
SITE SS-026
EXPLOSIVE ORDNANCE
DISPOSAL RANGE

PROPOSED PLAN

*Plattsburgh Air Force Base
Installation Restoration Program*



United States Department of The Air Force
Plattsburgh Air Force Base
Plattsburgh, New York

Final
December 2002

Grey Hadley

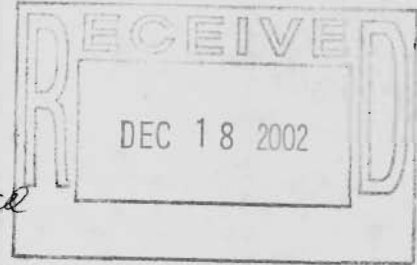
New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Eastern Remedial Action, 11th Floor
625 Broadway, Albany, New York 12233-7015
Phone: (518) 402-9625 FAX: (518) 402-9020



Erin M. Crotty
Commissioner

MEMORANDUM

TO: Rich Wagner, Region 5 - Ray Brook
FROM: Jim Quinn, Federal Projects Section, BERA, DER *JQ*
SUBJECT: Plattsburgh Air Force Base ID No. 510003
DATE: December 13, 2002



Attached a copy of the Final Proposed Plan for Site SS-026, Explosive Ordnance Disposal Range, at the former Plattsburgh Air Force Base.

If you have any questions, please contact me at 402-9697.

Attachment

Greg H.



STATE OF NEW YORK
DEPARTMENT OF HEALTH

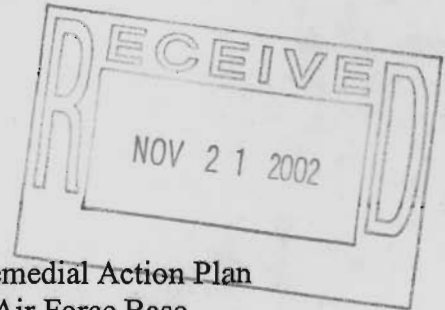
Flanigan Square, 547 River Street, Troy, New York 12180-2216

Antonia C. Novello, M.D., M.P.H., Dr.P.H.
Commissioner

Dennis P. Whalen
Executive Deputy Commissioner

November 19, 2002

Mr. Dale Desnoyers, Acting Director
Division of Environmental Remediation
NYS Dept. of Environmental Conservation
625 Broadway – 12th Floor
Albany, New York 12233-7011



Re: Proposed Remedial Action Plan
Plattsburgh Air Force Base
SS-026, Explosive Ordnance
Disposal Range
Site ID #510003
Plattsburgh, Clinton County

Dear Mr. Desnoyers:

Staff reviewed the October 2002 Proposed Remedial Action Plan (PRAP) for site SS-026 Explosive Ordnance Disposal Range. Based on that review, I understand the proposed remedy for the site is no further action because the removal of drummed waste in 1997 and the removal of PAH contaminated soil in 2000 resulted in the successful remediation of this site.

Based on this information, I concur with the proposed remedy and believe the remedy is protective of public health. If you have any questions, please call Mr. Michael Rivara at (518) 402-7890.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gary A. Litwin'.

Gary A. Litwin, Director
Bureau of Environmental Exposure Investigation

cc: G. Anders Carlson, Ph.D.
Mr. M. Rivara/FILE
Mr. J. Kanoza, CCHD
Mr. J. Quinn, DEC
Mr. R. Wagner, DEC, Region 5

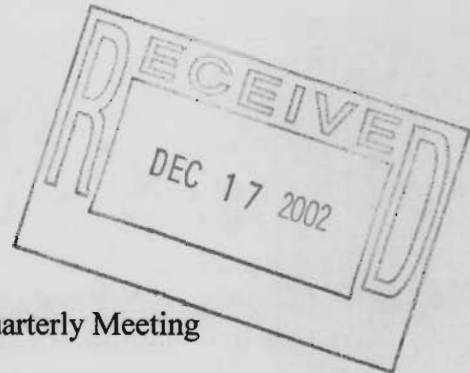
Grey

Marcia G. Wolosz
TN & Associates, Inc.
Community Relations Specialist
PAFB Project

c/o AFRPA
22 U.S. Oval Suite 2200
Plattsburgh, NY 12903

FAX: 518-566-8312

MEMORANDUM



Date: December 16, 2002

TO: RAB Members Absent From December 12, 2002 Quarterly Meeting
& Public Meeting SS-026

FROM: Marcia Wolosz *MW*

RE: Meeting Handouts

We're sorry we missed you at our most recent combined RAB Meeting/Public Meeting. Enclosed for your review are the following items:

- ◆ Agenda
- ◆ IRP Site Status/IRP Site Status Slides/IRP Site Map/
AFCEE Update
- ◆ "Site SS-026 Explosive Ordnance Disposal Range Proposed Plan"
Public Meeting Slide Presentation.

If you have any questions about this material, please call Mike Sorel at 563-2871 ext. 12.

We hope to see you at the next RAB quarterly meeting, scheduled for
Wednesday, March 19, 2003.*

* Due to scheduling conflicts with the Old Court House Meeting Room, RAB meetings for 2003 will take place on the third Wednesday of the quarter. Note the exception for December. 2003 Meeting Dates are:

Wednesday, March 19, 2003
Wednesday, June 18, 2003
Wednesday, September 17, 2003
Monday, December 8, 2003

All meetings are at 7:00 p.m.

cc: Michael D. Sorel, Site Manager/BRAC Environmental Coordinator

AGENDA
RESTORATION ADVISORY BOARD

December 12, 2002

133 Margaret Street
Old Court House
Second Floor Meeting Room
Plattsburgh, New York 12901

There will be a discussion of the following items:

- a. Introduction by the RAB co-chairs
- b. Review of agenda and call for agenda items from attendees
- c. Public Meeting for the Proposed Plan for SS-026, EOD Range
- d. Approval of previous minutes of September 26, 2002
- e. Status of Installation Restoration Program sites
 - ◆ FT-002, Fire Training Area
 - ● Source O/U Status
 - ● Groundwater O/U Status
 - ◆ SS-004, Flightline and Industrial Area
 - ◆ SS-013, Weapons Storage Area
 - ◆ SS-016, Nose Dock 8 (B/2890)
 - ◆ ST-030, Former BX Gas Station
 - ◆ SD-041, Building 2612
- f. Status of Other Environmental Projects
 - ◆ Closure of Miscellaneous EBS Factors
 - ◆ Soil Removal at SS-033, Old Small Arms Range
 - ◆ Washrack Removal Project
- g. Action items
- h. Notice of meetings for 2003

IRP SITE STATUS

- FT-002 Fire Training Area
 - Source O/U Status
 - Groundwater O/U Status
- SS-004 Flightline and Industrial Area
- SS-013 Weapons Storage Area
- SS-016 Nose Dock 8 (B/2890)
- ST-030 Former BX Gas Station
- SD-041 Building 2612

**PLATTSBURGH AIR FORCE BASE
INSTALLATION RESTORATION PROGRAM
SITE STATUS (Page 1 of 2)**

Evaluation/Decision in Progress (7)			
Site #	Rel. Risk	Description	Status
FT-002(GW)	High	Fire Training Area - GW O/U	Final RI/FS & Proposed Plan Complete, Draft Final ROD & 90% Remedial Design Submitted, Final ROD Pending LUC/IC Issues
*SS-004	High	Flightline and Industrial Area	Draft Final RI to be Revised, Field Work Complete, Rev. RI in Progress
*SS-013	High	Weapons Storage Area	Draft Final Sup. RI Report Reg. Comments Received, Additional Sampling Complete, Awaiting Results
SS-016	Medium	Nose Dock 8 (B/2890)	Sup. RI/FS Complete, Draft Final Proposed Plan in Progress
SS-026	N/E	Explosive Ordnance Disposal Range	Final Proposed Plan Submitted, Public Comment Period in Progress
SS-027	N/E	Liquid Oxygen Plant (B/3400)	**Response to USEPA Comments Complete, NFA DD in Progress
SD-041	N/E	Building 2612	Comments to Draft RI Report Received, Response to Comments and Draft Final Report in Progress

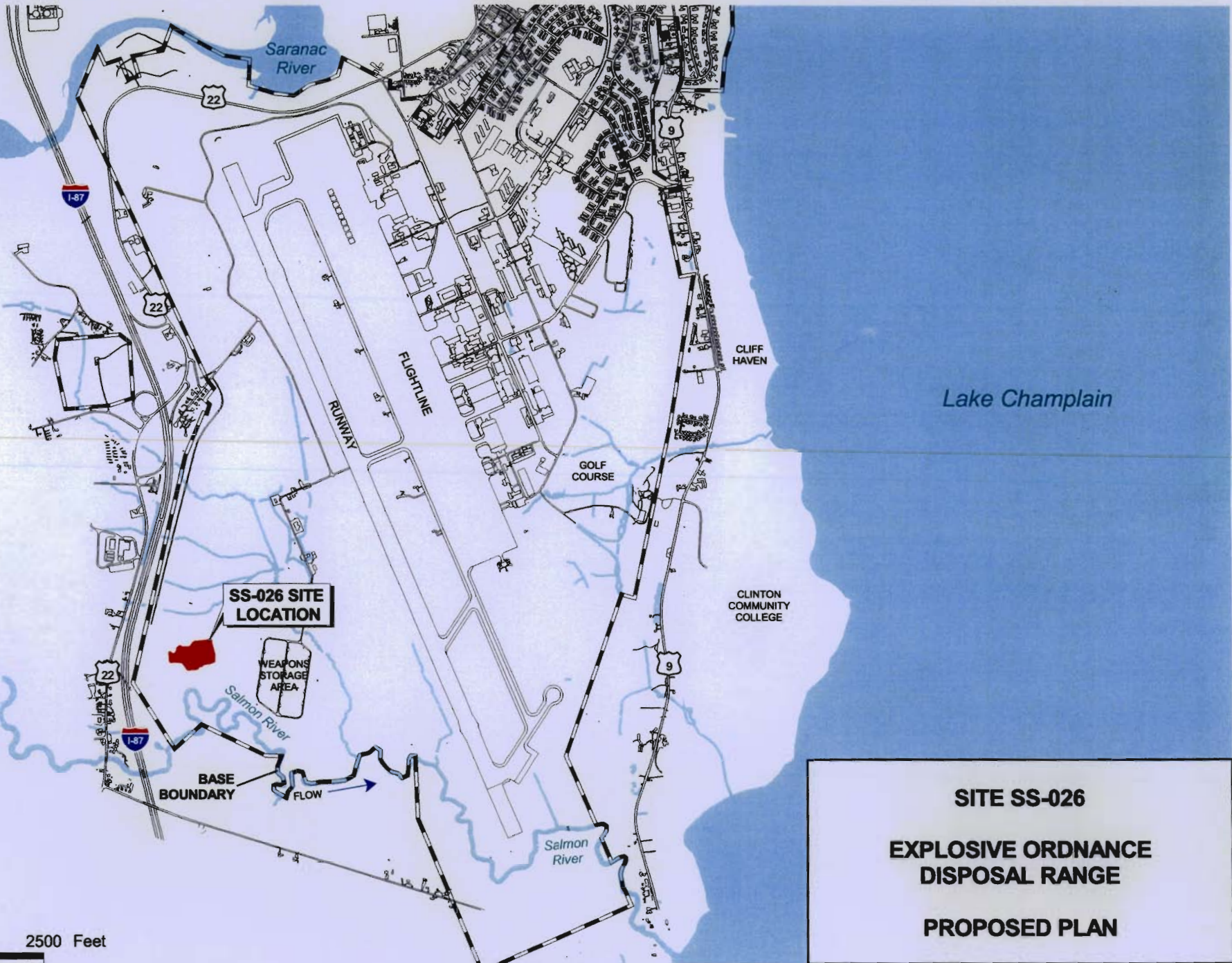
Remediation/Monitoring in Progress (12)		
Site #	Description	Status
FT-002(S)	Fire Training Area – Source O/U	ROD Signed Mar. 01; Existing Free Product Removal/Bioventing/SVE Systems Continuing, Draft Final Upgrade/Expansion Plan Pending Additional Soil Boring/Sampling; Draft Remedial Action Plan Awaiting NYSDEC Comment.
*SS-005	NDI Facility (B/2802)	Institutional Control ROD (for Soil) Signed Mar 98
*SS-006	AGE Facility (B/2815)	Institutional Control ROD (for Soil) Signed Mar 98
ST-012	POL Storage Area	Fuel Site; LTM Began 6/99; 12/01 & 6/02 Sampling Results Consistent with Previous Events
SS-018/028	Auto Hobby Shop (B/509)/ CES Open Storage Area (B/508)	ROD (Land Use and GW Monitoring/Restrictions) Signed Sep. 00; LTM Began 5/01,
LF-021	Former Landfill	ROD Signed Mar. 97; LTM Began 11/98 (ECD: 2028); 5/02 Sampling Consistent with Previous Events; Awaiting 8/02 and 11/02 Sampling Results
LF-022	Former Landfill, 1959-1966	ROD Signed Sep. 92; LTM Began 10/95 (ECD: 2025); 3/02 Results Consistent . . . ; Change from Quarterly to Semi Annual Sampling Recommended; Awaiting 9/02 Sampling Results.
LF-023 (S)	Former Landfill, Source O/U	ROD Signed Sep. 92; LTM/O Began 10/95 (ECD: 2025); 3/02 Sampling Results Consistent with Previous; Awaiting 6/02 & 9/02 Results.
LF-023 (GW)	Former Landfill, Groundwater O/U	ROD Signed Mar 95; (See LF-023 (S) Status Above)

Changes since September 2002 RAB Meeting are shaded

*Site Groundwater Component to be Addressed Under FT-002(GW)

** Sites being recommended for No Further Action (NFA)

As of 11 December 2002



0 2500 Feet

SITE SS-026
EXPLOSIVE ORDNANCE
DISPOSAL RANGE
PROPOSED PLAN

that no action appeared warranted to remediate chemicals present on site due to past site activities (see Appendix B, Table B-2).

2.2.3 Range Safing Operations

During extensive, post-SI range safing operations conducted in 1997 and 1998 (Human Factors 1999), several discoveries of items other than unexploded ordnance (UXO) were made that were considered to be evidence of potential for impact to human health or the environment. These included buried drums, chemical warfare training materials, and debris/fill (see Figure 3).

Twenty-seven buried 55-gallon drums containing what appeared to be waste oil were found in the west-central portion of the site. The drums seemed to be intact upon discovery; however, two were punctured. They were overpacked, sampled, and staged in the fall of 1997. Sample results confirmed that the material was waste petroleum product and the drums were disposed of off site in the spring of 1998. A single empty 55-gallon drum (later disposed of as scrap) also was found in the northeastern section of the site. Samples were taken from soil surrounding the drums; the soil samples were found to contain organic compounds and metals, but at concentrations below regulatory guidelines (see Appendix B, Table B-3).

Buried chemical warfare agent training materials were discovered in October 1997 in the north-central part of the site. These materials included an empty war gas identification set storage container, eight empty glass jars used to hold tear gas capsules, and 48 empty glass vials used to hold diluted chemical warfare agents. The materials were also removed in 1998.

In addition, several areas of scattered debris were identified to the north, east, and south of the EOD Range. The most significant and extensive of these areas was situated to the

south of the open EOD Range along a steep slope to the north of the Salmon River.

