Proposed Plan

AOC 9 GROUNDWATER

Former Griffiss Air Force Base
Rome, New York
Public Comment Period
January 13 - February 16, 2010

January 2010

This proposed plan describes:

- The environmental investigations that have been conducted at AOC 9.
- The proposed plan to perform remedial action.
- How you can participate in the final decision process for AOC 9 groundwater.

Proposed Plan
A document requesting public review and comment on a proposed remedial action at a particular site.

Area of Concern (AOC)
A location where hazardous substances are or may have been placed or may be located.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
Commonly known as Superfund; a federal law that establishes a program to identify, evaluate, and remediate sites where hazardous substances may have been released into the environment.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP)
The federal regulation that provides the organizational structure and procedures for responding to releases of hazardous substances, pollutants, and contaminants.

Federal Facility Agreement (FFA)
An agreement between the EPA, the State of New York, and the Air Force to evaluate waste disposal sites at the former Griffiss AFB and perform remediation if necessary.

Record of Decision (ROD)
A public document that identifies the selected action at a site, outlines the process used to reach a decision on the remedy, and confirms that the decision complies with CERCLA.

Air Force Recommends Remedial Action for AOC 9 Groundwater

Public Comments Solicited

Former Griffiss Air Force Base is located in Rome, New York.

This ***proposed plan*** is issued by the United States Air Force (Air Force) following consultation with the United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC). The Air Force recommends remedial action with long-term monitoring for ***Area of Concern*** (AOC) 9 groundwater (site designation SD-62).

The document has been prepared in accordance with public participation requirements of the ***Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, the National Contingency Plan***, and the former Griffiss Air Force Base (AFB) ***Federal Facility Agreement***. In this document, the Air Force, EPA, and NYSDEC will be referred to as "the agencies." This plan is intended to elicit public comments on the proposal to perform remedial action and long-term monitoring for groundwater at the site. The final decision or ***Record of Decision*** will be made only after the public comment period has ended and responses and information submitted during this time period have been reviewed and considered. Please refer to the Community Participation section at the end of this document for information on submitting public comments.

1. SITE DESCRIPTION

Regional

The former Griffiss AFB covered approximately 3,552 contiguous acres in the lowlands of the Mohawk River Valley in Rome, Oneida County, New York. Topography within the valley is relatively flat, with elevations on the former Griffiss AFB ranging from 435 to 595 feet above mean sea level. Three Mile Creek, Six Mile Creek (both of which drain into the New York State Barge Canal, located to the south of the base), and several state and/or federally regulated wetlands are located on the former Griffiss AFB, which is bordered by the Mohawk River on the west. Due to its high average precipitation and predominantly silty sands, the former Griffiss AFB is considered a ***groundwater recharge zone***.

Groundwater Recharge Zone
An area where the underlying aquifer (water-bearing zone) receives water (recharge) through downward flow of both precipitation, which infiltrates into the ground, and surface water bodies such as streams, lakes, etc.

Base Realignment and Closure Act (BRAC)
A federal law that established a commission to determine which military bases would be closed and which would remain active.

Griffiss AFB Operational History

The mission of the former Griffiss AFB varied over the years. The base was activated on February 1, 1942, as Rome Air Depot, with the mission of storage, maintenance, and shipment of material for the U.S. Army Air Corps. Upon creation of the Air Force in 1947, the depot was renamed Griffiss AFB. The base became an electronics center in 1950, with the transfer of Watson Laboratory Complex (later Rome Air Development Center [1951], Rome Laboratory, and then the Air Force Research Laboratory Information Directorate, established with the mission of accomplishing applied research, development, and testing of electronic air-ground systems). The 49th Fighter Interceptor Squadron was also added. The Headquarters of the Ground Electronics Engineering Installations Agency was added in June 1958 to engineer and install ground communications equipment throughout the world. On July 1, 1970, the 416th Bombardment Wing of the Strategic Air Command (SAC) was activated with the mission of maintenance and implementation of both effective air refueling operations and long-range bombardment capability. Griffiss AFB was designated for realignment under the ***Base Realignment and Closure Act*** in 1993 and 1995, resulting in deactivation of the 416th Bombardment Wing in September 1995. The Air Force Research Laboratory Information Directorate and the Northeast Air Defense Sector (NEADS) 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; and the Defense Finance and Accounting Services (DFAS) has established an operating location at the former Griffiss AFB.

Environmental Background

As a result of the various national defense missions carried out at the former Griffiss AFB since 1942, hazardous and toxic substances were used and hazardous wastes were generated, stored, or disposed at various sites on the installation. The defense missions involved, among others, procurement, storage, maintenance, and shipping of war materiel; research and development; and aircraft operations and maintenance.

Numerous studies and investigations under the U.S. Department of Defense Installation Restoration Program have been carried out to locate, assess, and quantify the past toxic and hazardous waste storage, disposal, and spill sites. These investigations included a records search in 1981, interviews with base personnel, a field inspection, compilation of an inventory of wastes, evaluation of disposal

Agency for Toxic Substances and Disease Registry (ATSDR)
The federal agency responsible for performing health assessments for facilities on the National Priorities List.

National Priorities List (NPL)
A formal listing established by CERCLA of the nation's hazardous waste sites that have been identified for possible remediation. Sites are ranked by the EPA based on their potential for affecting human health and the environment.

Remedial Investigation (RI)
An environmental investigation that identifies the nature and extent of contamination at a site. It also provides an assessment of the potential risks associated with a site.

Baseline Risk Assessment
An assessment required by CERCLA to evaluate potential risks to human health and the environment. This assessment estimates risks/hazards associated with existing and/or potential human and environmental exposures to contaminants at an area.

Remedial Action
Actions taken to permanently prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health, welfare, or the environment.

Applicable or Relevant and Appropriate Requirements (ARARs)
"Applicable" requirements mean those standards, criteria, or limitations promulgated under federal or state law that are required specific to a substance, pollutant, contaminant, action, location, or other circumstance at a CERCLA site, e.g., the New York State groundwater standards. "Relevant and appropriate" requirements mean those standards, requirements, or limitations that address problems or situations sufficiently similar to those encountered at the CERCLA sites so that their use is well suited to that particular site.

To-Be-Considereds (TBCs)
Advisories, criteria, or guidance that do not meet the definition of an ARAR, but may be useful in developing remedial action alternatives, e.g., the New York State groundwater guidance values.

Background Levels
The level of a chemical or contaminant naturally occurring in the vicinity of the site.

practices, and an assessment to determine the nature and extent of site contamination; Problem Confirmation and Quantification studies (similar to what is now designated a Site Investigation) in 1982 and 1985; soil and groundwater analyses in 1986; a basewide health assessment in 1988 by the U.S. Public Health Service, ***Agency for Toxic Substances and Disease Registry***; base-specific hydrology investigations in 1989 and 1990; a groundwater investigation in 1991; and site-specific investigations between 1989 and 1993. The ATSDR issued a Public Health Assessment for Griffiss AFB, dated October 23, 1995, and an addendum, dated September 9, 1996.

Pursuant to Section 105 of CERCLA, Griffiss AFB was included on the ***National Priorities List*** on July 15, 1987. On August 21, 1990, the agencies entered into an FFA under Section 120 of CERCLA. On March 20, 2009, 2,800 acres of the 3,552 acres at the former Griffiss AFB were removed from the NPL (AOC 9 remains on the NPL).

The Air Force prepared and submitted numerous reports to NYSDEC and EPA for review and comment. These reports addressed remedial activities that the Air Force is required to undertake under CERCLA and included identification of AOCs on base; a scope of work for a ***Remedial Investigation***; a work plan for the RI, including a sampling and analysis plan and a quality assurance project plan; a baseline risk assessment; a community relations plan; multiple RI reports; work plans and the reports for supplemental investigations (SI); and a Landfill Cover Investigation Report. The Air Force delivered the draft-final RI report covering 31 AOCs to EPA and NYSDEC on December 20, 1996. The final SI Report was delivered on July 24, 1998. Additional site-specific reports for AOC 9 included: the final RI for AOC 9 (May 2004), the final Feasibility Study (FS) for AOC 9 (October 2004), several predesign investigation data summaries for AOC 9 (2007), and a draft Addendum to the final FS (2009).

This proposed plan for remedial action is based on an evaluation of potential threats to human health and the environment due to groundwater contamination at AOC 9. During the RI and SI, the levels of contaminants were compared to available standards and guidance values using federal and state environmental and public health laws that were identified as potentially ***applicable or relevant and appropriate requirements*** at the site. Chemical-specific ARARs are usually health- or risk-based numerical values or methodologies that result in a numerical value when applied to site-specific conditions. Other non-promulgated federal and state advisories and guidance values, referred to as ***To-Be-Considereds***, and ***background levels*** of the contaminants in the absence of TBCs, were considered. The comparison of the levels of contaminants to the applicable standards and guidance values was used in the selection of the preferred remedial action.

AOC 9 GROUNDWATER

AOC 9 is a grass-covered area approximately 1,500 feet long and 650 feet wide located in the southwest side of the inactive Weapons Storage Area (WSA) (see Figure 1). The site is part of a strip of land that lies between an airplane runway to the southwest and extends into the WSA to the northeast. Perimeter Road runs through the site and Six Mile Creek borders the southwest edge. Between the WSA fence and Perimeter Road is a small water-retention pond (the aqueous film-forming foam [AFFF] pond) that was connected to WSA operations (see Figure 2).

The area comprising AOC 9 was originally farmland in the 1930s, before base construction. In the 1940s and 1950s, the first landfill for the base (currently known as AOC 9) was located beneath the northern portion of the former WSA and extended south between Perimeter Road and Six Mile Creek. 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 material were removed during construction of the WSA. Two former WSA igloos, identified as Buildings 912 and 913, are located at AOC 9. The buildings are periodically used for storage but are not currently occupied and will remain vacant. In addition to the WSA, two munitions storage bunkers were erected between Perimeter Road and Six Mile Creek in the early 1950s. One of the bunkers (also referred to as igloos) was removed in the late 1970s or early 1980s (i.e., before 1981), and the other bunker was removed in 1992. Although the bunkers were initially used for munitions storage, they were later used to store hazardous materials.

Due to the presence of elevated chlorinated solvents (i.e., in excess of NYSDEC Class GA standards and EPA maximum contaminant levels) in groundwater samples collected during the Expanded Site Investigation (ESI) at Area of Interest (AOI) 9, the status of this site was changed from AOI to AOC in 1998.

AOC 9 is currently inactive and access is somewhat restricted by Perimeter Road Gates 4 and 11. The southern portion of this area is expected to remain vacant in the future, acting as a buffer zone between the runway and future development in adjacent areas. The northern portion of the site extends into the former WSA boundary and is expected to be zoned as a non-residential, industrial area.

The ground surface at AOC 9 slopes gently downward toward Six Mile Creek. Groundwater flows southwest toward the creek. Depth to groundwater is approximately 10 to 12 feet but is closer to the ground surface between Perimeter Road and Six Mile Creek. There are several locations in this area where shallow groundwater discharges to the surface. Three intermittent drainage ways that discharge to Six Mile Creek exist on the southern portion of the 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 excavations, the soil in the area of the test pits is not a source of contamination.

