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FORMER LANDFILL
LF-021

RECORD OF DECISION

Plattsburgh Air Force Base Installation Restoration Program

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

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February 1997

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FORMER LANDFILL LF-021
RECORD OF DECISION

PLATTSBURGH AIR FORCE BASE
PLATTSBURGH, NEW YORK

DRAFT FINAL
FEBRUARY 1997

PLATTSBURGH AIR FORCE BASE
INSTALLATION RESTORATION PROGRAM

PREPARED BY:
URS GREINER, INC.

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DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Plattsburgh Air Force Base (AFB)
Former Landfill LF-021
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-021 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-021, 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.

DESCRIPTION OF THE REMEDY

This action addresses the principal threat posed by LF-021 by preventing endangerment to human health and the environment through containment of the landfill to minimize exposure to contaminants in the

soil and waste. 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 to the source control remedial action, 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 wastes and contamination is considered impracticable 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.

_____

Signature (USEPA, Regional Administrator) Date

_____

Signature (Director, Air Force Base Conversion Agency Date

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Plattsburgh AFB, located in Clinton County in northeastern New York State, is bordered on the north by the City of Plattsburgh, the south by the Salmon River, to the west by Interstate 87, and on the east by Lake Champlain. The Saranac River lies adjacent to the northern base boundary for short stretches near LF-021 and near the Old Base. The base is approximately 26 miles south of the Canadian border and 167 miles north of Albany (Figure 1).

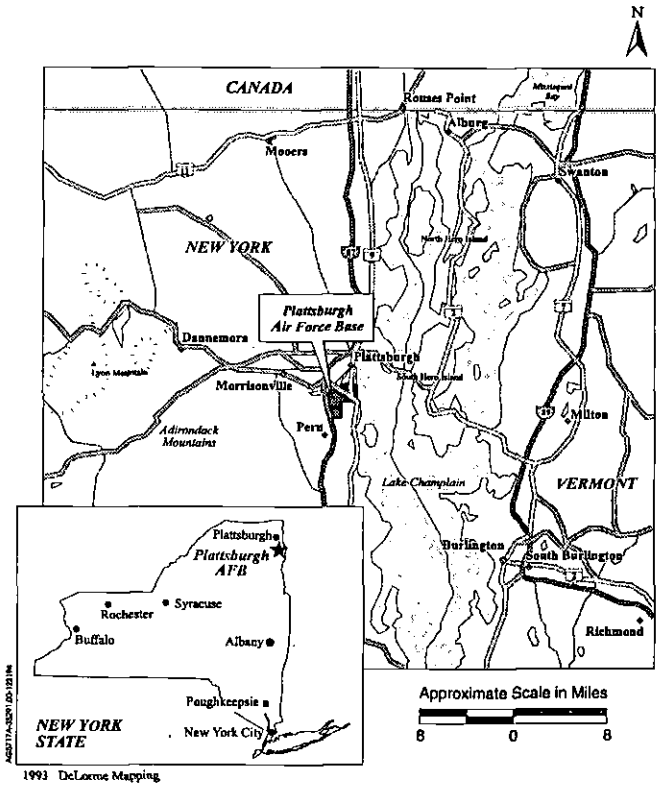


FIGURE 1: VICINITY LOCATION MAP

Plattsburgh AFB was closed on September 30, 1995 and its reuse is being administered by the Air Force Base Conversion Agency in conjunction with the Plattsburgh Airbase Redevelopment Corporation (PARC). According to the land use plan presented in the Final Environmental Impact Statement (FEIS), dated November 1995, for the disposal and reuse of the base, the likely reuse of LF-021 and its surrounding area will be public recreational. As currently envisioned, the area will be available for day hiking use. As part of the USAF's Installation Restoration Program (IRP), Plattsburgh AFB initiated activities to identify, evaluate, and restore identified hazardous waste sites. The IRP at Plattsburgh AFB is being implemented according to Federal Facilities Agreement (Docket No.: II-CERCLA-FFA-10201) signed between the USAF, USEPA, and NYSDEC on July 10, 1991. Plattsburgh AFB was placed on the National Priorities List on July 10, 1989.

Landfill LF-021 is 5.7 acres in size and located outside the formerly secured area of the base, just inside the northwest base boundary (Figure 2). The landfill is situated approximately 500 feet south of the Saranac River, and north of the Delaware & Hudson rail line and NY Route 22 (Figure 3). Paved and unimproved pathways are found around the landfill's perimeter.

PHOTO 1 - An eastward view along the paved access road that crosses the southern portion of LF-021. Note that the landfill has a well established cover of trees and grasses.

PHOTO 2 - An eastward view of the landfill surface near sample location SS-21-13.

SITE PHOTOS - LF-021

Currently, the landfill is covered by a soil layer and vegetated with young hardwood trees and brush. The area is unsecured and, as evidenced by relatively fresh debris strewn along the landfill's perimeter, has been used as an unauthorized dumping site by the public. Tires and other debris occasionally may be seen protruding from the landfill's surface (Photos 1 and 2).

The geology in the vicinity of LF-021 consists of a mantle of heterogeneous unconsolidated glacio-fluvial deposits overlying carbonate bedrock. The unconsolidated overburden deposits consist of two generalized geologic units: (1) brown silty sand, and (2) gray silty sand with some clay, gravel, and cobbles. The landfill material appears to have been placed on top of the unconsolidated deposits. Based upon site reconnaissance conducted from July 1993 through January 1994, it appears that all precipitation either eventually infiltrates into the landfill due to the permeable nature of the fill, or evapotranspirates.

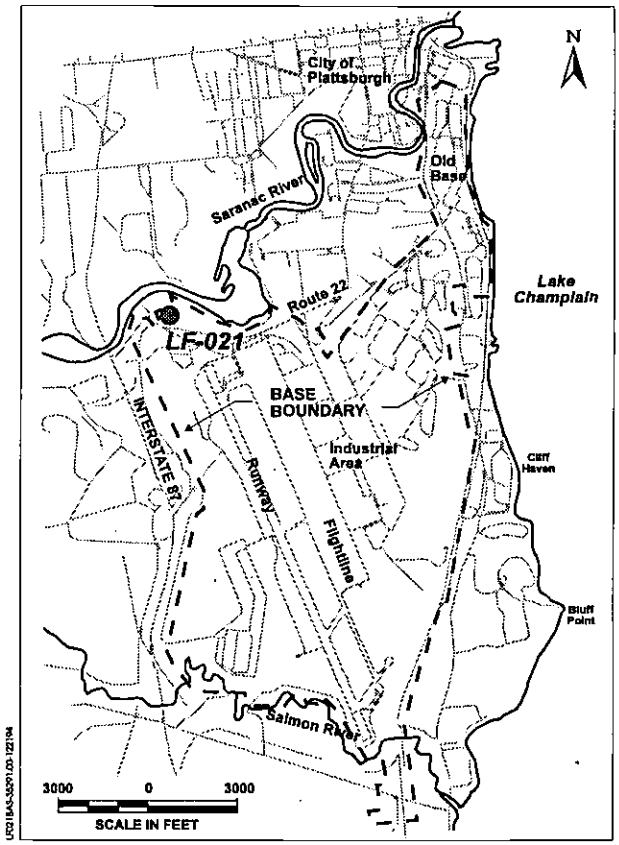
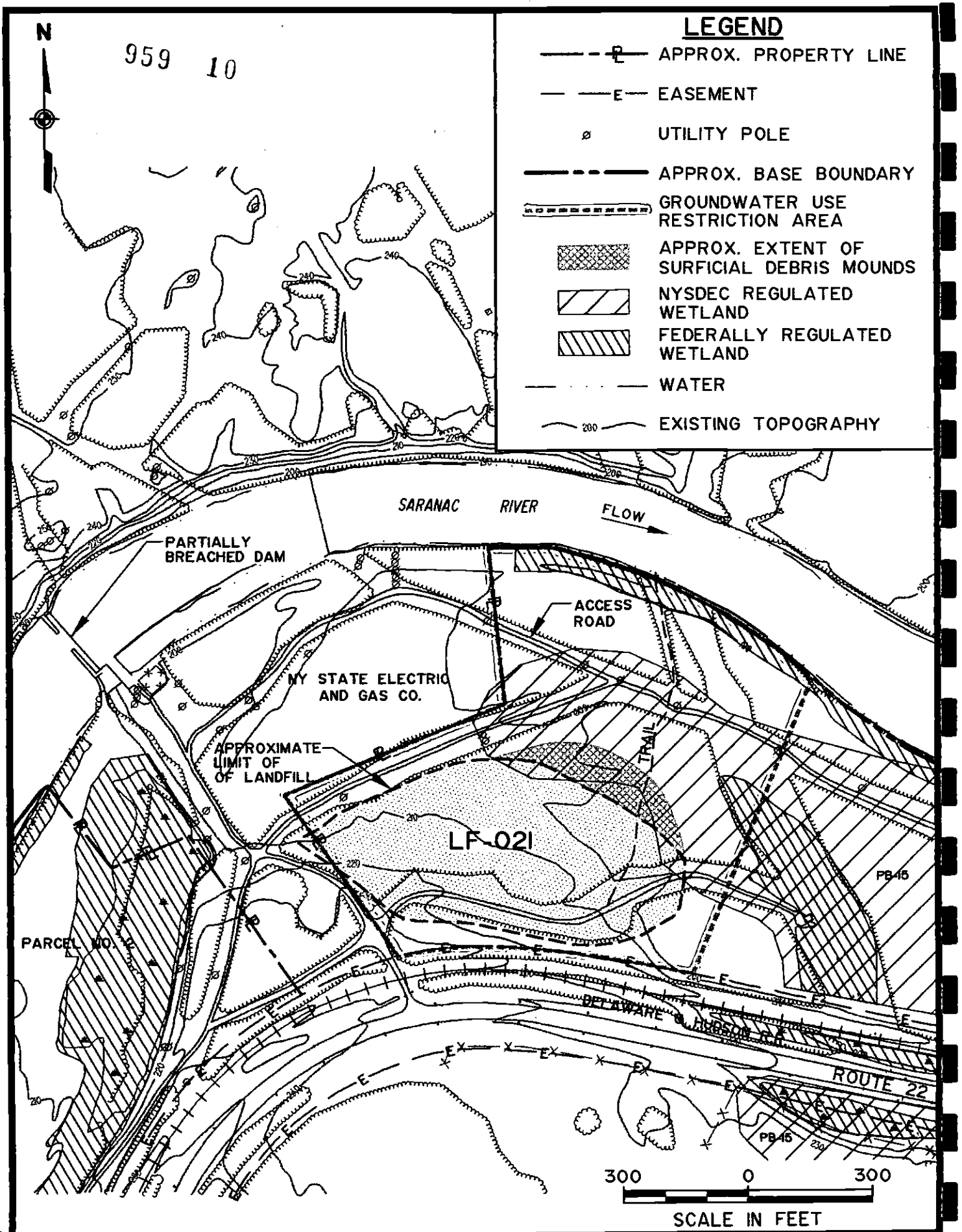


FIGURE 2: LOCATION OF LF-021

2.0 LAND USE AND RESPONSE HISTORY

From August 1956 to June 1959, LF-021 reportedly was used for the disposal of domestic wastes and sludge from Plattsburgh AFB's industrial wastewater treatment plant. This plant treated wastewater which included aircraft washrack residues, separating oil, grease, fuel residues, and cleaning compounds. Floc and skimmed residues reportedly were burned in trenches on the landfill before being disposed of and covered with sod.

Several investigations were conducted at LF-021 as part of the IRP. In 1985, a Phase I records search, or preliminary assessment, for Plattsburgh AFB determined that the site was not considered to be contaminated because the domestic waste did not appear to pose a significant threat. In addition, no evidence was found to substantiate the dumping of waste oils, solvents, or fuels. In 1987, site investigations (SIs) were conducted at 19 sites identified during the records search. Although the records search provided no basis for suspicion of contamination at LF-021, it was included among the SI sites because it was reported to have received sludge material considered to be potentially hazardous. The SI at LF-021 included a magnetometer survey, an



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PLATTSBURGH AFB LF-021
SITE FEATURES

FIGURE 3

excavation and sampling of test pits, as well as the installation and sampling of three groundwater monitoring wells. The study confirmed the presence of contaminants in the soil and groundwater (E.C. Jordan Co. 1989). Based upon the results of the SI, Plattsburgh AFB initiated a remedial investigation (RI) to further define the nature and distribution of the contaminants. The RI was conducted during the summer of 1993 and winter of 1994 (URS Consultants, Inc. 1994) and its specific objectives were to: determine the nature and extent of waste materials deposited on the site; determine the nature and extent of chemical contamination of soil and groundwater attributable to the landfill; identify and describe the migration pathways of contaminants to potential receptors; and evaluate the risks posed by site contaminants to human health and the environment.

Additional chemical and hydrogeologic data were obtained during the RI. Field activities included a terrain conductivity geophysical survey and excavation along ten test trench lines to determine the areal and vertical extent of fill. In addition, field work included the collection and chemical analysis of 14 subsurface soil samples, 6 waste samples, and 18 surface soil samples. Groundwater was sampled and analyzed from each of five new monitoring wells and from three monitoring wells installed as part of the SI. Sampling locations are depicted on Figure 4.

3.0 COMMUNITY PARTICIPATION

Plattsburgh AFB has kept the community and other interested parties informed of the activities at LF-021 through informational and public meetings, holding a 30-day public comment period from December 16, 1996 to January 16, 1997 to solicit public input. During this period, the public was invited to review the LF-021 Remedial Investigation and the Proposed Plan, and to comment on the remedial alternative being considered. These documents, which comprise the Administrative Record for the LF-021 site, were available for public review 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 Old Court House, Second Floor Meeting Room, 133 Margaret Street to discuss the data gathered at the site, the preferred alternative, and the decision-making process. Immediately after an informational presentation, Plattsburgh AFB held a formal public hearing to accept comments about the remedial alternative being considered for the LF-021 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 C). A response to the comments, included in the Responsiveness Summary, is part of this Record of Decision (Appendix D).

