COVER SHEET AND SIGNATURE PAGE

Site: Navy Field Station, Wales, Alaska

ADEC Data Base Record Key: **9032x900101**
ADEC CS File Number: **540.38.002**

Responsible Party: Naval Undersea Warfare Center Division, Keyport
610 Dowell Street, Keyport, WA 98345-7610
Engineering Field Activity NW
19775 7th Street NE, Poulsbo, WA 98370-7570

Contaminants of Concern/Media Impacted:
Diesel Range Organics (DRO), Residual Range Organics (RRO), and Methylene Chloride in soil, surface and subsurface to 2 feet

Regulatory Authorities: ADEC Site Cleanup Rules (18 AAC 75.325 – 18 AAC 75.390)

On-site Contaminant Concentrations:
DRO – up to 23,000 mg/kg; RRO – up to 26,000 mg/kg; Methylene Chloride – up to 970 mg/kg

Cleanup Method: Method 2, Table B2, 18 AAC 75.341 for DRO
Method 4 (risk assessment) for methylene chloride

Cleanup Levels: DRO – 12,500 ppm; RRO – 13,700 ppm; Methylene Chloride – 144 ppm (Note: This cleanup level was determined through risk assessment process. The Method 2 cleanup level is 270 ppm.)

Cleanup Remedy: Petroleum-contaminated soil: Hot Air Vapor Extraction System (HAVE): Excavated petroleum-contaminated soil is run through the HAVE system which reduces the levels of petroleum to below 200 ppm. This soil is then returned to the excavated area.
Methylene Chloride-contaminated soil: Verification sampling for methylene chloride in soils will occur; contaminated soils will be removed and

[a] Abbreviations and technical terms in *italic type* are defined in the Table 2 glossary.

transported to a permitted hazardous waste landfill for treatment and disposal.

It is anticipated that a total of 220 yards of soils will be treated or removed from the site by 30 September 1999.

Review of Cleanup Action after Site Closure:

Under 18 AAC 75.380(d)(1), ADEC may require the Navy to perform additional cleanup if new information is discovered which leads ADEC to make a determination that the cleanup described in this Record of Decision is not protective of human health, safety, and welfare or the environment, or if new information becomes available which indicates the presence of previously undiscovered contamination or exposure routes related to Navy activities.

Kevin K. Ball, Lead
Environmental Restoration Team
Engineering Field Activity Northwest

24 JUN 03
Date

John Halverson, for
Jennifer Roberts
Contaminated Site Program, Section Manager
Alaska Department of Environmental Conservation

7/14/2003
Date

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INTRODUCTION

The Naval Field Station (NFS) is located in Wales, Alaska. The site is situated at the northern edge of the Village of Wales on the eastern shore of the Bering Strait, about 100 miles north of Nome (Figure 1). Site contamination, primarily petroleum hydrocarbons in soils (covering an area of about 0.6 acre) and solvent in soil (covering less than 0.1 acre), resulted from prior operations and functions of the NFS. The U.S. Navy owns the existing buildings on the site, and leases the property from the Wales Native Corporation. There are currently no permanent workers stationed at this facility.

SITE BACKGROUND

The site was originally established as an Army post during World War II. After serving as a weather station from 1947 to 1951, it was transferred to the Navy. Historical activities at the site that have resulted in environmental impacts included the storage and use of petroleum-based fuels for transportation, electrical power, and heat; solvents for cleaning equipment; and electrical transformers containing polychlorinated biphenyls (PCBs). In addition, an area of the site was used to burn debris and garbage.

There have been two reported fuel spills:

- In March 1989, approximately 3,800 gallons of diesel fuel were spilled during transfer. The spill was cleaned up as soon as weather permitted. Affected soil was excavated and stored on site inside four landing vehicles. In 1994, a cleanup action removed 482 tons of debris and hazardous materials; the vehicles were removed and petroleum-contaminated soil(approx 300 cy) was placed in a lined basin (biocell) for remediation.

- In November 1996, leaks developed in two of the four 15,000-gallon diesel fuel tanks. Approximately 28,000 gallons of fuel leaked into the spill containment structure surrounding the tanks, and high winds blew fuel over the containment to the surrounding area. A Navy spill response team recovered a portion of this fuel.

In Fall 1997, all four tanks and associated lines were drained and taken out of service.

This decision document includes a summary of site investigation and risk assessment findings. More detailed information is presented in supporting documents available for public review at the following locations:

- Bering Straits Native Corporation, Nome, Alaska; and
- Community Center, Wales, Alaska.

SUMMARY OF RISK POSED BY THE SITE

Several site investigations were conducted from 1989 to 1997, to assess the extent of contamination at the site. Based on the results of these investigations, the Navy identified a list of chemicals of potential concern, and performed baseline risk assessments to evaluate potential risks to human health and the environment. The major risk assessment findings are summarized below.

