FINDING OF NO SIGNIFICANT IMPACT AND ENVIRONMENTAL ASSESSMENT

POLELINE ROAD REMOVAL ACTION FORT RICHARDSON, ALASKA

Alaska District
U.S. Army Corps of Engineers
June 1994

FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969, the U.S. Army Engineer District, Alaska, has assessed the environmental impacts of the following action:

Poleline Road Removal Action
Fort Richardson, Alaska

The project will remove contaminants and contaminated soil from the Poleline Road Disposal Area (PRDA) on Fort Richardson (figure 1 of the Environmental Assessment). The project is required to remediate buried solvent-containing chemical neutralization kits, chemical warfare materials, and soils contaminated with solvents and other compounds. The project will mitigate the migration of contaminants into the ground water, which has been shown to be contaminated with volatile organics including 1,1,2,2-tetrachloroethane (PCA) and trichloroethene (TCE). Chemical warfare identification kits and any other chemical warfare materials found during excavation will be removed to the secured ammunitions storage bunker on Fort Richardson for future disposal. Contaminated soils will be removed from the PRDA until cleanup levels are met.

The soil, rocks, and debris from the PRDA Areas 3 and 4 (figure 2 of the Environmental Assessment) will be stockpiled in lined covered storage areas until disposition and/or treatment is approved. Contaminated soils will be transferred to a long-term storage area approximately one-half mile southeast of the PRDA (adjacent to the Anchorage Municipal Landfill) for treatment. Vacuum extraction is the preferred alternative for treatment of solvent-contaminated soils. Non-hazardous materials uncovered during the project will be sent to the Anchorage Municipal Landfill. Clean soils extracted from the work areas will be used to backfill the excavated areas.

The proposed project was evaluated for environmental and engineering feasibility and consistency with pertinent environmental laws and regulations. The following points are pertinent to the environmental evaluation:

Environmental Considerations. The proposed action was evaluated for its effects on several significant resources, which include vegetation, fish, and wildlife. An evaluation by the U.S. Fish and Wildlife Service determined that the proposed project would have no significant environmental impact on the wildlife resources in the area or their habitat. The Service concluded that neither the endangered American peregrine falcon nor the arctic peregrine falcon that may pass through the area would be adversely impacted by the proposed project. No wetlands are within the project area, although the PRDA is adjacent to a small (approximately 1 acre) wetland. The proposed cleanup activities are not expected to impact this wetland.

Human Health Considerations. The potential risk of hazardous material leaks is considered to be low based on the work that has already been done at the PRDA. If a contaminated or hazardous material spill occurs, spill response activities would begin immediately. Air will be monitored continuously during soil excavation to detect and quantify potential airborne chemical hazards. If a release of phosgene or mustard agent is detected, work will immediately stop until the source is determined and corrective action taken. The entire project site will be fenced to prevent public access.

A release of phosgene gas would be the maximum credible event (MCE) that might affect unprotected personnel off site. A U.S. Environmental Protection Agency/National Oceanic and Atmospheric Administration model shows an approximate hazardous distance of 675 yards, although this distance is considered to be well in excess of the realistic MCE.

Cultural Resource Considerations. Previous surveys of Fort Richardson show that no cultural resources have been found in the project vicinity. The entire PRDA is an already disturbed area, and it has low potential to contain historic or prehistoric properties. Therefore, there are no constraints on the project due to cultural resource considerations.

Consistency with Laws and Regulations. The environmental assessment documents compliance with the National Historic Preservation Act, the Endangered Species Act, the Clean Water Act, and the National Environmental Policy Act.

An environmental review process has shown that the project does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement will not be prepared for the Poleline Road Removal Action, Fort Richardson, Alaska.

