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PLATTSBURGH AIR FORCE BASE
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FORMER LANDFILL LF-024

RECORD OF DECISION

PLATTSBURGH AIR FORCE BASE

PLATTSBURGH, NEW YORK

FINAL

MARCH 1997

PLATTSBURGH AIR FORCE BASE

INSTALLATION RESTORATION PROGRAM

PREPARED BY:

URS GREINER, INC.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

LIST OF APPENDICES

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Plattsburgh Air Force Base (AFB)
Former Landfill LF-024
Plattsburgh, New York

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents a selected remedial action, for soil and groundwater at site LF-024 on Plattsburgh AFB in Plattsburgh, New York. It has been developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for this site, a copy of which is located at the Information Repository at the Feinburg Library on the campus of the State University of New York at Plattsburgh.

The remedy has been selected by the US Air Force (USAF) in conjunction with the US Environmental Protection Agency (USEPA) and with the concurrence of the New York State Department of Environmental Conservation (NYSDEC) pursuant to the Federal Facilities Agreement among the parties under Section 117(a) of CERCLA, dated July 10, 1991.

ASSESSMENT OF THE SITE

Hazardous substances present in fill and soil at LF-024, and contamination of the, underlying groundwater, if not addressed by implementing the response action selected in this ROD, may present a potential endangerment to human health and the environment.

DESCRIPTION OF THE REMEDY

This action addresses the principal threat posed by LF-024 by preventing endangerment to human health and the environment, through containment of the landfill to minimize exposure to contaminants in the soil, waste and groundwater. The proposed source control remedy includes a re-establishment and upgrade of the native soil cap over the landfill; institutional controls to restrict site development, maintenance to protect the integrity of the cap, restrictions preventing the use of groundwater as a potable supply source on, and immediately downgradient of the site; periodic groundwater monitoring for 30 years; site reviews to be conducted every five years; and development of a post-closure plan specifying inspection, maintenance, and monitoring programs to be conducted over 30 years.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state Applicable or Relevant and Appropriate Requirements, and is cost-effective. The remedy is based on the presumptive remedy approach developed by the USEPA for military landfill sites. Using the presumptive remedy for this site, treatment of waste, soil and groundwater contamination is considered impractical and consequently, the remedy does not satisfy statutory preference for treatment as a principal element of remediation.

Because this remedy will result in hazardous substances remaining on site, the USAF, USEPA, and NYSDEC will conduct site reviews every five years to ensure that the source control remedy continues to provide adequate protection of human health and the environment.

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analysis. During field investigations 18 drums were observed protruding from the fill at the toe of the landfill, many of which were crushed or without lids. Drums that appeared to be intact sounded hollow and were presumed to be empty. Efforts to sample the drums during the SI were not undertaken, though a sediment sample was collected from the area of several drums and did not reveal the presence of contamination. Subsequent inspection of the landfill by URS Consultants, Inc. (URS) personnel failed to identify any drums. The USAF has no records indicating that drums were disposed of at the landfill, and it is believed they were used for trash collection.

A site investigation (SI) was performed at LF-024 in the summer of 1993 which included the following: 1) terrain conductivity, magnetometer, and soil gas surveys; 2) excavation of three test pits; 3) installation and sampling of one monitoring well and three well points; and 4) analysis of eleven soil, four sediment, and two surface water samples. Samples were analyzed for the full target compound and target analyte lists. Based on the results of the investigation, the SI report (Malcolm Pirnie 1994) concluded that no further investigation or remedial action was necessary. The database compiled as part of the SI was utilized to quantify potential risk posed to human health (URS 1995a).

3.0 COMMUNITY PARTICIPATION

Plattsburgh AFB has kept the community and other interested parties informed of the activities at LF-024 through informational and public meetings, holding a 30-day public comment period from January 6, 1997 to February 6, 1997 to solicit public input. During this period, the public was invited to review the Proposed Plan, the LF-024 SI and to comment on the remedial alternative being considered. These documents, which comprised the Administrative Record for the LF-024 site, available at the Information Repository located at the Feinberg Library on the campus of the State University of New York at Plattsburgh.

Plattsburgh AFB also hosted a public meeting on January 16, 1997 at the City of Plattsburgh Old Court House to discuss the data gathered at the site, the preferred alternate, and the decision-making process. Immediately after the information presentation, Plattsburgh AFB held a formal Public Hearing to accept comments about the remedial alternative being considered for the LF-024 site. Public comments were recorded and transcribed, and a copy of the transcript was added to the Administrative Record and Information Repository and are a part of this Record of Decision (Appendix D). A response to the comments included in the responsiveness summary is part of this Record of Decision (Appendix E).

4.0 SCOPE AND ROLE OF RESPONSE ACTION

This ROD addresses all of the principal threats posed by LF-024 to human health and the environment. The primary threat is risk associated with potential human inhalation of exposed fill material as fugitive dust and physical hazards posed by exposed construction debris. Metals contamination (principally manganese) also occurs in aroundwater at the site. There is no impact on surface water or air quality associated with the landfill.

The USAF has utilized the USEPA's containment presumptive remedy for military landfills to help determine an appropriate remedy for LF-024. Because of the large amount and heterogeneous nature of the material within the landfill, and the fact that the local land reuse authority (PARC) cuffently has no plans for the future use of the site, treatment is not considered practical. Containment, therefore, is considered the appropriate reponse action, or the presumptive remedy, for LF-024. The remedy recommended in this Plan addresses the principal threats through the removal of exposed debris, capping (containment), monitoring of groundwater, and institutional controls to protect the integrity of the cap and prohibit the use of groundwater as a potable supply source on, and immediately downgradient from the site.

5.0 SUMMARY SITE CONTAMINATION

5.1 Contaminant Pathways

Potential pathways by which contaminants might leave LF-024 are evaluated based on results of the SI investigation. Air pathways appear to be insignificant because dust generation is limited by the landfill vegetation and soil cover. Volatile organic compounds (VOCs) were detected infrequently and at low concentrations in the soil cover and waste, although elevated levels of metals in the fill do present an inhalation risk where the waste is exposed. Inspection of the landfill indicates that surface run-off from the landfill is confined to the landfill perimeter with rapid infiltration and evaporation of run-off at the margins of the landfill following heavy rain events. The only potentially significant contaminant migration pathway is vertical leaching of contaminants (i.e., metals) by percolating precipitation, with eventual transport downgradient through groundwater. The site conceptual model is shown in Figure 4. Groundwater flow at the site is shallow and vertically confined by underlying silty sediments which occur at or near the base of the landfill. Contaminant movement downgradient of the site (which will be monitored) is expected to be limited due to the relative immobility of metals. Chemicals detected in the various environmental media at LF-024 are listed and mapped in Appendix A.

5.2 Soil/Fill Contamination

Eleven soil/fill samples were analyzed during the SI including two subsurface soil samples from the upgradient monitoring well location (depths 0 to 2 feet and 5 to 7 feet), three near surface soil samples obtained from the three downgradient well point locations (1 to 3 feet depth), and six fill samples taken from the three test trenches (two per trench). The six fill samples, which were obtained at depths up to 12 feet, consisted of soil backfill that was mixed with the landfill debris composed of assorted trash, construction materials including corrugated steel, and wood.

In general, organic compounds were detected infrequently in soil/fill samples (Tables A-2, A-3, and A-4). Metals were detected much more frequently, as would be expected, since metals occur naturally in soil, are non-volatile, and do not biodegrade. The level of contamination in soil/fill was evaluated by comparing the detected concentrations to NYSDEC guidelines for soil cleanup (TAGM #4046, January 1994). This comparison is summarized in Table 1. One of the nineteen organic compounds (benzo(a)pyrene), and seven of the nineteen metals (antimony, magnesium, manganese, mercury, potassium, selenium, and thallium) were detected above the guideline values with most exceedances occurring in one sample (fill sample 02 at 5 feet) from TP24-001 (see Figures A-2, A-3, and A-4). As shown on Table 1, detection of these analytes above the guideline values was infrequent and in most cases marginally above guidance values. Low level exceedances of the guideline criteria for manganese, nickel and potassium also were found in near surface soil samples from the well point locations. In general, the metals contamination observed in the soil/fil1 samples is likely attributable to the leaching of metals from C&D debris constituting the landfill.

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TABLE 1

CONSTRUCTION SPOILS LANDFILL (LF-024)
CHARACTER OF SOIL/FILL CONTAMINATION

Analyte	Guidance Values	Frequency of Detection Above Guidance Value	Detected Maximum Concentration	Source of Guidance Exceedance
Benzo(a)pyrene	61 *	1/14	74	Test Trench
Antimony (mg/kg)	12.6 (SB)	1/14	15.4	Test Trench
Magnesium (mg/kg)	3,340 (SB)	2/14	5,459	Test Trench
Manganese (mg/kg)	474 (SB)	3/14	5,455	Test Trench
Mercury	0.1 *	1/14	0.17	Test Trench
Nickel (mg/kg)	13 *	1/14	28	Near Surface Soil
Potassium (mg/kg)	929 (SB)	3/14	1,160	Test Trench & Near Surface Soil
Selenium (mg/kg)	2 *	2/14	655	Test Trench
Thallium (mg/kg)	Non Detection	1/14	104	Test Trench

Organic results reported in Ig/kg. Inorganic results reported in mg/kg.

* - NYSDEC Soil Cleanup Objectives and Cleanup Levels, TAGM #4046, January 1994.

SB - Site background value. Based on base-wide background study (URS 1995b).

5.3 Surface Water/Run-off and Sedoment Contamination

Surface water and sediment samples were collected at the toe of the landfill where water from run-off was observed to pool after heavy rains. Flowing seeps were not observed during the SI. Since these pools subsequenty infiltrate into the underlying soil or evaporate within a few days, the sediment samples can be considered to belong to the soil medium.

The level of contamination from run-off and possible seeps was evaluated by comparing sediment/soil sample analytical data to NYSDEC soil cleanup guidelines (NYSDEC 1992) and the water data to NYSDEC standards for Class A surface water quality (6 NYCRR 703.5). These comparisons are summarized in Table 2 and shown on Figure A-1 (Appendix A). Two of thirteen organic compounds and three of seventeen metals detected in sediment (soil) samples exceeded the soil cleanup guidelines (Table A-1). None of the four organic compounds detected and three of fourteen metals detected exceeded surface water quality standards.

5.4 Groundwater Contamination

Groundwater samples were collected from one upgradient monitoring well and three downgradient well points that were installed using hand-driven well points. Well points were installed during the SI instead of monitoring wells because of safety concerns in maneuvering drilling equipment to the sample locations and in conducting drilling activities. Hence, hand driven well points were installed because of the relative ease of driving well points to monitor shallow groundwater. Since the monitoring well was installed with a sand filter around the well screen (whereas the well points were not), the sample from the well contained less suspended fines which probably accounts for the lower concentration of total metals reported in the monitoring well sample.