Potential Risks to Human Health

The human health risk assessment considered current and future site use. It was conducted in accordance with EPA and ADEC guidance, using conservative assumptions.

Potential health risks to the following types of individuals were evaluated under the following exposure scenarios:

- An occasional trespasser/site visitor;
- A future resident (including adults and children); and
- A subsistence consumer of aquatic organisms.

An individual's exposure to chemicals, through activities such as digging in the soil and inhaling vapors and dust, was estimated. Both carcinogenic and non-carcinogenic risks were evaluated.

The risk assessment determined that risk levels associated with petroleum hydrocarbons in site soils are acceptable according to ADEC and EPA guidance. However, methylene chloride could pose a potential future health risk at the site based on concentrations present

that may be above acceptable levels. The future resident and occasional trespasser/site visitor have the highest potential health risks, primarily through inhalation of methylene chloride evaporating from soil. No air sampling has been conducted for methylene chloride. The inhalation risk is based on conservative estimates of air concentrations that could result from impacted site soils. The highest methylene chloride concentrations were detected in 1994, in soil northeast of the spill containment structure. Soil concentrations are likely lower today because much of the methylene chloride is expected to have evaporated since that sampling event.

The actual risk level for each exposure scenario evaluated is shown below:

-An occasional trespasser/site visitor: RME Risk = 1.5E-5, RME Hazard = 1.2

-A future resident(including adults and children): RME Risk =3.6E-4 RME Hazard = 2.1

-A subsistence consumer of aquatic organisms: RME Risk = less than 1E-6. RME Hazard = less than 1.0

The risk assessment also determined there is no risk from this site for subsistence consumers of plants or animals. Subsistence level consumption of aquatic organisms such as fish caught in the Bering Strait and clams and sea cucumbers harvested from the beach will not cause harm to human health because no contaminants were detected in groundwater along the beach or in beach sediments that exceeded water quality criteria for salt water. Land and sea mammals used for subsistence consumption do not have significant exposure to the site. Nesting birds do not have significant exposure to the site and do not nest near the site. Plants harvested for subsistence use are not found near the site.

Potential Risks to the Environment

The results of the ecological risk assessment indicate that existing environmental conditions are within acceptable risk levels for aquatic resources harvested from the Bering Strait by members of the Village of Wales. (The RME Risk is less than 1E-6 and RME Hazard is less than 1.0) A slight potential for adverse impacts was indicated for small

mammals at the site. (The RME Hazard is 1.89 for Mammalian Insectivore and 0.31 for Mamalian Herbivore) However, since habitat quality is relatively poor in the areas of the site most impacted by contaminants, risks to small mammals should be minimal.

PROPOSED SOIL CLEANUP LEVELS

A three-tiered approach was taken to establishing proposed soil cleanup levels:

- Cleanup requirements to address site risk;
- Cleanup requirements to address regulations; and
- Cleanup requirements to address aesthetics.

These are discussed separately below.

Risk-Based Cleanup

The risk assessments indicated that methylene chloride is the only chemical in site soils with the potential to cause unacceptable health risks in the future. Based on risk assessment results, reducing methylene chloride concentrations in soil to below 144 *mg/kg* will address these unacceptable risks. The risk level represented by this cleanup number is RME Residential Risk = 2E-5 and RME Residential Hazard = 1.0. (The Method 2 cleanup level for methylene chloride is 270 mg/kg.) The Navy therefore proposes 144 mg/kg as the appropriate cleanup level for methylene chloride in soil. Figure 2 shows the estimated areal extent of site soils with methylene chloride concentrations exceeding 144 mg/kg, based on 1994 sampling results. Based on an estimated 2-foot depth of contamination, this represents approximately 220 cubic yards of soil. It is recognized that methylene chloride concentrations in soil may have declined substantially since the 1994 sampling event, due to evaporation. To determine if cleanup is required, verification sampling for methylene chloride will be conducted before site cleanup begins.

Regulatory-Based Cleanup

While the concentrations of individual petroleum constituents evaluated in the risk assessments do not pose a human health or ecological risk, concentrations of diesel- and residual-range petroleum hydrocarbons in site soils do exceed ADEC cleanup level guidance.

Based on ADEC's Method Two Petroleum Hydrocarbon Soil Cleanup Levels in Arctic Zones, the following cleanup levels have been agreed to by the Navy, State, and Community:

- Diesel-Range Organics (DRO) 12,500 mg/kg
- Residual-Range Organics (RRO) 13,700 mg/kg

For these levels to be applicable, there must be no significant potential for future migration of residual petroleum from the soil to groundwater or surface water. The Navy and ADEC believe this requirement is satisfied at NFS Wales, based on the following information developed during the site investigation:

- Three site soil samples were evaluated for contaminant leaching potential using the standard EPA test method, Synthetic Precipitation Leaching Procedure (SPLP). Individual petroleum hydrocarbon constituent concentrations in the leachate from these tests did not exceed ADEC groundwater cleanup level guidance.