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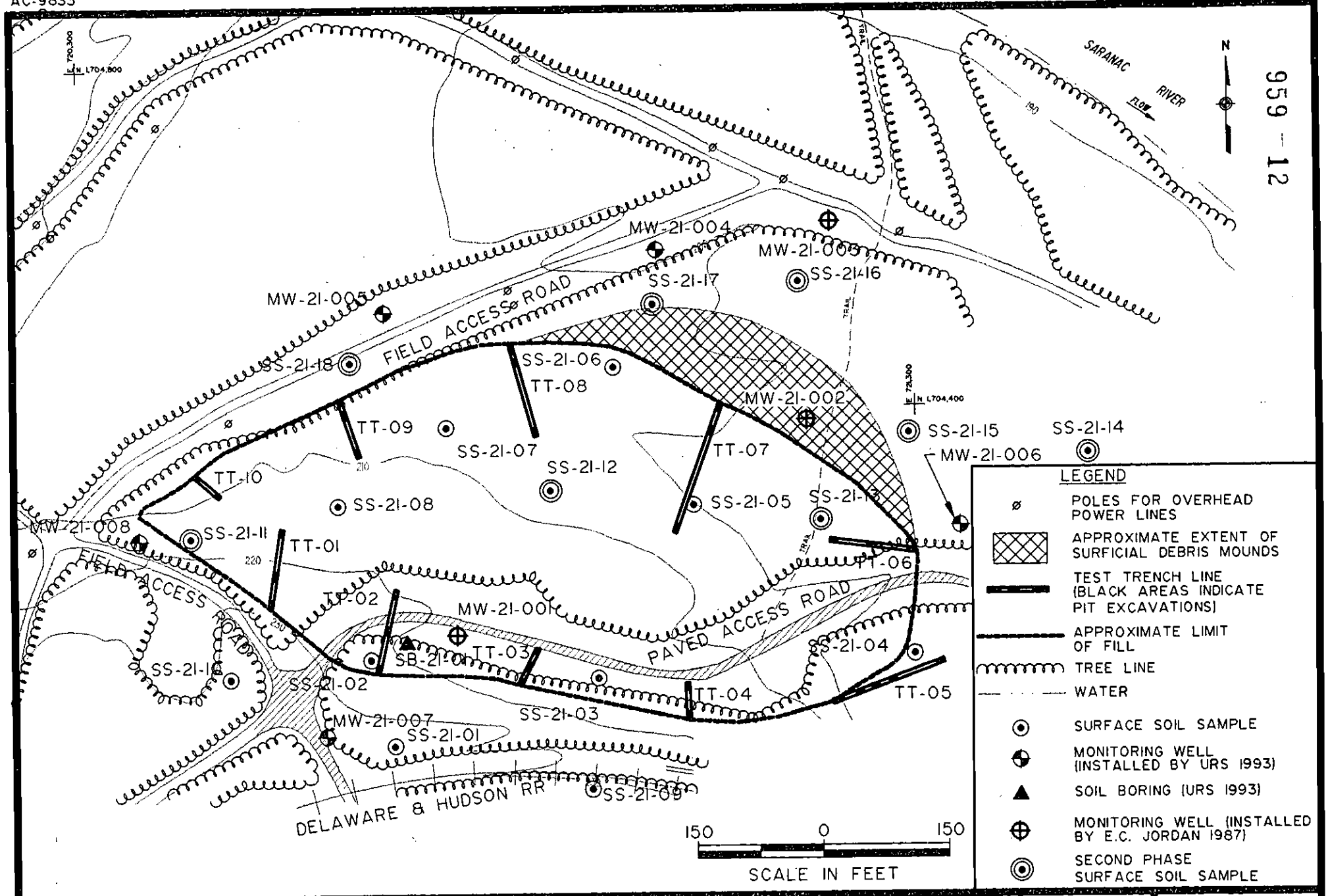

URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.
REMEDIAL INVESTIGATION SAMPLE LOCATIONS

FIGURE 4

The Proposed Plan for LF-021 identified implementation of a native soil cap and institutional controls as the preferred alternative. The USEPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

This ROD addresses all of the principal threats posed by LF-021 to human health and the environment. The primary threat is risk associated with potential human and environmental contact with contaminated soil and fill. Low level contamination also occurs in groundwater at the site, but it does not pose a significant risk to human health. No impact to surface water or air quality is associated with the landfill.

The USAF has utilized USEPA's Containment Presumptive Remedy for Military Landfills to help determine an appropriate remedy for LF-021. Because of the large amount and heterogenous nature of the material within the landfill, treatment of the fill is not considered practical. Containment, therefore, is considered the appropriate response action, or presumptive remedy, for LF-021. The remedy recommended in this ROD addresses the principal threats by 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 OF SITE CONTAMINATION

5.1 Contaminant Pathways

Potential pathways by which contaminants might leave LF-021 were evaluated during the RI. Air pathways appear to be insignificant because fugitive dust generation is limited by the landfill's vegetation, and few volatile organic compounds (VOCs) are present in the soil or waste. VOCs that are present were detected at relatively low concentrations. Water balance calculations determined that surface runoff traveling from the landfill is negligible. Moreover, no leachate seeps were observed during the period of study anywhere near the landfill. The only potentially significant contaminant migration pathway is vertical leaching of contaminants by percolating precipitation with eventual transport through groundwater. The site conceptual model is shown in Figure 5. Soil, waste, and groundwater samples generally were analyzed for target compound list (TCL) VOCs, TCL semivolatile organic compounds (SVOCs), TCL pesticides/polychlorinated

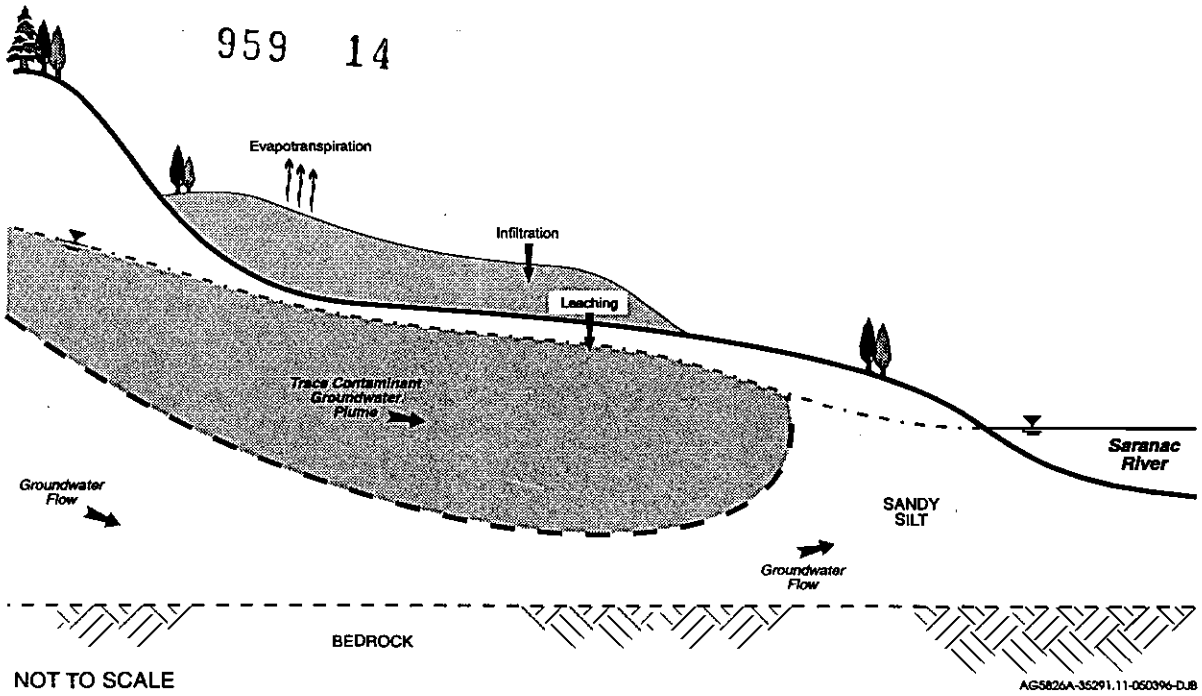

FIGURE 5: SITE CONCEPTUAL MODEL

biphenyls (PCBs), and 8 RCRA metals. Selected groundwater samples also were analyzed for Part 360 parameters. Chemicals detected in the various environmental media at LF-021 are listed and mapped in Appendix A.

5.2 Character of the Fill and Soil

The fill layer is characterized as a heterogeneous mixture of construction and demolition (C&D) debris, metallic objects, and municipal refuse. No intact drums were uncovered in the trenching programs conducted as part of the RI or SI. In general, the waste material appeared to have been burned at the time of filling. No physical evidence of landfill gas generation was observed during the investigation and no gasses were detected with real time monitoring equipment.

In soil sampled at the surface of the landfill (Table A-2), 12 polycyclic aromatic hydrocarbons (PAHs), 1 pesticide (aldrin: 0.36 ppm), 1 PCB (Aroclor-1260: 18 ppm), and 3 metals (barium: 1,030 ppm; chromium: 56.4 ppm; and mercury: up to 0.82 ppm) were detected at concentrations above NYSDEC soil guidelines. Individual PAH concentrations ranged to 970 ppm at one location (SS-021-12).

Four VOCs (methylene chloride, acetone, toluene, and xylene) were detected within the landfill waste (Tables A-6 and A-7), all infrequently and at relatively low concentrations (less than 0.013 ppm). If VOCs

were present in the waste at the time of filling, then the bulk of these compounds have apparently either volatilized or leached from the landfill materials since landfilling ceased.

In contrast, the less mobile chemicals are more widespread within the landfill waste. Pesticides, likely present as a result of insect control during landfilling operations, were detected at total concentrations of up to 38.7 ppm, but were more typically detected in the low ppb range. Primary pesticides detected were 4,4'-DDT and its metabolites (4,4'-DDE and 4,4'-DDD). PCBs were detected at three locations at concentrations of up to 18 ppm. Metals detected at concentrations above background included arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

Chemicals in soil sampled at the base of fill (Table A-8) were considerably less concentrated than the overlying fill materials. This soil generally contained chemicals at concentrations near or below NYSDEC soil guidelines. Only benzo(a)pyrene (0.067 ppm), benzo(g,h,i)perylene (0.052 ppm), 4,4'-DDT (3 ppm), and mercury (0.00025 ppm) were detected at above the guidelines.

Similarly, surface soil samples (Table A-3) taken in low lying areas and in wetland areas between the landfill and the Saranac River, and subsurface soil samples taken outside the landfill's perimeter (Table A-5) did not contain appreciable contamination. This observation is consistent with physical observations that indicate no existing overland pathway (runoff) from the landfill to the river. Four metals were found at concentrations above NYSDEC soil guidelines including cadmium (12.2 ppm), chromium (56.3 ppm), lead (545 ppm), and mercury (4.5 ppm). All of these exceedances occurred in a sample located adjacent to the field access road at the landfill's perimeter (SS-021-18). No chemicals were detected above state guidelines in subsurface soil samples downslope from the landfill.

5.3 Groundwater Contamination

Chemicals detected in groundwater samples from LF-021 are listed in Table A-9 of Appendix A. Organic contaminants detected in groundwater included acetone, carbon disulfide, chloroform, 1,2-dichlorethane, benzo(a)anthracene, chrysene, bis(2-ethylhexyl)phthalate, and 4,4'-DDT. Of these, only 4,4'-DDT (0.16 ppb) was detected at a concentration in contravention of groundwater ARARs (chemical-specific regulatory standards). The NYSDEC Groundwater Quality Standards (6 NYCRR Part 703.5 and 703.6) for 4,4'-DDT is non-detection. 4,4'-DDT also was detected at the background monitoring well location. USEPA's maximum contaminant levels (MCLs) for groundwater were not exceeded. Based upon groundwater transport

calculations performed during the RI, the detected compounds will have a negligible impact upon the nearby (downgradient) Saranac River.

6.0 SUMMARY OF SITE RISKS

During the RI, a baseline risk assessment was conducted to estimate the current and future risks at the site if no remedial action was taken. Possible human health and ecological risks were evaluated. Chemicals selected for use in evaluation of risks are indicated on Table 1. 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). *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 and yield a reasonable overestimation, rather than an underestimation of risk.

Two human exposure scenarios were evaluated as part of the risk assessment at LF-021.

1) Current Scenario - Utility maintenance workers and trespassers may come into contact with contaminated soil. Potential routes of exposure include incidental ingestion of and dermal contact with surface soil.

2) Future Scenario - This scenario assumes that the site would be developed as a campground with available

TABLE 1
FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS OF POTENTIAL CONCERN
SUMMARY TABLE

CHEMICAL	TOXICITY	GROUNDWATER	SURFACE SOIL
Methylene Chloride	C		X
Acetone		X	X
Carbon Disulfide		X	
Chloroform	C	X	
1,2-Dichloroethane	C	X	
Xylene (total)			X
Acenaphthylene			X
Acenaphthene			X
Dibenzofuran			X
Diethylphthalate			X
Fluorene			X
Phenanthrene			X
Anthracene			X
Carbazole	C		X
Di-n-butylphthalate			X
Fluoranthene			X
Pyrene			X
Benzo(a)anthracene	C	X	X
Chrysene	C	X	X
bis(2-Ethylhexyl)phthalate	C		X
Di-n-octylphthalate			X
Benzo(b)fluoranthene	C		X
Benzo(k)fluoranthene	C		X
Benzo(a)pyrene	C		X
Indeno(1,2,3-cd)pyrene	C		X
Dibenz(a,h)anthracene	C		X
Benzo(g,h,i)perylene			X
Aldrin	C		X
Dieldrin	C		X
4,4'-DDE	C		X
4,4'-DDD	C		X
4,4'-DDT	C	X	X
Methoxychlor			X
Endrin ketone			X
alpha-Chlordane	C		X
gamma-Chlordane	C		X
Aroclor-1260	C		X
Arsenic	C		X
Barium		X	X
Cadmium	C	X	X
Chromium	C		X
Lead	C	X	X
Mercury			X
Selenium		X	X
Silver			X

Notes:

X - Indicates chemical of potential concern

C - Chemical is classified as a carcinogen

drinking water and shower facilities. This assumption is conservative given that, although the area may be used for day hiking, drinking water and shower facilities would not be provided. Routes of exposure for this scenario include contact with surface soil, inhalation of fugitive dust particles, ingestion of potable groundwater, and inhalation of vapors from groundwater during showering.

The results of the human health risk assessment, as summarized in Table 2, indicate that LF-021 poses no unacceptable risk to human health given current conditions, but poses a potential risk given assumed future conditions. Federal guidelines for exposures to potentially hazardous chemicals are expressed as carcinogenic risk and noncarcinogenic hazard indices. These guidelines consider carcinogenic risk to be acceptable if it is calculated to be in the range of 10^{-4} to 10^{-6} or less, and specify a maximum health hazard index (which reflects noncarcinogenic effects for a human receptor) less than or equal to 1.0. A hazard index greater than 1.0 indicates a potential of noncarcinogenic health effects.

For current land use, the total cancer risk for utility workers and teenage trespassers are both 1×10^{-4}. These risks are the upper end of the acceptable risk range of 1×10^{-4} to 1×10^{-6} established by current federal guidelines. For hypothetical future land use, the total cancer risk for an adult camper is 3×10^{-4} and the total cancer risk for a child camper is 5×10^{-4}. Both cancer risks can be considered to fall within the acceptable range.

For current land use, the total chronic (noncarcinogenic) hazard indices for utility workers and teenage trespassers are 0.01 and 0.04, respectively. For hypothetical future land use, the hazard index is 0.1 for an adult and 0.5 for a child receptor. These hazard indices are less than 1 and, therefore, are acceptable under federal guidelines.

6.2 Ecological Risk Assessment

A four step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario: *Problem Formulation* - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. *Exposure Assessment* - a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. *Ecological Effects Assessment* - literature reviews, field studies, and toxicity tests linking contaminant concentrations to effects on ecological receptors. *Risk Characterization* - measurement or estimation of current adverse effects.

