



PITT-01-8-031

January 21, 2008

Project 00078/00202

Dept of the Navy  
Naval Station Great Lakes  
NAVFAC MW Code EV  
Attn: Howard Hickey  
201 Decatur Ave.  
Building 1A  
Great Lakes, IL 60088

Reference: CLEAN Contract No. N62467-94-D-0888/N62467-04-D-0055  
Contract Task Order 0384/0009

Subject: Final Proposed Plan, Final ERH Treatability Study Report, and Meeting Minutes  
Site 22 - Building 105 Old Dry Cleaning Facility  
Naval Station Great Lakes  
Great Lakes, Illinois

Dear Mr. Hickey:

Please find enclosed two copies of the ERH Treatability Study Report, the November 2007 meeting minutes, and the response to Illinois EPA comments on the draft report. Also attached are two compact discs with the electronic version of the ERH Treatability Study Work Plan and Report.

Also find enclosed 24 copies of the Proposed Plan for your file and public distribution and one copy of the response to Illinois EPA comments on the Draft Proposed Plan.

Copies have also been distributed as indicated below. If you have any questions, please call Chris Pike at 412-921-8861 or me at 412-921-7251.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert F. Davis', written over a horizontal line.

Robert F. Davis, P.E.  
Task Order Manager

RFD/cm

Enclosure

cc: M. Schultz, Naval Station Great Lakes (cover letter)  
Anthony Robinson/Michael Singletary, NAVFAC SE (2 CDs)  
Dan Waddill, NAVFAC LANT (1 CD)  
B. Conrath, Illinois EPA (3 copies ERH Treatability Study and Proposed Plan and 3 CDs)  
D. Humbert, TiNUS (cover letter only)  
Mark Perry/File 00078, TiNUS (1 copy - Proposed Plan)  
Mark Perry/File 00202, TiNUS (1 copy and 1 CD - ERH Treatability Study)

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**RESPONSE TO COMMENTS  
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
JULY 16, 2007  
PROPOSED PLAN FOR SITE 22  
NAVAL STATION GREAT LAKES**

1) **About This Document** – Obviously, the dates listed here and elsewhere in this document for accepting public comments will need to be updated.

***Response:*** *The document will be changed to indicate the public comment period is from February 4 to March 5, 2008 and the postmark date for the comments will be March 5, 2008. In addition, in the section Next Steps the September 2007 date will be changed to May 2008 anticipating a signed ROD by then.*

2) **Facility Description** – The last sentence mentions the intent to close the hazardous waste storage area through the Resource Conservation and Recovery Act (RCRA) program. It does not discuss the intent to close the site out under CERCLA or how these two programs interrelate at this site. There should be a brief explanation of why the site was investigated, remediated, and closed under CERCLA, while also complying with the closure requirements under RCRA.

***Response:*** *The following sentence will be added to the end of this section: “Because of the historical operations at the site and the fact that the majority of the contamination was not necessarily associated with the RCRA storage unit, the investigation, remediation, and closure are being conducted utilizing CERCLA guidance; however, because of the RCRA storage unit at the site, closure will also comply with RCRA guidance.”*

3) **Site Description** – As above, this section should explain why the closure of this site will be handled under both programs.

***Response:*** *The last sentence of the second paragraph will be deleted and the following sentence will be added at the end of the second paragraph: “Because a large portion of the contamination associated with this hot spot was believed to be due to the building floor drains and grease catch basin utilized as part of the historical dry cleaning operation (and not the RCRA storage unit itself), the investigation and remediation were conducted utilizing CERCLA guidance. Because of the presence of the RCRA storage unit, the Illinois EPA is requiring cleanup of this contamination to allow closure of that unit; therefore, closure of the site will meet both the CERCLA and RCRA requirements.”*

4) **Site Description** – The discussion in the second paragraph should explain that the hotspot near the southeastern corner of the building (grease trap) was related to the dry cleaner, rather than the RCRA storage facility.

***Response:*** *See the response to Comment 3 above.*

5) **The Proposed Cleanup Plan** – It should also state here that a Land Use Control Implementation Plan (LUCIP) for this site will be appended to the Land Use Control Memorandum of Agreement (LUCMOA) between the Navy and Illinois EPA to ensure the restrictions will be applied and enforced until they are no longer required.

***Response:*** *The following sentence will be added to the end of this section: “A LUC Implementation Plan will identify the restrictions for this site and will be appended to the LUC Memorandum of Agreement between the Navy and Illinois EPA to ensure the restrictions will be applied and enforced until they are no longer required”.*

**RESPONSE TO COMMENTS  
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
JULY 16, 2007  
PROPOSED PLAN FOR SITE 22  
NAVAL STATION GREAT LAKES**

6) **Summary of Site Risks** – In the last paragraph, it is stated that the estimated cancer risk value for future occupational workers of  $1.1 \times 10^{-6}$  is less than the U.S. EPA's target risk range and the Illinois EPA's goal of  $1 \times 10^{-6}$ . This is inaccurate. A value of  $1.1 \times 10^{-6}$  is within the U.S. EPA's target risk range and slightly above Illinois EPA's goal of  $1 \times 10^{-6}$ .