- Groundwater samples were collected from well points installed along the beach, downgradient of the petroleum-impacted areas of the site and near the point of groundwater discharge into the Bering Strait. No free product or sheen was observed in any of the well points, and dissolved constituent concentrations in the samples were below EPA ambient saltwater quality criteria protective of aquatic organisms.

- In addition to there being no evidence of significant contaminant concentrations in groundwater downgradient of the site, the rate of groundwater movement is very low. Movement occurs only during the summer thaw, estimated to last only 2 to 3 months each year. During this period, the rate of groundwater migration through the petroleum-impacted areas of the site and toward the Bering Strait is estimated at 0.5 gallon per minute.

Figure 2 shows the estimated areal extent of soils with contamination at concentrations above the proposed petroleum cleanup levels. DRO-impacted soils are located in the vicinity of reported diesel fuel spills, and extend from ground surface to an average depth of 4 feet. Soils exceeding the proposed RRO cleanup level are located in the former burn area, and extend to a depth of approximately 2 feet. The estimated total volume of these soils is 740 cubic yards.

Sampling of the DRO-impacted soils which were excavated in 1994 and placed in the biocell indicates that DRO concentrations are below the proposed cleanup level. However, because this soil has been excavated, there is a regulatory requirement that it be cleaned up. The estimated volume of soil in the biocell is 300 cubic yards.

Aesthetics-Based Cleanup

In some cases, soils containing petroleum hydrocarbons at concentrations below the cleanup levels proposed above may nonetheless present aesthetic concerns, including visual appearance (staining) and odor. Since this site may become a residential area in the future, the Navy proposes to address potential aesthetic concerns by cleaning up all near-surface soils to a depth of approximately 1 foot with DRO concentrations exceeding 1,000 mg/kg. Figure 3 shows the estimated areal extent of these "nuisance" soils, which represent an additional 720 cubic yards of soil to be cleaned up.

SUMMARY OF CLEANUP ALTERNATIVES

Four alternatives for cleanup of impacted site soils (volume estimated at nearly 2,000 cubic yards) were considered in the proposed plan, and are discussed below.

Alternative 1—No Action. The No Action alternative provides a baseline against which to compare the effectiveness of the other alternatives. Under this alternative, impacted soils would be left in-place without treatment.

Alternative 2—*In Situ* Bioventing. In this alternative, naturally occurring microorganisms already present in the soil would be used to break down DRO and RRO constituents. Biological activity would be enhanced by supplying atmospheric oxygen to impacted soils using a network of subsurface horizontal slotted pipe connected to a blower. It is anticipated that this bioventing system would be operated for four to five months per year, and that cleanup would require at least two field seasons to complete. Treatment would reduce both DRO and RRO concentrations in soil to below 200 mg/kg, in accordance with ADEC guidance (based on Method One Petroleum Hydrocarbon Soil Cleanup Levels in Arctic Zones). Methylene chloride would likely be removed from the soil through volatilization rather than

biodegradation, but the small amount of methylene chloride released to the atmosphere would not pose air quality concerns. The estimated cost of this alternative is $620,000, assuming a two-year treatment period. If more than two years were required, the cost would be higher.

Alternative 3—Excavation and On-site Hot Air Vapor Extraction. In this alternative, impacted soils would be excavated and treated at the site in an enclosed cell. Hot air would be circulated through the excavated soil to volatilize contaminants, and then treated in a thermal oxidation unit. Treatment would reduce DRO and RRO concentrations in soil to below 200 mg/kg, as in Alternative 2. Petroleum hydrocarbons would be oxidized to carbon dioxide and water, whereas methylene chloride would generate hydrogen chloride emissions. As in Alternative 2, however, the small amount of contaminant (in this case hydrogen chloride) released to the atmosphere would not pose air quality concerns. The soil would be treated in batches, each batch requiring several weeks to process. Treated soil would be backfilled to the excavation. Soil remediation under this alternative would require only one season to complete, and would cost an estimated $750,000.

Alternative 4—Excavation and Off-site Disposal. In this alternative, impacted soils would be excavated, barged to either Anchorage or Seattle, and disposed of in an appropriate landfill. Excavation and off-site disposal would require less than one season to complete, and would cost an estimated $760,000.

EVALUATION OF CLEANUP ALTERNATIVES

The above alternatives were evaluated according to the EPA criteria listed in Table 1, which were developed for cleanup of *Superfund* sites. To be considered further, an alternative should, at a minimum, fulfill the "threshold criteria" of 1) being protective of human health and the environment, and 2) complying with applicable state and federal regulations. The five "balancing criteria" are used for comparing alternatives and in selecting a preferred alternative. The two "modifying criteria" were considered based on a combination of the ADEC and community comments and involvement throughout the process, and after the public submitted comments on the proposed plan, these comments were factored into selection of the final cleanup action.