TABLE 2

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CANCER RISKS AND HAZARD INDICES FOR MULTIPLE HUMAN AND ECOLOGICAL PATHWAYS

HUMAN HEALTH RISK ASSESSMENT

EXPOSURE PATHWAY	CURRENT USE				FUTURE USE			
	CANCER RISK		HAZARD INDEX		CANCER RISK		HAZARD INDEX	
			CHRONIC	SUBCHRONIC			CHRONIC	SUBCHRONIC
	UTILITY WORKER	TEENAGE TRESPASSER	UTILITY WORKER	TEENAGE TRESPASSER	CAMPER		CAMPER	
					ADULT	CHILD	ADULT	CHILD
Dermal Contact with Surface Soil	4E-07	6E-07	0.004	0.02	1E-06	6E-07	0.01	0.02
Ingestion of Surface Soil	1E-04	9E-05	0.006	0.02	3E-04	5E-04	0.01	0.09
Inhalation of Fugitive Dust	—	—	—	—	5E-08	5E-08	0.0004	0.002
Ingestion of Groundwater	—	—	—	—	2E-06	9E-07	0.04	0.1
Inhalation of Chemicals in Vapors While Showering	—	—	—	—	5E-06	5E-06	0.07	0.3
TOTAL EXPOSURE CANCER RISK	**1E-04**	**9E-05**	—	—	**3E-04**	**5E-04**	—	—
TOTAL EXPOSURE HAZARD INDEX	—	—	**0.01**	**0.04**	—	—	**0.1**	**0.5**

— - Pathway not evaluated in the HRA

ECOLOGICAL RISK ASSESSMENT

EXPOSURE PATHWAY	INGESTION OF SURFACE SOIL AND PREY (FOOD CHAIN)			
RECEPTOR	MEADOW JUMPING MOUSE	RACCOON	MUSKRAT	COMMON CROW
CHRONIC SUMMARY HAZARD INDEX	**12.0**	**0.029**	**0.22**	**0.81**

A screening level ecological risk assessment was performed to assess the potential impact on terrestrial organisms from exposure to contaminated surface soil. Risk posed to four representative species (meadow jumping mouse, raccoon, muskrat, and common crow) was examined. The results of the assessment are expressed as hazard indices. A hazard index of 1 or greater indicates possible health effects. A summary of hazard indices for chronic ecological effects is given on Table 2.

Calculated hazard indices revealed: no chronic effects (from exposure to surface soil) on species represented by the raccoon, muskrat, and common crow; but, possible chronic effects (from exposure to surface soil) on species represented by the meadow jumping mouse. Because of the limited area of contaminated surface soil (approximately 6 acres), effects on populations of small mammals, as represented by the mouse, are expected be minimal and likely to impact only animals with a home range confined to the fill limits. Population level effects to such mammals, therefore, are expected to be negligible.

7.0 DESCRIPTION OF ALTERNATIVES

7.1 Approach

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 acceleration of the remedial process. In keeping with this approach, a focused feasibility study was performed and its results are contained within the Remedial Investigation Report for LF-021 (URS Consultants, Inc. 1994).

7.2 Presumptive Remedy

Because treatment is often impractical, containment is generally considered the appropriate response action, or presumptive remedy, for landfill sites. According to USEPA guidance, potential components of a presumptive remedy for landfill sites include landfill capping, source area controls to contain contaminated groundwater, leachate collection and treatment, landfill gas collection and treatment, and institutional controls to supplement engineering controls. Response actions selected for individual sites are required to include only those components that are necessary, based upon site-specific conditions.

For LF-021, a landfill cap is a necessary component of the remedial action to address potential human and environmental risks associated with exposure to surface soil/fill. A soil layer had been established over the surface of LF-021 at the cease of operations; however, it has since deteriorated through localized erosion. Groundwater control and leachate collection are unnecessary components because there appears to have been little, if any, leachate generation and groundwater contamination due to the landfill is minimal. Contaminants in groundwater at the site were detected infrequently, were detected at relatively low concentrations, are relatively immobile in groundwater, and do not pose a significant threat to human health or the environment. In addition, analytical modeling has demonstrated that transport of chemicals resulting from leachate generation would have an insignificant impact on the nearby Saranac River. Landfill gas collection/treatment is not a necessary component since air monitoring results indicated that there are no appreciable landfill gas emissions. Institutional controls are a necessary component for remediation at LF-021 to protect and maintain the landfill cap and prevent public exposure to low-level groundwater contamination. Long-term monitoring of groundwater is a necessary component to ensure that the landfill's impact to groundwater remains at or below its current level and that the Saranac River will not be impacted by groundwater contamination from the landfill. In addition, periodic inspections and five-year regulatory site reviews are necessary to monitor the adequacy of remedial measures.

In summary, appropriate components of the presumptive remedy for LF-021 include a landfill cap, institutional controls, long-term monitoring of groundwater, five-year site reviews, and development of a post-closure plan specifying inspection, and maintenance and monitoring programs to be conducted over 30 years.

7.3 Development of a Remedial Alternative

Use of a presumptive remedy eliminates the need for the initial identification and screening of alternatives during the feasibility study (FS); however, potential alternatives for each component or combinations of components must be evaluated (USEPA 1993). Potential options for the remedial components considered appropriate for LF-021 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) a native soil cap. These three options were evaluated with respect to effectiveness, (i.e., the ability to meet remedial objectives and protect human health and the environment), implementability (both administrative and technical), and cost. All three landfill caps are expected to be effective.

Any of these caps, if properly designed and maintained, would prevent direct contact by either humans or ecological receptors with onsite soil/fill, and reduce risks to acceptable levels for both these receptors. The technical implementability (i.e., constructability) of the three caps is related to the cap components which are summarized below.

- Double barrier cap includes a gas collection layer, 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 layer, 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 cap would be comparatively easier to construct. Either of the barrier caps would be particularly difficult to construct on LF-021 because a large portion of the surface is heavily forested. Complete clearing and grubbing of the site prior to cap construction is undesirable since the significant vegetation on the surface protects the surface against erosion. Construction of either clay or flexible membrane barrier layers around the trees would be extremely difficult, and it is likely that the barrier layers would "leak." Such leakage would largely eliminate the advantage of the barrier cap over the native soil cover, and also would likely lead to cap deterioration from localized erosion.

Cap costs depend largely on the number of components and total cap thickness. A native soil cap is the least costly landfill cap. An estimate for the construction of a 12-inch native soil cap is approximately $70,000 per acre or $450,000 for the site. The construction cost for a single barrier cap is estimated to be $1,500,000 and the construction cost of the double barrier cap is estimated to be $2,500,000. 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 cap.

Institutional Controls

Institutional controls for LF-021 must be coordinated with the land use plan for Base closure which was developed and will be implemented by the Plattsburgh Airbase Redevelopment Corporation (PARC 1995). The

proposed institutional controls are consistent with the use (public/recreational) currently identified in the Reuse Plan. Institutional controls for LF-021 include restrictions on site development that protect the integrity of the cap and prevent human contact with contaminated soil. Currently, PARC has no plans for the development of the site. Institutional controls also include deed and lease restrictions on the use of water that would prohibit the use of groundwater as a potable supply source on, and immediately downgradient of the site.

Summary

The appropriate response action for LF-021 includes a re-establishment and upgrade of the existing native soil cap and institutional controls to restrict development of the site and use of groundwater as a potable supply source. Implementation of these remedial measures also would include continued groundwater monitoring and five-year site reviews to evaluate the effectiveness of remedial measures. In addition, a post-closure plan will be developed to specify inspection, and maintenance and monitoring programs for LF-021 for a period of 30 years. These remedial measures and the rationale for their selection are supported by USEPA guidance. The decision framework for evaluating the applicability of the presumptive remedy is provided in Figure 6.

8.0 ANALYSIS OF ALTERNATIVES

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 1990a). These nine criteria are listed and described in Table 3. The evaluation of the recommended remedial alternative at LF-021 with respect to these nine criteria is presented below.

Overall Protection of Human Health and the Environment - The alternative would reduce human and environmental risk to acceptable levels by preventing direct contact with contaminated soil/fill by human or ecological receptors. Proper inspection and repair of the landfill cap, implementation of deed and lease restrictions, and five-year site reviews would ensure continued protection from soil and groundwater contamination.

Compliance with ARARs - NYSDEC soil TBCs will not be met since treatment is not included in the alternative; however, these TBCs are a guidance rather than promulgated standards and the NYSDEC concurred with the recommended alternative because it adequately protects human health and the environment. In general, exceedances of groundwater ARARs at LF-021 are minimal. It is expected that over time, groundwater ARARs

Highlight 4: Decision Framework

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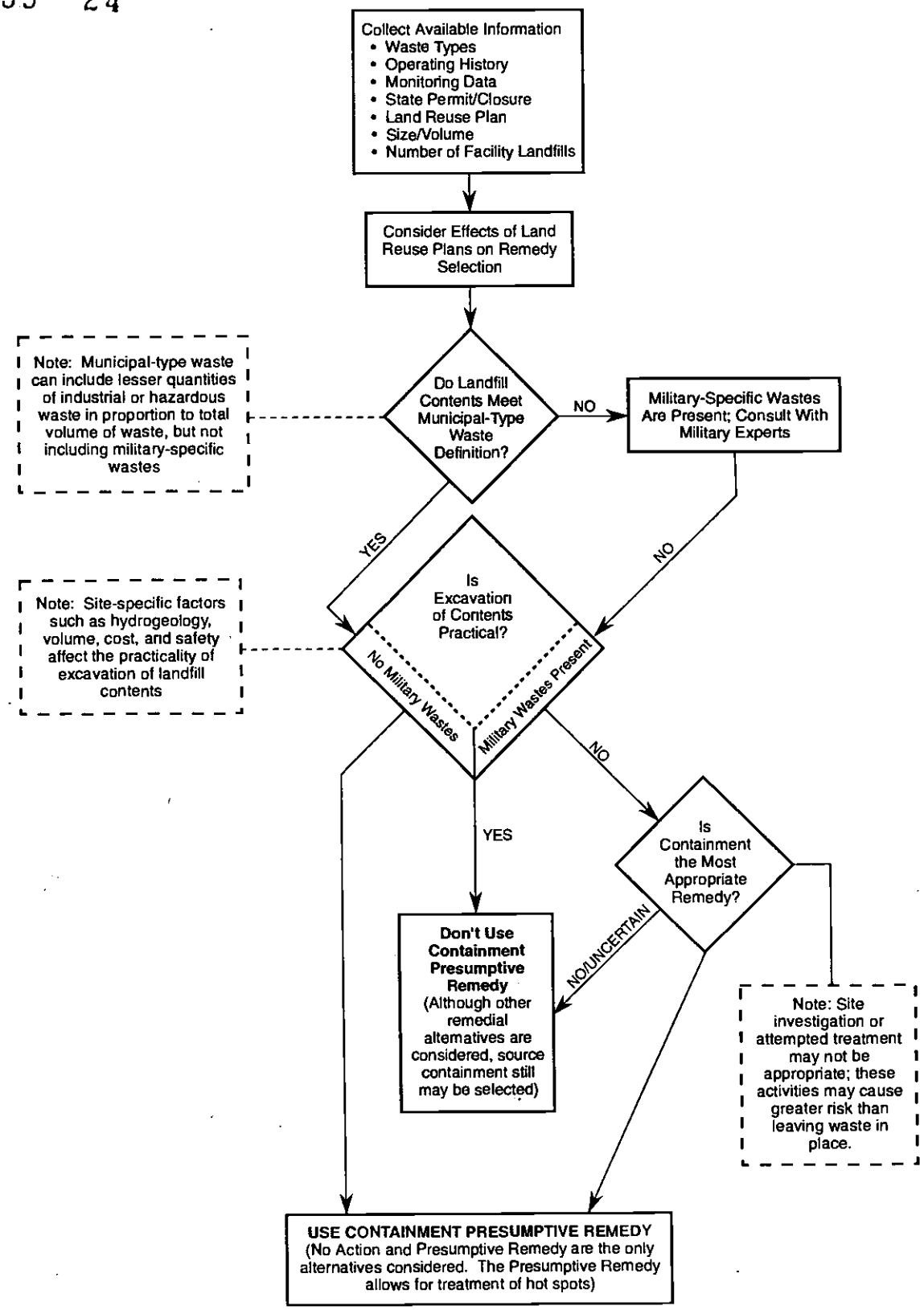

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CERCLA MILITARY LANDFILL
PRESUMPTIVE REMEDY DECISION FRAMEWORK

FIGURE 6

TABLE 3

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 for 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.

will be met through the natural attenuation of contaminants and the continued presence of a properly maintained cap. Human health will be adequately protected by preventing use of groundwater on and immediately downgradient of the site. Results of an analysis of surface soil samples collected between the landfill and the Saranac River indicated that contaminants are not migrating via overland flow toward the Saranac River and, therefore, will not negatively impact surface water or sediment quality. Construction of the cap with proper drainage control and continued monitoring will protect surface water and sediment quality. The recommended remedial alternative will comply with all action- and location-specific ARARs.

Long-Term Effectiveness and Permanence - Risks associated with direct exposure to surface soil/fill will be eliminated by the alternative. The remaining low-level risk from groundwater will be eliminated by implementation of use restrictions and ultimately by the natural attenuation of the groundwater contaminants. The monitoring program and five-year site reviews will be used to evaluate the effectiveness of remedial measures and, consequently, to protect human health and the environment. In addition, the post-closure plan will establish the ongoing requirements for continued integrity of the cover including requirements for periodic maintenance, inspection, and monitoring.

Reduction of Toxicity, Mobility, and Volume (TMV) - A treatment technology is not included in the alternative. There is no reduction of TMV.

Short-Term Effectiveness - Construction of the alternative will require some earthwork for site grading. During the construction period, short-term impacts to workers and the environment are possible via direct contact with soil or the 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 objective which is to prevent direct contact with onsite soil/fill by human or ecological receptors, will be met upon completion of construction.

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

Regular inspection of the cap will ensure that the cap remains effective in meeting the remedial objective. The monitoring program will help to evaluate the adequacy of controls and to protect downgradient environmental receptors and any future human receptors.

Cost - The capital cost includes the cost of cap construction and implementation of deed and lease restrictions. The capital cost estimate for this alternative is $452,000, or approximately $79,000 per acre. Bids have been received for the capital construction costs and range from approximately $75,000 to $113,000 per acre. Operation and maintenance (O&M) costs include quarterly monitoring, and cap inspection and repair. The estimated annual O&M cost is $62,000 for the first five years (during quarterly monitoring) and $30,000 for the next twenty-five years. The present worth cost of the annual O&M cost, based on a 30-year period at an interest rate of 6 percent, is $543,000.

State Acceptance - The NYSDEC has provided input during the preparation of the RI and concurred with the remedial alternative.

Community Acceptance - Community acceptance of the recommended alternative was evaluated after the public comment period and is documented in this ROD.

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 recommends the implementation of containment remedies for landfills.

9.0 THE SELECTED REMEDY

Plattsburgh AFB has selected "Native Soil Cap and Institutional Controls" as the selected remedy for LF-021. 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 a 9-inch soil layer, a 3-inch topsoil layer, and a vegetative cover will be established at LF-021 as a supplement to the existing soil cap. Soil for capping will be chemically analyzed before it is utilized at LF-021. Large trees (i.e., those over 6 inches in diameter) may be left in place during soil cover establishment. Only trees that will not interfere with the attainment of the remedial goal or trees that will enhance the maintenance of positive surface water runoff and erosion control will be

considered for incorporation into the cap. Soil layers will be compacted to reduce permeability and the site cap will be constructed to control surface water runoff 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. 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 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. Area groundwater use will be restricted in the area shown on Figure 3 and includes the area encompassing the landfill, northward to the Saranac River.