***Response:*** *The description of risk will be modified. The estimated cancer risk is shown in Table 4-3 of the ERH Treatability Study Report as  $1 \times 10^{-6}$ . This is rounded down from the calculated value of  $1.1 \times 10^{-6}$ . According to EPA guidance, the rounded value (in this case  $1 \times 10^{-6}$ ) is utilized for comparison to the risk criteria. In this manner, there is no difference between  $9.5 \times 10^{-7}$ ,  $1.1 \times 10^{-6}$ , and  $1.4 \times 10^{-6}$ . They all are rounded off to  $1 \times 10^{-6}$  and are considered acceptable.*

*Therefore, this portion of the sentence will be re-written as: "...and future occupational workers ( $1 \times 10^{-6}$ ) are acceptable when compared to the U.S. EPA target risk range and the Illinois EPA goal of  $1 \times 10^{-6}$ ." Additionally, all other risk values in this section will be rounded to one significant digit.*

7) **What's a Formal Comment** – This section needs to inform the public that they have the ability to request a 30-day extension to the public comment period. It should also tell them how to request such an extension.

***Response:*** *The following changes will be made to the section. The first sentence of the second paragraph will be moved to the end of the first paragraph. The following sentence will start the second paragraph: "A request for an extension of the public comment period (minimum of 30 days) must be made in writing." The last sentence of the paragraph will be changed to "...requests for a public meeting or an extension of the public comment period should..."*

*Note – other minor changes were made to the document based on comments from the Navy and comments on the ERH Treatability Study Report.*



**Proposed Plan for Site 22, Former Building 105 - Old Dry Cleaning Facility  
Naval Station Great Lakes,  
Installation Restoration Program  
Great Lakes, Illinois**

**About This Document**

The Navy, as the lead agency, is accepting formal public comments on this Proposed Plan from February 4 through March 5, 2008. The Navy, with concurrence by Illinois Environmental Protection Agency (Illinois EPA), developed this plan to summarize the proposed cleanup of Site 22, former Building 105 - Old Dry Cleaning Facility (Site 22). This Proposed Plan is being presented to satisfy the statutory and regulatory requirements for public participation under the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** and to help the public understand and provide input on the proposed cleanup alternatives. The Navy, with input from Illinois EPA, will make a final remedy selection after reviewing and addressing the public comments received.

This Proposed Plan highlights key information from the **Remedial Investigation/Risk Assessment (RI/RA)**, **Feasibility Study (FS)**, and **Electric Resistance Heating (ERH) Treatability Study** reports. These reports are maintained at Naval Station Great Lakes. More complete information can be found in these reports and the Administrative Record at Naval Station Great Lakes.

**Facility Description**

Naval Station Great Lakes is located in Lake County, Illinois, north of the City of Chicago, and encompasses 1.5 miles of Lake Michigan shoreline. Naval Station Great Lakes is used to support naval training and consists of the Recruit Training Command, the Training Support Center, and Naval Facilities Engineering Command Midwest. In 1986, an **Initial Assessment Study (IAS)** conducted at Naval Station Great

Lakes identified 14 potentially contaminated sites. Each site was evaluated with respect to potential contamination, migration pathways, and pollutant receptors. The study concluded that seven of these sites warranted further investigation to assess potential long-term impacts. Although Site 22 was not included as one of these seven sites, investigations of the hazardous waste storage area at Site 22 through the Resource Conservation and Recovery Act (RCRA) program identified soil contamination that warranted further investigation. Because of the historical operations at the site and the fact that the majority of the contamination was not necessarily associated with the RCRA storage unit, the investigation, remediation, and closure are being conducted utilizing CERCLA guidance; however, because of the RCRA storage unit at the site, closure will also comply with RCRA guidance.

**Site Description**

Site 22, former Building 105 was an Old Dry Cleaning Facility at Naval Station Great Lakes (see Figure 1). The site is bounded on the south by Porter Street, on the west by a vacant asphalt-paved lot, on the north by Bronson Avenue, and on the east by Sampson Street (see Figure 2). The former 10,500-square-foot building was a slab-on-grade structure measuring approximately 150 feet by 70 feet; the site is now an active, paved parking lot.

Naval Station Great Lakes has operated with RCRA interim status permit [United States (U.S.) EPA # IL7170024577] since November 19, 1980. Building 105 was originally included in the RCRA Part A permit because of a drum storage unit (storage of hazardous waste consisting of spent tetrachloroethene [PCE] from the laundry facilities) located inside the building along the eastern wall.

**The Proposed Cleanup Plan**

To address the contaminated soil and pore water at Site 22, the Navy, with concurrence by Illinois EPA, propose a modification of Alternative 5 (Focused **Electrical Resistance Heating [ERH]**), Limited Excavation, Off-Base Treatment [incineration] and Disposal, Capping, Monitoring, and **Land Use Controls [LUCs]**) as the cleanup remedy. The Navy conducted a Focused **ERH** Treatability Study in the "hot spot" (most contaminated) area of the site that reduced concentrations (reduced concentrations by 99%) of the **cVOCs** to levels that no longer posed unacceptable risks to human health and the environment. The Focused **ERH**, Off-Base Treatment [incineration] and Disposal, Capping, and

Monitoring components of Alternative 5 are no longer needed to protect human health and the environment. Therefore, the Navy and the Illinois EPA propose that the **LUCs** component of Alternative 5 be implemented at Site 22. **LUCs** would be incorporated into the Base Master Plan to make sure that the restrictions established in the **LUC** Memorandum of Agreement are applied and enforced at this site. A **LUC** Implementation Plan will identify the restrictions for this site and will be appended to the **LUC** Memorandum of Agreement between the Navy and Illinois EPA to ensure the restrictions will be applied and enforced until they are no longer required.