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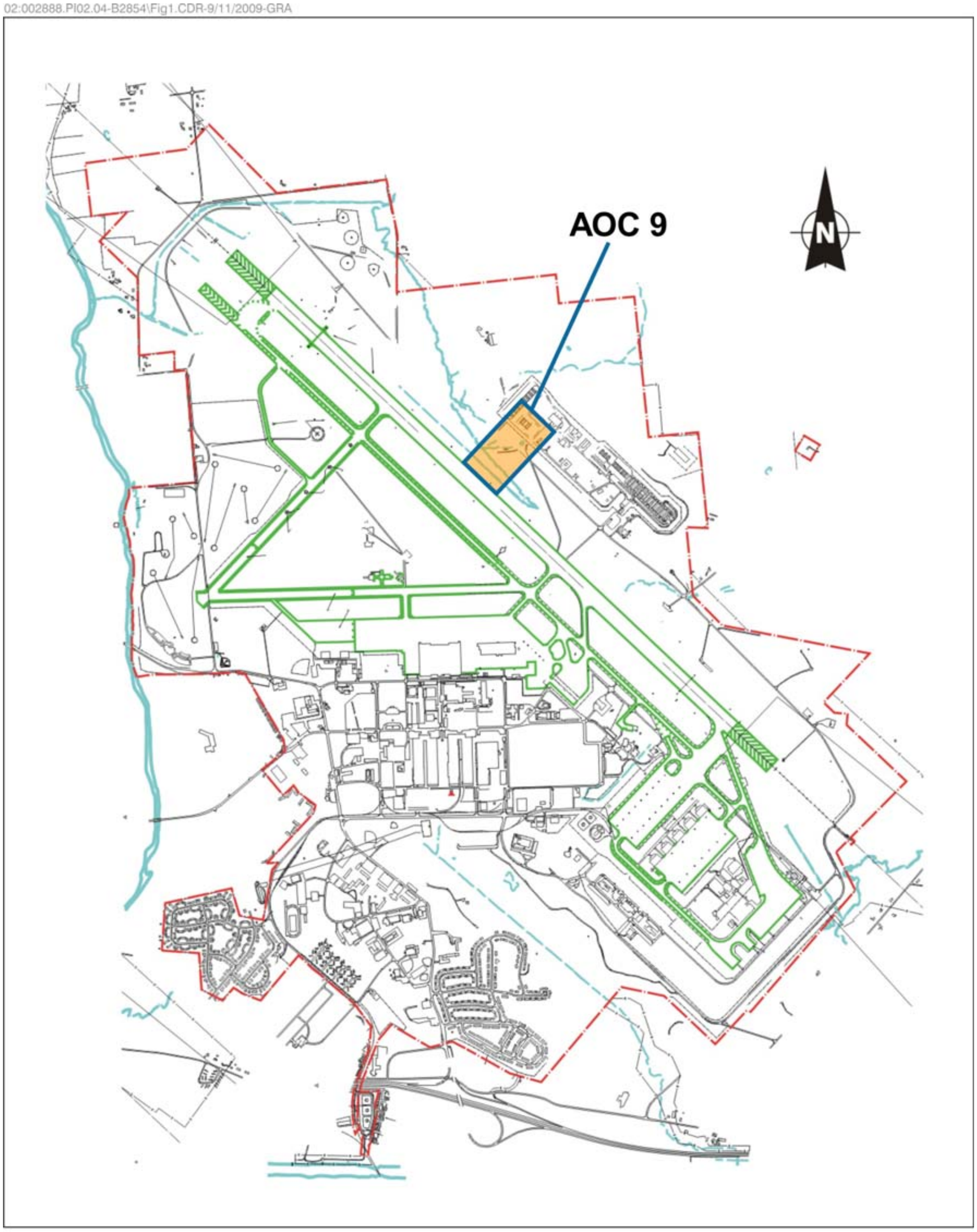

Figure 1 AOC 9, Former Griffiss Air Force Base, Rome, NY

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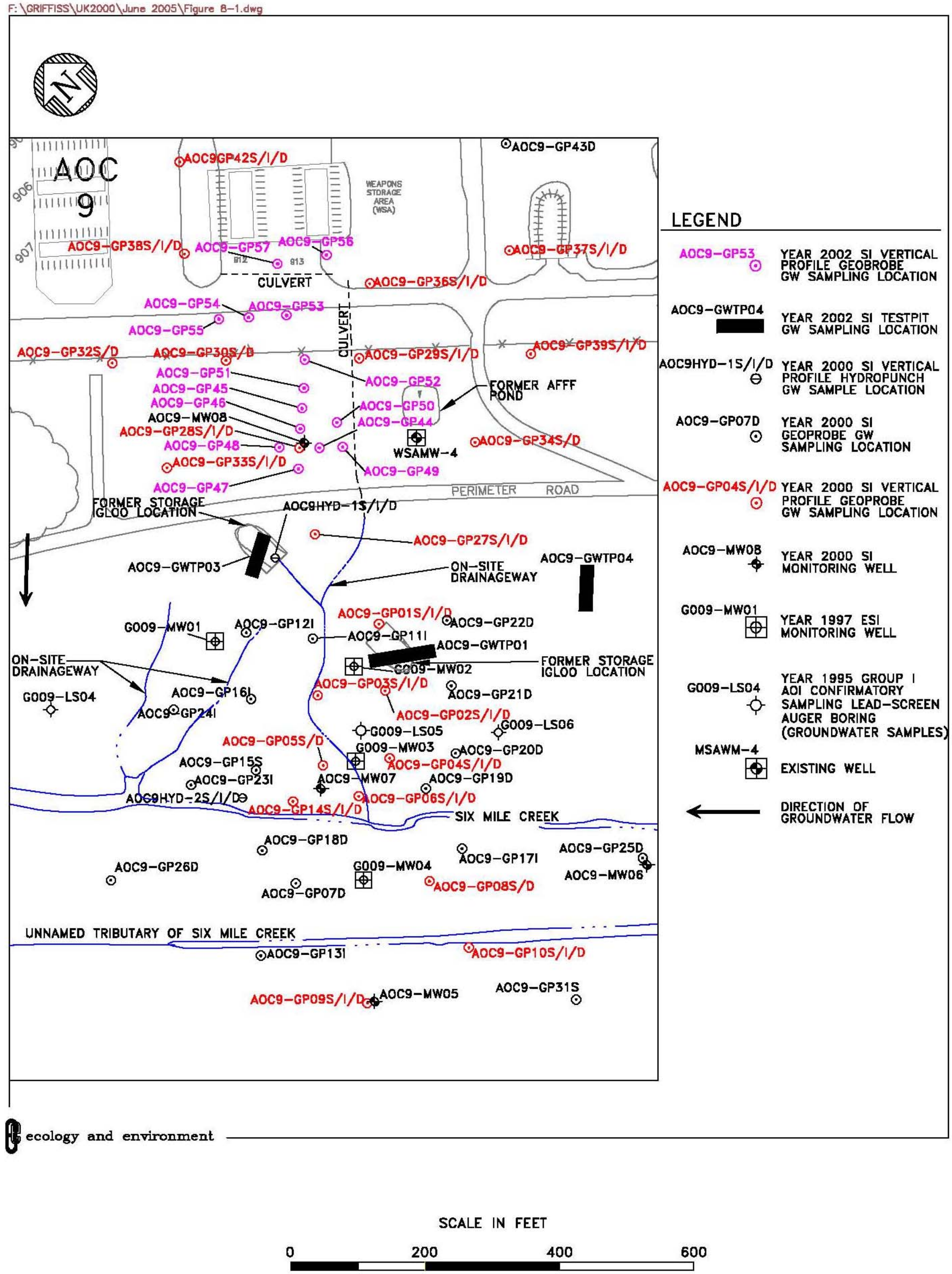

Figure 2 AOC 9 Groundwater Monitoring Well and Sampling Locations (1995 – 2002)

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Plume
A plume represents the groundwater that has been adversely affected by a contaminant or several contaminants. The boundaries of a plume are generally estimated based on monitoring well data.

A contaminated groundwater plume (chlorobenzene, trichloroethene [TCE], dichloroethene [DCE]) extends downgradient from AOC 9 for approximately 1,500 feet and covers approximately 8 acres. The lateral extent of the plume is approximately 400 feet and the vertical extent ranges from ground surface to 20 feet below ground surface (BGS), which is the top of bedrock. The chlorobenzene/TCE/DCE concentrations range from non-detect to 14,400 micrograms per liter (µg/L), 127 µg/L, and 373 µg/L, respectively. The leading edge of this plume has reached Six Mile Creek.

SUMMARY OF SITE ACTIVITIES

In 1994, a groundwater monitoring well (WSAMW-4) was installed and sampled at AOC 9. The groundwater sample contained low levels of chloromethane. In 1995, during the Group I AOI Confirmatory Sampling Program, surface soil, subsurface soil, surface water, and groundwater samples were collected, and a geophysical survey was performed. Sample results indicated the presence of chlorinated hydrocarbons in the groundwater.

Expanded Site Investigation

In 1997, an ESI was performed. The main objective of the ESI was to investigate the nature and extent of environmental contamination from historical releases at the site in order to determine whether any remedial action was necessary to prevent potential threats to human health and the environment that might arise from exposure to site conditions.

The ESI included the installation and sampling of four permanent monitoring wells. Analytical results indicated the presence of benzene, chlorobenzene, cis-1,2-DCE, 1,2-dichlorobenzene (DCB), 1,3-DCB, 1,4-DCB, tetrachloroethene (PCE), and TCE in one or more wells in concentrations that exceeded screening criteria. Several metals, including aluminum, iron, manganese, and potassium, were also detected in concentrations that exceeded screening criteria in one or more wells.

2000 Supplemental Investigation

In 2000, an SI was performed. A total of 88 Geoprobe and six Hydropunch groundwater screening samples were collected from 45 locations. Twenty-six of the 45 locations were vertically profiled (i.e., up to three samples were collected from different depths at the same location). In addition, four new monitoring wells were installed and sampled, and four existing monitoring wells were resampled. Analytical results for the Geoprobe/Hydropunch samples indicated the presence of sixteen volatile organic compounds (VOCs) at levels exceeding the most stringent criteria. Analytical results for the monitoring wells indicated the presence of 14 VOCs and five metals at concentrations exceeding the most stringent criteria (see Table 1).

2002 Supplemental Investigation

In 2002, a second SI was performed to collect additional data to further delineate the chlorinated hydrocarbon plume and determine if petroleum hydrocarbons were present within the groundwater. A total of 56 Geoprobe groundwater screening samples were collected from 14 locations. Eleven of the 14 locations were vertically profiled (i.e., up to five samples were collected from different depths at the same location). Analytical results for the Geoprobe samples indicated the presence of 15 VOCs at levels exceeding the most stringent screening criteria (see Table 2). The groundwater monitoring wells and temporary wells installed and monitored from 1995 through the 2002 SI are shown in Figure 2.

Table 1 **COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES** **AOC 9 PLUME** **2000 SUPPLEMENTAL INVESTIGATION GROUNDWATER SAMPLES**			
Compound	**Range of Detected Concentrations***	**Frequency of Detection Above Most Stringent Criterion****	**Most Stringent Criterion**
VOCs (µg/L)			
Benzene	0.650 - 12.6	22/102	1 [a]
n-Butylbenzene	Trace - 48.1	3/102	5 [a]
sec-Butylbenzene	Trace - 10.2	1/102	5 [a]
tert-Butylbenzene	Trace - 5.4	1/102	5 [a]
Chlorobenzene	Trace - 2352	32/102	5 [a]
1,2-Dichlorobenzene	0.363J - 414.2	30/102	3 [a]
1,3-Dichlorobenzene	Trace - 7.3	6/102	3 [a]
1,4-Dichlorobenzene	Trace - 214.9	27/102	3 [a]
cis-1,2-Dichloroethene	Trace - 227.2	21/102	5 [a]
Ethylbenzene	Trace - 50.3	5/102	5 [a]
Isopropylbenzene	Trace - 22.8	2/102	5 [a]
Methylene Chloride	72.6	1/102	5 [a, b]
Naphthalene	28.3	1/102	10 [d]
n-Propylbenzene	Trace - 14.0	1/102	5 [a]
Tetrachloroethene	Trace - 173.3	7/102	5 [a ,b]
Trichloroethene	Trace - 66.9	22/102	5 [a, b]
1,2,4-Trimethylbenzene	Trace - 68.8	1/102	5 [a]
1,3,5-Trimethylbenzene	Trace - 34.4	1/102	5 [a]
Vinyl Chloride	1.3J - 63.7	16/102	2 [a, b]
m,p-Xylene	16.4	1/102	5 [a]
o-Xylene	10.0	1/102	5 [a]
Metals (µg/L)			
Aluminum	587 - 2770	2/16	50 [c]
Iron	178 - 10800	8/16	300 [a, c]
Manganese	4.21J - 6810	14/16	50 [c]
Selenium	12.2 - 23.2	10/16	10 [a]
Thallium	6.2J - 7.46J	2/16	0.5 [d]

[*] Does not include nondetects.
[**] The number of samples that exceeded the criteria/ the total number of samples collected.
[a] NYSDEC Class GA groundwater standard, June 1998.
[b] EPA Federal primary maximum contaminant level.
[c] EPA Federal secondary maximum contaminant level.
[d] NYSDEC Class GA groundwater guidance value; June 1998.

Key:
J = Estimated concentration.
µg/L = Micrograms per liter.

Table 2 COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES AOC 9 PLUME 2002 SUPPLEMENTAL INVESTIGATION GROUNDWATER SAMPLES			
Compound	**Range of Detected Concentrations***	**Frequency of Detection Above Most Stringent Criterion****	**Most Stringent Criterion**
VOCs (µg/L)			
Acetone	3.27J - 352	4/56	50 [a]
Benzene	0.107J - 12.6J	17/56	1 [a]
Chlorobenzene	0.163J - 2150	41/56	5 [a]
1,2-Dichlorobenzene	0.0720J - 513J	30/56	3 [a]
1,3-Dichlorobenzene	0.174J - 7.32J	3/56	3 [a]
1,4-Dichlorobenzene	0.194J - 151J	39/56	3 [a]
1,2-Dichloroethene, total	0.188J - 71.2	3/56	5 [a]
cis-1,2-Dichloroethene	0.0900J - 70.0	3/56	5 [a]
Ethylbenzene	0.0790J - 59.6	5/56	5 [a]
Tetrachloroethene	0.0870J - 15.4	11/56	5 [a ,b]
Trichloroethene	0.152J - 10.3J	11/56	5 [a, b]
Vinyl Chloride	0.188J - 13.1J	4/56	2 [a, b]
m,p-Xylene	0.268J - 197	4/56	5 [a]
o-Xylene	0.104J - 19.7	2/56	5 [a]

[*] Does not include nondetects.
[**] The number of samples that exceeded the criteria/ the total number of samples collected.
[a] NYSDEC Class GA groundwater standard, June 1998.
[b] EPA Federal primary maximum contaminant level.

