	6.8E-08	GI system, liver, gallbladder	--	1.5E-03	--	1.5E-03
			1,3,5-Trimethylbenzene	--	1.9E-06	--	--	1.9E-06	CNS, respiratory tract, blood	--	1.2E-02	--	1.2E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	4.6E-03	--	4.6E-03
			1,4-Dichlorobenzene	--	1.0E-06	--	--	1.0E-06	Liver	--	5.8E-04	--	5.8E-04
			Acetone	--	--	--	--	--	Liver, kidney	--	1.2E-05	--	1.2E-05
			Benzene	--	1.2E-07	--	--	1.2E-07	Hematopoetic progenitor cells	--	7.4E-03	--	7.4E-03
			Chlorobenzene	--	--	--	--	--	Liver	--	1.9E-01	--	1.9E-01
			Chloroform	--	6.6E-08	--	--	8.6E-08	Kidney, liver	--	1.7E-04	--	1.7E-04
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	7.1E-03	--	7.1E-03
			Methylene chloride	--	5.6E-09	--	--	5.6E-09	Liver	--	1.2E-05	--	1.2E-05
			Naphthalene	--	--	--	--	--	Respiratory tract	--	5.0E-03	--	5.0E-03
			n-Butylbenzene	--	--	--	--	--	--	--	1.8E-04	--	1.8E-04
			Tetrachloroethene	--	6.0E-07	--	--	6.0E-07	Liver, kidney	--	7.6E-04	--	7.5E-04
			Trichloroethene	--	8.4E-06	--	--	8.4E-06	CNS, liver, endocrine system	--	6.4E-03	--	5.4E-03
			Vinyl Chloride	--	1.3E-06	--	--	1.3E-06	Liver	--	4.2E-03	--	4.2E-03
			Xylenes	--	--	--	--	--	CNS	--	2.6E-03	--	2.6E-03
			Chemical Total	--	1.5E-05	--	--	1.5E-05		--	2.6E-01	--	2.6E-01
		Exposure Point Total						1.5E-05					2.6E-01
	Exposure Medium Total							2.0E-03					7.3E+01
Groundwater Total								2.4E-03					9.7E+01
Receptor Total							Receptor Risk Total	2E-03				Receptor HI Total	103

Child Receptor Total (from Table 9.4)	Receptor Cancer Risk Total	6E-03
Child/Adult Receptor Total	Receptor Cancer Risk Total	8E-03

Total Liver HI Across All Media =	63
Total Nervous System HI Across All Media =	20
Total Respiratory System HI Across All Media =	12
Total Blood HI Across All Media =	11
Total Whole Body HI Across All Media =	3
Total Offspring HI Across All Media =	3
Total Kidney HI Across All Media =	3
Total Thyroid HI Across All Media =	2
Total Hematopoietic System HI Across All Media =	1

TABLE 9.5.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	8.2E-03	--	1.3E-03	9.5E-03
			Antimony	--	--	--	--	--	Whole body, blood	3.4E-03	--	1.8E-04	3.6E-03
			Arsenic	5.5E-07	--	1.3E-07	--	6.8E-07	Skin	9.4E-03	--	2.3E-03	1.2E-02
			Iron	--	--	--	--	--	Various organs	4.2E-02	--	3.3E-03	4.5E-02
			Manganese	--	--	--	--	--	CNS	1.9E-02	--	3.6E-03	2.3E-02
			Thallium	--	--	--	--	--	Liver, blood	3.2E-03	--	2.6E-05	3.3E-03
			Dieldrin	2.5E-08	--	2.0E-08	--	4.4E-08	Liver	2.4E-04	--	1.9E-04	4.3E-04
			Benzo[a]anthracene	1.7E-08	--	1.7E-08	--	3.4E-08	--	6.0E-06	--	6.2E-06	1.2E-05
			Benzo[a]pyrene	1.7E-07	--	1.7E-07	--	3.4E-07	--	--	--	--	--
			Benzo[b]fluoranthene	1.7E-08	--	1.7E-08	--	3.4E-08	--	6.0E-06	--	6.2E-06	1.2E-05
			Chemical Total	7.7E-07	--	3.6E-07	--	1.1E-06		8.5E-02	--	1.1E-02	9.6E-02
		Exposure Point Total						1.1E-06					9.6E-02
	Exposure Medium Total							1.1E-06					9.6E-02
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	4.5E-03	--	4.5E-03
			Antimony	--	--	--	--	--	Lung	--	2.7E-05	--	2.7E-05
			Arsenic	--	4.3E-09	--	--	4.3E-09	Skin	--	7.4E-06	--	7.4E-06
			Iron	--	--	--	--	--	Various organs	--	3.3E-05	--	3.3E-05
			Manganese	--	--	--	--	--	Nervous system	--	2.5E-02	--	2.5E-02
			Thallium	--	--	--	--	--	Liver, blood	--	2.5E-06	--	2.5E-06
			Dieldrin	--	1.9E-11	--	--	1.9E-11	Liver	--	1.9E-07	--	1.9E-07
			Benzo[a]anthracene	--	5.5E-12	--	--	5.5E-12	--	--	4.7E-09	--	4.7E-09
			Benzo[a]pyrene	--	5.5E-11	--	--	5.5E-11	--	--	--	--	--
			Benzo[b]fluoranthene	--	5.5E-12	--	--	5.5E-12	--	--	4.7E-09	--	4.7E-09
			Chemical Total	--	4.4E-09	--	--	4.4E-09		--	2.9E-02	--	2.9E-02
		Exposure Point Total						4.4E-09					2.9E-02
	Exposure Medium Total							4.4E-09					2.9E-02
Surface Soil Total								1.1E-06					1.3E-01
Sediment (exposures same as Recreational Visitor)	Sediment	Six Mile Creek	Aluminum	--	--	--	--	--	Offspring	1.2E-03	--	6.1E-06	1.2E-03
			Arsenic	1.9E-06	--	2.2E-07	--	2.1E-06	Skin	3.5E-03	--	--	3.5E-03
			Iron	--	--	--	--	--	Various organs	1.2E-02	--	3.1E-05	1.2E-02
			Manganese	--	--	--	--	--	CNS	1.8E-02	--	1.7E-04	1.8E-02
			Thallium	--	--	--	--	--	Liver, blood	3.2E-03	--	1.3E-05	3.2E-03
			Aldrin	3.2E-08	--	1.3E-08	--	4.4E-08	Liver	5.2E-05	--	9.8E-05	1.5E-04
			Heptachlor epoxide	1.5E-08	--	6.1E-09	--	2.1E-08	Liver	1.1E-04	--	2.1E-05	1.3E-04
			Benzo[a]anthracene	6.7E-08	--	3.5E-08	--	1.0E-07	--	2.6E-06	--	4.0E-06	6.5E-06
			Benzo[a]pyrene	6.7E-07	--	3.5E-07	--	1.0E-06	--	--	--	1.3E-05	--
			Benzo[b]fluoranthene	7.0E-08	--	3.8E-08	--	1.1E-07	--	2.7E-06	--	1.4E-05	1.7E-05
			Dibenz[a,h]anthracene	5.6E-07	--	2.9E-07	--	8.5E-07	--	2.1E-06	--	1.8E-04	1.8E-04
			Indeno[1,2,3-cd]pyrene	5.6E-08	--	2.9E-08	--	8.6E-08	--	1.3E-06	--	2.4E-05	2.5E-05
			Chemical Total	3.3E-06	--	9.8E-07	--	4.3E-06		3.8E-02	--	5.7E-04	3.9E-02
		Exposure Point Total						4.3E-06					3.9E-02
	Exposure Medium Total							4.3E-06					3.9E-02
Sediment Total								4.3E-06					3.9E-02

TABLE 9.5.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water (exposures same as Recreational Visitor)	Surface Water	Creek/Seeps	Aluminum	--	--	--	--	--	Offspring	1.2E-02	--	5.6E-02	6.8E-02
			Arsenic	4.0E-07	--	9.6E-08	--	4.9E-07	Skin	6.9E-03	--	1.7E-03	8.5E-03
			Barium	--	--	--	--	--	Cardiovascular system, kidney	1.1E-03	--	3.8E-03	4.9E-03
			Beryllium	--	--	--	--	--	Intestine	1.7E-04	--	5.8E-03	6.0E-03
			Cadmium	--	--	--	--	--	Kidneys	8.2E-04	--	3.9E-03	4.8E-03
			Chromium(VI)	--	--	--	--	--	None reported	7.1E-04	--	1.4E-02	1.4E-02
			Cobalt	--	--	--	--	--	Blood	1.7E-04	--	1.6E-05	1.8E-04
			Copper	--	--	--	--	--	GI system	2.0E-04	--	--	2.0E-04
			Iron	--	--	--	--	--	Various organs	7.5E-02	--	1.8E-01	2.6E-01
			Lead	--	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	--	CNS	1.9E-01	--	1.1E+00	1.3E+00
			Nickel	--	--	--	--	--	Whole body, organs	2.6E-04	--	3.1E-04	5.7E-04
			Silver	--	--	--	--	--	Skin	1.7E-04	--	6.0E-04	7.7E-04
			Vanadium	--	--	--	--	--	Whole body	5.6E-04	--	1.4E-04	7.0E-04
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	1.9E-04	--	4.5E-05	2.3E-04
			Bis(2-ethylhexyl)phthala	5.1E-09	--	3.9E-07	--	4.0E-07	Liver	1.4E-04	--	1.1E-02	1.1E-02
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.3E-07	--	3.8E-06	4.0E-06
			1,4-Dichlorobenzene	4.8E-11	--	8.0E-10	--	8.5E-10	Offspring	5.2E-07	--	8.7E-06	9.2E-06
			Chlorobenzene	--	--	--	--	--	Liver	1.4E-05	--	1.2E-04	1.3E-04
			Trichloroethene	4.1E-10	--	1.7E-09	--	2.2E-09	Liver, kidney, fetus	2.6E-05	--	1.1E-04	1.4E-04
			Chemical Total	4.0E-07	--	4.9E-07	--	8.9E-07		2.9E-01	--	1.4E+00	1.7E+00
		Exposure Point Total						8.9E-07					1.7E+00
			Aluminum	--	--	--	--	--	Offspring	1.3E-05	--	6.1E-05	7.4E-05
			Copper	--	--	--	--	--	GI system	3.2E-05	--	--	3.2E-05
			Iron	--	--	--	--	--	Various organs	1.3E-04	--	3.1E-04	4.4E-04
			Manganese	--	--	--	--	--	CNS	2.8E-04	--	1.7E-03	1.9E-03
			Cyanide, free	--	--	--	--	--	Whole body, thyroid, nerves	5.4E-04	--	1.3E-04	6.7E-04
			Pentachlorophenol	1.5E-09	--	4.5E-07	--	4.6E-07	Liver, kidney	3.3E-06	--	9.8E-04	9.8E-04
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	9.5E-05	--	2.1E-04	3.0E-04
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.5E-06	--	4.0E-05	4.2E-05
			1,4-Dichlorobenzene	7.5E-10	--	1.2E-08	--	1.3E-08	Offspring	8.1E-06	--	1.3E-04	1.4E-04
			Benzene	7.8E-10	--	3.0E-09	--	3.8E-09	Blood, immune system	3.7E-05	--	1.4E-04	1.8E-04
			Chlorobenzene	--	--	--	--	--	Liver	2.0E-04	--	1.8E-03	2.0E-03
			Tetrachloroethene	1.1E-09	--	1.6E-08	--	1.7E-08	Liver, Whole body	1.6E-05	--	2.4E-04	2.6E-04
			Trichloroethene	1.2E-08	--	5.2E-08	--	6.4E-08	Liver, kidney, fetus	7.8E-04	--	3.4E-03	4.1E-03
			Chemical Total	1.6E-08	--	5.4E-07	--	5.5E-07		2.1E-03	--	9.1E-03	1.1E-02
		Exposure Point Total						5.5E-07					1.1E-02
	Exposure Medium Total							1.4E-06					1.7E+00
Surface Water Total								1.4E-06					1.7E+00

TABLE 9.5.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-site Tap Water	Aluminum	--	--	--	--	--	Offspring	1.0E-01	--	2.1E-02	1.2E-01
			Chromium(VI)	--	--	--	--	--	None reported	3.5E-02	--	2.9E-02	8.4E-02
			Iron	--	--	--	--	--	Various organs	6.4E-01	--	6.7E-02	7.1E-01
			Manganese	--	--	--	--	--	CNS	3.9E+00	--	1.0E+00	4.9E+00
			Thallium	--	--	--	--	--	Liver, blood	1.3E+00	--	1.4E-02	1.3E+00
			2-Methylnaphthalene	--	--	--	--	--	Lung	4.3E-04	--	5.8E-04	1.0E-03
			1,2,4-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.9E-03	--	3.8E-03	6.7E-03
			1,2-Dichlorobenzene	--	--	--	--	--	None	7.3E-02	--	9.5E-02	1.7E-01
			1,2-Dichloroethane	5.1E-07	--	5.0E-08	--	5.6E-07	Liver, kidney	1.5E-03	--	1.4E-04	1.6E-03
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.4E-03	--	3.1E-03	5.4E-03
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	8.0E-02	--	1.5E-01	2.3E-01
			1,4-Dichlorobenzene	6.0E-06	--	8.1E-06	--	1.4E-05	Offspring	6.5E-02	--	8.7E-02	1.5E-01
			Acetone	--	--	--	--	--	Liver, kidney	3.7E-03	--	7.0E-05	3.8E-03
			Benzene	5.5E-07	--	1.7E-07	--	7.2E-07	Blood, immune system	2.6E-02	--	8.0E-03	3.4E-02
			Chlorobenzene	--	--	--	--	--	Liver	1.6E+00	--	1.2E+00	2.8E+00
			Chloroform	--	--	--	--	--	Liver	1.8E-03	--	3.2E-04	2.1E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	6.1E-02	--	1.1E-02	7.2E-02
			Methylene chloride	1.0E-07	--	7.7E-09	--	1.1E-07	Liver	1.8E-03	--	1.3E-04	1.9E-03
			Naphthalene	--	--	--	--	--	Whole body	1.3E-02	--	1.7E-02	3.0E-02
			n-Butylbenzene	--	--	--	--	--	Liver, kidney	4.7E-03	--	5.6E-03	1.0E-02
			Tetrachloroethene	1.5E-06	--	1.8E-06	--	3.4E-06	Liver, Whole body	2.3E-02	--	2.8E-02	5.1E-02
			Trichloroethene	1.3E-05	--	4.5E-06	--	1.8E-05	Liver, kidney, fetus	8.5E-01	--	2.9E-01	1.1E+00
			Vinyl Chloride	3.1E-05	--	3.3E-06	--	3.4E-05	Liver	5.8E-02	--	6.1E-03	6.4E-02
			Xylenes	--	--	--	--	--	Whole body	2.3E-03	--	3.0E-03	6.4E-03
			Chemical Total	5.3E-05	--	1.8E-05	--	7.1E-05		8.8E+00	--	3.0E+00	1.2E+01
		Exposure Point Total						7.1E-05					1.2E+01
	Exposure Medium Total							7.1E-05					1.2E+01
	Vapors	On-site Bath/Shower	2-Methylnaphthalene	--	--	--	--	--	--	--	1.9E-02	--	1.9E-02
			1,2,4-Trimethylbenzene	--	6.5E-06	--	--	6.5E-06	CNS, respiratory tract, blood	--	1.6E-01	--	1.6E-01
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	2.1E-01	--	2.1E-01
			1,2-Dichloroethane	--	9.6E-07	--	--	9.6E-07	GI system, liver, gallbladder	--	5.8E-02	--	5.8E-02
			1,3,5-Trimethylbenzene	--	7.7E-06	--	--	7.7E-06	CNS, respiratory tract, blood	--	1.3E-01	--	1.3E-01
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	1.5E-01	--	1.5E-01
			1,4-Dichlorobenzene	--	1.0E-05	--	--	1.0E-05	Liver	--	1.6E-02	--	1.6E-02
			Acetone	--	--	--	--	--	Liver, kidney	--	7.0E-03	--	7.0E-03
			Benzene	--	5.1E-07	--	--	5.1E-07	Hematopoetic progenitor cells	--	8.5E-02	--	8.5E-02
			Chlorobenzene	--	--	--	--	--	Liver	--	3.5E+00	--	3.5E+00
			Chloroform	--	3.5E-07	--	--	3.5E-07	Kidney, liver	--	2.3E-03	--	2.3E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	1.1E-01	--	1.1E-01
			Methylene chloride	--	4.2E-08	--	--	4.2E-08	Liver	--	2.3E-04	--	2.3E-04
			Naphthalene	--	--	--	--	--	Respiratory tract	--	5.7E-01	--	5.7E-01
			n-Butylbenzene	--	--	--	--	--	--	--	1.2E-03	--	1.2E-03
			Tetrachloroethene	--	1.2E-06	--	--	1.2E-06	Liver, kidney	--	3.8E-03	--	3.8E-03
			Trichloroethene	--	2.5E-05	--	--	2.5E-05	CNS, liver, endocrine system	--	4.2E-02	--	4.2E-02
			Vinyl Chloride	--	1.3E-06	--	--	1.3E-06	Liver	--	1.1E-02	--	1.1E-02
			Xylenes	--	--	--	--	--	CNS		3.0E-02		3.0E-02
			Chemical Total	--	5.3E-05	--	--	5.3E-05		--	5.1E+00	--	5.1E+00
		Exposure Point Total						5.3E-05					5.1E+00

TABLE 9.5.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater (continued)	Vapors (continued)	On-Site Indoors	2-Methylnaphthalene	–	--	–	--	--	–	–	1.3E-04	–	1.3E-04
			1,2,4-Trimethylbenzene	–	3.8E-07	–	--	3.8E-07	CNS, respiratory tract, blood	–	9.3E-03	–	9.3E-03
			1,2-Dichlorobenzene	–	--	–	--	--	Whole body	–	5.2E-03	–	5.2E-03
			1,2-Dichloroethane	–	2.0E-08	–	--	2.0E-08	GI system, liver, gallbladder	–	1.2E-03	–	1.2E-03
			1,3,5-Trimethylbenzene	–	5.8E-07	–	--	5.8E-07	CNS, respiratory tract, blood	–	9.6E-03	–	9.6E-03
			1,3-Dichlorobenzene	–	--	–	--	--	Blood, thyroid	–	3.6E-03	–	3.6E-03
			1,4-Dichlorobenzene	–	3.0E-07	–	--	3.0E-07	Liver	–	4.7E-04	–	4.7E-04
			Acetone	–	--	–	--	--	Liver, kidney	–	9.5E-06	–	9.5E-06
			Benzene	–	3.6E-08	–	--	3.6E-08	Hematopoetic progenitor cells	–	5.9E-03	–	5.9E-03
			Chlorobenzene	–	--	–	--	--	Liver	–	1.5E-01	–	1.5E-01
			Chloroform	–	2.0E-08	–	--	2.0E-08	Kidney, liver	–	1.3E-04	–	1.3E-04
			cis-1,2-Dichloroethene	–	--	–	--	--	Blood	–	5.7E-03	–	5.7E-03
			Methylene chloride	–	1.7E-09	–	--	1.7E-09	Liver	–	9.2E-06	–	9.2E-06
			Naphthalene	–	--	–	--	--	Respiratory tract	–	4.0E-03	–	4.0E-03
			n-Butylbenzene	–	--	–	--	--	–	–	1.5E-04	–	1.5E-04
			Tetrachloroethene	–	1.8E-07	–	--	1.8E-07	Liver, kidney	–	6.0E-04	–	6.0E-04
			Trichloroethene	–	2.5E-06	–	--	2.5E-06	CNS, liver, endocrine system	–	4.3E-03	–	4.3E-03
			Vinyl Chloride	–	3.8E-07	–	--	3.8E-07	Liver	–	3.4E-03	–	3.4E-03
			Xylenes	–	--	–	--	--	CNS	–	2.1E-03	–	2.1E-03
			Chemical Total	–	4.4E-06	–	--	4.4E-06		–	2.1E-01	–	2.1E-01
		Exposure Point Total						4.4E-06					2.1E-01
	Exposure Medium Total							5.8E-05					5.3E+00
Groundwater Total								1.3E-04					1.7E+01
Receptor Total							Receptor Risk Total	1E-04				Receptor HI Total	19

Child Receptor Total (from Table 9.4)	Receptor Cancer Risk Total	5E-04
Child/Adult Receptor Total	Receptor Cancer Risk Total	6E-04

Total Liver HI Across All Media =	9
Total Nervous System HI Across All Media =	7
Total Respiratory System HI Across All Media =	1
Total Blood HI Across All Media =	2
Total Whole Body HI Across All Media =	0.32
Total Offspring HI Across All Media =	1
Total Kidney HI Across All Media =	1
Total Thyroid HI Across All Media =	0.38
Total Hematopoietic System HI Across All Media =	0.09

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	1.2E-02	--	1.6E-03	1.3E-02
			Antimony	--	--	--	--	--	Whole body, blood	4.9E-03	--	2.1E-04	6.1E-03
			Arsenic	2.2E-06	--	4.3E-07	--	2.6E-06	Skin	1.3E-02	--	2.7E-03	1.6E-02
			Iron	--	--	--	--	--	Various organs	6.0E-02	--	3.9E-03	6.4E-02
			Manganese	--	--	--	--	--	CNS	2.7E-02	--	4.5E-03	3.2E-02
			Thallium	--	--	--	--	--	Liver, blood	4.6E-03	--	3.0E-05	4.6E-03
			Dieldrin	9.7E-08	--	6.4E-08	--	1.6E-07	Liver	3.4E-04	--	2.3E-04	5.7E-04
			Benzo[a]anthracene	6.7E-08	--	5.7E-08	--	1.2E-07	--	8.5E-06	--	7.3E-06	1.6E-05
			Benzo[a]pyrene	6.6E-07	--	5.7E-07	--	1.2E-06	--	--	--	--	--
			Benzo[b]fluoranthene	6.7E-08	--	5.7E-06	--	1.2E-07	--	8.5E-06	--	7.3E-06	1.6E-05
			Chemical Total	3.1E-06	--	1.2E-06	--	4.2E-06		1.2E-01	--	1.3E-02	1.3E-01
		Exposure Point Total						4.2E-06					1.3E-01
	Exposure Medium Total							4.2E-06					1.3E-01
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	6.4E-03	--	6.4E-03
			Antimony	--	--	--	--	--	Lung	--	3.2E-05	--	3.2E-05
			Arsenic	--	1.4E-08	--	--	1.4E-08	Skin	--	8.8E-06	--	8.8E-06
			Iron	--	--	--	--	--	Various organs	--	3.9E-05	--	3.9E-05
			Manganese	--	--	--	--	--	Nervous system	--	3.0E-02	--	3.0E-02
			Thallium	--	--	--	--	--	Liver, blood	--	3.0E-06	--	3.0E-06
			Dieldrin	--	6.4E-11	--	--	6.4E-11	Liver	--	2.2E-07	--	2.2E-07
			Benzo[a]anthracene	--	1.8E-11	--	--	1.8E-11	--	--	6.6E-09	--	6.6E-09
			Benzo[a]pyrene	--	1.8E-10	--	--	1.8E-10	--	--	--	--	--
			Benzo[b]fluoranthene	--	1.8E-11	--	--	1.8E-11	--	--	5.6E-09	--	5.6E-09
			Chemical Total	--	1.4E-08	--	--	1.4E-08		--	3.5E-02	--	3.5E-02
		Exposure Point Total						1.4E-08					3.5E-02
	Exposure Medium Total							1.4E-08					3.6E-02
Surface Soil Total								4.2E-06					1.7E-01