Three organic compounds, twenty metals, and cyanide were detected in groundwater. The level of groundwater contamination was evaluated by comparing unfiltered and filtered groundwater samples to NYSDEC standards (6 NYCRR 703.5 and 703.6) and USEPA drinking water standards established by 40 CFR 141 and 143. Results of the comparison are summarized in Table 3. One of the three organic compounds detected and eleven of twenty metals detected in the unfiltered groundwater were present at concentrations above groundwater standards (Table A-5). The concentrations of metals detected in the filtered groundwater samples were considerably less than concentrations reported in the unfiltered samples, reflecting the effect of sample turbidity on the total metals concentration. In the filtered samples, only four metals (iron, manganese, sodium, and thallium) exceeded groundwater standards at one well point location. In the groundwater sample from the upgradient monitoring well, only one metal (an unfiltered iron sample) exceeded groundwater standards. In addition, the concentrations of metals in the upgradient unfiltered sample were significantly lower than concentrations reported in the well point samples (see Figure A-5, Appendix A).

TABLE 2

CONSTRUCTION SPOILS LANDFILL (LF-024)
CHARACTER OF SURFACE WATER RUN-OFF AND LEACHATE SEEPS

SEDIMENT (SOIL) SAMPLES

Analyte	Guidance Value	Frequency of Detection Above Guidance Value	Detected Maximum Concentration
Acetone	200 *	1/4	300
Benzo(a)pyrene	61 *	2/4	130
Antimony (mg/kg)	12.6 (SB)	2/4	20.5
Manganese (mg/kg)	474 (SB)	1/4	542
Mercury (mg/kg)	0.1 *	1/4	0.18

WATER SAMPLES

Analyte	Water Quality Standard **	Frequency of Detection Above Guidance Value	Detected Maximum Concentration
Aluminum (Ig/l)	100	1/1	1,960
Iron (Ig/l)	300	2/2	15,100
Manganese (Ig/l)	300	1/1	1,310

Organic soil results reported in Ig/kg. Inorganic soil results reported in mg/kg. Aqueous inorganic results reported in Ig/l.

* - NYSDEC Soil Cleanup Objectives and Cleanup Levels, TAGM #4046, January 1994.

SB - Site background value. Based on base-wide background study (URS 1995b).

** - NYSDEC Surface Water and Groundwater Quality Standards, 6 NYCRR 703.5.

TABLE 3

CONSTRUCTION SPOILS LANDFILL (LF-024)
CHARACTER OF GROUNDWATER CONTAMINATION

		Unfiltered Samples		Filtered Samples	
Analyte	ARAR Value *	Frequency of Detection Above Gaidance Vale	Detected Maximum Concentration	Frequency of Detection Above Guidance Value	Detected Maximum Concentration
2-Methylphenol	1	1/4	2	--	--
Antimony	3	1/4	87.6	0/4	ND
Barium	1,000	1/4	1,790	0/4	195
Beryllium	3	1/4	10.3	0/4	ND
Chromium	50	3/4	338	0/4	ND
Iron	300	4/4	250.000	1/4	82.700
Lead	15 **	3/4	85.9	0/4	ND
Magnesium	35.000	3/4	65.600	0/4	33.700
Manganese	300	3/4	15.100	1/4	3.970
Sodium	20.000	1/4	31.300	1/4	28.900
Thallium	4	2/4	9.3	1/4	6.8
Zinc	300	3/4	2.770	0/4	96

All results reported in ıg/l.

* - Unless otherwise noted, ARARs are NYSDEC Ambient Water Quality Standards (6 NYCRR 703.5 and 703.6).

** - USEPA Drinking Water Standards 40 CFR 141.

6.0 SUMMARY OF SITE RISKS

A human health risk assessment was conducted to estimate current and future risks at the site if no Remedial Action was taken. Chemicals selected for use in evaluation of risks are indicated on Table 4. Compounds were chosen based on frequency of detection, chemical-specific toxicity information, and exceedance of background levels (for inorganics only).

6.1 Human Health Risk Assessment

Five steps are followed in assessing site-related human health risks: Hazard Identification - determines the contaminants of concern at the site based on 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., dermal contact with soil) by which humans potentially are exposed. Toxicity Assessment - determines adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Toxicity values used for analytes of concern in this study are provided in Appendix B. Risk Characterization - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. Uncertainty Analysis - qualifies the quantitative results of the risk assessment based upon the uncertainty associated with the assumptions made in the analysis. Generally, assumptions made in the assessment process are conservative, so that actual risk is unlikely to be greater than the estimated risk. For example, groundwater total metal results were used to assess risk associated with groundwater ingestion as opposed to the filtered metals data. However, groundwater used for drinking water would be better represented by filtered (no solids) data, hence risks are overestimated. Consequently, the HRA for LF-024 is not to be taken as a characterization of absolute risk, but rather, as an overestimation of the actual risk.

TABLE 4

CONSTRUCTION SPOILS LANDFILL (LF-024)
CHEMICALS OF POTENTIAL CONCERN
SUMMARY TABLE

CHEMICAL	TOXICITY	GROUNDWATER	SURFACE SOIL	SOIL
Methylene Chloride	C	X	X	X
Acetone			X	X
2-Butanone			X	X
Acenaphthylene			X	X
Anthracene			X	X
Benzoic Acid			X	
Benzo(a)anthracene	C		X	X
Benzo(a)pyrene	C		X	X
Benzo(b)fluoranthene	C		X	X
Benzo(k)fluoranthene	C		X	X
Benzo(g.h.i)perylene			X	X
bis(2-Ethylhexyl)phthalate	C	X	X	X
Butylbenzylphthalate	C		X	X
Chrysene	C		X	X
Diethylphthalate			X	X
Di-n-butylphthalate			X	X
Fluoranthene			X	X
Fluorene				X
Indeno(1,2,3-cd)pyrene	C		X	X
2-Methylnaphthaiene			X	X
2-Methylphenol	C	X		
Naphthalene			X	X
4-Nitroaniline			X	X
Phenanthrene			X	X
Pyrene			X	X
Aluminum			X	
Antimony			X	
Arsenic	C	X	X	X
Barium			X	X
Beryllium	C	X		
Chromium (III)			X	
Chromium (VI)	C	X		
Cobalt			X	
Cyanide			X	
Lead	C	X		
Manganese		X	X	X
Mercury		X		
Nickel			X	
Selenium			X	
Thallium		X		X
Vanadium		X		
Zinc		X		

Notes

X - Indicates chemical of potential concern
C - Chemical is classified as a carcinogen

Two human exposure scenarios were evaluated as part of the risk assessment at LF-024.

1) Current Site Conditions - This scenario assumes that the site will remain undeveloped and will be accessible to trespassers. Potentially exposed populations include teenage (ages 13 through 18) and adult (ages 18 and over) trespassers. Potential exposure pathways include dermal contact with and incidental ingestion of soil.

2) Future Site Conditions - This scenario assumes that the site will be remediated and developed for industrial use. Potentially exposed populations include construction workers during site development and industrial workers after site development. Potential exposure pathways include dermal contact with and incidental ingestion of soil, inhalation of fugitive dust, and ingestion of groundwater.

Current federal guidelines for acceptable exposures are expressed as an individual lifetime excess total cancer risk in the range of 10 -4 to 10 -6 and a maximum total hazard index (which reflects noncancer risks) equal to one. A hazard index (HI) greater than one indicates a potential for adverse health effects.

The results of the HRA are summarized in Table 5. For current site conditions, cancer risks and hazard indices for potentially exposed populations are below federal guidelines, and risks to human health posed by site contaminants are acceptable. For projected future site conditions, cancer risks fall near the upper end of the acceptable range specified by federal guidelines; however, hazard indices for both construction and maintenance workers (HI = 20 for the inhalation of fugitive dust) and industrial workers (HI = 10 for the ingestion of groundwater) are above federal guidelines. Therefore, there is a potential for adverse health effects. Inhalation of fugitive dust is the pathway of concern for construction workers, and ingestion of groundwater is the pathway of concern for industrial workers. Manganese is the primary constituent driving the unacceptable health risk for both soil and groundwater, with minor contribution from aluminum, antimony, barium, and vanadium in groundwater.

Groundwater at the site currently is not used as a source of drinking water and is unlikely to be used in the future given the extremely limited yield capacity of the shallow water-bearing zone. The assumptions concerning risks associated with groundwater ingestion are also conservative given that the analysis was performed using total metals data from turbid groundwater samples.

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6.2 Ecological Risk Assessment

An ecological risk assessment was not performed for LF-024 as part of the SI. Also, the ecological risks to potentially impacted terrestrial organisms exposed to contaminated fill and groundwater are expected to be negligible. Because of the limited area of the landfill (approximately 1 acre), effects on populations of small burrowing mammals (e.g., the meadow mouse) are expected to be minimal and likely to impact only animals with a home range restricted to the fill limits. Contaminants associated with groundwater also are unlikely to affect area ecology significantly, since exposure to groundwater is limited and the metals plume is confined to the area immediately downgradient of the landfill.

7.0 DEVELOPMENT OF REMEDIAL ALTERNATIVE

7.1 Selection of the Presumptive Remedy for Military Landfills

Based on information acquired as a result of past experience with the Superfund Program, the USEPA has developed the presumptive remedy approach to accelerate the remediation process. Presumptive remedies are preferred technologies for common categories of sites (e.g., landfills) that are based on historical patterns of remedy selection and on scientific and engineering evaluations of technology performance. The presumptive remedy approach is a tool for expediting of the remedial process developed by the Office of Federal Facilities Restoration and Reuse.

In keeping with this approach, a remedial investigation/feasibility study (RI/FS) was not prepared for LF-024. Instead, existing site data have been used to perform a risk assessment which provides the basis for

the development of a remedial approach that analyzes the various components of the presumptive remedy.

The presumptive remedy for CERCLA landfills meeting the criteria specified by the USEPA's guidance is source containment (USEPA 1996). The decision whether the containment presumptive remedy applies to a specific military landfill is subject to a-step-by-step analysis of site-specific conditions with respect to the USEPA guidance criteria. The decision framework for evaluating the applicability of the presumptive remedy is provided in Figure 5. Specific-site circumstances which dictate the appropriateness of this approach include the types of waste present, volume of landfill contents, land use plans, and hydrogeologic and safety considerations. Within the decision framework, the effects of land use are considered first followed by a determination of whether the landfill contents meet the definition of municipal-type waste. Municipal wastes are defined to include household and commercial and industrial solid waste, with less quantities of hazardous waste. Military-specific waste which may pose unique safety risks are afforded special consideration.