Monitoring - Groundwater from five existing monitoring wells (MW-21-002 and MW-21-004 through MW-21-007) and one new well (located between MW-21-005 and MW-21-008) will be sampled and analyzed for TCL VOCs, SVOCs, TCL pesticides/PCBs, and target analyte list (TAL) metals. Samples will be analyzed quarterly the first five years after the cap is constructed in order to establish baseline conditions, and annually thereafter. After each sampling event, the parameter list will be examined to determine if the analytical program should be modified. Monitoring results will be reviewed by the USAF, USEPA, and NYSDEC.

Five-Year Site Review - Every five years, data generated by the monitoring program will be reviewed to evaluate the effectiveness of remedial measures.

Post-Closure Plan - A post-closure plan will be developed to establish the on-going requirements for continued integrity of the cover. The plan will specify the requirements for maintenance, inspection, and monitoring, for the 30-year post-closure period.

The remedy will eliminate the risks associated with direct exposure to surface soil/fill 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. Construction of the remedy will require some earthwork for site grading. During the one-year construction period, short-term impacts to workers are possible through inhalation of fugitive dust. However, these impacts easily can be avoided by implementing conventional safety precautions. The remedy is expected to be implemented with little, if any, difficulty. Construction of the cap and grading in heavily-wooded

areas will present the greatest difficulty. Materials required for construction (such as topsoil and common borrow) are expected to be available. Regular inspection of the cap will ensure that the cap remains effective in meeting the remedial objective. The monitoring program will help to evaluate the adequacy of controls and to protect downgradient environmental receptors and any future human receptors. The cost includes the cap construction, implementation of deed restriction, and O&M cost (Table 4).

The selected remedy complies with state regulations governing closure and post-closure of solid waste landfills, and the NYSDEC has had the opportunity to review and comment on all documents procured for LF-021. State and public comments received on the LF-021 Remedial Investigation Report and the Proposed Plan to date have been incorporated into this ROD.

10.0 STATUTORY DETERMINATIONS

The remedial action selected for implementation at LF-021 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 (as well as the other alternatives evaluated) 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-021 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 imposed to limit the future development of the site and prohibit 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 direct contact with soil/fill material by human or ecological receptors.

Currently, LF-021 poses no unacceptable risk to human health. Carcinogenic risk is 1×10^{-4} and the noncarcinogenic hazard index is less than 1. Though the calculated hazard index for ecological receptors revealed possible chronic effects for one indicator species (i.e., the meadow jumping mouse), effects on the population of these mammalian species are expected to be negligible.

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 transported by precipitation and subsequently groundwater. Moreover, institutional controls will prohibit onsite and downgradient use of groundwater as a water supply; and cap inspection and repair will ensure the integrity of the cap is maintained. 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.

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). The chemical-specific ARARs will be achieved over time 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.

Overall, contaminant levels in groundwater are considered to be minimal; therefore, human health can be protected by prohibiting its use on site, and immediately downgradient of the site. Only one chemical, 4,4'-DDT, was detected at a concentration above NYSDEC water quality standards. Environmental investigations did not reveal evidence of contaminant migration towards the Saranac River, so neither surface water nor sediment are expected to be impacted negatively. Construction of a cap with proper drainage controls and continued monitoring will protect surface water and sediment quality.

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 1501)* - The Department of the Air Force revised their protocols to update its process for 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) 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, groundwater analytical results were compared with water quality standards and NYSDEC ambient water quality guidance values (TOGS 1.1.1). Chrysene and benzo(a)anthracene were detected at concentrations above NYSDEC guidance values in the second round groundwater samples.

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 $450,000, or approximately $79,000 per acre. Bids have been received for the capital construction costs and range from approximately $75,000 to $113,000 per acre. The estimated annual O&M cost, including groundwater monitoring, and cap inspection and repair, is $62,000 for the first five years (during quarterly monitoring), and $30,000 for the next 25 years (during annual monitoring). The present worth cost of the annual O&M cost, based on a 30-year period at an interest rate of 6 percent, is $543,000 (Table 4).

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.

10.6 The Selected Remedy Does Not Satisfy 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-021 landfill site. The size of the landfill and 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.

TABLE 4
COST ESTIMATE SUMMARY FOR THE SELECTED REMEDY

	UNIT	QUANTITY	UNIT COST	TOTAL COST
CAPITAL COSTS:				
1. VEGETATIVE COVER	ACRE	5.7	$ 2,300.00	$ 13,000.00
2. TOP SOIL INCLUDING SPREADING	ACRE	5.7	18,000.00	103,000.00
3. SOIL BORROW LAYER INCLUDING COMPACTION	CY	5,060	21.50	109,000.00
4. REGRADING OF SOIL	CY	5,060	22.50	114,000.00
5. MONITORING WELL	EA	1	1,200.00	1,200.00
6. MOBILIZATION AND DEMOBILIZATION	5%			17,000.00
7. CONSTRUCTION, ADMINISTRATION, AND DESIGN ENGINEERING	15%			54,000.00
8. CONTINGENCY	10%			41,000.00
				$452,000.00
OPERATION AND MAINTENANCE COST:				
1. LANDFILL CAP	HR	80	$ 50.00	$ 4,000.00
INSPECTION OF CAP	NO./YR	7	430.00	3,010.00
MAINTENANCE (CUT GRASS)	NO.	2	6,000.00	12,000.00
REPAIR (REPLACEMENT OF TOPSOIL AND RESEEDING)				
Total Yearly Cost For Cap Inspection , Monitoring And Repair				$19,010.00
2. GROUNDWATER MONITORING SAMPLING - QUARTERLY 6 GROUNDWATER + 4 QA/QC SAMPLES 2 WORKERS x 1.5 DAYS x 8 HRS/DAY	HR	96	$ 50.00	$ 4,800.00
ANALYTICAL TESTING OF SAMPLES 10 SAMPLES/4 TIMES A YEAR	NO.	40	$ 705.00	$ 28,200.00
AUDITING OF SAMPLING RESULTS AND PREPARATION OF A REPORT - TOTAL OF 30 HRS/ROUND x 4 EVENTS/YEAR	HR	120	$ 80.00	$ 9,600.00
Total Cost of Groundwater Monitoring Per Year on a Quarterly Basis for the First 5 years				$ 42,600.00
Total Cost of Groundwater Monitoring on an Annual Basis for Year 6 to Year 30				$10,650.00
Present worth of groundwater monitoring for 30 years @ 6% interest				$281.181.00
Present worth of cap maintenance for 30 years @ 6% interest				$261.669.00
TOTAL PRESENT WORTH OF ALTERNATIVE				$994,850.00

TOTAL COSTS $946,250.00

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11.0 DOCUMENTATION OF NO SIGNIFICANT CHANGES

Plattsburgh AFB presented a Proposed Plan for the preferred alternative for remediation of LF-021 in December 1996 that included institutional and engineering controls. 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
- 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 RI 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-021 . A copy of the declaration of concurrence is attached as Appendix B.

REFERENCES

E. C. Jordan Co. 1989. *Installation Restoration Program, Final Site Inspection Report, Plattsburgh Air Force Base, Plattsburgh, New York.*

New York State Department of Environmental Conservation (NYSDEC). 1994. Bureau of Hazardous Waste Remediation. *Determination of Soil Cleanup Objectives and Cleanup Levels, TAGM #4046.*

_____. 1993. *Ambient Water Quality Standards and Guidance Values, TOGS 1.1.1.* Albany: Division of Water.

PARC. 1995. *Comprehensive Reuse Plan for Plattsburgh Air Force Base.* 15 September (subject to revision).

Radian Corporation. 1985. *Installation Restoration Program, Phase I - Records Search, Plattsburgh Air Force Base, Plattsburgh, New York.*

URS Consultants, Inc. 1994. *Former Landfill (LF-021), Remedial Investigation Report, Plattsburgh Air Force Base, Installation Restoration Program, Plattsburgh, New York.*

U.S. Environmental Protection Agency (USEPA). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, October. Cincinnati, OH: USEPA.

_____. 1989a. *Risk Assessment Guidance for Superfund, Vol I: Human Health Evaluation Manual (Part A), Interim Final*, (EPA/540/1-89/002). Cincinnati, OH: USEPA.

_____. 1989b. *Risk Assessment Guidance for Superfund, Vol. II: Environmental Evaluation Manual* (EPA/540/1-89/001). Cincinnati, OH: USEPA.

_____. 1989c. *Guidance on Preparing Superfund Decision Documents: The Proposed Plan, The Record of Decision, Explanation of Significant Differences, The Record of Decision Amendment, Interim Final,* July. Cincinnati, OH: USEPA.

_____. 1990a. *Streamlining the RI/FS for CERCLA Municipal Landfill Sites.* Cincinnati, OH: USEPA.

_____. 1990b. "National Oil and Hazardous Substance Pollution Contingency Plan;" 40 CFR Part 300; Washington, D.C. March 8, 1990.

_____. 1991a. *Summary Report on Issues in Ecological Risk Assessment*, EPA/625/3-91-018, Risk Assessment Forum. Cincinnati, OH: USEPA.

_____. 1991b. *Ecological Assessment of Superfund Sites: An Overview*, ECO Update, Vol. 1, No. 2, Publication 934.0-05I. Cincinnati, OH: USEPA.

_____. 1991c. *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfills,* EPA/540/P-91/001. Cincinnati, OH: USEPA.

_____. 1993. *Presumptive Remedy for CERCLA Municipal Landfill Sites.* Cincinnati, OH: USEPA.

_____. 1996. *Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills (Interim Guidance).* EPA/540/F-96/007, April. Washington, D.C.

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.

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 be 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 constituents 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-021

CHEMICALS DETECTED
IN ENVIRONMENTAL MEDIA
AT LF-021

Table/Figure Number	Title
Table A-1	Chemicals Detected in Background Surface Soil Samples
Table A-2	Chemicals Detected in Surface Soil Samples Collected Within the Landfilled Area
Table A-3	Chemicals Detected in Surface Soil Samples Collected Downslope from the Landfill
Figure A-1	Chemicals Detected in Surface Soil Samples
Table A-4	Chemicals Detected in Background Subsurface Soil Samples (Borings)
Table A-5	Chemicals Detected in Subsurface Soil Samples (Borings Along Downslope Perimeter)
Table A-6	Chemicals Detected in Subsurface Soil Samples (From Boring SB-021-01)
Figure A-2	Chemicals Detected in Subsurface Soil Samples from Borings
Table A-7	Chemicals Detected in Waste Samples Obtained During Test Trenching
Figure A-3	Chemicals Detected in Waste Samples Obtained During Test Trenching
Table A-8	Chemicals Detected in Subsurface Soil Samples Obtained During Test Trenching
Figure A-4	Chemicals Detected in Soil Samples Obtained During Test Trenching
Table A-9	Chemicals Detected in Groundwater Samples
Figure A-5	Chemicals Detected in Groundwater (Round 1)
Figure A-6	Chemicals Detected in Groundwater (Round 2)

TABLE A-1

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS DETECTED IN BACKGROUND SURFACE SOIL SAMPLES
(SS-021-01, SS-021-09, SS-021-10)

ANALYTE	*TBC	FREQUENCY OF DETECTION	DETECTED MINIMUM CONCENTRATION	DETECTED MAXIMUM CONCENTRATION	AVERAGE OF DETECTIONS
Diethylphthalate (µg/kg)	7100	1/3	710	710	710
Arsenic	7.5	3/3	1.2	2	1.6
Barium	300	3/3	16.8	64.4	36.4
Chromium	50	3/3	4.8	7	6.1
Lead	**	3/3	13.7	45.5	24.4

Results reported in ppm (mg/kg) unless otherwise noted.

*TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum #4046 - "Determination of Soil Cleanup Objectives and Cleanup Levels," November 16, 1992.

** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.

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TABLE A-2

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION CHEMICALS DETECTED IN SURFACE SOIL SAMPLES COLLECTED WITHIN THE LANDFILLED AREA

ANALYTE	*TBC	FREQUENCY OF DETECTION	FREQUENCY OF TBC EXCEEDANCES	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION
Acetone	200	1/10	0/10	13	13
Diethylphthalate	7100	2/10	0/10	28	4500
Phenanthrene	50000	4/10	1/10	21	170000
Di-n-butylphthalate	8100	1/10	0/10	46	46
Di-n-octylphthalate	50000	1/10	0/10	380	380
Fluoranthene	50000	5/10	1/10	42	910000
Pyrene	50000	4/10	1/10	160	860000
Benzo(a)anthracene	224	4/10	1/10	91	590000
Chrysene	400	4/10	1/10	99	570000
Benzo(b)fluoranthene	1100	6/10	1/10	41	970000
Benzo(k)fluoranthene	1100	3/10	1/10	54	340000
Benzo(a)pyrene	61	4/10	4/10	110	680000
Indeno(1,2,3-cd)pyrene	3200	4/10	1/10	95	500000
Dibenz(a,h)anthracene	14	3/10	3/10	160	140000
Benzo(g,h,i)perylene	50000	4/10	1/10	93	490000
Acenaphthylene	41000	1/10	0/10	850	850
Acenaphthene	50000	1/10	0/10	21000	21000
Dibenzofuran	6200	1/10	0/10	5100	5100
Fluorene	50000	1/10	1/10	150000	150000
Anthracene	50000	1/10	0/10	50000	50000
Carbazole	-	1/10	-	18000	18000
Bis(2-ethylhexyl)phthalate	50000	1/10	0/10	750	750
Aldrin	41	1/10	1/10	360	360
Dieldrin	44	1/10	0/10	24	24
Endrin Ketone	-	1/10	-	730	730
alpha-Chlordane	540	1/10	0/10	20	20
4,4'-DDE	2100	8/10	0/10	4.8	450
4,4'-DDD	2900	5/10	0/10	4.1	220
4,4'-DDT	2100	7/10	0/10	3.4	1000
Methoxychlor	10000	1/10	0/10	550	550
gamma-Chlordane	540	2/10	0/10	34	40
Aroclor-1260	1000	1/10	1/10	18000	18000
Arsenic (mg/kg)	7.5	9/10	0/10	0.92	4.5
Barium (mg/kg)	300	10/10	1/10	17.6	1030
Cadmium (mg/kg)	10	2/10	0/10	2.9	6.6
Chromium (mg/kg)	50	10/10	1/10	2.4	56.4
Lead (mg/kg)	**	10/10	0/10	2.3	386
Mercury (mg/kg)	0.1	7/10	7/10	0.12	0.82
Selenium (mg/kg)	2	1/10	0/10	0.32	0.32
Silver	-	1/10	0/10	2.5	2.5

Results reported in ppb (µg/kg) unless otherwise noted.

*TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum # 4046, November 16, 1992.