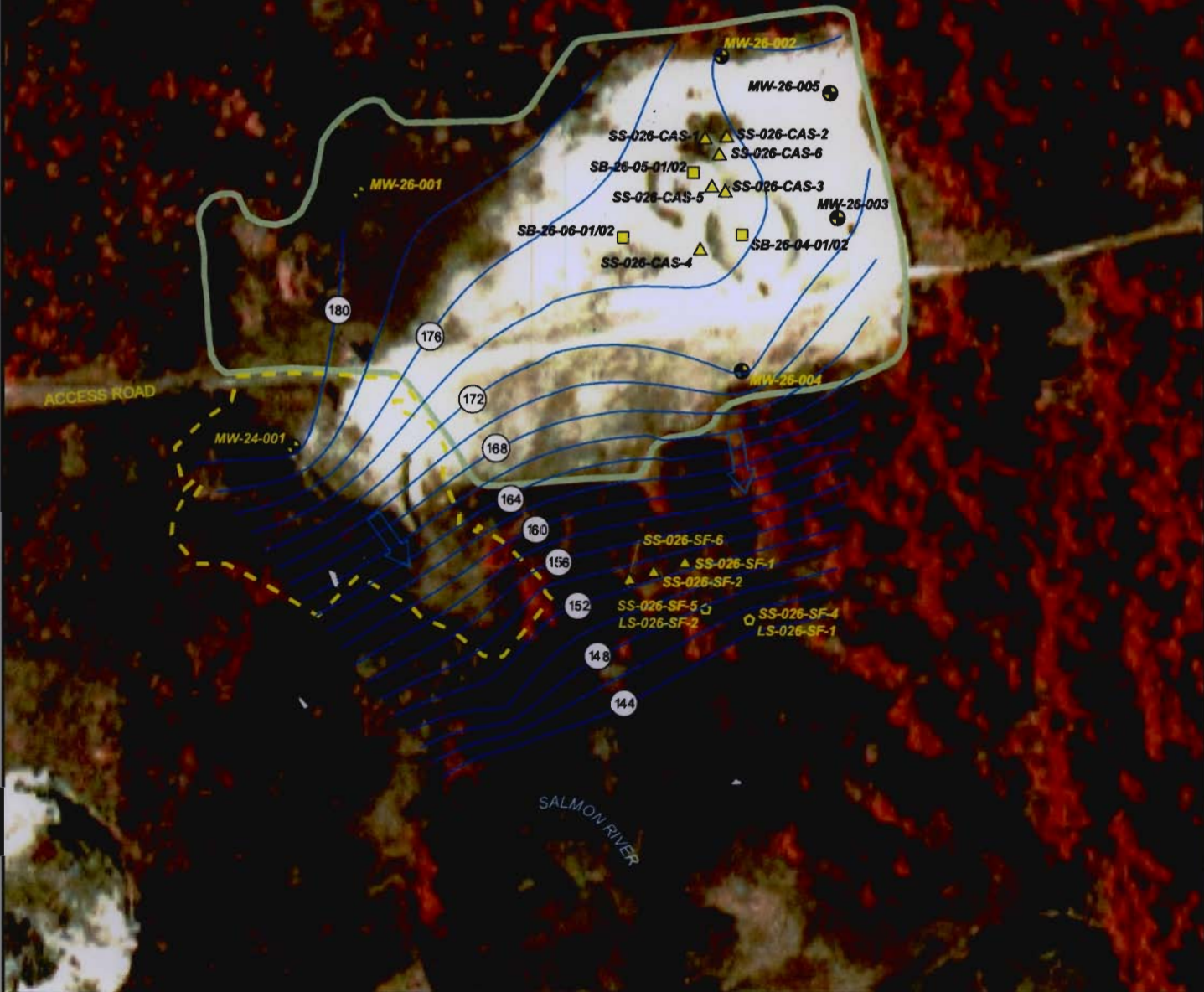
Range safing was conducted (100% surface and subsurface clearance) over an approximately 6.5 acre area by Human Factors Inc. of Holicong, Pennsylvania to a depth of at least 4 feet. Two deep disposal trenches were located and excavated to a depth of 10 feet and 16 feet respectively. An additional 32.5 acres surrounding the range (the "buffer zone") was cleared to a depth of 1-foot.

Based on the site explosives ordnance safing work performed, the range safing contractor (Human Factors Applications, Inc.) recommended to the United States Army Corps of Engineers (USACE) that the site is suitable for unrestricted reuse. The USACE issued a "Statement of Clearance" on July 16, 1999. This statement recommends that the range "be used for any purpose for which the land is suited". The statement and related information is presented in Appendix A.

2.2.4 Additional SI Sampling

Supplemental SI field activities were conducted in 1999 in response to regulatory agency comments to the Draft SI Report and to investigate several areas of potential for impact to human health or the environment discovered during the 1997/1998 range safing operations.

During this phase of investigation, one additional monitoring well was installed and groundwater from six wells, 17 soil samples, and two groundwater seep samples were collected and chemically analyzed (Figure 4). In addition, 14 test trenches were excavated and the extent of buried debris was delineated (Figure 5). Some of the chemical analyses performed were targeted to evaluate the presence of chemical warfare agents and their breakdown products (thiodiglycol, arsenic, chloroform, 2-chloroacetophenone, and chlorobenzylidenemalonitrile) and herbicides (dioxins/furans); these chemicals



- Monitoring Well Location
- Soil Boring Location
- ▲ Surface Soil Sample Location
- ⊕ Surface Soil/Groundwater Seep Sampling Location

Legend

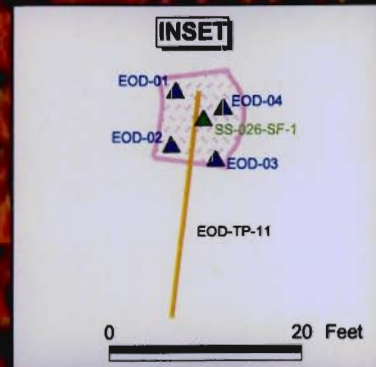
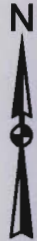
- SS-026 Boundary
 - - - LF-024 Cap Boundary
 - 144 Groundwater Elevation Contour (ft amsl)
 - ← Groundwater Flow Direction
- 200 0 200 Feet





J:\01\00013_10\gis\Applications\ss-026.apr 1999 SUPPLEMENTAL INVESTIGATION
4/28/2002

URS




PLATTSBURGH AFB - SS-026 (EOD RANGE)
1999 SUPPLEMENTAL INVESTIGATION
ENVIRONMENTAL SAMPLE LOCATIONS

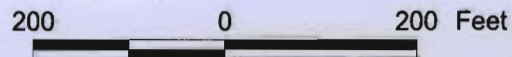
FIGURE 4



-  1999 Soil Sample Location
-  2001 Confirmatory Soil Sample Location
-  Approximate Limits of 2001 Soil Excavation (Versar)
-  Approximate Limits of Buried Debris (Delineated by URS, September 1999)

Legend

-  EOD-TP-05 Test Trench Location
-  SS-026 Boundary
-  LF-024 Cap Boundary



N:\11169476.00000\GIS\Applications\ss-026.apr LIMITS OF BURIED DEBRIS 10/10/2002



PLATTSBURGH AFB - SS-026 (EOD RANGE)
1999 DEBRIS DELINEATION TEST TRENCHES AND
2001 SOIL INVESTIGATION/EXCAVATION AREA

FIGURE 5

either were not detected or were not detected at concentrations posing a concern to human health and the environment. Generally, the sampling results indicated only minor impacts to soil and groundwater related to past activities at the site (see Appendix B, Tables B-4 through B-8).

However, one soil sample contained 12 PAHs at concentrations exceeding their respective TBC values (Appendix B, Table B-6). These exceedances occurred in the vicinity of a tar-like substance located in the "satellite fill area" (Figure 3) located south of the EOD Range. Results from this sampling are discussed further in Section 2.3.

The Draft-Final SI Report (URS 2000) also evaluated risks posed to human health based on the newly collected data. Risks are discussed in Section 4.0. The report recommended that 1) the tar-like material containing high levels of PAHs be further investigated and potentially removed and 2) surficial metallic debris in the "satellite fill area" be removed to eliminate any physical hazards. Some of the metal debris was removed at the end of the SI field effort.

2.2.5 Investigatory Excavation

An excavation to further investigate the tar-like material found in the "satellite fill area" was undertaken in 2001. Soil, tar-like material, pieces of asphalt, and miscellaneous debris that included scrap metal and metal cans covered with tar were removed and staged in a roll-off container. The excavated soil and tar-like material exhibited no odors or headspace photoionization detector (PID) readings above background levels. Four soil samples were collected from the approximately 10-foot-long by 8-foot-wide excavation, which was about 1 foot deep. Only low levels of PAHs were detected in the samples. The excavated materials were properly disposed of at CWM Chemical Services' permitted facility located in Model

City, NY. Based on the soil sample results, the NYSDEC and USEPA agreed that no further action was warranted regarding the tar-like substance. Sample locations are shown on Figure 5; results are presented in Appendix B, Table B-9. The results of the investigation are documented in the Investigation Report (Versar 2002).

2.3 Summary of Site Contamination

The presence of contamination at site SS-026 was evaluated in the SI through soil and groundwater sampling events conducted in 1994 and 1999. Regulatory criteria used in the assessment included:

Soil

- TAGM 4046 Soil Cleanup Guidelines (NYSDEC 1994)
- USEPA Dioxin Toxic Equivalency Guidelines (USEPA 1989a)

Groundwater

- NY State Ambient Water Quality Criteria (NYSDEC 1998)
- Safe Drinking Water Act (40 CFR 141 and 143)
- USEPA Region 2 Guidance for Explosive Compounds in Drinking Water.

Results are discussed by contaminant type below.

Dioxins and furans were analyzed in soil samples to assess the potential impact of past defoliation at the EOD Range. These compounds were detected in site soils, but at concentrations well below USEPA's recommended action levels (USEPA 1989a) (Appendix B, Table B-5).

Because chemical warfare training kits were detected during range safing, soil samples collected at the range were analyzed for arsenic, chloroform, and thiodiglycol (chemical warfare agent indicator parameters). Only one chemical (arsenic)

was detected in one of the samples (Appendix B, Table B-4); its concentration fell well below NYSDEC cleanup guidelines. To assess the presence of tear gas and Mace, site soils were analyzed for chlorobenzylidenemalonitrile and 2-chloroacetophenone. These compounds were not detected.

Volatile Organic Compound (VOC) detections in soil and groundwater were infrequent and at low concentrations that did not exceed TBC or ARAR values.

Semivolatile Organic Compounds (SVOCs) detected in the 1994 samples were at concentrations that did not exceed TBC or ARAR values (Appendix B, Tables B-1 and B-2). 1999 soils sample SS-026-SF-1 contained 12 PAHs at concentrations exceeding their respective TBC values due to a tar-like substance present in surface soils at the location of test trench EOD-TP-11 (Appendix B, Table B-6). The tar-like substance and surrounding soils were removed in the 2001 investigatory excavation (see Section 2.2.5).

No PCBs were detected in soil or groundwater. The only site pesticide detections were 4,4'-DDT and its metabolite 4,4'-DDE in three soil samples at concentrations well below their respective TBC values (Appendix B, Tables B-1 and B-3).

RDX was the only explosive compound detected, both in soil and groundwater (Appendix B, Tables B-1, B-2, and B-7); its presence is due to past ordnance disposal at the EOD Range. RDX was detected in a soil sample from the former bermed ordnance disposal area and in two groundwater monitoring wells downgradient from this area (MW-26-003 and MW-26-004) at concentrations slightly exceeding the USEPA's Drinking Water Health Advisory value.

Four metals – antimony, cadmium, chromium, and silver – were detected at concentrations exceeding TBC values in the

1994 soil samples collected in the bermed area (Appendix B, Table B-1). Antimony and silver were not detected in any 1994 downgradient groundwater samples and chromium detections were comparable in upgradient and downgradient groundwater samples (Appendix B, Table B-2). Chromium and cadmium were detected below groundwater ARARs. The only analyte detected at concentrations exceeding ARARs in the 1994 downgradient groundwater samples was iron; this chemical was also detected at concentrations exceeding ARARs in the upgradient groundwater samples. Therefore, the site did not appear to be contributing metals contamination to groundwater.

Three metals – copper, selenium, and zinc – were detected at concentrations exceeding TBC values in the 1999 soil samples collected in the "satellite fill area" (Appendix B, Table B-6). These soil samples were collected downgradient of all SS-026 monitoring wells. Two groundwater seep samples collected downslope from these soil samples had iron, manganese, lead, selenium, and thallium detections at concentrations exceeding their respective groundwater ARARs (no other chemicals were detected in the seep samples) (Appendix B, Table B-8). The concentrations of iron and selenium in the groundwater sample from MW-26-005 also exceeded their respective groundwater ARARs (Appendix B, Table B-7). The 1999 analytical results indicate that the site may be contributing selenium to groundwater; however, selenium was not detected in any of the 1994 soil or groundwater samples (Appendix B, Tables B-1 and B-2).

3.0 SCOPE AND ROLE OF OPERABLE UNIT

Site SS-026 is one of several sites (or operable units) administered under the Plattsburgh AFB IRP. Records of Decision have been signed for fourteen operable units at the base, and additional Records of Decision are planned for other sites. The SS-026

Operable Unit includes both soil and groundwater. Interim actions conducted at the site to remove drummed waste and PAH contaminated soil have removed the principal threat wastes at the site. It is intended that the proposed action presented in this plan be the final action for SS-026.

4.0 HEALTH RISK ASSESSMENT

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification* – identifies the contaminants of concern 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 pathways (e.g., ingesting contaminated well water) 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). *Risk Characterization* – summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The human health risk assessment (HRA) follows federal guidelines (USEPA 1989b) to estimate the potential carcinogenic (i.e., cancer-causing) and adverse non-carcinogenic health effects due to potential exposure to site contaminants of concern from assumed exposure scenarios and pathways. These guidelines consider an excess upper bound lifetime cancer risk to an individual to be acceptable if it is calculated to be less than one-in-one million (10^{-6}). Risks in the range of one-in-ten thousand (10^{-4}) to one-in-one million are evaluated on a case-by-case basis. The guidance also specifies a maximum health hazard index (which reflects non-carcinogenic effects for a human receptor) less than or equal to 1. The hazard index is a representation of risk, based on a quotient or ratio of chronic

daily intake to a reference (safe) dose. A hazard index greater than 1 indicates a potential for adverse non-carcinogenic health effects.

An HRA was performed during the SI (URS 2000) that assessed human health risks associated with exposure to site soils and/or groundwater using two exposure scenarios. These were:

- 1) Current land use conditions, under which adult and teenage trespassers are exposed to surface soil and groundwater at leachate seeps.
- 2) Hypothetical future land use conditions, under which adult and child residents and construction and industrial workers are exposed to site soils and groundwater.

A summary of all calculated cancer risk values and non-cancer hazard indices for various human pathways calculated in the SI is presented in Table 1.

The calculated non-cancer hazard indices for all potential receptor populations were below USEPA's target threshold hazard index of 1 for both current and future land use scenarios, indicating that the site does not pose an unacceptable non-carcinogenic health risk. The calculated cancer risks for the trespasser and construction exposure scenarios fell within range of cancer risks (10^{-4} to 10^{-6}) considered acceptable by USEPA on a case-by-case basis. The calculated cancer risk for the residential scenario was 2×10^{-4} , a risk falling just above USEPA's range. The calculated excess cancer risk posed to potential future residents resulted from potential exposure to high levels of PAHs in soil and arsenic in groundwater. Although the observed concentrations of arsenic in groundwater significantly contributed to the excess cancer risk (8×10^{-5}) for the groundwater pathway, the highest concentration ($4.9 \mu\text{g/L}$) fell below the USEPA Maximum Contaminant Level of $10 \mu\text{g/L}$. Subsequent to the SI, PAH-contaminated soil was excavated and

**SITE SS-026
EXPLOSIVE ORDNANCE
DISPOSAL RANGE**

**FINAL
PROPOSED PLAN**

**PLATTSBURGH AIR FORCE BASE
PLATTSBURGH, NEW YORK**

**UNITED STATES DEPARTMENT OF THE AIR FORCE
INSTALLATION RESTORATION PROGRAM**

Prepared by:

URS CONSULTANTS, INC.

DECEMBER 2002

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APPENDICES

Appendix A – Statement of EOD Range Clearance	
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1.0 INTRODUCTION

This Proposed Plan presents the proposed remedial alternative for the Explosive Ordnance Disposal Range (site SS-026) at the Plattsburgh Air Force Base (AFB) in Plattsburgh, New York (see Figure 1). The United States Air Force (USAF), in conjunction with the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC), has developed this plan to address contamination that was present as a result of the site's use for explosive ordnance demolition and disposal, as well as the historical use of defoliant and fuel oil. Interim actions undertaken at the site have resulted in the successful remediation of the contaminated soil. Contaminants are not present in groundwater at concentrations that are a threat to human health. The preferred remedial alternative for site SS-026, therefore, is No Further Action. This plan has been evaluated in detail as part of the Department of Defense's Installation Restoration Program (IRP) at the base.

The Proposed Plan is being published in accordance with Section 117(a) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Its purpose is to summarize information that can be found in greater detail in the Site Investigation Report, Closure Report, and other related documents for this site. Additionally, it provides information for public review of the preferred alternative. The USAF, in conjunction with the USEPA and the NYSDEC, will consider public input on the alternative proposed in this plan. Therefore, the public is encouraged to review and comment on the alternative being considered. The Administrative Record File contains the information upon which the selection of the response action will be based. This information is available to the public at the Information Repository, which is located at the Feinberg Library on the campus of the State University of New York at Plattsburgh.

The repository documents are on reserve (see the Special Collections Librarian). Photocopying equipment is available.