David A. Bramlett
Major General, USA
Commander

11 July 94
Date

Environmental Assessment
Poleline Road Removal Action
Fort Richardson, Alaska

1.0 PURPOSE AND NEED OF PROPOSED ACTION

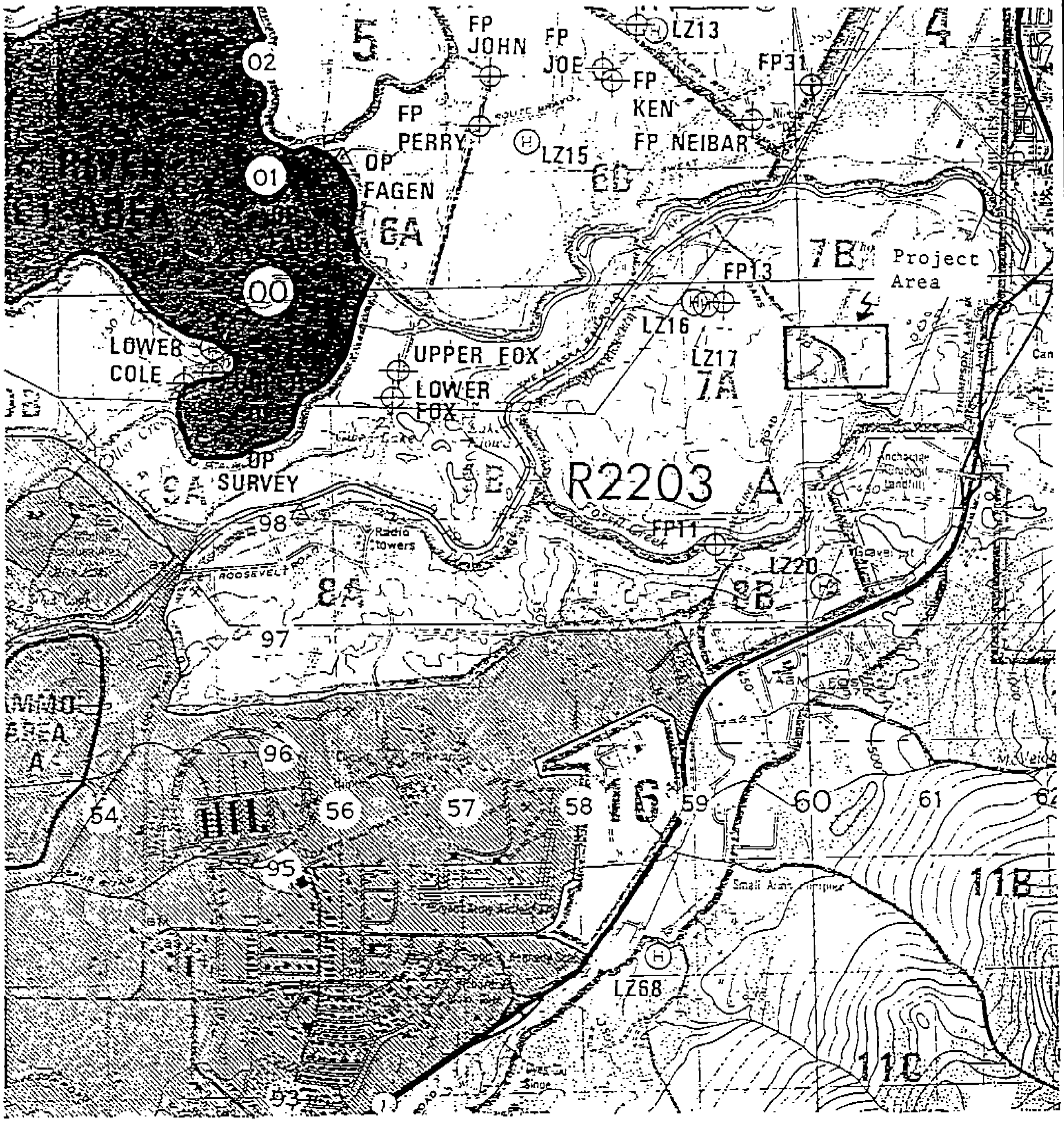
The U.S. Army Corps of Engineers has contracted OHM Remediation Services Corp. to conduct contaminant source removal activities on Fort Richardson. The purpose of the proposed action is to excavate contaminant materials from the Poleline Road Disposal Area (PRDA). The PRDA is 1.1 miles southwest of the Eagle River and 0.8 miles northwest of the Anchorage municipal landfill (figure 1). The project is required to remediate buried solvent-containing chemical neutralization kits, solvents, Chemical Warfare Materials (CWM), contaminated soil, and other miscellaneous debris. The project will also prevent migration of volatile organic compounds (VOC's) into soils and ground water at the PRDA. The main components of concern are volatile organics including 1,1,2,2-tetrachloroethane (PCA) and trichloroethene (TCE).

2.0 DESCRIPTION OF THE PROPOSED ACTION

The areas to be remediated were identified from previous site investigations by OHM and the Department of the Army, Corps of Engineers Cold Region Research and Engineering Laboratory (CRREL). The OHM Corporation in 1993 began to excavate the trenches at the PRDA, although work was halted after a few days when they discovered chemical agent identification sets (CAIS) in both trenches. In 1994, CRREL conducted geophysical subsurface investigations of the PRDA to determine the location and extent of trenches or excavations filled with waste materials. Information from this survey was used to develop a new project plan to excavate and dispose of all contaminants in the PRDA.

Work proposed under this action would involve several removal, sampling, and disposal activities. Chemical waste, waste containers, debris, and contaminated soils would be excavated and disposed of. Soil and water samples would be analyzed on site to determine the extent of contamination and to confirm the absence of contaminants in excavated areas. An off-site laboratory would be used to analyze monitoring well samples and to confirm the onsite analysis of excavation samples.