Samples include SS-021-02, SS-021-03, SS-021-04, SS-021-05, SS-021-06, SS-021-07, SS-021-08, SS-021-11, SS-021-12, and SS-021-13

** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.

TABLE A-3

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION CHEMICALS DETECTED IN SURFACE SOIL SAMPLES COLLECTED DOWNSLOPE FROM THE LANDFILL

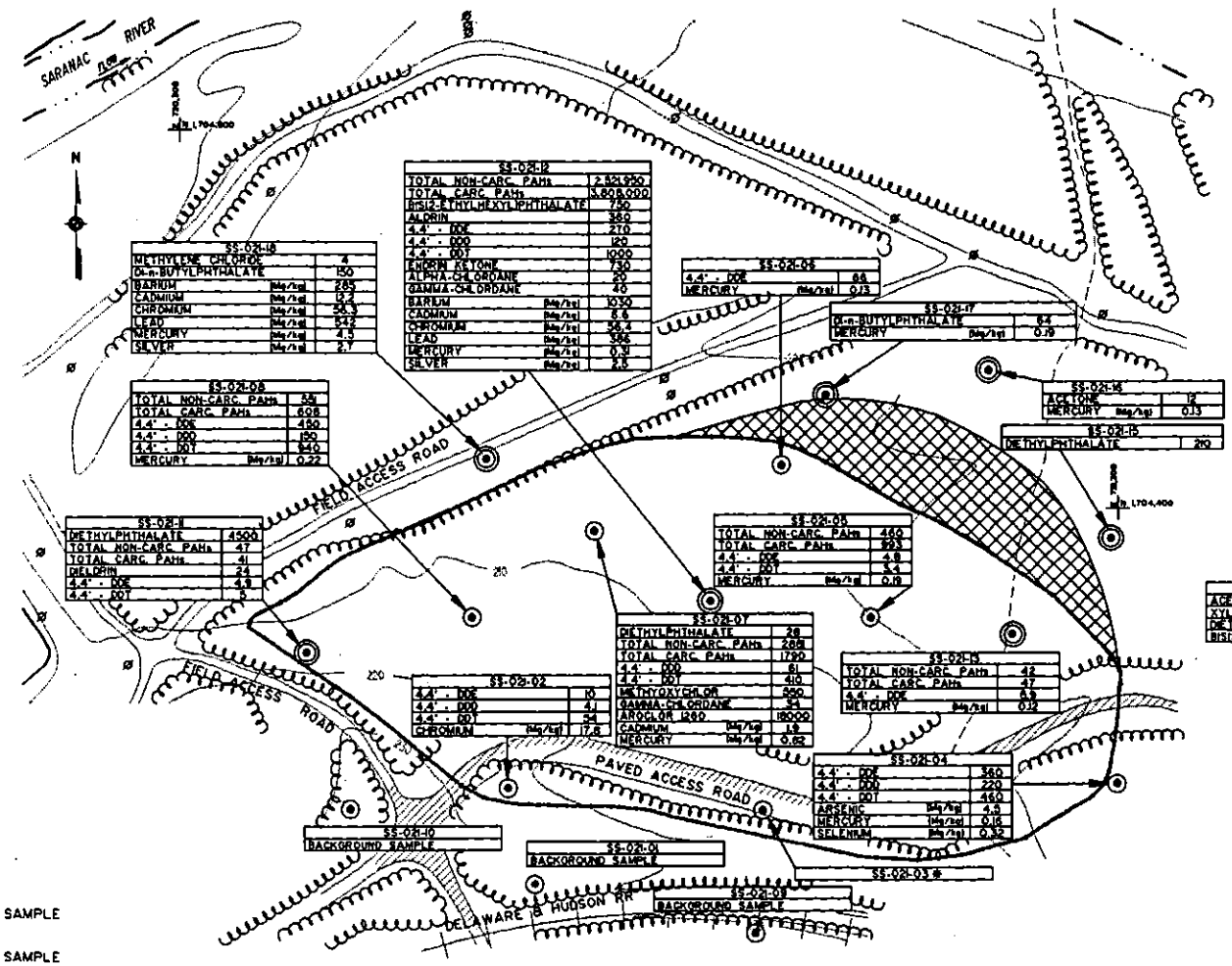
ANALYTE	*TBC	FREQUENCY OF DETECTION	FREQUENCY OF TBC EXCEEDANCES	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION
Methylene Chloride	100	1/5	0/5	4	4
Acetone	200	3/5	0/5	4	13
Xylene (Total)	1200	1/5	0/5	7	7
Bis(2-ethylhexyl)phthalate	50000	1/5	0/5	70	70
Arsenic (mg/kg)	7.5	5/5	0/5	0.6	2.7
Barium (mg/kg)	300	5/5	0/5	14.7	285
Cadmium (mg/kg)	10	1/5	1/5	12.2	12.2
Chromium (mg/kg)	50	5/5	1/5	2.2	56.3
Lead (mg/kg)	**	5/5	1/5	15	542
Mercury (mg/kg)	0.1	3/5	3/5	0.13	4.5
Silver (mg/kg)	-	1/5	0/5	2.7	2.7

Results reported in ppb (µg/kg) unless otherwise noted.

*TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum # 4046, November 16, 1992.

Samples Include SS-021-14, SS-021-15, SS-021-16, SS-021-17, and SS-021-18.

** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.



NOTES:

1. THE FIGURE PRESENTS ALL VOLATILE ORGANIC COMPOUNDS, PESTICIDES, PCBs AND METALS (SEE NOTE 4) DETECTED IN THE SURFACE SOIL SAMPLES. SEMIVOLATILE ORGANIC COMPOUND DETECTIONS HAVE BEEN GROUPED INTO: DIETHYPHTHALATES, TOTAL NON-CARC. PAHs (SEE NOTE 2); AND TOTAL CARC. PAHs (SEE NOTE 3); ALL DETECTIONS ARE REPORTED IN ug/kg UNLESS OTHERWISE INDICATED.
2. TOTAL NON-CARC. PAHs = THE TOTAL OF THE CONCENTRATIONS OF THESE NON-CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: ACENAPHTHENE, ACENOPHTHYLENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLOURANTHENE, PYRENE, DIBENZOFURAN AND BENZO(G,H,I)PERYLENE.
3. TOTAL CARC. PAHs = THE TOTAL OF THE CONCENTRATIONS OF THESE CARCINOGENIC OR POTENTIALLY CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: CARBAZOLE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLOURANTHENE, BENZO(K)FLOURANTHENE, BENZO(A)PYRENE, INDENO(1,2,3-CD)PYRENE AND DIBENZ(A,H)ANTHRACENE.
4. ONLY METALS DETECTIONS WHOSE CONCENTRATIONS EXCEEDED TWO-TIMES THE MAXIMUM DETECTED IN THE BACKGROUND SAMPLES (SS-021-01, SS-021-09, AND SS-021-10) ARE REPORTED.

* NO ORGANIC COMPOUNDS WERE DETECTED IN THESE SAMPLES AND NO INORGANIC (METALS) DETECTIONS WERE ABOVE TWO TIMES THE MAXIMUM DETECTED CONCENTRATION IN THE BACKGROUND SAMPLES (SS-021-01, SS-021-09, AND SS-021-10).

LEGEND

- SURFACE SOIL SAMPLE
- SECOND PHASE SURFACE SOIL SAMPLE
- APPROXIMATE EXTENT OF SURFICIAL DEBRIS MOUNDS
- APPROXIMATE LIMIT OF FILL
- WATER
- TREE LINE

200 0 200

SCALE IN FEET

959 43

URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.
CHEMICALS DETECTED IN SURFACE SOIL SAMPLES

FIGURE A-1

TABLE A-4

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS DETECTED IN BACKGROUND SUBSURFACE SOIL SAMPLES (Borings)
(SS-021-09-3, SS-021-10-3, MW-PH-021-07-11)

ANALYTE	*TBC	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	AVERAGE OF DETECTIONS
delta-BHC	300	1/3	0.47	0.47	0.47
4,4-DDE	2100	1/3	4.3	4.3	4.3
4,4'-DDT	2100	1/3	5.7	5.7	5.7
Arsenic (mg/kg)	7.5	3/3	0.66	2.5	1.7
Barium (mg/kg)	300	3/3	19.2	52.7	33.4
Chromium (mg/kg)	50	3/3	5.9	9.2	7.6
Lead (mg/kg)	**	3/3	2.5	58.3	22.1
Selenium (mg/kg)	2	1/3	0.21	0.21	0.21

Results reported in ppb (µg/kg) unless otherwise noted.

*TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum #4046 - "Determination of Soil Cleanup Objectives and Cleanup Levels," November 16, 1992.

** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.

TABLE A-5

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS DETECTED IN SUBSURFACE SOIL SAMPLES (Borings Along Downslope Perimeter)

ANALYTE	*TBC	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	AVERAGE OF DETECTIONS
Toluene	1500	1/3	4	4	4
4,4'-DDE	2100	1/3	0.75	0.75	0.75
4,4'-DDT	2100	1/3	1.7	1.7	1.7
Arsenic (mg/kg)	7.5	3/3	1.0	3.6	2.1
Barium (mg/kg)	300	3/3	21.5	39.0	30.9
Chromium (mg/kg)	50	3/3	4.5	11.2	7.9
Lead (mg/kg)	**	3/3	3.5	8.6	5.4
Silver (mg/kg)	-	1/3	0.55	0.55	0.55

Results reported in ppb (µg/kg) unless otherwise noted.

*TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum #4046 - "Determination of Soil Cleanup Objectives and Cleanup Levels," November 16, 1992.

** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.

TABLE A-6

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION CHEMICALS DETECTED IN SUBSURFACE SOIL SAMPLES FROM BORING SB-021-01

ANALYTE	*TBC	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	AVERAGE OF DETECTIONS
Methylene Chloride	100	1/2	2	2	2
Phenanthrene	50000	1/2	320	320	320
Anthracene	50000	1/2	330	330	330
Fluoranthene	50000	1/2	1400	1400	1400
Pyrene	50000	1/2	910	910	910
Benzo(a)anthracene	220	1/2	330	330	330
Chrysene	400	1/2	340	340	340
Benzo(b)fluoranthene	1100	1/2	130	130	130
Benzo(k)fluoranthene	1100	1/2	140	140	140
Benzo(a)pyrene	61	1/2	99	99	99
Arsenic (mg/kg)	7.5	2/2	2.1	2.5	2.3
Barium (mg/kg)	300	2/2	42.2	90.3	66.3
Chromium (mg/kg)	50	2/2	6.2	21.8	14
Lead (mg/kg)	**	2/2	4.8	7	5.9
Selenium (mg/kg)	2	1/2	0.24	0.24	0.24

Results reported in ppb (µg/kg) unless otherwise noted.

*TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum #4046 - "Determination of Soil Cleanup Objectives and Cleanup Levels," November 16, 1992.

** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.

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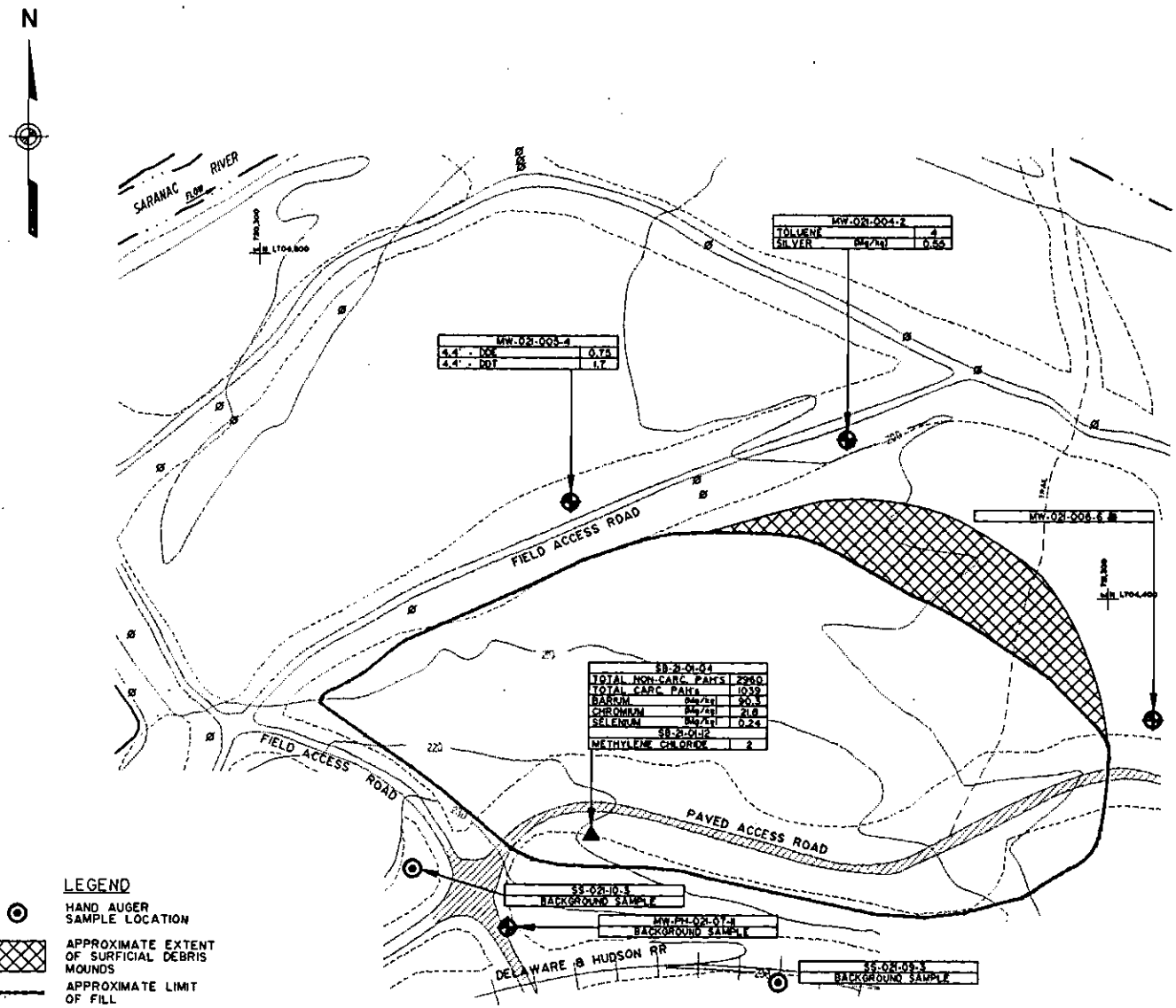
\35291\CAD\LF021\ 1=200 5/3/96-1 RAL



NOTES

1. THE FIGURE PRESENTS ALL VOLATILE ORGANIC COMPOUNDS, PESTICIDES, PCB's AND METALS (SEE NOTE 4) DETECTED IN THE SUBSURFACE SOIL SAMPLES. SEMIVOLATILE ORGANIC COMPOUND DETECTIONS HAVE BEEN GROUPED INTO: TOTAL NON-CARC PAH's (SEE NOTE 2); AND TOTAL CARC. PAH's (SEE NOTE 3). ALL DETECTIONS ARE REPORTED IN ug/kg UNLESS OTHERWISE INDICATED.
2. TOTAL NON-CARC. PAH's = THE TOTAL OF THE CONCENTRATIONS OF THESE NON-CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLOURANTHENE, PYRENE, AND BENZO(G,H,I)PERYLENE.
3. TOTAL CARC. PAH's = THE TOTAL OF THE CONCENTRATIONS OF THESE CARCINOGENIC OR POTENTIALLY CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: CARBAZOLE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLOURANTHENE, BENZO(K)FLOURANTHENE, BENZO(A)PYRENE, INDENO(1,2,3-CD)PYRENE AND DIBENZ(A,H)ANTHRACENE.
4. ONLY METALS DETECTIONS WHOSE CONCENTRATIONS EXCEEDED TWO-TIMES THE MAXIMUM DETECTED IN THE BACKGROUND SAMPLES (SS-021-09-3, SS-021-10-3, AND MW-PH-021-07-11) ARE REPORTED.