Figure 4 shows a comparison of alternatives based on EPA's criteria for selecting an appropriate cleanup action, including estimated costs. The No Action alternative is highly implementable and has the lowest cost, but otherwise does not meet the evaluation criteria and thus was not considered further. In comparing the other alternatives, the following points are noteworthy:

- Each alternative meets the two threshold criteria (overall protection of human health and the environment, and compliance with environmental regulations), as well as the balancing criteria addressing implementability and long-term effectiveness and permanence;

- In situ bioventing and hot air vapor extraction are more effective than off-site disposal at reducing contaminant toxicity and volume, since they achieve contaminant destruction;

- Hot air vapor extraction and off-site disposal are somewhat more effective in the short-term, since they would likely require only one season to complete, versus two or more years for in situ bioventing; and

- Estimated costs are similar, with the least expensive alternative (in situ bioventing) costing over 80 percent that of the most expensive alternative (off-site disposal).

THE SELECTED CLEANUP ALTERNATIVE

Based on the information currently available and comparison to the EPA evaluation criteria, the Navy and ADEC believe that excavation of impacted soils and on-site treatment using hot air vapor extraction (HAVE) technology provides the best balance of trade-offs among the alternatives. It meets the threshold and balancing criteria, and can be completed more quickly than in situ bioventing at moderate incremental cost. It achieves the Navy's goal of expediting cleanup at the site and does not require long-term monitoring. For these reasons, it has been identified by the Navy as the preferred cleanup alternative.

State Concurrence: The Alaska Department of Environmental Conservation agrees that this is an acceptable and protective alternative.

Cleanup at the NFS site will be completed during the 1999 construction season. Following is the schedule:

- **Late June.** Mobilize equipment and personnel to the site.

- **Early July through Mid-September.** Excavate site soils with contaminant concentrations above the proposed cleanup levels, and treat them in three or four batches using the HAVE system. Additionally, a small volume of petroleum-impacted soil from the Tin City White Alice Site will be treated in the HAVE system. Actual field work on the Site began on 08 July 1999.

- **Late September.** Demobilize equipment and personnel. Demobilization of the Site was completed on 26 September 1999.

- A closure report was prepared and forwarded to the State and the Community of Wales by the Navy on 01 February 2000. The report was approved by ADEC on 28 March 2000.

While soil remediation is the principal component of site cleanup, field reconnaissance will also be completed at the site during the 1999 construction season to locate potential buried drums and debris. Any buried drums discovered will be removed from the soil and staged on site pending characterization of contents, and subsequently removed from the site along with recovered debris. Petroleum-impacted soil associated with the drums (if any) will be excavated and treated on-site by hot air vapor extraction, and will be subject to the cleanup levels agreed to for DRO and RRO. Soil sampling and analysis will be performed in excavations and at buried drum locations to verify that cleanup goals have been achieved site-wide prior to leaving the site. If analysis results indicate cleanup levels have not been met, the Navy will determine the best course of action to take in consultation with ADEC and respond accordingly. For more information you are referred to the "Closeout Report Treatment of Petroleum Contaminated Soil", Naval Field Station Wales, Alaska, dated February 1, 2000. Contract No. N44255-98-D-9951/D.O. #0013, prepared by Bristol Environmental and Engineering Services Corporation for the Department of Navy, Engineering Field Activity, Northwest, Naval Facilities Engineering Command.

COMMUNITY RELATIONS AND PUBLIC INVOLVEMENT ACTIVITIES

Community Relations. A Community Relations Plan was written in 1996 for NFS Wales. Throughout the investigation and cleanup process, the Navy has forwarded fact sheets and community updates, including August 1996, 1997, April 1998, and August 1998, and held informal meetings with the community.

Community Meetings. The Navy and ADEC met with community members of Wales at three public meetings in August 1997, May 1998, and September 1998 to present status of the project, cleanup ideas, and to discuss community concerns. At the last two of these meetings, a representative of the Bering Straits Native Corporation participated as a community liaison.

Community Concerns. The Navy appreciates the numerous individuals who have taken the time to attend the pubic meetings and participate in discussions about this site. In summary, there were many concerns expressed by the community members. These included the risk of consuming marine life netted or taken from the beach where there had been oil sheen, concern that their drinking water may have been or could become contaminated, desire for the Navy to remove more buried drums and surface debris from the NFS, and the desire for the Navy to return the land back to the Community in pristine condition. The Navy has discussed each question and provided information based on study results to all concerns raised at the meetings, and this is documented in the minutes of each meeting. These minutes are found in Appendix A. Responses to these major concerns are also summarized here.

Concern: Is it safe to fish from the area by the Naval Field Station? Is it safe to eat the clams collected from the beach?
Answer: Yes. Sampling of groundwater at the beach and sampling of the sediments show that there are no contaminants entering the beach environment at levels that exceed water quality criteria for salt water organisms. After the site cleanup is complete, there will be even more protection from the chance that contaminants could leach to the beach environment.