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-site Tap Water	Aluminum	--	--	--	--	--	Offspring	8.6E-02	--	8.6E-03	9.4E-02
			Chromium(VI)	--	--	--	--	--	None reported	3.0E-02	--	1.2E-02	4.2E-02
			Iron	--	--	--	--	--	Various organs	5.5E-01	--	2.7E-02	5.8E-01
			Manganese	--	--	--	--	--	CNS	3.3E+00	--	4.2E-01	3.7E+00
			Thallium	--	--	--	--	--	Liver, blood	1.1E+00	--	5.5E-03	1.1E+00
			2-Methylnaphthalene	--	--	--	--	--	Lung	3.7E-04	--	3.1E-04	6.8E-04
			1,2,4-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.5E-03	--	2.1E-03	4.6E-03
			1,2-Dichlorobenzene	--	--	--	--	--	None	6.2E-02	--	5.1E-02	1.1E-01
			1,2-Dichloroethane	1.2E-06	--	7.6E-08	--	--	Liver, kidney	1.3E-03	--	7.8E-05	1.3E-03
			1,3,5-Trimethylbenzene	--	--	--	--	--	Whole body, kidney, liver	2.0E-03	--	1.7E-03	3.7E-03
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	6.9E-02	--	8.0E-02	1.5E-01
			1,4-Dichlorobenzene	1.4E-05	--	1.2E-05	--	2.7E-05	Offspring	5.6E-02	--	4.7E-02	1.0E-01
			Acetone	--	--	--	--	--	Liver, kidney	3.2E-03	--	3.8E-05	3.2E-03
			Benzene	1.3E-06	--	2.5E-07	--	1.6E-06	Blood, immune system	2.2E-02	--	4.3E-03	2.7E-02
			Chlorobenzene	--	--	--	--	--	Liver	1.4E+00	--	6.3E-01	2.0E+00
			Chloroform	--	--	--	--	--	Liver	1.5E-03	--	1.8E-04	1.7E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	5.2E-02	--	5.9E-03	5.8E-02
			Methylene chloride	2.4E-07	--	1.2E-08	--	2.6E-07	Liver	1.5E-03	--	7.2E-05	1.6E-03
			Naphthalene	--	--	--	--	--	Whole body	1.1E-02	--	9.3E-03	2.0E-02
			n-Butylbenzene	--	--	--	--	--	Liver, kidney	4.0E-03	--	3.0E-03	7.0E-03
			Tetrachloroethene	3.7E-06	--	2.8E-06	--	6.4E-06	Liver, Whole body	2.0E-02	--	1.5E-02	3.5E-02
			Trichloroethene	3.1E-05	--	6.8E-06	--	3.8E-05	Liver, kidney, fetus	7.3E-01	--	1.6E-01	8.8E-01
			Vinyl Chloride	7.4E-05	--	4.9E-06	--	7.9E-05	Liver	4.9E-02	--	3.2E-03	5.3E-02
			Xylenes	--	--	--	--	--	Whole body	2.0E-03	--	1.6E-03	3.7E-03
			Chemical Total	1.3E-04	--	2.7E-05	--	1.5E-04		7.6E+00	--	1.5E+00	9.1E+00
		Exposure Point Total						1.5E-04					9.1E+00
	Exposure Medium Total							1.5E-04					9.1E+00
	Vapors	On-site Bath/Shower	2-Methylnaphthalene	--	--	--	--	--	--	--	8.1E-02	--	8.1E-02
			1,2,4-Trimethylbenzene	--	7.7E-05	--	--	7.7E-05	CNS, respiratory tract, blood	--	6.9E-01	--	6.9E-01
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	9.2E-01	--	9.2E-01
			1,2-Dichloroethane	--	1.1E-05	--	--	1.1E-05	GI system, liver, gallbladder	--	2.5E-01	--	2.5E-01
			1,3,5-Trimethylbenzene	--	9.2E-05	--	--	9.2E-05	CNS, respiratory tract, blood	--	5.6E-01	--	5.6E-01
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	6.5E-01	--	6.5E-01
			1,4-Dichlorobenzene	--	1.2E-04	--	--	1.2E-04	Liver	--	6.9E-02	--	6.9E-02
			Acetone	--	--	--	--	--	Liver, kidney	--	3.0E-02	--	3.0E-02
			Benzene	--	6.1E-06	--	--	6.1E-06	Hematopoetic progenitor cells	--	3.7E-01	--	3.7E-01
			Chlorobenzene	--	--	--	--	--	Liver	--	1.5E+01	--	1.5E+01
			Chloroform	--	4.1E-06	--	--	4.1E-06	Kidney, liver	--	1.0E-02	--	1.0E-02
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	4.9E-01	--	4.9E-01
			Methylene chloride	--	5.0E-07	--	--	5.0E-07	Liver	--	1.0E-03	--	1.0E-03
			Naphthalene	--	--	--	--	--	Respiratory tract	--	2.4E+00	--	2.4E+00
			n-Butylbenzene	--	--	--	--	--	--	--	5.3E-03	--	5.3E-03
			Tetrachloroethene	--	1.4E-05	--	--	1.4E-05	Liver, kidney	--	1.7E-02	--	1.7E-02
			Trichloroethene	--	2.9E-04	--	--	2.9E-04	CNS, liver, endocrine system	--	1.8E-01	--	1.8E-01
			Vinyl Chloride	--	1.5E-05	--	--	1.5E-05	Liver	--	4.9E-02	--	4.9E-02
			Xylenes	--	--	--	--	--	CNS	--	1.3E-01	--	1.3E-01
			Chemical Total	--	6.4E-04	--	--	6.4E-04		--	2.2E+01	--	2.2E+01
		Exposure Point Total						6.4E-04					2.2E+01

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater (continued)	Vapors (continued)	On-Site Indoors	2-Methylnaphthalene	--	--	--	--	--	--	--	1.6E-04	--	1.6E-04
			1,2,4-Trimethylbenzene	--	1.3E-06	--	--	1.3E-06	CNS, respiratory tract, blood	--	1.1E-02	--	1.1E-02
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	6.2E-03	--	6.2E-03
			1,2-Dichloroethane	--	6.7E-08	--	--	6.7E-08	GI system, liver, gallbladder	--	1.4E-03	--	1.4E-03
			1,3,5-Trimethylbenzene	--	1.9E-06	--	--	1.9E-06	CNS, respiratory tract, blood	--	1.1E-02	--	1.1E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	4.3E-03	--	4.3E-03
			1,4-Dichlorobenzene	--	1.0E-06	--	--	1.0E-06	Liver	--	5.6E-04	--	5.6E-04
			Acetone	--	--	--	--	--	Liver, kidney	--	1.1E-05	--	1.1E-05
			Benzene	--	1.2E-07	--	--	1.2E-07	Hematopoetic progenitor cells	--	7.1E-03	--	7.1E-03
			Chlorobenzene	--	--	--	--	--	Liver	--	1.8E-01	--	1.8E-01
			Chloroform	--	6.6E-08	--	--	6.6E-08	Kidney, liver	--	1.6E-04	--	1.6E-04
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	6.6E-03	--	6.6E-03
			Methylene chloride	--	5.5E-09	--	--	5.5E-09	Liver	--	1.1E-05	--	1.1E-05
			Naphthalene	--	--	--	--	--	Respiratory tract	--	4.7E-03	--	4.7E-03
			n-Butylbenzene	--	--	--	--	--	--	--	1.7E-04	--	1.7E-04
			Tetrachloroethene	--	6.0E-07	--	--	6.0E-07	Liver, kidney	--	7.1E-04	--	7.1E-04
			Trichloroethene	--	8.4E-06	--	--	8.4E-06	CNS, liver, endocrine system	--	5.1E-03	--	5.1E-03
			Vinyl Chloride	--	1.3E-06	--	--	1.3E-06	Liver	--	4.0E-03	--	4.0E-03
			Xylenes	--	--	--	--	--	CNS	--	2.6E-03	--	2.6E-03
			Chemical Total	--	1.6E-05	--	--	1.6E-05		--	2.5E-01	--	2.5E-01
		Exposure Point Total						1.6E-05					2.5E-01
	Exposure Medium Total							6.5E-04					2.2E+01
Groundwater Total								8.0E-04					3.1E+01
Receptor Total							Receptor Risk Total	8E-04				Receptor HI Total	32

Total Liver HI Across All Media =	20
Total Respiratory System HI Across All Media =	4
Total Blood HI Across All Media =	4
Total Nervous System HI Across All Media =	5
Total Whole Body HI Across All Media =	1
Total Offspring HI Across All Media =	1

TABLE 9.6.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	5.3E-03	--	1.4E-03	6.7E-03
			Antimony	--	--	--	--	--	Whole body, blood	2.2E-03	--	1.9E-04	2.4E-03
			Arsenic	2.6E-07	--	1.0E-07	--	3.6E-07	Skin	6.1E-03	--	2.4E-03	8.5E-03
			Iron	--	--	--	--	--	Various organs	2.7E-02	--	3.6E-03	3.1E-02
			Manganese	--	--	--	--	--	CNS	1.2E-02	--	4.0E-03	1.6E-02
			Thallium	--	--	--	--	--	Liver, blood	2.1E-03	--	2.8E-05	2.1E-03
			Dieldrin	1.2E-08	--	1.5E-08	--	2.7E-08	Liver	1.5E-04	--	2.0E-04	3.6E-04
			Benzo[a]anthracene	8.0E-09	--	1.4E-08	--	2.2E-08	--	3.9E-06	--	6.6E-06	1.0E-05
			Benzo[a]pyrene	7.9E-08	--	1.4E-07	--	2.1E-07	--	--	--	--	--
			Benzo[b]fluoranthene	8.0E-09	--	1.4E-08	--	2.2E-08	--	3.9E-06	--	6.6E-06	1.0E-05
			Chemical Total	3.6E-07	--	2.8E-07	--	6.5E-07		5.5E-02	--	1.2E-02	6.7E-02
		Exposure Point Total						6.5E-07					6.7E-02
	Exposure Medium Total							6.5E-07					6.7E-02
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	4.8E-03	--	4.8E-03
			Antimony	--	--	--	--	--	Lung	--	2.9E-05	--	2.9E-05
			Arsenic	--	3.4E-09	--	--	3.4E-09	Skin	--	7.9E-06	--	7.9E-06
			Iron	--	--	--	--	--	Various organs	--	3.5E-05	--	3.5E-05
			Manganese	--	--	--	--	--	Nervous system	--	2.7E-02	--	2.7E-02
			Thallium	--	--	--	--	--	Liver, blood	--	2.7E-06	--	2.7E-06
			Dieldrin	--	1.5E-11	--	--	1.5E-11	Liver	--	2.0E-07	--	2.0E-07
			Benzo[a]anthracene	--	4.4E-12	--	--	4.4E-12	--	--	5.0E-09	--	5.0E-09
			Benzo[a]pyrene	--	4.3E-11	--	--	4.3E-11	--	--	--	--	--
			Benzo[b]fluoranthene	--	4.4E-12	--	--	4.4E-12	--	--	5.0E-09	--	5.0E-09
			Chemical Total	--	3.4E-09	--	--	3.4E-09		--	3.2E-02	--	3.2E-02
		Exposure Point Total						3.4E-09					3.2E-02
	Exposure Medium Total							3.4E-09					3.2E-02
Surface Soil Total								6.5E-07					9.9E-02

TABLE 9.8.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-site Tap Water	Aluminum	--	--	--	--	--	Offspring	7.7E-02	--	7.7E-03	8.5E-02
			Chromium(VI)	--	--	--	--	--	None reported	2.7E-02	--	1.1E-02	3.8E-02
			Iron	--	--	--	--	--	Various organs	5.0E-01	--	2.5E-02	5.2E-01
			Manganese	--	--	--	--	--	CNS	3.0E+00	--	3.6E-01	3.4E+00
			Thallium	--	--	--	--	--	Liver, blood	1.0E+00	--	5.0E-03	1.0E+00
			2-Methylnaphthalene	--	--	--	--	--	Lung	3.3E-04	--	2.8E-04	6.2E-04
			1,2,4-Trimethylbenzen	--	--	--	--	--	Whole body, kidney, liver	2.3E-03	--	1.9E-03	4.1E-03
			1,2-Dichlorobenzene	--	--	--	--	--	None	5.6E-02	--	4.7E-02	1.0E-01
			1,2-Dichloroethane	2.9E-07	--	1.8E-08	--	--	Liver, kidney	1.1E-03	--	7.0E-05	1.2E-03
			1,3,5-Trimethylbenzen	--	--	--	--	--	Whole body, kidney, liver	1.8E-03	--	1.5E-03	3.3E-03
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	6.2E-02	--	7.3E-02	1.3E-01
			1,4-Dichlorobenzene	3.4E-06	--	2.9E-06	--	6.3E-06	Offspring	5.0E-02	--	4.3E-02	9.3E-02
			Acetone	--	--	--	--	--	Liver, kidney	2.9E-03	--	3.4E-05	2.9E-03
			Benzene	3.1E-07	--	6.1E-08	--	3.7E-07	Blood, immune system	2.0E-02	--	3.9E-03	2.4E-02
			Chlorobenzene	--	--	--	--	--	Liver	1.2E+00	--	5.7E-01	1.8E+00
			Chloroform	--	--	--	--	--	Liver	1.4E-03	--	1.6E-04	1.5E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	4.7E-02	--	5.3E-03	5.3E-02
			Methylene chloride	5.8E-08	--	2.8E-09	--	6.1E-08	Liver	1.4E-03	--	6.5E-05	1.4E-03
			Naphthalene	--	--	--	--	--	Whole body	1.0E-02	--	8.4E-03	1.8E-02
			n-Butylbenzene	--	--	--	--	--	Liver, kidney	3.6E-03	--	2.8E-03	6.4E-03
			Tetrachloroethene	8.7E-07	--	6.8E-07	--	1.5E-06	Liver, Whole body	1.8E-02	--	1.4E-02	3.2E-02
			Trichloroethene	7.4E-06	--	1.6E-06	--	9.0E-06	Liver, kidney, fetus	6.6E-01	--	1.4E-01	8.0E-01
			Vinyl Chloride	1.8E-05	--	1.2E-06	--	1.9E-05	Liver	4.5E-02	--	2.9E-03	4.8E-02
			Xylenes	--	--	--	--	--	Whole body	1.8E-03	--	1.5E-03	3.3E-03
			Chemical Total	3.0E-05	--	6.4E-06	--	3.6E-05		6.8E+00	--	1.3E+00	8.2E+00
		Exposure Point Total						3.6E-05					8.2E+00
	Exposure Medium Total							3.6E-05					8.2E+00
	Vapors	On-site Bath/Shower	2-Methylnaphthalene	--	--	--	--	--	--	--	1.2E-02	--	1.2E-02
			1,2,4-Trimethylbenzen	--	3.1E-06	--	--	3.1E-06	CNS, respiratory tract, blood	--	1.0E-01	--	1.0E-01
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	1.4E-01	--	1.4E-01
			1,2-Dichloroethane	--	4.6E-07	--	--	4.6E-07	GI system, liver, gallbladder	--	3.7E-02	--	3.7E-02
			1,3,5-Trimethylbenzen	--	3.7E-06	--	--	3.7E-06	CNS, respiratory tract, blood	--	8.3E-02	--	8.3E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	9.7E-02	--	9.7E-02
			1,4-Dichlorobenzene	--	4.9E-06	--	--	4.9E-06	Liver	--	1.0E-02	--	1.0E-02
			Acetone	--	--	--	--	--	Liver, kidney	--	4.5E-03	--	4.5E-03
			Benzene	--	2.4E-07	--	--	2.4E-07	Hematopoetic progenitor cells	--	6.5E-02	--	6.5E-02
			Chlorobenzene	--	--	--	--	--	Liver	--	2.3E+00	--	2.3E+00
			Chloroform	--	1.6E-07	--	--	1.6E-07	Kidney, liver	--	1.6E-03	--	1.6E-03
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	7.4E-02	--	7.4E-02
			Methylene chloride	--	2.0E-08	--	--	2.0E-08	Liver	--	1.5E-04	--	1.5E-04
			Naphthalene	--	--	--	--	--	Respiratory tract	--	3.7E-01	--	3.7E-01
			n-Butylbenzene	--	--	--	--	--	--	--	7.9E-04	--	7.9E-04
			Tetrachloroethene	--	5.5E-07	--	--	5.5E-07	Liver, kidney	--	2.5E-03	--	2.5E-03
			Trichloroethene	--	1.2E-05	--	--	1.2E-05	CNS, liver, endocrine system	--	2.7E-02	--	2.7E-02
			Vinyl Chloride	--	6.1E-07	--	--	6.1E-07	Liver	--	7.3E-03	--	7.3E-03
			Xylenes	--	--	--	--	--	CNS	--	2.0E-02	--	2.0E-02
			Chemical Total	--	2.5E-05	--	--	2.5E-05		--	3.3E+00	--	3.3E+00
		Exposure Point Total						2.5E-05					3.3E+00

TABLE 9.6.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater (continued)	Vapors (continued)	On-Site Indoors	2-Methylnaphthalene	--	--	--	--	--	--	--	1.6E-04	--	1.4E-04
			1,2,4-Trimethylbenzene	--	1.3E-06	--	--	3.0E-07	CNS, respiratory tract, blood	--	1.1E-02	--	1.0E-02
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	6.2E-03	--	5.6E-03
			1,2-Dichloroethane	--	6.7E-08	--	--	1.6E-08	GI system, liver, gallbladder	--	1.4E-03	--	1.3E-03
			1,3,5-Trimethylbenzene	--	1.9E-06	--	--	4.6E-07	CNS, respiratory tract, blood	--	1.1E-02	--	1.0E-02
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	4.3E-03	--	3.9E-03
			1,4-Dichlorobenzene	--	1.0E-06	--	--	2.4E-07	Liver	--	5.6E-04	--	5.0E-04
			Acetone	--	--	--	--	--	Liver, kidney	--	1.1E-05	--	1.0E-05
			Benzene	--	1.2E-07	--	--	2.8E-08	Hematopoetic progenitor cells	--	7.1E-03	--	6.4E-03
			Chlorobenzene	--	--	--	--	--	Liver	--	1.8E-01	--	1.6E-01
			Chloroform	--	6.6E-08	--	--	1.6E-08	Kidney, liver	--	1.6E-04	--	1.4E-04
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	6.8E-03	--	6.1E-03
			Methylene chloride	--	5.5E-09	--	--	1.3E-09	Liver	--	1.1E-05	--	9.9E-06
			Naphthalene	--	--	--	--	--	Respiratory tract	--	4.7E-03	--	4.3E-03
			n-Butylbenzene	--	--	--	--	--	--	--	1.7E-04	--	1.6E-04
			Tetrachloroethene	--	6.0E-07	--	--	1.4E-07	Liver, kidney	--	7.1E-04	--	6.4E-04
			Trichloroethene	--	8.4E-06	--	--	2.0E-06	CNS, liver, endocrine system	--	5.1E-03	--	4.6E-03
			Vinyl Chloride	--	1.3E-06	--	--	3.0E-07	Liver	--	4.0E-03	--	3.6E-03
			Xylenes	--	--	--	--	--	CNS	--	2.5E-03	--	2.2E-03
			Chemical Total	--	1.5E-05	--	--	3.5E-06		--	2.5E-01	--	2.2E-01
		Exposure Point Total						3.5E-06					2.2E-01
	Exposure Medium Total							2.9E-05					3.5E+00
Groundwater Total								6.5E-05					1.2E+01
Receptor Total							Receptor Risk Total	7E-05				Receptor HI Total	12

Total Liver HI Across All Media =	6
Total Respiratory System HI Across All Media =	1
Total Blood HI Across All Media =	2
Total Nervous System HI Across All Media =	4
Total Whole Body HI Across All Media =	0.21
Total Offspring HI Across All Media =	1

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	On-Site	Aluminum	--	--	--	--	--	Offspring	2.5E-02	--	1.0E-03	2.6E-02
			Antimony	--	--	--	--	--	Whole body, blood	1.6E-02	--	2.1E-04	1.6E-02
			Arsenic	1.3E-07	--	7.6E-09	--	1.4E-07	Skin	2.4E-03	--	1.5E-04	2.6E-03
			Iron	--	--	--	--	--	Various organs	2.1E-01	--	4.2E-03	2.1E-01
			Manganese	--	--	--	--	--	CNS	9.2E-02	--	4.6E-03	9.6E-02
			Thallium	--	--	--	--	--	Liver, blood	6.7E-03	--	1.3E-05	6.7E-03
			Dieldrin	3.0E-09	--	5.9E-10	--	3.5E-09	Liver	5.2E-04	--	1.0E-04	6.2E-04
			Benzo[a]anthracene	6.1E-09	--	1.6E-09	--	7.7E-09	--	3.9E-06	--	1.0E-06	4.9E-06
			Benzo[a]pyrene	5.4E-08	--	1.4E-08	--	6.8E-08	--	--	--	--	--
			Benzo[b]fluoranthene	5.4E-09	--	1.4E-09	--	6.9E-09	--	3.5E-06	--	9.1E-07	4.4E-06
			Dibenz[a,h]anthracene	3.6E-08	--	9.2E-09	--	4.5E-08	--	2.3E-06	--	5.8E-07	2.9E-06
			Chemical Total	2.3E-07	--	3.5E-08	--	2.7E-07		3.5E-01	--	1.0E-02	3.6E-01
		Exposure Point Total						2.7E-07					3.6E-01
	Exposure Medium Total							2.7E-07					3.6E-01
	Air Particulates	On-Site	Aluminum	--	--	--	--	--	Nervous system	--	1.7E-01	--	1.7E-01
			Antimony	--	--	--	--	--	Lung	--	5.4E-04	--	5.4E-04
			Arsenic	--	1.3E-08	--	--	1.3E-08	Skin	--	2.4E-05	--	2.4E-05
			Iron	--	--	--	--	--	Various organs	--	2.1E-03	--	2.1E-03
			Manganese	--	--	--	--	--	Nervous system	--	1.5E+00	--	1.5E+00
			Thallium	--	--	--	--	--	Liver, blood	--	6.5E-05	--	6.5E-05
			Dieldrin	--	2.9E-11	--	--	2.9E-11	Liver	--	6.0E-06	--	5.0E-06
			Benzo[a]anthracene	--	2.5E-11	--	--	2.5E-11	--	--	3.8E-08	--	3.8E-08
			Benzo[a]pyrene	--	2.2E-10	--	--	2.2E-10	--	--	--	--	--
			Benzo[b]fluoranthene	--	2.2E-11	--	--		--	--	3.4E-08	--	3.4E-08
			Dibenz[a,h]anthracene	--	1.5E-10	--	--	1.5E-10	--	--	2.2E-08	--	2.2E-08
			Chemical Total	--	1.3E-08	--	--	1.3E-08		--	1.7E+00	--	1.7E+00
		Exposure Point Total						1.3E-08					1.7E+00
	Exposure Medium Total							1.3E-08					1.7E+00
Subsurface Soil Total								2.8E-07					2.0E+00