*This document summarizes the Proposed Plan for Site 22 at Naval Station Great Lakes. For detailed information on the investigation and feasibility and treatability studies of Site 22, consult the documents available for review at Naval Station Great Lakes. Call the Naval Station Great Lakes Environmental Department at (847) 688-2600, Extension 243 to review the information.*

Bolded terms throughout this Proposed Plan are explained in the Glossary of Terms presented on page 13.

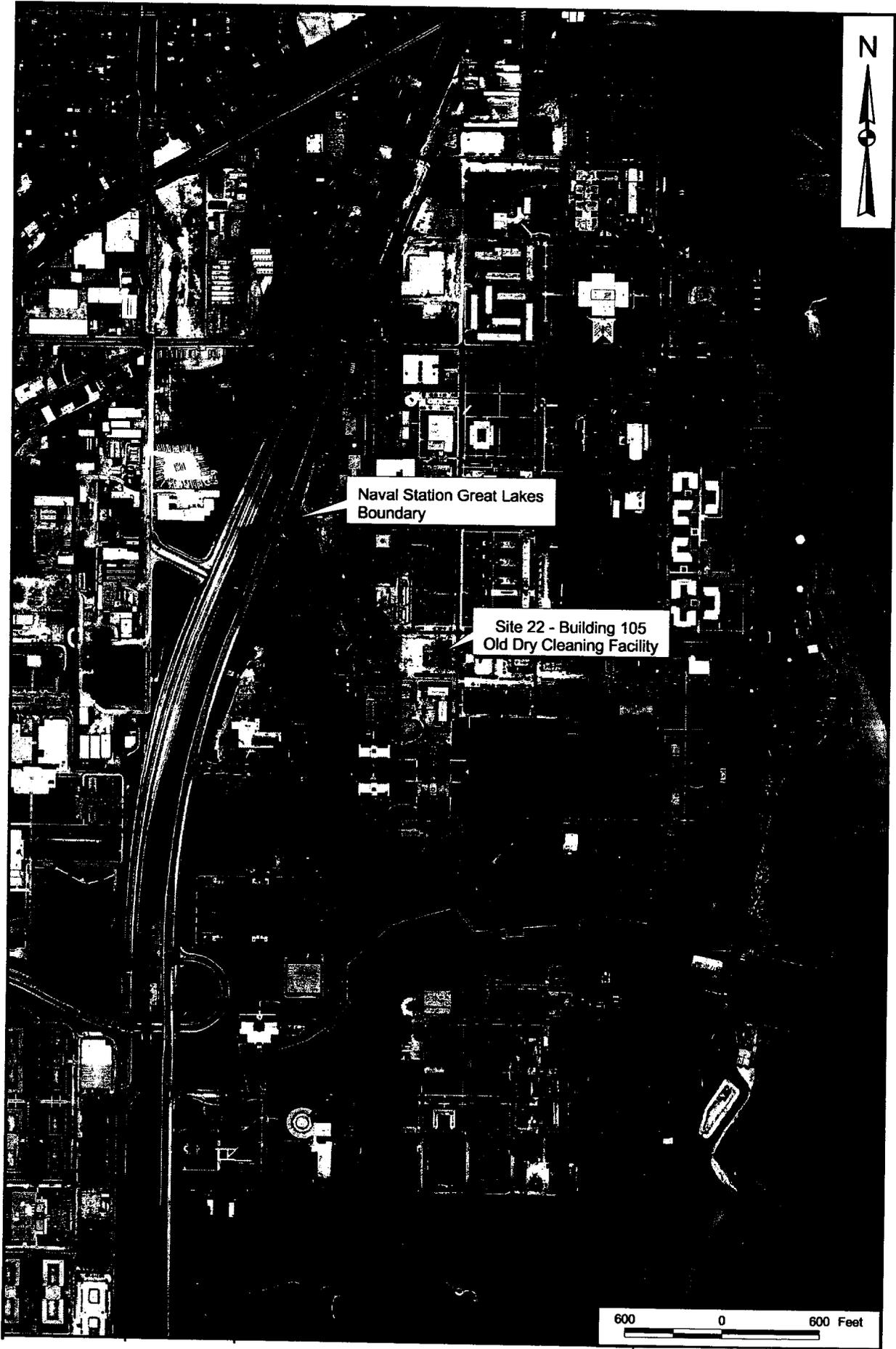


Figure 1: General Location Map

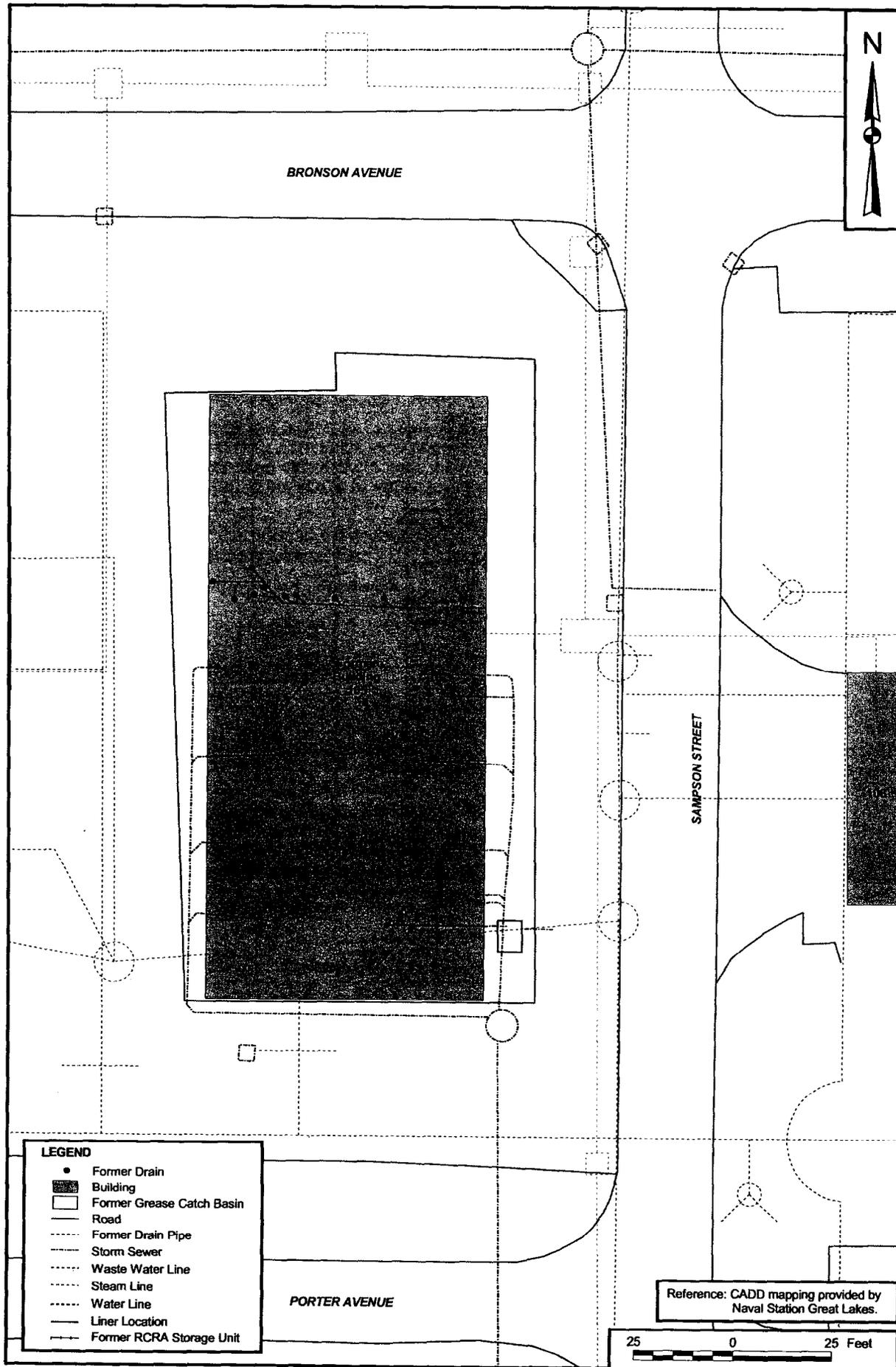


Figure 2: Site Map



Investigations at Site 22 included soil and groundwater sampling over a 10-year period. Based on the results of these investigations, the **chemicals of concern (COCs)** are PCE and cis-1,2-dichloroethene (DCE) in soil and groundwater. The "hot spot" of contamination was located near the southeastern corner of the former building along Sampson Street near the former grease catch basin, as shown on Figure 3. Because a large portion of the contamination associated with this hot spot was believed to be due to the building floor drains and grease catch basin utilized as part of the historical dry cleaning operation (and not the RCRA storage unit itself), the investigation and remediation were conducted utilizing CERCLA guidance. Because of the presence of the RCRA storage unit, the Illinois EPA is requiring cleanup of this contamination to allow closure of that unit; therefore, closure of the site will meet both the CERCLA and RCRA requirements.

A Focused **ERH** Treatability Study was implemented at Site 22 to reduce the mass of chlorinated **volatile organic compounds (cVOCs)** and to determine the effectiveness of the **ERH** technology in reducing concentrations of **cVOCs** at the site to allow implementation of a closure plan that incorporates **LUCs** at the site. The goal of the treatability study was to reduce the average soil **cVOC** concentrations by 95.5 percent [to less than 20 milligrams per kilograms (mg/kg)].

Sixteen **ERH** electrodes were installed in a 2,400-square-foot area shown on Figure 4 at depths ranging from 8 feet in the western portion to 25 feet in the northeastern portion of the site to treat 1,400 cubic yards of soil. The Focused **ERH** Treatability Study heated the soil with electricity to transfer the **cVOCs** from the soil and pore water into the air. The air containing the **cVOCs** was collected with a vapor recovery system. Soil **cVOC** concentrations following the Focused **ERH** Treatability Study are shown of Figure 5.