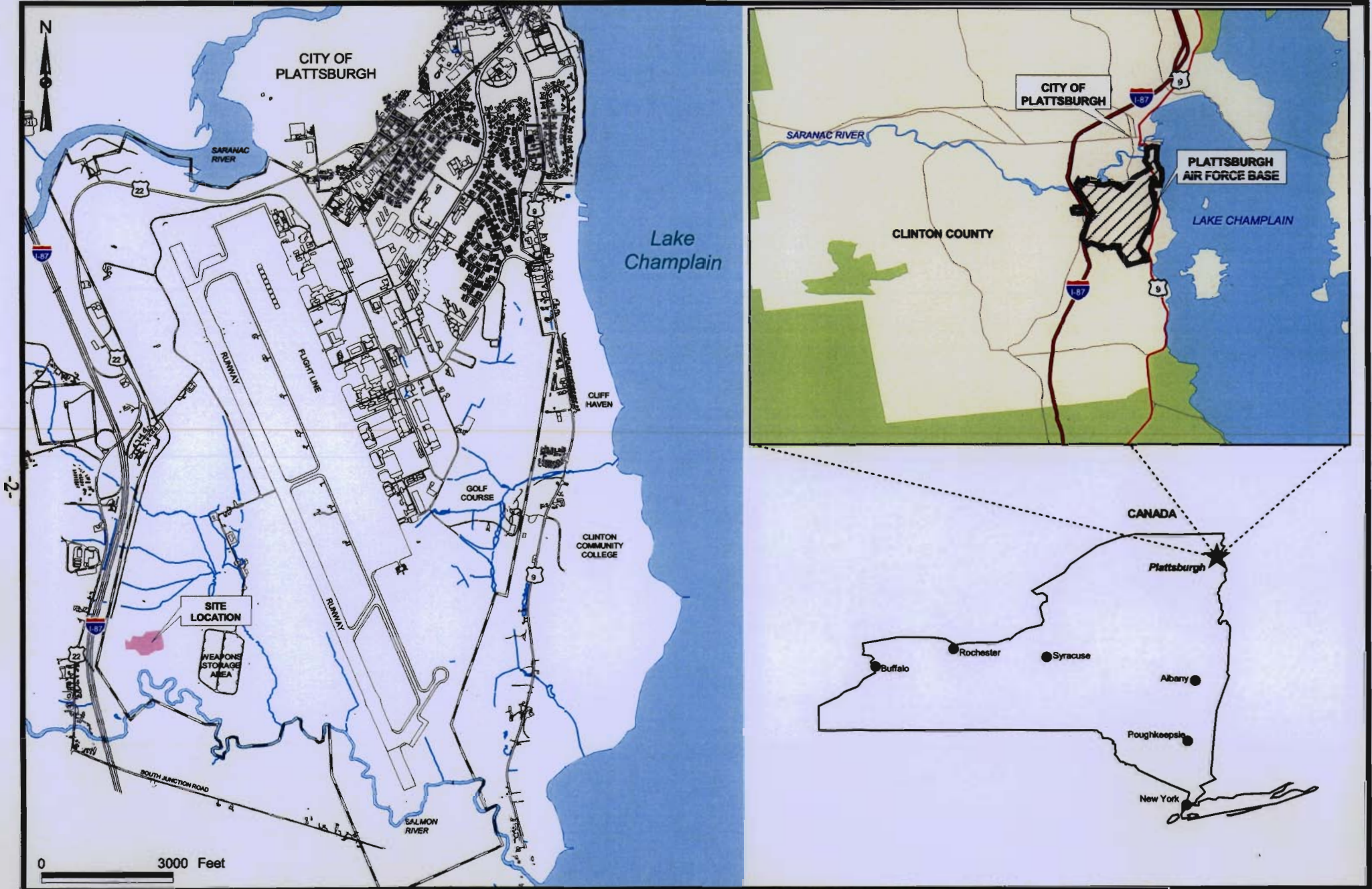
The Administrative Record File location is:

Feinberg Library
SUNY at Plattsburgh
Plattsburgh, NY 12901
Special Collections Department
(518) 564-5206

Hours of the Special Collections Department

Monday	Not Open
Tuesday	4:00 p.m. to 7:00 p.m.
Wednesday	9:00 a.m. to 12:30 p.m. and 1:00 p.m. to 4:00 p.m.
Thursday	9:00 a.m. to 12:30 p.m. and 1:00 p.m. to 4:00 p.m.
Friday	10:00 a.m. to 12:30 p.m. and 1:00 p.m. to 4:00 p.m.
Saturday	1:00 p.m. to 5:00 p.m.
Sunday	Not Open

This plan addresses soil and groundwater contamination that was found in the immediate vicinity of the Explosive Ordnance Disposal (EOD) Range (SS-026), which has been used primarily for explosive ordnance demolition and disposal. A Preliminary Assessment for SS-026 was completed in 1992. The investigation included a review of historical records, personnel interviews, and a site walkover. Because of the ordnance disposal activities and the historical use of defoliant and fuel oil, the site was recommended for further investigation. Based upon the recommendation of the Preliminary Assessment, a Site Investigation (SI) was initiated in the summer of 1994 to describe the physical conditions of the site, to evaluate the nature and extent of chemical contamination in the site groundwater and soils, to evaluate the risks posed by site contaminants to human health and the environment, and to determine if remedial or removal actions were warranted.



In 1997-1998, explosive ordnance range safing was undertaken at the site. The safing included sensing of potential ordnance using magnetic detection equipment, excavation and sifting of at least the top 4 feet of soil over the entire EOD Range, and clearing of a 32.5 acre buffer zone around the range to a depth of 1 foot. The work was performed in coordination with the United States Army Corp of Engineers. Several discoveries were made during range safing that were considered evidence of potential for impact to human health or the environment. These included buried drums, chemical warfare training materials, and debris/fill. Drums were removed in 1997 (URS 2000 and HFA 1999) and chemical warfare training materials were removed in 1998 (HFA 1999).

Following the completion of range safing, further SI characterization (including investigation of debris/fill areas) was conducted in 1999. No evidence of chemical warfare agents was present in site soils. Soils generally contained organic chemicals at concentrations below New York State guidelines; however, high concentrations of polycyclic aromatic hydrocarbons (PAHs) were present that were associated with a tar-like material discovered in an area of fill located south of the EOD Range (refer to Section 2.3). The April 2000 Draft-Final SI concluded that, other than in the area of high PAHs, no unacceptable human health risk was associated with exposure to site soils.

In the 1999 SI groundwater sampling, only two chemicals, iron and selenium, were detected above chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) in groundwater sampled at SS-026, but these compounds were at levels similar to regional background concentrations (refer to Section 2.3). Carcinogenic risk calculated for hypothetical future potable use of groundwater was attributed to arsenic; however, this element was detected below its ARAR value in groundwater at the site.

Non-carcinogenic risks associated with potable use of site groundwater were within acceptable levels.

Soil, tar-like material, pieces of asphalt, and miscellaneous debris that included scrap metal and metal cans covered with tar were removed in 2001. This resulted in the removal of the remaining principal threat waste at the site, and human health risks from site soils were reduced to acceptable levels. Based upon the negligible impact to human health and the environment currently posed by SS-026, no further action is warranted to remediate chemicals present on site due to past site activities.

The USAF, in conjunction with the USEPA and NYSDEC, may modify the proposed alternative presented in this plan based on new information or public comments. Therefore, the public is encouraged to review and comment on the alternative identified herein.

2.0 SITE BACKGROUND

2.1 Site Description and Background

Plattsburgh AFB, located in Clinton County in northeastern New York State, is bordered on the north by the City of Plattsburgh, on the south by the Salmon River, on the west by Interstate 87, and on the east by Lake Champlain. The base is approximately 26 miles south of the Canadian border and 167 miles north of Albany.

Plattsburgh AFB was closed on September 30, 1995 as part of the (third round of) base closures mandated under the Defense Base Closure and Realignment (BRAC) Act of 1993, and its reuse is being administered by the Plattsburgh Airbase Redevelopment Corporation (PARC). PARC is responsible for maintaining base property, marketing and controlling base reuse, leasing and managing property, and developing base facilities, as necessary, to promote

advantageous reuse. The draft base reuse plan, developed and issued by PARC (PARC 1995), indicates an industrial or public/recreation reuse for the SS-026 site. The base land reuse plans were incorporated into the Environmental Impact Statement (Tetra Tech 1995). As part of the USAF's Installation Restoration Program, Plattsburgh AFB has initiated activities to identify, evaluate, and restore identified hazardous material disposal areas. The IRP at Plattsburgh AFB is being implemented according to a Federal Facilities Agreement (Docket No.: II-CERCLA-FFA-10201) signed between the USAF, USEPA, and NYSDEC on July 10, 1991. Plattsburgh AFB was placed on the National Priorities List on November 21, 1989. Cleanup is being funded by the USAF.

The USAF has kept the community informed regarding progress at site SS-026 and other base IRP sites during quarterly Restoration Advisory Board (RAB) meetings open to the public. This board consists of the BRAC Cleanup Team (BCT) members (key representatives from the USAF, USEPA, and NYSDEC) as well as a representative from the New York State Department of Health and several representatives from municipalities, community organizations, and associations including community members with environmental/engineering expertise. The RAB, which was chartered in 1995, serves as a forum for the community to become familiar with the restoration activities ongoing at Plattsburgh AFB and to provide input to the BCT.

The EOD Range is an approximately eight-acre area located in the southwest portion of Plattsburgh Air Force Base (Figure 2). SS-026 was used primarily for explosive ordnance demolition and disposal. Magnesium flares, Mace, tear gas, RR 119, and ALA 40 were also disposed of and burned at the site (RR 119 and ALA 40 are Air Force designations for magnesium-based flare/illumination munitions).

Ordnance was placed in "burn kettles" (i.e., a reinforced dumpster or jet engine cover) within earthen berms. Wood and approximately five gallons of diesel fuel were then placed in the kettle and detonated with powder using a timed fuse. After each "burn," EOD personnel would clear the area within 200 feet of the "kettle" of visually apparent material and ordnance debris. The earthen berms were bulldozed periodically to maintain their shape and to clear the area of combustible material (i.e., grass and trees). Reportedly, an unknown defoliant was also used for this purpose for three years.

In addition, the EOD Range was reportedly also used as a burial site for animals and small amounts of household waste. EOD personnel would commonly find bones, dishes, and silverware during range clearance. Chemicals of potential concern include byproducts of military ordnance disposal (metal and explosives), defoliants, and diesel fuel. Potential contaminant migration pathways include soil and groundwater.

In 1995 (as shown on Figure 2), the site was relatively flat, sandy, and unvegetated with the exception of three "U"-shaped earthen mounds present in the central portion of the site that were used to contain ordnance explosions. These berms have since been sifted and stockpiled onsite. The stockpiles are cleared for reuse as needed. The range is situated approximately 350 feet north of the Salmon River. The area surrounding the site is wooded and is remote from the industrial and residential portion of the base. Precipitation primarily infiltrates to groundwater and no significant runoff pathway exists to the Salmon River. The most significant pathways for potential contaminant migration at the site are leaching of soil contaminants to groundwater, chemical transport within the unconfined aquifer, and wind entrainment of chemicals adhering to surface soils.



A closed construction and demolition debris landfill (LF-024) lies adjacent to the southwest edge of the EOD Range. This landfill, capped in 1997-1998, was the subject of a separate investigation by the USAF. A Record of Decision was signed for the site in 1997 (URS 1997). Groundwater monitoring is ongoing.

2.2 Summary of Investigation Activities

Based on site history, the major contaminants of concern at SS-026 are related to ordnance disposal, defoliant, and diesel fuel. Ordnance was disposed of in "burn kettles" that used wood, diesel fuel, and blasting powder within earthen berms, which were bulldozed periodically to maintain their shape. In addition to bulldozing, defoliant was used to clear the area of combustible material. Other materials of concern included chemical warfare training materials, tar-like material, metal cans covered with tar, pieces of asphalt, and miscellaneous debris that were found during investigations at SS-026. Investigations and activities at the site are summarized below.

2.2.1 Preliminary Investigations

A Preliminary Assessment (PA) for SS-026 was completed in 1992 (Malcolm Pirnie 1992). The PA included a review of historical records, interviews with base personnel regarding site use, and a site walkover. Based on the ordnance disposal at the site and the historical use of defoliant and fuel oil, the site was recommended for further investigation.

In July 1994, USAF EOD personnel performed sporadic trenching while clearing the site of unexploded ordnance in preparation for a Site Investigation (SI) in the summer of 1994. During the trenching, an approximately six-inch-thick layer of household waste was discovered within two feet of the surface immediately east of the bermed area. In addition, magnesium flares were discovered at a depth of approximately

two feet near a boring location within the bermed area. Several unexploded hand grenades were found near the berm in the northeast corner of the site and were disposed of by EOD personnel.

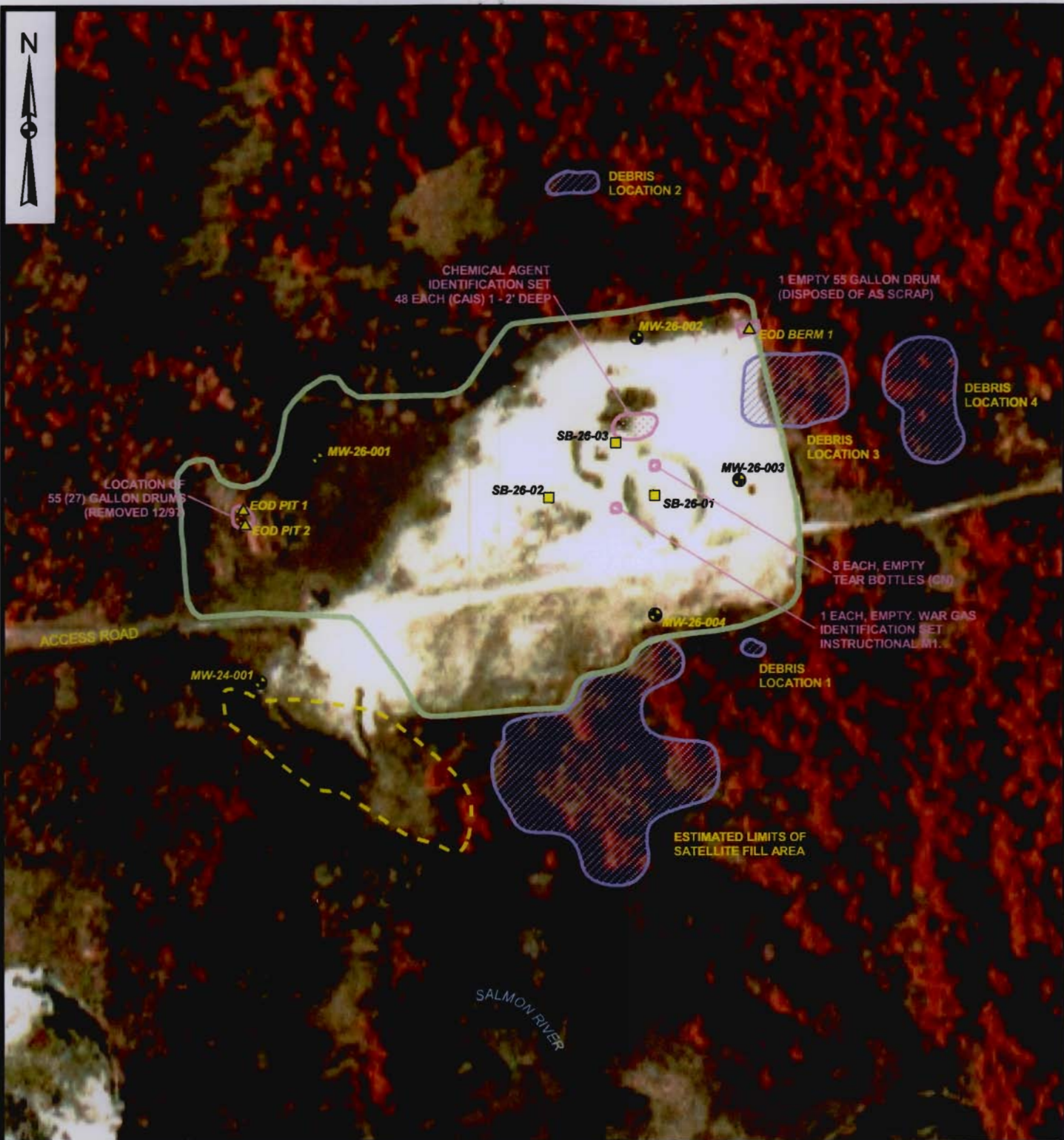
2.2.2 Draft Site Investigation

In 1994, a Site Investigation was conducted to describe the physical conditions of the site, to evaluate the nature and extent of chemical contamination in the site groundwater and soils, to evaluate the risks posed by site contaminants to human health and the environment, and to determine if remedial or removal actions were warranted. Site investigation field activities included the advancement of seven soil borings, installation of four groundwater monitoring wells, collection and chemical analysis of eight soil samples, collection and chemical analysis of five groundwater samples, and observations of the site's physical condition (see Figure 3). These data were compiled and utilized to quantitatively assess potential risks posed by site contaminants to human receptors.