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Vapors	On-Site Indoors	2-Methylnaphthalene	--	--	--	--	--	--	--	1.5E-06	--	1.5E-06
			1,2,4-Trimethylbenzene	--	6.9E-11	--	--	6.9E-11	CNS, respiratory tract, blood	--	3.1E-06	--	3.1E-06
			1,2-Dichlorobenzene	--	--	--	--	--	Whole body	--	2.5E-06	--	2.6E-06
			1,2-Dichloroethane	--	7.0E-12	--	--	7.0E-12	GI system, liver, gallbladder	--	7.5E-07	--	7.5E-07
			1,3,5-Trimethylbenzene	--	1.0E-10	--	--	1.0E-10	CNS, respiratory tract, blood	--	3.0E-06	--	3.0E-06
			1,3-Dichlorobenzene	--	--	--	--	--	Blood, thyroid	--	1.8E-05	--	1.8E-05
			1,4-Dichlorobenzene	--	7.4E-11	--	--	7.4E-11	Liver	--	6.6E-07	--	6.6E-07
			Acetone	--	--	--	--	--	Liver, kidney	--	8.2E-08	--	8.2E-08
			Benzene	--	6.8E-12	--	--	6.8E-12	Hematopoetic progenitor cells	--	2.0E-06	--	2.0E-06
			Chlorobenzene	--	--	--	--	--	Liver	--	5.8E-05	--	6.8E-05
			Chloroform	--	4.0E-12	--	--	4.0E-12	Kidney, liver	--	4.9E-07	--	4.9E-07
			cis-1,2-Dichloroethene	--	--	--	--	--	Blood	--	2.3E-06	--	2.3E-06
			Methylene chloride	--	4.3E-13	--	--	4.3E-13	Liver	--	4.2E-08	--	4.2E-08
			Naphthalene	--	--	--	--	--	Respiratory tract	--	4.8E-05	--	4.8E-05
			n-Butylbenzene	--	--	--	--	--	--	--	4.4E-07	--	4.4E-07
			Tetrachloroethene	--	2.9E-11	--	--	2.9E-11	Liver, kidney	--	1.7E-06	--	1.7E-06
			Trichloroethene	--	4.4E-10	--	--	4.4E-10	CNS, liver, endocrine system	--	1.3E-06	--	1.3E-06
			Vinyl Chloride	--	6.8E-11	--	--	5.8E-11	Liver	--	9.2E-06	--	9.2E-06
			Xylenes	--	--	--	--	--	CNS		6.8E-06	--	6.8E-06
			Chemical Total	--	7.9E-10	--	--	7.9E-10		--	1.6E-04	--	1.6E-04
		Exposure Point Total						7.9E-10					1.6E-04
	Exposure Medium Total							7.9E-10					1.6E-04
Groundwater Total								7.9E-10					1.6E-04
Receptor Total							Receptor Risk Total	3E-07				Receptor HI Total	2

Total Nervous System HI Across All Media = 2

TABLE 4.DA
CALCULATION OF DERMAL ABSORBED DOSE PER EVENT -- WATER CONTACT
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

For inorganics:

DA-event = (CWxCF1xCF2) x Kp x t-event

For organics:

If t-event is less than or equal to t*:

DA-event = (CWxCF1xCF2) x 2 x FA x Kp x CW x SQRT(6 x tau-event x t-event/pi)

If t-event is greater than t*:

DA-event = (CWxCF1xCF2) x FA x Kp x [t-event/(1+B) + 2tau-event(1+3B+3B^2)/(1+B)^2]

where:

CW = Concentration in water (ug/L)
CF1 = Conversion factor 1 = 0.001 mg/ug
CF2 = Conversion factor 2 = 0.001 L/cm^3
FA = Fraction Absorbed (dimensionless)
tau-event = lag time per event (hr/event)
t-event = Event duration (hr/event)
t* = Time to reach steady state (hr/event)
B = Ratio of a compound's permeability coefficient through the stratum corneum relative to its permeability coefficient through the epidermis (dimensionless)

						Recreational Visitor Wading RME		Resident Child Bath RME		Resident Adult Bath RME		Commercial/Industrial Worker Shower RME	
						t-event = 2.00 hr/event		t-event = 1.00 hr/event		t-event = 0.58 hr/event		t-event = 0.33 hr/event	
CHEMICAL	Kp (cm/hr)	B	tau-event (hr/event)	t* (hr/event)	FA	Is t-event > t* ?	DA-event/CW (mg/cm^2-event per ug/L)	Is t-event > t* ?	DA-event/CW (mg/cm^2-event per ug/L)	Is t-event > t* ?	DA-event/CW (mg/cm^2-event per ug/L)	Is t-event > t* ?	DA-event/CW (mg/cm^2-event per ug/L)
Aluminum	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Arsenic	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Barium	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Beryllium	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Cadmium	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Chromium(VI)	0.002	--	--	--	--	--	4.00E-09	--	2.00E-09	--	1.16E-09	--	6.66E-10
Cobalt	0.0004	--	--	--	--	--	8.00E-10	--	4.00E-10	--	2.32E-10	--	1.33E-10
Copper	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Iron	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Lead	0.0001	--	--	--	--	--	2.00E-10	--	1.00E-10	--	5.80E-11	--	3.33E-11
Manganese	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Nickel	0.0002	--	--	--	--	--	4.00E-10	--	2.00E-10	--	1.16E-10	--	6.66E-11
Silver	0.0006	--	--	--	--	--	1.20E-09	--	6.00E-10	--	3.48E-10	--	2.00E-10
Thallium	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Vanadium	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
Cyanide, free	0.001	--	--	--	--	--	2.00E-09	--	1.00E-09	--	5.80E-10	--	3.33E-10
2-Methylnaphthalene	0.047	0.2	0.56	1.34	1	no	1.37E-07	no	9.72E-08	no	7.40E-08	no	5.61E-08
Bis(2-ethylhexyl)phthalate	0.025	0.2	16.64	39.93	0.8	no	3.19E-07	no	2.25E-07	no	1.72E-07	no	1.30E-07
Pentachlorophenol	0.39	2.5	3.33	13.82	0.9	no	2.60E-08	no	1.77E-06	no	1.35E-06	no	1.02E-06
1,2,4-Trimethylbenzene	0.053	0.2	0.42	1.01	1	no	1.34E-07	no	9.49E-08	no*	7.23E-08	no	5.48E-08
1,2-Dichlorobenzene	0.041	0.2	0.71	1.71	1	no	1.35E-07	no	9.55E-08	no	7.27E-08	no	5.51E-08
1,2-Dichloroethane	0.0042	0	0.38	0.92	1	no	1.01E-08	yes	7.39E-09	no	5.45E-09	no	4.13E-09
1,3,5-Trimethylbenzene	0.053	0.2	0.42	1.01	1	no	1.34E-07	no	9.49E-08	no	7.23E-08	no	5.48E-08
1,3-Dichlorobenzene	0.058	0.3	0.71	1.71	1	no	1.91E-07	no	1.35E-07	no	1.03E-07	no	7.79E-08
1,4-Dichlorobenzene	0.042	0.2	0.71	1.71	1	no	1.38E-07	no	9.78E-08	no	7.45E-08	no	5.64E-08
Acetone	0.00096	0	0.27	0.65	1	no	1.95E-09	yes	1.48E-09	no	1.05E-09	no	7.96E-10
Benzene	0.015	0.1	0.29	0.7	1	no	3.16E-08	yes	2.32E-08	no	1.70E-08	no	1.29E-08
Chlorobenzene	0.028	0.1	0.46	1.09	1	no	7.42E-08	no	5.25E-08	no	4.00E-08	no	3.03E-08
Chloroform	0.0068	0	0.5	1.19	1	no	1.88E-08	no	1.33E-08	no	1.01E-08	no	7.67E-09
cis-1,2-Dichloroethene	0.0077	0	0.37	0.89	1	no	1.83E-08	yes	1.34E-08	no	9.86E-09	no	7.47E-09
Methylene chloride	0.0035	0	0.32	0.76	1	no	7.74E-09	yes	5.74E-09	no	4.17E-09	no	3.16E-09
Naphthalene	0.047	0.2	0.56	1.34	1	no	1.37E-07	no	9.72E-08	no	7.40E-08	no	5.81E-08
n-Butylbenzene	0.049	0.2	0.42	1.01	1	no	1.24E-07	no	8.78E-08	no	6.68E-08	no	5.06E-08
Tetrachloroethene	0.033	0.2	0.91	2.18	1	no	1.23E-07	no	8.70E-08	no	6.63E-08	no	5.02E-08
Trichloroethene	0.012	0.1	0.58	1.39	1	no	3.57E-08	no	2.53E-08	no	1.92E-08	no	1.46E-08
Vinyl chloride	0.0056	0	0.24	0.57	1	no	1.07E-08	yes	8.29E-09	yes	6.94E-09	no	4.38E-09
Xylenes	0.053	0.2	0.42	1.01	1	no	1.34E-07	no	9.49E-08	no	7.23E-08	no	5.48E-08

Key: RME = Reasonable maximum exposure

Table 4.PEF.wind

CALCULATION OF PARTICULATE EMISSION FACTOR FROM WIND EROSION OF SOIL

GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Equation:

$$PEF = \frac{Q/C \times 3600 \text{ s/hr}}{0.036 \text{ g/m}^2\text{-hr} \times (1-V) \times (Um/Ut)^3 \times F(x)}$$

Parameters:

Parameter	Definition	Value	Units
PEF	Particulate Emission Factor	3.07E+08	m^3/kg
Q/C	Inverse of mean concentration at center of 30-acre-square source (Harrisburg, PA)	42.4	g/m^2-s per kg/m^3
V	Fraction of Vegetative Cover	0	unitless
Um	Mean Annual Wind Speed	4.69	m/s
Ut	Equivalent Threshold of Wind Speed at 10 m	11.32	m/s
F(x)	Function Dependent on Um/Ut	0.194	unitless

Source: Soil Screening Guidance: User's Guide, Publication 9355.4-23 (EPA 1996).

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Additional Nonstandard Tables

Table 4.PEF.construction
CALCULATION OF PARTICULATE EMISSION FACTOR DURING CONSTRUCTION ACTIVITIES
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

Equation:

$$PEF_{sc} = \frac{Q/C_{sr} \times (1/F_O) \times T \times A_R}{556 \times (W/3)^{0.4} \times (365 day/year-p)/365\ day/year \times \Sigma VKT}$$

Parameters:

Parameter	Definition	Value	Units	Rationale/Reference
PEF_{sc}	Subchronic Road Particulate Emission Factor	6.22E+06	m^3/kg	
Q/C_{sr}	Inverse of 1-hour average air concentration along a straight road segment bisecting a 0.5 acre square site	23.02	g/m^2-s per kg/m^3	EPA 2001
F_O	Dispersion/correction factor	0.185	unitless	
T	Total time over which construction occurs	15,800,000	s	Estimate 6 months
A_R	Surface area of contaminated road segment (45 m x 8 m)	270	m^2	Estimate
W	Mean vehicle weight	8	tons	Estimate; See (1)
p	Number of days per year with at least 0.01 inches of precipitation	150	days/year	EPA 2001 (Exhibit 5-2)
ΣVKT	Sum of fleet vehicle kilometers traveled during the exposure duration	176	km	Estimate; See (2)

EPA 2001a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

(1) W = [(20cars x 2 tons/car) + (10 trucks x 20 tons/truck)]/15 8 tons
(2) ΣVKT = 30 vehicles x 0.045 km/day x 130 days/year = 176 km

TABLE 4.VF.outdoor
VOLATILIZATION FACTOR FOR GROUNDWATER TO OUTDOOR AIR, CONSTRUCTION SCENARIO
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

(1) $\text{VFwamb} = [\text{H} \times 1000\ \text{L/m}^3] / [1 + \text{Uair} \times \delta\text{air} \times \text{Lgw} / (\text{W} \times \text{Deff-ws})]$

(2) $\text{Deff-ws} = (\text{h-cap} + \text{h-v}) / (\text{h-cap}/\text{Deff-cap} + \text{h-v}/\text{Deff-a})$

(3) $\text{Deff-cap} = \text{Dair} \times (\theta\text{-acap}^{3.33}/\theta\text{-t}^2) + \text{Dw} \times (1/\text{H}) \times (\theta\text{-wcap}^{3.33}/\theta\text{-t}^2)$

(4) $\text{Deff-a} = \text{Dair} \times (\theta\text{-as}^{3.33}/\theta\text{-t}^2) + \text{Dw} \times (1/\text{H}) \times (\theta\text{-ws}^{3.33}/\theta\text{-t}^2)$

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference
VFwamb	Volatilization Factor for groundwater to outdoor air	Chemical-specific	(mg/m^3-air)/(mg/L-water)	Equation (1); EPA 2001
Deff-ws	Effective diffusion coefficient between groundwater and soil surface	Chemical-specific	cm^2/s	Equation (2); EPA 2001
Deff-cap	Effective diffusion coefficient through capillary fringe	Chemical-specific	cm^2/s	Equation (3); EPA 2001
Deff-a	Effective diffusion coefficient in soil based on vapor phase concentration	Chemical-specific	cm^2/s	Equation (4); EPA 2001
H	Henry's Law constant	Chemical-specific	cm^3-water/cm^3-air	See table below
Uair	Wind speed in ambient mixing zone	225	cm/s	default; EPA 2001
δair	Ambient air mixing zone height	200	cm	default; EPA 2001
Lgw	Depth to groundwater (h-cap + h-v)	5	cm	assumed
h-cap	Thickness of capillary fringe	5	cm	default; EPA 2001
h-v	Thickness of vadose zone	0	cm	assumed
W	Width of source area parallel to wind or GW flow direction	1500	cm	default; EPA 2001
Dair	Diffusion coefficient in air	Chemical-specific	cm^2/s	See table below
Dw	Diffusion coefficient in water	Chemical-specific	cm^2/s	See table below
θ-acap	Volumetric air content in capillary fringe soils	0.038	cm^3-air/cm^3-soil	default; EPA 2001
θ-wcap	Volumetric water content in capillary fringe soils	0.342	cm^3-air/cm^3-soil	default; EPA 2001
θ-t	Total soil porosity	0.38	cm^3-air/cm^3-soil	default; EPA 2001
θ-as	Volumetric air content in vadose zone soils	0.26	cm^3-air/cm^3-soil	default; EPA 2001
θ-ws	Volumetric water content in vadose zone soils	0.12	cm^3-air/cm^3-soil	default; EPA 2001

Chemical-Specific Values and Results:

CHEMICAL	Volatile?	H cm^3-water/cm^3-air	Dair cm^2/s	Dw cm^2/s	Deff-a cm^2/s	Deff-cap cm^2/s	Deff-ws cm^2/s	VFwamb (mg/m^3-air)/(mg/L-water)
Aluminum	no	–	–	–	–	–	–	–
Chromium(VI)	no	–	–	–	–	–	–	–
Iron	no	–	–	–	–	–	–	–
Manganese	no	–	–	–	–	–	–	–
Thallium	no	–	–	–	–	–	–	–
2-Methylnaphthalene	yes	1.85E-02	6.29E-02	7.20E-06	4.91E-03	8.40E-05	8.40E-05	1.03E-05
1,2,4-Trimethylbenzene	yes	2.34E-01	7.50E-02	7.10E-06	5.85E-03	1.56E-05	1.56E-05	2.43E-05
1,2-Dichlorobenzene	yes	7.79E-02	6.90E-02	7.90E-06	5.39E-03	2.86E-05	2.86E-05	1.49E-05
1,2-Dichloroethane	yes	4.01E-02	1.04E-01	9.90E-06	8.12E-03	6.14E-05	6.14E-05	1.64E-05
1,3,5-Trimethylbenzene	yes	3.16E-01	7.50E-02	7.10E-06	5.85E-03	1.41E-05	1.41E-05	2.96E-05
1,3-Dichlorobenzene	yes	7.79E-02	6.90E-02	7.90E-06	5.39E-03	2.86E-05	2.86E-05	1.49E-05
1,4-Dichlorobenzene	yes	9.96E-02	6.90E-02	7.90E-06	5.38E-03	2.43E-05	2.43E-05	1.62E-05
Acetone	yes	1.59E-03	1.24E-01	1.14E-05	9.72E-03	1.41E-03	1.41E-03	1.49E-05
Benzene	yes	2.28E-01	8.80E-02	9.80E-06	6.87E-03	1.97E-05	1.97E-05	2.99E-05
Chlorobenzene	yes	1.52E-01	7.30E-02	8.70E-06	5.70E-03	2.06E-05	2.06E-05	2.08E-05
Chloroform	yes	1.50E-01	1.04E-01	1.00E-05	8.12E-03	2.64E-05	2.64E-05	2.64E-05
cis-1,2-Dichloroethene	yes	1.67E-01	7.36E-02	1.13E-05	5.74E-03	2.26E-05	2.26E-05	2.52E-05
Methylene chloride	yes	8.98E-02	1.01E-01	1.17E-05	7.88E-03	3.84E-05	3.84E-05	2.30E-05
Naphthalene	yes	1.98E-02	5.90E-02	7.50E-06	4.61E-03	8.13E-05	8.13E-05	1.07E-05
n-Butylbenzene	yes	5.37E-01	7.50E-02	7.80E-06	5.85E-03	1.25E-05	1.25E-05	4.48E-05
Tetrachloroethene	yes	7.54E-01	7.20E-02	8.20E-06	5.62E-03	1.14E-05	1.14E-05	5.74E-05
Trichloroethene	yes	4.22E-01	7.90E-02	9.10E-06	6.16E-03	1.44E-05	1.44E-05	4.05E-05
Vinyl Chloride	yes	1.11E+00	1.06E-01	1.23E-06	8.27E-03	1.39E-05	1.39E-05	1.03E-04
Xylenes	yes	3.01E-01	7.00E-02	7.80E-06	5.46E-03	1.41E-05	1.41E-05	2.82E-05

TABLE 4.VF.indoor
VOLATILIZATION FACTOR FOR GROUNDWATER TO INDOOR AIR
GRIFFISS AFB - AOC 9: WEAPONS STORAGE AREA (WSA)

(1) $$\text{VFwesp} = \frac{[\text{H} \times 1000\ \text{L/m}^3] \times [(\text{Deff-ws}/\ \text{Lgw}) / (\text{ER} \times \text{Lb})]}{1 + [(\text{Deff-ws} / \text{Lgw}) / (\text{ER} \times \text{Lb})] + [(\text{Deff-ws}/\text{Lgw}) / (\eta \times \text{Deff-crack} / \text{Lcrack})]}$$

(2) $$\text{Deff-ws} = (\text{h-cap} + \text{h-v}) / (\text{h-cap}/\text{Deff-cap} + \text{h-v}/\text{Deff-a})$$

(3) $$\text{Deff-crack} = \text{Dair} \times (\theta\text{-acrack}^{3.33}/\theta\text{-t}^2) + \text{Dw} \times (1/\text{H}) \times (\theta\text{-wcrack}^{3.33}/\theta\text{-t}^2)$$

(4) $$\text{Deff-cap} = \text{Dair} \times (\theta\text{-acap}^{3.33}/\theta\text{-t}^2) + \text{Dw} \times (1/\text{H}) \times (\theta\text{-wcap}^{3.33}/\theta\text{-t}^2)$$

(5) $$\text{Deff-a} = \text{Dair} \times (\theta\text{-as}^{3.33}/\theta\text{-t}^2) + \text{Dw} \times (1/\text{H}) \times (\theta\text{-ws}^{3.33}/\theta\text{-t}^2)$$

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference
VFwesp	Volatilization Factor for groundwater to an enclosed air space	Chemical-specific	(mg/m^3-air)/(mg/L-water)	Equation (1); EPA 2001
Deff-ws	Effective diffusion coefficient between groundwater and soil surface	Chemical-specific	cm^2/s	Equation (2); EPA 2001
Deff-crack	Effective diffusion coefficient through foundation cracks	Chemical-specific	cm^2/s	Equation (3); EPA 2001
Deff-cap	Effective diffusion coefficient through capillary fringe	Chemical-specific	cm^2/s	Equation (4); EPA 2001
Deff-a	Effective diffusion coefficient in soil based on vapor phase concentration	Chemical-specific	cm^2/s	Equation (5); EPA 2001
H	Henry's Law constant	Chemical-specific	cm^3-water/cm^3-air	See table below
ER	Enclosed space air exchange rate	0.00014	1/s	default; EPA 2001
η	Areal fraction of cracks in foundations/walls	0.01	cm^2-cracks/cm^2-total area	default; EPA 2001
Lb	Enclosed space volume / infiltration area ratio	300	cm	Estimate (1)
Lcrack	Enclosed space foundation or wall thickness	15	cm	default; EPA 2001
Lgw	Depth to groundwater (h-cap + h-v)	200	cm	assumed
h-cap	Thickness of capillary fringe	5	cm	Estimate (2)
h-v	Thickness of vadose zone	195	cm	Estimate (2)
Dair	Diffusion coefficient in air	Chemical-specific	cm^2/s	See table below
Dw	Diffusion coefficient in water	Chemical-specific	cm^2/s	See table below
θ-acrack	Volumetric air content in foundation/wall cracks	0.26	cm^3-air/cm^3-total volume	default; EPA 2001
θ-wcrack	Volumetric water content in foundation/wall cracks	0.12	cm^3-air/cm^3-total volume	default; EPA 2001
θ-acap	Volumetric air content in capillary fringe soils	0.038	cm^3-air/cm^3-soil	default; EPA 2001
θ-wcap	Volumetric water content in capillary fringe soils	0.342	cm^3-air/cm^3-soil	default; EPA 2001
θ-t	Total soil porosity	0.38	cm^3-air/cm^3-soil	default; EPA 2001
θ-as	Volumetric air content in vadose zone soils	0.26	cm^3-air/cm^3-soil	default; EPA 2001
θ-ws	Volumetric water content in vadose zone soils	0.12	cm^3-air/cm^3-soil	default; EPA 2001