During the operation of the **ERH** system, the temperature of the soil was greater than 90 degrees Centigrade (200 degrees Fahrenheit) throughout the treatment volume. Approximately 1,200 of 1,350 pounds (89 percent) of **cVOC** mass were removed in the vapor recovery stream. The average total **cVOC** concentrations in soil samples were reduced by 99 percent, and each individual soil sample concentration was reduced lower than the goal of 20 mg/kg; the average **cVOC** soil concentration following remediation was 4.1 mg/kg. Pore water **cVOC** concentrations from the three wells inside the **ERH** treatment area were reduced between 94 and 99.9 percent (average of 99 percent) to concentrations ranging from 1.2 to 16 micrograms per liter as shown on Figure 6.

## What do you think?

You don't have to be a technical expert to comment. If you have a concern, a question or suggestion, or preference, the Navy and Illinois EPA want to hear it before making a final decision on how to protect our community. The Navy, as the lead agency, is accepting formal public comments on this Proposed Plan from February 4 to March 5, 2008. To comment formally:

- Offer oral comments during the comment portion of the public meeting, if such a meeting is requested (see page 14 for details).
- Send written comments postmarked no later than March 5, 2008 to:  
Department of the Navy  
Naval Station Great Lakes  
NAVFAC MW  
Attn: Howard Hickey  
201 Decatur Avenue  
Building 1A, Code EV  
Great Lakes, IL 60088
- E-mail comments by March 5, 2008 to:  
[howard.hickey@navy.mil](mailto:howard.hickey@navy.mil)

## Summary of Site Risks

The investigation of Site 22 included evaluating potential human health risks from chemicals in soil and pore water. Risks to ecological receptors were not evaluated because Site 22 is located in a highly developed portion of Naval Station Great Lakes. Site 22 and the adjacent areas provide only minimal terrestrial habitat of poor quality in a developed (urban-type) setting.

The human health risk assessment (HHRA) conducted with the data from the Site 22 **RI** (prior to the Focused **ERH** Treatability Study) indicated that exposure to **cVOCs** in soil and pore water could pose potential risks to human health under current and potential future land use scenarios. The Incremental Lifetime Cancer Risks (ILCRs) for construction workers ( $7 \times 10^{-5}$ ), future occupational workers ( $5 \times 10^{-5}$ ), and maintenance workers ( $3 \times 10^{-6}$ ) were within U.S. EPA's risk management range,  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$ , but exceeded the Illinois EPA goal of  $1 \times 10^{-6}$ . ILCRs for future military adult residents ( $8 \times 10^{-4}$ ), future military child residents ( $2 \times 10^{-3}$ ), and future civilian residents ( $5 \times 10^{-3}$ ) exceeded U.S. EPA's risk

### Site History

Following is a brief environmental history of Site 22:

- 1939 to 1993 – Building 105 was constructed and was utilized as a dry cleaning facility.
- 1980 to 1987 – RCRA Drum Storage Area stored spent PCE.
- 1993, 1995, 1998, and 2001 – Investigations were conducted as part of the RCRA closure process and identified soil contamination.
- 1993 to 2001 – Building 105 was converted to a vending machine supply and repair station.
- 2001 to 2003 – Building 105 was vacant.
- 2003 – Building 105 was demolished.
- 2003 – **RI** was conducted.
- 2005 – **FS** was conducted.
- 2006 – Focused **ERH** Treatability Study was conducted.