Soil removal limits would be based on concentrations of chlorinated compounds in soil samples. Removal would be guided by the action limits stated in the EPA's "Region X Risk-Based



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Concentrations." The action limits for the compounds of concern are:

Trichloroethene (TCE):	600 mg/kg
Tetrachloroethene (PCE):	100 mg/kg
1,1,2,2 - Tetrachloroethane (PCA):	30 mg/kg

Excavated soils would be segregated by sieving through a vibrating screen. Clean soils found during the initial excavation would be returned to the PRDA to be used as backfill. Soils shown to be contaminated would be moved to a long-term storage area, approximately one-half mile south of the site, for treatment. Vacuum extraction is the preferred treatment method for solvent-contaminated soils, although the treatment method would not be selected until the Remedial Investigation phase of the entire Poleline Road Disposal Area project.

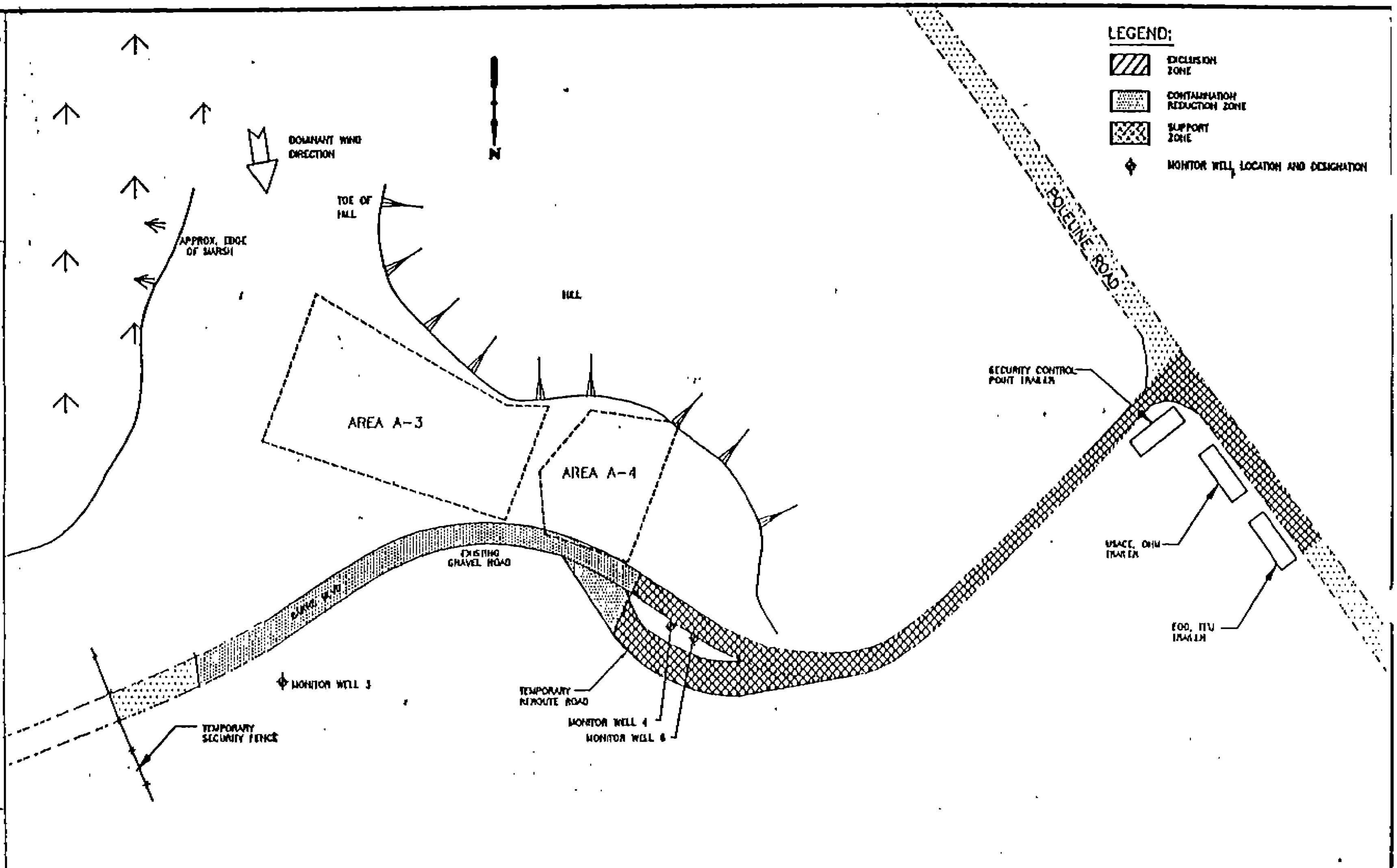
If munitions, explosives, or chemical agents were found during excavation, the site supervisor would notify the appropriate technical expert (Huntsville Division of the Army Corps of Engineers, an explosive ordnance technician, or technical escort) for guidance on further excavation and disposal.