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Based on information presented in the SI report and summarized in Sections 2.0 and 3.0, and land use plans for the site, the containment presumptive remedy is an appropriate remedy for remediation of LF-024. Currently, PARC has no plans for the development of the property. In addition, restrictions on future use of the property will be enforced to prevent any adverse actions leading to the deterioration of the landfill cap, thereby ensuring source containment. Although the landfill is relatively small (approximately 1 acre in size), excavation and consolidation would not be preferred given the difficulties associated with the disposal of the waste. Excavation is impractical for several reasons. The excavation and incorporation of the waste within other onsite landfills is not an option since these landfills either have been closed or placement of the waste would impinge on existing wetlands. Excavation and removal of the waste to an offsite landfill also would not be beneficial from a cost perspective. Finally, the contents of the landfill meet the guidance definition for municipal-type waste, and includes a high proportion of nonhazardous C&D debris. The presence of military-type waste in LF-024 has not been documented, and was not observed during SI activities. Levels of contamination associated with the fill indicate a low level of risk commensurate with source containment.

7.2 Remedial Action Objectives

Remedial action objectives are medium-specific goals for protecting human health and the environment, and provide the basis for selection of an appropriate remedial action. Results of the HRA indicate that there is no risk of adverse health effects from direct contact (either incidental ingestion or skin contact) with contaminated soil/fill. However, there is a potential health risk to construction workers from the inhalation of fugitive dust during site remediation operations which include excavation and earth-moving activities. A comparison of analytical results from soil/fill samples with New York State guidelines indicates the onsite soil/fill contamination is minimal. Manganese is the primary constitute driving the fugitive dust hazard index as discussed in the risk assessment (Section 3.1). On this basis, the following remedial action objective has been established:

- Prevent construction workers from inhaling contaminated fugitive dust resulting from earth-moving activities during site remediation and post-closure maintenance operations.

The HRA also indicates that there is a potential health risk if a groundwater well is installed on, or immediately downgradient of the site and utilized for drinking water. At present, there are no drinking water wells on site. The potential risk is attributed primarily to the presence of manganese at elevated concentrations in groundwater, with antimony, barium, and vanadium contributing to a lesser degree to the hazard index. On this basis, the following remedial action objective has been established:

- Prevent human ingestion of contaminated groundwater on and immediately downgradient of the site.

In addition to the potential, chemically-related health-risks described above, the presence of exposed C&D debris which protrudes from the surface of the landfill poses a potential safety hazard. Consequently, the following remedial action objective has been established:

! Eliminate potential physical hazards to onsite workers and maintenance personnel.

7.3 Development of the Remedial Alternative

The containment presumptive remedy consists of five remedial response actions which are evaluated separately with respect to LF-024. The five component parts of the presumptive remedy include:

! Landfill cap

! Source area groundwater control to contain plume

! Leachate collection and treatment

! Landfill gas collection and treatment

! Institutional controls to supplement engineering controls

According to USEPA guidance, response actions for individual sites are required to include only those components that are necessary, based on site-specific conditions. An evaluation of each of the remedial components is provided below.

A landfill cap is a necessary component of the remedial action for LF-024. It is required in conjunction with the removal of exposed surface C&D debris which presents a physical safety hazard and is a remedial action objective for this site. The landfill cap will serve to separate further the fill and debris from surface exposure. The cap will incorporate erosion control measures to reduce the effects of rain and wind; and will provide a growth medium for the long-term maintenance of the landfill cover.

Groundwater contamination at the site is limited to the presence of metals which were detected in turbid groundwater samples. Groundwater control and leachate collection are unnecessary components of the remediation since the dissolved contaminants, which form the greatest concern to groundwater ingestion, are readily absorbed by sediments and immobile in groundwater. Therefore the metals contamination would have an insignificant impact on the nearby Salmon River. Preventing the ingestion of groundwater at the site (a major remedial action objective) will be addressed by institutional controls to prohibit the local use of groundwater. Landfill gas collection and treatment is an unnecessary component of the remediation, since air monitoring results indicate that there is no appreciable landfill gas emissions.

Institutional controls are a necessary component for remediation at LF-024 and are required to: (1) restrict groundwater use and limit site development, (2) provide for the continued protection and maintenance of the landfill cap, and (3) provide notice of potential health risks associated with remediation and development of the site.

Specific alternatives for the two remedial components considered appropriate for LF-024 (i.e., landfill cap and institutional controls), are discussed below.

Landfill Cap: Three potential options for the landfill cap include: 1) a double barrier (RCRA-based) cap; 2) a single barrier (NYSDEC Part 360-based) cap and 3) native soil cover (i.e., naturally occurring). Individual components of these caps are described below. Each option was evaluated with respect to effectiveness (i.e., the ability to meet the remedial action objectives and to protect human health and the environment), implementability (both administrative and technical), and cost.

All three landfill caps are expected to be effective. Any of the caps, if properly designed and maintained, would prevent direct contact by humans with onsite soil/fill, gradually diminish leachate generation and groundwater contamination, and reduce risks associated with physical hazards and the inhalation of fugitive dust.

The technical implementability (i.e., constructability) of the three caps is related to the components summarized below:

Double Barrier Cap includes a gas collection, clay layer, flexible membrane liner, sand drainage layer, filter fabric, soil layer for frost protection, topsoil, and vegetative cover.

Single Barrier Cap includes a gas collection, a low permeability layer (or flexible membrane liner), a soil layer for frost protection, topsoil, and vegetative cover.

Native Soil Cap includes a soil layer, topsoil, and vegetative cover.

Based on the components required, the double barrier cap and single barrier cap would be more difficult to construct, whereas the native soil cover would be comparatively easier to construct. Both barrier caps would be particularly difficult to construct on LF-024 because a portion of the surface is heavily forested. Complete clearing and grubbing of the site prior to cap construction is undesirable, since the significant vegetation protects the surface against erosion.

Cap costs depend largely on the number of components and total cap thickness. A native soil cover is the least costly landfill cap. An order of magnitude estimate for the construction of a 12-inch native soil cover is $59,000 for this 1-acre site. The construction cost for a single barrier cap (without a gas collection layer) is estimated to be over four times greater than the native soil cover. The construction cost of the double barrier cap is estimated to be significantly (approximately 20 to 40 percent) greater than the single barrier cap. Operations and maintenance (O&M) costs for the double barrier cap are expected to be the highest. O&M costs for a single barrier cap are expected to be lower than the double barrier, but significantly higher than for a native soil cover.

Institutional Controls: Appropriate institutional controls to be implemented for LF-024 include restrictions that limit site development and protect the integrity of the cap. In addition, institutional controls are necessary to address remedial action objectives including water use restrictions that prohibit the use of groundwater as a potable water source on and immediately downgradient of the site. These institutional controls will be implemented by PARC which is responsible for management of the property.

Implementation of these remedial measures will require continued groundwater monitoring, including five-year site reviews to evaluate the effectiveness of the remedial measures. These remedial measures and the rationale for their selection are supported by USEPA guidance.

8.0 COMPARATIVE ANALYSIS OF ALTERNATIVES SUMMARY

Nine criteria are utilized for the evaluation of an alternative as specified in the NCP and discussed in detail in the RI/FS guidance (USEPA 1988). These nine criteria are listed and described in Table 6. The evaluation of the recommended remedial alternative at LF-024 with respect to these nine criteria is presented below.

Overall Protection of Human Health and the Environment - The remedial alternative selected for LF-024 will reduce human health risk to acceptable levels. The construction of a landfill cap, in conjunction with the removal/realignment of protruding construction debris, will eliminate physical hazards while protecting onsite industrial workers from the possible inhalation of fugitive dust. In addition, the landfill cap effectively will reduce long-term leaching impacts on groundwater quality, reducing risks associated with groundwater ingestion.

The implementation of institutional controls (including deed and lease provisions to limit site development, protect the integrity of the cap, and prohibit groundwater use) would ensure continued protection. Notice of potential inhalation risks and, health and safety measures required during earth moving activities, will further protect site construction workers. Regular inspection of the cap will ensure that the cap remains effective in meeting the remedial objectives. The groundwater monitoning program will assist in evaluating the adequacy of controls to protect downgradient receptors.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) - In general, exceedances of groundwater ARARs (see Section 2.4.4) are minimal and are believed to be due to the high turbidity of the groundwater samples. Human health can be protected adequately by preventing groundwater use on and

immediately downgradient of the site until such time as groundwater quality is confirmed or leaching effects are sufficiently diminished. Construction of the cap with proper drainage control and continued monitoring will protect against a release of contaminants exceeding ARARs in near-surface soil and fill. It is anticipated that acceptable levels of metals will be obtained in groundwater within the first year of cap construction.

TABLE 6

CONSTRUCTION SPOILS LANDFILL (LF-024)
EVALUATION CRITERIA

Criteria No.	Description
1	Overall Protection of Human Health and the Environment - Protectiveness is the primary requirement of remedial action at hazardous waste sites. Evaluation of this criterion involves an assessment of how an alternative achieves protection over time and how site risks are reduced.
2	Compliance with ARARs - Compliance with ARARs includes compliance with chemical-specific, action-specific, and location-specific requirements.
3	Long-term Effectiveness and Permanence - This criterion requires an assessment of: (a) the magnitude of residual risk after remediation; (b) the adequacy of controls to meet required performance specifications, both initially and into the future, and (c) the reliability of controls from an operational standpoint.
4	Reduction of Toxicity, Mobility, or Volume TMV - This criterion addresses the statutory preference, expressed in the Superfund Amendments and Reauthorization Act (SARA), for remedies that employ treatment as a principal element. It includes an assessment of the magnitude, significance, and irreversibility of treatment, as well as an evaluation of the type and quantity of residuals remaining after treatment.
5	Short-term Effectiveness - This criterion includes the short-term impacts of an alternative (i.e., during implementation) upon the surrounding community, onsite workers, and the environment. It also addresses the time required tor the alternative to satisfy remedial action objectives.
6	Implementability - Implementability includes many of the practical aspects associated with implementation of the remedial alternative, such as the ability to construct and operate remedial technologies, the reliability of the technologies, ease of undertaking additional remedial actions if necessary, ability to monitor the alternative's effectiveness, availability of required materials and services, permit requirements, and need to coordinate with other agencies.
7	Cost - This quantitative evaluation criterion includes the capital and operation/maintenance costs associated with each alternative, as well as its total present worth.
8	State Acceptance - This criterion evaluates the technical and administrative issues and concerns the State may have regarding an alternative.
9	Community Acceptance - This criterion evaluates the issues and concerns the public may have regarding an alternative.

NYSDEC regulations, namely 6NYCRR Part 360 Solid Waste Management Facilities (effective January 14, 1995), are the most important action-specific ARARs for LF-024. They regulate closure and final design for landfills. The recommended remedial alternative is compliant with these regulations and complies with all action-and location-specific ARARs.

Long-Term Effectiveness and Performance - The remedial action objectives established for LF-024 will be addressed by the remedy. Health risk associated with the future inhalation of fugitive dust and physical hazards related to protruding debris will be eliminated by surface contouring and capping. Risks associated with the ingestion of groundwater will be controlled by implementing institutional controls on groundwater use. In addition, the gradual reduction in groundwater contamination will be achieved by diminished landfill leaching over time and ultimately, by the natural attenuation of the groundwater contaminants.

The site monitoring program and five-year site reviews represent additional components that will be used to evaluate the effectiveness of remedial measures and, consequently, to protect human health and the environment.