Chemical-Specific Values and Results:

CHEMICAL	Volatile?	H cm^3-water/cm^3-air	Dair cm^2/s	Dw cm^2/s	Deff-a cm^2/s	Deff-cap cm^2/s	Deff-crack cm^2/s	Deff-ws cm^2/s	VFwesp (mg/m^3-air)/(mg/L-water)
Aluminum	no	–	–	–	–	–	–	–	–
Chromium(VI)	no	–	–	–	–	–	–	–	–
Iron	no	–	–	–	–	–	–	–	–
Manganese	no	–	–	–	–	–	–	–	–
Thallium	no	–	–	–	–	–	–	–	–
2-Methylnaphthalene	yes	1.85E-02	6.29E-02	7.20E-06	4.91E-03	8.40E-05	4.91E-03	2.02E-03	1.09E-03
1,2,4-Trimethylbenzene	yes	2.34E-01	7.50E-02	7.10E-06	5.85E-03	1.56E-05	5.85E-03	5.65E-04	9.12E-03
1,2-Dichlorobenzene	yes	7.79E-02	6.90E-02	7.90E-06	5.39E-03	2.86E-05	5.39E-03	9.48E-04	3.79E-03
1,2-Dichloroethane	yes	4.01E-02	1.04E-01	9.90E-06	8.12E-03	6.14E-05	8.12E-03	1.90E-03	3.29E-03
1,3,5-Trimethylbenzene	yes	3.16E-01	7.50E-02	7.10E-06	5.85E-03	1.41E-05	5.85E-03	5.14E-04	1.17E-02
1,3-Dichlorobenzene	yes	7.79E-02	6.90E-02	7.90E-06	5.39E-03	2.86E-05	5.39E-03	9.48E-04	3.79E-03
1,4-Dichlorobenzene	yes	9.96E-02	6.90E-02	7.90E-06	5.38E-03	2.43E-05	5.38E-03	8.27E-04	4.56E-03
Acetone	yes	1.59E-03	1.24E-01	1.14E-05	9.72E-03	1.41E-03	9.72E-03	8.47E-03	2.13E-04
Benzene	yes	2.28E-01	8.80E-02	9.80E-06	6.87E-03	1.97E-05	6.87E-03	7.10E-04	1.08E-02
Chlorobenzene	yes	1.52E-01	7.30E-02	8.70E-06	5.70E-03	2.06E-05	5.70E-03	7.21E-04	6.68E-03
Chloroform	yes	1.50E-01	1.04E-01	1.00E-05	8.12E-03	2.64E-05	8.12E-03	9.36E-04	8.99E-03
cis-1,2-Dichloroethene	yes	1.67E-01	7.36E-02	1.13E-05	5.74E-03	2.26E-05	5.74E-03	7.85E-04	7.72E-03
Methylene chloride	yes	8.98E-02	1.01E-01	1.17E-05	7.88E-03	3.64E-05	7.88E-03	1.29E-03	6.19E-03
Naphthalene	yes	1.98E-02	5.90E-02	7.50E-06	4.61E-03	8.13E-05	4.61E-03	1.93E-03	1.10E-03
n-Butylbenzene	yes	5.37E-01	7.50E-02	7.80E-06	5.85E-03	1.25E-05	5.85E-03	4.62E-04	1.86E-02
Tetrachloroethene	yes	7.54E-01	7.20E-02	8.20E-06	5.62E-03	1.14E-05	5.62E-03	4.23E-04	2.43E-02
Trichloroethene	yes	4.22E-01	7.90E-02	9.10E-06	6.16E-03	1.44E-05	6.16E-03	5.28E-04	1.62E-02
Vinyl Chloride	yes	1.11E+00	1.06E-01	1.23E-06	8.27E-03	1.39E-05	8.27E-03	5.22E-04	4.87E-02
Xylenes	yes	3.01E-01	7.00E-02	7.80E-06	5.46E-03	1.41E-05	5.46E-03	5.12E-04	1.08E-02

(1) Estimate for single story slab-on-grade construction.
(2) Depths to groundwater found aroung perimeter road range from about 6 to 10 feet (200 to 300 cm); shallower depth was assumed.

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Fish Consumption Risk Calculation Tables (from the 1996 RI for the SMC AOC)

Table C.11: Calculations of Risk from Sixmile Creek Fauna
Adult Recreational Fishermen – Ingestion of Fish
Sixmile Creek Remedial Investigation
Griffiss Air Force Base, Rome, New York

Parameter	Exposure Point Concentration (mg/Kg)	Exposure Value Type [a]	Intake Factor (kg/kg-d)		Intake (mg/kg-d) [b]		Toxicity Values		Adult Hazard Quotient [c] (unitless)	Excess Cancer Risk [d] (unitless)
			Noncarc. (Adult)	Carcinogen (Lifetime)	Noncarc. (Adult)	Carcinogen (Lifetime)	Oral RfD (mg/kg-d)	Slope Factor (kg-d/mg)		
SEMI-VOLATILES										
Bis(2-ethylhexyl)phthalate	6.40E-03	Conc.	3.15E-04	1.35E-04	2.02E-06	8.64E-07	2.00E-02	1.40E-02	1.01E-04	1.21E-08
PESTICIDES/PCBs										
4,4-DDD	5.20E-02	Conc.	3.15E-04	1.35E-04	1.64E-05	7.02E-06	--	2.40E-01	--	1.68E-06
4,4-DDE	8.70E-01	Conc.	3.15E-04	1.35E-04	2.74E-04	1.17E-04	--	3.40E-01	--	3.99E-05
4,4-DDT	1.29E-02	Conc.	3.15E-04	1.35E-04	4.06E-06	1.74E-06	5.00E-04	3.40E-01	8.13E-03	5.92E-07
alpha BHC	1.14E-02	Conc.	3.15E-04	1.35E-04	3.59E-06	1.54E-06	--	6.30E+00	--	9.70E-06
beta BHC	1.37E-02	Conc.	3.15E-04	1.35E-04	4.32E-06	1.85E-06	--	1.80E+00	--	3.33E-06
delta BHC	2.26E-02	Conc.	3.15E-04	1.35E-04	7.12E-06	3.05E-06	--	6.30E+00	--	1.92E-05
gamma BHC	1.65E-03	Conc.	3.15E-04	1.35E-04	5.20E-07	2.23E-07	3.00E-04	1.30E+00	1.73E-03	2.90E-07
alpha Chlordane	1.03E-01	Conc.	3.15E-04	1.35E-04	3.24E-05	1.39E-05	6.00E-05	1.30E+00	5.41E-01	1.81E-05
gamma Chlordane	6.80E-03	Conc.	3.15E-04	1.35E-04	2.14E-06	9.18E-07	6.00E-05	1.30E+00	3.57E-02	1.19E-06
Dieldrin	3.13E-01	Conc.	3.15E-04	1.35E-04	9.86E-05	4.23E-05	5.00E-05	1.60E+01	1.97E+00	6.76E-04
Endosulfan I	5.15E-03	Conc.	3.15E-04	1.35E-04	1.62E-06	6.95E-07	6.00E-03	--	2.70E-04	--
Endosulfan II	1.33E-02	Conc.	3.15E-04	1.35E-04	4.19E-06	1.80E-06	6.00E-03	--	6.98E-04	--
Endosulfan sulfate	9.60E-04	Conc.	3.15E-04	1.35E-04	3.02E-07	1.30E-07	6.00E-03	--	5.04E-05	--
Heptachlor epoxide	2.38E-03	Conc.	3.15E-04	1.35E-04	7.50E-07	3.21E-07	1.30E-05	9.10E+00	5.77E-02	2.92E-06
PCB-1254	8.40E-01	Conc.	3.15E-04	1.35E-04	2.65E-04	1.13E-04	2.00E-05	7.70E+00	1.32E+01	8.73E-04
PCB-1260	1.35E+01	Conc.	3.15E-04	1.35E-04	4.25E-03	1.82E-03	--	7.70E+00	--	1.40E-02
TOTAL METALS										
Aluminum	2.32E+03	Conc.	3.15E-04	1.35E-04	7.31E-01	3.13E-01	1.00E+00	--	7.31E-01	--
Antimony	7.60E+00	Conc.	3.15E-04	1.35E-04	2.39E-03	1.03E-03	4.00E-04	--	5.99E+00	--
Cadmium	1.44E+00	Conc.	3.15E-04	1.35E-04	4.54E-04	1.94E-04	5.00E-04	--	9.07E-01	--
Chromium	2.80E+00	Conc.	3.15E-04	1.35E-04	8.82E-04	3.78E-04	5.00E-03 (e)	--	1.76E-01	--
Copper	1.72E+01	Conc.	3.15E-04	1.35E-04	5.42E-03	2.32E-03	4.00E-02	--	1.35E-01	--
Manganese	1.71E+03	Conc.	3.15E-04	1.35E-04	5.39E-01	2.31E-01	2.30E-02	--	2.34E+01	--
Mercury	1.30E+00	Conc.	3.15E-04	1.35E-04	4.10E-04	1.76E-04	--	--	--	--
Selenium	2.85E+00	Conc.	3.15E-04	1.35E-04	8.98E-04	3.85E-04	5.00E-03	--	1.80E-01	--
Strontium	4.90E+01	Conc.	3.15E-04	1.35E-04	1.54E-02	6.62E-03	6.00E-01	--	2.57E-02	--
Zinc	1.69E+02	Conc.	3.15E-04	1.35E-04	5.32E-02	2.28E-02	3.00E-01	--	1.77E-01	--
								TOTAL:	50	2E-02

-- Not available or applicable
a – "Conc." refers to the maximum detected concentration; "UCL" refers to the 95% upper confidence limit.
b – Intake = Exposure Point Concentration * Intake Factor
c – Hazard Quotient = Intake/RfD
d – Excess Cancer Risk (Carcinogens) = Intake * Slope Factor
e – Value for hexavalent chromium

PREPARED/DATE: CHR 8/2/95
CHECKED/DATE: LAS 8/5/95

Table C.12: Calculations of Risk from Sixmile Creek Fauna
Child, Youth, and Adolescent Recreational Fishermen – Ingestion of Fish
Sixmile Creek Remedial Investigation
Griffiss Air Force Base, Rome, New York

			Intake Factor (kg/kg-d)			Intake (mg/kg-d) b			Toxicity Value	Hazard Quotients c		
Parameter	Exposure Point Concentration (mg/Kg)	Exposure Value Type a	Noncarc. (Child)	Noncarc. (Youth)	Noncarc. (Adolescent)	Noncarc. (Child)	Noncarc. (Youth)	Noncarc. (Adolescent)	Oral RfD (mg/kg-d)	Child (unitless)	Youth (unitless)	Adolescent (unitless)
SEMI-VOLATILES												
Bis(2-ethylhexyl)phthalate	6.40E-03	Conc.	5.27E-04	3.57E-04	2.11E-04	3.37E-06	2.28E-06	1.35E-06	2.00E-02	1.69E-04	1.14E-04	6.75E-05
PESTICIDES/PCBs												
4,4-DDD	5.20E-02	Conc.	5.27E-04	3.57E-04	2.11E-04	2.74E-05	1.86E-05	1.10E-05	--	--	--	--
4,4-DDE	8.70E-01	Conc.	5.27E-04	3.57E-04	2.11E-04	4.58E-04	3.11E-04	1.84E-04	--	--	--	--
4,4-DDT	1.29E-02	Conc.	5.27E-04	3.57E-04	2.11E-04	6.80E-06	4.61E-06	2.72E-06	5.00E-04	1.36E-02	9.21E-03	5.44E-03
alpha BHC	1.14E-02	Conc.	5.27E-04	3.57E-04	2.11E-04	6.01E-06	4.07E-06	2.41E-06	--	--	--	--
beta BHC	1.37E-02	Conc.	5.27E-04	3.57E-04	2.11E-04	7.22E-06	4.89E-06	2.89E-06	--	--	--	--
delta BHC	2.26E-02	Conc.	5.27E-04	3.57E-04	2.11E-04	1.19E-05	8.07E-06	4.77E-06	--	--	--	--
gamma BHC	1.65E-03	Conc.	5.27E-04	3.57E-04	2.11E-04	8.70E-07	5.89E-07	3.48E-07	3.00E-04	2.90E-03	1.96E-03	1.16E-03
alpha Chlordane	1.03E-01	Conc.	5.27E-04	3.57E-04	2.11E-04	5.43E-05	3.68E-05	2.17E-05	6.00E-05	9.05E-01	6.13E-01	3.62E-01
gamma Chlordane	6.80E-03	Conc.	5.27E-04	3.57E-04	2.11E-04	3.58E-06	2.43E-06	1.43E-06	6.00E-05	5.97E-02	4.05E-02	2.39E-02
Dieldrin	3.13E-01	Conc.	5.27E-04	3.57E-04	2.11E-04	1.65E-04	1.12E-04	6.60E-05	5.00E-05	3.30E+00	2.23E+00	1.32E+00
Endosulfan I	5.15E-03	Conc.	5.27E-04	3.57E-04	2.11E-04	2.71E-06	1.84E-06	1.09E-06	6.00E-03	4.52E-04	3.06E-04	1.81E-04
Endosulfan II	1.33E-02	Conc.	5.27E-04	3.57E-04	2.11E-04	7.01E-06	4.75E-06	2.81E-06	6.00E-03	1.17E-03	7.91E-04	4.68E-04
Endosulfan sulfate	9.60E-04	Conc.	5.27E-04	3.57E-04	2.11E-04	5.06E-07	3.43E-07	2.03E-07	6.00E-03	8.43E-05	5.71E-05	3.38E-05
Heptachlor epoxide	2.38E-03	Conc.	5.27E-04	3.57E-04	2.11E-04	1.25E-06	8.50E-07	5.02E-07	1.30E-05	9.65E-02	6.54E-02	3.86E-02
PCB-1254	8.40E-01	Conc.	5.27E-04	3.57E-04	2.11E-04	4.43E-04	3.00E-04	1.77E-04	2.00E-05	2.21E+01	1.50E+01	8.86E+00
PCB-1260	1.35E+01	Conc.	5.27E-04	3.57E-04	2.11E-04	7.11E-03	4.82E-03	2.85E-03	--	--	--	--
TOTAL METALS												
Aluminum	2.32E+03	Conc.	5.27E-04	3.57E-04	2.11E-04	1.22E+00	8.28E-01	4.90E-01	1.00E+00	1.22E+00	8.28E-01	4.90E-01
Antimony	7.60E+00	Conc.	5.27E-04	3.57E-04	2.11E-04	4.01E-03	2.71E-03	1.60E-03	4.00E-04	1.00E+01	6.78E+00	4.01E+00
Cadmium	1.44E+00	Conc.	5.27E-04	3.57E-04	2.11E-04	7.59E-04	5.14E-04	3.04E-04	5.00E-04	1.52E+00	1.03E+00	6.08E-01
Chromium	2.80E+00	Conc.	5.27E-04	3.57E-04	2.11E-04	1.48E-03	1.00E-03	5.91E-04	5.00E-03 (d)	2.95E-01	2.00E-01	1.18E-01
Copper	1.72E+01	Conc.	5.27E-04	3.57E-04	2.11E-04	9.06E-03	6.14E-03	3.63E-03	4.00E-02	2.27E-01	1.54E-01	9.07E-02
Manganese	1.71E+03	Conc.	5.27E-04	3.57E-04	2.11E-04	9.01E-01	6.10E-01	3.61E-01	2.30E-02	3.92E+01	2.65E+01	1.57E+01
Mercury	1.30E+00	Conc.	5.27E-04	3.57E-04	2.11E-04	6.85E-04	4.64E-04	2.74E-04	--	--	--	--
Selenium	2.85E+00	Conc.	5.27E-04	3.57E-04	2.11E-04	1.50E-03	1.02E-03	6.01E-04	5.00E-03	3.00E-01	2.03E-01	1.20E-01
Strontium	4.90E+01	Conc.	5.27E-04	3.57E-04	2.11E-04	2.58E-02	1.75E-02	1.03E-02	6.00E-01	4.30E-02	2.92E-02	1.72E-02
Zinc	1.69E+02	Conc.	5.27E-04	3.57E-04	2.11E-04	8.91E-02	6.03E-02	3.57E-02	3.00E-01	2.97E-01	2.01E-01	1.19E-01
									TOTAL:	80	50	30

-- Not available or applicable
a – "Conc." refers to the maximum detected concentration.
b – Intake = Exposure Point Concentration * Intake Factor
c – Hazard Quotient = Intake/RfD
d – Value for hexavalent chromium

PREPARED/DATE: CHR 8/2/95
CHECKED/DATE: LAS 8/5/95

M Ecological Risk Assessment Information for AOC 9

M-1
Database for the AOC 9 Ecological Assessment

Appendix M - Table 1

Analyte	AOC9-TP01	AOC9-TP02	AOC9-TP03	AOC9-TP04	AOC9-TP04/D	AOC9-TP05	AOC9-TP06	G009-MW01-Z1	G009-MW01-Z1/D	G009-MW01-Z2
VOC and SVOC µg/kg										
Acetone	7.7	7.4	18.8	40.3	5.07	6.1	9.45	93	26	40
Benzoic acid	510	505	460	483.5	478.5	498	477.5	1250	1400	1100
2-Butanone	7.7	7.4	3.8	3.07	5.9	6.1	6.35	28	4.35	3.5
Chlorobenzene	3.84	3.705	2.37	3.255	2.94	3.045	3.18	3.85	4.35	3.5
1,4-Dichlorobenzene	3.84	3.705	4.74	3.255	2.94	3.045	3.18	255	285	230
Methylene chloride	3.84	3.705	3.31	3.255	2.94	3.045	3.18	3.85	4.35	3.5
1,1,1-Trichloroethane	3.84	3.705	3.31	3.255	2.94	3.045	3.18	3.85	4.35	3.5
Bis(2-ethylhexyl)phthalate	202	201	183	192.5	190.5	198	190	63	140	55
Carbazole	202	201	536	192.5	190.5	198	190	255	285	230
Chloromethane	7.7	7.4	6.6	6.5	5.9	6.1	6.35	7.5	8.5	7
Dibenzofuran	202	201	520	192.5	190.5	198	190	255	285	230
PAH µg/kg										
2-Methylnaphthalene	202	201	219	192.5	190.5	198	190	255	285	230
Acenaphthene	202	201	579	192.5	190.5	198	190	255	285	230
Anthracene	202	201	1440	192.5	190.5	198	190	255	285	230
Benzo(a)anthracene	202	201	2170	163		198	190	255	70	230
Benzo(a)pyrene	202	201	1400	87.3	190.5	198	190	255	75	230
Benzo(b)fluoranthene	202	201	1510	192.5	190.5	198	190	255	76	230
Benzo(g,h,i)perylene	202	201	520	192.5	190.5	198	190	255	285	230
Benzo(k)fluoranthene	202	201	1800	192.5	190.5	198	190	255	71	230
Chrysene	202	201	1900	192.5	190.5	198	190	255	87	230
Dibenzo(a,h)anthracene	202	201	225	180.5		198	190	255	285	230
Fluoranthene	202	201	6110	192.5	190.5	198	190	255	150	230
Fluorene	202	201	741	192.5	190.5	198	190	255	285	230
Indeno(1,2,3-cd)pyrene	202	201	283	192.5	190.5	198	190	255	285	230
Naphthalene	202	201	601	192.5	190.5	198	190	255	285	230
Phenanthrene	202	201	7110	192.5	190.5	198	190	255	285	230
Pyrene	202	201	5390	192.5	190.5	198	190	255	210	230
Hydrocarbons										
Diesel Range Organics	NA	NA	NA	13.9	14.3	NA	NA	NA	NA	NA
TRPH	NA	NA	NA	NA	NA	NA	NA	15.5	17.5	14
Pesticides µg/kg										
4,4´-DDD	1.265	1.095	1.2	1.79	1.735	1.195	1.17	5.6	8.5	1.4
4,4´-DDE	1.265	1.095	1.2	1.79	1.735	1.195	1.17	5.9	4	1.4
4,4´-DDT	1.265	1.095	1.2	1.125	2.315	1.195	1.17	38.5	21.5	3.5
Aldrin	0.635	0.55	1.26	2.385	2.315	0.595	0.585	7.5	4.35	0.7
alpha-BHC	0.635	0.55	1.05	1.79	1.735	0.595	0.585	7.5	4.35	0.7
Dieldrin	1.265	1.095	59.4	2.98	2.89	1.195	1.17	15.5	8.5	1.4
Endrin ketone	1.265	1.095	3.2	1.79	1.735	1.195	1.17	NA	NA	NA
Metals mg/kg										
Antimony	0.4735	0.43	0.4045	0.899	0.749	0.344	0.54	0.23	0.26	0.21
Arsenic	0.905	1.05	0.981	0.995	1.33	1.22	2.39	3.3	4	1.9
Barium	15.2	28.1	23.3	28.8	26.2	10	23.1	28	31	21
Beryllium	0.325	0.294	0.331	0.298	0.264	0.158	0.355	0.385	0.435	0.35
Cadmium	1.47	1.7	1.41	1.21	1.07	0.959	2.17	0.385	0.435	0.35
Chromium[2]	7.84	8.18	8.54	9.43	6.57	4.81	9.51	8	7.3	11
Cobalt[2]	3.64	3.64	3.71	3.67	2.52	2.84	5.66	4.1	4.3	4.2
Copper[2]	17.4	9.74	10.7	8.96	9.38	8.57	21	13	14	10
Lead	2.7	11.1	3.22	8.72	7.73	1.45	5.34	12	11	4
Manganese[2]	173	531	374	182	251	242	546	760	860	210
Mercury	0.0225	0.02015	0.02	0.0439	0.0368	0.0202	0.021	0.075	0.085	0.07
Nickel	8.96	7.04	8	9.09	4.46	6.3	12.7	10	8.3	8.8
Selenium	0.4735	0.43	0.651	3.025	2.68	0.344	0.54	3	4.3	2.1
Silver	0.4735	0.43	0.4045	1.21	1.07	0.284	0.54	0.75	0.85	0.7
Thallium	0.4735	0.43	0.4045	0.871	0.975	0.344	0.54	0.155	0.175	0.58
Vanadium[2]	10.8	13.5	12.1	12.8	13.8	6.53	12.5	12	12	11
Zinc	29.7	34.9	27.2	35.8	24.4	16.4	43.6	44	40	40