Key:
J = Estimated concentration.
µg/L = Micrograms per liter.

Based on these results, the overall shape of the contaminant plume at that time appeared to be linear and oriented northeast/southwest (approximately 850 feet long) with a relatively narrow center. The downgradient portion appeared to be the widest due to natural dispersion and the change in direction of groundwater flow in proximity to the creeks, as illustrated in the lower portion of Figure 3. Subsequent investigations provided additional data to better define the entire plume.

During the SI, five test pits were excavated to the water table and groundwater samples were collected to determine if petroleum hydrocarbons were present within the groundwater. Analytical results indicated that there was no significant petroleum hydrocarbon contamination in the test pit samples.

Bedrock Groundwater Study

A Bedrock Groundwater Study for AOC 9 was conducted in 2002 to determine whether contamination was present in the bedrock. The study consisted of drilling, installation, development, sampling, and slug testing of three new bedrock wells and installation of one soil boring. Soil and groundwater samples were analyzed for VOCs and chemicals that would be indicative of natural attenuation (methane, ethane, ethene, anions, and dissolved organic carbon). The soil and groundwater samples collected from the soil boring were collected for treatability bench-scale tests in preparation for a groundwater treatability pilot study. Analytical results for the bedrock groundwater samples indicated that VOCs are not present at concentrations above the most stringent screening criteria within the bedrock. The Bedrock Groundwater Study concluded that groundwater contamination observed in the overlying overburden aquifer does not appear to have migrated downward into the underlying bedrock at the site. Therefore, no further action was recommended for bedrock groundwater.

Treatability Studies

AOC 9 was included in the in situ chemical oxidation groundwater treatability studies for Landfill 6 and Building 775 due to the similarity of their contaminants. The treatability studies evaluated the effectiveness of the technology at these sites.

Bench-scale Study

In 2002, in situ chemical oxidation bench-scale studies (treatability studies) for groundwater contamination were conducted at AOC 9 using both potassium permanganate and Fenton-based reagent as the oxidants. Results from the Fenton-based test indicated a very effective 99.9% destruction of VOCs (i.e., total VOCs were reduced from 591 µg/L to 0.41 µg/L), but groundwater treated with permanganate showed no VOC reduction. This is likely due to Fenton's reagent ability to destroy chlorobenzene, one of the contaminants of concern (COCs) at the site.

Field Pilot-scale Study

Field pilot-scale studies (treatability studies) were performed at AOC 9 in 2002 and 2003 to identify and collect the data/information needed to assess the potential full-scale application of in situ chemical oxidation technology. Based on the results of the bench-scale study, Fenton-based reagent was used as the oxidant. Two injections of the oxidant were conducted (November 2002 and November 2003) in an attempt to determine the amount of oxidant needed to treat the groundwater plumes on a full-scale basis and to obtain information regarding radial effects. In general, the pilot study results indicated that conditions at the site would be conducive to treating groundwater containing chlorobenzene and other VOCs within the dissolved phase plume. After the second injection event, there was an overall total VOC reduction in the wells, but a rebound of contaminat levels was observed following the completion of the pilot study.

Feasibility Study (FS)

A final FS was developed for AOC 9 (October 2004) that identified and evaluated technologies that were available to remediate the areas identified in the previous investigations as requiring remedial action. The FS was developed considering information collected during the treatability studies described above. Technologies to remediate the groundwater plume were evaluated and in-situ chemical oxidation was recommended as the preferred alternative in the final FS. Several alternatives considered during the final FS are discussed in detail in the Remedial Action section of this proposed plan. However, as a result of further investigations, the preferred alternative was modified (see Predesign Investigations and FS Addendum below).

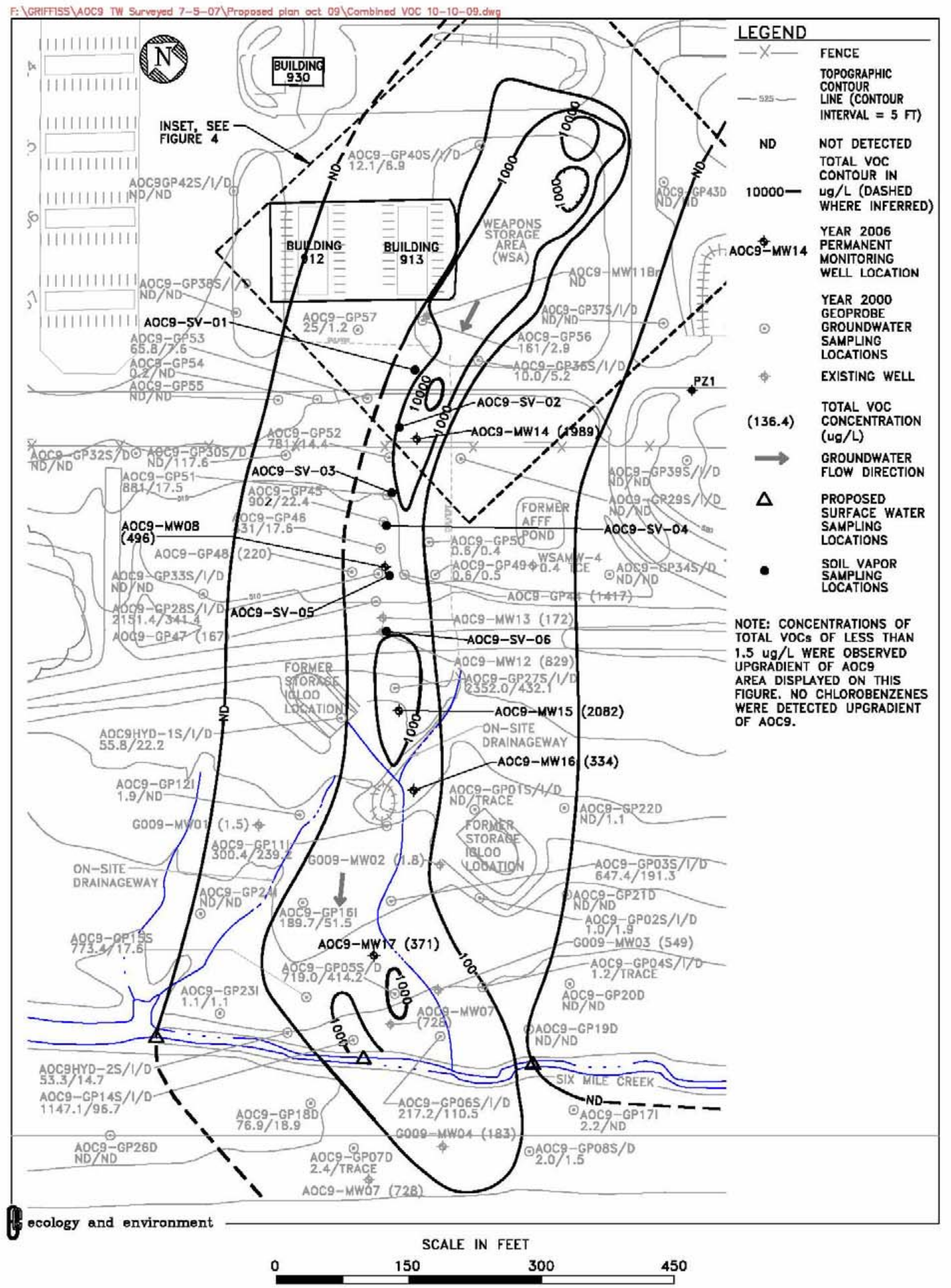

Figure 3 Total VOC Concentrations in Groundwater and Soil Vapor Sample Locations

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Soil Vapor Study

Soil Vapor Study. Six soil vapor samples (from 5 to 8 feet BGS) were collected at AOC 9 in 2006. PCE and TCE concentrations were detected below the screening levels in all samples. PCE was detected at levels ranging from 130 to 610 µg/m^3 (screening level 4,088 µg/m^3) and TCE was detected at levels ranging from 17 to 810 µg/m^3 (screening level 1,386 µg/m^3). Chlorobenzene was detected in only one sample at a concentration of 1.4 µg/m^3. Soil vapor results are provided in Table 3 and sample locations are shown on Figure 3.

Table 3
SUMMARY OF POSITIVE RESULTS FOR SOIL VAPOR SAMPLES COLLECTED FROM AOC 9 2006

Compound	Range of Detected Concentrations*	Frequency of Detection**
VOCs (µg/m^3)		
1,2,4-Trimethylbenzene	2.7 – 5.4	5/6
1,3-Butadiene	4.4 – 11	4/6
4-Ethyltoluene	3.9	1/6
Acetone	48 – 69	4/6
Benzene	1.7 – 12	4/6
Carbon Disulfide	3.4 – 6.5	4/6
cis-1,2-Dichloroethylene	15 - 19	2/6
Cyclohexane	15	1/6
Ethylbenzene	2.3 – 4.8	4/6
m,p-Xylene (sum of isomers)	6.9 – 14	5/6
Methyl ethyl ketone (2-butanone)	35 – 150	6/6
n-Heptane	2.7 – 23	4/6
n-Hexane	5.3 – 35	4/6
o-Xylene	2.0 – 3.9	4/6
Styrene	3.5 – 7.2	5/6
Tetrachloroethene	130 – 610	6/6
Toluene	12 – 19	6/6
Total 1,2-Dichloroethene	15 – 19	2/6
Trichloroethene	17 – 810	6/6
Xylenes, Total	7.4 – 18	5/6
2-Hexanone (methyl butyl ketone)	6.1 – 22	3/6
4-Ethyltoluene	2.1 – 2.7	2/6
Chlorobenzene	1.4	1/6
Cyclohexane	2.2	1/6
Trichlorofluoromethane	1.5	1/6

* Does not include non-detects.
** The number of samples that contain detections / the total number of samples collected.

Key:
µg/m^3 = Micrograms per cubic meter.

There were no buildings within the original boundaries of the AOC 9 property. Following the PDIs, the AOC 9 boundary was extended because the investigations indicated that the plume extended upgradient of and adjacent to Building 913. Sampling of soil gas in this vicinity revealed a maximum of 610 μg/m^3 (PCE). The Air Force has proposed to place deed restrictions on any future buildings constructed on this property and the use of Building 912 and Building 913 will be restricted to remain unoccupied. Deed covenant language would be included in the ROD requiring that any new construction on the property address SVI in coordination with NYSDEC and EPA Region 2. The Air Force will continue to monitor groundwater to determine if the concentrations of COCs in the groundwater are decreasing.

Predesign Investigations

During a predesign investigation conducted in September through November 2006, four additional groundwater monitoring wells (AOC9-MW14 through AOC9–MW17) were installed at the site. Twenty-three different VOCs were detected in at least one of the groundwater samples collected during this investigation (see Table 4). The highest concentrations of total VOCs (1, 2-DCB, 1, 4-DCB, chlorobenzene, and benzene) were detected in presumed upgradient wells AOC9-MW14 and AOC9-MW15 (see Figure 3) at 2,082 μg/L and 1,989 μg/L, respectively. These concentrations at presumed upgradient wells prompted further investigation and a potential source of groundwater contamination was found in the soil upgradient of Six Mile Creek and Perimeter Road. Two additional PDIs were conducted to determine the extent and nature of this source.

The second predesign investigation (PDI 2) was performed in February through April 2007. This study included the installation of 25 temporary monitoring wells and identified areas containing significantly higher levels of chlorobenzene and related compounds east of Building 913 (see Table 5). Monitoring wells TW39 and TW32 (see Figure 4) had chlorobenzene concentrations of 14,400 μg/L and 8,580 μg/L, respectively. These concentrations were five to 10 times higher than the highest concentrations historically detected at AOC 9.