It was found that the soils at SS-026 contained acetone, methylene chloride, toluene, 4-4'-DDT, and RDX, but none of these compounds were detected at levels that exceeded "To Be Considered" (TBC) criteria (see Appendix B, Table B-1). The metals antimony, cadmium, chromium, and silver were detected at concentrations elevated relative to background soils at Plattsburgh Air Force Base; however, no unacceptable carcinogenic or non-carcinogenic human health risk was found to be associated with exposure to the site's soils.

Only iron was detected above chemical-specific ARARs in the sampled groundwater, but this chemical was at levels similar to regional background concentrations.

The recommendation of the Draft Site Investigation Report (URS 1995) was



Legend	
	1997 Soil Sample Location
	1994 SI Monitoring Well Location
	1994 SI Soil Boring Location
	Non-Uxo Items Identified During 1997-1998 Range Safing
	Fill/Debris Area Identified During 1997-1999 Range Safing
	SS-026 Boundary
	Limit of LF-024 Before Consolidation, Regrading, and Capping

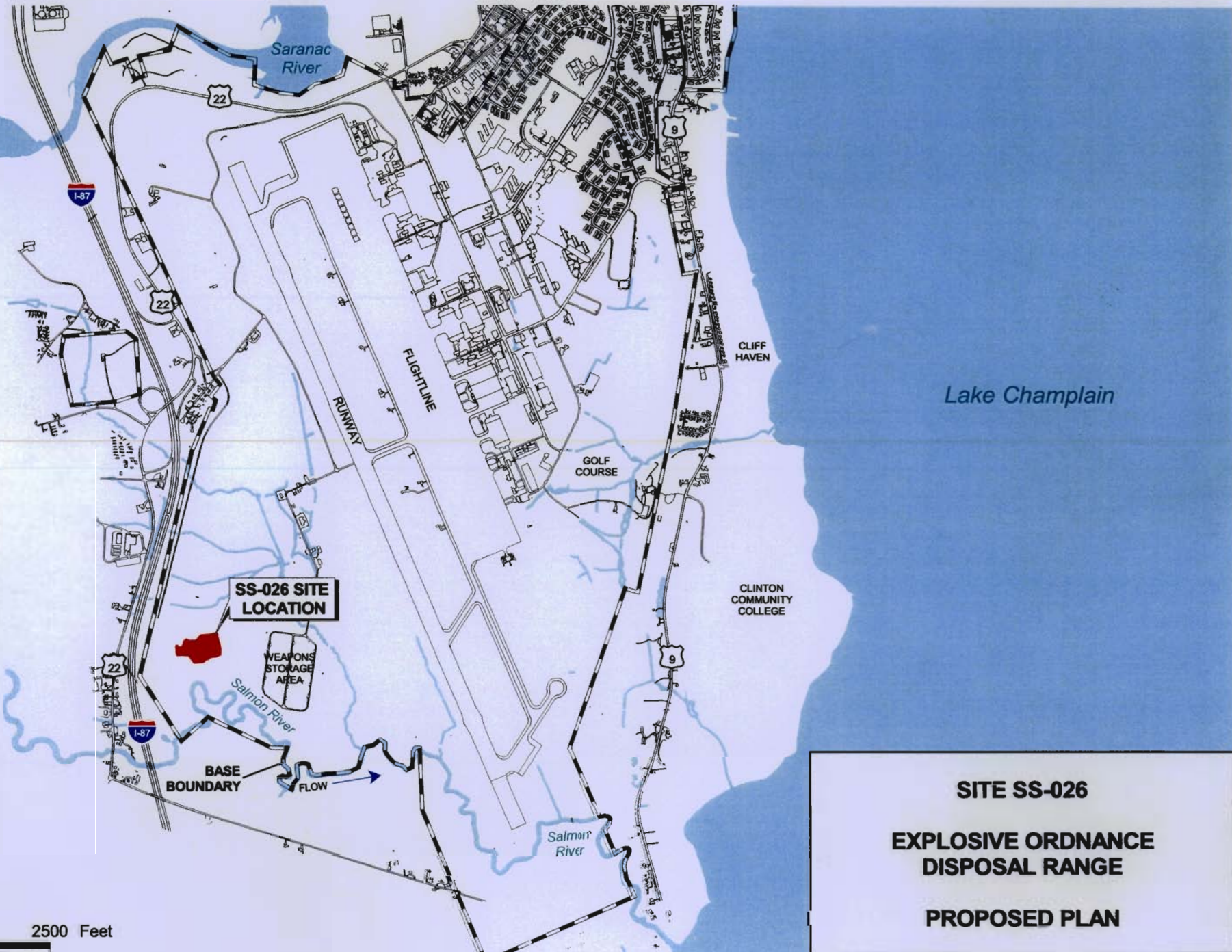
200 0 200 Feet

N:\1168476_000000\GIS\Applications\ss-026.apr INVESTIGATION FEATURES 10/10/2002



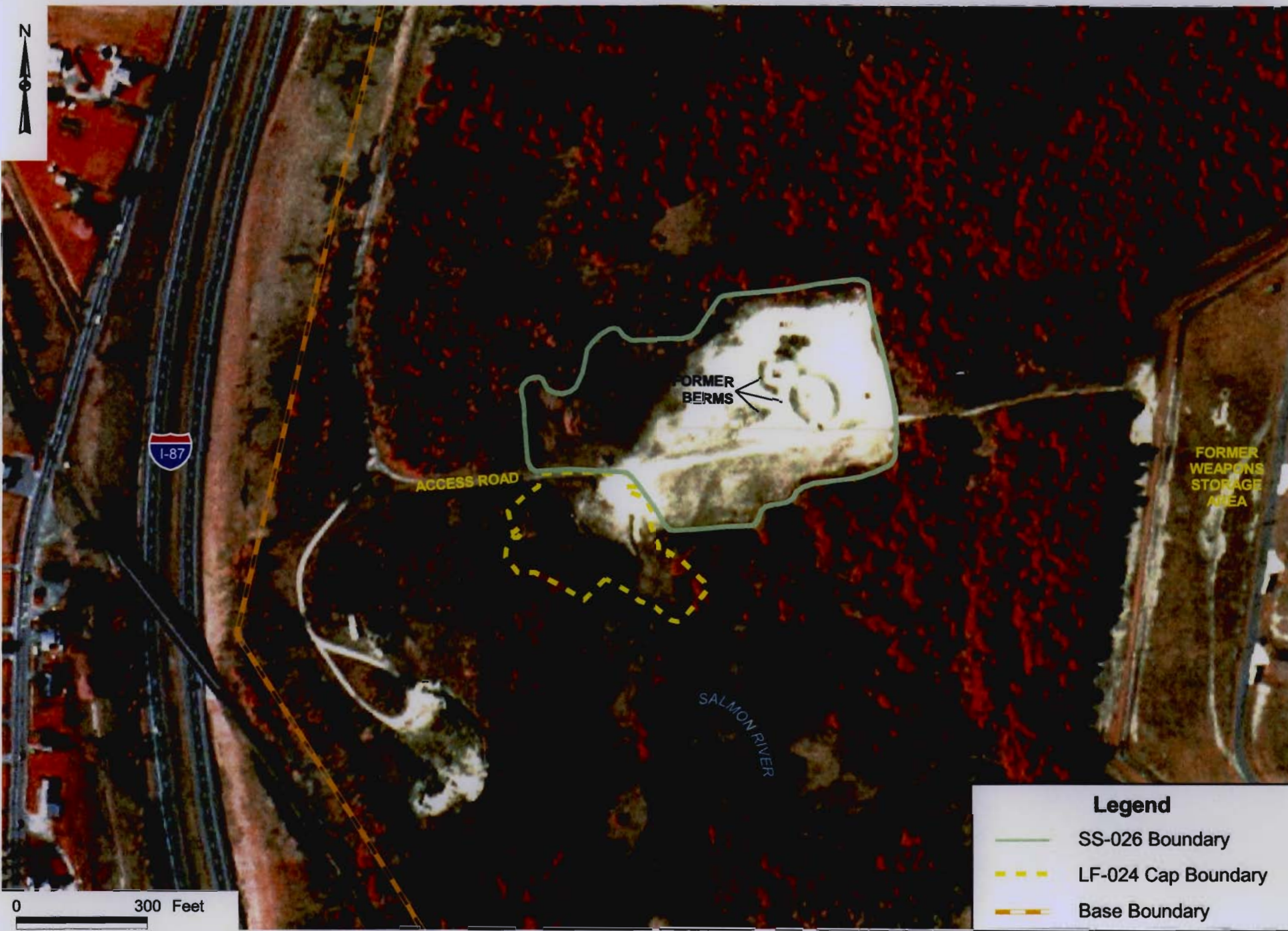
PLATTSBURGH AFB - SS-026 (EOD RANGE)
INVESTIGATION FEATURES 1994 - 1999

FIGURE 3



0 2500 Feet

SITE SS-026
EXPLOSIVE ORDNANCE
DISPOSAL RANGE
PROPOSED PLAN



FORMER
BERMS

ACCESS ROAD

SALMON RIVER

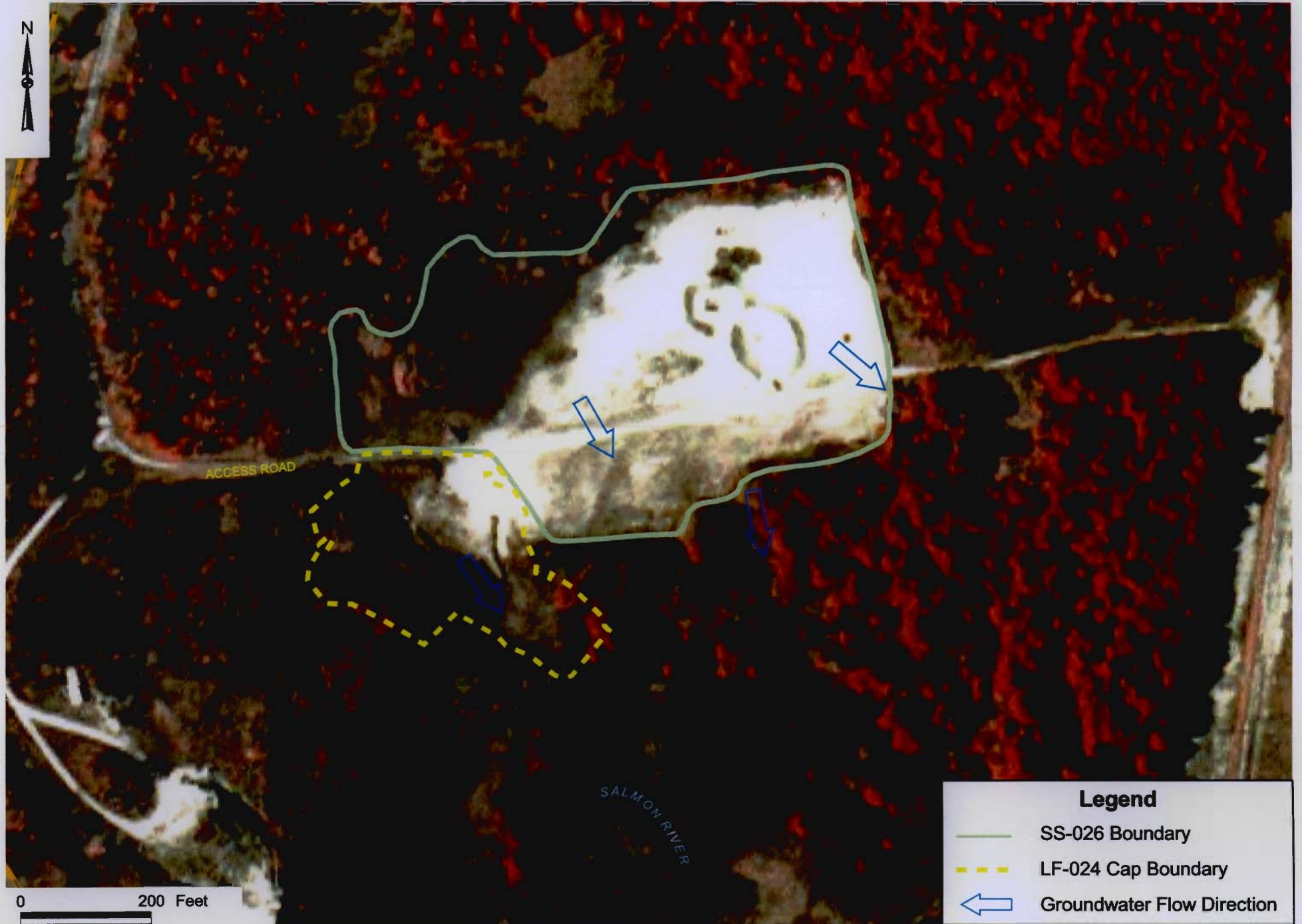
FORMER
WEAPONS
STORAGE
AREA

I-87

0 300 Feet

Legend

- SS-026 Boundary
- - - LF-024 Cap Boundary
- - - Base Boundary



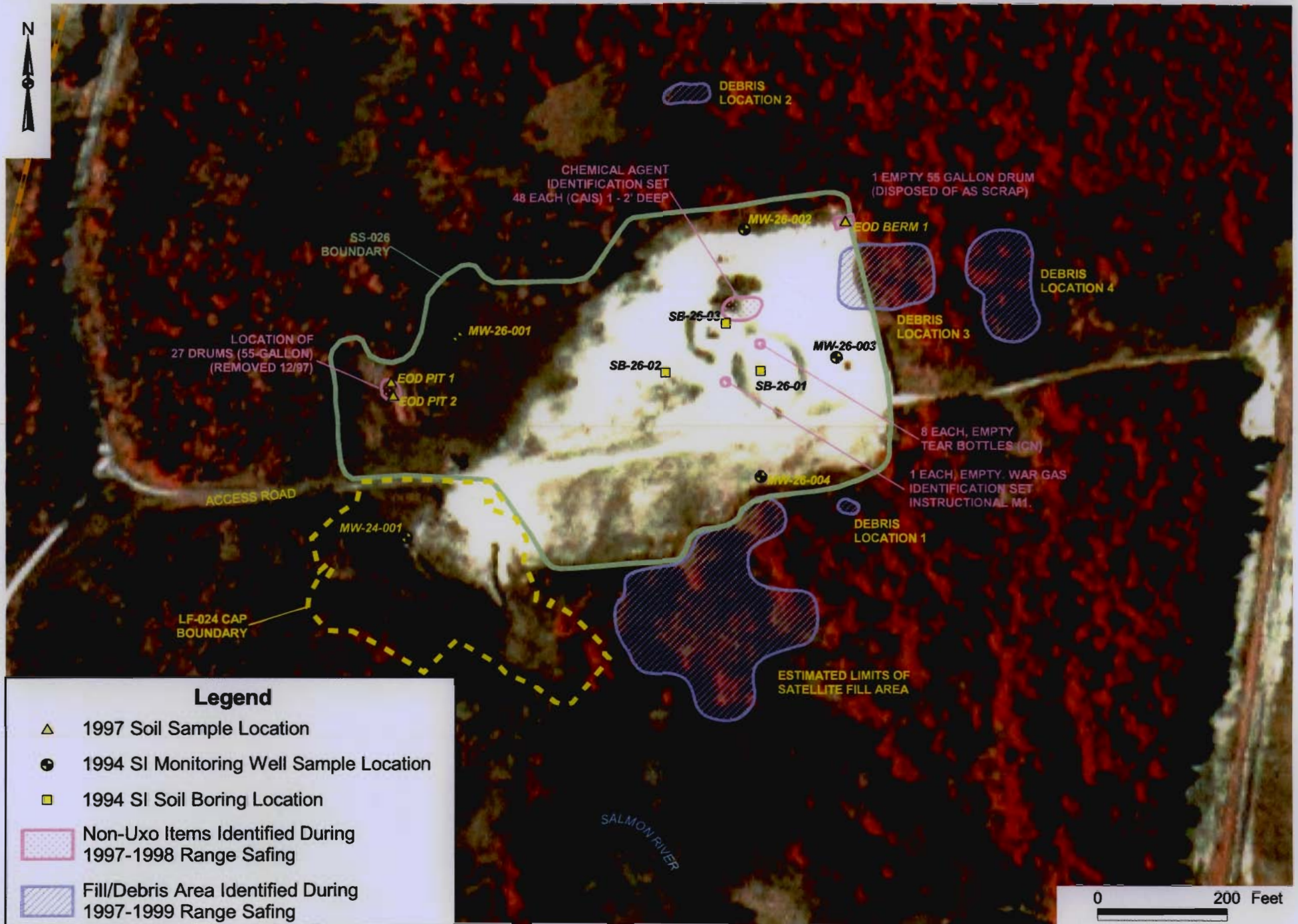
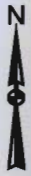
Legend