Key:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
SVOC = Semivolatile organic compound
PAH = Polycyclic Aromatic Hydrocarbon
VOC = Volatile organic compound
gray shading indicates 1/2 detection limit for a non-detect

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 1

Analyte	G009-MW02-Z1	G009-MW02-Z2	G009-MW03-Z1	G009-MW03-Z2	G009-MW04-Z1-2	G009-MW04-Z2-2	G009-SS01-Z1	G009-SS01-Z2	SBMW3	SBMW4
VOC and SVOC µg/kg										
Acetone	5.5	6	18	8.6	6.5	6.5	6.5	13	NA	NA
Benzoic acid	900	4650	1050	1150	1050	1050	1050	1000	NA	NA
2-Butanone	2.8	2.9	3.3	6.4	3.3	3.2	3.25	8.5	NA	NA
Chlorobenzene	2.8	2.9	3.3	14	3.3	3.2	3.25	3.1	NA	NA
1,4-Dichlorobenzene	190	950	220	240	220	210	215	205	NA	NA
Methylene chloride	2.8	2.9	3.3	3.65	3.3	3.2	3.25	3.1	NA	NA
1,1,1-Trichloroethane	2.8	2.9	3.3	3.65	3.3	3.2	3.25	3.1	NA	NA
Bis(2-ethylhexyl)phthalate	48	950	220	200	190	68	140	81	NA	NA
Carbazole	185	950	220	240	220	210	215	205	NA	NA
Chloromethane	5.5	6	6.5	7.5	6.5	6.5	6.5	6	NA	NA
Dibenzofuran	185	950	220	240	220	210	215	205	NA	NA
PAH µg/kg										
2-Methylnaphthalene	185	950	220	240	220	210	215	205	NA	NA
Acenaphthene	185	950	220	240	220	210	215	205	NA	NA
Anthracene	39	950	220	240	220	210	215	205	NA	NA
Benzo(a)anthracene	150	490	220	240	220	210	215	205	NA	NA
Benzo(a)pyrene	170	660	220	240	220	210	215	205	NA	NA
Benzo(b)fluoranthene	140	700	220	240	220	210	215	205	NA	NA
Benzo(g,h,i)perylene	185	950	220	240	220	210	215	205	NA	NA
Benzo(k)fluoranthene	170	980	220	240	220	210	215	205	NA	NA
Chrysene	170	670	220	240	220	210	215	205	NA	NA
Dibenzo(a,h)anthracene	185	950	220	240	220	210	215	205	NA	NA
Fluoranthene	240	560	220	240	220	210	215	205	NA	NA
Fluorene	185	950	220	240	220	210	215	205	NA	NA
Indeno(1,2,3-cd)pyrene	185	950	220	240	220	210	215	205	NA	NA
Naphthalene	185	950	220	240	220	210	215	205	NA	NA
Phenanthrene	160	270	220	240	220	210	215	205	NA	NA
Pyrene	430	1100	220	240	220	210	215	205	NA	NA
Hydrocarbons										
Diesel Range Organics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRPH	35	57	13	14.5	13.5	13	13	12.5	NA	NA
Pesticides µg/kg										
4,4´-DDD	2.9	3.5	0.53	0.58	1.35	1.3	1.3	1.25	NA	NA
4,4´-DDE	9.4	13	0.93	1.45	0.93	0.9	1.3	1.25	NA	NA
4,4´-DDT	13	15	3.3	3.65	3.3	3.2	3.25	3.1	NA	NA
Aldrin	2.8	2.9	0.65	0.75	0.65	0.65	0.65	0.6	NA	NA
alpha-BHC	2.8	2.9	0.65	0.75	0.65	0.65	0.65	0.6	NA	NA
Dieldrin	5.5	46	1.3	1.45	1.35	1.3	1.3	1.25	NA	NA
Endrin ketone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals mg/kg										
Antimony	0.54	0.92	0.2	0.53	1.4	1.2	0.46	0.5	NA	NA
Arsenic	4.8	4.2	2.4	3.3	6.2	6.8	5.3	3.2	2.07	4.2
Barium	36	42	21	47	72	71	28	25	16	51
Beryllium	0.28	0.29	0.33	0.365	0.89	0.94	0.325	0.31	NA	NA
Cadmium	0.28	0.29	0.33	0.365	0.33	0.32	0.325	0.31	0.89	3.2
Chromium^2	20	14	7.2	16	23	25	9.4	7	4.11	9.65
Cobalt^2	6.4	6.3	4.3	12	13	13	5.1	4	NA	NA
Copper^2	27	27	17	25	32	32	16	13	10.6	29.8
Lead	8.9	39	9.8	13	19	19	8.1	6	2.9	9.4
Manganese^2	690	740	230	360	810	830	450	80	338	956
Mercury	0.055	0.06	0.065	0.075	0.065	0.065	0.065	0.06	0.24	0.33
Nickel	17	14	10	23	26	27	9.6	9.3	6.5	16.8
Selenium	4.2	3.8	3	4.6	5.8	6.5	3.8	3.3	0.6	0.3
Silver	0.055	0.06	0.65	0.75	0.65	0.65	0.65	0.6	NA	NA
Thallium	0.115	0.28	0.13	0.145	0.135	0.13	0.13	0.125	0.6	0.61
Vanadium^2	16	16	13	22	33	34	14	12	NA	NA
Zinc	58	68	40	56	93	92	38	31	17.4	62.5

Key:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
SVOC = Semivolatile organic compo
PAH = Polycyclic Aromatic Hydrocar
VOC = Volatile organic compound
gray shading indicates 1/2 detection

Source: Ecology and Environment, Inc. 2003

Appendix M - Table 1

Analyte	SBMW401 - D P	WSASB1BG	WSASB2	WSASB201 - D P	WSASB3
VOC and SVOC µg/kg					
Acetone	NA	49	51	49	53
Benzoic acid	NA	1760	1700	1680	38
2-Butanone	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA
Methylene chloride	NA	25 B	8.4 B	7.4 B	8.7 B
1,1,1-Trichloroethane	NA	6.5	6.8	6.5	6.5
Bis(2-ethylhexyl)phthalate	NA	360	350	350	370
Carbazole	NA	NA	NA	NA	NA
Chloromethane	NA	55	28	53	56
Dibenzofuran	NA	NA	NA	NA	NA
PAH µg/kg					
2-Methylnaphthalene	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	360	350	350	43
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Hydrocarbons					
Diesel Range Organics	NA	NA	NA	NA	NA
TRPH	NA	NA	NA	NA	NA
Pesticides µg/kg					
4,4´-DDD	NA	NA	NA	NA	NA
4,4´-DDE	NA	NA	NA	NA	NA
4,4´-DDT	NA	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA	NA
alpha-BHC	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA
Endrin ketone	NA	NA	NA	NA	NA
Metals mg/kg					
Antimony	NA	3.3	3.16	3.16	3.4
Arsenic	3.2	1.74	2.7	1.81	3.04
Barium	32.6	18.7	9.7	12.1	37.8
Beryllium	NA	NA	NA	NA	NA
Cadmium	2.82	1.81	2.2	1.3	2.83
Chromium[2]	7.22	4.2	6.2	3.2	8.3
Cobalt[2]	NA	NA	NA	NA	NA
Copper[2]	16.5	10.8	15.2	9.9	24.1
Lead	9.64	4.94	3.65	1.82	6.33
Manganese[2]	878	434	330	174	775
Mercury	0.035	0.022	0.032	0.021	0.043
Nickel	10.6	6.2	8.94	4.53	8.3
Selenium	0.29	0.55	0.53	0.53	0.56
Silver	NA	NA	NA	NA	NA
Thallium	0.59	NA	NA	NA	NA
Vanadium[2]	NA	NA	NA	NA	NA
Zinc	43.2	18.5	21.3	12.2	45.8

Key:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
SVOC = Semivolatile organic compo
PAH = Polycyclic Aromatic Hydrocarl
VOC = Volatile organic compound
gray shading indicates 1/2 detection

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 2

Analyte	G009-SW01	G009-SW03	G009-SW04	G009-SW08	G009-SW08-R
VOC and SVOC µg/L					
1,1,1-Trichloroethane	2.5	2.5	2.5	2.5	NA
1,1,2,2-Tetrachloroethane	2.5	2.5	2.5	2.5	NA
1,1,2-Trichloroethane	2.5	2.5	2.5	2.5	NA
1,1-Dichloroethane	2.5	2.5	2.5	2.5	NA
1,1-Dichloroethene	2.5	2.5	2.5	2.5	NA
1,2,4-Trichlorobenzene	5	5	5	5	NA
1,2-Dichlorobenzene	5	5	5	5	NA
1,2-Dichloroethane	2.5	2.5	2.5	2.5	NA
1,2-Dichloropropane	2.5	2.5	2.5	2.5	NA
1,3-Dichlorobenzene	5	5	5	5	NA
1,4-Dichlorobenzene	5	5	5	5	NA
2,4,5-Trichlorophenol	25	25	25	25	NA
2,4,6-Trichlorophenol	5	5	5	5	NA
2,4-Dichlorophenol	5	5	5	5	NA
2,4-Dimethylphenol	5	5	5	5	NA
2,4-Dinitrophenol	25	25	25	25	NA
2,4-Dinitrotoluene	5	5	5	5	NA
2,6-Dinitrotoluene	5	5	5	5	NA
2-Butanone	5	5	5	5	NA
2-Chloroethyl vinyl ether	5	5	5	NA	NA
2-Chloronaphthalene	5	5	5	5	NA
2-Chlorophenol	5	5	5	5	NA
2-Hexanone	5	5	5	5	NA
2-Methylnaphthalene	5	5	5	5	NA
2-Methylphenol	5	5	5	5	NA
2-Nitroaniline	25	25	25	25	NA
3,3'-Dichlorobenzidine	10	10	10	10	NA
3-Nitroaniline	25	25	25	25	NA
4-Chloro-3-methylphenol	5	5	5	5	NA
Acetone	13	5	6	5	NA
Benzidine	NA	NA	NA	25	NA
Benzoic Acid	25	25	25	25	NA
Benzyl Alcohol	5	5	5	5	NA
PAH µg/L					
Acenaphthene	5	5	5	5	NA
Acenaphthylene	5	5	5	5	NA
Anthracene	5	5	5	5	NA
Benzene	2.5	2.5	2.5	2.5	NA
Benzo(a)anthracene	5	5	5	5	NA
Benzo(a)pyrene	5	5	5	5	NA
Benzo(b)fluoranthene	5	5	5	5	NA
Benzo(g,h,i)perylene	5	5	5	5	NA
Benzo(k)fluoranthene	5	5	5	5	NA
Chrysene	5	5	5	5	NA
Dibenzo(a,h)anthracene	5	5	5	5	NA
Fluoranthene	5	5	5	5	NA
Fluorene	5	5	5	5	NA
Indeno(1,2,3-cd)pyrene	5	5	5	5	NA
Naphthalene	5	5	5	5	NA
Phenanthrene	5	5	5	5	NA
Pyrene	5	5	5	5	NA

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 2

Analyte	G009-SW01	G009-SW03	G009-SW04	G009-SW08	G009-SW08-R
Other SVOC µg/L					
Bis(2-ethylhexyl)phthalate	5	5	5	5	NA
Butylbenzylphthalate	5	5	5	5	NA
Carbazole	NA	NA	NA	5	NA
Carbon disulfide	2.5	2.5	2.5	2.5	NA
Carbon tetrachloride	2.5	2.5	2.5	2.5	NA
Chlorobenzene	2.5	2.5	2.5	2.5	NA
Chloroethane	5	5	5	5	NA
Chloroform	2.5	2.5	2.5	2.5	NA
Chloromethane	5	5	5	5	NA
cis-1,3-Dichloropropene	2.5	2.5	2.5	2.5	NA
Diethylphthalate	5	5	5	5	NA
Dimethylphthalate	5	5	5	5	NA
Di-n-butyl phthalate	5	5	5	5	NA
Di-n-octyl phthalate	5	5	5	5	NA
Dibenzofuran	5	5	5	5	NA
Dibromochloromethane	2.5	2.5	2.5	2.5	NA
Ethylbenzene	2.5	2.5	2.5	2.5	NA
Hexachlorobenzene	5	5	5	5	NA
Hexachlorobutadiene	5	5	5	5	NA
Hexachlorocyclopentadiene	5	5	5	5	NA
Hexachloroethane	5	5	5	5	NA
Isophorone	5	5	5	5	NA
Methylene chloride	2.5	2.5	2.5	2.5	NA
Nitrobenzene	5	5	5	5	NA
N-Nitroso-di-n-propylamine	5	5	5	5	NA
N-Nitrosodiphenylamine	5	5	5	5	NA
Pentachlorophenol	25	25	25	25	NA
Phenol	5	5	5	5	NA
Styrene	2.5	2.5	2.5	2.5	NA
Tetrachloroethene	2.5	2.5	2.5	2.5	NA
Toluene	2.5	2.5	2.5	2.5	NA
Total Xylenes	2.5	2.5	2.5	2.5	NA
trans-1,3-Dichloropropene	2.5	2.5	2.5	2.5	NA
Trichloroethene	2.5	2.5	2.5	2.5	NA
Vinyl acetate	5	5	5	5	NA
Vinyl chloride	5	5	5	5	NA
Hydrocarbons					
TRPH	0.5	0.5	0.5	0.5	NA
PCB µg/L					
Aroclor 1016	NA	NA	NA	NA	0.25
Aroclor 1221	NA	NA	NA	NA	0.25
Aroclor 1232	NA	NA	NA	NA	0.25
Aroclor 1242	NA	NA	NA	NA	0.25
Aroclor 1248	NA	NA	NA	NA	0.25
Aroclor 1254	NA	NA	NA	NA	0.25
Aroclor 1260	NA	NA	NA	NA	0.25

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 2

Analyte	G009-SW01	G009-SW03	G009-SW04	G009-SW08	G009-SW08-R
Pesticides µg/L					
4,4´-DDD	NA	NA	NA	NA	0.025
4,4´-DDE	NA	NA	NA	NA	0.025
4,4´-DDT	NA	NA	NA	NA	0.05
Aldrin	NA	NA	NA	NA	0.0125
alpha-BHC	NA	NA	NA	NA	0.0125
beta-BHC	NA	NA	NA	NA	0.0125
Chlordane	NA	NA	NA	NA	0.1
delta-BHC	NA	NA	NA	NA	0.0125
Dieldrin	NA	NA	NA	NA	0.025
Endosulfan I	NA	NA	NA	NA	0.025
Endosulfan II	NA	NA	NA	NA	0.025
Endosulfan sulfate	NA	NA	NA	NA	0.05
Endrin	NA	NA	NA	NA	0.025
Endrin aldehyde	NA	NA	NA	NA	0.05
gamma-BHC	NA	NA	NA	NA	0.0125
Heptachlor	NA	NA	NA	NA	0.0125
Heptachlor epoxide	NA	NA	NA	NA	0.025
Methoxychlor	NA	NA	NA	NA	0.2
Toxaphene	NA	NA	NA	NA	1.0 U
Metals µg/L (total)					
Antimony	2.5	2.5	2.5	1.5	NA
Arsenic	2.5	20	47	16	NA
Barium	620	190	960	300	NA
Beryllium	2.5	2.5	7.6	2.5	NA
Cadmium*	2.5	2.5	12	2.5	NA
Chromium*	5	5	62	35	NA
Cobalt	20	29	110	22	NA
Copper*	10	31	250	120	NA
Lead*	2.5	29	190	62	NA
Manganese	46000	12000	16000	13000	NA
Mercury	0.1	0.1	0.59	0.1	NA
Nickel*	24	26	160	45	NA
Selenium	2.5	1	1	2.5	NA
Silver*	10	5	20	5	NA
Thallium	2.5	0.5	0.5	1	NA
Vanadium	10	10	150	43	NA
Zinc*	110	75	580	390	NA

Key:
NA = Not available or not applicable
mg/L = milligrams per liter
µg/L = micrograms per liter
SVOC = Semivolatile organic compound
PAH = Polycyclic Aromatic Hydrocarbon
VOC = Volatile organic compound
gray shading indicates 1/2 detection limit for a non-detect

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 3

Analyte	G009-SD01	G009-SD03	G009-SD04	G009-SD08
VOC and SVOC µg/kg				
1,1,1-Trichloroethane	3	8.5	4.55	3.25
1,1,2,2-Tetrachloroethane	3	8.5	4.55	3.25
1,1,2-Trichloroethane	3	8.5	4.55	3.25
1,1-Dichloroethane	3	8.5	4.55	3.25
1,1-Dichloroethene	3	8.5	4.55	3.25
1,2,4-Trichlorobenzene	233.5	233.5	300	650
1,2-Dichlorobenzene	385	550	300	650
1,2-Dichloroethane	3	8.5	4.55	3.25
1,2-Dichloroethene, Total	NA	NA	NA	3.25
1,2-Dichloropropane	3	8.5	4.55	3.25
1,3-Dichlorobenzene	385	550	300	650
1,4-Dichlorobenzene	385	550	300	650
2,4,5-Trichlorophenol	1850	2750	1450	3100
2,4,6-Trichlorophenol	385	550	300	650
2,4-Dichlorophenol	385	550	300	650
2,4-Dimethylphenol	385	550	300	650
2,4-Dinitrophenol	1850	2750	1450	3100
2,4-Dinitrotoluene	385	550	300	650
2,6-Dinitrotoluene	385	550	300	650
2-Butanone[4]	11.5	17	9	14
2-Chloroethyl vinyl ether	11.5	17	9	NA
2-Chloronaphthalene	385	550	300	650
2-Chlorophenol	385	550	300	650
2-Hexanone	11.5	17	9	6.5
2-Methylnaphthalene	385	550	300	180
2-Methylphenol	385	550	300	650
2-Nitroaniline	1850	2750	1450	3100
2-Nitrophenol	385	550	300	650
3,3'-Dichlorobenzidine	750	1150	600	1300
3-Nitroaniline	1850	2750	1450	3100
4,6-Dinitro-2-methylphenol	1850	2750	1450	3100
4-Bromophenylphenylether	385	550	300	650
4-Chloro-3-methylphenol	385	550	300	650
4-Chloroaniline	385	550	300	650
4-Chlorophenylphenylether	385	550	300	650
4-Methyl-2-pentanone	11.5	17	9	6.5
4-Methylphenol	385	550	300	650
4-Nitroaniline	1850	2750	1450	3100
4-Nitrophenol	1850	2750	1450	3100
Acetone[4]	11.5	14	6.2	19.5
Benzidine	NA	NA	NA	3100
Benzoic acid	1850	2750	1450	3100
Benzyl alcohol	385	550	300	650
Bis(2-chloroethoxy)methane	385	550	300	650
Bis(2-chloroethyl)ether	385	550	300	650
Bis(2-chloroisopropyl)ether	385	550	300	NA
Bis(2-ethylhexyl)phthalate	385	550	300	650
Bromodichloromethane	6	8.5	4.55	3.25
Bromoform	6	8.5	4.55	3.25
Bromomethane	11.5	17	9	6.5
Butylbenzylphthalate	385	550	63	650
Carbazole	NA	NA	NA	650
Carbon disulfide	6	8.5	4.55	3.25
Carbon tetrachloride	6	8.5	4.55	3.25
Chlorobenzene	6	8.5	4.55	3.25
Chloroethane	11.5	17	9	6.5
Chloroform	6	8.5	4.55	3.25
Chloromethane	11.5	17	9	6.5
cis-1,3-Dichloropropene	6	8.5	4.55	3.25
Dibenzofuran	385	550	300	650
Dibromochloromethane	6	8.5	4.55	3.25
Diethylphthalate	385	550	300	650

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 3

Analyte	G009-SD01	G009-SD03	G009-SD04	G009-SD08
Dimethylphthalate	385	550	300	650
Di-n-butyl phthalate	385	550	300	650
Di-n-octyl phthalate	385	550	300	650
Ethylbenzene	6	8.5	4.55	3.25
Hexachlorobenzene	385	550	300	650
Hexachlorobutadiene	385	550	300	650
Hexachlorocyclopentadiene	385	550	300	650
Hexachloroethane	385	550	300	650
Methylene chloride[4]	6	8.5	4.55	1.8
Pentachlorophenol	385	550	300	3100
Phenol	385	550	300	650
Styrene	6	8.5	4.55	3.25
Tetrachloroethene	6	8.5	4.55	3.25
Toluene	6	8.5	4.55	1.7
Total Xylenes	6	8.5	4.55	3.25
trans-1,3-Dichloropropene	6	8.5	4.55	3.25
Trichloroethene	6	8.5	4.55	3.25
Vinyl acetate	11.5	17	9	6.5
Vinyl chloride	11.5	17	9	6.5
PAH µg/kg				
Acenaphthene	385	550	300	650
Acenaphthylene	385	550	300	160
Anthracene	385	550	300	380
Benzene	6	8.5	4.55	3.25
Benzo(a)anthracene	385	550	300	1400
Benzo(a)pyrene[2]	385	550	300	1300
Benzo(b)fluoranthene[2]	385	550	300	1400
Benzo(g,h,i)perylene[2]	385	550	300	750
Benzo(k)fluoranthene	385	550	300	650
Chrysene[2]	385	550	300	1700
Dibenzo(a,h)anthracene[2]	385	550	300	440
Fluoranthene	385	550	300	1500
Fluorene	385	550	300	410
Indeno(1,2,3-cd)pyrene[2]	385	550	300	690
Naphthalene	385	550	300	650
Phenanthrene[2]	385	550	300	3100
Pyrene	385	550	300	5700
Hydrocarbons				
TRPH	NA	NA	NA	13
Petroleum Hydrocarbons	23	34.5	18	NA
PCB µg/kg				
Aroclor 1016	NA	NA	NA	260
Aroclor 1221	NA	NA	NA	260
Aroclor 1232	NA	NA	NA	260
Aroclor 1242	NA	NA	NA	260
Aroclor 1248	NA	NA	NA	260
Aroclor 1254	NA	NA	NA	260
Aroclor 1260	NA	NA	NA	260
Pesticides µg/kg				
4,4'-DDD	NA	NA	NA	26
4,4'-DDE	NA	NA	NA	26
4,4'-DDT	NA	NA	NA	65
Aldrin[2]	NA	NA	NA	47
alpha-BHC	NA	NA	NA	13
beta-BHC	NA	NA	NA	13
Chlordane	NA	NA	NA	105
delta-BHC	NA	NA	NA	13
Dieldrin	NA	NA	NA	26
Endosulfan I	NA	NA	NA	13
Endosulfan II	NA	NA	NA	13
Endosulfan sulfate	NA	NA	NA	65
Endrin	NA	NA	NA	26
Endrin aldehyde	NA	NA	NA	32.5

Source: Ecology and Environment, Inc.
2003

Appendix M - Table 3

Analyte	G009-SD01	G009-SD03	G009-SD04	G009-SD08
gamma-BHC	NA	NA	NA	13
Heptachlor	NA	NA	NA	13
Heptachlor epoxide	NA	NA	NA	59
Methoxychlor	NA	NA	NA	210
Toxaphene	NA	NA	NA	650
Physical Properties				
% Moisture	NA	NA	NA	23
Solids - Total %	42	29	55	NA
Total Organic Carbon mg/kg	NA	48000	43000	NA
Metals mg/kg				
Antimony	0.6	0.85	0.455	0.195
Arsenic	4.6	17	4.8	2.2
Barium	270	72	53	14
Beryllium	0.6	0.85	0.455	0.325
Cadmium	1.6	0.85	0.455	0.325
Chromium	1.15	3.4	5.2	5.2
Cobalt	8.2	16	10	3.5
Copper	7.3	27	19	13
Lead	12	34	12	5.7
Manganese	24000	1300	1000	390
Mercury	0.115	0.17	0.09	0.065
Nickel	13	26	17	7.3
Selenium	1.15	0.5	0.5	0.325
Silver	4.9	1.7	0.9	0.65
Thallium	0.6	0.17	0.09	0.13
Vanadium	2.3	3.45	11	8.4
Zinc	26	76	44	27

Key:
NA = Not available or not applicable
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
SVOC = Semivolatile organic compound
PAH = Polycyclic Aromatic Hydrocarbon
VOC = Volatile organic compound
gray shading indicates 1/2 detection limit for a non-detect

Source: Ecology and Environment, Inc.
2003

M-2
Agency Correspondence

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

February 14, 2003

Sara Allen
Ecology and Environment, Inc
Buffalo Corporate Center
368 Pleasant View Drive
Lancaster, NY 14086

Dear Ms. Allen:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the proposed Ecological Risk Assessment at the former Griffiss Air Force Base, area as indicated on the map you provided, including a 2-mile radius, located in the Towns of Rome and Floyd, Oneida County.

> Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

The presence of rare species may result in your project requiring additional permits, permit conditions, or review. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

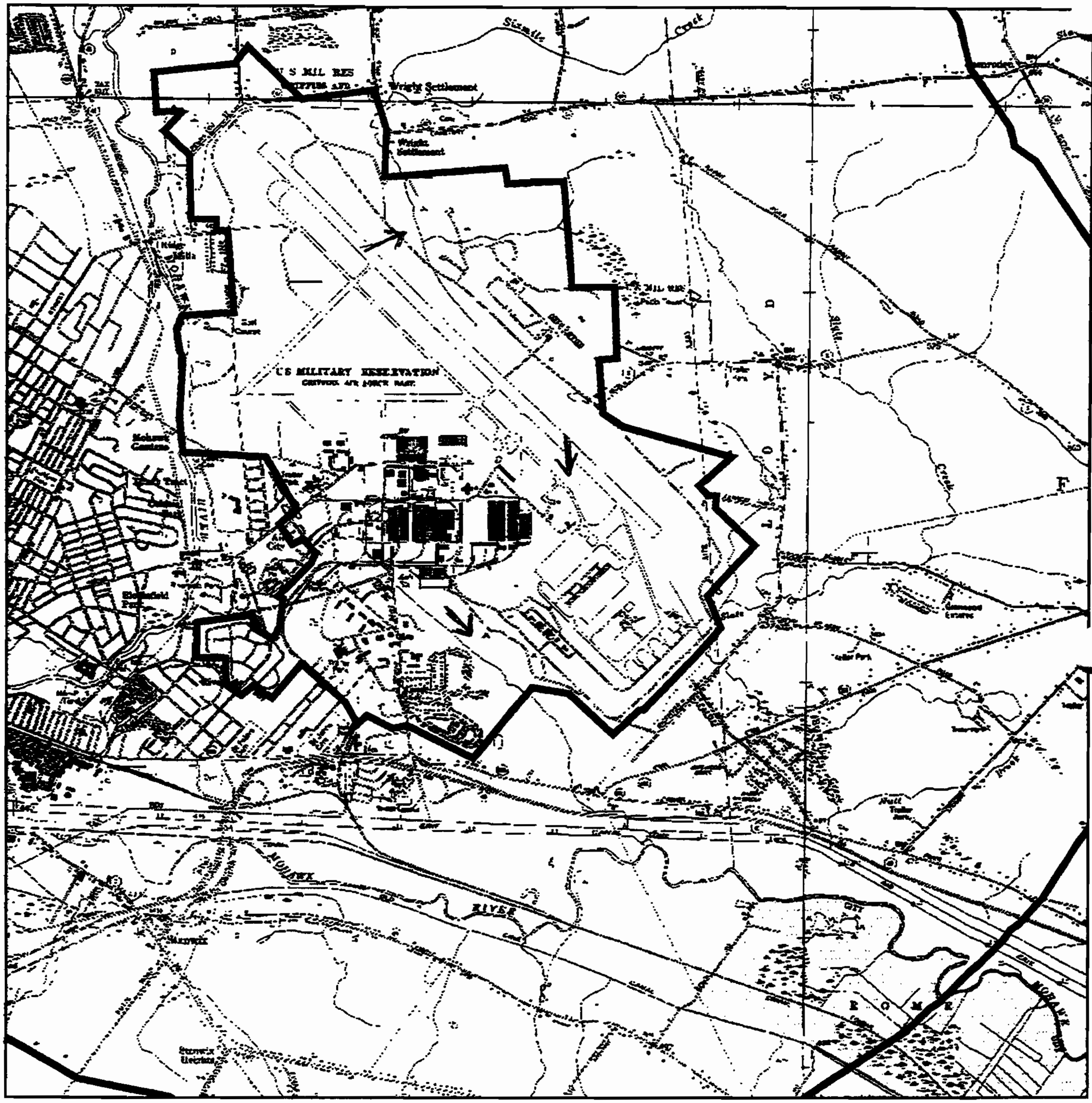
Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,
Charlene Houle jo
Charlene Houle, Information Services
NY Natural Heritage Program

Enc.

Natural Heritage Map of Rare Species and Ecological Communities

Prepared February 12, 2003 by NY Natural Heritage Program, NYS DEC, Albany, New York



▭ **PROJECT SITE (and 2-mile buffer)**

New York Natural Heritage Progam Database Records*

Plant

▥ Animal

Animal Concentration Area

▒ Community

Scale: 1:45000

0.5 0 0.5 Miles

N

*** The locations that are displayed are considered sensitive and cannot be released to the public without permission. We do not provide map locations for all records. Please see report for details.**

Natural Heritage Report on R Species and Ecological Communities

Prepared 12 February 2003 by NY Natural Heritage Program, NYS DEC, Albany, New York

This report contains SENSITIVE information that should be treated in a sensitive manner -- Please see cover letter. Refer to the Users' Guide for explanations of codes, ranks, and fields.
We do not always provide maps of locations of species most vulnerable to disturbance, nor of some records whose locations and/or extents are not precisely known or are too large to display.

* County ** Town Scientifc Name, COMMON NAME, & Group Name	NY Legal Status, Heritage Ranks, & Federal Status	EO Rank & Last Seen	Detailed Location	General Habitat	Office Use
* ONEIDA					
** CITY OF ROME					
Pycnanthemum verticillatum var verticillatum WHORLED MOUNTAIN-MINT Vascular Plant	THREATENED G5T5? S1S2	C 1993-08-01	GRIFFISS AIR FORCE BASE AMMO STORAGE From the perimeter road along the northeast edge of the base take the first dirt road to the north to gate 14, which leads to the small arms firing range. Immediately past the base confidence course, take a dirt road south to a small parking area. W	Rich sloping fen bordered on north by a successional woods and on south by a low, riparian wetland. The dominant tree is Thuja occidentalis with a diversity of herbaceous plants and bryophytes. There is an abandoned dump upslope and a brown flocculen Hundreds of plants in small fen with landfill leachate.	4307524 S
Pycnanthemum verticillatum var verticillatum WHORLED MOUNTAIN-MINT Vascular Plant	THREATENED G5T5? S1S2	CD 1993-08-01	GRIFFISS AIR FORCE BASE RUNWAY WETLAND At the Air Force base approach the wetland via the road that leads from perimeter road. After parking at road's end, pass southeast over metal platform into wetland. Continue on about 300 yards to the stand. Plants lie in the central part of the ove	Rich sloping fen dominated by Equisetum variegatum. Most of the wetland area is flat with the eastern margin springy and sloping. Soils are sandy muck. Associated species: Eleocharis erythropoda, Equisetum variegatum. Area mowed with some regularity. Over 100 plants in mowed site.	4307524 S
Lycopodium complanatum NORTHERN RUNNING-PINE Vascular Plant	ENDANGERED G5 S1	E 1993-05-30	GRIFFISS AIR FORCE BASE THREE MILE CREEK WOODS From the skyline gate take wright drive onto ellsWorth Road to perimeter road. Park at open area and walk along dirt road. First open stretch to the right is a pipeline right-of-way. Walk halfway down right-of-way, then head southeast into woods. Lo	Hemlock northern hardwoods forest. Primarily hemlock with a few red maple, yellow birch and beech. The understory consisted of a few hemlock and beech but few or no shrubs or herbaceous vegetation. Lots of needle litter on the ground. Extant, no exact count taken.	4307524 S
** WHITESTOWN					
Carex chordorrhiza CREEPING SEDGE Vascular Plant	THREATENED G5 S2	F 1840-06-08	ORISKANY SWAMP Oriskany swamp.		4307523 M

Natural Heritage Report on Rare Species and Ecological Communities

Prepared 12 February 2003 by NY Natural Heritage Program, NYS DEC, Albany, New York

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* County ** Town Scientifc Name, COMMON NAME, & Group Name	NY Legal Status, Heritage Ranks, & Federal Status	EO Rank & Last Seen	Detailed Location	General Habitat	Office Use
* ONEIDA					
** WHITESTOWN					
Carex tenuiflora SPARSE-FLOWERED SEDGE Vascular Plant	ENDANGERED G5 S1	F 1840-06-08	ORISKANY SWAMP Oriskany swamp.	Swamp.	4307523 M
** WHITESTOWN, MARCY					
Carex nigra BLACK SEDGE Vascular Plant	ENDANGERED G5 SH	F 1842	ORISKANY SWAMP Oriskany swamp.	Swamp.	4307523 M

6 Records Processed

USERS GUIDE TO NY NATURAL HERITAGE DATA

NATURAL HERITAGE PROGRAM: The Natural Heritage Program is an ongoing, systematic, scientific inventory whose goal is to compile and maintain data on the rare plants and animals native to New York State, and significant ecological communities. The data provided in the report facilitate sound planning, conservation, and natural resource management and help to conserve the plants, animals and ecological communities that represent New York's natural heritage.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should not be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

NATURAL HERITAGE REPORTS (may contain any of the following types of data):

COUNTY NAME: County where the occurrence of a rare species or significant ecological community is located.
TOWN NAME: Town where the occurrence of a rare species or significant ecological community is located.
USGS 7 ½' TOPOGRAPHIC MAP: Name of 7.5 minute US Geological Survey (USGS) quadrangle map (scale 1:24,000).

SIZE (acres): Approximate acres occupied by the rare species or significant ecological community at this location. A blank indicates unknown size.
SCIENTIFIC NAME: Scientific name of the occurrence of a rare species or significant ecological community.
COMMON NAME: Common name of the occurrence of a rare species or significant ecological community.
ELEMENT TYPE: Type of element (i.e. plant, animal, significant ecological community, other, etc.)

LAST SEEN: Year rare species or significant ecological community last observed extant at this location.

EO RANK: Comparative evaluation summarizing the quality, condition, viability and defensibility of this occurrence. Use with LAST SEEN.
A-E = Extant: A=excellent, B=good, C=marginal, D=poor, E=extant but with insufficient data to assign a rank of A - D.
F = Failed to find. Did not locate species, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
? = Unknown.
Blank = Not assigned.

NEW YORK STATE STATUS (animals): Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in NY.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NEW YORK STATE STATUS (plants): The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

E = Endangered Species: listed species are those with:
1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T = Threatened: listed species are those with:
1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R = Rare: listed species have:
1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.

continued on next page

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

January 24, 2003

Ms. Sara Allen
Environmental Scientist
Ecology and Environment, Inc.
Buffalo Corporate Center
368 Pleasant View Drive
Lancaster, NY 14086

Dear Ms. Allen:

This responds to your letter of January 8, 2003, requesting information on the presence of endangered or threatened species in the vicinity of the former Griffiss Air Force Base Area of Concern 9 in the City of Rome and Town of Floyd, Oneida County, New York.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the project impact area. In addition, no habitat in the project impact area is currently designated or proposed "critical habitat" in accordance with provisions of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act is required with the U.S. Fish and Wildlife Service (Service). Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered.

The above comments pertaining to endangered species under our jurisdiction are provided pursuant to the Endangered Species Act. This response does not preclude additional Service comments under other legislation.

For additional information on fish and wildlife resources or State-listed species, we suggest you contact the appropriate New York State Department of Environmental Conservation regional office(s) as shown on the enclosed map, and:

New York State Department of Environmental Conservation
New York Natural Heritage Program Information Services
625 Broadway
Albany, NY 12233
(518) 402-8935

Since wetlands may be present, you are advised that National Wetlands Inventory (NWI) maps may or may not be available for the project area. However, while the NWI maps are reasonably accurate, they should not be used in lieu of field surveys for determining the presence of wetlands or delineating wetland boundaries for Federal regulatory purposes. Copies of specific NWI maps can be obtained from:

Cornell Institute for Resource Information Systems
302 Rice Hall
Cornell University
Ithaca, NY 14853
(607) 255-4864

Work in certain waters and wetlands of the United States may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act, the Service may concur, with or without stipulations, or recommend denial of the permit depending upon the potential adverse impacts on fish and wildlife resources associated with project implementation. The need for a Corps permit may be determined by contacting the appropriate Corps office(s) as shown on the enclosed map.

If you require additional information please contact Michael Stoll at (607) 753-9334.

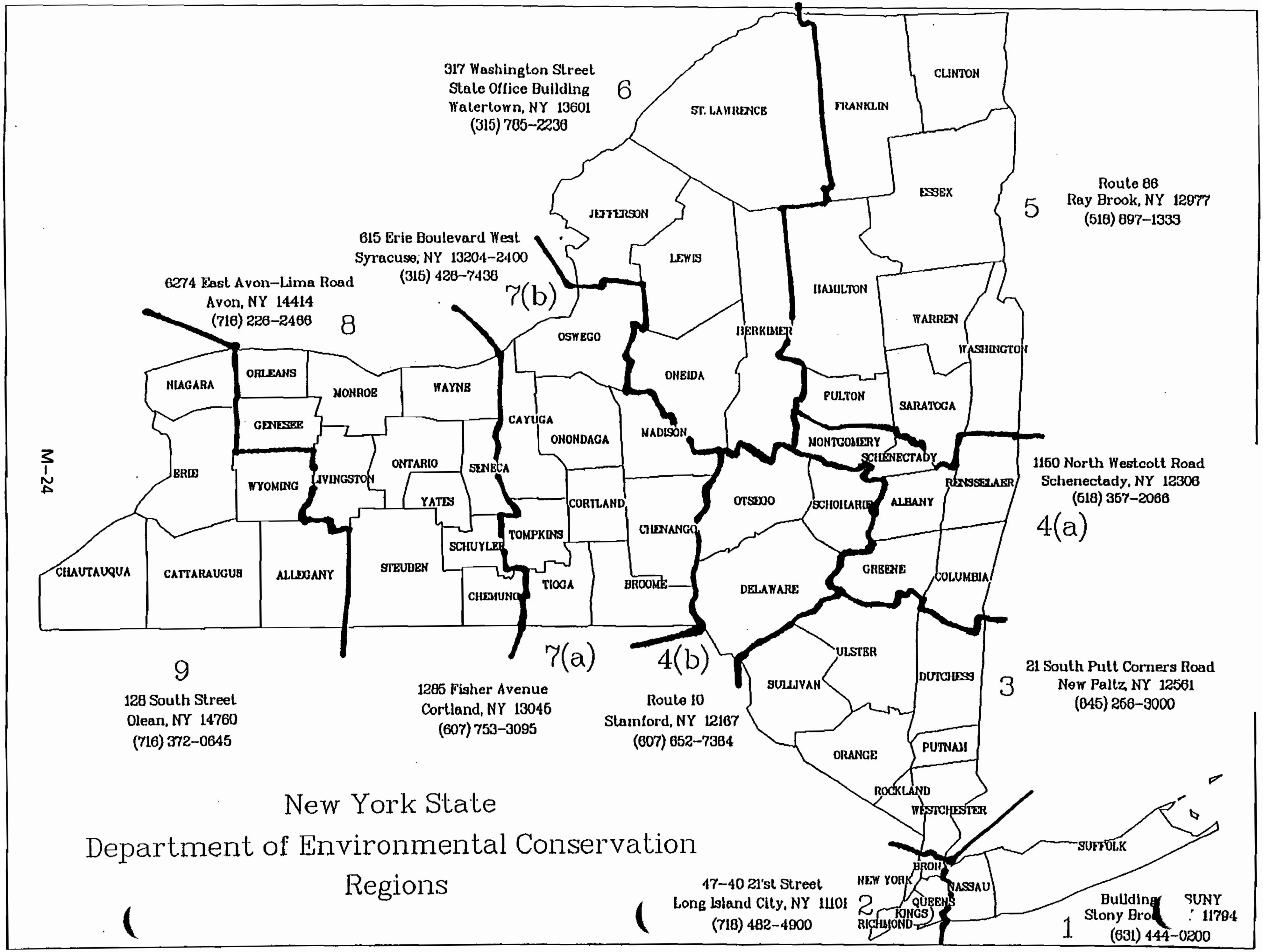
Sincerely,

Mark W Clough
Acting For

David A. Stilwell
Field Supervisor

Enclosure

cc: NYSDEC, Watertown, NY (Environmental Permits)
NYSDEC, Albany, NY (Natural Heritage Program)
NYSDEC, Albany, NY (Endangered Species Unit)
COE, Buffalo, NY



New York State
Department of Environmental Conservation
Regions

U.S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

To provide a timely response to future requests for endangered species comments in New York, please include the following in future inquiries:

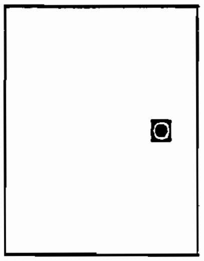
1. A concise brief description of the project/action.

2. Name of the hamlet/village/city/town/county where the project/action occurs.

3. The latitude and longitude of the project/action, i.e.: 42° 13' 28" / 76° 56' 30". If the project/action is linear, you may provide coordinates for both ends or just one near center.

4. A map showing the project/action location. Preferrably the map should be a U.S. Geological Survey quadrangle map (USGS Quad). You need only provide a copy of that portion where the project/action occurs. Please provide the name(s) of the USGS quadrangle.

   If providing only a portion, indicate where the portion would be located on the full quadrangle, i.e.



Providing the information above will assist us in responding to your needs.

If you require additional information please contact Michael Stoll at (607) 753-9334.

M-3
Surface Water Contribution to Total Chemical Exposure

Appendix M-3 Surface Water Contribution to Total Chemical Exposure

The principal routes of exposure for wildlife are from diet and incidental ingestion of soil and/or sediment. Including water intake in the wildlife exposure calculations would have a negligible influence on the estimated total exposure and, thus, on the risk estimates and overall conclusions of the wildlife risk assessment. An example calculation is provided in the table below for the raccoon for arsenic.

Exposure Route	Estimated Exposure (mg/kg body weight/day)	Percent of Total Exposure
Diet	0.26	75.6
Sediment Ingestion	0.08	23.3
Drinking Water	0.0039	1.1
Total	0.3439	100

The estimated exposure from diet and sediment ingestion were taken from Table 7.3-12. The estimated exposure from drinking (EE-water) was calculated from: (1) the maximum detected arsenic level in surface water from the on-site drainageways (0.047 mg/L; see Table 7.3-3A); (2) the water ingestion rate (WIR) of the raccoon (0.44 L/day), which was calculated from the raccoon's body weight using an allometric equation from Sample et al. (1996); (3) a site use factor (SUF) and exposure duration (ED) of 1; and (4) the raccoon's body weight (BW) (5.3 kg). The following equation was used:

EE-water = 0.0073 mg/L x WIR x SUF x ED / BW

The example shows that drinking water accounts for only 1.1% of the total estimated arsenic exposure for the raccoon. A similar result would be expected for the other receptors (shrew, robin, heron) and other chemicals that were evaluated in the wildlife risk assessment.