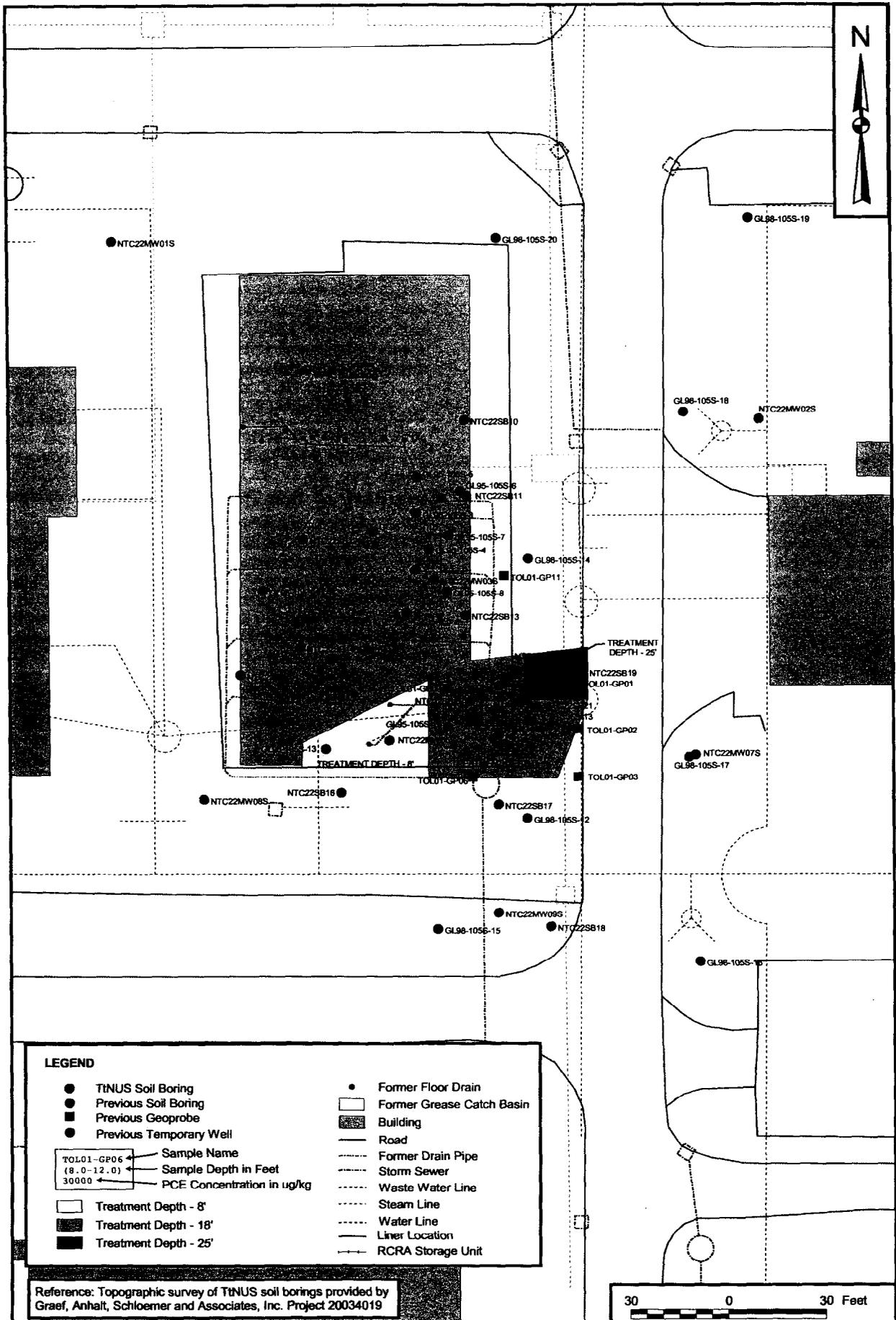


Figure 4: Treatment Area Map

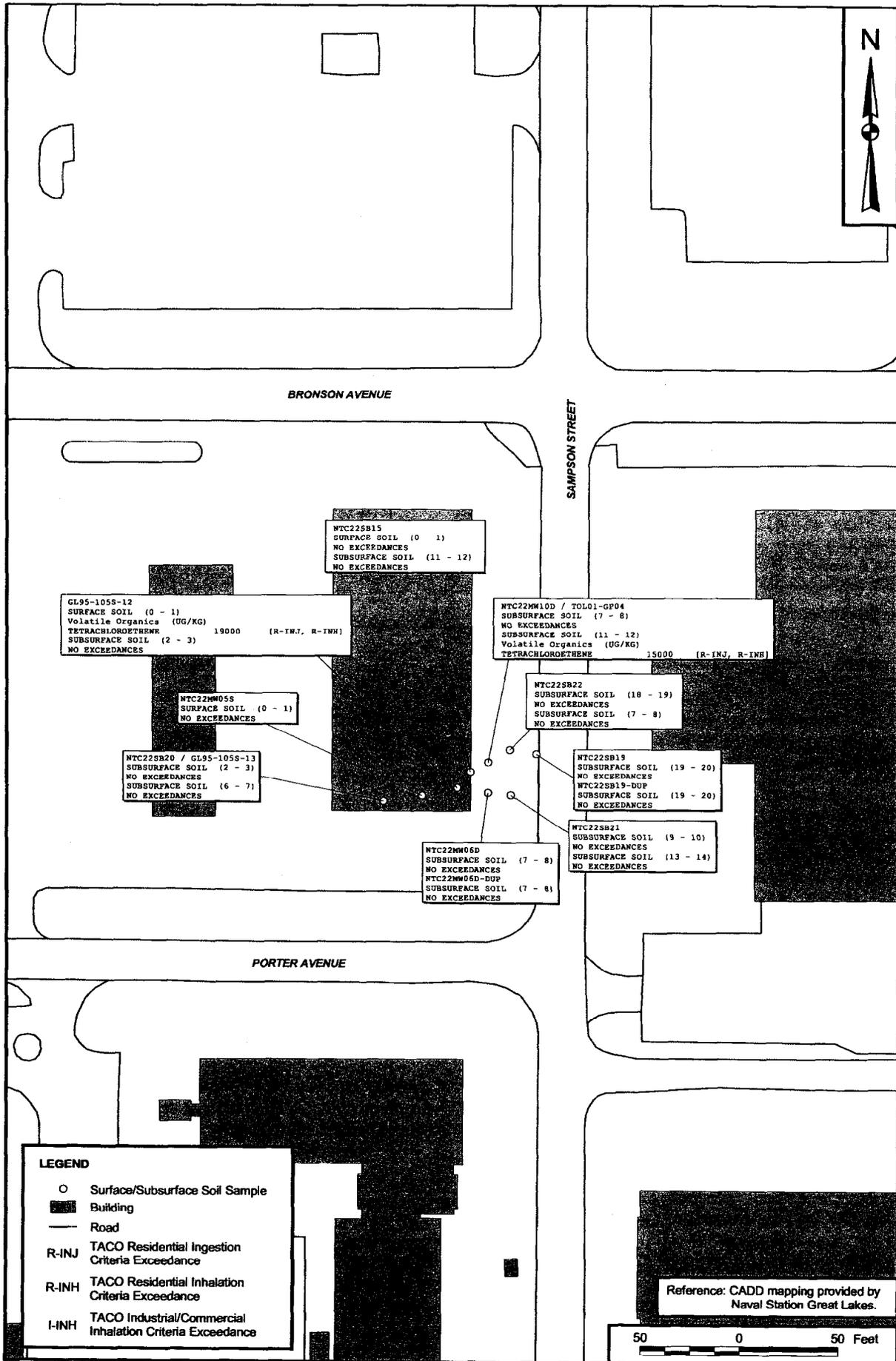


Figure 5: Post-ERH Treatability Study Sample Results Map

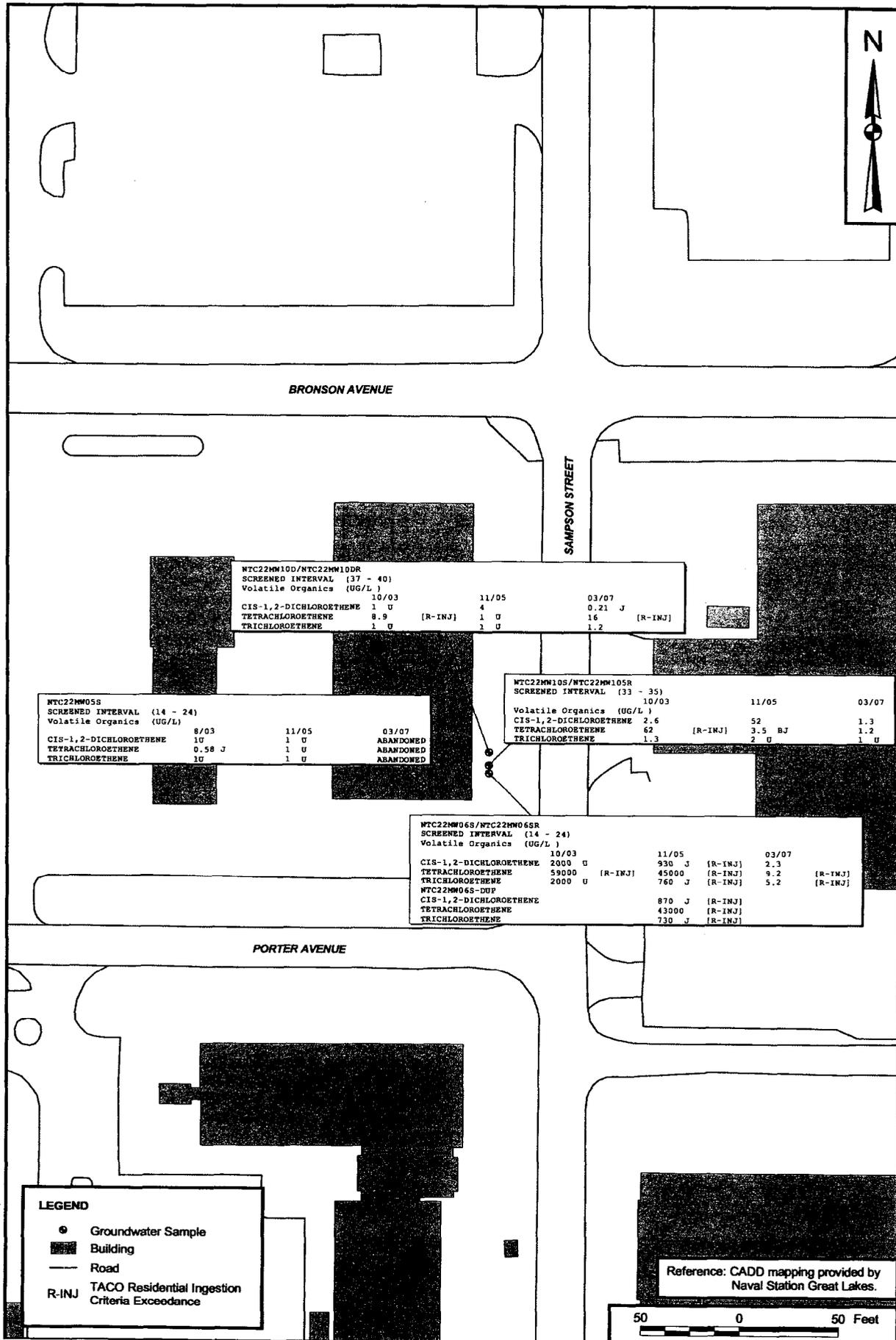


Figure 6: Pore Water Sample Results Map

management range and the Illinois EPA goal. In addition, noncarcinogenic effects (represented by Hazard Indices [HI]) for construction workers (HI = 33), and hypothetical future military and civilian residents (adult HI = 24, child HI = 58) exceeded the U.S. EPA and Illinois EPA benchmark (1.0). The elevated carcinogenic and noncarcinogenic risks were mainly due to exposure to PCE in soil and pore water.

The Focused ERH Treatability Study removed approximately 1,200 pounds of cVOCs from the soil and pore water in the treated area and reduced the average concentrations of the contaminants by more than 99 percent in soil and 99 percent in pore water. The HHRA conducted with the data collected after the Focused ERH Treatability Study indicated that the estimated cancer risks for construction workers ( $2 \times 10^{-7}$ ) and future occupational workers ( $1 \times 10^{-6}$ ) are acceptable when compared to the U.S. EPA's target risk range and the Illinois EPA goal of  $1 \times 10^{-6}$ . Cancer risks for hypothetical future residents ( $3 \times 10^{-6}$ ) are within the U.S. EPA target risk range and slightly exceed the Illinois EPA goal. Noncarcinogenic HIs for the receptors are less than the U.S. EPA and Illinois EPA goal of 1. The cancer and noncarcinogenic risks after the Focused ERH Treatability Study are one to two orders of magnitude less than the estimated risks based on the RI data for the receptors.