When acceptable analytical results were obtained from soil sampling, the trenches would be backfilled. The fill materials would be obtained locally, placed in the excavated areas and compacted as necessary. When backfilling was completed, all areas disturbed by project activities would be surface graded and hydroseeded with native grasses.

3.0 ALTERNATIVES CONSIDERED

3.1 No Action

The no-action alternative would leave the PRDA in its present condition. Soil contaminated with chlorinated hydrocarbon solvents and other contaminants would not be removed. Potentially hazardous CWM or other chemicals would not be removed and could become exposed or could leach farther into nearby soil and water. Surface and subsurface migration of contaminants to ground water would not be prevented. Unsafe and hazardous debris would remain at the site.



OHM Remediation Services Corp.
WALNUT CREEK, CA.

FIGURE 2 SITE MAP AND SECURITY CONTROL POINT	DRAWN BY j.b.V.	DATE 5/25/94	
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3.2 Proposed Action

The preferred alternative is to removal all chemical waste, contaminated soils, and debris from the PRDA. In addition, soil and ground water would be sampled to determine the extent of contaminant migration. The project would initially focus on two rectangular areas (A-3 and A-4) defined by the 1994 CRREL geophysical subsurface investigation. Those areas include the two ditches that were excavated and backfilled during a previous site investigation by OHM in September and October 1993 (figure 2). The excavated area of trench A was approximately 100 feet long and ranged from 14 to 17 feet wide. The excavated area of trench B was approximately 12 feet in diameter. Excavation was halted in both trenches when chemical warfare materials were identified by the Fort Richardson Explosives Ordnance Detachment (EOD).

The proposed work will involve the following activities:

- Excavation and removal of chemical waste
- Excavation and removal of waste containers
- Excavation and removal of wooden crate debris
- Excavation and removal of contaminated soils
- Disposal of hazardous waste (soils, containers, debris, etc.)

Concurrent with excavation and removal activities, the onsite laboratory would conduct the following sampling activities:

- Sampling during excavation activities to assist in segregation of soils
- Sampling to confirm absence of contaminants in excavated areas
- Assisting in the coordination of transportation and disposal of waste as needed

Activities that would be subcontracted for off-site analytical services include:

- Disposal analysis of representative disposal samples
- Confirmation analysis of excavation samples
- Analysis of monitoring well samples

The soil removal work will be guided by action limits drawn from U.S. Environmental Protection Agency (EPA) guidance. The action limits are based on a residential soil ingestion scenario. The risk-based criteria are very conservative for the site conditions present at the PRDA; the site is remote and access is restricted. The site would be backfilled with 4 feet of clean soil; therefore, the exposure pathway is not complete. An effort would be made to meet the criteria, but if it is not practical, excavation would cease and confirmation samples would be collected.

Specific project activities are described in the following sections.

3.2.1 Excavation Sampling. Excavated material would be sampled to confirm the removal of all soil contaminated above the action levels. It would also be done to help define disposal options. Excavated soil would be sampled for chemical warfare material as it was placed into piles. These results would be used to assess the levels of residual contamination and facilitate the segregation of soils. Samples would be collected until all debris and contaminated soil were removed from the trenches. Chlorinated compounds would be field screened to help define the limits of excavation. An Organic Vapor Analyzer (OVA) would be used on each soil stockpile to determine the organic content. The soil pile with the highest OVA reading would be sampled and analyzed for volatile organics.

3.2.2 Verification Sampling. Grab samples would be collected to verify removal of all contaminants above action levels. The excavated trenches would be sampled along the trench floors on a 20-foot center grid. The side and end walls would be sampled on 40-foot centers. Approximately 15 samples would be collected from trench A and 20 samples would be collected from trench B. Samples would not be combined, and only when results were below the action limit for all of the target contaminants would excavation be stopped. Levels above the action limit would indicate that contaminants were still present and excavation with delineation sampling would resume. Volatile organic samples would be co-located to ensure sample integrity.

3.2.3 Monitoring Well Sampling. Monitoring wells would be sampled to determine the presence and extent of contaminants in ground water. Eleven wells are present at the PRDA site, although in October 1993 four of them were dry. For the proposed project, all wells containing water would be sampled for CWM breakdown products, volatile organics, semi-volatile organics, and metals.