Concern: Has our drinking water been contaminated, or can it be contaminated from this site?

Answer: No. Community drinking water sources have not been contaminated by this site, and are not at risk of being contaminated by this site in the future.

Concern: Will the Navy remove buried drums and surface debris from the site?
Answer: Yes. During the cleanup, a comprehensive search will be made for any additional buried drums, and any drums that are found will be removed. Surface debris will also be removed and properly disposed of.

Concern: Will the Navy return the land in pristine condition?
Answer: It is virtually impossible to restore the land to pristine conditions. However, the Navy has worked closely with the community and with ADEC to develop cleanup levels and a cleanup plan that will protect human health and the environment. After the cleanup, this land will be safe for any kind of use, including residential uses.

Proposed Plan. A meeting with the Navy, State, and tribal leaders was also held in February 1999 to present the proposed cleanup levels and plans. Representatives of the Wales City Council, Wales Native Corporation, Wales IRA Traditional Council, and the Bering Straits Native Corporation were agreeable to the cleanup levels listed in this document.

Public Comment. A proposed cleanup action plan was sent out for a 30-day public comment period March 13 through April 12. The plan was mailed to all members on the Navy's mailing list for Wales, with extra copies forwarded to the Wales Post Office for community members not on the mailing list. Written comments were received from two Wales residents.

Responsiveness Summary. The Navy appreciates the individuals who took the time to prepare and send in written comments on the Proposed Plan. These comments and the Navy's responses to them are summarized in this section.

A Responsivenss Summary was mailed to all P.O. Box holders in Wales by the Navy on 31 August 1999.

Comment: I know that the Wales Naval Field Station needs cleaning up because of what I saw when I worked on the site during the 1994 cleanup.
Answer: The Navy appreciates this comment. Information from people like you who have personal knowledge of this site has helped the Navy to develop a cleanup plan that will include all of the areas where the community has concerns. After the cleanup, this site will be safe for any use, including residential uses.

Comment: The Proposed Cleanup Plan does not include any demolition of buildings, removal of oil tanks, or disposal of other visible debris such as aircraft parts and the old oil/gas staging platform.
Answer: A plan to do these activities is being developed as part of the lease termination process and will be presented in more detail to the community as a separate process from the environmental cleanup, to the extent that disposal of tanks or other surface debris will be part of the environmental cleanup.

Comment: When the buildings are torn down, will the land underneath them be checked for contamination?
Answer: Yes. When the buildings are demolished, the land underneath them will be checked for contamination. If contamination is found, it will be cleaned up to residential cleanup levels that have been set for this site to make the land safe for people to live at the site.

Comment: At the meeting in Nome on February 24, 1999, I tried asking the Navy if they had done any tests near the buildings.
Answer: The Navy appreciates this comment. Following the February meeting, ADEC and the Navy checked the sampling locations from past site investigations, and found that there had not been any sampling on the ground below the heating oil tanks behind the two houses. During the cleanup, the Navy will sample these two locations, and if there is petroleum contamination in the soil, the soil will be excavated and treated with the rest of the soil undergoing treatment.

Future Contacts. Throughout the process, Wales Community members have been encouraged to contact the Navy and State site managers with questions and comments. Community members are still encouraged to do so. These representatives are:

Gerry Rieger, Navy Project Manager
Engineering Field Activity, Northwest
19917 - 7th Avenue NE
Poulsbo, WA 98370-7570
(360) 396-0063 (phone)
(360) 396-0857 (fax)

Tamar Stephens, Environmental Specialist
Alaska Department of Environmental Conservation
610 University Avenue
Fairbanks, AK 99709-3643
(907) 451-2131 (phone)
(907) 451-2187 (fax)

Table 1 - Criteria for Evaluation of Cleanup Alternatives

Threshold Criteria

Overall Protection of Human Health and the Environment. How well does the alternative protect human health and the environment, both during and after construction?

Compliance with Federal and State Environmental Regulations. Does the alternative comply with appropriate state and federal regulations?

Balancing Criteria

Long-Term Effectiveness and Permanence. How well does the alternative protect human health and the environment after completion of cleanup? What risk will remain at the site?

Reduction of Toxicity, Mobility, and Volume. Does the alternative effectively treat the contamination to significantly reduce the toxicity, mobility, and volume of the hazardous substance?

Short-Term Effectiveness. Are there potential adverse effects to either human health or the environment during construction or implementation of the alternative? How fast does the alternative achieve the cleanup goals?

Implementability. Is the alternative feasible from a technical and administrative viewpoint? Are the materials and services needed to implement the alternative available?

Cost. What are the estimated costs of the alternative? Are the costs appropriate for the site risk?

Modifying Criteria

State (ADEC) Acceptance. Based on its review of the baseline risk assessments and this plan, does ADEC concur with, oppose, or have no comment on the preferred cleanup alternative?

Community Acceptance. Have the community's comments and concerns been addressed?