Reduction of Toxicity, Mobility, and Volume (TMV) - A treatment technology to reduce TMV is not included in the alternative. Groundwater contamination at the site is limited to metals which are relatively immobile in groundwater due to the high affinity of dissolved metals for solid surfaces. Consequently the metals contamination would have an insignificant impact on the Salmon River. Health risks associated with the ingestion of metals (primarily manganese) will be controlled by limiting infiltration and landfill leaching, and by restrictions on groundwater use on and immediately downgradient of the landfill.

Short-Term Effectiveness - Construction of the alternative will require some earth-work for site grading. During the construction period including intrusive activities during site development, short-term impacts to workers and the environment is possible via inhalation of fugitive dust. However, these impacts can be mitigated easily by instituting conventional health and safety measures. It is estimated that construction/implementation of remedial measures will require less than one year. The remedial action objectives will be met upon completion of construction and the incorporation of deed restrictions on the use of groundwater.

Implementability - The technologies proposed for the alternative are conventional and are expected to be constructed with little, if any, difficulty. Cap construction and grading in wooded areas is expected to present the greatest difficultly during construction. Materials required for construction (i.e., topsoil and common borrow) are available.

Cost - The capital cost includes the cost of cap construction and implementation of deed restrictions. The capital cost estimate for this alternative is S59,000. O&M costs include annual monitoring, and cap inspection and repair. The estimated annual O&M cost is $6,000. The present worth cost of the annual 0&M cost, based on a 30-year period at an interest rate of 6 percent, is $77,000 (Table 7).

State Acceptance - The NYSDEC has provided input during the preparation of the SI and HRA and concurs with the remedial alternative.

Community Acceptance - Community acceptance of the recommended alternative has been obtained. Public comments solicited from the community during the public comment period and responses to these comments are provided in Appendices D and E.

In accordance with the NCP, the recommended alternative is protective of human health and the environment will comply with ARARs and is cost effective. The recommended alternative is not a permanent solution since it does not include treatment. However, it follows the NCP and USEPA guidance which specifies containment as the presumptive remedy for landfills.

TABLE 7

COST ESTIMATE SUMMARY FOR THE SELECTED REMEDY

		UNIT	QUANTITY	UNIT COST	TOTAL COST
CAPITAL COSTS:					
1.	VEGETATIVE COVER	ACRE	1.0	$ 2,300.00	$ 2,300.00
2.	TOP SOIL INCLUDING SPREADING	ACRE	1.0	18,000.00	18,000.00
3.	SOIL BORROW LAYER INCLUDING COMPACTION	CY	890	21.50	19,135.00
4.	REGRADING OF SOIL	CY	890	22.50	20,025.00
					$59,460.00
OPERATION AND MAINTENANCE COST:					
1	LANDFILL CAP				
	INSPECTION OF CAP	HR	10	$ 50.00	$ 500.00
	MAINTENANCE (CUT GRASS)	NO/YR	7	75.00	525.00
	REPAIR (REPLACEMENT OF TOPSOIL AND RESEEDING)	NO	2	500.00	1,000.00
	Total Yearly Cost For Cap Inspection, Maintenance, And Repair				$2,025.00
2	GROUNDWATER MONITORING				
	SAMPLING - QUARTERLY				
	4 GROUNDWATER ' 2 QA QC SAMPLES	HR	32	$ 50.00	$1,600.00
	2 WORKERS x 15 DAYS x 8 HRS DAY				
	ANALYTICAL TESTING OF SAMPLES (Metals Only)	NO	24	$ 65.00	$1,560.00
	6 SAMPLES 4 TIMES A YEAR				
	AUDITING OF SAMPLING RESULTS AND	HR	16	$ 60.00	$ 960.00
	PREPARATION OF A REPORT - TOTAL OF				
	4 HRS ROUND x 4 EVENTS YEAR				
	Total Cost of Groundwater Monitoring Per Year on a Quarterly Basis for the First 5 years				$4,120.00
	Total Cost of Groundwater Monitoring on an Annual Basis for Year 6 to Year 30				$1,030.00
	Present worth of O&M for 30 years @ 6% interest				$77,125.00
	TOTAL PRESENT WORTH OF ALTERNATIVE				$136,585.00

9.0 THE SELECTED REMEDY

Plattsburgh AFB has selected for remediation of LF-024 the presumptive remedy designated by the USEPA for military landfills consisting of containment with a native soil cap and institutional controls. USEPA approval and NYSDEC concurrence are expected. The selected remedy is protective of human health and the environment, and is cost effective. The alternative includes the following, elements:

Native Soil Cap - A 12-inch native soil cap consisting of naturally occurring soils with a 9-inch layer of inorganic soil, a 3-inch topsoil layer, and a vegetative cover, will be established at LF-024 as a supplement to the existing soil cap to ensure fugitive dust control. Soil for capping will be chemically analyzed before it is utilized at LF-024. Large trees (i.e., those over 6 inches in diameter) may be left in place during soil cover establishment provided the trees do not interfere with the attainment of the remedial goal or the maintenance of positive surface water run-off and erosion control. Soil layers will be compacted to reduce permeability and the site cap will be constructed to control surface water run-off and control erosion. The soil cover will be inspected on an annual basis with repairs/replacement of the cap as required.

Institutional Controls - Restrictions will be imposed to limit development of any structure on the landfill site which would adversely effect human health and safety. Deed and lease agreements will include appropriate restrictions to prevent any adverse action leading to the deterioration of the landfill cap to include prohibition from installing any wells for drinking water or any other purpose which could result in the use of the underlying groundwater and the prohibition against any excavation of the landfill cap without prior approval of New York State Department of Environmental Conservation. In addition, notice is to be provided in deed and lease agreements to warn of potential short-term health risks from inhalation of dust during site construction activities. Area groundwater use will be restricted as shown on Figure 3 and includes the area encompassing the landfill and groundwater pathway between the landfill and the Salmon River.

Monitoring - Long-term groundwater monitoring will be performed and analyzed to evaluate groundwater quality during the post-closure period (30 years). Groundwater samples will be collected using a low-flow pump from three shallow downgradient monitoring wells, which will be installed near the respective locations of the SI well points (See Figure A-5 - Appendix A). An additional well will be located 100 feet farther downgradient, between the landfill and the Salmon River to serve as a sentry well to monitor plume containment. A groundwater sample also will be collected from the existing upgradient monitoring well to provide a background comparison. Samples will be collected following well purging and analyzed for total metals (i.e., target analyte list inorganics). Sampling will be conducted semi-annually for the first five-years after the cap is constructed, and annually thereafter. Monitoring results will be reviewed by the USAF, USEPA, and NYSDEC. Detailed instructions for the conduct of the groundwater monitoring program will be included in the site's Operation and Maintenance Plan and implemented as part of the Record of Decision (ROD).

Five-Year Site Review - Every five years, data generated by the monitoring program will be reviewed to evaluate the effectiveness of remedial measures. Modifications to the extent of site monitoring efforts will be recommended at that time.

10.0 STATUTORY DETERMINATIONS

The remedial action selected for implementation at LF-024 is consistent with CERCLA and, to the extent practicable the NCP. The selected remedy is protective of human health and the environment, attains ARARs, and is cost effective. The selected remedy uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable for this site. However, it does not satisfy the statutory preference for treatment which permanently and significantly reduces the mobility, toxicity, or volume of hazardous substances as a principal element.

10.1 The Selected Remedy is Protective of Human Health and the Environment

The remedy at LF-024 will permanently reduce the potential future risk posed to human health and the environment through engineering controls (i.e., construction of a native soil cap), as well as institutional

controls (i.e., restrictions on the future development of the site and the use of groundwater as a potable supply source). The construction of the cap, as well as its inspection every five years and any required repair, will effectively eliminate the risks posed by the inhalation of fugitive dust and physical hazards associated with protruding construction debris.

The site cap will be constructed so that soil layers are compacted to reduce permeability and to control surface water runoff and erosion. These features will reduce offsite migration of contaminants by surface runoff and groundwater. Finally, implementation of the selected remedy will not pose unacceptable short-term risks that cannot be mitigated easily by instituting conventional health and safety measures. In addition, no adverse environmental impacts are expected from implementation of the remedy.

10.2 The Selected Remedy Attains ARARs

The remedy will comply with all applicable or relevant and appropriate chemical-, action-, and location-specific requirements (ARARs). Compliance with the chemical-specific ARARs will be achieved gradually through the process of natural degradation and attenuation. Federal and state ARARs are presented below.

Chemical-specific

! RCRA Hazardous Waste Toxicity Characteristic Limit, 40 CFR 261 - Establishes standards for soil.

! 6 NYCRR 700-705 Water Quality Regulations - Establishes standards for groundwater.

! USEPA Safe Drinking Water Act, National Primary and Secondary Drinking Water Regulations (40 CFR Parts 141 and 143) - Establishes standards for potable sources.

Action-specific

! NYSDEC Solid Waste Management Facility Rules 6 NYCRR Part 360 Effective January 14, 1995 - Establishes criteria for solid waste landfills and specifies closure and post-closure procedures

! NYSDEC Division of Air Resources Regulation (6NYCRR Parts 200-202, 257) - Establishes regulations applicable to particulate matter (e.g., fugitive dusts) entrained in air during clearing, grading, and cover system construction activities.

! Clean Air Act (40 CFR Part 50) - Establishes regulations applicable to particulate matter (e.g., fugitive dusts) entrained in air during clearing, grading, and cover system construction activities.

! Occupational Safety and Health Administration Regulations (29 CFR Parts 1904, 1910, and 1916) - Establishes regulations applicable to all work conducted on site.

Location specific

! National Environmental Policy Act of 1969 (NEPA) (40 CFR Part 1501) - The Department of the Air Force revised their protocols to be in compliance with NEPA. The revision provides policy and guidance for consideration of environmental matters in the Air Force decision-making process.

- Section 404 of the Clean Water Act and 40 CFR 230 - Protects waters of the United States, including aquatic and wetland habitats.

- New York State Use and Protection of Waters (6 NYCRR 608)- Protects streams including Class A, B, and C(T) from disturbances or adverse impacts through a permitting process.

- New York State Water Quality Classifications (6 NYCRR 701-703) - Classifies and protects groundwater, streams, and other water bodies.

10.3 Other Criteria, Advisories, or Guidance to be Considered for this Remedial Action

NYSDEC soil TBCs (TAGM #4046, 1994) will not be met since treatment is not included in the alternative. However, the NYSDEC concurred with the recommended alternative since TBCs are guidance rather than promulgated standards and the remedy adequately protects human health and the environment. In addition, surface water and groundwater results were compared with NYSDEC ambient water quality guidance values (TOGS 1.1.1, 1993). Overall, contaminant levels in groundwater are considered to be minimal; therefore, human health can be protected by prohibiting its use on, and immediately downgradient of the site. Construction of a cap with proper drainage controls and continued monitoring will protect surface water and sediment quality.