3.2.4 Soil and Wastewater Sampling. Soil and wastewater would be sampled to characterize the waste streams being generated in the project and to facilitate the most cost-effective disposal method(s). Soil samples would be taken from the soil stockpiles excavated from the trenches and other areas of the PRDA. These piles would be segregated based on OVA screening. The pile(s) with the highest OVA readings would be sampled for VOC's for disposal. These samples would be analyzed for a variety of contaminants outlined in section 6.0 of the project work plan (OHM 1994). Wastewater, such as decontamination and purge water, would also be analyzed for disposal as described in section 6.0 of the work plan.

3.2.5 Long-Term Soil Storage. As soils were removed from the work area they would be placed in a temporary storage site approximately one-half mile southeast of the PRDA. The contractor would have to remove a few bushes to accommodate the soil stockpile. Three separate storage cells would be constructed on site to store the soil, rocks, and recovered metal debris, respectively. The storage cells would be constructed by lining a designated bermed area with 20 mil HDPE. The liner would be seamed together into one piece and a sand layer would be laid down under the liner. In the metal debris cell, a 6-inch layer of contaminated soil would be placed on top of the liner to protect the liner from any sharp edges of the debris. The bottom liner would go over the berm and would be anchored in an anchor trench around the berm. The cell would be covered with 40 mil HDPE (high density polyethylene) and the cover would come off the side of the cell and over the berm in a continual slope to preclude water collection. The cover would be anchored in the same anchor trench as the liner. The entire project area would be secured with fencing to keep out wildlife and humans.

3.2.6 Debris and Chemical Warfare Material Disposal. Chemical Warfare Materials (CWM) uncovered during excavation would be immediately removed to a secured ammunitions storage bunker on Fort Richardson: These chemicals would be stored until they could be safely neutralized or destroyed. Other hazardous waste would be disposed of by OHM Remediation Services in accordance with applicable laws and regulations. All non-hazardous debris would be disposed of in the adjacent Anchorage Municipal Landfill.

3.2.7 Soil Treatment Methods. The preferred alternative for treating solvent-contaminated soils is vacuum extraction. This process is a contaminant separation technique for the removal of VOC's from saturated soils. Extraction wells are installed in or around the defined contaminated area. Air flow is induced through the contaminated soils by connecting a vacuum system to the extraction wells, and if needed, injecting air through a system of injection wells. VOC's are stripped and volatilized from the soil matrix into the air stream, which can then be treated by activated carbon canisters or discharged directly into the atmosphere, depending on hydrocarbon concentration in the discharged air. Increasing the vacuum enhances the volatilization of VOC's by increasing their partial pressure in the air stream.

A second alternative to treating soils is low temperature thermal desorption (LTDD). In this process, organic contaminants are removed as a condensed high Btu liquid, which then must be destroyed in a permitted incinerator. Because of lower operating temperatures and gas-flow rates, this process is less expensive than incineration.

One of these methods probably will be used to remediate contaminated soils. Soil remediation will be evaluated for effectiveness, cost, and environmental consequences during the feasibility studies for the PRDA project.

3.2.8 Backfilling and Demobilization. When satisfactory results of all chemical samples are obtained, all excavated areas would be backfilled with locally available clean materials. All areas disturbed by project activities would be surface graded and hydroseeded with native grasses.

4.0 AFFECTED ENVIRONMENT

4.1 Description of Existing Conditions

Results of the CRREL ground-penetrating radar (GPR) survey showed distinct trenches at the PRDA, with anomalies that were interpreted to be multiple buried objects including individually stacked cylindrical objects. The records also show evidence of a buried soil horizon in some parts of the site, which suggests the area may have been covered with fill without significant excavation. The GPR profiles also showed marginal indications of the presence of metallic objects in the marsh. This indicates there may be widely dispersed, small objects entrapped in the peat and sediment layers. No excavation work is planned for the marsh.

Interviews with ex-soldiers stationed at Fort Richardson revealed that chemicals were buried at the PRDA site in the 1950's. These chemicals are believed to be solvents and decontamination compounds used to neutralize chemical warfare agents. From the analytical work performed by OHM in 1993, it was determined that adamsite was present in the soil as well as chlorinated volatile compounds. Adamsite is a chemical that causes irritation of the eyes and mucous membranes, coughing, severe headache, acute pain and tightness in the chest, nausea, and vomiting. In addition to adamsite, other CWM may be in the trenches, including mustard agent, lewisite, chloropicrin, phosgene, choroacetophenone, cyanogen chloride, and chloroform. The predominant volatile chlorinated compound found was 1,1,2,2-tetrachloroethane. Chlorinated volatile compounds were also found in shallow ground water.