An additional predesign investigation was performed in June through October 2007 to better define the plume and further identify the potential soil source area. During this investigation, a total of 56 new temporary monitoring wells were installed around the site. Twenty-two different VOCs were detected in the groundwater samples collected from the temporary monitoring wells at concentrations exceeding the groundwater standards (see Table 6). The highest total VOC concentrations were detected in groundwater samples collected from temporary wells TW45 (3,100 μg/L), TW71 (3,300 μg/L), and TW100 (3,400 μg/L) (see Figure 4). In addition, 42 boreholes were installed in the soil and soil cores were screened continuously with a photoionization detector and flame ionization detector (PID/FID) from ground surface to refusal (in the glacial till layer, approximately between 20 and 30 feet BGS). Samples were taken at depth intervals where the highest PID/FID readings were measured. Twelve VOCs (1, 2, 4-trimethylbenzene, 1, 3, 5-trimethylbenzene, 1, 2-DCB, 1,3-DCB, 1, 4-DCB, chlorobenzene, ethylbenzene, naphthalene, n-butylbenzene, n-propylbenzene, sec-butylbenzene, and toluene) were detected at concentrations exceeding screening criteria in the soil samples collected from the 42 soil borings (see Figure 5). The highest total VOC concentrations were detected in soil samples collected from boreholes SB01 (1,100 milligrams/kilogram [mg/kg]) and SB12 (1,600 mg/kg) with chlorobenzenes representing the largest fraction of VOCs. The sample results and field observations indicated that there was a 6-foot thick gray to black smear zone of contamination at the top of the saturated zone which is located at depths ranging from 8 to 17 feet BGS.

Table 4 COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES AOC 9 PLUME 2006 PREDESIGN INVESTIGATION GROUNDWATER SAMPLES			
Compound	**Range of Detected Concentrations***	**Frequency of Detection Above Most Stringent Criterion****	**Most Stringent Criterion**
VOCs (µg/L)			
1,2,4-Trimethylbenzene	8.0J – 220	2/4	5[a]
1,2-Dichlorobenzene	25 – 170	4/4	3[a]
1,3,5-trimethylbenzene	10J – 79	2/4	5[a]
1,3-Dichlorobenzene	1.2 – 8.0J	2/4	3[a]
1,4-Dichlorobenzene	14 – 110	4/4	3[a]
Benzene	0.96 – 12J	3/4	1[a]
Chlorobenzene	250 – 1900	4/4	5[a]
Cis-1,2-Dichloroethylene	2.1 – 12	1/4	5[a]
Ethylbenzene	Trace - 21	1/4	5[a]
Isopropylbenzene	0.25J – 17	2/4	5[a]
Xylene	5.9 – 68	2/4	5[a]
Methylene Chloride	87	1/4	5[a]
Naphthalene	51	1/4	10[a]
Propylbenzene	15	1/4	5[a]
Cymene	5.5	1/4	5[a]
Butylbenzene	0.33J – 8.3	1/4	5[a]
Trichloroethene	1.2 – 19	1/4	5[a]

[*] Does not include nondetects.
[**] The number of samples that exceeded the criteria/ the total number of samples collected.
[a] NYSDEC Class GA groundwater standard, June 1998.

Key:
J = Estimated concentration.
µg/L = Micrograms per liter.

Table 5 COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES AOC 9 PLUME 2007 PREDESIGN INVESTIGATION 2 GROUNDWATER SAMPLES			
Compound	**Range of Detected Concentrations**	**Frequency of Detection Above Most Stringent Criterion**	**Most Stringent Criterion**
VOCs (µg/L)			
1,2,4-Trimethylbenzene	3.45 – 1140	11/25	5[a]
1,2-Dichlorobenzene	1.1 – 4930	4/25	5[a]
1,3,5-Trimethylbenzene	1.76 – 433	10/25	5[a]
1,4-Dichlorobenzene	0.570 – 1380	13/25	3[a]
Benzene	0.51 – 1.81	1/25	1[a]
Chlorobenzene	0.66 – 14400	16/25	5[a]
Cis-1,2-Dichloroethene	Trace – 79.5	1/25	5[a]
Ethylbenzene	4.02 – 22.5J	1/25	5[a]
Isopropylbenzene	4.3 – 84.5	4/25	5[a]
n-Butylbenzene	2.66 – 160	2/25	5[a]
n-Propylbenzene	2.48 – 87.5	3/25	5[a]
m+p-Xylenes	7.99 – 778	4/25	5[a]
Naphthalene	6.06 – 530	10/25	10[a]
o-Xylene	Trace– 10.8	1/25	5[a]
p-Isopropyltoluene	13.6 – 166	3/25	5[a]
sec-Butylbenzene	2.37 – 138	2/25	5[a]
tert-Butylbenzene	5.10 – 74.0	2/25	5[a]
Toluene	Trace – 6.00J	1/25	5[a]
Trichloroethene	Trace – 127	1/25	5[a]
Total Xylenes	18.8 – 855	6/25	5[a]

[a] NYSDEC Class GA groundwater standard, June 1998.

Key:

F = Analyte was positively identified above the Method Detection Limit; however the concentration is below the reporting limit (RL).

µg/L = Micrograms per liter.

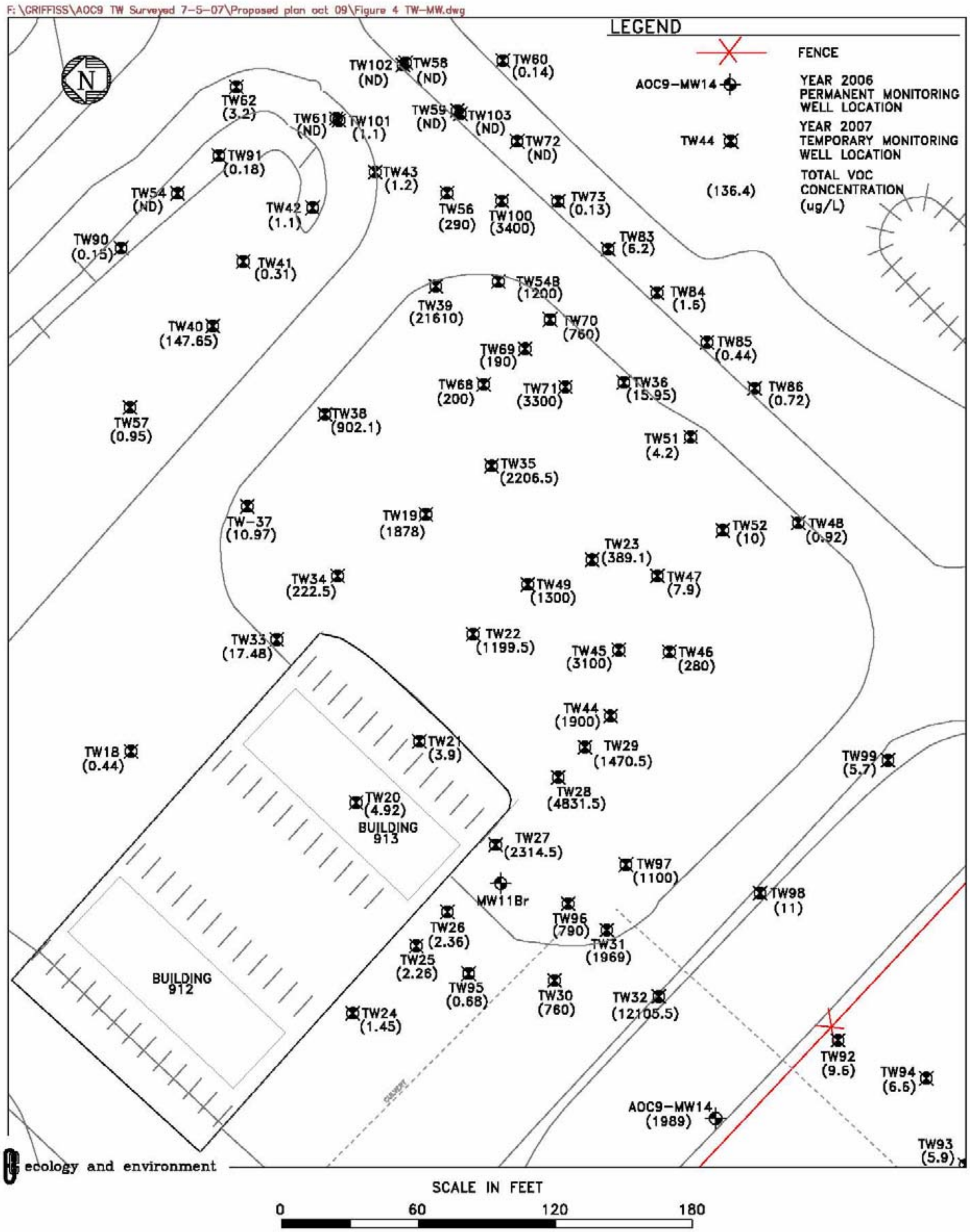

Figure 4 Temporary Monitoring Well Locations (2007)

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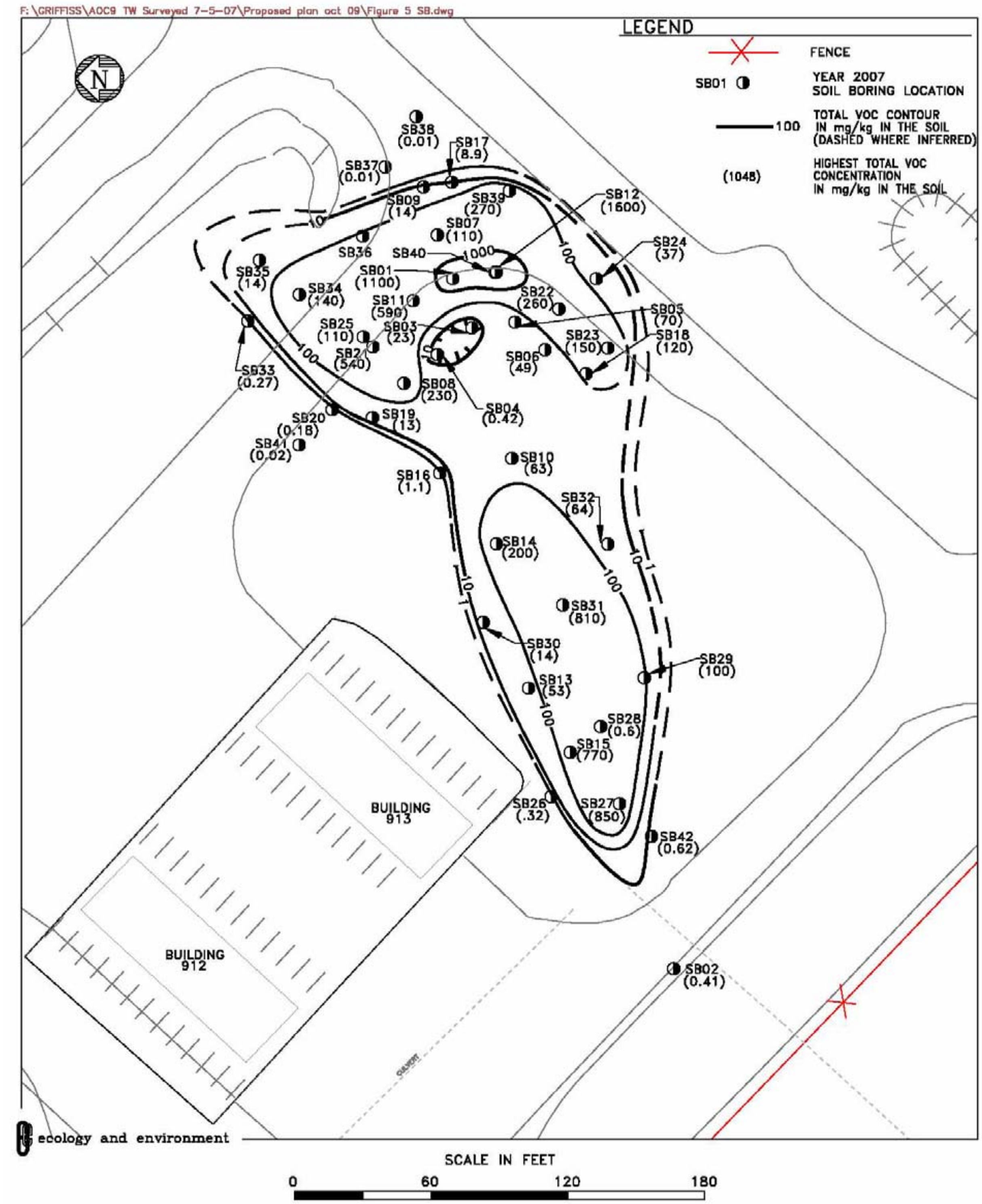