10.4 Cost-Effectiveness

The selected remedy is cost-effective, in that, it provides an effective remedy at a significantly lower cost than the other capping alternatives evaluated. In selecting this remedy, the overall effectiveness of each capping alternative was evaluated by assessing three relevant criteria: ability to protect human health and the environment, implementability, and cost. Including the cap construction and implementation of deed restriction, the capital cost is estimated to be $59,000. O&M costs include groundwater monitoring, and cap inspection and repair. The estimated annual O&M cost is $6,000. The present worth cost of the annual O&M cost, based on a 30-year period at an interest rate of 6 percent, is $77,000.

10.5 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

The selected remedy uses permanent solutions and alternative treatment technologies to the extent practicable for this site. The remedy will eliminate the risks associated with inhalation of fugitive dust and groundwater. Monitoring and five-year site reviews will be used to measure its long-term effectiveness in protecting human health and the environment. However, the remedy will not reduce the toxicity, mobility, and volume of contaminated site media. Regular inspection of the cap will ensure that the cap remains effective in meeting the remedial objective.

10.6 The Selected Remedy Does Not Safisfy the Preference for Treatment Which Permanently and Significantly Reduces the Toxicity, Mobility, or Volume of the Hazardous Substances as a Principal Element

Because treatment of the principal threats at the site was found to be impracticable, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. Treatment technologies were considered during the identification, development, and initial screening of alternatives, but were considered to be infeasible for the LF-024 landfill site. The fact that there are no definable onsite hot spots that represent the major sources of contamination preclude a remedy in which contaminants could be excavated and treated effectively.

11.0 DOCUMENTATION OF NO SIGNIFICANT CHANGES

Plattsburgh AFB presented a Proposed Plan for the preferred alternative for remediation of LF-024 in November 1996. The preferred alternative includes:

- Clearing the site
- Establishing a continuous soil cover
- Managing surface water runoff to minimize erosion of the cover and minimize maintenance requirements
- Establishing vegetation to minimize erosion of the final cover and enhance evapotranspiration
- Placing institutional controls in property deed an lease agreements to prevent adverse actions leading to deterioration of the cap and prohibitions on local use of groundwater.
- Developing a post-closure plan development to monitor, maintain, and inspect the site
- Monitor groundwater
- Conducting five-year reviews

The chosen remedial action does not differ from the preferred alternative presented in the Proposed Plan.

12.0 STATE ROLE

The NYSDEC, on behalf of the State of New York, has reviewed the various alternatives and has indicated its support for the selected remedy. It also has reviewed the Sl and Proposed Plan to determine if the selected remedy complies with applicable or relevant and appropriate New York State environmental laws and regulations. The NYSDEC concurs with the selected remedy for the LF-024. A copy of the declaration of concurrence is attached as Appendix C.

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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.

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 environmental 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.

Carcinogenic: Exposure to a particular level of a potential carcinogen 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.

C&D Debris: Building waste resulting from construction and demolition activities.

Ecological Receptors: Fauna or flora in a given area that could be affected by contaminants in surface soils, surface water, and/or sediment.

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.

HDPE: High Density Polyethene, plastic material often used to cover municipal and hazardous waste landfills.

Inorganic Compounds: A class of naturally occurring compounds that includes metals, cyanide, nitrates, sulfates, chlorides, carbonate, bicarbonate, and other oxide complexes.

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 clean up hazardous waste disposal and spill sites at Department of Defense facilities nation-wide.

Landfill Cap: A cover system for the landfill.

Leachate: Solution produced by percolating liquid in contact with contaminated matter.

NCP National Oil and Hazardous Substance Contingency Plan. A federal law governing hazardous substances (40 CFR Part 300. 1990).

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.

Noncarcinogenic: Exposure to a particular level of a potential noncarcinogen may produce adverse health effects.

Organic Compounds: Any chemical compounds built on the carbon atom, (i.e., methane, propane, etc.)

PAHs: Polynuclear Aromatic Hydrocarbons, often associated with combustion process and distillation tars.

PCBs: Polychlorinated Biphenyls, formerly used as a lubricant and transformer coolant.

ppb: Parts per billion.

ppm: Parts per million.

RCRA: Resource Conservation and Recovery Act.

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: A long-term 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.

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

Remedial Investigation (RI): The Remedial Investigation determines the nature, extent and composition of contamination at a hazardous waste site, and directs the types of remedial options that are developed in the Feasibility Study.

SACM: Superfund Accelerated Cleanup Model.

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

Sediments: Soil material found in water.

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

Source: Area at a hazardous waste site from which contamination originates.

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 he located or are unwilling or unable to perform the work or (2) takes legal action to force parties responsible for site contamination to clean up the site or pay back the federal government for the cost of the remediation. Federal facilities are not eligible for Superfund monies.

TBC: Non-promulgated standards "To Be Considered" for consideration as ARARs.

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

APPENDIX A

CHEMICALS DETECTED
IN ENVIRONMENTAL MEDIA
AT LF-024

APPENDIX A

CHEMICALS DETECTED IN ENVIRONMENTAL MEDIA AT LF-024

TABLE A-1

CONSTRUCTION SPOILS LANDFILL(LF-024) - SITE INVESTIGATION
SUMMARY OF ANALYTES DETECTED IN THE SEDIMENT (SOIL) SAMPLES

ANALYTE	TBC Values*	FREQUENCY OF DETECTION	DETECTED MINIMUM CONCENTRATION	LEVEL IV DETECTED MAXIMUM CONCENTRATION
Methylene Chloride	100	2 / 4	7	10
Acetone	200	1 / 4	300	300
2-Butanone	300	2 / 4	22	98
Diethylphthalate	7,100	1 / 4	15	15
Phenanthrene	50,000	1 / 4	10	10
Di-n-butylphthalate	8,100	4 / 4	39	5300
Fluoranthene	50,000	2 / 4	10	13
Pyrene	50,000	2 / 4	6	6
Butylbenzylphthalate	50,000	2 / 4	13	15
bis(2-Ethylhexyl)phthalate	50,000	2 / 4	32	43
Benzo(a)pyrene	61	2 / 4	67	130
Naphthalene	13,000	1 / 4	7	7
2-Methylnaphthalene	36,400	1 / 4	2	2

All results reported in Ig/kg

* - Unless otherwise noted, To Be Considered (TBC) values are NYSDEC Soil Cleanup Objectives and Cleanup Levels, TAGM HWR-94-4046, January 1994.

Note:

Due to limited areal extent and intermittent subaqueous nature, these samples were used in the HRA to evaluate risks associated with soil

<IMG SRC 97011B7>
<IMG SRC 97011B8>
<IMG SRC 97011B9>
<IMG SRC 97011C>
<IMG SRC 97011C1>
<IMG SRC 97011C2>
<IMG SRC 97011C3>

All results reported in pgfkg
Unless othermse noted, To Be Considered (TOC) values are NYSDEC Soil Cleanup Objectives and Cleanup Levels, TAGM HWR-94-4046, Januwy 1994.
Note~
Due to limited areal extent and intermittent subaqueous nature. itiese sarriples were used in the HRA to evaluate risks associated with soil

LEVEL IV

ANALYTE	TRC	FREQUENCY OF DETECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	DETECTED Values*
-Methylene Chloride		1100	2 / 4	7	10
Acetone	200	1 / 4	300	300	
2 Butanone	300	2 / 4	22	98	
Dieth)4phthalate		7.100	1 1 4	15	15
PtienarAhiene		50.000	1 / 4	10	10
Di-n-buyphthatate		8100	4 1 4	39	5300
Fluoranthene	Wow	2 1 4	10	13	
Pyrem	50.000	2 / 4	6	6	
ButybenzylphthaWe		50,000	2 / 4	13	15
bis(2-EIhyIheq)pWhaWe		50.000	2 / 4	32	43
Benzo(a)pyiene		61	2 / 4	67	130
NapNhalene	'13,000	1 1 4	7	7	
2 Methy1naphthalene		36.400	1 1 4	2	2

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TABLE A-1 (cont'd)

CONSTRUCTION SPOILS LANDFILL(LF-024) - SITE INVESTIGATION
SUMMARY OF ANALYTES DETECTED IN THE SEDIMENT (SOIL) SAMPLES

ANAI.YTE	TBC	LEVEL IV DETECTED FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	Values'
Aluminurv!		8,510 SO	4 / 4	2450	3490
Antimony	126 (SO)		2 1 4	153	205
Atsenic	7,5	1 1 4	35	3,5	
Barium	300		4 1 4	251	321
H-Aum	074 (SO)		1 1 4	07	07
Calcium	30,200 (SB)		4 / 4	2390	3220
Chfornium		19,5 (SB)	4 1 4	39	64
Cobaft	30	4 1 4	16	52	
COPIM	44. 11 (SB)		3 1 4	1.4	5.8
If on	36	4 1 4	6760	15600	
Lead	79.4 (SB)		4 / 4	4.6	115
.!~!~soum		3,340 (SB)	4 / 4	679	low
.Mainqain~		474 (SB)	4 / 4	189	542
Mercury	01	1 / 4	0.18	0.18	

Nickel 13 1 / 4 85 85
Pollassium 929 (SB) 4 / 4 363 588
Vanadium 150 4 / 4 105 124
Zinc 634 (SB) 4 / 4 16.1 39,11

AD results reported in mg/kg,

Unless otherwise noted. To Be Considered (TBC) values are NYSDEC Sod Cleanup Objectives and Cleanup Levels.
TAGM HWR-94-4046, January 1994
SB - Site background values for metals were used when less stringent than the regulatory value Site Background was
based on a basewide background study (URS 1995)
Note
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in the HRA to evaluate risks associated with sod

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LF024 SITE INVESTIGATION
CHEMICAl S OF TECTED IN SURF ACF
WATER ANID SEDIMENT SAMPLF,
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l1w.4 A-, -
TABLE A-2

CONSTRUCTION SPOILS LANDFILL(LF-024) - SITE INVESTIGATION
SUMMARY OF ANALYTES DETECTED IN NEAR SURFACE SOIL

ANAIYIl	TBC	I.FVIEL III		
Values'	I RFQV[NCY DF IFCIF D ()l 11-("TED			
	Of MINIMUM MAXIMUM			
	OETFCTION CONCIENTRATION CONCIFNIRATION			
~c ~C-Vnpo inds:				
Acelor*	200	2 / 3	2	6
3d				
bis(2-EIhyIhexyI)phIhaIate	50.000	3 / 3	21	42
Inorganic CT~n				
linds:				
Aluminum	0.510 (SB)	3 / 3	4715	6752
Barium	300	3 / 3	41	120
Calcium	30,200 (SB)	3 / 3	1948	2467
Chromium	195 (SB	3 / 3	79	103
Iron	36,200 (SO)	3 / 3	13200	15414
Magnesium	3.340 (SB	3 / 3	1141	1853
Manganese	474 (SB	3 / 3	307	2481
Mercury	0 1	1 / 1	001	0 01
Nickel	13	1 1 3	28 "	28
Potassium	929 tSB)	I / 3	1160 a	1160
Vatiadium	150	3 / 3	143	242
Zinc.	63.4 (SB)	3 / 3	8 0	137