The initial excavation of trench A in 1993 unearthed mustard and lewisite gas sniffer kits, a partly decomposed gas identification instruction manual, unused smoke canisters, compressed gas cylinders, and rusted drums and pails that may have formerly contained hazardous waste. Excavation of trench B also revealed a gas identification container. These are large steel cylindrical containers that may contain up to 48 glass ampoules of various chemical agents. The container appeared unopened and intact, and a subsequent radiographic inspection showed intact ampoules inside. After these initial excavations, work was stopped so that health and safety and work plans could be modified to ensure safe removal and disposal of the contaminants.

4.2 Physical and Biological Environment

Fort Richardson is in Southcentral Alaska and encompasses approximately 60,000 acres (94 square miles) northeast of Anchorage. Other nearby communities include Eagle River and Chugiak. The post boundary is irregular in shape, about 15 miles from north to south and 7 miles east to west. The post is bounded on the east by the Chugach Mountains (Chugach State Park), on the north by Knik Arm, on the west by Elmendorf Air Force Base and the city of Anchorage, and on the south by privately owned rural lands.

The PRDA site is bisected by Barrs Blvd., a dirt road connecting the installation perimeter with Poleline Road. Barrs Blvd. is bordered on the west by Hill 385 and on the south by a low-lying wetland area. Poleline Road is a major gravel road that runs north/south along a power line route across the north end of Fort Richardson. Approximate distances to nearby features are: Anchorage Municipal Landfill, 0.8 miles to the southwest; the Glenn Highway, 1 mile to the east, and the Eagle River, 1 mile to the north.

The project site is a low-lying, flat forested area. To the north/northwest and the south/southeast are hills with about 80 feet of relief. Alder, an early successional species, is the predominant vegetation, indicating recent ground disturbance. Backfilled pits are discernible, with a noticeable lack of vegetation in some areas. Immediately southwest of the site is a wetland of low relief.

4.2.1 Climatic Conditions. Fort Richardson is in the transitional zone between the extremes of the continental and maritime climatic regions. To the south and southeast, the Chugach and Kenai Mountains form a barrier between Fort Richardson and the Gulf of Alaska. To the northeast, north, and northwest the Talkeetna and Alaska Ranges form a similar barrier to the intrusion of cold air masses into the post area. To the immediate south and west, the post is bounded by the waters of Cook Inlet and Turnagain and Knik Arms.

Annual precipitation averages 15.5 inches, including an average snowfall of 61 inches. Mean high temperatures range in the 60's during summer months, while average low temperatures range between 10° and 20 ° F during winter. During summer months, average wind speed is 7.5 miles per hour and winds are predominantly form the south.

4.2.2 Surface Water. The Eagle River is the largest nearby stream in terms of drainage area. Five smaller creeks (Clunie, Fossil, Ship, Chester, and North Fork of Campbell) transverse the post. The Eagle River is approximately 1 mile north of the site. It is a glacier-fed stream and consequently carries a high silt load during high-flow summer months. The other creeks are nonglacial, and fast-flowing. Fossil Creek is between the project site and the Anchorage landfill. Ship Creek provides the water supply for Anchorage, Fort Richardson, and Elmendorf Air Force Base. Ship Creek waters also are used for cooling the Fort Richardson and Elmendorf power plants.

4.2.3 Ground Water. There are two principal ground water systems (aquifers) on the post. A shallow unconfined aquifer is in the sand and gravel deposits near the land surface and is separated from a deeper, confined (artesian) aquifer by a relatively impermeable layer of silt, clay, and clayey sediment. Previous studies have shown that the shallow ground water aquifer exists in the glacial till at the PRDA and extends from approximately 18 to 60 feet below ground surface. It is underlain by a water-free zone of fine-grained silts and clays that extends from 60 to approximately 120 feet deep where bedrock and another water zone is encountered. The shallow aquifer occurs under water table conditions, and the underlying fine-grained sediments below appear to be acting as a semiconfining layer between the shallow alluvium and the underlying bedrock. The deeper saturated zone (bedrock) also appears to be under water table conditions. The thickness of the deeper water zone is unknown.

The alluvium and glacial deposits forming the surficial sediments of PRDA and the surrounding area comprise an unconfined aquifer system. Based on the monitoring well borings drilled, the surficial deposits consist of poorly sorted clays, silts, gravels, cobbles, and boulders. Shallow ground water was encountered in these wells 18 to 32 feet below the ground surface. Water levels in this aquifer range from elevation 252 to 277 feet above mean sea level. Shallow ground water flow is in a northerly direction, with a component of flow in a northwesterly direction (ESE 1991).

4.2.4 Geologic Resources. The northern and central portions of Fort Richardson are in a structural trough of the Cook Inlet-Susitna Lowlands. This part of Fort Richardson is characterized by glacial features resulting from a series of five glacial periods in recent geologic history. The southcentral and southern parts of Fort Richardson consist of outcrops and mountains of metamorphic bedrock of the Kenai Formation. The mountains and lowlands are mantled by glacial till from the Wisconsin period.