* NO ORGANIC COMPOUNDS WERE DETECTED IN THESE SAMPLES AND NO INORGANIC (METALS) DETECTIONS WERE ABOVE TWO TIMES THE MAXIMUM DETECTED CONCENTRATION IN THE BACKGROUND SAMPLES (SS-021-09-3, SS-021-10-3, AND MW-PH-021-07-11).

LEGEND

- HAND AUGER SAMPLE LOCATION
- APPROXIMATE EXTENT OF SURFICIAL DEBRIS MOUNDS
- APPROXIMATE LIMIT OF FILL
- MONITORING WELL (INSTALLED BY URS 1993)
- SOIL BORING (URS 1993)
- WATER
- TREE LINE

200 0 200

SCALE IN FEET

959 47

URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.
CHEMICALS DETECTED IN SUBSURFACE SOIL SAMPLES FROM BORINGS

FIGURE A-2

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TABLE A-7

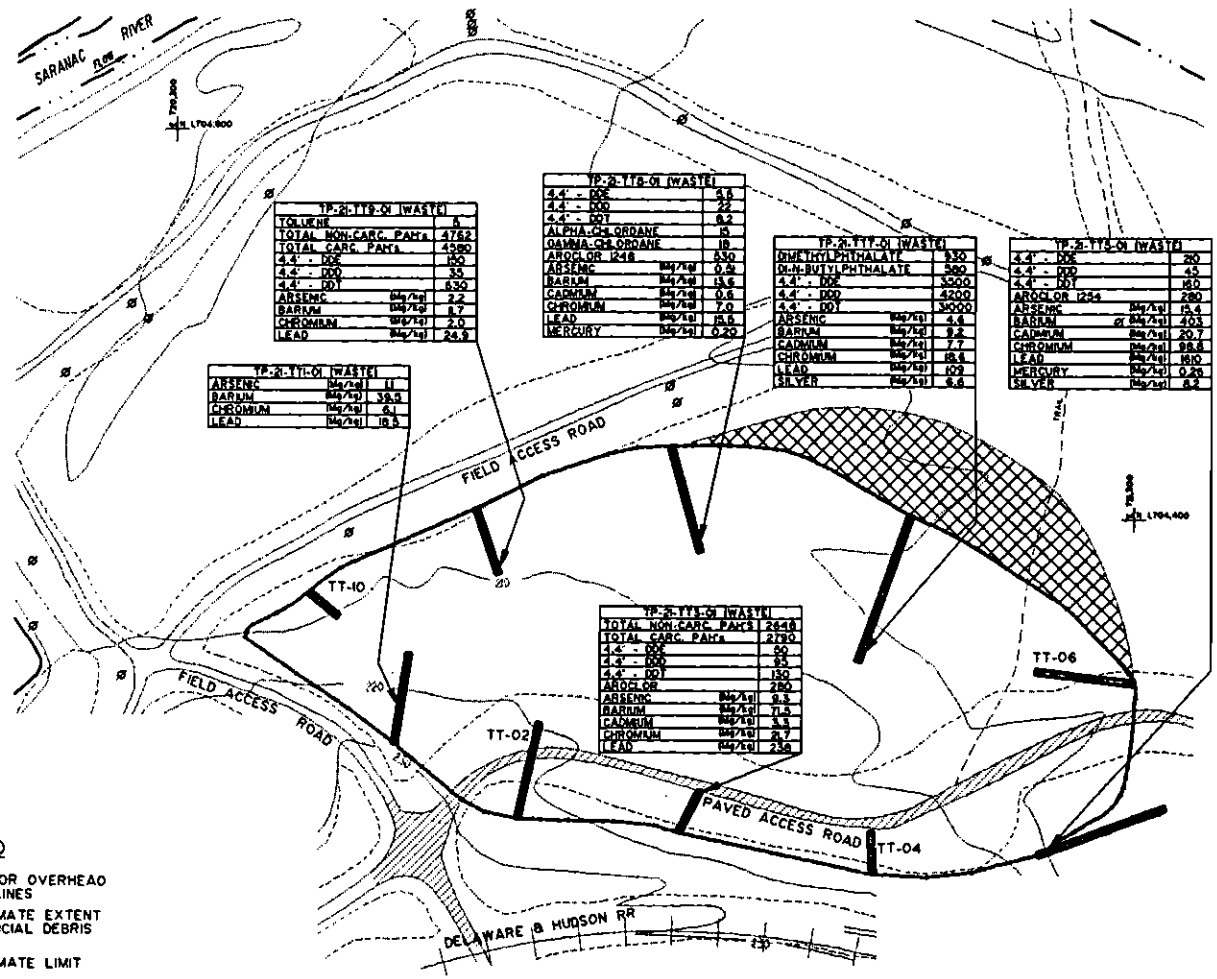
FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS DETECTED IN WASTE SAMPLES OBTAINED DURING TEST TRENCHING

ANALYTE	*RANGE OF BACKGROUND CONCENTRATION	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	AVERAGE OF DETECTIONS
Toluene	ND	1/6	5	5	5
Dimethylphthalate	ND	1/6	930	930	930
Fluorene	ND	1/6	56	56	56
Phenanthrene	ND	2/6	540	900	720
Anthracene	ND	2/6	72	92	82
Carbazole	ND	1/6	110	110	110
Di-n-butylphthalate	ND	1/6	580	580	580
Fluoranthene	ND	2/6	700	1700	1200
Pyrene	ND	2/6	840	1700	1270
Benzo(a)anthracene	ND	2/6	390	710	550
Chrysene	ND	2/6	420	820	620
Benzo(b)fluoranthene	ND	2/6	990	1200	1095
Benzo(k)fluoranthene	ND	1/6	380	380	380
Benzo(a)pyrene	ND	2/6	510	680	595
Indeno(1,2,3-cd)pyrene	ND	2/6	370	560	465
Dibenz(a,h)anthracene	ND	2/6	110	120	115
Benzo(g,h,i)perylene	ND	2/6	370	440	405
4,4'-DDE	ND-0.47	5/6	5.5	3500	783
4,4'-DDD	ND	5/6	21	4200	879
4,4'-DDT	ND-5.7	5/6	8.2	31000	6386
alpha-Chlordane	ND	1/6	15	15	15
gamma-Chlordane	ND	1/6	18	18	18
Aroclor-1248	ND	1/6	530	530	530
Aroclor-1254	ND	2/6	280	280	280
Arsenic (mg/kg)	0.66-2.5	6/6	0.51	15.4	5.5
Barium (mg/kg)	19.2-52.7	6/6	11.7	403	105
Cadmium (mg/kg)	ND	4/6	0.06	20.7	8.08
Chromium (mg/kg)	5.9-9.2	6/6	2.0	121	29.4
Lead (mg/kg)	2.5-58.3	6/6	15.5	2120	421
Mercury (mg/kg)	ND	2/6	0.20	0.26	0.26
Selenium (mg/kg)	ND	1/6	0.37	0.37	0.37
Silver (mg/kg)	ND	2/6	6.6	13.6	10.1

Results reported in ppb (µg/kg) unless otherwise noted.

*Values from Table A-3.

ND - Not Detected



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NOTES

1. THIS FIGURE PRESENTS ALL VOLATILE ORGANIC COMPOUNDS, PESTICIDES, PCB's AND METALS DETECTED IN THE WASTE SAMPLES. SEMIVOLATILE ORGANIC COMPOUND DETECTIONS HAVE BEEN BEEN GROUPED INTO: INDIVIDUAL PHTHALATES, TOTAL NON-CARC. PAH's (SEE NOTE 2); TOTAL CARC. PAH's (SEE NOTE 3);
   ALL DETECTIONS ARE REPORTED IN ug/kg UNLESS OTHERWISE INDICATED.

2. TOTAL NON-CARC. PAH's = THE TOTAL OF THE CONCENTRATIONS OF THESE NON-CARCINOGENIC POLY-CYCLIC AROMATIC HYDROCARBON COMPOUNDS: ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLOURANTHENE, PYRENE, AND BENZO(G,H,I)PERYLENE.

3. TOTAL CARC. PAH's = THE TOTAL OF THE CONCENTRATIONS OF THESE CARCINOGENIC OR POTENTIALLY CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: CARBAZOLE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLOURANTHENE, BENZO(K)FLOURANTHENE, BENZO(A)PYRENE, INDENO(1,2,3-CD)PYRENE AND DIBENZ(A,H)ANTHRACENE.

LEGEND

- POLES FOR OVERHEAD POWER LINES
- APPROXIMATE EXTENT OF SURFICIAL DEBRIS MOUNDS
- APPROXIMATE LIMIT OF FILL
- TEST TRENCH LINE (BLACK AREAS INDICATE PIT EXCAVATIONS)
- WATER
- TREE LINE

959 49

200 0 200

SCALE IN FEET

URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.

CHEMICALS DETECTED IN WASTE SAMPLES OBTAINED DURING TEST TRENCHING

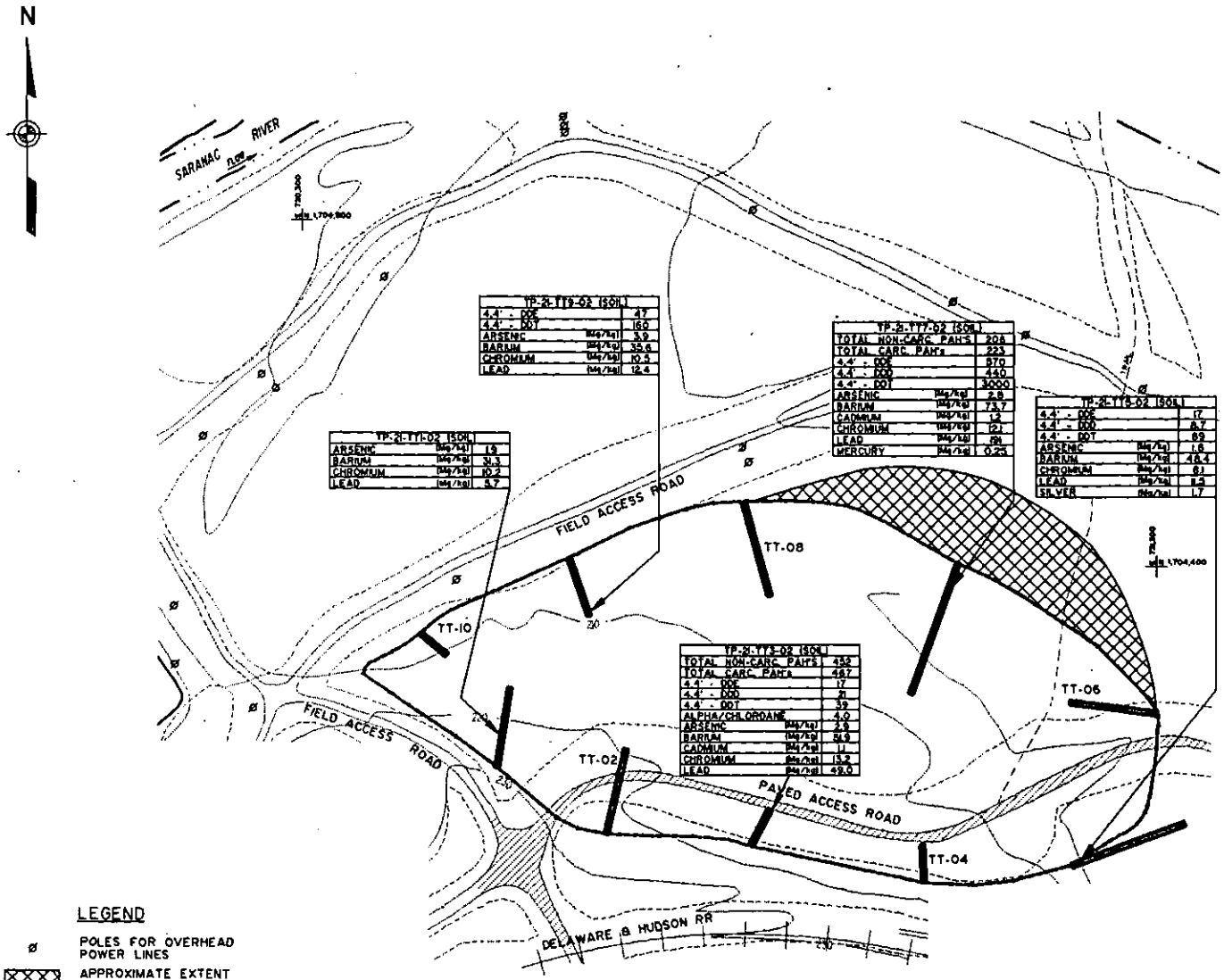
FIGURE A-3

TABLE A-8

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS DETECTED IN SUBSURFACE SOIL SAMPLES OBTAINED DURING TEST TRENCHING

ANALYTE	*RANGE OF BACKGROUND CONCENTRATION	**TBC	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	AVERAGE OF DETECTIONS
Phenanthrene	ND	50000	2/5	37	100	68.5
Fluoranthene	ND	50000	2/5	70	130	100
Pyrene	ND	50000	2/5	78	140	109
Benzo(a)anthracene	ND	220	2/5	40	72	56
Chrysene	ND	400	2/5	39	76	57.5
Benzo(b)fluoranthene	ND	1100	2/5	53	130	92
Benzo(k)fluoranthene	ND	1100	2/5	22	59	41
Benzo(a)pyrene	ND	61	2/5	38	67	52.5
Indeno(1,2,3-cd)pyrene	ND	3200	2/5	31	63	47
Benzo(g,h,i)perylene	ND	41	2/5	21	82	51.5
4,4'-DDE	ND-0.47	2100	4/5	17	570	163
4,4'-DDD	ND	2900	3/5	8.7	440	157
4,4'-DDT	ND-5.7	2100	4/5	39	3000	817
alpha-Chlordane	ND	540	1/5	4	4	4
Arsenic (mg/kg)	0.66-2.5	7.5	5/5	1.8	3.9	2.7
Barium (mg/kg)	19.2-52.7	300	5/5	31.3	73.7	48.2
Cadmium (mg/kg)	ND	10	2/5	1.1	1.2	1.2
Chromium (mg/kg)	5.9-9.2	50	5/5	8.1	13.2	10.8
Lead (mg/kg)	3.5-8.6	***	5/5	5.7	191	53.9
Mercury (mg/kg)	ND	0.1	1/5	0.25	0.25	0.25
Silver (mg/kg)	ND	-	1/5	1.7	1.7	1.7

Results reported in ppb (µg/kg) unless otherwise noted.
*Values from Table A-4.
**TBC - Criteria that are not legally binding (To Be Considered) from NYSDEC Technical Administrative Guidance Memorandum #4046 - "Determination of Soil Cleanup Objectives and Cleanup Levels," November 16, 1992.
*** - Background levels for lead vary widely. Average background levels in metropolitan or suburban areas near highways are much higher and typically range from 200-500 ppm. The USEPA's Interim Lead Hazard Guidance (July 14, 1994) established a residential screening level of 400 ppm.
ND - Not Detected



NOTES

1. THIS FIGURE PRESENTS ALL VOLATILE ORGANIC COMPOUNDS, PESTICIDES, PCB's AND METALS DETECTED IN THE SUBSURFACE SOIL SAMPLES. SEMIVOLATILE ORGANIC COMPOUND DETECTIONS HAVE BEEN GROUPED INTO: DI-N-PHTHALATE, TOTAL NON-CARC. PAH's (SEE NOTE 2); AND TOTAL CARC. PAH's (SEE NOTE 3); AND ALL DETECTIONS ARE REPORTED IN ug/kg UNLESS OTHERWISE INDICATED.