Figure 5 Soil Boring Locations and Total VOC Contours

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Table 6 COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES 2007 AOC 9 ADDITIONAL PREDESIGN INVESTIGATION GROUNDWATER AND SOIL SAMPLES			
Compound	**Range of Detected Concentrations**	**Frequency of Detection Above Most Stringent Criterion**	**Most Stringent Criterion**
Groundwater: VOCs (µg/L)			
1,2,4-Trimethylbenzene	0.20J – 680	10/53	5 [a]
1,2-Dichlorobenzene	0.11J – 230	12/53	0.6 [a]
1,3,5-Trimethylbenzene	0.16J – 240	10/53	5 [a]
1,3-Dichlorobenzene	0.54J – 11	6/53	3 [a]
1,4-Dichlorobenzene	0.12J – 523	12/53	3 [a]
Benzene	1.0J – 120J	12/53	1 [a]
Chlorobenzene	0.15J – 2400	12/53	5 [a]
Cis-1,2-Dichloroethene	0.19J – 26	7/53	5 [a]
Ethylbenzene	0.17J – 26	5/53	5 [a]
Isopropylbenzene	0.61J – 40	6/53	5 [a]
n-Butylbenzene	0.30J – 17	5/53	5 [a]
n-Propylbenzene	0.19J – 45	5/53	5 [a]
m+p-Xylenes	1.4J – 140J	8/53	10 [a]
Naphthalene	1.0 – 88	9/53	5 [a]
o-Xylene	1.8 – 35J	7/53	5 [a]
p-Isopropyltoluene	0.48J – 25	6/53	5 [a]
sec-Butylbenzene	0.20J – 20	6/53	5 [a]
tert-butylbenzene	0.48J – 9.8J	2/53	5 [a]
Tetrachloroethene	0.21J – 12	3/53	5 [a]
Toluene	0.11J – 6.7	1/53	5 [a]
Trichloroethene	0.12J – 14	1/53	5 [a]
Vinyl Chloride	0.44J – 3.5	2/53	2 [a]
Total Xylenes	3.7 – 120	9/53	5 [a]
Soil Borings: VOCs (mg/kg)			
1,2,4-Trimethylbenzene	0.0006J – 394J	21/49	3.6 [b]
1,2-Dichlorobenzene	0.0007J – 1000J	12/49	1.1 [b]
1,3,5-Trimethylbenzene	0.0006J – 174J	15/49	8.4 [b]
1,3-Dichlorobenzene	0.0009J – 24J	4/49	2.4 [b]
1,4-Dichlorobenzene	0.0009J – 170J	18/49	1.8 [b]
Chlorobenzene	0.0006J – 440J	18/49	1.1 [b]
Ethylbenzene	0.0006J – 6.96J	5/49	1 [b]
n-Propylbenzene	0.0006J – 29.4J	6/49	3.9 [b]
Naphthalene	0.0082 – 57J	5/49	12 [b]
sec-Butylbenzene	0.0007J – 20.9J	1/49	11 [b]
Toluene	0.0006J – 3.4J	1/49	0.7 [b]

[a] NYSDEC Class GA groundwater standard, June 1998.
[b] New York State Department of Environmental Conservation, 6NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives, Draft, Dec. 14, 2006 Unrestricted Use of Soil Cleanup Objectives.

Key:

J = Estimated concentration.
µg/L = Micrograms per liter.
mg/kg = Milligrams per kilogram.

None of the samples collected below the smear zone yielded levels of contamination greater than the proposed excavation limit of 1 part per million total VOCs.

Based on the predesign investigations, the soil east of Building 913 was identified as the source of the AOC 9 groundwater contamination, and the preferred alternative identified in the final FS was reevaluated.

Feasibility Study Addendum

In 2009, an addendum to the final FS was prepared to address the contamination that was identified during the predesign investigations. It was determined that the alternative recommended in the final FS would not be the optimal treatment alternative for AOC 9 due to the presence of a previously unknown source of chlorobenzene in the soil. The preferred alternative would include removal of this source of contamination in addition to chemical oxidation of the groundwater. The preferred alternative in the FS Addendum is described in the Remedial Action section of this proposed plan.

A soil risk assessment was not performed because the source removal component of the remedy will remove contaminated soil to meet the RAO to restore groundwater to Class GA standards. Excavation of the soil mass will remove any contaminated soil above regulatory screening levels appropriate for the future land use of this AOC.

AOC 9 SOIL

The nature and extent of soil contamination at AOC 9 was evaluated during the remedial investigations and during the predesign investigations. The existing data includes the characterization of soil throughout AOC 9 (Areas A and B on Figure 6).

Surface and subsurface soil samples were collected and analyzed for Area B during numerous investigations including Group I AOI confirmatory sampling program (1995), the Expanded Site Investigation (1997), and the Supplemental Investigations (2000 and 2002). A summary of these investigations and the associated risk assessment are documented in *AOC 9: Weapons Storage Area (WSA) Landfill Final 2002 Remedial Investigation Report*, May 2004. Both surface and subsurface soil samples were analyzed for Target Compound List (TCL) VOCs, semivolatile organic compounds (SVOCs), pesticides, PCBs, and total Target Analyte List (TAL) metals. Table 7 provides a summary of the soil contaminants that exceeded the NYSDEC guidance criteria that were in effect during the investigations (Technical and Administrative Guidance Memorandum [TAGM] 4046); the current criteria (6NYCRR Part 375-6 Unrestricted Use Soil Cleanup Objectives) also are included in the table for comparison purposes. Based on the new unrestricted use soil cleanup objectives established in Part 375, there were no exceedances for surface soils.

For the surface soil samples (up to 2 feet) collected at AOC 9 through 2002 (Area B of Figure 6), some metals concentrations exceeded TAGM 4046, but the RI human health risk assessment concluded that future exposure to surface soil would not pose significant health risks to future site residents or commercial/industrial workers and were within EPA's acceptable risk range. Subsurface soil contamination was primarily found in the saturated zone indicating that the soil was being impacted by the groundwater plume. For the subsurface soil, the RI risk assessment concluded that exposure to subsurface soil by construction workers was within EPA's acceptable risk range and a groundwater remedy was initiated.

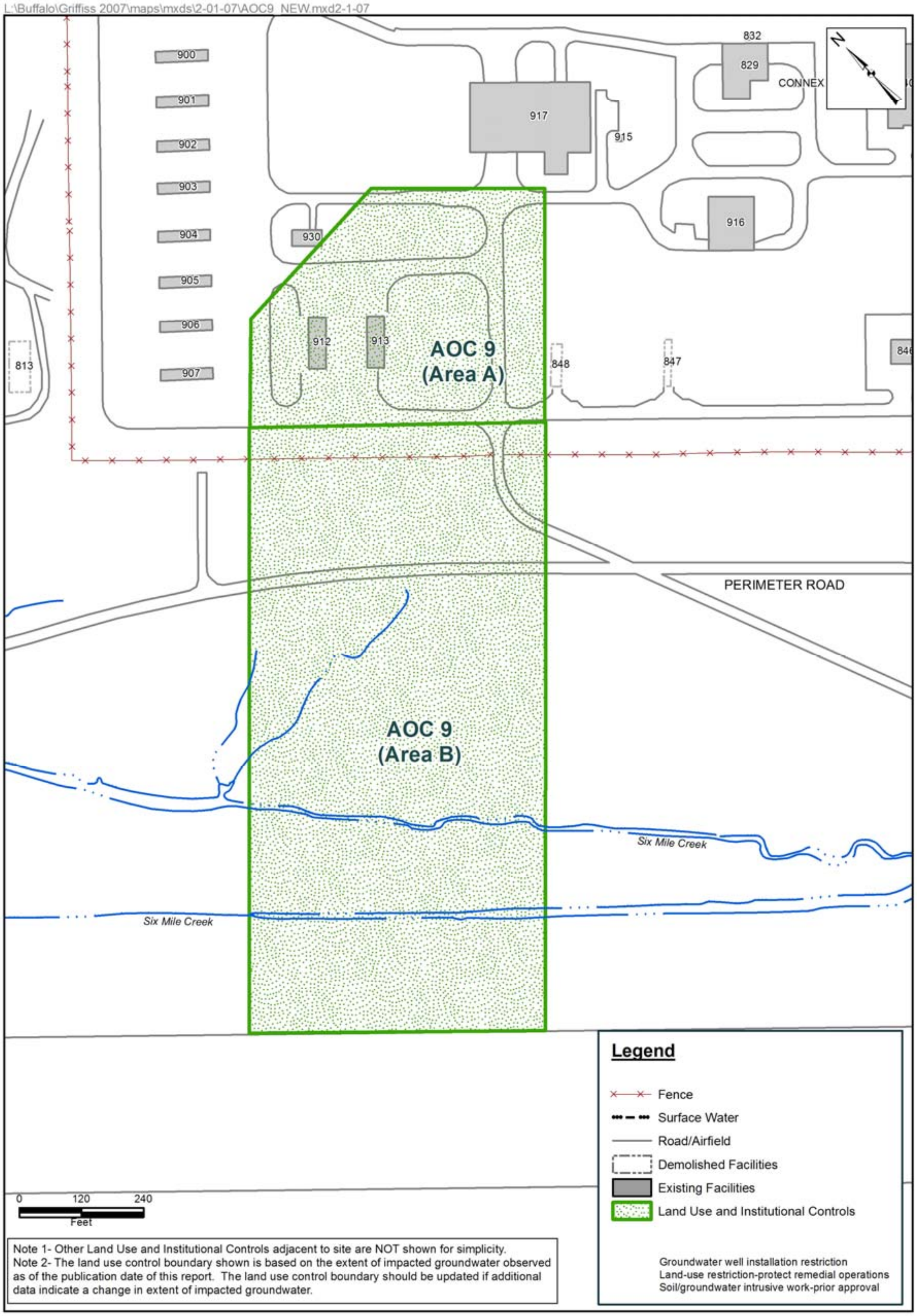

Figure 6 Land Use and Institutional Controls Boundary

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Table 7 COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES AOC 9 SOIL BORING AND TEST PIT SAMPLES 1995 - 2002				
Compound	**Range of Detected Concentrations[a]**	**Frequency of Detection Above Most Stringent Criterion[b]**	**NYSDEC TAGM 4046[c]**	**NYSDEC 6NYCRR Part 375-6[d]**
Subsurface Soil 1995 AOI Investigation				
Metals (mg/kg)				
Beryllium	0.61 - 0.76	2/5	0.16	7.2
Copper	11 - 46	1/5	25	50
Iron	9,500 - 27,000	5/5	2,000	NA[e]
Magnesium	2,000 - 5,400	1/5	5,000	NA[e]
Nickel	10 - 28	4/5	13	30
Silver	1.2 – 1.7	5/5	1.1 (SB)[f]	2
Zinc	21 - 47	5/5	20	109
Surface Soil (0 to 2 feet) 1997 Expanded Site Investigation				
SVOCs (µg/kg)				
Benzo(a)anthracene	75J - 490J	1/11	224	1,000
Benzo(a)pyrene	170J - 660J	2/11	61	1,000
Chrysene	87J - 670J	1/11	400	1,000
Metals (mg/kg)				
Aluminum	5,600 - 19,000	1/11	18,306	NA[e]
Arsenic	4.0 – 6.8	7/11	4.9	13
Barium	72	1/11	71	350
Beryllium	0.89 - 0.94	2/11	0.73	7.2
Potassium	590 – 11,000	3/11	1,993	NA[e]
Selenium	2.1 – 6.5	11/11	0.34	3.9
Thallium	0.58	1/11	0.45	NA[e]
Subsurface Soil 1997 Expanded Site Investigation				
Metals (mg/kg)				
Calcium	1200 – 30,000	1/5	23,821	NA[e]
Selenium	1.9 – 4.3	5/5	0.34	3.9
Test Pit Soil Samples (0 to 10 feet) 2000 Site Investigation				
SVOCs (µg/kg)				
Benzo(a)anthracene	163J – 2170J	1/6	224	1,000
Benzo(a)pyrene	87.3J- 1400	2/6	61	1,000
Benzo(b)fluoranthene	161J – 1510J	1/6	1100	1,000
Benzo(k)fluoranthene	133J - 1800	1/6	1100	800
Chrysene	168J – 1900J	1/6	400	1,000
Metals (mg/kg)				
Cadmium	1.41 – 2.17	5/6	1.0	2.5

Table 7 COMPOUNDS EXCEEDING STANDARDS AND GUIDANCE VALUES AOC 9 SOIL BORING AND TEST PIT SAMPLES 1995 - 2002				
Compound	**Range of Detected Concentrations[a]**	**Frequency of Detection Above Most Stringent Criterion[b]**	**NYSDEC TAGM 4046[c]**	**NYSDEC 6NYCRR Part 375-6[d]**
Subsurface Soil And Test Pit Soil Samples 2002 Site Investigation				
Metals (mg/kg)				
Antimony	0.749J – 4.94J	6/7	ND	NA[e]
Beryllium	0.264J - 0.298J	2/7	0.16	7.2
Chromium	5.80 – 13.0	1/7	10	30
Copper	6.79 – 28.2	1/7	25	50
Iron	10,300 - 26,900	6/7	2,000	NA[e]
Nickel	3.38 – 15.5	1/7	13	30
Thallium	0.871J– 5.66J	6/7	1.1 (SB)[f]	2
Zinc	24.4 – 65.1	6/7	20	109

a Does not include nondetects.
b The number of samples that exceeded the criteria/ the total number of samples collected.
c Screening criteria as established in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046.
d 6NYCRR Part 375-6 Remedial Program Soil Cleanup Objective, Draft, Dec. 14, 2006 Unrestricted Use Soil Cleanup Objectives.
e No criteria provided for compound in 6NYCRR Part 375-6.
f NYSDEC guidance value given as site-specific soil background.