Previous studies have shown the presence of glacial deposits at the site (ESE 1991). They consist of unstratified to poorly stratified clays, silts, sands, gravels, and boulders. These sediments range widely in size, shape, and distribution, and were deposited chiefly by direct action of glacial ice and/or melt water. The deposits are likely part of the Elmendorf Moraine deposits that were laid down during the last glaciation phase. A deep monitoring well installed during a previous survey encountered bedrock at 123 feet below ground surface. The bedrock consisted of black hard claystone with grey interbeds.

4.2.5 Biological Environment. The PRDA site is a low-lying, flat forested area. Alder, an early successional plant, is the predominant vegetative type in the undisturbed areas within the PRDA.

Fish and Wildlife. The diversity and distribution of wildlife on Fort Richardson are related to habitats and seasonal movements. Large mammals and birds, primarily moose, bear, swans, and waterfowl, comprise the most conspicuous and important wildlife species. Moose and smaller mammals occasionally pass through the PRDA. The current annual wintering moose population on the post is estimated at 450 to 500 animals. Moose are scattered throughout the post in summer and are concentrated in wintering areas located due east of the cantonment area and around the Moose Run Golf Course. Moose habitat is primarily successional shrub-thicket vegetation. The post has some good black bear habitat, and moderate population densities exist in most lowland areas. Grizzly bear use the reservation only seasonally (Nakata Planning Group, 1987).

A highly diverse population of waterfowl uses Fort Richardson wetlands for breeding and migratory staging areas. The primary areas are Eagle River Flats, Otter Lake Wildlife Area, and the McVeigh Marsh. One active bald eagle nest is located on the northwestern portion of Eagle River Flats (Nakata Planning Group, 1987), although no nests are known within the vicinity of the PRDA.

Other species on Fort Richardson that may occur in the vicinity of the PRDA include spruce grouse, ptarmigan, snowshoe hare, lynx, coyote, marten, red squirrel, shrew, and vole.

Eagle River supports runs of chinook, pink, and chum salmon. Lower Ship Creek supports the above species plus sockeye and coho salmon, rainbow trout, and Dolly Varden.

4.3 Threatened and Endangered Species

Coordination with the U.S. Fish and Wildlife Service under the Endangered Species Act indicated the endangered American peregrine falcon (*Falco perigrinus anatum*) and the arctic peregrine falcon (*Falco peregrinus tundrius*) may pass through the area during the migration seasons. However, their occurrence is irregular and transitory. No other threatened or endangered species are known to occur in the project area.

4.4 Wetlands

A site visit conducted by personnel from the Environmental Resources Section of the Corps of Engineers confirmed the presence of a small wetland area, approximately 1 acre, immediately southwest of project areas of the PRDA. It has been characterized by the U.S. Fish and Wildlife Service's National Wetlands Inventory Program as a palustrine, emergent persistent, broad-leaved wetland, scrub-shrub community with saturated soil. No wetlands are present within the project site itself and no activities would take place within the adjacent wetland.

4.5 Cultural Resources

An archeological survey done for Fort Richardson (Reynolds 1980) showed that cultural resources have not been found in the project vicinity.

4.6 Human Activities

The communities of Anchorage and Eagle River are nearest to the PRDA project. Anchorage is approximately 5 miles southwest of the site and Eagle River is 1 (plus) mile away. The Anchorage Municipal Landfill is approximately one-half mile to the southeast, and the Glenn Highway is 1 mile east of the site. The nearest recreational area is the Eagle River, which is 1 mile north of the site. The residential areas of Fort Richardson are approximately 3 miles to the southwest of the site.

5.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

5.1 No Action

Environmental consequences of the no action alternative would potentially include continued ground water quality and soil degradation from leaching solvents or other contaminants. If CWM's are not removed, the containers holding them could corrode and eventually the materials could leak to the soils or ground water. Due to the extremely hazardous nature of the materials the no-action alternative is not acceptable.

5.2 Proposed Action

5.2.1 Long-term Soil Storage. Stockpiled soils could leach contaminants to the soil or ground water if they are not completely contained. This problem would be avoided by placing soils on liner material and covering them so that rain does not penetrate the soil. This would avoid creating runoff that could percolate through soils and eventually ground water. To prevent wildlife or humans from contacting the soils, the entire project area would be fenced off. The area would be reseeded with native vegetation following project completion.

5.2.2 Soil Treatment. Vacuum extraction of soils would produce noise from extraction pumps operating on the site on a continuous basis. However, this soil treatment site is in a remote area and noise produced from pumps or other construction activity is not likely to significantly disturb wildlife. In addition, the vegetation in the area acts as a noise buffer.