2. TOTAL NON-CARC. PAH's = THE TOTAL OF THE CONCENTRATIONS OF THESE NON-CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLOURANTHENE, PYRENE, AND BENZO(G,H,I)PERYLENE.

3. TOTAL CARC. PAH's = THE TOTAL OF THE CONCENTRATIONS OF THESE CARCINOGENIC OR POTENTIALLY CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS: CARBAZOLE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLOURANTHENE, BENZO(K)FLOURANTHENE, BENZO(A)PYRENE, INDENO(1,2,3-CD)PYRENE AND DIBENZ(A,H)ANTHRACENE.

959 51

LEGEND

- ø POLES FOR OVERHEAD POWER LINES
- APPROXIMATE EXTENT OF SURFICIAL DEBRIS MOUNDS
- APPROXIMATE LIMIT OF FILL
- TEST TRENCH LINE (BLACK AREAS INDICATE PIT EXCAVATIONS)
- WATER
- TREE LINE

200 0 200

SCALE IN FEET

URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.

CHEMICALS DETECTED IN SOIL SAMPLES OBTAINED DURING TEST TRENCHING

FIGURE A-4

TABLE A-9

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
CHEMICALS DETECTED IN GROUNDWATER SAMPLES

COMPOUND	*ARAR	ROUND - 1				ROUND - 2			
		FREQUENCY OF DETECTION	DETECTED MINIMUM CONCENTRATION	DETECTED MAXIMUM CONCENTRATION	AVERAGE OF DETECTIONS	FREQUENCY OF DETECTION	DETECTED MINIMUM CONCENTRATION	DETECTED MAXIMUM CONCENTRATION	AVERAGE OF DETECTIONS
Acetone	—	1/8	8	8	8	0/8	-	-	-
Carbon Disulfide	—	1/8	17	17	17	1/8	15	15	15
Chloroform	7	1/8	3	3	3	0/8	-	-	-
1,2-Dichloroethene	5	0/8	-	-	-	1/8	3.2	3.2	3.2
Benzo-(a)anthracene	—	0/8	-	-	-	1/8	1	1	1
Chrysene	—	0/8	-	-	-	1/8	2	2	2
Bis(2-Ethylhexyl)phthalate	50	0/8	-		-	1/8	5	5	5
4,4'-DDT	ND	3/8	0.074	0.12	0.107	1/8	0.16	0.16	0.16
Arsenic	25	8/8	1.3	5.4	3.1	7/8	1.1	6	3.3
Barium (TOT)	1000	8/8	47.6	265	144	8/8	29.3	657	178.6
Cadmium (TOT)	10	3/8	2.5	3.7	3.2	-	-	-	-
Chromium (TOT)	50	4/8	5.1	15.4	11.4	4/8	4.5	25.8	13
Lead (TOT)	15	7/8	1.6	20.7	6.8	8/8	1.3	59.2	11.4
Selenium (TOT)	10	0/8	-	-	-	3/8	1.3	2.9	1.9
Arsenic (DISS)	25	3/8	1.4	3.1	2	4/8	1	1.7	1.4
Barium (DISS)	1000	8/8	35.4	165	89.2	8/8	34	206	111.3
Cadmium (DISS)	10	3/8	3.3	4.3	3.9	-	-	-	-
Lead (DISS)	15	2/8	1.2	20.9	11.1	1/8	2.3	2.3	2.3
Selenium (DISS)	10	1/8	1.1	1.1	1.1	1/8	1.2	1.2	1.2

- Indicates Analyte was analyzed for but not detected.

Results reported in ppb (µg/kg) unless otherwise noted.

* Chemical Specific Standards (ARARs) are from 6 NYCRR 703.5 and 703.6.
  The standard for Lead is from the USEPA Drinking Water Standards (40 CFR 141).

TABLE A-9 (continued)

FORMER LANDFILL (LF-021) - REMEDIAL INVESTIGATION
PART 360 PARAMETER ANALYSIS RESULTS

COMPOUND	*ARAR	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	AVERAGE OF DETECTIONS
Alkalinitiy Total	-	4/4	250	530	407.5
Ammonia-Nitrogen	2	1/4	0.35	0.35	0.35
Chloride	250 ppm	4/4	10	230	109.7
Chemical Oxygen Demand	-	3/4	15	41	24.3
Nitrate-Nitrogen	10 ppm	2/4	0.062	0.74	0.4
O.R.P.(EH)	-	4/4	270	360	318
pH(s.u.)	6.5/8.5	4/4	6.4	7.4	7.1
Total Dissolved Solids	500	4/4	290	1,200	770
Sulfate	250 ppm	4/4	23	250	140
Hardness	-	4/4	290	1,200	782.5
Turbidity (ntu)	-	4/4	700	1,900	1,087.5
Calcium	-	4/4	64,300	343,000	205,075
Iron	300	4/4	6,240	224,000	72,235
Lead	15	4/4	4.9	19.9	10.8
Magnesium	-	4/4	26.1	114.0	75.975
Manganese	300	4/4	187	2,730	1,566.8
Potassium	-	4/4	2,710	139,000	9,745
Sodium	20 ppm	4/4	3.68	96.6	53.02

Results reported in ppb (µg/kg) unless otherwise noted.

* Chemical Specific Standards (ARARs) are from 6 NYCRR 703.5 and 703.6.
Standards for pH and Total Dissolved Solids are from NYSDEC Water Quality Regulation 6NYCRR 703.
The standard for Lead is from the USEPA Drinking Water Standards (40 CFR 141).

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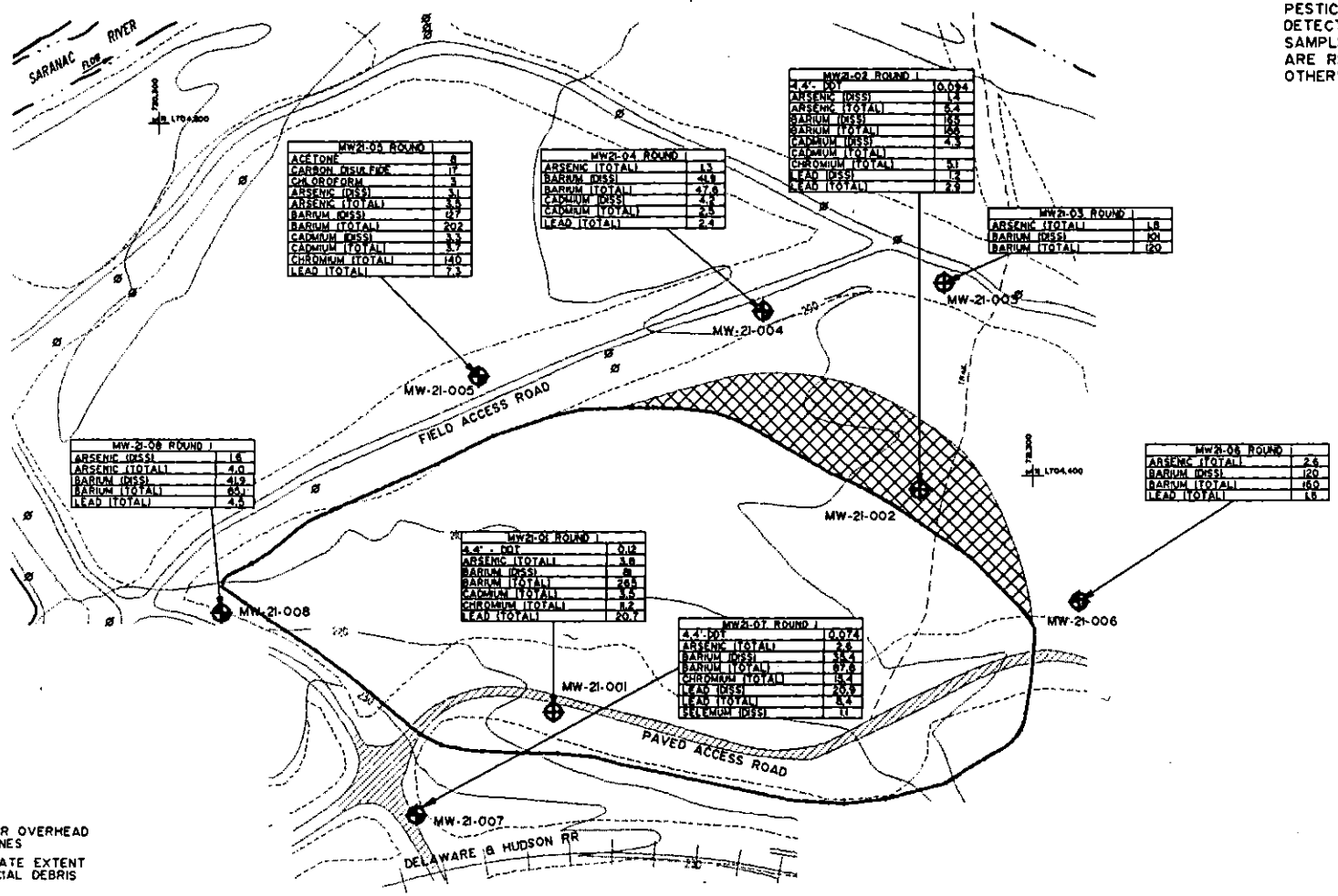
NOTES

1. THIS FIGURE PRESENTS ALL VOLATILE ORGANIC COMPOUNDS, SEMI VOLATILE ORGANIC COMPOUNDS, PESTICIDES, PCB'S AND METALS DETECTED IN THE GROUNDWATER SAMPLES. ALL DETECTIONS ARE REPORTED IN ug/l UNLESS OTHERWISE INDICATED.



MW21-05 ROUND	
ACETONE	8
CARBON DISULFIDE	17
CHLOROFORM	3
ARSENIC (DISS)	3.1
ARSENIC (TOTAL)	5.8
BARIUM (DISS)	127
BARIUM (TOTAL)	202
CADMIUM (DISS)	3.3
CADMIUM (TOTAL)	3.7
CHROMIUM (TOTAL)	140
LEAD (TOTAL)	7.3

MW21-04 ROUND	
ARSENIC (TOTAL)	1.3
BARIUM (DISS)	44.9
BARIUM (TOTAL)	47.8
CADMIUM (DISS)	4.2
CADMIUM (TOTAL)	2.5
LEAD (TOTAL)	2.4

MW21-02 ROUND 1	
4,4'- DDT	0.094
ARSENIC (DISS)	1.4
ARSENIC (TOTAL)	6.4
BARIUM (DISS)	155
BARIUM (TOTAL)	160
CADMIUM (DISS)	4.3
CADMIUM (TOTAL)	5
CHROMIUM (TOTAL)	5.1
LEAD (DISS)	1.2
LEAD (TOTAL)	2.9

MW21-03 ROUND	
ARSENIC (TOTAL)	1.8
BARIUM (DISS)	101
BARIUM (TOTAL)	120

MW21-08 ROUND 1	
ARSENIC (DISS)	1.6
ARSENIC (TOTAL)	4.0
BARIUM (DISS)	41.9
BARIUM (TOTAL)	80.1
LEAD (TOTAL)	4.5

MW21-06 ROUND	
ARSENIC (TOTAL)	2.6
BARIUM (DISS)	120
BARIUM (TOTAL)	160
LEAD (TOTAL)	1.6

MW21-01 ROUND 1	
4,4'- DDT	0.12
ARSENIC (TOTAL)	3.8
BARIUM (DISS)	81
BARIUM (TOTAL)	265
CADMIUM (TOTAL)	3.5
CHROMIUM (TOTAL)	8.2
LEAD (TOTAL)	20.7

MW21-07 ROUND 1	
4,4'-DDT	0.074
ARSENIC (TOTAL)	2.6
BARIUM (DISS)	53.4
BARIUM (TOTAL)	87.6
CHROMIUM (TOTAL)	15.4
LEAD (DISS)	20.9
LEAD (TOTAL)	8.4
SELENIUM (DISS)	1.1

LEGEND

- POLES FOR OVERHEAD POWER LINES
- APPROXIMATE EXTENT OF SURFICIAL DEBRIS MOUNDS
- APPROXIMATE LIMIT OF FILL
- MONITORING WELL (INSTALLED BY E.C. JORDAN (1987)
- MONITORING WELL (INSTALLED BY URS (1993)
- WATER
- TREE LINE

200 0 200

SCALE IN FEET

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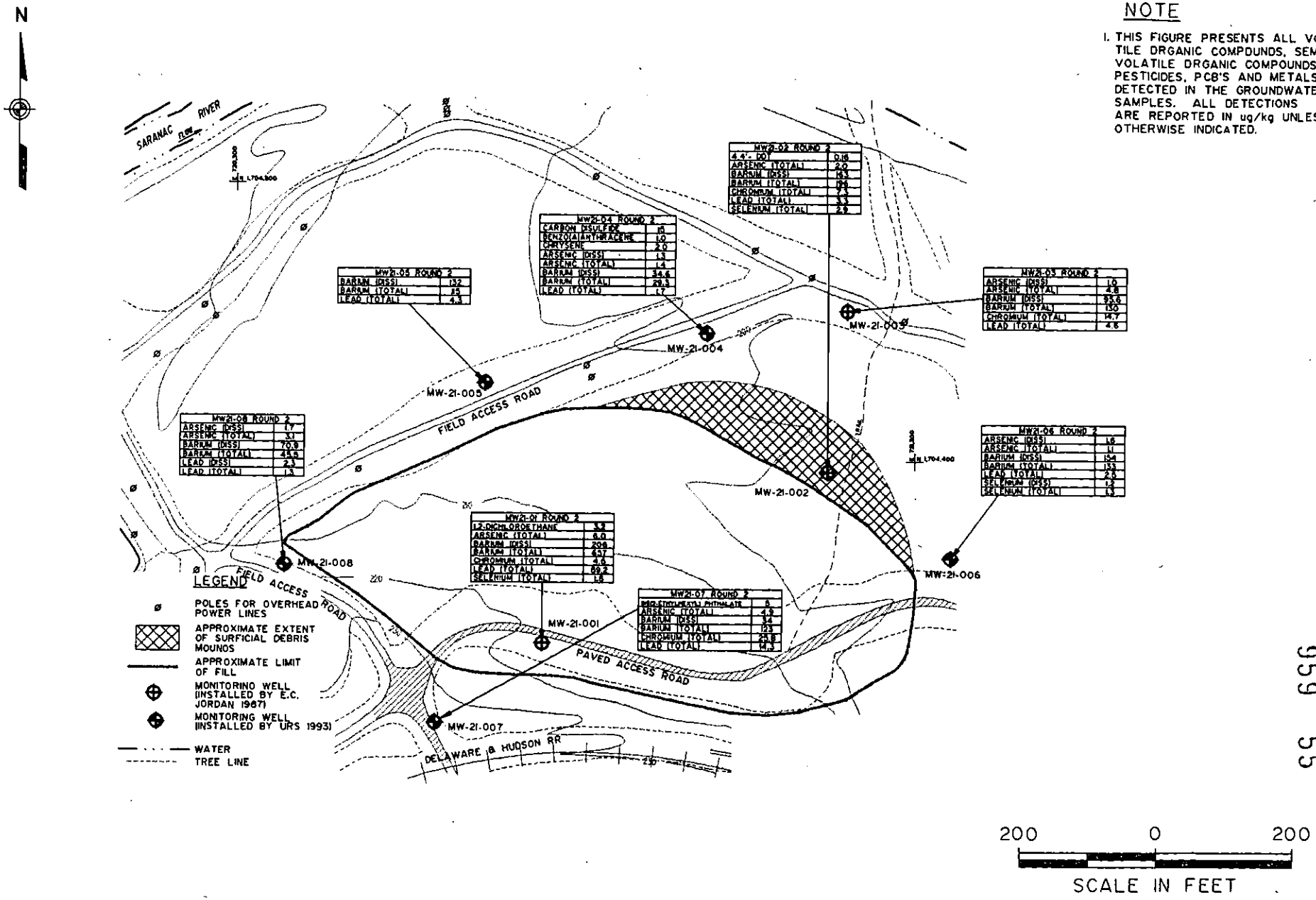
URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.
CHEMICALS DETECTED IN GROUNDWATER (ROUND 1)

FIGURE A-5

AC-9832

\35291\CAD\LF021 1=200 5/3/96-1 RAL



NOTE

1. THIS FIGURE PRESENTS ALL VOLATILE ORGANIC COMPOUNDS, SEMI VOLATILE ORGANIC COMPOUNDS, PESTICIDES, PCB'S AND METALS DETECTED IN THE GROUNDWATER SAMPLES. ALL DETECTIONS ARE REPORTED IN ug/kg UNLESS OTHERWISE INDICATED.