- SS-026 Boundary
- - - LF-024 Cap Boundary
- ← Groundwater Flow Direction

SS-026 EOD RANGE

SUMMARY OF IRP ACTIVITIES

1992	Preliminary Assessment	- Recommended further investigation
1994	SI UXO Clearing	- Household waste found
1994	Draft Site Investigation	- Only trace chemicals found
1997-1998	Range Safing	- Drums discovered - Debris discovered - CAIS training kit found - Site 100% cleared



Legend

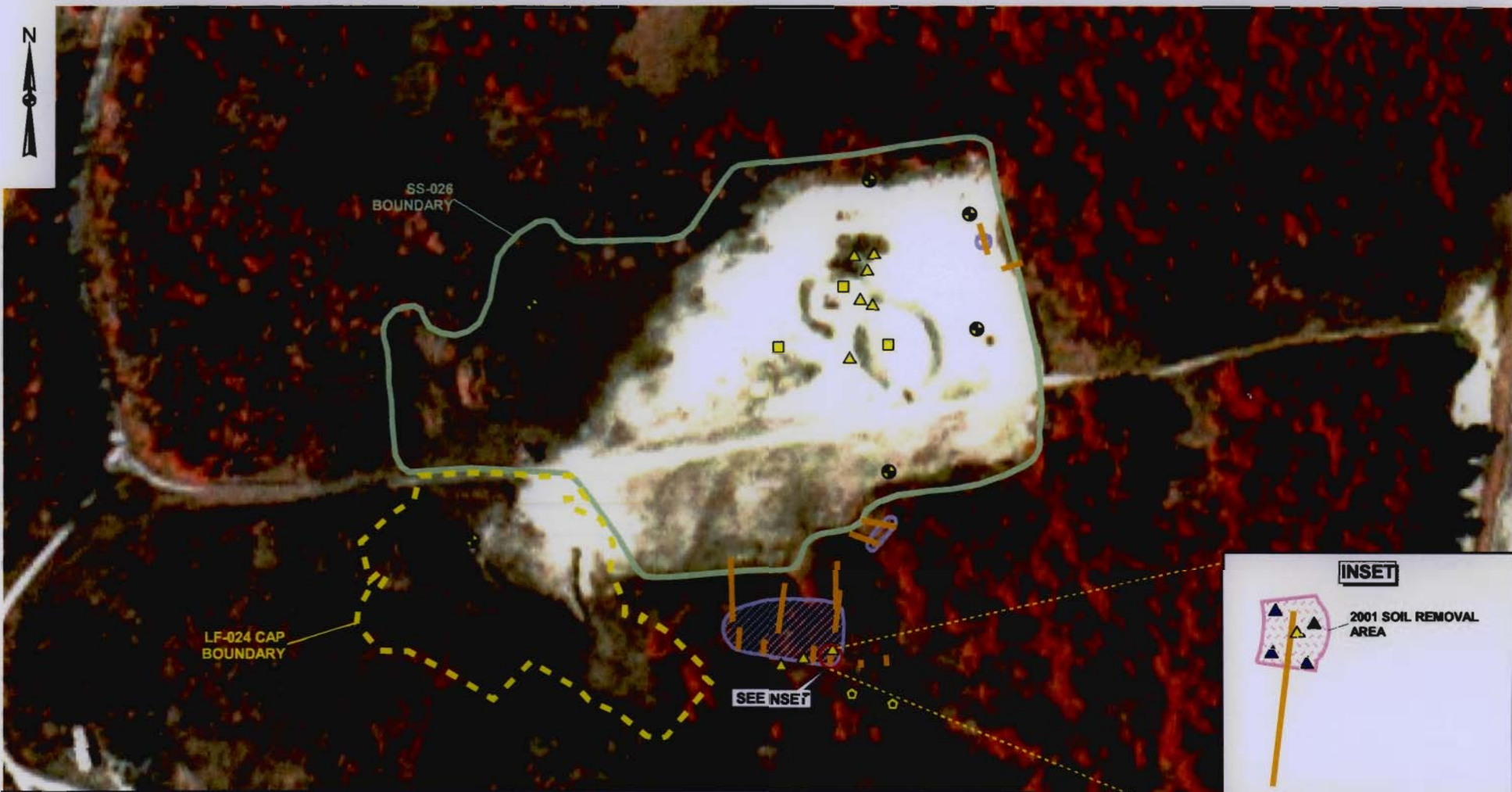
- ▲ 1997 Soil Sample Location
- 1994 SI Monitoring Well Sample Location
- 1994 SI Soil Boring Location
- Non-Uxo Items Identified During 1997-1998 Range Safing
- ▨ Fill/Debris Area Identified During 1997-1999 Range Safing



SS-026 EOD RANGE

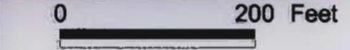
SUMMARY OF IRP ACTIVITIES (cont'd)

1999	Additional SI Data Collection	- Tar-like material found - Only minor impacts to soil and groundwater
2001	Investigatory Excavation	- Tar-like material removed



Legend

●	1999 Monitoring Well Sample Location	—	1999 Test Trench Location
▲	1999 Surface Soil Sample Location	▨	Approximate Limits of 2001 Soil Excavation (Versar)
■	1999 Subsurface Soil Sample Location	▩	Approximate Limits of Buried Debris (Delineated by URS, September 1999)
⬠	1999 Surface Soil/Groundwater Seep Sampling Location		
▲	2001 Confirmatory Soil Sample Location		



SS-026 EOD RANGE HUMAN HEALTH RISK ASSESSMENT

- **Cancer risk exceeding USEPA guidelines calculated for hypothetical residential exposure to soil**
 - **Risk was due to PAHs in tar-like material**
 - **Contaminated material removed during investigatory excavation**
 - **Currently there is no unacceptable risk**
-

SS-026 EOD RANGE PREFERRED ALTERNATIVE

- **No further action will be undertaken at Site SS-026**
 - **No restriction on land use**
 - **Notification of prior land use as EOD Range to be included in property transfer documents**



SS-026 EOD RANGE

- **Send written comments to:**

**Mr. Michael D. Sorel
BRAC Environmental Coordinator/
Site Manager
Air Force Real Property Agency
22 U.S. Oval Suite 2200
Plattsburgh, NY 12903**

TABLE 1

CANCER RISKS AND HAZARD INDICES FOR MULTIPLE HUMAN PATHWAYS
2000 SITE INVESTIGATION REPORT

EXPOSURE PATHWAY	CURRENT USE				FUTURE USE					
	CANCER RISK		HAZARD INDEX		CANCER RISK			HAZARD INDEX		
	Adult Trespassers	Teenage Trespassers	CHRONIC	SUBCHRONIC	Adult Residents	Child Resident	Construction Workers	CHRONIC	SUBCHRONIC	
			Adult Trespassers	Teenage Trespassers				Adult Residents	Child Resident	Construction Workers
Dermal Contact with Soil	3×10^{-5}	8×10^{-6}	2×10^{-3}	8×10^{-4}	6×10^{-5}	3×10^{-5}	2×10^{-5}	3×10^{-3}	3×10^{-3}	1×10^{-4}
Ingestion of Soil	3×10^{-6}	8×10^{-7}	7×10^{-4}	7×10^{-4}	6×10^{-6}	1×10^{-5}	5×10^{-8}	3×10^{-3}	3×10^{-2}	2×10^{-3}
Inhalation of Fugitive Dust	7×10^{-12}	2×10^{-12}	3×10^{-6}	4×10^{-6}	-	-	2×10^{-12}	-	-	2×10^{-5}
Ingestion of Groundwater	-	-	-	-	8×10^{-5}		-	7×10^{-1}		-
Dermal Contact with Groundwater	-	-	-	-	1×10^{-7}		-	1×10^{-3}		-
Inhalation of Chemicals in Vapors While Showering	-	-	-	-	NV		-	NV		-
Dermal Contact with Groundwater Seeps	5×10^{-7}	1×10^{-7}	2×10^{-3}	2×10^{-3}	-	-	-	-	-	-
TOTAL EXPOSURE CANCER RISK	4×10^{-5}	9×10^{-6}	-	-	2×10^{-4}		2×10^{-5}	-		-
TOTAL EXPOSURE HAZARD INDEX	-	-	4×10^{-3}	4×10^{-3}	-	-	-	8×10^{-1}		2×10^{-3}

removed from the site during an investigation of tar-like material. This excavation and removal has resulted in the elimination of the remaining principal threat waste at the site and human health risks resulting from potential exposure to the site soils was thereby reduced to acceptable levels.

No quantitative assessment of potential risk posed to ecological communities was performed during the SI. However, there appears to be little potential for site contaminants to adversely impact aquatic communities of the nearby Salmon River. The groundwater seeps located downgradient from SS-026 and 250 feet upgradient from Salmon River (see Figure 4) were conservatively assumed to be representative of potential site groundwater contaminant loading to the river. Seep sample results were compared with surface water criteria to determine potential impact from the three contaminants of concern (arsenic, selenium, and thallium). Note that no organic compounds were detected in the seep samples. The maximum selenium concentration exceeded the New York State Class C (T) and USEPA Freshwater Chronic criteria by a factor of 3 (no other exceedances of criteria occurred); however, it was determined that the actual impact on the river would be minimal due to the dilution capacity of the river and the dilution and adsorption that would occur in the 250-foot distance between the seeps and the river. Therefore, there appears to be little potential for significant contaminant loading from site SS-026 to the Salmon River.

5.0 DESCRIPTION OF PREFERRED ALTERNATIVE

Removal of drummed waste in 1997 and removal of PAH-contaminated soil in 2001 have resulted in the elimination of the principal threat wastes at the site. In addition, range safing conducted in 1997-1998 has removed any remaining ordnance at the site. As a result, no other alternatives were evaluated to reduce contaminant levels

in soil at the site. No Further Action is the single and preferred alternative. This alternative includes the following elements:

- 1) No further action will be undertaken at site SS-026.

No restriction on land use will be imposed through institutional controls for site SS-026. However, notification of the prior land use as an EOD range will be included in the site property transfer documents.

The preferred alternative can be modified based on public comment or newly available information, if any.

6.0 COMMUNITY PARTICIPATION

The following paragraphs explain how the public can become involved in the selection process after reviewing the Proposed Plan. Note that the preferred alternative can change in response to public comment or as a result of new information.

6.1 Public Comment Period

Plattsburgh AFB will hold a 30-day public comment period from December 10, 2002 to January 8, 2003 to solicit public input. During this period, the public is invited to review the Proposed Plan and other project documents, and to comment on the recommended alternative. These documents are included in the Administrative Record of the site. The full-length reports are available at the Information Repository located at the Feinberg Library at the SUNY Plattsburgh Campus (see page one of this Proposed Plan for the Library's address and available hours).

6.2 Public Informational Meeting

Plattsburgh AFB will hold a public meeting on December 12, 2002 at the old Court House, Second Floor Meeting Room, 133 Margaret Street. The actual date and time of the meeting will be published in the *Plattsburgh Press Republican*. The meeting

will be divided into two segments. In the first segment, data gathered at the site, the preferred alternative, and the decision-making process will be discussed. The public is encouraged to attend this presentation and to ask questions. Immediately after the informational presentation, the USAF will accept comments about the alternative being considered for site SS-026. The meeting will provide the opportunity for people to comment officially on the plan. Public comments will be recorded and transcribed, and a copy of the transcript will be added to the Administrative Record and Information Repository.

6.3 Written Comments

If you would like to submit written comments about Plattsburgh AFB's preferred alternative or other issues relevant to the site remediation, please deliver your comments to Plattsburgh AFB's IRP Coordinator at the Public Hearing or mail your written comments (to be received no later than January 8, 2003) to:

Mr. Michael D. Sorel
BRAC Environmental Coordinator/
Site Manager
Air Force Real Property Agency
22 U.S. Oval, Suite 2200
Plattsburgh, NY 12903
(518) 563-2871

6.4 Plattsburgh AFB's Review of Public Comments

Public comments are part of the process of reaching a final decision on a response action for site SS-026. Plattsburgh AFB's final choice of an alternative will be issued in a Record of Decision for the site and will be submitted to the USEPA for review, approval, and signature and to the NYSDEC for review and concurrence. A Responsiveness Summary of public comments and Plattsburgh AFB's responses to them will be included in the Record of Decision. Once the Record of Decision is signed, it will become part of the Administrative Record.

6.5 Additional Public Information

Because the Proposed Plan only summarizes the field investigations and the alternative for site SS-026, the public is encouraged to consult the Information Repository, which contains all supporting reports.

REFERENCES

- Human Factor Applications, Inc. (HFA). 1999. *Final Ordnance and Explosives Removal Action Report*. Holicong, PA. May.
- Malcolm Pirnie, Inc. 1992. *Draft Final Report Preliminary Assessment*.
- New York State Department of Environmental Conservation (NYSDEC). 1994. *Determination of Soil Cleanup Objectives and Cleanup Levels*. Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046. Albany, NY: Bureau of Hazardous Waste Remediation.
- New York State Department of Environmental Conservation (NYSDEC). 1998. *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. Technical and Operational Guidance Series (TOGS) 1.1.1. Albany, NY: Division of Water.
- Plattsburgh Airbase Redevelopment Corporation (PARC). 1995. *Comprehensive Reuse Plan for Plattsburgh Air Force Base*. 15 September.
- Tetra Tech. 1995. *Final Environmental Impact Statement, Disposal and Reuse of Plattsburgh Air Force Base, New York*. Prepared for the Plattsburgh Air Base Redevelopment Corporation.
- URS Consultants, Inc. (URS). 1995. *Draft Explosion Ordnance Demolition Range (SS-026) Site Investigation Report*. Buffalo, New York. August.
- URS Consultants, Inc. (URS). 1997. *Former Landfill LF-024, Final Record of Decision*. March.
- URS Consultants, Inc. (URS). 2000. *Draft Final Explosive Ordnance Demolition Range (SS-026) Site Investigation Report*. Buffalo, NY. April.
- United States Environmental Protection Agency (USEPA). 1989a. *Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update*. EPA/600/9-89/043. USEPA Risk Assessment Forum, Washington, DC.
- United States Environmental Protection Agency (USEPA). 1989b. *Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual*, EPA/540/1-89/001. Cincinnati, OH: USEPA.
- United States Environmental Protection Agency (USEPA). 1990. *"National Oil and Hazardous Substance Pollution Contingency Plan;" 40 CFR Part 300*. Washington, D.C., March 8, 1990.
- Versar, Inc. 2002. *Investigation Report, SS-026*. Bristol, PA. September.

GLOSSARY

Administrative Record: A file established and maintained in compliance with Section 113(K) of CERCLA, consisting of information upon which the lead agency bases its final decisions on the selection of remedial method(s) for a Superfund site. The Administrative Record is available to the public.

AFB: Air Force Base.

AFCEE: Air Force Center for Environmental Excellence.

Alternative: Technology or action used to address contaminated media at a site.

Applicable or Relevant and Appropriate Requirements (ARARs): ARARs include any state or federal statute or regulation that pertains to protection of public health and the environment in addressing certain site conditions or using a particular remedial technology at a Superfund site. A state law to preserve wetland areas is an example of an ARAR. USEPA must consider whether a remedial alternative meets ARARs as part of the process for selecting a remedial alternative for a Superfund site.

Aquifer: A water-bearing formation or group of formations.

BCT: BRAC cleanup team.

BRAC: Base Realignment and Closure (program).

Carcinogenic: Chemicals, which when exposure occurs at a particular level, may produce cancer.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The act requires federal agencies to investigate and remediate abandoned or uncontrolled hazardous waste sites.

EOD: Explosive Ordnance Disposal.

Groundwater: Water found beneath the earth's surface that fills pores within materials such as sand, soil, gravel, and cracks in bedrock, and often serves as a source of drinking water if found in an adequate quantity.

HRA: Health risk assessment.

Installation Restoration Program (IRP): The U.S. Air Force subcomponent of the Defense Environment Restoration Program (DERP) that specifically deals with investigating and remediating sites associated with suspected releases of toxic and hazardous materials from past activities. The DERP was established to cleanup hazardous waste disposal and spill sites at Department of Defense facilities nationwide.

Monitoring: Ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action. Information gathering may include groundwater well sampling, surface water sampling, soil sampling, air sampling, and physical inspections.