Table 2 - Glossary of Abbreviations and Technical Terms (Italicized in Text)

ADEC. State of Alaska Department of Environmental Conservation.

Carcinogenic. Having the potential to cause cancer.

Downgradient. In the direction of groundwater flow.

DRO. Diesel Range Organics (petroleum hydrocarbons in the diesel range).

EPA. United States Environmental Protection Agency.

In Situ Bioventing. A method of treating soils in-place (i.e., no excavation required).

Leachate. Water that has come into contact with contaminated soils.

Method Two Petroleum Hydrocarbon Soil Cleanup Levels in Arctic Zones. Soil cleanup levels for Arctic Zones specified in Table B2 of ADEC's Oil and Hazardous Substances Pollution Control Regulations (18 AAC 75.3).

Methylene Chloride. A toxic, volatile chemical used as a cleaning solvent.

mg/kg. Milligrams per kilogram (equivalent to parts per million).

NFS. Naval Field Station.

PCBs (Polychlorinated biphenyls). A group of toxic, persistent chemicals formerly used for insulating electrical transformers and capacitors.

Risk Assessment. A process that uses regulatory guidelines to determine whether the level of human health or ecological risks are high enough to be unacceptable.

RRO. Residual Range Organics (petroleum hydrocarbons in the motor oil range).

Subsistence Consumer. A person who depends on the food source in question for a large portion of his or her diet.

Superfund. EPA program for evaluating and cleaning up high-priority hazardous waste sites.

Well Point. A simple device installed in the ground, from which a groundwater sample can be collected.