Key:
J = Estimated concentration.
µg/kg = Micrograms per kilogram.
mg/kg = Milligram per kilogram.
NA = Not available.
SB = Soil background.

The surface soil on the northern portion of the site (Area A of Figure 6) was investigated through the use of a Membrane Interface Probe (MIP) during the first predesign investigation (2006). Data collected from 26 points showed no PID response in the top one foot of surface soils as presented in the *Final Predesign Investigation Data Summary Report at Landfill 6, Building 817/WSA, Building 775/Pumphouse 3, and AOC 9*, February 2007. As discussed in the groundwater section of this proposed plan, contaminated subsurface soil was identified in Area A in the saturated zone during the additional predesign investigation (2007). The soil data is summarized in Table 6 of this proposed plan. No contamination was found beyond the excavation boundary at levels above NYSDEC's soil cleanup objectives (6NYCRR Part 375-6). A risk assessment was not performed for this soil because it will be excavated and 99% of the contaminant mass will be removed (see Remedial Action section of this proposed plan).

SUMMARY OF SITE RISKS

In 2002, as part of the RI, a baseline risk assessment was performed at AOC 9 to evaluate current and future potential risks to human health and the environment associated with contaminants found in the groundwater at the site. The results of the risk assessment were considered when formulating this proposed plan.

Human Health Risk Assessment

Background Information

A baseline human health risk assessment was conducted to determine whether chemicals detected at the site could pose health risks to individuals under the current and expected future land use conditions. As part of the baseline risk assessment, the following four-step process was used to assess site-related human health risks for a reasonable maximum exposure scenario: Hazard identification—identifies the COCs at the site based on several factors such as toxicity, frequency of occurrence, and concentration; Exposure Assessment—estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathway (e.g., ingestion of contaminated soils) by which humans are potentially exposed; Toxicity Assessment—determines the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and Risk Characterization—summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative (e.g., one-in-a-million excess carcinogenic risk and noncarcinogenic Hazard Index [HI] value) assessment of site-related risks and a discussion of uncertainties associated with the evaluation of the risks and hazards for the site.

Chemicals of potential concern (COPCs) were identified based on the analytical results and data quality evaluation from the RI. All contaminants detected in the groundwater samples from the site were considered COPCs with the exception of inorganics detected at concentrations less than twice the mean background concentrations; elements considered to be essential human nutrients (iron, magnesium, calcium, potassium, and sodium); and chemicals detected in less than 5% of the total samples and at concentrations below ARARs and TBCs. As a class, petroleum hydrocarbons were not selected as a chemical of concern; but the individual toxic constituents (e.g., benzene, toluene, ethylbenzene) were evaluated. The presence of petroleum hydrocarbons as a class of contaminants was considered in the selection of the preferred remedial action.

Quantitative estimates of carcinogenic and noncarcinogenic risks were calculated as part of a risk characterization. The risk characterization evaluates potential health risks based on estimated exposure intakes and toxicity values. For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the potential carcinogen. The range of acceptable risk is generally considered to be 1 in 10,000 (1×10^{-4}) to 1 in 1,000,000 (1×10^{-6}) of an individual developing cancer over a 70-year lifetime from exposure to the contaminant(s) under specific exposure assumptions. Therefore, sites with carcinogenic risk below the acceptable risk range for a reasonable maximum exposure do not generally require cleanup based upon carcinogenic risk under the National Contingency Plan (NCP).

Results of Site-Specific Health Risk Assessment

A baseline risk assessment was performed for AOC 9 to evaluate current and future potential risks to human health and the environment associated with contaminants found in the groundwater at the site. The assessment was based on environmental data collected from July 1992 through the 2002 SI.

The current and future use designation for the southern portion of the AOC 9 area is open space, acting as a buffer zone between the runway and future development in adjacent areas. The northern portion of the site extends into the former WSA boundary and is expected to be zoned as a non-residential, industrial area. The human health risk assessment evaluated exposure to potential residential and occupational (commercial/industrial worker and construction) worker populations. The receptors and pathways evaluated for groundwater exposure in the risk assessment are summarized in Table 8. The exposure assumptions, which were selected in accordance with EPA guidance, are more fully described in the RI report.

Table 8
AOC 9 PLUME
RISK ASSESSMENT EXPOSURE SCENARIOS

Residential Receptor (groundwater used for potable water)	Occupational Receptor (groundwater used for potable or process water)
■ Groundwater ingestion ■ Inhalation of volatiles in groundwater (bathing, showering) ■ Dermal contact with groundwater	■ Inhalation of volatiles in groundwater ■ Dermal contact with groundwater

Carcinogenic Risk

For future residential exposures at AOC 9, the estimated total child/adult lifetime carcinogenic risk was 8×10^{-3} and the total estimated carcinogenic risk for future commercial/industrial workers was 8×10^{-4}, both exceeding the EPA's target risk range. The estimated carcinogenic risk for construction workers (3×10^{-7}) was within EPA's target risk range.

Noncarcinogenic Risk

For future residential exposures, the total HIs for child and adult were 921 and 102, respectively, and for future commercial/industrial workers the total HI was 32. The total HI calculated for construction workers was 2. Therefore, for all potential future receptors, the HI exceeded the acceptable level of 1.

The estimated carcinogenic and non-carcinogenic risks were primarily due to groundwater consumption and inhalation of vapors released from groundwater during baths/showers. The chemicals in groundwater that accounted for the majority of the risks were TCE, 1,4-DCB, 1,3,5-trimethylbenzene (TMB), 1,2,4-TMB, vinyl chloride, and cis-1,2-DCE.

The results of the human health risk assessment indicated that the potential risk of COPCs in groundwater is reduced substantially if groundwater is not used for drinking water purposes.

Risk Uncertainties

There are inherent uncertainties associated with the overall risk assessment process and with each of its components. However, conservative (health-protective) assumptions are used throughout the process to ensure that the risk estimates will be protective of human health and the environment. Examples of uncertainties associated with the risk assessment process include: (1) Samples were collected from locations with known or suspected contamination rather than random locations, which may result in a potential overestimation of risk; (2) Actual natural background concentrations of inorganic compounds in the groundwater are uncertain, due to limited data sets; (3) For inhalation exposures, contaminant concentrations in air were estimated from soil and groundwater concentrations using modeling and conservative model input assumptions, which may result in a potential overestimation of risk; (4) Elevated levels of contaminants in groundwater that were measured following the RI were not factored into the risk assessments, which would result in an underestimation of risk; and (5) It was assumed that groundwater might be used as a potable water source, which is unlikely since the site has ready access to existing water supplies at the former base and in the city of Rome. This would result in a potential overestimation of risk.

Ecological Risk Assessment

The ecological risk assessment focused on four assessment points: terrestrial and wetland plant communities, the soil-fauna community, aquatic life in Six Mile Creek and on-site tributaries, and bird and mammal populations in the vicinity of the site. AOC 9 does not represent a high quality habitat because most of the site is periodically mowed, the area surrounding the site is developed (buildings, roads), and an on-site fence limits access to the site by wildlife. Several chlorinated pesticides, metals, and PAHs exceeded conservative screening benchmarks at selected sampling locations or were predicted to pose a potential risk to wildlife when the exposure was calculated using maximum chemical concentrations in soil and sediment. However, given the conservative nature of the risk estimation process, the overall results from the 2002 risk assessment indicated that the environmental contamination at the site was unlikely to adversely affect populations or communities of ecological receptors.

The ecological risk assessment for exposure to groundwater beneath the surface was not performed because wildlife does not have access to this groundwater at AOC 9.

REMEDIAL ACTION

Remedial Action Objectives (RAOs)

For the AOC 9 groundwater, the RAOs are as follows:

1. Reduce the potential for human risk of exposure to COCs found in on-site groundwater by reducing the potential for ingestion of contaminated groundwater and inhalation of vapors.

2. Achieve the proposed cleanup goals for COCs as specified in Table 9; and

3. Reduce further off-site migration of contaminated groundwater above the cleanup goals to the extent practical.

TABLE 9 AOC 9 GROUNDWATER CLEANUP GOALS	
Contaminants of Concern[a]	**Groundwater Cleanup Goal**[b] **(μg/L)**
1,2-dichlorobenzene	3
1,2-dichloroethane	0.6
1,3,5-trimethylbenzene	5
1,3-dichlorobenzene	3
1,4-dichlorobenzene	3
acetone	50
benzene	1
chlorobenzene	5
cis-1,2-dichloroethene	5
ethylbenzene	5
isopropylbenzene	5
methylene chloride	5
naphthalene	10
n-butylbenzene	5
n-propylbenzene	5
sec-butylbenzene	5
trichloroethene	5
tert-butylbenzene	5
tetrachloroethene	5
vinyl chloride	2
xylene (total)	5

[a] from the *Final Feasibility Study Report for AOC 9* (E & E 2004a)
[b] NYSDEC Class GA Groundwater Standard

Description and Evaluation of Remedial Action Alternatives

CERCLA regulations mandate that a remedial action must be protective of human health and the environment. Six remedial action alternatives were evaluated in the final FS for AOC 9 (Alternatives 1 through 6) and one remedial action alternative was evaluated in the FS Addendum (Alternative 7). The seven alternatives are listed below:

Alternative 1: No Action
Alternative 2: Institutional Controls/Long-term Monitoring
Alternative 3: In Situ Chemical Oxidation
Alternative 4: In Situ Air Sparging/Soil Vapor Extraction
Alternative 5: Groundwater Extraction Treatment and Disposal
Alternative 6: Constructed Treatment Wetland
Alternative 7: Source Removal, Groundwater Treatment, and Land Use Controls

Alternatives 5 and 6 are no longer considered appropriate and were eliminated from further consideration due to the presence of a source of groundwater contamination in the soil, which may result in very long remediation times. The time to achieve RAOs and the cost estimates for Alternatives 1 through 4 were updated in the FS Addendum in consideration of the larger area of impacted groundwater, the presence of the source of contamination in the soil, and the time since the original estimates were made.

Descriptions of the five alternatives evaluated in the FS Addendum are as follows:

- Alternative 1: No Action. No action involves no remedial action for treatment of the AOC 9 plume. The plume would be allowed to migrate and naturally attenuate. This alternative does not include remedial action, institutional or engineering controls, or long-term monitoring.

- Alternative 2: Institutional Controls/Long-term Monitoring. Institutional control actions would employ methods such as deed restrictions to prevent future use of the groundwater, and a groundwater monitoring program to evaluate the extent of migration and attenuation of the plume. Deed restrictions would be filed to control future use/activities at the site. A long-term monitoring program would be implemented at the site to evaluate the extent of contamination migration and attenuation. For purposes of the final FS Addendum, it was assumed that on-site contaminant concentrations would remain above cleanup goals for the assumed 30-year alternative duration.

- Alternative 3: In Situ Chemical Oxidation. In situ chemical oxidation would involve the delivery of a strong oxidizing agent into the subsurface through temporary injection points to oxidize COCs to non-toxic compounds. In addition, institutional controls, including long-term monitoring of groundwater, would be implemented to minimize the potential for future exposure to contaminated groundwater until cleanup goals were achieved. During this action, there would be continued monitoring of the extent of migration or natural attenuation of the plume. This alternative would involve full-scale remediation for the area contained within the 100-µg/L total VOC concentrations contour line (see Figure 3). In addition, due to the observed upward gradient groundwater flow near Six Mile Creek and in order to eliminate the potential for oxidizing agents or contaminants to migrate off-site when injecting near the downgradient edge of the plume, a section of Six Mile Creek would be diverted around the proposed injection area. Maintenance of institutional controls and the long-term monitoring program was assumed for an estimated 30 years in the FS Addendum.

- Alternative 4: In Situ Air Sparging/Soil Vapor Extraction (AS/SVE). This alternative involves injection of air through a contaminated aquifer. Injected air would flow in channels through the soil, which would remove VOCs and SVOCs through volatilization. The rate of volatilization is constrained by contaminant properties and the equilibrium relationship that exists between the concentration of contaminants in the groundwater or soil and the soil vapor. Air sparging is also effective at increasing the concentration of dissolved oxygen in groundwater, thereby facilitating aerobic degradation of organic compounds. Similar to Alternative 3, full-scale remediation of this technology was assumed for the area contained within the 100-µg/L total VOC concentration contour line. An on-site pilot study would be conducted before full-scale implementation of this technology. In addition, institutional controls, including long-term monitoring of groundwater, would be implemented to minimize the potential for future exposure to contaminated groundwater and to monitor the extent of migration or natural attenuation of the plume. In the FS Addendum, operation of the AS/SVE system was assumed for 5 years and maintenance of institutional controls and the long-term monitoring program was assumed for an estimated 25 years beyond the operation of the AS/SVE system.