GLOSSARY (Con't)

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The NCP provides the organization, structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants. The NCP is required under CERCLA and the Clean Water Act, and USEPA has been delegated the responsibility for preparing and implementing the NCP. The NCP is applicable to response actions taken pursuant to the authorities under CERCLA and the Clean Water Act.

National Priorities List: USEPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program.

New York State Registry of Inactive Hazardous Waste Sites: The state's compilation of all known hazardous waste sites, comprising nine volumes with site descriptions and locations. (Copies available for review in NYSDEC offices).

Noncarcinogenic: Chemicals that may produce adverse health effects that are not related to cancer.

NYSDEC: The New York State Department of Environmental Conservation.

Operable Unit (OU): A separate and distinct remedial project that is part of a large, complex hazardous waste site. Each OU has its own ROD, RI/FS, design and construction.

PA: Preliminary assessment.

PAH: Polycyclic aromatic hydrocarbon.

PID: Photoionization detector.

Proposed Plan: A public document that solicits public input on a recommended remedial alternative to be used at a National Priorities List (NPL) site. The Proposed Plan is based on information and technical analysis generated during the RI/FS. The recommended remedial action could be modified or changed based on public comments and community concerns.

RAB: Restoration Advisory Board.

Range Safing: The process of locating and removing potential unexploded ordnance from an area where ordnance was used or disposed of in the past.

Record of Decision (ROD): A public document that explains the remedial alternative to be used at a National Priorities List (NPL) site. The ROD is based on information and technical analysis generated during the Remedial Investigation, and on consideration of the public comments and community concerns received on the Proposed Plan. The ROD includes a Responsiveness Summary of public comments.

Remedial Action: An action that stops or substantially reduces a release or threat of a release of hazardous substances that is serious but not an immediate threat to human health or the environment.

GLOSSARY (Con't)

Remedial Alternatives: Options evaluated to address the source and/or migration of contaminants to meet health-based or ecology-based remediation goals.

SARA: The Superfund Amendments and Reauthorization Act of 1986 amended the 1980 CERCLA environmental statutes. The amendments re-authorized the federal Superfund which had expired in 1985 and established the preference for remedies that permanently reduces toxicity, volume or mobility of hazardous constituents.

Semivolatile Organic Compounds (SVOCs): Organic constituents which are generally insoluble in water and are not readily transported in groundwater.

Site Investigation (SI): An investigation that determines the nature and composition of contamination at a hazardous waste site. Not as in-depth as a remedial investigation. Similar to a Site Investigation.

Superfund: The trust fund, created by CERCLA out of special taxes, used to investigate and clean up abandoned or uncontrolled hazardous waste sites. Out of this fund USEPA either: (1) pays for site remediation when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work or (2) takes legal action to force parties responsible for site contamination to cleanup the site or pay back the federal government for the cost of the remediation. Federal facilities are not eligible for Superfund monies.

TAGM: Technical and Administrative Guidance Memorandum.

To Be Considered (TBC): Federal and state policies, advisories, and other non-promulgated health and environment criteria, including numerical guidance values, that are not legally binding. TBCs are used for the protection of public health and the environment if no specific ARARs for a chemical or other site conditions exist, or if ARARs are not deemed sufficiently protective.

USEPA: United States Environmental Protection Agency.

UXO: Unexploded ordnance.

Volatile Organic Compounds (VOCs): Organic constituents which tend to volatilize or to change from a liquid to a gas form when exposed to the atmosphere. Many VOCs are readily transported in groundwater.

APPENDIX A

**STATEMENT OF EOD
RANGE CLEARANCE**

16 JUL 1999

MEMORANDUM FOR Department of the Air Force, Air Force Base
Conversion Agency, ATTN: AFBCA/DA, Plattsburgh
(Mr. Michael D. Sorel, P.E.), 426 U.S. Oval
Suite 2200, Plattsburgh, NY 12903

SUBJECT: Explosive Ordnance Disposal (EOD) Range, Plattsburgh
Air Force Base (AFB), Plattsburgh, NY

1. References:

a. Contract DACA87-95-D-0027, Task Order 0006, EOD Range and
Practice 40mm Grenade Range, Plattsburgh Air Force Base, NY.

b. Interim Final Report for Ordnance and Explosive (OE)
Clearance of the Practice 40mm Grenade Range at Plattsburgh AFB,
Plattsburgh, NY, 9 March 1998, Human Factors Applications,
Incorporated.

c. Final Ordnance and Explosives Removal Action Report,
14 May 1999, Human Factors Applicatons, Incorporated.

d. Memorandum for Department of the Air Force, Air Force
Base Conversion Agency, ATTN: AFBCA/DA, Plattsburgh,
(Mr. Michael D. Sorel, P.E.), 1 June 1998, subject: Practice
40mm Grenade Range, Plattsburgh AFB, Plattsburgh, NY.

2. Enclosed is the Statement of Clearance for the Explosive
Ordnance Disposal (EOD) Range. This Statement of Clearance is
accompanied by related enclosures. The Statement of Clearance
for the Practice 40mm Grenade Range was enclosed with the
memorandum referenced in 1d above.

3. During the period of 15 September through 20 November 1997,
and 23 June through 11 November 1998, Human Factors Applications,
Incorporated, under contract with the U.S. Army Engineering and
Support Center, Huntsville (USAESCH), conducted a 100 percent
surface and subsurface clearance to a depth of at least 4 feet in
the area known as the Explosive Ordnance Disposal Range. Two
deep disposal trenches were located and excavated to a depth of

CEHNC-OE-DC (200-1c)

16 JUL 1999

SUBJECT: Explosive Ordnance Disposal (EOD) Range, Plattsburgh
Air Force Base (AFB), Plattsburgh, NY

10 feet and 16 feet respectively. The buffer zone around the EOD Range was cleared to a depth of 1 foot. The intent of this clearance was to remove all unexploded ordnance (UXO) and ordnance-related scrap. It is recommended that the EOD Range be used for any purpose for which the land is suited.

4. The EOD Range occupied approximately 6.5 acres in the southwest portion of the Air Force Base within a bermed area (encl 1, 2 and 3). The site was basically barren and flat except for a ridge at the northern boundary of the site and three, U-shaped, earthen berms in the center of the range that were used to contain explosions. The EOD Range was used to burn large quantities of Code H ordnance, especially 20mm cartridges. It also appeared that the trenches used for the burn operation were used to destroy other types of ordnance by detonation. The total area cleared at the EOD Range, to include the buffer zone, was 39.05 acres.

5. During the removal operation on the EOD Range, all anomalies were cleared. A UXO Safety Specialist from USAESCH was present onsite during all ordnance-related actions. Enclosure 4 lists the UXO items that were recovered and disposed of during the removal operations.

6. If you have any questions, please contact Mr. Bill Sargent, Project Manager, at commercial 256-895-1562 or facsimile 256-895-1378.

Original Signed by
COL Walter J. Cunningham

4 Encls -

WALTER J. CUNNINGHAM
COL, EN
Commanding

**STATEMENT OF CLEARANCE
EXPLOSIVE ORDNANCE DISPOSAL (EOD) RANGE
PLATTSBURGH AIR FORCE BASE, NEW YORK**

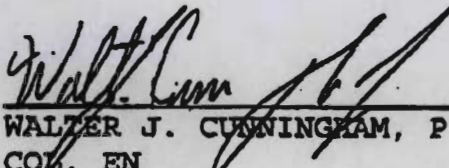
The following parcel of land (as indicated in encl 1, 2, and 3), located within the boundaries of Plattsburgh Air Force Base, in Clinton County, New York, has been given careful search and has been cleared of all dangerous and explosive ordnance reasonably possible to detect. The ordnance items listed on encl 4 were removed from the parcel.

It is recommended that:

The Explosive Ordnance Disposal Range be used for any purpose for which the land is suited.

This action has been conducted in accordance with Army Regulations 385-64 (Ammunition and Explosives Safety Standards), and DDESB approved Explosive Safety Submission, 405-90 (Disposal of Real Estate).

SUBMITTED BY:


WALTER J. CUNNINGHAM, P.E.
COL, EN
Commander

16 JUL 1993
(date)

U.S. Army Engineering and Support Center, Huntsville

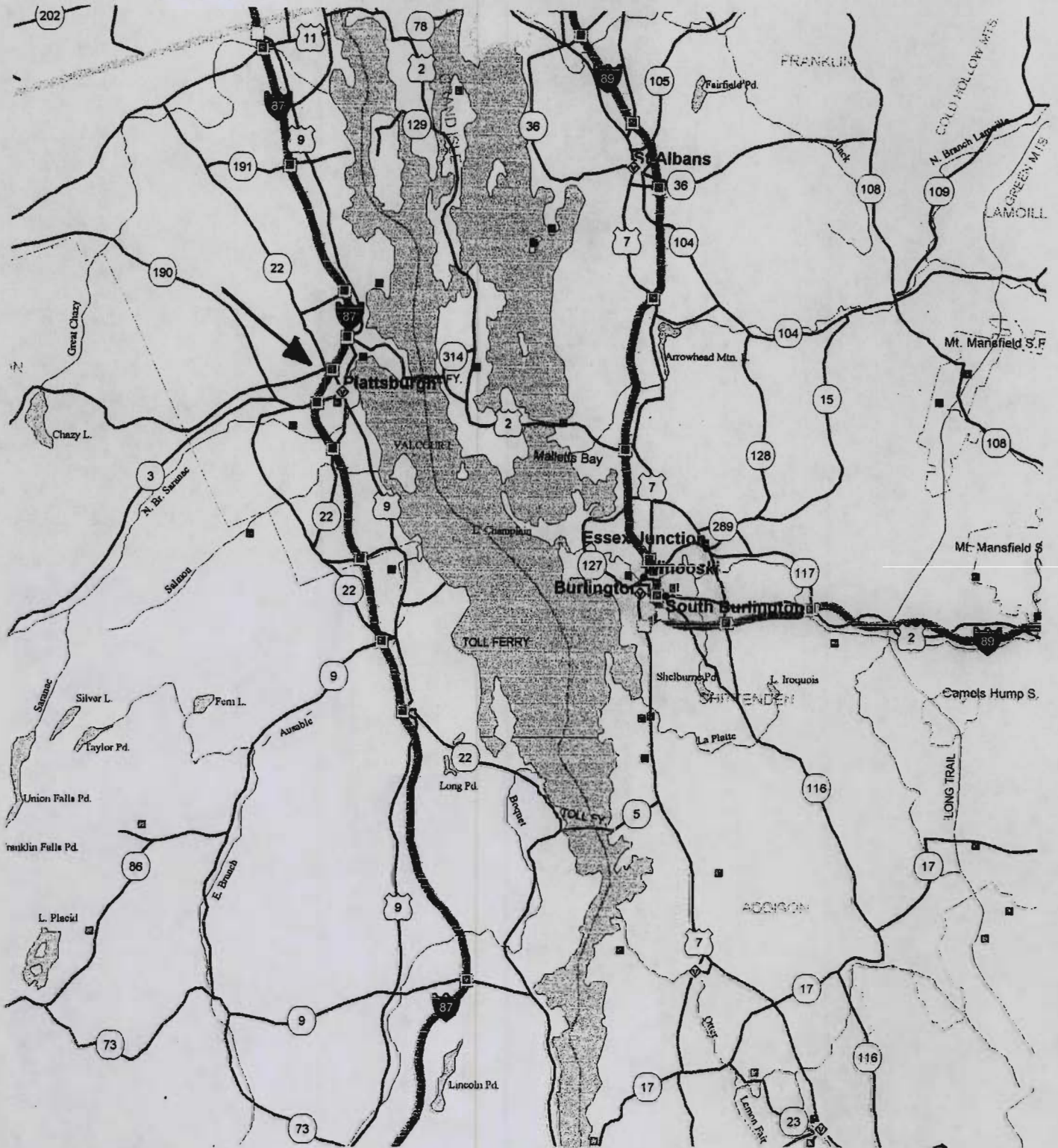
APPROVED BY:

(date)

ENCLOSURES:

1. General Site Map
2. Site Location Map
3. Site Grid Map with Survey Data
4. Listing of Ordnance Destroyed

Figure 1-1
Base Location Map



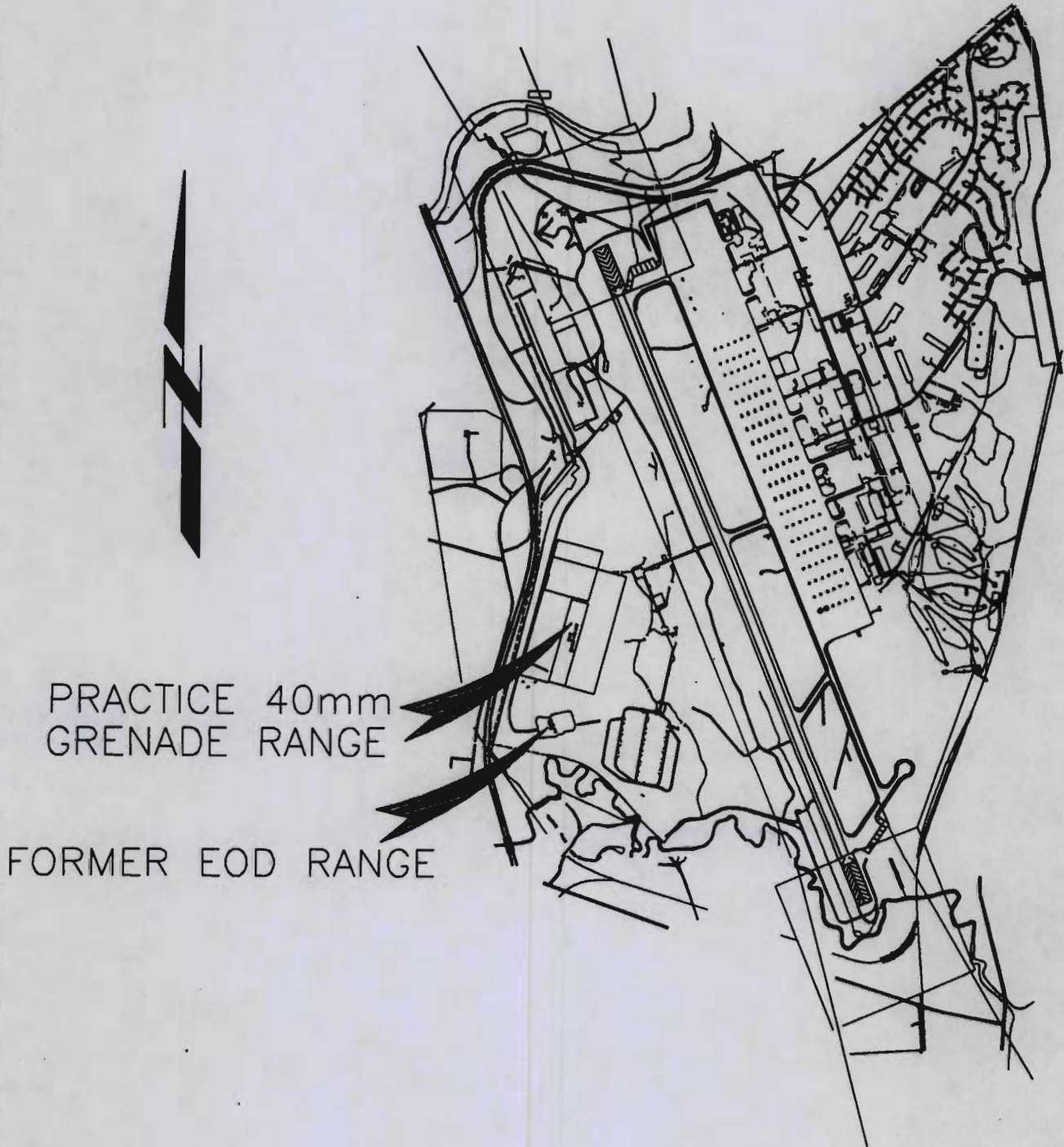
DACA87-95-D-0027
Task Order 0006

3

14 May 1999
Final BRAC Removal Action Report

FIGUURE 1-2
SITE LOCATION MAP

**PLATTSBURGH AIR FORCE BASE
PLATTSBURGH, NY**



DACA87-95-D-0027
TASK ORDER 0006

4

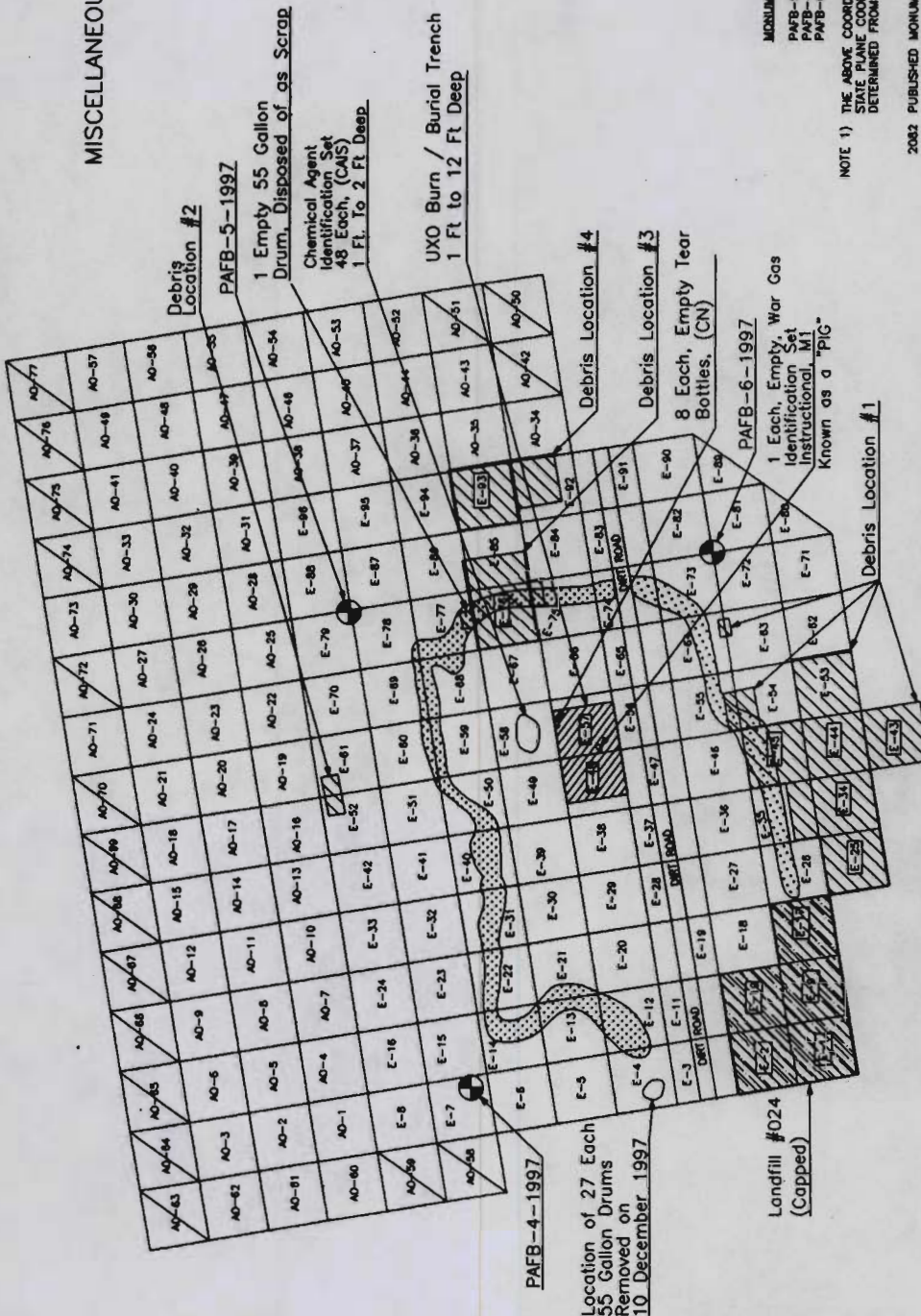
BRAC REMOVAL ACTION REPORT

A-5

ENCL 2

FIGURE 2-1

MISCELLANEOUS LOCATIONS OF NON-UXO



- NOTE: PATTERN INDICATES THE BERM THAT BORDERS THE EOD RANGE THE AREA OUTSIDE THE BERM IS THE BUFFER ZONE TOTAL AREA CLEARED, 39.05 ACRES
- NOTE: PATTERN INDICATES THE UXO BURN / BURIAL TRENCH
- NOTE: PATTERN INDICATES LANDFILL GRIDS
- NOTE: GRIDS NOT CLEARED BECAUSE ADJACENT GRIDS CONTAINED NO UXO
- NOTE: CONCRETE MONUMENT WITH DISC SET BY CDS MARKED WITH

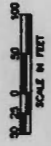
MONUMENT	NORTHING	EASTING
PAFB-5-1997	2118000.52	757850.17
PAFB-4-1997	2118007.08	756832.23
PAFB-6-1997	2118300.88	757743.48

NOTE 1) THE ABOVE COORDINATE VALUES ARE BASED ON GRID NORTH, NEW YORK EAST STATE PLANE COORDINATE SYSTEM, NAD 83 (1992). COORDINATE VALUES WERE DETERMINED FROM CONVENTIONAL TERRESTRIAL SURVEY METHODS.

2002 PUBLISHED MONUMENTS USED FOR CONTROL ARE AS FOLLOWS:

STATION	NORTH	EAST
HANGAR	2,123,481.86	762,338.92
APRON	2,125,920.63	761,063.14

ALL COORDINATE AND LINEAR VALUES ARE REPORTED IN U.S. SURVEY FOOT.



FORMER EOD RANGE
MISCELLANEOUS LOCATIONS OF NON-UXO

CDS CONSULTING ENGINEERS • LAND SURVEYING
1000 WEST 10TH AVENUE, SUITE 1000, DENVER, CO 80202
TEL: 303.733.1100 FAX: 303.733.1101
WWW.CDS-ENGINEERS.COM

PLATTSMITH AIR FORCE BASE
PLATTSMITH, NEW YORK

LOCATION SURVEY AND LAYOUT
FIELD LAYOUT
PROVIDE FIELD CONTROL RANGE
AND PROVIDE EOD RANGE

SHEET
REFERENCE
NUMBER:
SHEET 1 OF 1

**LIST OF ORDNANCE DESTROYED
EXPLOSIVE ORDNANCE DISPOSAL RANGE
PLATTSBURGH AIR FORCE BASE, NEW YORK**

1.	Actuator Explosive	83
2.	Air Craft Flare	43
3.	Bolt Explosive	9
4.	CAD Devices	87
5.	Explosive Transfer Assemblies	9
6.	Cal 50 Cartridge Case (primed)	1
7.	20mm Cartridge Case (primed)	600
8.	Flare Signal MK13	7
9.	Flares	33
10.	Fuze Practice Grenade	1
11.	Fuze Mortar PTT M65	33
12.	Fuze Bomb Nose M103	4
13.	Fuze Bomb Tail M132	1
14.	Fuze Bomb Nose M193	1
15.	Fuze Bomb Tail M100 Series	1
16.	Fuze Bomb Tail M123	2
17.	20mm Projectile	6,069
18.	Projectile 30mm Solid Shot	3
19.	Projectile 57mm RR M308 WP	1
20.	Mortar 60mm Illumination M83	27
21.	Igniter JATO	20
22.	JATO Bottle	1
23.	Propellant, Starter Cartridge	1
24.	Igniter AC Starter Cartridge	46
25.	MK23 Practice Bomb	6
26.	Incendiary Bomb 4lb (Hex Nose)	32
27.	Incendiary Bomb 10lb	41
28.	Bomb Fuze Adapter	16
29.	Burster Tubes	5
30.	Chaff 2.75 inch	2
31.	2.36 inch Rocket Motor	1

APPENDIX B
ANALYTICAL DATA

TABLE B-2
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN 1994 GROUNDWATER SAMPLES

Analyte	Class	ARAR VALUE	Upgradient Samples				Onsite Samples				Location of Onsite Maximum Detection
			Detection Frequency	Frequency of ARAR Exceedance	Min. Detected Concentration	Max. Detected Concentration	Detection Frequency	Frequency of ARAR Exceedance	Min. Detected Concentration	Max. Detected Concentration	
Acetone	VOC	50	0 / 2	0 / 2	—	—	1 / 3	0 / 3	15	15	MW-26-002
bis(2-Ethylhexyl)phthalate	SVOC	6	0 / 2	0 / 2	—	—	3 / 3	0 / 3	2	4	MW-26-002
RDX	EXPLOSIVE	2* (TBC)	0 / 2	0 / 2	—	—	1 / 3	0 / 3	5.6	5.6	MW-26-003
Aluminum (Total)	METAL	—	2 / 2	2 / 2	234	3940	3 / 3	3 / 3	703	6050	MW-26-003
Antimony (Total)	METAL	3	1 / 2	1 / 2	29.3	29.3	0 / 3	0 / 3	—	—	—
Arsenic (Total)	METAL	10	1 / 2	0 / 2	3	3	3 / 3	0 / 3	2.2	4.9	MW-26-003
Barium (Total)	METAL	1,000	2 / 2	0 / 2	7.9	29.2	3 / 3	0 / 3	7.7	46.2	MW-26-003
Beryllium (Total)	METAL	3	1 / 2	0 / 2	0.46	0.46	3 / 3	0 / 3	0.29	0.74	MW-26-003
Calcium (Total)	METAL	—	2 / 2	0 / 2	8190	9310	3 / 3	0 / 3	5230	16300	MW-26-002
Chromium (Total)	METAL	50	1 / 2	0 / 2	5.7	5.7	1 / 3	0 / 3	11.5	11.5	MW-26-003
Cobalt (Total)	METAL	—	2 / 2	0 / 2	5.6	6.2	1 / 3	0 / 3	9.3	9.3	MW-26-003
Copper (Total)	METAL	200	1 / 2	0 / 2	5.4	5.4	2 / 3	0 / 3	4.3	13.3	MW-26-003
Iron (Total)	METAL	300	2 / 2	2 / 2	314	6140	3 / 3	3 / 3	1860	12600	MW-26-003
Lead (Total)	METAL	15	2 / 2	0 / 2	1.2	4.3	3 / 3	0 / 3	2.2	5.6	MW-26-003
Magnesium (Total)	METAL	35,000	2 / 2	0 / 2	1850	3040	3 / 3	0 / 3	783	3700	MW-26-002
Manganese (Total)	METAL	300	2 / 2	0 / 2	10.7	62.9	3 / 3	0 / 3	30.3	104	MW-26-003
Nickel (Total)	METAL	100	1 / 2	0 / 2	12	12	1 / 3	0 / 3	21	21	MW-26-003
Potassium (Total)	METAL	—	2 / 2	0 / 2	1840	2310	3 / 3	0 / 3	1620	3020	MW-26-003
Sodium (Total)	METAL	20,000	2 / 2	0 / 2	1410	4870	3 / 3	0 / 3	1410	1920	MW-26-003
Vanadium (Total)	METAL	—	1 / 2	0 / 2	8.6	8.6	2 / 3	0 / 3	3.8	27.7	MW-26-003
Zinc (Total)	METAL	2,000	2 / 2	0 / 2	52	182	3 / 3	1 / 3	221	315	MW-26-004
Aluminum (Dissolved)	METAL	—	2 / 2	1 / 2	38	105	2 / 3	1 / 3	35.8	280	MW-26-002
Arsenic (Dissolved)	METAL	10	0 / 2	0 / 2	—	—	1 / 3	0 / 3	3.3	3.3	MW-26-002
Barium (Dissolved)	METAL	1,000	2 / 2	0 / 2	34.6	105	3 / 3	0 / 3	29.1	49.2	MW-26-004
Cadmium (Dissolved)	METAL	5	0 / 2	0 / 2	—	—	1 / 3	0 / 3	4.1	4.1	MW-26-004
Calcium (Dissolved)	METAL	—	2 / 2	0 / 2	7730	9410	3 / 3	0 / 3	5040	19100	MW-26-004
Cobalt (Dissolved)	METAL	—	1 / 2	0 / 2	5.1	5.1	0 / 3	0 / 3	—	—	—
Iron (Dissolved)	METAL	300	2 / 2	0 / 2	25.9	73.6	3 / 3	0 / 3	13.7	61.2	MW-26-002
Lead (Dissolved)	METAL	15	1 / 2	0 / 2	1.3	1.3	3 / 3	0 / 3	1.1	1.4	MW-26-004
Magnesium (Dissolved)	METAL	35,000	2 / 2	0 / 2	1690	1900	3 / 3	0 / 3	421	3620	MW-26-002
Manganese (Dissolved)	METAL	300	2 / 2	0 / 2	8.3	9.8	3 / 3	0 / 3	8.9	107	MW-26-002
Potassium (Dissolved)	METAL	—	2 / 2	0 / 2	1300	2290	3 / 3	0 / 3	1490	2070	MW-26-004
Sodium (Dissolved)	METAL	20,000	2 / 2	0 / 2	1830	5320	3 / 3	0 / 3	1170	1580	MW-26-003
Thallium (Dissolved)	METAL	2	1 / 2	0 / 2	1.3	1.3	0 / 3	0 / 3	—	—	—
Zinc (Dissolved)	METAL	2,000	2 / 2	0 / 2	29.1	78.7	3 / 3	0 / 3	24.1	37.9	MW-26-004

Notes:

* - USEPA Region 2 TBC Guidance for Explosive Compounds in Drinking Water.

1) Concentrations in µg/l.

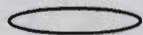
2) ARAR values from NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, TOGS 1.1.1 (June 1998) and USEPA Drinking Water Standards 40 CFR 141-143.

— - Concentration exceeds ARAR or TBC value

TABLE B-3
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1997 SOIL SAMPLES

Location ID			EOD BERM 1	EOD PIT 1	EOD PIT 2
Sample ID			EODBERM1	EODPIT1	EODPIT2
Matrix			Soil	Soil	Soil
Depth Interval (ft)			-	-	-
Date Sampled			12/11/97	12/11/97	12/11/97
Parameter	Units	Criteria*			
Volatile Organic Compounds					
Acetone	UG/KG	200	42	45	46
Methylene chloride	UG/KG	100	4	6	5
Pesticide Organic Compounds					
4,4'-DDE	UG/KG	2100	1.0		
4,4'-DDT	UG/KG	2100	3.0		0.44
Total Metals					
Aluminum	MG/KG	8510 (SB)	3,830	1,800	3,340
Arsenic	MG/KG	7.5	0.77		1.3
Barium	MG/KG	300	13.7	19.7	21.7
Calcium	MG/KG	30200 (SB)	311	1,220	1,020
Chromium	MG/KG	19.5 (SB)	2.4	3.8	5.7
Cobalt	MG/KG	30	1.1	1.6	2.4
Copper	MG/KG	44.1 (SB)	1.9	0.78	2.3
Iron	MG/KG	36700 (SB)	3,560	4,800	12,300
Lead	MG/KG	79.4 (SB)	9.8	3	3.6
Magnesium	MG/KG	3340 (SB)	335	439	906
Manganese	MG/KG	474 (SB)	56.5	79.6	74.9
Nickel	MG/KG	13	2.7	2.9	5.5
Potassium	MG/KG	929 (SB)	118	136	322
Selenium	MG/KG	2	0.85		1.3
Sodium	MG/KG	520 (SB)	59.5	45.4	66.7
Vanadium	MG/KG	150	4.5	5.3	11.3
Zinc	MG/KG	63.4 (SB)	29	14.8	25.5

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).



Concentration Exceeds Criteria.

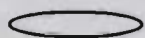
SB - Site Background

Only Detected Results Reported.

TABLE B-4
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 SOIL SAMPLES

Location ID			SS-026-CAS-1	SS-026-CAS-2	SS-026-CAS-3	SS-026-CAS-4	SS-026-CAS-5
Sample ID			SS-026-CAS-1	SS-026-CAS-2	SS-026-CAS-3	SS-026-CAS-4	SS-026-CAS-5
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)			0.0-2.0	2.0-4.0	5.0-7.0	8.0-9.0	0.0-1.0
Date Sampled			09/01/99	09/01/99	09/01/99	09/01/99	09/01/99
Parameter	Units	Criteria*					
Total Metals							
Arsenic	MG/KG	7.5	1.4				

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).



Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE B-4
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 SOIL SAMPLES

Location ID		SS-026-CAS-6	
Sample ID		SS-026-CAS-6	
Matrix		Soil	
Depth Interval (ft)		0.0-1.0	
Date Sampled		09/01/99	
Parameter	Units	Criteria*	
Total Metals			
Arsenic	MG/KG	7.5	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).



Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE B-5
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 SOIL BORING SAMPLES

Location ID		SB-26-01	SB-26-01	SB-26-02	SB-26-02	SB-26-03
Sample ID		SB-26-04-01	SB-26-04-02	SB-26-06-01	SB-26-06-02	SB-26-05-01
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		0.0-2.0	2.0-4.0	0.0-2.0	2.0-4.0	0.0-2.0
Date Sampled		09/01/99	09/01/99	09/01/99	09/01/99	09/01/99
Parameter	Units					
Dioxins & Furans						
1,2,3,4,6,7,8-HpCDD	NG/KG	1.8	1.9	2.70	7.10	3.8
1,2,3,4,6,7,8-HpCDF	NG/KG					
OCDD	NG/KG	13.00	12.00	17.00	72.00	37.00
OCDF	NG/KG				6.50	
Total HpCDD	NG/KG	3.30	3.50	5.70	16.00	8.2
Total HpCDF	NG/KG	0.97				0.98
Total HxCDD	NG/KG				2.50	
Total HxCDF	NG/KG	0.60			2.60	1.40
Dioxin Toxicity Equivalence	NG/KG	0.0310	0.0310	0.0439	0.1495	0.075

Only Detected Results Reported.