Potential environmental consequences of the low temperature thermal desorption process include soil and water pollution from wastestream spills or cross-contamination, particulates in the air from incinerator stack emissions, and fugitive dust emissions. Measures to mitigate these effects are stipulated by the Alaska Department of Environmental Conservation (ADEC) requirements for contaminated wastewater handling and disposal and would have to be defined in the thermal plant operation plan. The contractor would obtain the appropriate ADEC air quality permit.

5.2.3 Human Health Considerations. To detect and quantify the presence of potential airborne chemical hazards, the personnel from the Army Technical Escort Unit (TEU) would employ specialized monitoring equipment for chemical warfare materials. Various direct reading instruments and integrated samplers would be used during intrusive operations in the trench areas and at remote sampling points. A weather station would be set up on site in the support zone to monitor wind direction, wind velocity, and air temperature. Periodic weather readings would be taken during intrusive operations to document the meteorological conditions.

Experts in hazardous waste cleanup and munitions removal have collaborated to estimate the worst case scenario for a leak of hazardous material at the PRDA (see Section II Site Specific Health and Safety Plan, Project Work Plan, OHM 1994). This worst-case scenario is designated the Maximum Credible Event (MCE). The MCE for a chemical warfare material or industrial chemical release that might affect unprotected personnel off site would be a release of the gas phosgene. Phosgene is the most volatile material potentially present and would present the greatest potential for an off-site vapor hazard. The maximum amount of phosgene that could be released would be 84 ounces (the total material in one "pig", which is a term used to describe gas identification containers). Two large steel cylindrical containers (pigs) were found in trench B at the PRDA. Using an EPA /NOAA model that assumes a wind speed of 5 knots, release duration of 1 minute, and an atmospheric stability class C, an approximate hazardous distance of 675 yards (less than half a mile) has been calculated. Because of the limited time of exposure, reactive nature of phosgene, longer expected volatilization time, and higher expected atmospheric instability, this distance is considered to be well in excess of the realistic MCE. The Anchorage Municipal Landfill, Glenn Highway, and the Eagle River are all approximately 1 mile from the PRDA.

A second CWM that could be released is mustard agent, most likely through striking and breaking an intact pig. However, due to the relatively low Anchorage summer temperatures, the mustard would not readily volatilize, but would present a significant contact hazard. This is not considered a likely event, since the "pig" presents a high degree of structural integrity and great care would be exercised during excavation.

Air monitoring at the PRDA would focus on determining the potential exposure to airborne contaminants generated during soil excavation activities. Sampling for mustard agent would be performed continuously by TEU during all intrusive excavation sampling. To detect any phosgene in the immediate work area, continuous direct reading monitoring would also be conducted.

Overall, the potential risk of leaks of hazardous materials is considered to be low, based on the work that has already been done at the PRDA. If a release of phosgene or mustard agent were detected, work would immediately stop until the source is determined and corrective action taken. In the event that a spill of contaminated or hazardous materials occurs, spill response activities would begin immediately. The spill would be containerized, and any liquids or associated contaminated soils transferred into 55 gallon drums for later disposal.

5.2.4 Threatened and Endangered Species. The threatened arctic peregrine falcon and the endangered American peregrine falcon may pass through the Fort Richardson area during their annual migration. However, their occurrence is sporadic and transitory and the project is not expected to have any impact on these species (B. Anderson, USFWS, pers. comm.).

5.2.5 Cultural Resources. An archeological survey of Fort Richardson did not identify cultural resources in the project vicinity. It is extremely unlikely that resources would be found in the future due to the disturbed nature of the site. However, if cultural resources were found during the project activities, all work would be stopped and immediate consultation would be conducted with the SHPO.

6.0 LISTING OF AGENCIES AND PERSONS CONSULTED

Brian Anderson, U.S. Fish & Wildlife Service, Threatened and Endangered Species
Kevin Gardner, Environmental Restoration Specialist, Fort Richardson Public Works Evironmental Division
Bill Quirk, Fort Richardson Public Works Environmental Division

7.0 CONCLUSION

The removal activities at the Fort Richardson PRDA, as discussed in this document, would not cause significant impacts to the environment. This assessment supports the conclusion that the proposed project does not constitute a major Federal action significantly affecting the quality of the human environment; therefore, a Finding of No Significant Impact will be prepared.

8.0 REFERENCES

Department of the Army, Cold Regions Research and Engineering Laboratory (CRREL), 1994. *Reconnaissance Ground-Penetrating Radar and Electromagnetic Induction Surveys of the Poleline Road Site, Fort Richardson, Alaska. Draft Final Report.* Prepared for Corps of Engineers, Alaska District, Anchorage, Alaska and U.S. Army, 6th Infantry Garrison Public Works Environmental Branch, Ft. Richardson, Alaska.

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