- Alternative 7: Source Removal, Groundwater Treatment, and Land Use Controls. This alternative includes removal of the source area through excavation of contaminated soil, treatment of contaminated groundwater using chemical oxidation, and land use controls. The groundwater contaminant source area is identified as the area within the 1 milligram per kilogram (mg/kg) total VOC contour on Figure 5. The groundwater contaminant source area excavation would be followed by in situ chemical oxidation treatment of the soil below the source area (application of persulfate oxidant), which is expected to result in further contaminant destruction. Approximately 99% of the total VOCs contaminant mass would be removed during the source area excavation. Removal of the source material in the soil would decrease the concentration of VOCs in the downgradient groundwater by decreasing the desorption of the VOCs from the soil into the groundwater.

After the source is removed, the concentrations of contaminants in the groundwater plume are expected to decrease due to natural processes including advection, dilution and biodegradation. In addition, the groundwater would be treated with a persulfate oxidant injected through temporary wells approximately 15 to 25 feet deep within the treatment area (see Figure 7). It is proposed that sodium persulfate with an iron chelate activator be used at AOC 9 because it is very stable in the sub-surface, performs better in a neutral pH environment, and can destroy the major COCs at AOC 9, including DCB, DCE, TCE, PCE, and chlorobenzene. Modeling has indicated that removal of the source by excavation of the soil, application of persulfate oxidant to the soil at the bottom of the excavation, and one injection of persulfate oxidant in the center of the plume immediately downgradient of the excavation area would result in a reduction of groundwater contaminant concentration levels and achievement of RAOs in 11 years.

Under Alternatives 1 and 2, no actions would be taken to reduce levels of contaminants in groundwater or the soil source area. Implementation of Alternative 3, which was the selected alternative in the final FS, would have a high risk of failure in treating the source area when compared to excavation of the source. The treatment efficiency for Alternative 3 would not be very high because sufficient mixing is hard to achieve between groundwater, the impacted soils, and the oxidant solution. In addition, the high organic loading in the source area and large oxidant demand would likely require multiple injections and each of these injections would require a monitoring period to assess effectiveness. This iterative approach would result in a larger risk of remedy failure when compared to excavation.

Alternative 4, in situ air sparging, would be less effective than soil excavation because air distribution may be hard to predict since the air flow path is highly sensitive to the material permeability. In the shallow aquifer at the AOC 9 site, there is material stratification that may cause difficulties in predicting the flow path and in getting the injected air into contact with the contaminated soils. These site conditions indicate that further predesign investigation tracer studies would be required. Treatment efficiency also may be reduced by diversion of the plume away from the air-sparging influence zone because air injection can produce a zone of reduced hydraulic conductivity.

Based on a comparative analysis of remedial alternatives, according to established criteria, the recommended alternative for the AOC 9 plume is Alternative 7, Source Removal, Groundwater Treatment, and Land Use Controls. Excavation and disposal of contaminated soil with chemical oxidation of groundwater represents an active remedial approach to permanently reduce the toxicity, mobility, and volume of site COCs, which is a preferred technology, when practical. This alternative also provides for protection of human health and the environment and has the shortest treatment duration of the alternatives. Although this alternative was not the least expensive alternative, it was on the same order of magnitude as the other active treatment alternatives (Alternatives 3 and 4). A summary of estimated durations and costs are presented in Table 10.

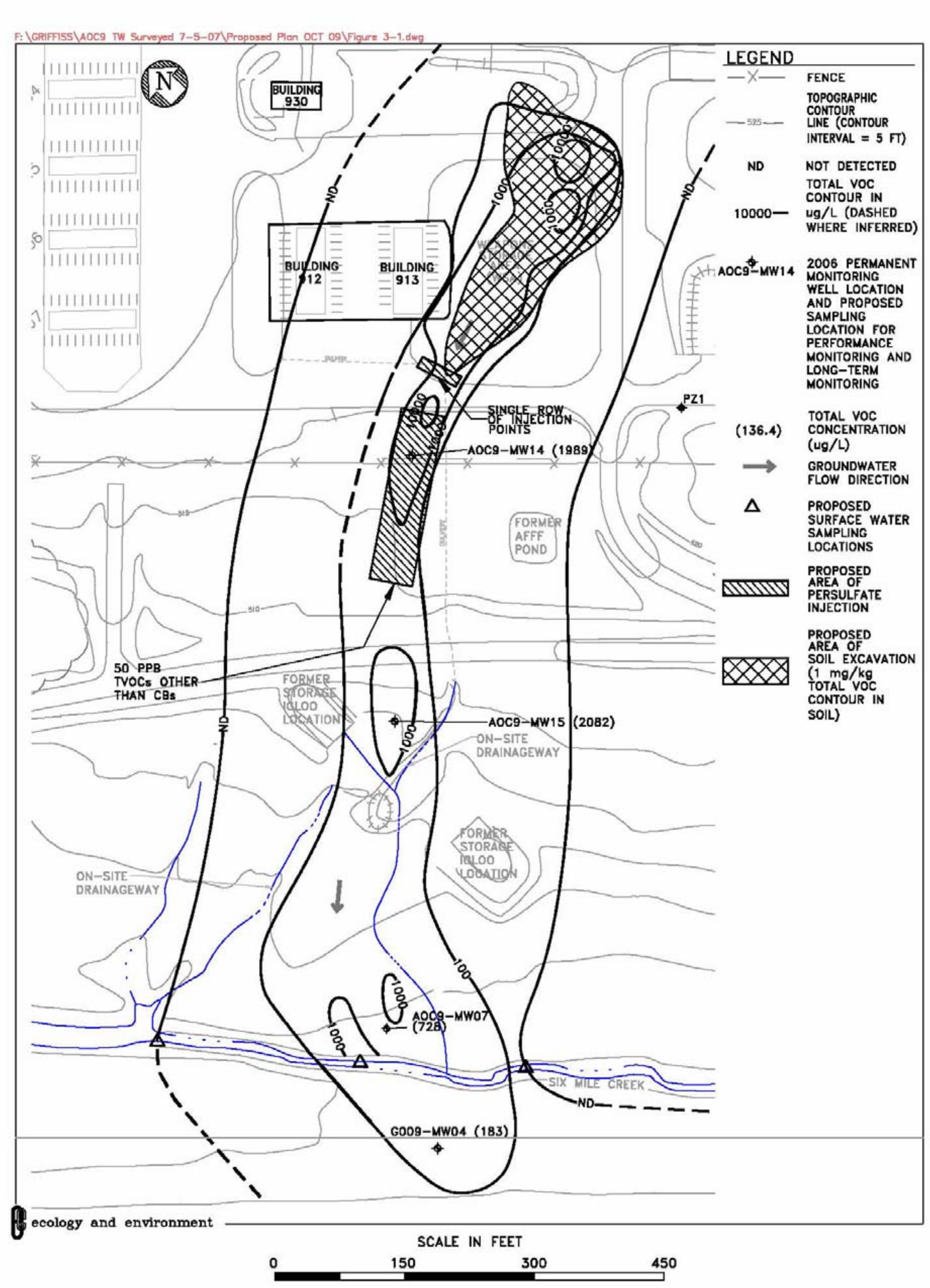

Figure 7 AOC 9 Remedial Action Areas and Monitoring Locations

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TABLE 10 SUMMARY OF REMEDIAL ALTERNATIVE DURATIONS AND COSTS FOR AOC 9					
Description	Alternative[a]				
	1	2	3	4	7
	No Action	Institutional Controls/ Long-term Monitoring	In Situ Chemical Oxidation	Air Sparging/ Soil Vapor Extraction	Source Removal, Groundwater Treatment, and Land Use Controls
Total Approximate Project Duration (Years)	0	30	30	30	11
Total Present Value (in $ 2009)	**$0**	**$660,000***	**$5,305,000***	**$5,308,000***	**$5,658,000**

[a] Alternatives 5 and 6 were eliminated from further consideration in the final FS Addendum.

Key:
LTM = Long-term monitoring.
* = Values estimated from the R.S. Means Historical Cost Index Method

Evaluation Criteria for Remedial Action Alternatives

Remedial alternatives are assessed on the basis of both a detailed and a comparative analysis pursuant to the NCP. The detailed analysis of AOC 9 groundwater in the FS report consisted of (1) an assessment of the individual alternatives against seven evaluation criteria and (2) a comparative analysis focusing upon the relative performance of each alternative against the criteria.

In general, the following "threshold" criteria must be satisfied by an alternative for it to be eligible for selection. The proposed alternative is briefly evaluated below for each of the first seven criteria:

1. Overall protection of human health and the environment addresses whether a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

   This alternative is considered protective of the environment as it would remove a source of groundwater contamination through excavation of contaminated soil and eliminate future potential exposure threats. The institutional controls included in this alternative would restrict the use of contaminated groundwater during and after cleanup and provide some long-term protection of human health and the environment.

2. Compliance with ARARs addresses whether a remedy would (1) meet all of the ARARs or (2) provide grounds for invoking a waiver.

   This alternative complies with ARARs since contaminated soils will be removed from the site and properly disposed of. The alternative will reduce groundwater VOC concentrations to below the NYSDEC Class GA groundwater standards indicating the potential use of this groundwater as a drinking water source.

Off-site disposal will comply with all applicable land disposal restrictions and analytical requirements. The remedy will be implemented in compliance with action-specific ARARs including noise limitations and Occupational Safety and Health Administration (OSHA) regulations.

In addition, the following "primary balancing" criteria are used to make comparisons and identify the major trade-off among alternatives:

3. Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

   This alternative is expected to be effective in the long term because approximately 99% of the estimated total mass of total VOCs will be removed. In situ chemical oxidation of the groundwater and dilution of the groundwater due to the recharge of the aquifer following remedial action will reduce groundwater concentrations to cleanup goals; modeling has indicated that this should occur in 11 years.

4. Reduction of toxicity, mobility, or volume via treatment refers to a remedial technology's expected ability to reduce the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants at the site.

   The volume of contamination at the site will be reduced through source excavation and on-site groundwater treatment. The source removal will assist in eliminating concerns associated with toxicity of the groundwater, and in-situ chemical oxidation should reduce dissolved phase concentrations.

5. Short-term effectiveness addresses (1) the period of time needed to achieve protection and (2) any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.

   Several short-term impacts to the community and workers may arise during excavation of contaminated soil, dewatering, and water treatment at the site. These short-term impacts include dust, noise, and potential spills during handling and transportation of contaminants. To limit short-term impacts, site access will be restricted during construction and remediation activities. Health and safety measures, including air monitoring, use of appropriate personal protective equipment, and decontamination of equipment leaving the site, will be in place to protect the workers and surrounding community. Action levels will be set prior to any intrusive activities, and an appropriate correction action will be implemented if these action levels are exceeded. Off-site transportation of contaminated soil to the disposal facility will be performed by a licensed hauler.

   The construction activities at the site are estimated to last less than one year. After removal of contaminated soils, the source area will be covered with backfill soils and will be reseeded, reducing inhalation exposures. In addition, groundwater concentrations and the subsequent exposure to contaminated groundwater will be reduced through the source excavation and chemical oxidation process.

6. Implementability refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

   This alternative can be readily implemented using standard construction means and methods. Contaminated soil will be excavated, tested, and disposed of at an appropriate waste disposal facility. Since a chemical oxidation pilot study has already been performed at the site, there is a better understanding of the physical and chemical requirements necessary to treat the COCs at this site.

7. Cost includes estimated capital, O&M, and present-worth costs.

   The 2009 total present worth cost of the alternative based on an 11-year period to reach groundwater cleanup goals (annual costs assumed for this length of time based on modeling results) is $5,658,000. Table 10 presents the quantities, unit costs, and subtotal costs for the various line items in this alternative. The cost estimating information was obtained from 2008 RS Means Cost Data series and engineering judgment. Groundwater sampling and renewal of institutional controls are included with this alternative.

   Capital cost for this scenario is estimated at $3,104,000.

Finally, the following “modifying” criteria are considered fully after the formal public comment period on the proposed plan is complete:

8. State acceptance indicates whether, based on its review of the proposed plan and the RI, SI, and FS reports, the State supports or opposes the preferred alternative and/or has identified any reservations with respect to the preferred alternative.

9. Community acceptance refers to the public’s general response to the alternatives described in the proposed plan and the RI, SI, and FS reports. Factors of community acceptance include support, reservation, or opposition by the community.