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URS CONSULTANTS, INC.

PLATTSBURGH A.F.B. - LF-021 R.I.
CHEMICALS DETECTED IN GROUNDWATER (ROUND 2)

FIGURE A-6

APPENDIX B

DECLARATION OF CONCURRENCE

Section is Missing from the Official Government Document

APPENDIX C

PUBLIC MEETING TRANSCRIPT

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.

1 Pesticides such as DDT and PCBs were also detected.
2 These were not detected in any particular pattern. The
3 pattern of contamination is somewhat heterogenous in the
4 landfill.
5 In groundwater, only three compounds were
6 detected that exceeded the New York State standards, and
7 those were two polycyclic aromatic hydrocarbons and
8 DDT. It was worthy to note that there was an absence of
9 volatiles, which are quickly moving compounds, in
10 groundwater. There were none of those compounds.
11 We also examined contaminant migration
12 pathways at the site. Since few volatiles were found,
13 we consider the volatilization pathway for contaminant
14 migration is insignificant.
15 In addition, since the site is vegetated,
16 there's a limited potential for dust generation and,
17 therefore, we considered contaminant transport via dust
18 pathway as insignificant.
19 Also, we consider run-off pathways to be
20 negligible because of the high permeability of the
21 landfill. Most of the precipitation will infiltrate
22 into the landfill and, also, topographic constraints --
23 and actually the overhead here we have is somewhat
24 misleading, this slope somewhat kind of rises again
25 before it drops again into the Saranac River. All of

1 the precipitation will infiltrate into the ground before
2 it gets to the river.
3 One pathway that is potentially significant is
4 the percolation of rainwater through the landfill
5 picking up contaminants along the way and then transport
6 through the groundwater.
7 Again, the contaminants detected in
8 groundwater were of the type that do not move very
9 quickly or very far in groundwater.
10 We conducted a human health risk assessment to
11 determine the potential risk to human health posed by
12 the site, and that was broken down into two scenarios,
13 including a current use scenario in which we assessed
14 potential impacts to utility workers -- there was a
15 right-of-way, utility right-of-way adjacent to the site
16 -- and also to trespassers.
17 The calculations indicated no significant
18 carcinogenic or noncarcinogenic risk to these potential
19 receptors.
20 The second scenario was a future use scenario
21 in which we assessed the risk to a campground populated
22 by campers who were utilizing the groundwater for
23 showering and potable water, camping right on the
24 landfill. We considered this to be a conservative
25 hypothetical scenario. It's not something that's

envisioned; however, this is a conservative benchmark in which we can assess the 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.

1 Using the U.S. EPA Superfund Accelerated
2 Cleanup Model, we then developed the basic components of
3 our remedial alternative. And these include a landfill
4 cap and institutional controls. There were three types
5 of landfill caps looked at, and they were examined for
6 their ability to achieve the goal that we set for
7 this -- this remediation, and all three of these
8 landfill caps accomplish the goal adequately.
9 Therefore, we looked at cost and picked the
10 most cost effective cap, which is a native soil cover as
11 our selected remedial component.
12 Also, a basic component remedy is
13 institutional controls in which we propose site
14 development restrictions to protect the integrity of the
15 cap once it's established and also to restrict water
16 use, although that's not one of -- it's not reflected in
17 our goal, there are three exceedances of New York State
18 Groundwater Quality Criteria and then, therefore, we
19 thought it would be prudent to restrict the use of the
20 groundwater.
21 Therefore, our remedial alternative includes
22 the following elements: A native soil cover to prevent
23 direct contact of human and ecological receptors with
24 contaminated soil and fill materials and development
25 restrictions which include restrictions to prevent any

1 adverse action leading to the deterioration of the
2 landfill cover and prohibition against any excavation of
3 the landfill cover without prior appropriate approvals,
4 and this will be implemented to protect the integrity of
5 the cap over the long term.
6 We are also going to prohibit the installation
7 of any wells for drinking or any other purposes which
8 could result in the use of the underlying groundwater.
9 And this is in response to the exceedances of New York
10 State Groundwater Quality Criteria in groundwater.
11 We are also -- two other elements of the
12 remedy that are necessary, one is groundwater
13 monitoring. We'll supplement our existing groundwater
14 monitoring network and sample it routinely in order to
15 ensure that the slow-moving compounds that we have
16 detected will not migrate off site. We don't expect
17 them to, but the routine groundwater monitoring will
18 ensure that that will not happen in the future.
19 And, finally, there's a five year site review
20 process in which the Air Force, the United States
21 Environmental Protection Agency and the New York State
22 Department of Environmental Conservation will review all
23 the data collected throughout the five years and ensure
24 that the remediation is being effective in protecting
25 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, metals, 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

1 steepens considerably, and construction and demolition
2 debris is protruding from the landfill cover as
3 indicated by the lower of the two photographs.
4 The upper photograph is the top of the slope,
5 southern slope, and the lower photograph depicts the toe
6 of the slope, the southern slope. The Air Force
7 considers this to be a general physical hazard to
8 trespassers and people walking in this area.
9 The landfill was investigated and site
10 investigation in which test trenching was conducted to
11 determine the extent of the fill and determine its
12 character. We also did boring and monitoring wells and
13 looked at groundwater samples.
14 The nature of the fill material is essentially
15 free of organic contaminants; however, metals were
16 elevated above background in the fill materials.
17 Again, groundwater was examined, and it was
18 also found to be essentially free of organic materials,
19 organic contaminants; however, several metals were
20 detected in exceedance of New York State Groundwater
21 Quality Criteria.
22 I also should note that there were several
23 drums found during test trenches at the site; however,
24 none of these drums were found to be intact, many of
25 them had no lids, were empty or just crushed prior to

1 being in the landfill.
2 We also looked at the potential contaminant
3 migration pathways. And very similar to LF-21, there
4 were no volatiles found and, therefore, the
5 volatilization pathway was considered insignificant.
6 Since the landfill is heavily vegetated, there
7 is limited potential for dust migration and
8 contamination transport through that mechanism. Also,
9 once again, this doesn't quite depict the slope
10 correctly. It's much flatter there, and the run-off
11 pathways are also considered to be insignificant. All
12 of the rainfall will percolate into the landfill surface
13 or be captured by topographic constraints and not reach
14 the Salmon River directly.
15 However, again, we -- we have a potentially
16 significant groundwater migration pathway, again, where
17 rainwater percolates through the fill, picks up metal
18 contaminants and transports them through the
19 groundwater. And it should be noted again that the
20 metal contaminants are also very slow-moving compounds.
21 Again, we conducted a human health risk
22 assessment to determine potential risk to the receptors,
23 and two scenarios were examined including current use
24 scenario, which is basically no one is being exposed at
25 the site except for trespassers, and the assessment

1 indicated no potential for carcinogenic risk,
2 unacceptable carcinogenic risk or unacceptable
3 noncarcinogenic risk.
4 A future use scenario was also examined. It
5 was a bi-phased scenario in which the site would
6 hypothetically be developed, and there would be a
7 construction phase in which excavation would occur and
8 building would be constructed, and then a second phase
9 in which the buildings were already constructed and the
10 area were landscaped and the industrial workers were
11 using the facility routinely.
12 There were no unacceptable cancer risks
13 indicated by the analysis. However, there were
14 unacceptable noncarcinogenic risks indicated for
15 inhalation of fugitive dust to construction workers.
16 During construction there's considerable dust excavated,
17 and there's a potential for exposure and adverse effects
18 to these construction workers through inhalation of the
19 fugitive dust with manganese adhered to it. Also, if
20 groundwater were to be used at the site, there is a
21 potential for adverse effects again from the compound
22 manganese, and there is also potential for future
23 problems from barium, vanadium and antimony.
24 One thing to note is that currently there is
25 no risk to receptors via carcinogenic or noncarcinogenic

1 risk; however, there is a physical hazard posed by
2 protruding debris along the steep southern slope and a
3 couple other places in the landfill.
4 Based on the HRA, we determined some
5 remediation goals. The first is to prevent construction
6 workers from inhaling contaminated fugitive dust
7 resulting from earth moving activities, and that's in
8 response to the risk calculated for the inhalation of
9 fugitive dust.
10 Second would be to prevent human ingestion of
11 contaminated groundwater immediately down gradient of
12 the site, and that's in response to the risk calculated
13 for the ingestion of groundwater.
14 And, third, we would like to eliminate
15 potential physical hazards to on-site workers and
16 maintenance personnel.
17 Again, using U.S. EPA guidance, we determined
18 the basic components of a remedy for the site. The
19 landfill cap is necessary to -- to accomplish the third
20 goal, and that is to eliminate potential physical
21 hazards on site. There is no -- there is no potential
22 chemical hazards due to direct contact with the fill.
23 So the cap is only to eliminate the physical hazards.
24 Therefore, all three caps -- since the area
25 will be regraded and debris covered and the potentially

1 unstable slopes eliminated, all three caps will be
2 equally effective and cost is, therefore, looked at as
3 the deciding factor between the caps, and we selected
4 the least expensive of the three options, and that is a
5 native soil cover.
6 Second we -- the -- the second basic component
7 is institutional controls which includes site
8 development restrictions, and that is to protect the
9 integrity of the cap, water use restrictions to address
10 our second remediation goal which is to prevent human
11 ingestion of contaminated groundwater and, third, a
12 cautionary notice concerning inhalation risks during
13 earth moving activities, and that is to address our
14 first remediation goals, to prevent construction workers
15 from inhaling fugitive dust.
16 To recap, our recommended alternative consists
17 of the native soil cap, to limit -- eliminate potential
18 physical hazards from debris and also develop
19 restrictions including restrictions to prevent any
20 adverse action leading to the deterioration of the cap,
21 prohibition against excavation of the landfill without
22 prior appropriate approval and prohibition from
23 installing any wells that could result in the use of the
24 underlying groundwater.
25 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

1 that these limitations are carried out, who gives the
2 permit to excavate, how long is this oversight as to
3 permits and prohibitions to continue, who's got the
4 responsibility?
5 MR. SOREL: Good question. It's actually one
6 that's come up in our discussions with the regulator
7 that they have the very same concerns that you do.
8 There will be a transfer by deed, and when we
9 start talking about transfer by deed, what we are going
10 to do, in fact, if you look in the proposed plan,
11 there's a paragraph in there that deals with that, and
12 let me read what we put in there. It says: The deed
13 will include appropriate restrictions to prevent any
14 adverse action leading to the deterioration of the
15 landfill cap to include prohibition from installing any
16 wells for drinking water or any other purpose which
17 could result in use of the underlying groundwater and
18 the prohibition against any excavation of the landfill
19 cap without prior approval of the New York State DEC.
20 So, essentially, we are saying at that point
21 there will indeed be restrictions and, of course, the
22 Air Force at that point would no longer be the owner of
23 the property, so some of that will rely on the -- the
24 local agencies having jurisdiction in that area.
25 For instance, if we are in the town of

1 Plattsburgh, then I would assume if there were
2 construction, there would be issues of the building
3 permit and at that time, those prohibitions would be
4 noted. So through that process, we believe that that's
5 how these prohibitions would be controlled.
6 MR. BOOTH: That makes sense that there would
7 be public records that follow the land that way and will
8 the restrictions mention that DEC is a reference point?
9 MR. SOREL: Correct. In fact, we have already
10 coordinated that with them. They have agreed to be that
11 reference point.
12 MR. BOOTH: And that also if interested, why,
13 the township or the city or the county also could step
14 in, but at least there's a list of restrictions and
15 restrictive covenants really?
16 MR. SOREL: Right, right.
17 MR. BOOTH: And who to refer to to start
18 complying or finding out the answers?
19 MR. SOREL: And there would also be a notice
20 of any hazardous materials present that would follow
21 this as well, so anybody that would be issuing that
22 building permit or whatever.
23 MR. BOOTH: In 25 years, that will all be
24 forgotten, and I was just wondering.
25 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.)

1 C E R T I F I C A T E

2

3 STATE OF VERMONT)

4 COUNTY OF CALEDONIA)

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

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

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

19 Dated at Barre, Vermont, this 23rd day of January,
20 1997. My commission expires February 10, 1999.

21

22

23

24 SUSAN BRETSCHNEIDER, Notary Public

25

APPENDIX D

RESPONSIVENESS SUMMARY

DEPARTMENT OF THE AIR FORCE
AIR FORCE BASE CONVERSION AGENCY

11 Feb 97

MEMO FOR RECORD

SUBJECT: Responsiveness Summary: Public Comment Period For Remedial Action at LF-021

A. OVERVIEW

LF-021 is a former landfill located in the northwest corner of the former Plattsburgh Air Force Base. It is situated outside of the perimeter fence and north of NYS Route 22. From 1956 to 1959, the landfill was used for the disposal of domestic wastes and treated sludge from the base's industrial wastewater pretreatment plant.

A variety of chemicals was detected in the subsurface soil or fill materials. Polycyclic aromatic hydrocarbons from the incomplete combustion of fossil fuels, metals, and pesticides such as DDT and PCBs were found to be present at LF-021. Only three compounds were detected in the groundwater that exceeded the New York State standards, and those were two polycyclic aromatic hydrocarbons and DDT. Volatile organic compounds, which are highly mobile in the groundwater, were notably absent.

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-021. 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-021 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 23 December 1996 to 23 January 1997. The Public Meeting was recorded by a court reporter, Ms. Susan Bretschneider of Vernontville, 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. Environmental 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 23 January 1997, no further questions or comments were received by the Air Force regarding this subject.

MICHAEL D. SOREL, PE
BRAC Environmental Coordinator