All results reported in pgtkg for organic analyles and in mg/kg for in(irganic analyles
ND - Not Detected
SB - Soil backgti-itind value Based on basewide background study (URS 1995)
Notes
Unless otherwise noted, To Be Considered (TBG) values are NYSDIE C Soil Cleanup Objectives and Cleanup Levels, TAGM
HWR-94 -404ri. January 1994 Site Background (SB) values for metals were used when less %tringent than the regulatory value
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LF024 SITE INVESTIGATION
CHEMICALS DETECTED
IN NEAR SURFACE SOIL SAMPLES

FIGURE A-2
TABLE A-3

CONSTRUCTION SPOILS LANDFILL(LF-024) - SITE INVESTIGATION
SUMMARY OF ANALYTES DETECTED IN FILL SAMPLES TAKEN DURING TEST TRENCHING

ANALYTIF Value,'	TBC FREQUIF NCY DFTFCTl D ()F MINIMUM DETEC (ION	LEVI L III MAXIMUM CONCUNfRATION	LEW t IV MINIMUM CONCfNTRA110H	I MAXIMUM	FREQUENCY nFTFCTfD DETECTED DETECTION	CONCENTRATION	CONCENTRATION
AcWone	a		0 / 2		NO		
Benzoic Acid 2,7W	3 / 6	16	30	0 1 1	NO	ND	
2 Methyinaphthalene	36.400		0 / 6	NO	NO	I / I	I
Acenaphthylene	91,000		1 / 6	17	17	0 / I	NO
I luorene 50.000		1 1 6	26	26	0 / I	NO	NO
4-Nitroanilirm	I / 6		57	57	0 1 11		NO
Phenardhrene 50.000		2 1 6	22	55	1 2	2	2
Anthracene 50,000		1 / 6	28	28	0 1	NO	NO
Di-n-butylphthalate e	6.1100		1 1 6	18	18	0 1	ND
Fluoiarilhene Idle	50.000		2 / 6	34	100	0 1 11	ND
Pyrene 50,000		2 / 6	41	97	1 2	2	2
Benzo(a)anithracene ,e	224	2 / 6	20	58	0 1	NO	NO
Chrysene 400	2 Ji 6		31	80	0 1	NO	ND
bis~2-Ethy")plhllhalate		50.000	4 1 6	96	1150	0 1 2	ND
Benzo(b)ftuararghene		1,100	2 / 6	29	76	0 1 1	NO
Benzo(k)M"arf1heq*	1,100	2 / 6	22	78	0 / I	NO	NO

Benzo(a)pyrene	61	2 / 6	24	74	0 / I	NO	NO	
Indeno(1.2,3-cd 'ene	3.200	2 1 6	19	46	0 / I	NO	ND	
Berizo(q,hJ)pey~!ne	50.000	2 / 6	27'	50	0 1 1	NO	NO	

All resufts reported in pglkg
NO - Not Detected
Notes

Unless otherwise noted, To Be Considpied (TBC) values are NYSDFC Soil Cleanup Obleclives and Cleanup L evels, TAGM

liWR-94-4046, January 1994 The listed TRC value is the most stringent regulatory value
Exceeds TIRCvalup-,

TABLE A-3 (cont'd)
CONSTRUCTION SPOILS LANDFILL(LF-024) - SITE INVESTIGATION
SUMMARY OF ANALYTES DETECTED IN FILL SAMPLES TAKEN DURING TEST TRENCHING

ANALY-TE	TBC Value,-;	LEVEL III FREQUENCY D[TECIFO OF TFC1F0			[FVFl IV or		FREQUENCY DFT[CILD OF T[CIFD	
		OF DE TECTION	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	MINIMUM	MAXIMUM	DETECTION	CONCENTRATION CONCENTRATION
Aluminum	-	I~6	2847	6303	2 / 2 --		---2--530	
~0 65 SB 8510 (SB)								
Anlimony 1	126 S FBI		0 6	ND	NO	1 1 2	154	154
Ai-enic 5	75	0 6	ND	ND	1 / 2	3	3	
Barium 300	A3	2 6	43	210 2 1 2	I	114	344	
Calcium 30200 (SO)	0 ;~ (Sol		6 6	1344	10213	2 1 2	1180	6620
Chromium A	195 (SB)		6 6	36	99	2 1 2	43	1
Cobalt	30	0 1 6	ND	NO	2 / 2	19	52	
C2Eper	44 1 SO		3 6	36	6	0 2	ND	ND
Iron	36700 (SB)	6 6	4670	27295	2 2	6730	21500	
Lead	794 (SBI	1 6	33	33	2 2	23	28	
Magnesium	3340 I.SB--)		5 6	752	5459	2 2	667	3870 a
Manganese	474 (SB)		5 6	50	5455	2 2	651	201
Mercury	01	0 6	ND	ND	1 2	017 "	017 a	
Nickel	13	2 6	6 6	8 6	1 2	017	0 17	
Potassium	929 (SB)		3 6	691	1043	1 2	5 7	5 7
Selenium	2	0 1 6	ND	ND	2 1 2	299 a	655 a	
Thahium	ND (SB)		0 / 6	ND	ND	1 2	104 -	104 0
Vanadium	150	5 / 6	68	18,11	0 2	NO	ND	
Zinc	634 (SB)	6 / 6	57	22	2 2	104	14	
Solids, Total (%WtW)			NA	NA	NA	2 2	73	167

All results reported in mg1kg
ND - Not Detected
NA - Not Analyzed
SB - Soil baCkgrourbd value
Notes

Unless otherwise noted, T6 Be Considered (TBC) values are NYSDEC Soil Cleanup Objectives and Cleanup Levels. TAGM

IWIR-94-4046, January 1994 Site Background (SB) values for metals were used when less stringent than the regulatory value

Site Background was based on a basewide background study (URS 1995)

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MW24 003 TPO Itsy PIT TRENCH

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LF024 SITE INVESTIGATION
CHEMICALS DETECTED
IN FILL SAMPLES
LM FWAME A-3

TABLE A-4
CONSTRUCTION SPOILS LANDFILL(LF-024) - SITE INVESTIGATION SUMMARY OF ANALYTES DETECTED IN SUBSURFACE SOIL SAMPLES FROM BORINGS

		LEVEL III			LEVEL IV		
ANALYTE	TBC Values *	FREQUENCY OF DETECTION	DETECTED MINIMUM CONCENTRATION	DETECTED MAXIMUM CONCENTRATION	FREQUENCY OF DETECTION	DETECTED MINIMUM CONCENTRATION	DETECTED MAXIMUM CONCENTRATION
Organic Compounds:							
Acetone	200	1 / 2	5	5	1 / 1	11	11
Di-n butylphthalate	8,100	2 / 2	9	14	0 / 1	ND	ND
Fluoranthene	50,000	1 / 2	16	16	0 / 1	ND	ND
Pyrene	50,000	1 / 2	16	16	0 / 1	ND	ND
bis(2 Ethylhexyl)phthalate	50,000	2 / 2	110	140	0 / 1	ND	ND
Inorganics (metals):							
Aluminum	8,510 (SB)	2 / 2	2723	7151	1 / 1	3090	3090
Barium	300	0 / 2	ND	ND	1 / 1	16.8	16.8
Calcium	30,200 (SB)	1 / 2	1228	1228	1 / 1	955	955
Chromium	19.5 (SB)	2 / 2	3.2	9.4	1 / 1	5.2	5.2
Cobalt	30.0	ND	ND	ND	1 / 1	1.6	1.6
Iron	36,700 (SB)	2 / 2	3813	10250	1 / 1	6540	6540
Lead	79.4 (SB)	ND	ND	ND	1 / 1	2.6	2.6
Magnesium	3,340 (SB)	ND	ND	ND	1 / 1	732	732
Manganese	474 (SB)	2 / 2	52	91	1 / 1	62.4	62.4
Nickel	13	ND	ND	ND	1 / 1	5.2	5.2
Potassium	929 (SB)	ND	ND	ND	1 / 1	424	424
Sodium	520 (SB)	ND	ND	ND	1 / 1	106	106
Vanadium	150	1 / 2	16.8	16.8	1 / 1	9.7	9.7
Zinc	63.4 (SB)	2 / 2	8.1	11.9	1 / 1	9.9	9.9

All organic results reported in ıg/kg All inorganic results reported in mg/kg

ND - Not Detected
SB - Soil background value Based on basewide background study (URS 1995)
Notes
* - Unless otherwise noted, To Be Considered (TBC) values are NYSDEC Soil Cleanup Objectives and Cleanup Levels. TAGM HWR-94 4046, January 1994. Site Background (SB) values for metals were used when less stringent than the regulatory value
Site Background was based on a basewide background study (URS 1995)
The listed TBC value for organics is the most stringent regulatory value

<IMG SRC 97011C4>
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APPENDIX B

HUMAN HEALTH RISK - TOXICITY VALUES

APPENDIX C

DECLARATION OF CONCURRENCE

APPENDIX D

PUBLIC MEETING TRANSCRIPTS

PUBLIC HEARING FOR REMEDIAL ACTIONS AT FORMER
LANDFILL LF-021 AND FORMER LANDFILL LF-024
JANUARY 16, 1997
OLD COURTHOUSE, 133 MARGARET STREET, 2ND FLOOR
PLATTSBURGH, NEW YORK.

This proceeding was stenographically reported by Susan Bretschneider, Certified Shorthand Reporter, and commenced at 7:00 p.m. at the above-mentioned location.

MR. SOREL: Okay, I guess we'll go ahead and get started. This is the public meeting for Landfill 21 and Landfill 24. I'd like to begin the public meeting for the remedial actions at the Former Landfill LF-21 and LF-24. For those who don't know me, I'm Mike Sorel, the BRAC Environmental Coordinator working for the Air Force Base Conversion Agency at Plattsburgh. I will be presiding over the meeting, the main purpose of which is to allow the public the opportunity to comment on the Air Force's action for this site.

Assisting me tonight in this presentation are the following people: Steve Gagnier, the project manager for these actions, and Brady Baker, the project engineer, both with the Air Force Base Conversion Agency, and Bruce Przybyl, the project manager with URs Greiner. These individuals are here to provide answers

to technical questions you might have about the alternatives available to the Air Force for cleaning up the site.

Tonight's agenda will consist of a description of the remedial action and an explanation of how it will improve the environment. After that, we will move to the most important part of this meeting, the part where you provide your comments on the remedial action.

First, however, I would like to take care of several administrative details.

As you can see, everything being said here tonight is being taken down word for word by a professional court reporter. The transcript will become part of the administrative record for the sites.

We would like everyone to complete the sign-in sheet at the door. We will use the sheet to review our mailing list for the site.

At the conclusion of the presentation, we will open the floor up to comments and questions. I would ask that you hold your questions until the presentation for both sides is complete. If you have a prepared statement, you may read it out loud or turn it in without reading it. In any case, your comments will become part of the record. Also, we have cards at the front desk for your use for any written comments. If

you turn in any written comments, please write your name and address on them.