TABLE B-5
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 SOIL BORING SAMPLES


Location ID		SB-26-03	SB-26-03
Sample ID		SB-26-05-01DUP	SB-26-05-02
Matrix		Soil	Soil
Depth Interval (ft)		0.0-2.0	2.0-4.0
Date Sampled		09/01/99	09/01/99
Parameter	Units	Field Duplicate (1-1)	
Dioxins & Furans			
1,2,3,4,6,7,8-HpCDD	NG/KG	4.20	
1,2,3,4,6,7,8-HpCDF	NG/KG	0.95	
OCDD	NG/KG	32.00	3.90
OCDF	NG/KG	1.80	1.10
Total HpCDD	NG/KG	8.10	0.48
Total HpCDF	NG/KG	2.00	0.70
Total HxCDD	NG/KG		
Total HxCDF	NG/KG		
Dioxin Toxicity Equivalence	NG/KG	0.086	0.005

Only Detected Results Reported.

**TABLE B-6
EOD RANGE (SS-026) - SATELLITE FILL AREA
SUMMARY OF ANALYTES DETECTED IN
1999 SURFACE SOIL SAMPLES**

Location ID			SS-026-SF-1	SS-026-SF-2	SS-026-SF-4	SS-026-SF-4	SS-026-SF-5
Sample ID			SS-026-SF-1	SS-026-SF-2	SS-026-SF-4	SS-026-SF-4DUP	SS-026-SF-5
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)			0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Date Sampled			09/20/99	09/20/99	09/15/99	09/15/99	09/15/99
Parameter	Units	Criteria*				Field Duplicate (1-1)	
Volatile Organic Compounds							
Methylene chloride	UG/KG	100			54		
Toluene	UG/KG	1500			17		
Semivolatile Organic Compounds							
2-Methylnaphthalene	UG/KG	36400	12,900				
4-Methylphenol (p-cresol)	UG/KG	900	814				
Acenaphthene	UG/KG	50000	20,600				
Benzo(a)anthracene	UG/KG	224 or MDL	57,700				
Benzo(a)pyrene	UG/KG	61 or MDL	17,900		213		
Benzo(b)fluoranthene	UG/KG	1100	14,700				
Benzo(g,h,i)perylene	UG/KG	50000	15,600				
Benzo(k)fluoranthene	UG/KG	1100	12,400				
bis(2-Ethylhexyl)phthalate	UG/KG	50000		679			
Carbazole	UG/KG	-	19,200				
Chrysene	UG/KG	400	26,100				
Dibenz(a,h)anthracene	UG/KG	14 or MDL	8,840				
Dibenzofuran	UG/KG	6200	13,800				
Di-n-butylphthalate	UG/KG	8100		352			
Fluoranthene	UG/KG	50000	57,500	78			
Fluorene	UG/KG	50000	21,600				
Indeno(1,2,3-cd)pyrene	UG/KG	3200	14,700				
Naphthalene	UG/KG	13000	18,100				
Phenanthrene	UG/KG	50000	72,000				
Pyrene	UG/KG	50000	58,600	82			

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels: HWR-94-4046 January 24, 1994 (Revised).

 Concentration Exceeds Criteria.

SB - Site Background


MDL - Method Detection Limit

Only Detected Results Reported.

TABLE B-6
EOD RANGE (SS-026) - SATELLITE FILL AREA
SUMMARY OF ANALYTES DETECTED IN
1999 SURFACE SOIL SAMPLES

Location ID			SS-026-SF-1	SS-026-SF-2	SS-026-SF-4	SS-026-SF-4	SS-026-SF-5
Sample ID			SS-026-SF-1	SS-026-SF-2	SS-026-SF-4	SS-026-SF-4DUP	SS-026-SF-5
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)			0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Date Sampled			09/20/99	09/20/99	09/15/99	09/15/99	09/15/99
Parameter	Units	Criteria*				Field Duplicate (1-1)	
Total Metals							
Aluminum	MG/KG	8510 (SB)	3,390	3,140	3,090	3,350	2,990
Antimony	MG/KG	12.6 (SB)	2.7	1.4	3.2	2.9	7.2
Barium	MG/KG	300	15.5	15.4	25.3	26.2	22.9
Beryllium	MG/KG	0.74 (SB)	0.21	0.13	0.17	0.17	0.23
Cadmium	MG/KG	1.3 (SB)					0.03
Calcium	MG/KG	30200 (SB)	3,150	2,070	2,430	2,290	5,080
Chromium	MG/KG	19.5 (SB)	6.3	10	4.4	5	5.3
Cobalt	MG/KG	30	1.3	1.2	0.96	1.1	1.3
Copper	MG/KG	44.1 (SB)	5.8	52.8	2.3	2	3.8
Iron	MG/KG	36700 (SB)	11,200	7,970	4,410	4,650	5,260
Lead	MG/KG	79.4 (SB)	16.6	65.3	NA	NA	NA
Magnesium	MG/KG	3340 (SB)	789	424	731	720	1,540
Nickel	MG/KG	13	3.2	2.5	2.6	2.9	2.6
Potassium	MG/KG	929 (SB)	234	152	218	261	333
Selenium	MG/KG	2	7.6	5.7	3.7	4.5	4.5
Vanadium	MG/KG	150	21	11	6.7	7.2	9.1
Zinc	MG/KG	63.4 (SB)	27.3	153	NA	NA	NA

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

 Concentration Exceeds Criteria.

SB - Site Background


MDL - Method Detection Limit

Only Detected Results Reported.

TABLE B-6
EOD RANGE (SS-026) - SATELLITE FILL AREA
SUMMARY OF ANALYTES DETECTED IN
1999 SURFACE SOIL SAMPLES

Location ID		SS-026-SF-6
Sample ID		SS-026-SF-6
Matrix		Soil
Depth Interval (ft)		0.0-0.5
Date Sampled		09/15/99
Parameter	Units	Criteria*
Volatile Organic Compounds		
Methylene chloride	UG/KG	100
Toluene	UG/KG	1500
Semivolatile Organic Compounds		
2-Methylnaphthalene	UG/KG	36400
4-Methylphenol (p-cresol)	UG/KG	900
Acenaphthene	UG/KG	50000
Benzo(a)anthracene	UG/KG	224 or MDL
Benzo(a)pyrene	UG/KG	61 or MDL
Benzo(b)fluoranthene	UG/KG	1100
Benzo(g,h,i)perylene	UG/KG	50000
Benzo(k)fluoranthene	UG/KG	1100
bis(2-Ethylhexyl)phthalate	UG/KG	50000
Carbazole	UG/KG	-
Chrysene	UG/KG	400
Dibenz(a,h)anthracene	UG/KG	14 or MDL
Dibenzofuran	UG/KG	6200
Di-n-butylphthalate	UG/KG	8100
Fluoranthene	UG/KG	50000
Fluorene	UG/KG	50000
Indeno(1,2,3-cd)pyrene	UG/KG	3200
Naphthalene	UG/KG	13000
Phenanthrene	UG/KG	50000
Pyrene	UG/KG	50000

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

 Concentration Exceeds Criteria.

SB - Site Background


MDL - Method Detection Limit

Only Detected Results Reported.

TABLE B-6
EOD RANGE (SS-026) - SATELLITE FILL AREA
SUMMARY OF ANALYTES DETECTED IN
1999 SURFACE SOIL SAMPLES

Location ID		SS-026-SF-6	
Sample ID		SS-026-SF-6	
Matrix		Soil	
Depth Interval (ft)		0.0-0.5	
Date Sampled		09/15/99	
Parameter	Units	Criteria*	
Total Metals			
Aluminum	MG/KG	8510 (SB)	2,180
Antimony	MG/KG	12.6 (SB)	5.1
Barium	MG/KG	300	18.4
Beryllium	MG/KG	0.74 (SB)	
Cadmium	MG/KG	1.3 (SB)	
Calcium	MG/KG	30200 (SB)	5,760
Chromium	MG/KG	19.5 (SB)	5.2
Cobalt	MG/KG	30	0.9
Copper	MG/KG	44.1 (SB)	16.8
Iron	MG/KG	36700 (SB)	4,820
Lead	MG/KG	79.4 (SB)	12.8
Magnesium	MG/KG	3340 (SB)	596
Nickel	MG/KG	13	7
Potassium	MG/KG	929 (SB)	216
Selenium	MG/KG	2	4.7
Vanadium	MG/KG	150	8.3
Zinc	MG/KG	63.4 (SB)	56.1

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

 Concentration Exceeds Criteria.

SB - Site Background

MDL - Method Detection Limit

Only Detected Results Reported.

**TABLE B-7
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 GROUNDWATER SAMPLE RESULTS**

Location ID			MW-24-001	MW-26-001	MW-26-002	MW-26-003	MW-26-004
Sample ID			MW-24-001	MW-26-001	MW-26-002	MW-26-003	MW-26-004
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/06/99	10/06/99	10/06/99	10/06/99	10/06/99
Parameter	Units	Criteria*					
Explosives (Nitroaromatics & Nitroamines)							
RDX	UG/L	2				6.1	5.5

*Criteria- USEPA Region 2 TBC Guidance Value for Explosive Compounds in Drinking Water.



Concentration Exceeds Criteria.

Only Detected Results Reported.

**TABLE B-7
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 GROUNDWATER SAMPLE RESULTS**

Location ID			MW-26-005	MW-26-005
Sample ID			MW-26-005	MW-26-005DUP
Matrix			Groundwater	Groundwater
Depth Interval (ft)			-	-
Date Sampled			10/06/99	10/06/99
Parameter	Units	Criteria*		Field Duplicate (1-1)
Explosives (Nitroaromatics & Nitroamines)				
RDX	UG/L	2		

*Criteria- USEPA Region 2 TBC Guidance Value for Explosive Compounds in Drinking Water.




Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE B-7
EOD RANGE (SS-026)
SUMMARY OF ANALYTES DETECTED IN
1999 GROUNDWATER SAMPLE RESULTS

Location ID			MW-26-005	MW-26-005
Sample ID			MW-26-005	MW-26-005DUP
Matrix			Groundwater	Groundwater
Depth Interval (ft)			-	-
Date Sampled			10/06/99	10/06/99
Parameter	Units	Criteria*		Field Duplicate (1-1)
Total Metals				
Aluminum	UG/L	NS	3,700	3,350
Barium	UG/L	1000	40.7	41.8
Calcium	UG/L	NS	23,200	25,700
Chromium	UG/L	50	7.3	6.6
Copper	UG/L	200	8.8	9.2
Iron	UG/L	300	7,200	6,500
Magnesium	UG/L	35000	5,090	5,060
Manganese	UG/L	300	180	196
Mercury	UG/L	0.7	0.37	0.22
Nickel	UG/L	100	5.2	4.9
Potassium	UG/L	NS	1,570	1,570
Selenium	UG/L	10	12.3	11.8
Sodium	UG/L	20000	1,590	1,600
Vanadium	UG/L	NS	11.9	10.8
Zinc	UG/L	2000	46.9	51

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998, Revised April 2000, Class GA.

 Concentration Exceeds Criteria.

NS - No standard is available for the subject parameter

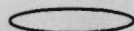
Only Detected Results Reported.

TABLE B-8
EOD RANGE (SS-026) - SATELLITE FILL AREA
SUMMARY OF ANALYTES DETECTED IN
1999 GROUNDWATER SEEP SAMPLES

Location ID				LS-026-SF-1	LS-026-SF-1	LS-026-SF-2
Sample ID				LS-026-SF-1	LS-026-SF-1DUP	LS-026-SF-2
Matrix				GW Seep	GW Seep	GW Seep
Depth Interval (ft)				0.0-1.0	0.0-1.0	0.0-1.5
Date Sampled				09/15/99	09/15/99	09/15/99
Parameter	Units	Criteria (1)	Criteria (2)	Field Duplicate (1-1)		
Total Metals						
Aluminum	UG/L	NS	-	8,540	7,950	2,280
Arsenic	UG/L	25	10	7.5	7.3	
Barium	UG/L	1000	-	164	151	34.7
Calcium	UG/L	NS	-	51,600	48,500	28,800
Chromium	UG/L	50	-	12.8	12.0	4.2
Copper	UG/L	200	-	13.8	12.7	8.5
Iron	UG/L	300	-	14,900	13,600	4,470
Lead	UG/L	25	15	24.8	23.2	8.2
Magnesium	UG/L	35000	-	11,800	11,200	7,540
Manganese	UG/L	300	-	2,640	2,420	401
Nickel	UG/L	100	-	8.5	8.3	2.9
Potassium	UG/L	NS	-	2,880	2,690	938
Selenium	UG/L	10	-	11.9	13.8	7.1
Sodium	UG/L	20000	-	6,370	6,070	5,450
Thallium	UG/L	0.5	-	6.6		
Vanadium	UG/L	NS	-	19.0	17.5	6.2
Zinc	UG/L	2000	-	70.3	54.2	34.2

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

Criteria (2)- USEPA MCL Value



Concentration Exceeds Criteria 1



Concentration Exceeds Criteria 2

NS - No standard is available for the subject parameter

Only Detected Results Reported.

TABLE B - 9

EOD Range (SS-026)
Satellite Fill Area Confirmation Sampling Results

ANALYTE	NYSDEC Recommended Soil Cleanup Objective (ppm or mg/kg) ¹	MDL (mg/kg)	SAMPLE RESULTS (mg/kg)					
			EOD-1	EOD-2	EOD-3	EOD-3 dil (rerun at 1:1dilution, MDL doubled)	EOD-4	EOD-4 dil (rerun at 1:1dilution, MDL doubled)
Acenaphthene	50.0	0.082	ND	ND	0.161 F	ND	ND	ND
Acenaphthylene	41.0	0.082	ND	ND	ND	ND	ND	ND
Anthracene	50.0	0.082	ND	ND	0.268	0.238 F	ND	ND
Benzoic Acid	2.7	0.31	ND	ND	ND	0.953 F	0.454 F	1.02 F
Benzo(a) anthracene	0.224 or MDL	0.082	ND	0.093 F	0.488 F	0.405 F	ND	ND
Benzo(a)pyrene	0.061 or MDL	0.082	ND	0.0937 F	0.46 R	0.34 F	ND R	ND
Benzo(b)fluoranthene	1.1	0.082	ND	0.102 F	0.514 R	0.359F	ND R	ND
Benzo(g,h,i)perylene	50.0	0.082	ND R	ND R	0.174 R	0.227 F	ND R	ND
Benzo(k)fluoranthene	1.1	0.082	ND	ND	0.378 R	0.261 F	ND R	ND
Bis(2-ethylhexyl)phthalate	50.0	0.082	ND	ND	ND	ND	ND	ND
Chrysene	0.4	0.082	ND	0.118 F	0.575 F	0.484 F	ND	ND
Dibenzofuran	6.2	0.082	ND	ND	0.0853 F	ND	ND	ND
Dibenzo(a,h)anthracene	0.014 or MDL	0.082	ND	ND	ND	ND	ND R	ND
Di-n-octylphthalate	50.0	0.082	ND	0.101 F	ND	ND	ND	ND
Fluoranthene	50.0	0.082	ND	0.173 F	1.08	0.919 F	ND	ND
Fluorene	50.0	0.082	ND	ND	0.15 F	ND	ND	ND
Indeno(1,2,3-cd)pyrene	3.2	0.082	ND	ND	0.153 R	0.193 F	ND R	ND
Naphthalene	13.0	0.082	ND	0.0873 F	0.131 F	ND	ND	ND
Phenanthrene	50.0	0.082	ND	ND	0.918	0.745	ND	ND
Pyrene	50.0	0.082	ND	0.151F	1.19 J	0.674 F	ND	ND
Percent Carbon Content ²	-----	-----	4%	3%	12%	-----	12%	-----

¹ Values taken from NYSDEC TAGM HWR-94-4046 *Determination of Soil Cleanup Objectives and Cleanup Levels*, Appendix A, Table 2, Column 9.

² Calculated as 100% - %Ash

F = Result is above the MDL but below the CRDL and is subject to poor precision

MDL = Minimum Detection Level

ND = Not detected above MDL

R = QAPP QA/QC criteria (typically calibration) were not met and result may not be usable

RDL = Reportable Detection Limit

- detected concentration exceeds NYSDEC Recommended Soil Cleanup Objective value