Vicinity and Site Features Maps

Naval Field Station Cape Prince of Wales, Alaska

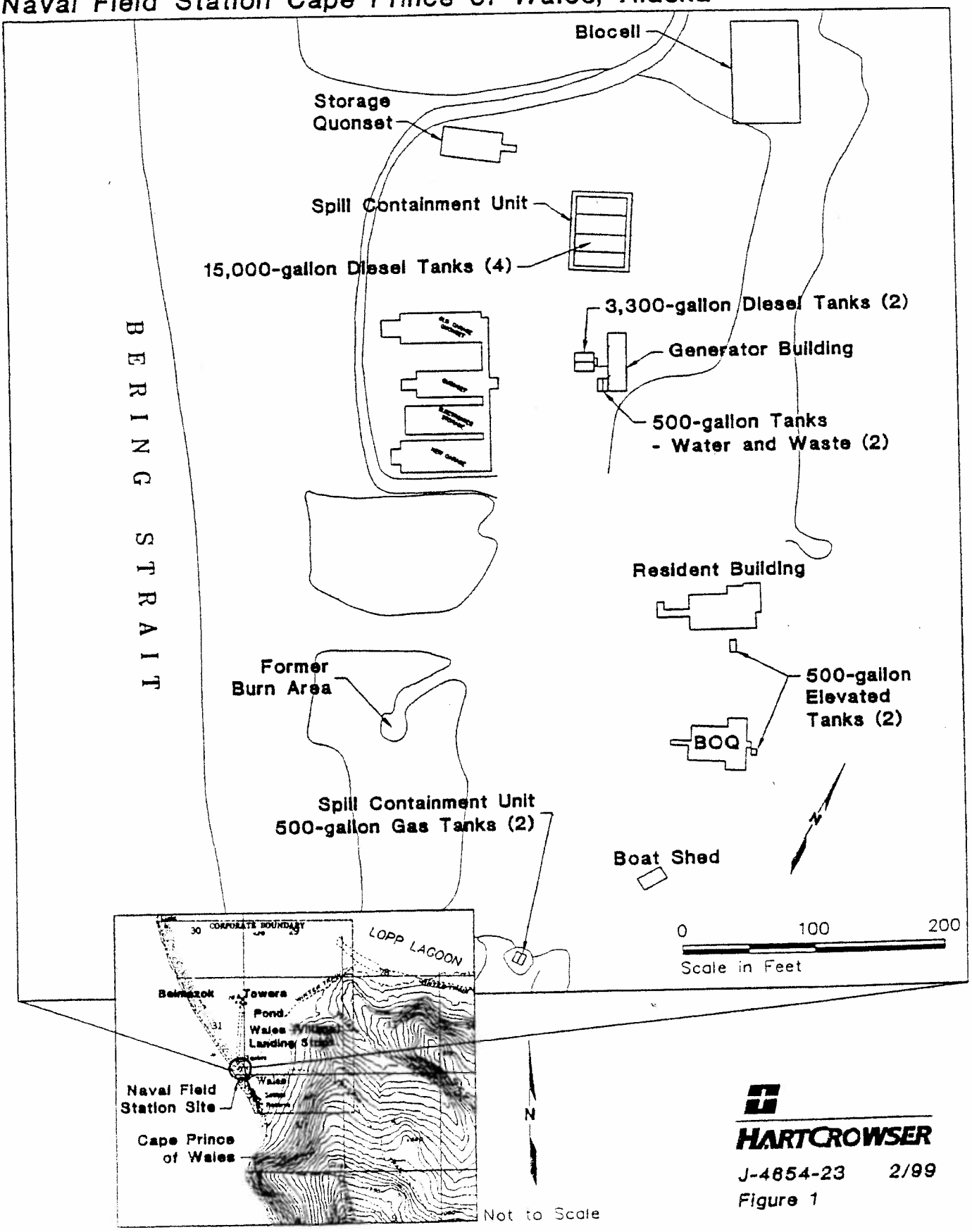

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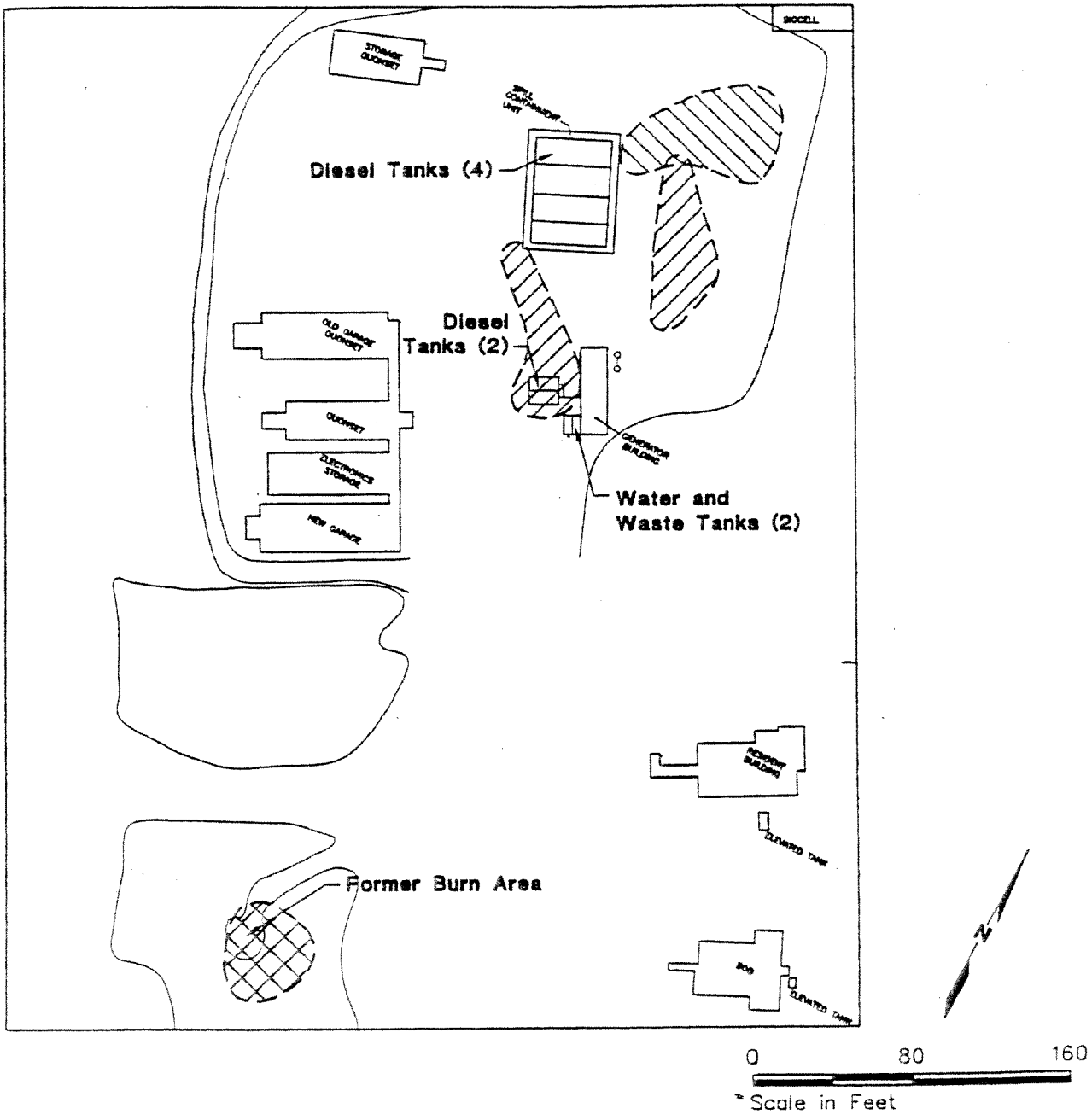
Figure 1

Areal Extent of Soils Exceeding Proposed Cleanup Levels

Naval Field Station Cape Prince of Wales, Alaska



Soil Exceeding Cleanup Levels		Proposed Soil Cleanup Level in mg/kg
	Diesel–Range Organics (DRO)	12,500
	Residual–Range Organics (RRO)	13,700
	Methylene Chloride (MeCl)	144