If you later decide to make comment or add something that you said here, you may send additional comments to us at this address. The public comment period ends today on Landfill 21 and on February 6th for Landfill 24. I will show this address slide again at the end of the meeting.

The final point is that our primary purpose tonight is to listen to you. We want to hear your comments on any issues you are concerned about at these sites, and we will try to answer any questions you may have. We want you to be satisfied with the action we take will properly address and fully address the problems at this site.

Now, I would like to turn the meeting over to Bruce Przybyl.

MR. PRZYBYL: Good evening. We'd like to talk to you today about the Air Force's recommended alternatives for remedial action at two landfills at the Plattsburgh Air Force Base. The first I'd like to talk about is Landfill 21. Landfill 21 is located in the northwest corner of the base outside the perimeter fence and north of Route 22. The area is designated as open space for land use planning.

I would first like to go through the process by which the decisions were made in reaching the conclusions in coming to the recommended alternative.

The process started by preparation of a preliminary assessment or records search which looked at the history of the site and the disposal practice of the site. At that time, a recommendation was made, further investigation was necessary, a site investigation was undertaken.

The site investigation showed it is a relatively small site, and the conclusions of that were to recommend a larger scale investigation, a remedial investigation.

The remedial investigation assessed health (sic) to human health -- to humans and the environment in addition to collection of many samples. From that a preferred alternative was determined and documented in a proposed plan which is available at the Feinberg Library and has been for a period of time.

Throughout this period, the New York State Department of Environmental Conservation and United States Environmental Protection Agency have provided review and comment to each document along the way and have concurred in principle with the remedial alternative.

We are at this stage, the public meeting and comment, and we're here to answer your questions and incorporate your comments into the record of decision which is the legal instrument for the remediation.

The Landfill 21 is about six acres in size. It was active from 1956 to 1959. It accepted domestic waste and sludge from the industrial wastewater treatment plant at the base. The other area is adjacent to some wetland areas and is located 500 feet from the Saranac River.

The character of the site is generally -- currently generally vegetative with mature trees and grasses covering the site, but there is locations where debris is protruding from the landfill surface. One such location is depicted in the lower of the two photographs.

The remedial investigation included the excavation of many test trenches to determine the extent of the fill and to sample the subsurface materials and fill, boring, well installation and groundwater sampling.

A variety of chemicals were detected in subsurface soil or fill materials. Polycyclic aromatic hydrocarbons were detected. These were the products of incomplete combustion of fossil fuels, metals.

Pesticides such as DDT and PCBs were also detected. These were not detected in any particular pattern. The pattern of contamination is somewhat heterogenous in the landfill.

In groundwater, only three compounds were detected that exceeded the New York State standards, and those were two polycyclic aromatic hydrocarbons and DDT. It was worthy to note that there was an absence of volatiles, which are quickly moving compounds, in groundwater. There were none of those compounds.

We also examined contaminant migration pathways at the site. Since few volatiles were found, we consider the volatilization pathway for contaminant migration is insignificant.

In addition, since the site is vegetated, there's a limited potential for dust generation and, therefore, we considered contaminant transport via dust pathway as insignificant.

Also, we consider run-off pathways to be negligible because of the high permeability of the landfill. Most of the precipitation will infiltrate into the landfill and, also, topographic constraints and actually the overhead here we have is somewhat misleading, this slope somewhat kind of rises again before it drops again into the Saranac River. All of

the precipitation will infiltrate into the ground before it gets to the river.

One pathway that is potentially significant is the percolation of rainwater through the landfill picking up contaminants along the way and then transport through the groundwater.

Again, the contaminants detected in groundwater were of the type that do not move very quickly or very far in groundwater.

We conducted a human health risk assessment to determine the potential risk to human health posed by the site, and that was broken down into two scenarios, including a current use scenario in which we assessed potential impacts to utility workers -- there was a right-of-way, utility right-of-way adjacent to the site -- and also to trespassers.

The calculations indicated no significant carcinogenic or noncarcinogenic risk to these potential receptors.

The second scenario was a future use scenario in which we assessed the risk to a campground populated by campers who were utilizing the groundwater for showering and potable water, camping right on the landfill. We considered this to be a conservative hypothetical scenario. It's not something that's

envisioned; however, this is a conservative benchmark in which we can assess fhe potential of contaminant risk.

The future use scenario yielded no noncarcinogenic risk to campers; however, there was a significant risk represented by this five times 10 to the minus four due to exposure to soils on the landfill. This is a carcinogenic risk.

It's significant to note that there was no risk calculated -- or no significant risk calculated for groundwater ingestion pathways despite the fact that three New York State standards were exceeded. They were exceeded but not to a great extent, enough to yield risks in our calculations.

It also should be noted we performed an ecological risk assessment and determined a potential potentially a slight potential risk to mammals that come into contact with the soil and fill of the landfill. Based on the risk assessment, we came up with a remediation or remedial goal to the site.

The goal is to prevent direct contact with on-site soil, fill materials by human or ecological receptors basically as a response to the carcinogenic risk calculated in the risk assessment and the minor ecological risk that was indicated in the ecological risk assessment.

Using the U.S. EPA Superfund Accelerated Cleanup Model, we then developed the basic components of our remedial alternative. And these include a landfill cap and institutional controls. There were three types of landfill caps looked at, and they were examined for their ability to achieve the goal that we set for this -- this remediation, and all three of these landfill caps accomplish the goal adequately.

Therefore, we looked at cost and picked the most cost effective cap, which is a native soil cover as our selected remedial component.

Also, a basic component remedy is institutional controls in which we propose site development restrictions to protect the integrity of the cap once it's established and also to restrict water use, although that's not one of -- it's not reflected in our goal, there are three exceedances of New York State Groundwater Quality Criteria and then, therefore, we thought it would be prudent to restrict the use of the groundwater.

Therefore, our remedial alternative includes the following elements: A native soil cover to prevent direct contact of human and ecological receptors with contaminated soil and fill materials and development restrictions which include restrictions to prevent any

adverse action leading to the deterioration of the landfill cover and prohibition against any excavation of the landfill cover without prior appropriate approvals, and this will be implemented to protect the integrity of the cap over the long term.

We are also going to prohibit the installation of any wells for drinking or any other purposes which could result in the use of the underlying groundwater. And this is in response to the exceedances of New York State Groundwater Quality Criteria in groundwater.

We are also -- two other elements of the remedy that are necessary, one is groundwater monitoring. We'll supplement our existing groundwater monitoring network and sample it routinely in order to ensure that the slow-moving compounds that we have detected will not migrate off site. We don't expect them to, but the routine groundwater monitoring will ensure that that will not happen in the future.

And, finally, there's a five year site review process in which the Air Force, the United States Environmental Protection Agency and the New York State Department of Environmental Conservation will review all the data collected throughout the five years and ensure that the remediation is being effective in protecting human health and the environment.

The second landfill I am going to talk about today is the construction spoils landfill or Landfill LF-24. This landfill is located to the -- in the southeast corner of the base about 200 feet north of the Salmon River as indicated on this figure right here. This area has been designated as open space for light industrial use for land use planning purposes, either or.

Once again, I'm showing an overhead showing the process by which we reached our remedial alternative, and it's similar to that for LF-21 in which we are soliciting public comments at this time, and we've received New York State Department of Environmental Conservation input and United States Environmental Protection Agency input along the way and, again, comments received today will be incorporated into the record of decision.

Landfill 24 is less than one acre in size and accepted construction and demolition debris, concrete rebar, things of that nature, matals, from the period of 1980 to 1986. The landfill is covered generally with brush and trees. There are very few sparse areas. One of them is indicated in the lower of the two photographs here but generally well covered with brush and trees. To the south near the toe of the slope, the landfill

steepens considerably, and construction and demolition debris is protruding from the landfill cover as indicated by the lower of the two photographs.

The upper photograph is the top of the slope, southern slope, and the lower photograph depicts the toe of the slope, the southern slope. The Air Force considers this to be a general physical hazard to trespassers and people walking in this area.

The landfill was investigated and site investigation in which test trenching was conducted to determine the extent of the fill and determine its character. We also did boring and monitoring wells and looked at groundwater samples.

The nature of the fill material is essentially free of organic contaminants; however, metals were elevated above background in the fill materials.

Again, groundwater was examined, and it was also found to be essentially free of organic materials, organic contaminants; however, several metals were detected in exceedance of New York State Groundwater Quality Criteria.

I also should note that there were several drums found during test trenches at the site; however, none of these drums were found to be intact, many of them had no lids, were empty or just crushed prior to

being in the landfill.

We also looked at the potential contaminant migration pathways. And very similar to LF-21, there were no volatiles found and, therefore, the volatilization pathway was considered insignificant.

Since the landfill is heavily vegetated, there is limited potential for dust migration and contamination transport through that mechanism. Also, once again, this doesn't quite depict the slope correctly. It's much flatter there, and the run-off pathways are also considered to be insignificant. All of the rainfall will percolate into the landfill surface or be captured by topographic constraints and not reach the Salmon River directly.

However, again, we -- we have a potentially significant groundwater migration pathway, again, where rainwater percolates through the fill, picks up metal contaminants and transports them through the groundwater. And it should be noted again that the metal contaminants are also very slow-moving compounds.

Again, we conducted a human health risk assessment to determine potential risk to the receptors, and two scenarios were examined including current use scenario, which is basically no one is being exposed at the site except for trespassers, and the assessment

indicated no potential for carcinogenic risk, unacceptable carcinogenic risk or unacceptable noncarcinogenic risk.

A future use scenario was also examined. It was a bi-phased scenario in which the site would hypothetically be developed, and there would be a construction phase in which excavation would occur and building would be constructed, and then a second phase in which the buildings were already constructed and the area were landscaped and the industrial workers were using the facility routinely.

There were no unacceptable cancer risks indicated by the analysis. However, there were unacceptable noncarcinogenic risks indicated for inhalation of fugitive dust to construction workers. During construction there's considerable dust excavated, and there's a potential for exposure and adverse effects to these construction workers through inhalation of the fugitive dust with manganese adhered to it. Also, if groundwater were to be used at the site, there is a potential for adverse effects again from the compound manganese, and there is also potential for future problems from barium, vanadium and antimony.

One thing to note is that currently there is no risk to receptors via carcinogenic or noncarcinogenic

risk; however, there is a physical hazard posed by protruding debris along the steep southern slope and a couple other places in the landfill.

Based on the HRA, we determined some remediation goals. The first is to prevent construction workers from inhaling contaminated fugitive dust resulting from earth moving activities, and that's in response to the risk calculated for the inhalation of fugitive dust.

Second would be to prevent human ingestion of contaminated groundwater immediately down gradient of the site, and that's in response to the risk calculated for the ingestion of groundwater.

And, third, we would like to eliminate potential physical hazards to on-site workers and maintenance personnel.