DESCRIPTION OF THE PREFERRED ALTERNATIVE

The preferred alternative for AOC 9 includes removal of the source area through excavation of contaminated soil, treatment of contaminated groundwater using chemical oxidation, and land use controls. The excavation of the source area is the primary treatment for groundwater at this site. The horizontal and vertical limits of this excavation have been defined based on the selected cleanup objectives, and groundwater and soil boring analytical results. Approximately 99% of the total VOCs contaminant mass will be removed during the source area excavation. After the soil is excavated from the 6-foot smear zone, the bottom of the excavation will be screened with the PID to ensure that the contamination hasn’t migrated deeper into the soil. If contamination is found above 50 ppm, that soil will be excavated and the process repeated. In addition, as a polishing step, a sodium persulfate oxidant with an iron chelate activator (persulfate oxidant) will be applied to the bottom of the excavation to oxidize any low-level residual contamination. Application of the oxidant is expected to reduce the number of years required to meet RAOs.

After the source is removed, the concentrations of contaminants in the groundwater plume are expected to decrease due to natural processes including advection, dilution, and biodegradation. In addition, to further reduce the number of years required to meet RAOs, the groundwater will be treated with persulfate oxidant, which will be injected into the center of the plume through temporary wells approximately 15 to 25 feet deep immediately downgradient of the excavation area. The persulfate oxidant will be used because it is very stable in the subsurface, performs better in a neutral pH environment, and can destroy chlorobenzene and dichlorobenzene. Oxidant injection is being performed in an area of 50 feet by 200 feet immediately downgradient of the excavation area, which will treat groundwater in an in situ plume area of 10,000 square feet. This portion of the plume has an average saturated thickness of 15 feet and an estimated porosity of 0.35, which provides a water treatment volume of approximately 390,000 gallons. Modeling has indicated that removal of the source by excavation of the soil, application of persulfate oxidant to the soil at the bottom of the excavation, and one injection of persulfate oxidant in the center of the plume immediately downgradient of the excavation area, will result in a reduction of groundwater contaminant concentration levels and achievement of RAOs in 11 years.

During source excavation, uncontaminated overburden soil will be removed to access the contaminated soil. The overburden soil will be excavated, stockpiled, and used for backfilling following excavation of the contaminated soil. Steel sheeting will be installed around the contaminated soil area to support the excavation below the water table. An area of approximately 31,500 square feet of soil, 6 feet thick, is planned to be removed, which provides a contaminated soil removal volume of 7,000 cubic yards. Dewatering will be performed during the excavation of the contaminated soil located below the groundwater table. The collected groundwater will be pumped into tanks, treated (if necessary), sampled, and shipped to the City of Rome Publicly Owned Treatment Works (POTW). Following excavation of the contaminated soil and application of the persulfate oxidant to the excavation floor, the steel sheeting will be removed and the area will be backfilled with the stockpiled overburden soil. Presently, the elevation of the excavation area is higher than the surrounding roadways. After completion of construction, it is expected that the final grade will be lower, but still higher than the surrounding roadway. Swales and culverts will be restored to their preconstruction elevations to match existing drainage features.

Monitoring of the groundwater plume and treatment performance will be performed by the Air Force until RAOs are achieved. In order to properly monitor the plume, groundwater sampling will be performed to determine and monitor seasonal water table and contaminant concentration fluctuations.

As referenced in the Summary of Site Activities section of this proposed plan, the bedrock beneath the proposed excavation area at AOC 9 is present at depths of 30 to 35 feet BGS and in 2002, the Bedrock Groundwater Study concluded that groundwater contamination had not migrated into the underlying bedrock. Based on previous studies, it was determined that a thickness of between 6 and 16 feet of uncontaminated soil rests above the bedrock.

If during the source excavation or during monitoring of the groundwater plume, there are indications that contamination is migrating deeper, the potential impacts to bedrock groundwater will be evaluated and a recommendation will be presented to NYSDEC and EPA.

Institutional controls in the form of deed restrictions for affected groundwater will also be implemented as follows:

- Development and use of the entire AOC 9 property for residential housing, elementary and secondary schools, childcare facilities, and playgrounds will be prohibited unless prior approval is received from the Air Force, EPA, and NYSDEC.

- The owner or occupant of this site shall not extract, utilize, consume, or permit others to extract, utilize, or consume any water from the subsurface aquifer within the boundary of the site unless such owner or occupant obtains prior written approval from the NYSDOH. The Grantee will bear all costs associated with obtaining use of such water, including the costs of studies, analysis, or remediation, without any cost whatsoever to the Grantor.

- The owner or occupant of this site will not engage in any activities that will disrupt required remedial investigation, remedial actions, and oversight activities, should any be required.

- The owner or occupant of this site shall not have access to subsurface soils and groundwater without prior approval of the Air Force, EPA, and NYSDEC.

- The owner or occupant of this site will restrict access to and prohibit contact with all subsurface soils and groundwater at or below the groundwater interface at this AOC until cleanup goals are achieved and have been confirmed through sample results.

- With respect to risks that may be posed via indoor air contaminated by chemicals volatilizing from the groundwater (vapor intrusion), the Grantee will covenant to conduct either (a) construction of new structures within the Groundwater Restriction Area in a manner that would mitigate unacceptable risk under CERCLA and the NCP; or (b) an evaluation of the potential for unacceptable risk prior to the erection of any structure in the Groundwater Restriction Area, and the Grantee shall include mitigation of the vapor intrusion in the design/construction of the structure prior to occupancy if an unacceptable risk under CERCLA and the NCP is posed. Any such mitigation or evaluations will be coordinated with the EPA and NYSDEC. In addition, with respect to vapor intrusion, Buildings 912 and 913 will remain unoccupied until either of the conditions under (a) or (b) above is completed. “Occupied” means that the building is used and there is human occupation of it with regularity (e.g., persons present the same day of the week, for approximately the same number of hours). Incidental use of the building, such as for storage of materials, that necessitates intermittent visits by individuals who would not remain in the building after delivery or retrieval of such materials, would not meet this definition of occupation. “Occupied” has the same meaning throughout this document. The owner may also choose to demolish the buildings.

The above restrictions will be maintained until the concentrations of hazardous substances in the groundwater are at such levels to allow for unrestricted use. Prior approval by EPA and NYSDEC will be required for any modification or termination of institutional controls, use restrictions, or anticipated actions that may disrupt the effectiveness of or alter or negate the need for institutional controls.

The upgradient area of AOC 9 (Area A on Figure 6) was transferred prior to discovery of the upgradient portion of the contamination. A deed modification will be issued to implement the institutional controls as deed restrictions for Area A.

For the area designated as Area B on Figure 6, during the time between the adoption of the ROD (after public review of this proposed plan) and deeding of the property, equivalent restrictions will be implemented by lease terms, which will not be less restrictive than the use restrictions and controls described above. These lease terms shall remain in place until the property is transferred by deed, at which time they will be superseded by the institutional controls described in the ROD.

Based on modeling results, groundwater monitoring is assumed to be required for 11 years to reach RAOs. Trend data will be collected and evaluated as part of the performance monitoring and long-term monitoring programs. Following each monitoring event, concentrations of COCs will be evaluated. If an increasing trend in COC concentrations is identified (e.g., three consecutive monitoring events showing a statistically significant increasing trend), the Air Force will conduct either additional oxidant injections or additional excavations of isolated source areas, or both, within six months of receipt of the sampling results. If it is determined that an alternative action is required because additional oxidant injections or excavations are not proving to be effective in addressing the conditions, the Air Force will propose a draft ROD amendment or Explanation of Significant Differences to address the conditions.

Annual inspections and reporting will be performed by the Air Force to verify that the land use controls are effective, or the Air Force will require the transferee to do so. Five-year reviews will be performed by the Air Force, in conjunction with the EPA and NYSDEC, to ensure the remedy is still protective of public health and the environment.

COMMUNITY PARTICIPATION

The agencies desire to have an open dialogue with citizens concerning the results of the RI/FS and encourage citizens to participate by commenting on the proposal to perform remedial action with long-term monitoring at AOC 9. This interaction between the agencies and the public is critical to the CERCLA process and to making sound environmental decisions. Details on this AOC, the environmental program, and all reports referred to in this document are available for review in the ***administrative record*** file located at 153 Brooks Road in the Griffiss Business and Technology Park and on the administrative record Web site found at https://afrpaar.lackland.af.mil/ar/docsearch.aspx.

Administrative Record
Documents including correspondence, public comments, and technical reports upon which the agencies base their remedial action selection.

The public is encouraged to review all aspects of the administrative record and comment on the agencies' proposal to perform remedial actions with long-term monitoring. The agencies will consider all public comments on this proposed plan in preparing the ROD. Depending on the comments received, the plan presented in the ROD could be different from the alternative presented in this proposed plan. All written and verbal comments will be summarized and responded to in the responsiveness summary section of the ROD.

How You Can Participate

Whether you are reading this type of document for the first time or are familiar with the Superfund process, you are invited to participate in the process.

- Read the proposed plan and review additional documents in the administrative record file.
- Contact the Air Force, EPA, or NYSDEC project managers listed below to ask questions or request information.
- Attend a public meeting and give verbal comments (see details below).
- Submit written comments (see comment form below) by February 16, 2010.

Public Comment Period

The agencies have set a public comment period from January 13, 2010, to February 16, 2010, to encourage public participation in the selection process. Written comments should be sent to:

Mr. Michael McDermott
BRAC Environmental Coordinator
Air Force Real Property Agency
153 Brooks Road
Rome, NY 13441

Public Meeting

The comment period includes a public meeting at which the Air Force will present the proposed plan. Representatives from the agencies will be available to answer questions and accept both oral and written comments. The public meeting is scheduled for 5:00 pm, Wednesday, January 20, 2010, and will be held at the Mohawk Valley EDGE Conference Room, 153 Brooks Rd, Rome, NY.

Environmental Timeline

1981	**Problem Identification/Records Search**
1982	**Problem Confirmation and Quantification**
1985	**Field Investigation**
1988	**Griffiss AFB added to National Priorities List (NPL)**
1990	**EPA, NYSDEC, and Air Force enter into Federal Facility Agreement**
1993 and 1995	**Griffiss designated for realignment by BRAC**
1995	**ATSDR Health Assessment**
1996	**ATSDR Addendum**
1997	**Expanded Site Investigation at AOC 9**
2000	**Supplemental Investigation at AOC 9**
2002	**Additional Supplemental Investigation at AOC 9**
2004	**Final Remedial Investigation Report for AOC 9**
2004	**Final Feasibility Study Report for AOC 9**
2006 and 2007	**Predesign Investigations at AOC 9**
2009	**2,800 acres of Griffiss AFB removed from NPL (not including AOC 9)**
2009	**Addendum to Final Feasibility Study Report for AOC 9**
2010	**Remedial Action with Long-term Monitoring Proposed Plan for AOC 9**

More Griffiss Air Force Base Environmental Information

General information concerning the environmental program at the former Griffiss AFB can be found at the AFRPA offices at 153 Brooks Road, Rome, New York 13441 (phone (315) 356-0810).

Additional Information

Three agencies have been identified in the FFA: Air Force, NYSDEC, and EPA. The agreement ensures that environmental impacts on public health, welfare, and the environment associated with past and present activities at the former Griffiss AFB are thoroughly investigated and appropriate remedial actions are taken as necessary to protect the public health, welfare, and the environment. Any of the following agency representatives may be contacted to obtain additional information:

The **Air Force** is legally responsible for the environmental activities at the former Griffiss AFB. Since this site is on the National Priorities List, all investigations and cleanup plans are finalized only after consultation with EPA and NYSDEC.

For additional information concerning the environmental program at the former Griffiss AFB and the Air Force's role in preparing this proposed plan, contact:

Mr. Michael McDermott
BRAC Environmental Coordinator
Air Force Real Property Agency
153 Brooks Road
Rome, NY 13441
(315) 356-0810

The **New York State Department of Environmental Conservation**

For additional information concerning the state's role in preparing this proposed plan, contact:

Ms. Heather Bishop
New York State Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233
(518) 402-9692

The **U.S. Environmental Protection Agency**

For additional information concerning the EPA's role in preparing this proposed plan, contact:

Mr. Douglas Pocze
U.S. Environmental Protection Agency, Region II
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4432

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(Comments continued. Attach additional pages, if necessary.)

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Mr. Michael McDermott
BRAC Environmental Coordinator
Air Force Real Property Agency
153 Brooks Road
Rome, NY 13441

AOC 9 Groundwater

This comment form is provided for your convenience in submitting written comments to the Air Force concerning AOC 9. If you would like to receive a copy of the ROD and Responsiveness Summary, which address public comments received on this proposed plan, please make sure the information on the mailing label below is correct.

Comments:

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(continued on reverse)

BRAC Environmental Coordinator
Air Force Real Property Agency
153 Brooks Road
Rome, NY 13441

This mailing is to inform you of the proposed environmental plan for AOC 9 at the former Griffiss AFB, and to solicit your comments.