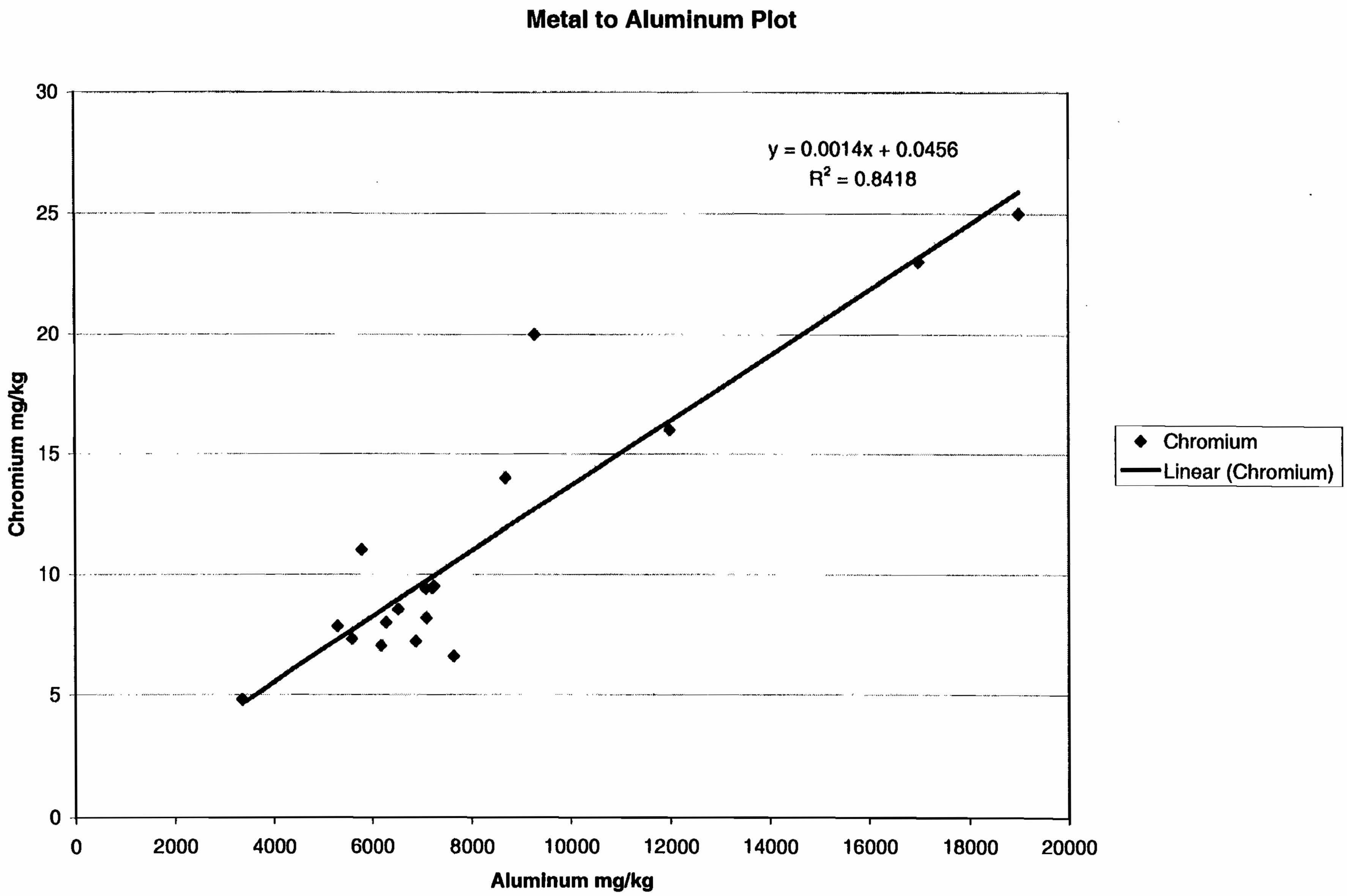
Reference

Sample, B.E., D.M. Opresko, and G.W. Suter, 1996, *Toxicological Benchmarks for Wildlife: 1996 Revision*, Oak Ridge National Laboratory, Oak Ridge, TN, ES/ER/TM-86/R3.

M-4
Metal-to-Aluminum Plots for Soil at AOC 9

Appendix M-4 Metal-to-Aluminum Plots for Soil at AOC 9

This appendix includes figures showing the relationship between five metals (chromium, manganese, selenium, vanadium, and zinc) and aluminum in surface soil from AOC 9. The figures are discussed in Section 7.3.7.2 of this report.



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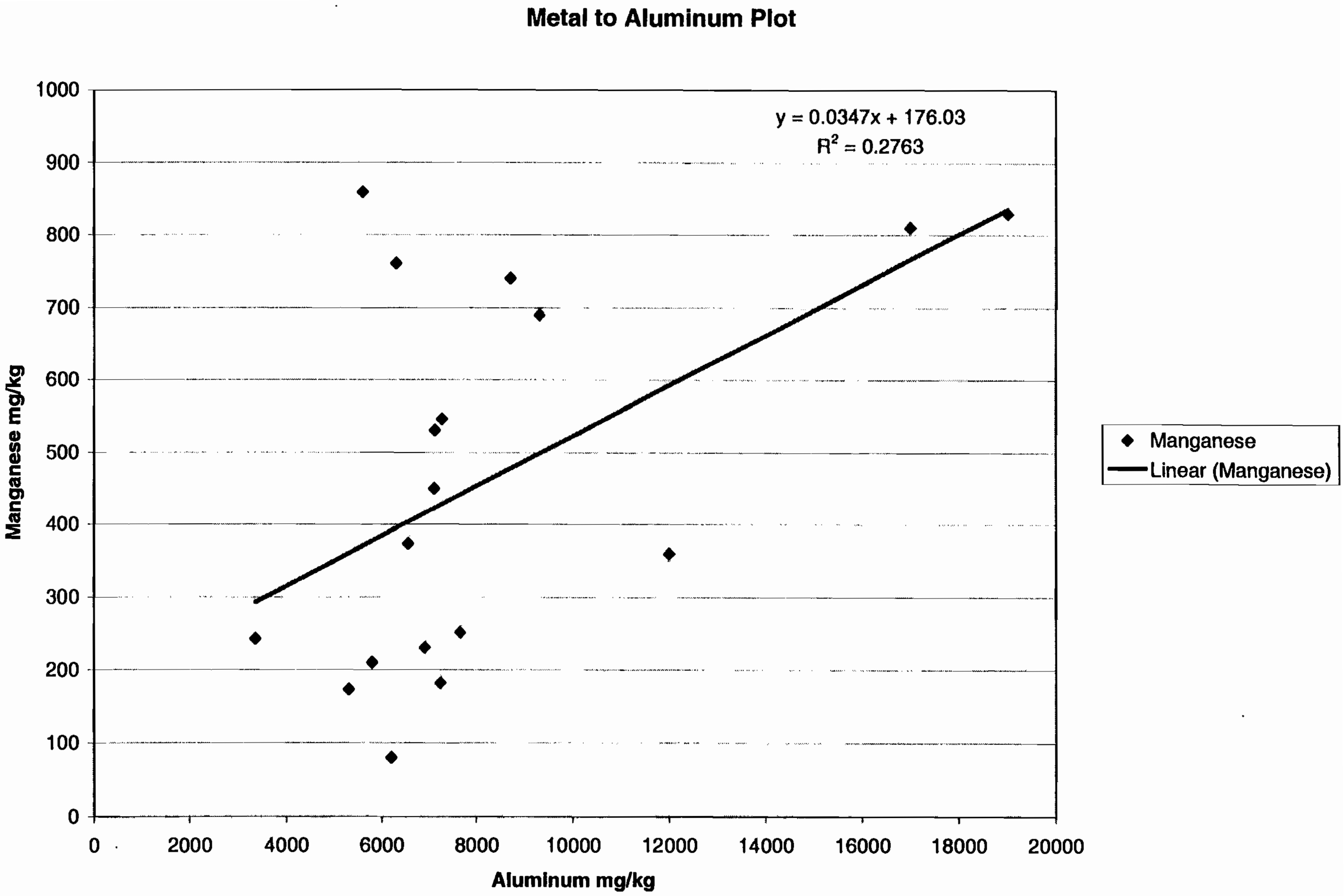

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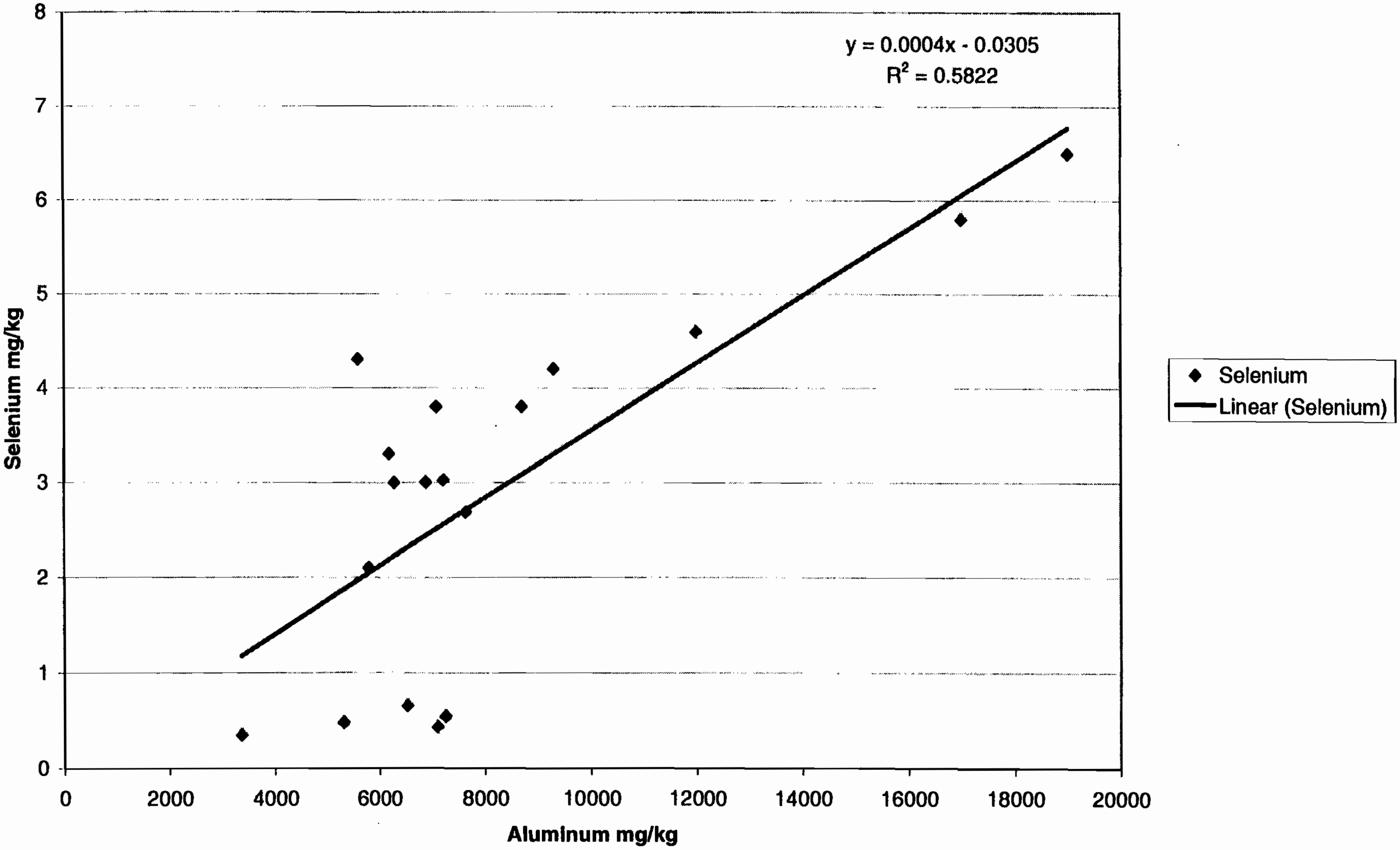
Metal to Aluminum Plot



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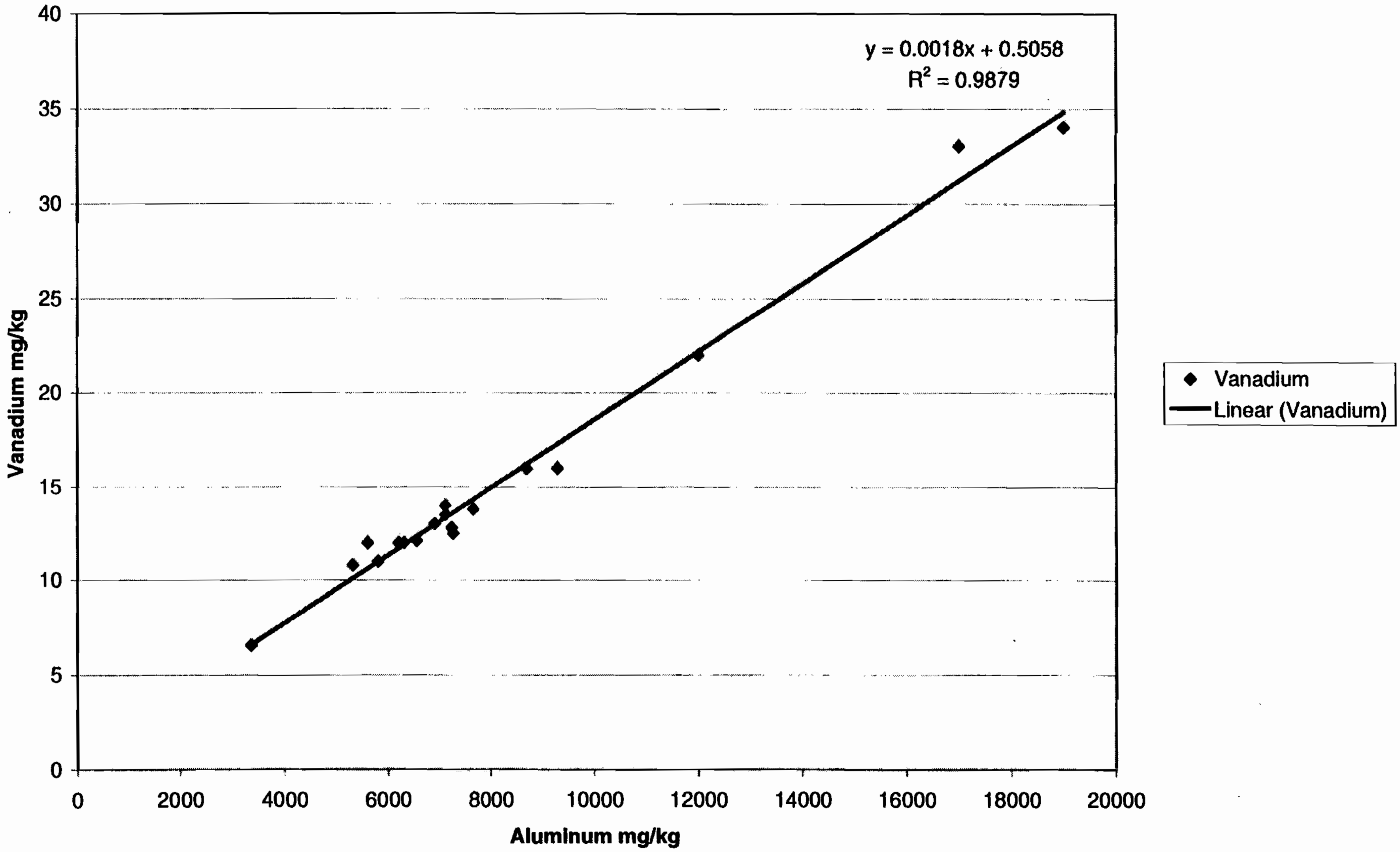
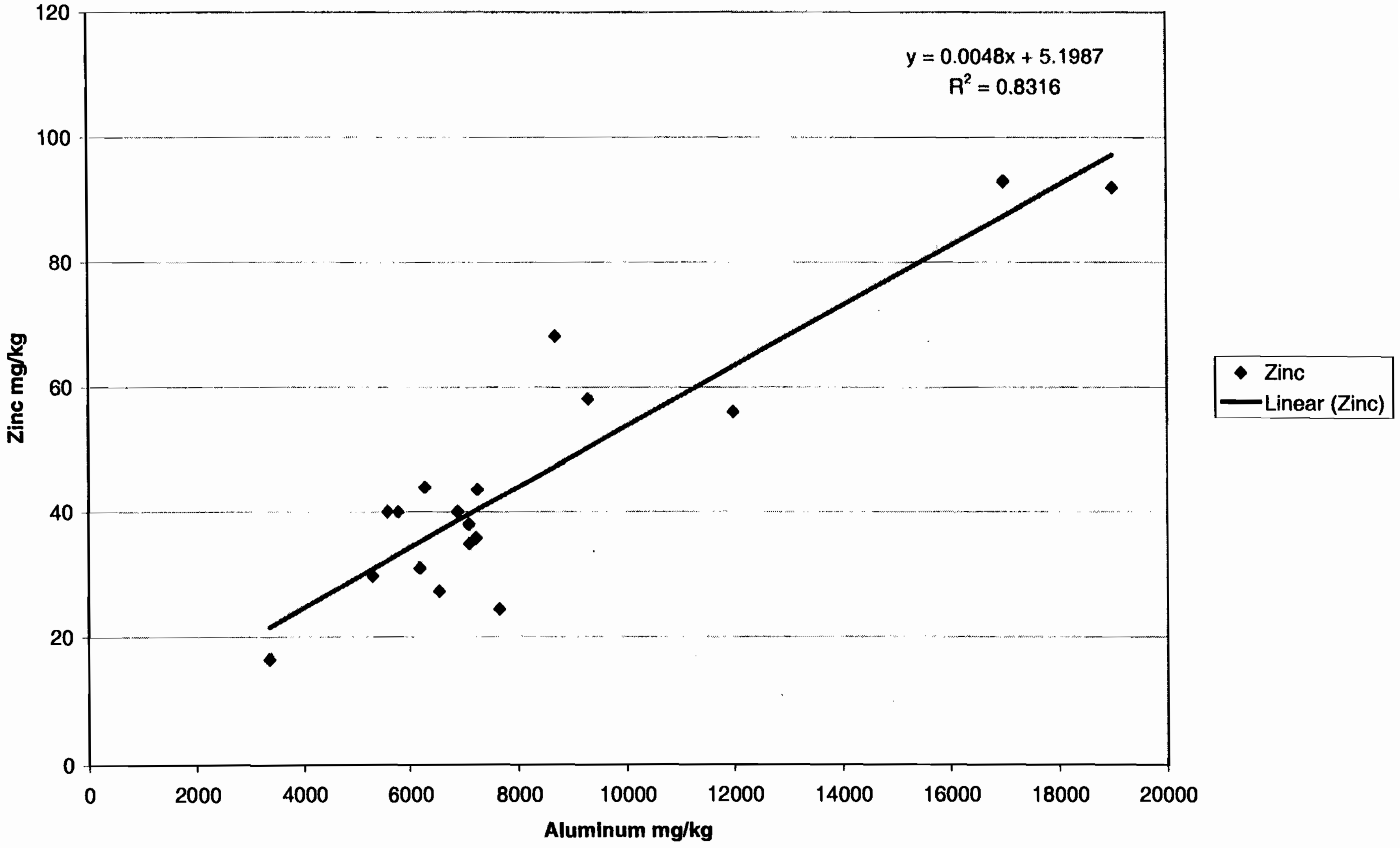


Metal to Aluminum Plot

Metal to Aluminum Plot



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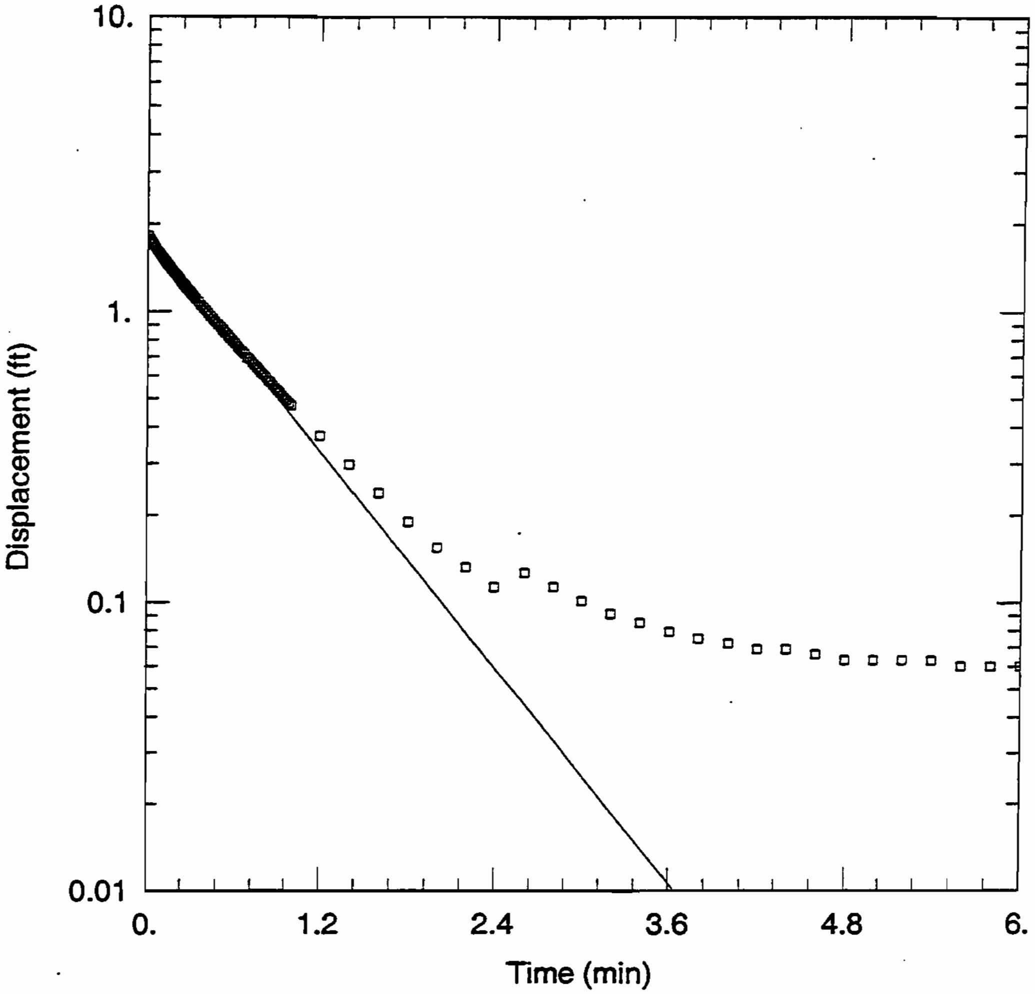
S7 Attach4.xls-Zinc Plot-3/27/2003

Table M-1. Surface Soil Data for Aluminum, Chromium, Manganese, Vanadium, and Zinc for AOC 9.