Again, using U.S. EPA guidance, we determined the basic components of a remedy for the site. The landfill cap is necessary to -- to accomplish the third goal, and that is to eliminate potential physical hazards on site. There is no -- there is no potential chemical hazards due to direct contact with the fill. So the cap is only to eliminate the physical hazards.

Therefore, all three caps -- since the area will be regraded and debris covered and the potentially

unstable slopes eliminated, all three caps will be equally effective and cost is, therefore, looked at as the deciding factor between the caps, and we selected the least expensive of the three options, and that is a native soil cover.

Second we -- the -- the second basic component is institutional controls which includes site development restrictions, and that is to protect the integrity of the cap, water use restrictions to address our second remediation goal which is to prevent human ingestion of contaminated groundwater and, third, a cautionary notice concerning inhalation risks during earth moving activities, and that is to address our first remediation goals, to prevent construction workers from inhaling fugitive dust.

To recap, our recommended alternative consists of the native soil cap, to limit -- eliminate potential physical hazards from debris and also develop restrictions including restrictions to prevent any adverse action leading to the deterioration of the cap, prohibition against excavation of the landfill without prior appropriate approval and prohibition from installing any wells that could result in the use of the underlying groundwater.

Also, we are going to issue a notice

concerning potential site risk which is a notice provided concerning potential short-term health risks from inhaling dust during construction activities. Also, groundwater monitoring is a part of that. Also, metals in groundwater will move very slowly and will not get very far. We want to install a groundwater monitoring network to track that through time and make sure that the groundwater contaminants are not getting far off site and, also, in LF-21, it will be reviewed every five years by the U.S. EPA and the New York State Department of Environmental Conservation and the Air Force to determine whether it has continued to be effective, and that concludes my discussion.

MR. SOREL: At this time, I'd like to open up the meeting for questions. Since everything that is being said here tonight is being taken down, please state your name for the record before you make a statement.

Do we have any questions? Mr. Booth?

MR. BOOTH: Robert Booth. In each of your sites, we reach a conclusion about where you are headed next with a list of prohibitions, for instance, to prevent activities that would destroy the cap, prevent the drilling of wells that would tap groundwater, prevent excavation without a permit. Who or what sees

that these limitations are carried out, who gives the permit to excavate, how long is this oversight as to permits and prohibitions to continue, who's got the responsibility?

MR. SOREL: Good question. It's actually one that's come up in our discussions with the regulator that they have the very same concerns that you do.

There will be a transfer by deed, and when we start talking about transfer by deed, what we are going to do, in fact, if you look in the proposed plan, there's a paragraph in there that deals with that, and let me read what we put in there. It says: The deed will include appropriate restrictions to prevent any adverse action leading to the deterioration of the landfill cap to include prohibition from installing any wells for drinking water or any other purpose which could result in use of the underlying groundwater and the prohibition against any excavation of the landfill cap without prior approval of the New York State DEC.

So, essentially, we are saying at that point there will indeed be restrictions and, of course, the Air Force at that point would no longer be the owner of the property, so some of that will rely on the -- the local agencies having jurisdiction in that area. For instance, if we are in the town of

Plattsburgh, then I would assume if there were construction, there would be issues of the building permit and at that time, those prohibitions would be noted. So through that process, we believe that that's how these prohibitions would be controlled.

MR. BOOTH: That makes sense that there would be public records that follow the land that way and will the restrictions mention that DEC is a reference point?

MR. SOREL: Correct. In fact, we have already coordinated that with them. They have agreed to be that reference point.

MR. BOOTH: And that also if interested, why, the township or the city or the county also could step in, but at least there's a list of restrictions and restrictive covenants really?

MR. SOREL: Right, right.

MR. BOOTH: And who to refer to to start complying or finding out the answers?

MR. SOREL: And there would also be a notice of any hazardous materials present that would follow this as well, so anybody that would be issuing that building permit or whatever.

MR. BOOTH: In 25 years, that will all be forgotten, and I was just wondering.

MR. SOREL: We will file a deed.

MR. BOOTH: And you have got it if there are recorded documents.
MR. SOREL: Sure.
MR. BOOTH: Thank you.
MR. SOREL: Any other questions?
Okay, since everybody seems to have made their comments, we would like to conclude this meeting.
I would like to add that the proposed plans and other documents relating to these sites are available for review at the information repository located in Special Collections at the Feinberg Library, SUNY-Plattsburgh.
Thank you very much for coming.
(This hearing was concluded at 7:37 p.m.)

C E R T I F I C A T E

STATE OF VERMONT)
COUNTY OF CALEDONIA)

I, Susan Bretschneider, a Notary Public within and for the State of Vermont, do hereby certify that I stenographically reported the proceedings of the public hearing in re: Remedial Actions at Former Landfill LF-21 and Former Landfill LF-24 on January 16, 1997 beginning at 7:00 p.m., at the Old Courthouse, 133 Margaret Street, 2nd Floor, Plattsburgh, New York.

I further certify that the foregoing proceeding was taken by me stenographically and thereafter reduced to typewriting, and the foregoing 20 pages are a full, true and correct transcription of the proceedings.

I further certify that I am not related to any of the parties thereto and that I am in no way interested in the outcome of said proceedings.

Dated at Barre, Vermont, this 23rd day of January, 1997. My commission expires February 10, 1999.

<IMG SRC 97011E>

ERRATA SHEET

TO: Marcia G. Wolosz
DATE: February 14, 1997
RE: 1-16-96 Public Hearing
FROM: Capitol Court Reporters, P.O. Box 329,
Burlington, Vermont 05402

Please read through the enclosed transcript. If you wish to make any corrections, please do so below referring to page and line number followed by the correction.

Page	Line No.	Change
2	21	"sides" should be "sites"
3	3	insert "a" before "comment"
3	13	with" should be "that"
4	11	small site" should be "low contamination site"
5	8	other area" should be "site"
5	23	place a colon after materials:
5	25	"fuels. Metals,"
6	1	"Pesticides" should be "pesticides"
6	1	place a comma after DDT,
8	12	before the word "enough" put "not"
17	9	before the words "in LF-021" put " as with"
18	6	change "regulator" to "regulators." (period at end of word)
18	7	"They" starts a new sentence
18	10	change "do," to "do--"
19	2-3	replace "issues of the building permit" with "a building permit issued"

ERRATA SHEET

TO: Marcia G. Wolcsz
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Please read through the enclosed transcript. If you wish to make any corrections, please do so below referring to page and line number followed by the correction.

Page	Line No.	Change
3	5 & 6	Sentence beginning "the public comment". should read, "The public comment period ends on January 23rd for LF 21, as stated in the public notice advertised in the Plattsburgh Press-Republican on Monday, December 23, 1996."

<IMG SRC 97011F>

APPENDIX E - RESPONSIVENESS SUMMARY

<IMG SRC 97011G>

DEPARTMENT OF THE AIR FORCE - AIR FORCE BASE CONVERSION AGENCY

25 Feb 97
MEMO FOR RECORD

SUBJECT: Responsiveness Summary: Public Comment Period for Remedial Action at LF-024

A. OVERVIEW

LF-024 is a former landfill located in the southeast corner of the former Plattsburgh Air Force Base, about 200 feet north of the Salmon River. The less-than-one-acre-sized landfill accepted construction and demolition debris from the period of 1980 to 1986. Evidence of this can be seen in the debris protruding from the landfill cover. The Air Force considers this to be a general physical hazard to trespassers and people walking in the area. The fill material and groundwater were found to be essentially free of organic contaminants, but metals were detected at levels elevated above background in the fill materials and in exceedance of New York State Groundwater Quality criteria in the shallow aquifer.

The BRAC Cleanup Team reviewed a number of presumptive remedies (as defined by the U.S. Environmental Protection Agency) for remediating the contamination at LF-024. Based on the nature of the contamination and knowledge of site conditions obtained from the site investigation, the Air Force selected a combined approach of landfill capping and institutional controls for containing the site. This was found to be the most technically and economically acceptable alternative for achieving the BRAC team's goals, which are to prevent direct contact with on-site soil/fill and groundwater by human or ecological receptors. The remedial action is detailed in the proposed plan dated December 1996.

B. PUBLIC MEETING & PUBLIC COMMENT PERIOD

A Public Meeting was held on the remedial action for LF-024 on 16 January 1997 at 7:00 p.m. It was held at the Old Court House in the City of Plattsburgh, County of Clinton. NY. A prepared statement was read by Mr. Michael D, Sorel, PE, the BRAC Environmental Coordinator for the Air Force Base Conversion Agency (AFBCA). Mr. Bruce Przybyl of URS Greiner, Inc., detailed the proposed remedial action for the audience. The floor was then opened to the public for questions and comments. Concluding the meeting was a statement by Mr. Sorel that additional comments could be sent to the Air Force. As advertised in the Plattsburgh Press-Republican, the public comment period ran from 6 January 1997 to 6 February 1997. The Public Meeting was recorded by a court reporter, Ms. Susan Bretschneider of Vermontville, NY.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND AGENCY RESPONSES

Mr. Robert Booth, a member of the Plattsburgh AFB Restoration Advisory Board, wanted to know who would be responsible for seeing that any limitations on site development are carried out.

Mr. Sorel replied that this has been the subject of discussion with the U.S. Envirorimental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC). Mr. Sorel read a paragraph from the proposed plan that deals with the wording in the future transer deed. Included will be restrictions of any activities leading to the deterioration of the landfill cap, and use of the underlying groundwater. Since the Air Force will no longer own the property, the local agency responsible for issuing building permits will need to make written reference to the prohibitions. All of these documents will remain on file. Also, the NYSDEC has agreed to act as the reference agency for oversight.

From the time of the Public Meeting until the deadline of 6 February 1997, no further questions or comments were received by the Air Force regarding this subject.

<IMG SRC 97011H>

ROD FACT SHEET

SITE
Name : Plattsburgh Air Force Base
Landfill LF-024
Location/State : Plattsburgh, New York
EPA Region : 2
HRS Score(date): 30.34 (9/22/88) Basewide score, not landfill
Site ID : NY4571924774

ROD
Date Signed: 3/25/97
Remedy/ies: Native Soil Cover, Institutional Controls
Operating Unit Number: OU-8 (IRP Site LF-024)
Capital cost: $ 59,000 in 1997 dollars)
Construction Completion: April 1998
O & M in 1998: $ 4,120 (in 1997 dollars)
1999: $ 4,120
2000: $ 4,120
2001: $ 4,120
Present worth: $ 136,585 (6% discount rate, 30 years O&M,
O & M drops to $ 1,030/yr in 6th year)

LEAD
Remedial - Federal Facility Lead
Primary contact - Bob Morse (212) 637-4331
Secondary contact - Bob Wing (212) 637-4332
Main PRP(s) - U.S. Air Force
PRP Contact - Mike Sorel (518) 563-2871

WASTE
Type - Metals (mainly manganese)
Medium Soil and Groundwater
Origin - Construction and Demolition (C & D) Landfill
Est. quantity - One acre