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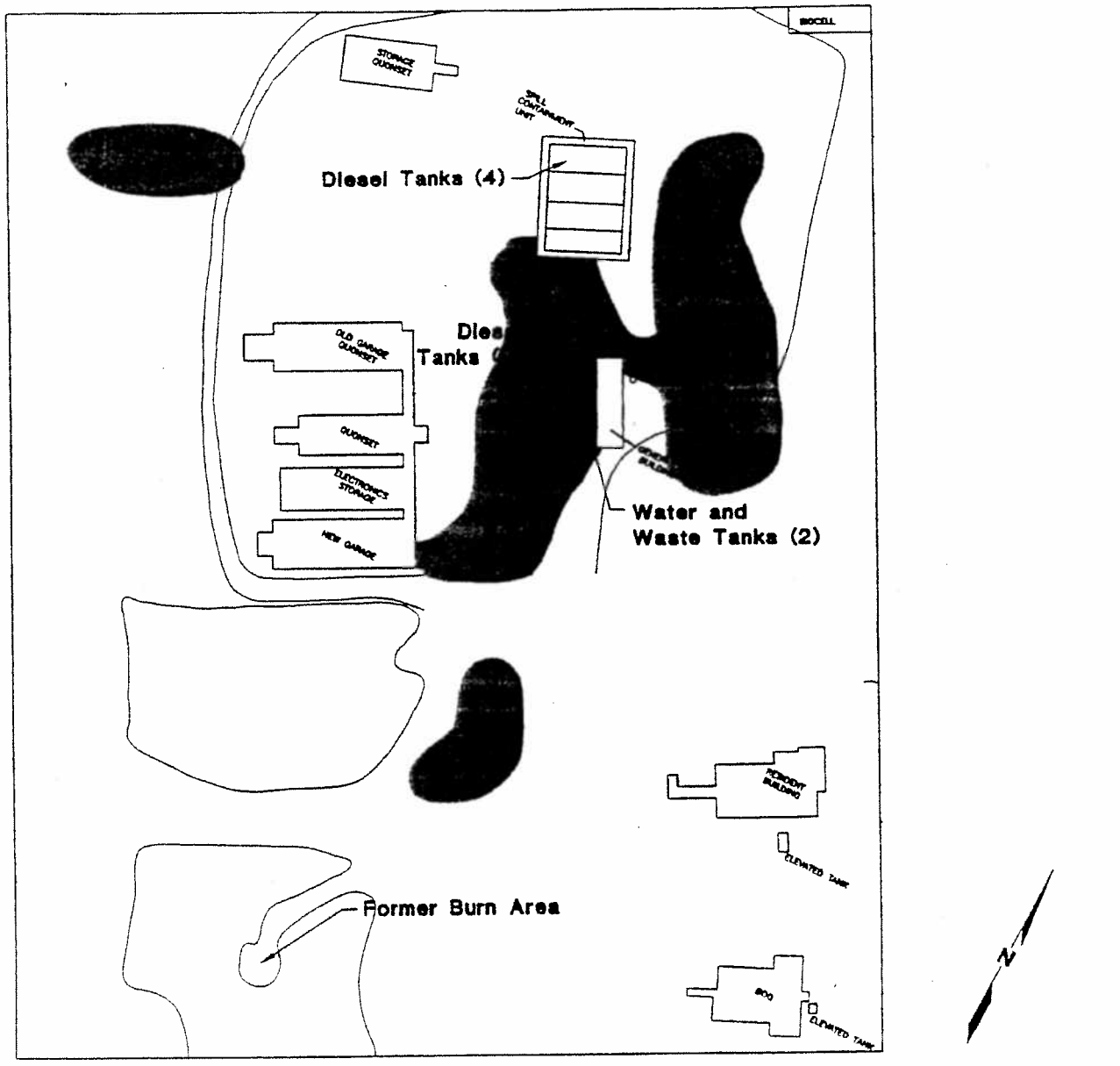
Figure 2

Areal Extent of Near-Surface Soils with Nuisance/Odor Potential

Naval Field Station Cape Prince of Wales, Alaska



Estimated Extent of Near-Surface Soils with Nuisance\Odor Potential (DRO>1,000 mg/kg)

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Figure 3

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Evaluation of Cleanup Alternatives by Criteria

	Threshold Criteria		Balancing Criteria				
	Protection of Human Health and the Environment	Compliance with Federal and State Regulations	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume	Short-Term Effectiveness	Implementability	Estimated Cost
1. No Action	○	○	○	○	○	●	$0
2. *In Situ* Bioventing	●	●	●	●	◐	●	$620,000
3. Hot Air Vapor Extraction	●	●	●	●	●	●	$750,000
4. Off-Site Disposal	●	●	●	◐	●	●	$760,000

○ Does not Generally Meet Criterion

◐ Partially Meets Criterion

● Generally Meets Criterion

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Figure 4