Metals mg/kg in soil	Aluminum	Zinc	Vanadium	Selenium	Manganese	Chromium
AOC9-TP01	5310	29.7	10.8	0.4735	173	7.84
AOC9-TP02	7110	34.9	13.5	0.43	531	8.18
AOC9-TP03	6550	27.2	12.1	0.651	374	8.54
AOC9-TP04	7230	35.8	12.8	3.025	182	9.43
AOC9-TP04/D	7650	24.4	13.8	2.68	251	6.57
AOC9-TP05	3360	16.4	6.53	0.344	242	4.81
AOC9-TP06	7260	43.6	12.5	0.54	546	9.51
G009-MW01-Z1	6300	44	12	3	760	8
G009-MW01-Z1/D	5600	40	12	4.3	860	7.3
G009-MW01-Z2	5800	40	11	2.1	210	11
G009-MW02-Z1	9300	58	16	4.2	690	20
G009-MW02-Z2	8700	68	16	3.8	740	14
G009-MW03-Z1	6900	40	13	3	230	7.2
G009-MW03-Z2	12000	56	22	4.6	360	16
G009-MW04-Z1-2	17000	93	33	5.8	810	23
G009-MW04-Z2-2	19000	92	34	6.5	830	25
G009-SS01-Z1	7100	38	14	3.8	450	9.4
G009-SS01-Z2	6200	31	12	3.3	80	7

N Aquifer Testing Results



WELL TEST ANALYSIS

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PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: G009-MW1

AQUIFER DATA

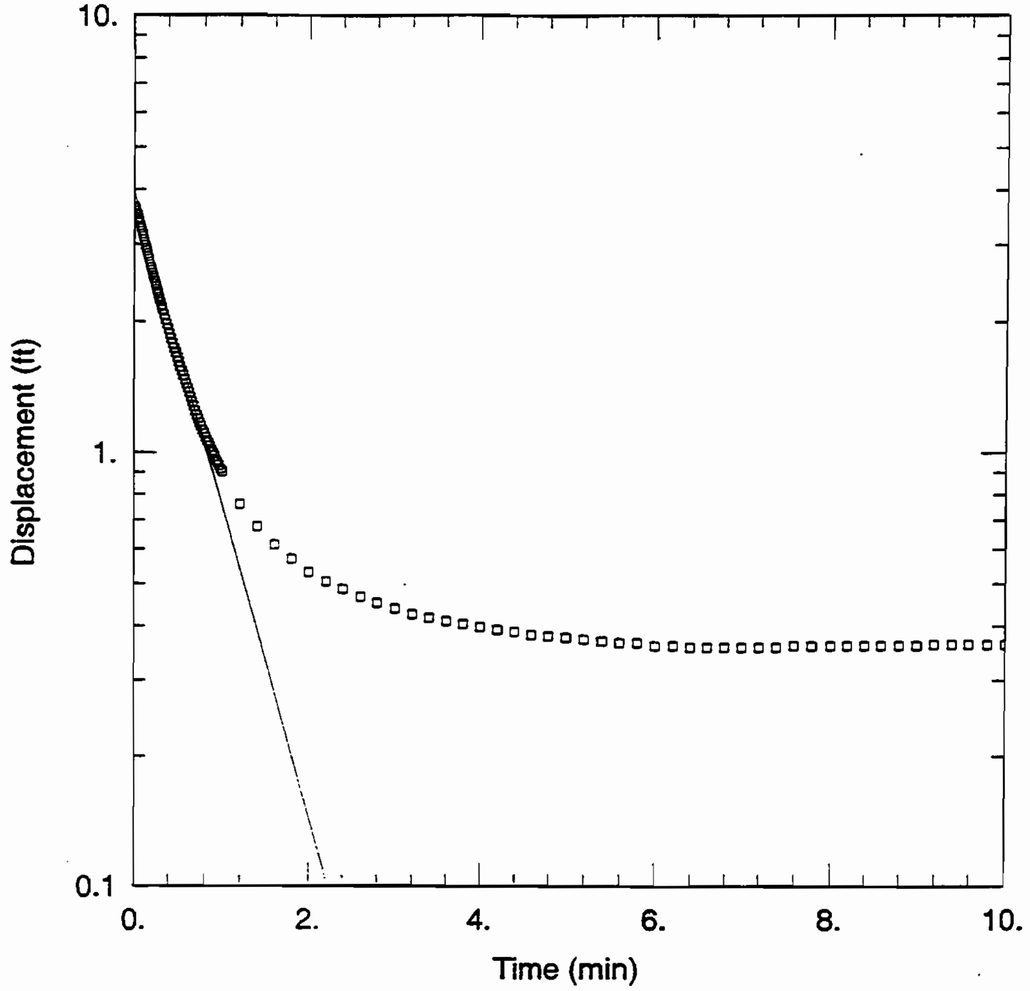
Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 1.817 ft
Water Column Height: 9. ft
Casing Radius: 0.082 ft
Wellbore Radius: 0.35 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
$K = 0.01717$ ft/min
Solution Method: Bouwer-Rice
$y0 = 1.83$ ft



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Date: 01/09/03 Time: 16:14:05

PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: G009-MW2

AQUIFER DATA

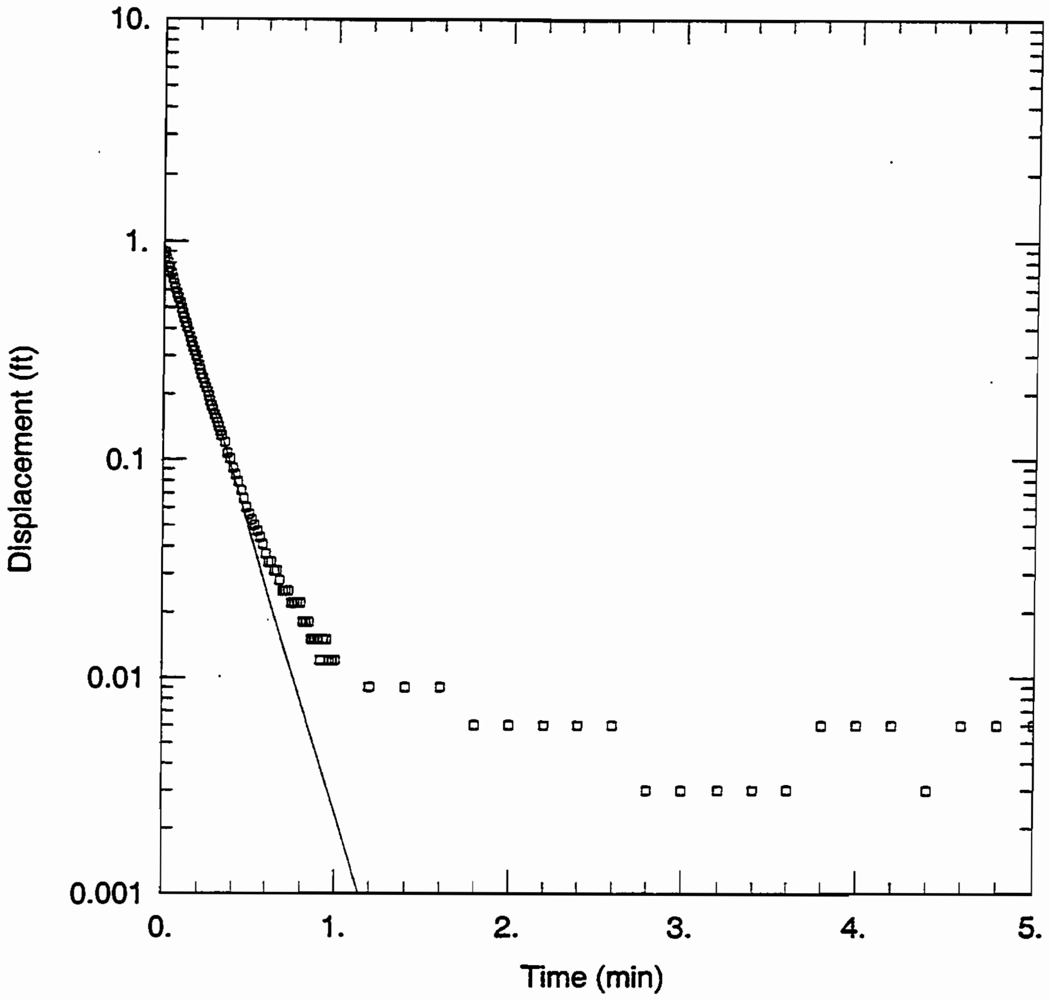
Saturated Thickness: 6.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.654 ft
Casing Radius: 0.082 ft
Screen Length: 5. ft
Water Column Height: 6.2 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01806 ft/min
y0 = 3.94 ft



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Date: 01/09/03 Time: 14:26:28

PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: G009-MW3

AQUIFER DATA

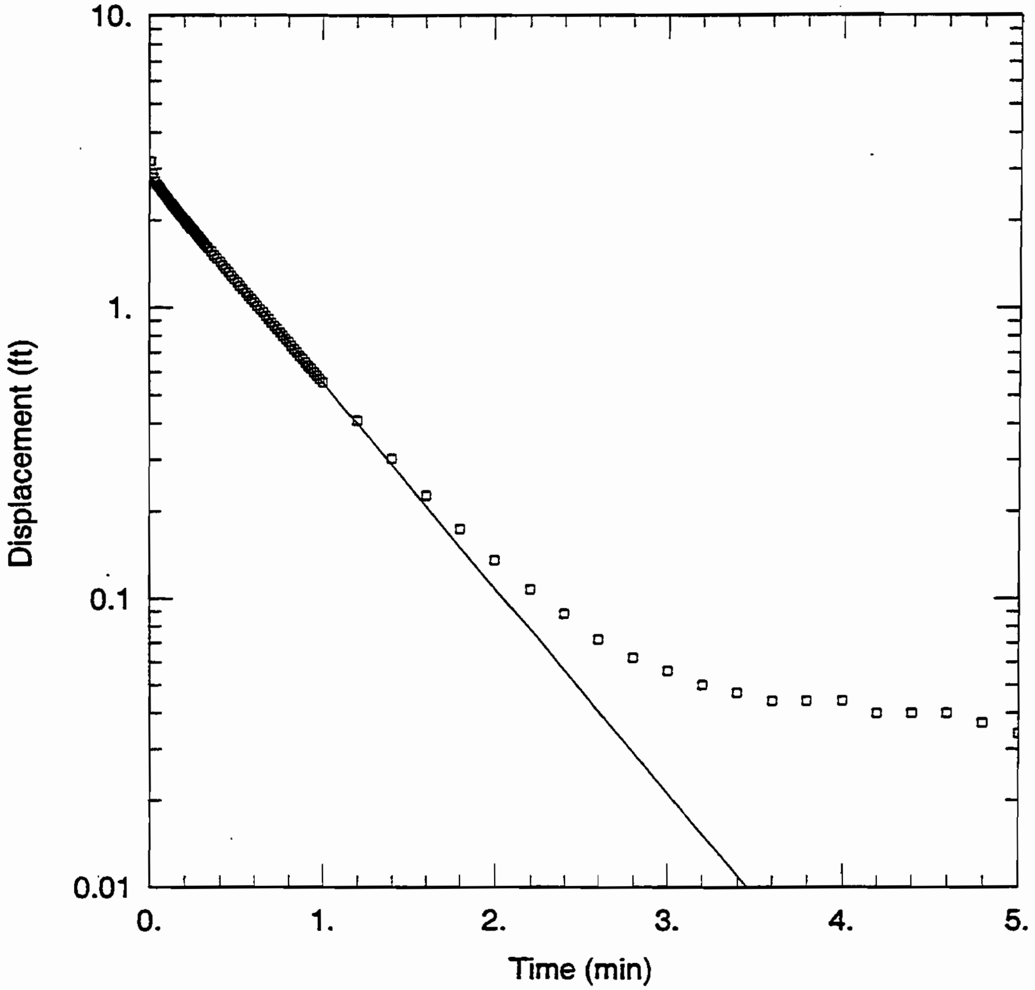
Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 0.891 ft
Casing Radius: 0.082 ft
Screen Length: 5. ft
Water Column Height: 9. ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.07207 ft/min
y0 = 0.9564 ft



WELL TEST ANALYSIS

Data Set: C:\DOCUME~1\CERVIB\MYDOCU~1\GRIFFIS\NEWSLU~1\AOC9MW7.AQT
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PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: AOC9-MW7

AQUIFER DATA

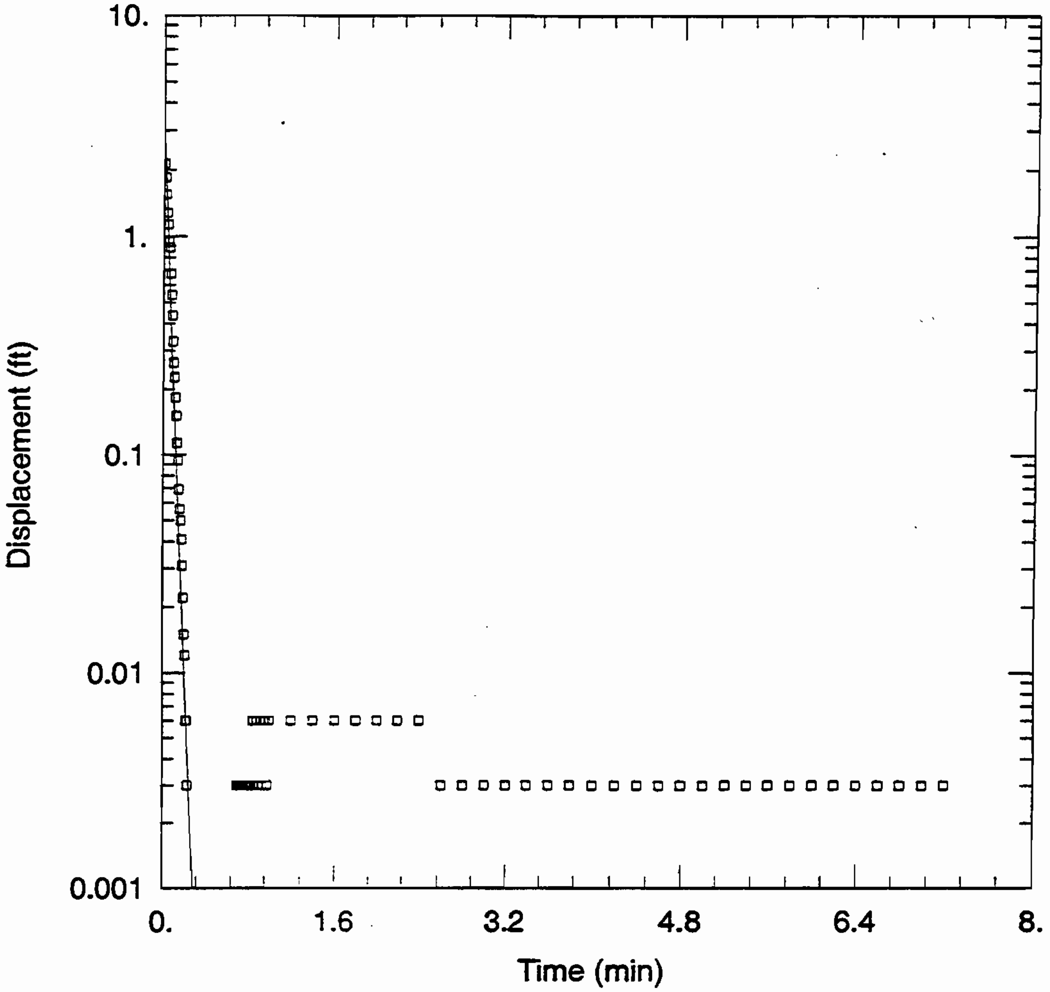
Saturated Thickness: 7.85 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.189 ft
Casing Radius: 0.082 ft
Screen Length: 5. ft
Water Column Height: 7.85 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01898 ft/min
y0 = 2.838 ft



WELL TEST ANALYSIS

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PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: AOC9-MW8

AQUIFER DATA

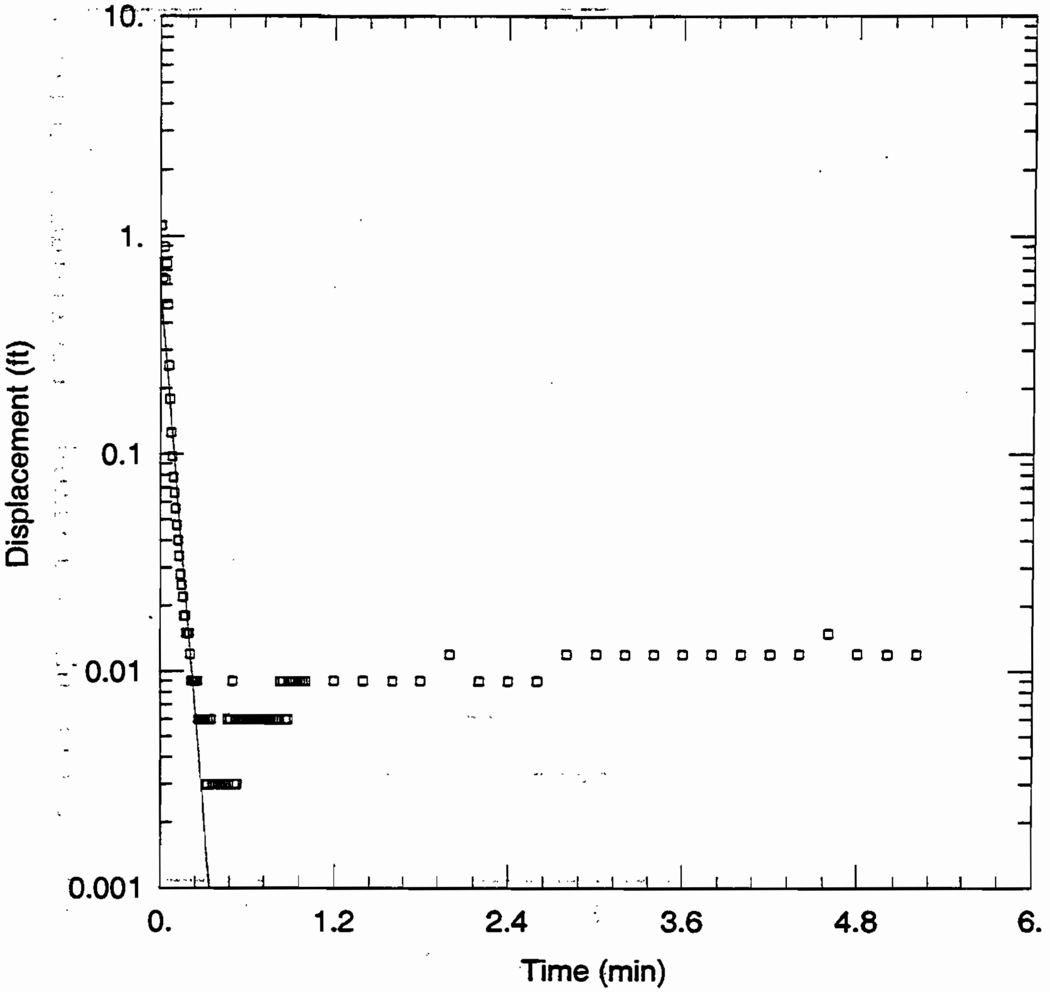
Saturated Thickness: 11.9 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.138 ft
Casing Radius: 0.082 ft
Screen Length: 5. ft
Water Column Height: 11.9 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3605 ft/min
y0 = 2.966 ft



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PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: AOC9-MW12

AQUIFER DATA

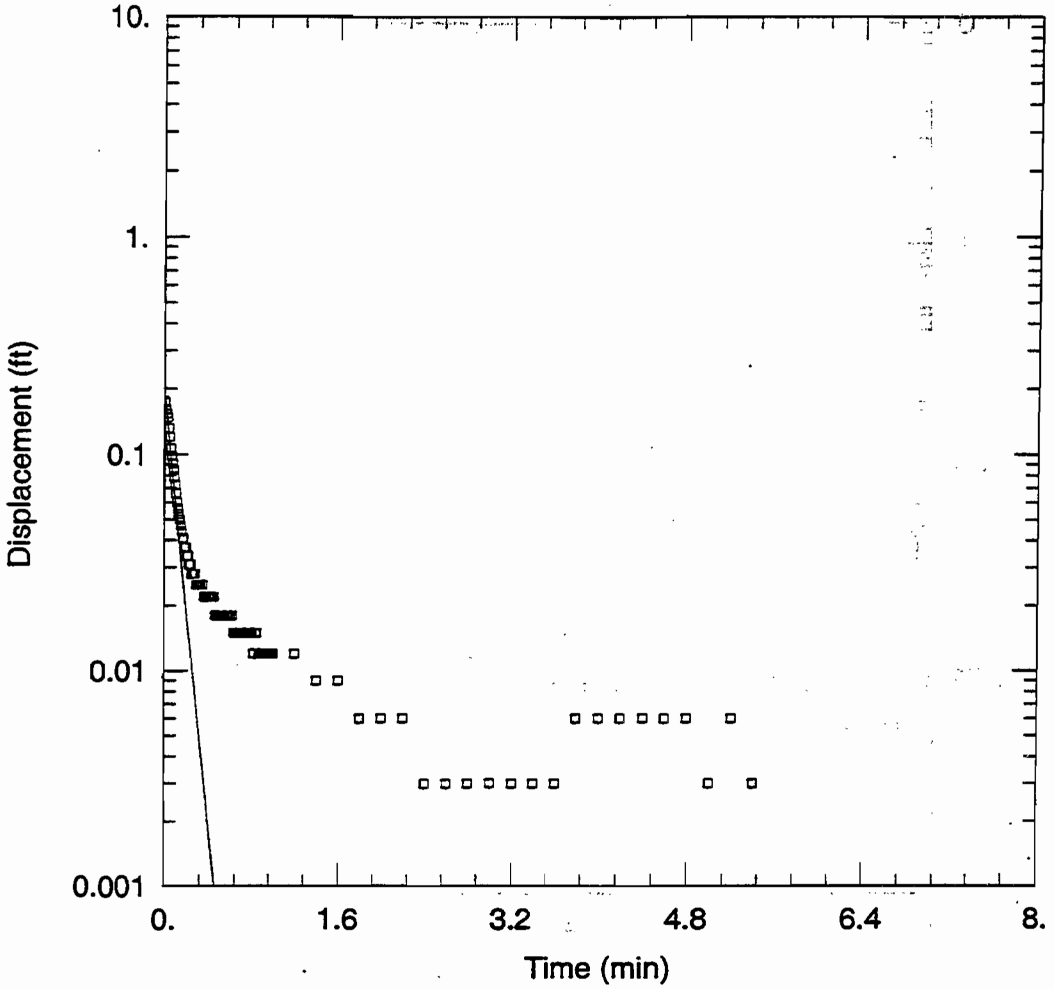
Saturated Thickness: 15.24 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 1.117 ft
Water Column Height: 15.24 ft
Casing Radius: 0.082 ft
Wellbore Radius: 0.35 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.1374 ft/min
y0 = 0.5843 ft



WELL TEST ANALYSIS

Data Set: C:\DOCUME~1\CERVIB\MYDOCU~1\GRIFFIS\NEWSLU~1\AOC9MW13.AQT
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Time: 16:13:29

PROJECT INFORMATION

Company: Ecology & Environment
Client: USACE-KC
Project: 001002.UK04
Test Location: GAFB
Test Well: AOC9-MW13

AQUIFER DATA

Saturated Thickness: 15.55 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 0.176 ft
Casing Radius: 0.082 ft
Screen Length: 10. ft
Water Column Height: 15.55 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.4

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.08546 ft/min
y0 = 0.1896 ft