## Why was Cleanup Needed?

The Navy's environmental studies of Site 22 before the Focused ERH Treatability Study resulted in the following conclusion:

- As a result of past activities, cVOCs were present in soil and pore water at Site 22 at concentrations that could result in unacceptable human health risk.

It is the judgment of the Navy and Illinois EPA that the Preferred Alternative identified in this Proposed Plan, or one of the other cleanup alternatives considered, is necessary to protect public health and welfare and the environment from actual or threatened releases of hazardous substances into the environment.

## What are Cleanup Objectives and Levels?

Using the information gathered during the site investigations, the Navy and the Illinois EPA have identified the following Remedial Action Objectives (RAOs) for soil and pore water at Site 22:

- Prevent unacceptable human health risks associated with inhalation, ingestion, and dermal contact with soil containing chlorinated organics at concentrations greater than the established preliminary remediation goals (PRGs).
- Prevent unacceptable human health risks associated with ingestion of pore water or future dermal contact by workers with pore water containing chlorinated organics at concentrations greater than the established PRGs.
- Prevent further adverse impacts on pore water from chlorinated organics migrating from soil to pore water. It should be noted that at the current time this exposure pathway is not applicable to Site 22 because the site is capped and groundwater at Naval Station Great Lakes is not used as a source of potable water and is not expected to be used in the future.
- In order to comply with the Naval Station Great Lakes RCRA permit issued by Illinois EPA, obtain closure for the drum storage area (RCRA Unit SO1). This will

include conducting remedial actions to reduce cVOC mass in soil and groundwater.

## Cleanup Alternatives for Site 22

The Site 22 FS Report presents the options that the Navy and Illinois EPA considered for cleanup of this site. These options, referred to as "cleanup alternatives," are different combinations of plans to restrict access and to contain, remove, or treat contamination to protect public health and the environment. The Preferred Alternative is Alternative 5: Focused ERH, Limited Excavation, Off-Base Treatment (incineration) and Disposal, Capping, Monitoring, and LUCs. The Focused ERH Treatability Study was conducted from May to October 2006 and reduced the average cVOC concentrations by 99 percent. Soil and pore water contamination that posed unacceptable human health risk is no longer present at the site. Therefore, only LUCs are necessary to prevent access to the remaining soil contamination at the site and to maintain the existing cap (asphalt parking lot and high density polyethylene [HDPE] cap). Limited excavation, off-base treatment (incineration) and disposal, capping, and monitoring are no longer required.

### Alternative 1: No Action

No remedial action would be conducted to reduce risks to human health and the environment, and no restrictions would be imposed to prevent access to soil and pore water contamination. This alternative does not address the contamination and is only retained to provide a baseline for comparison to other alternatives (required under CERCLA).

### Alternative 2: In-Situ Chemical Oxidation, Monitoring, and LUCs

This alternative would consist of in-situ chemical oxidation (injection of a special reagent formulated to chemically oxidize and degrade the soil COCs, in particular PCE) in the contaminated soil and pore water area. Monitoring would consist of verifying the effectiveness and completeness of the in-situ chemical oxidation process following each injection event by collecting and analyzing soil and pore water samples. LUCs would be incorporated into the Naval Station Great Lakes Base Master Plan to make sure that the restrictions on groundwater use established in the LUC Memorandum of Agreement are applied and enforceable at this site. These LUCs would be required until monitoring verifies the effectiveness and completeness of the in-situ chemical oxidation process in meeting the RAOs for the site.

### Alternative 3: In-Situ ERH, Monitoring, and LUCs

This alternative would consist of installing and operating an in-situ ERH system in the contaminated soil and pore water area. This system would consist of a network of buried electrodes connected to a power-generating unit. These electrodes would heat up the contaminated soil and associated pore water to approximately 100 degrees Centigrade, resulting in the evaporation of cVOCs. The vapors would be collected in the recovery wells associated with each electrode and conveyed to a central treatment unit by a vacuum pump. Monitoring and LUCs would be very similar to those described for Alternative 2.

### Alternative 4: Excavation, Off-Base Treatment (chemical oxidation or incineration) and Disposal, Monitoring, and LUCs

Under this alternative, soil and pore water contaminated with concentrations of COCs in excess of PRGs would be excavated. Approximately 10,000 cubic yards of contaminated material weighing an estimated 13,500 tons would be excavated to a depth of up to 25 feet below ground surface. The excavated material would be transported to a permitted off-base treatment, storage, and disposal facility where,

depending on the concentrations of **COCs**, it would be either directly landfilled or pre-treated with chemical oxidation or incineration and subsequently landfilled. Monitoring would consist of collection of groundwater samples from existing monitoring wells surrounding the excavation area to verify that excavation activities have not resulted in migration of **COCs** to the surrounding groundwater and collection of soil samples to verify the removal of contaminated soil. **LUCs** would be very similar to those described for Alternative 2.

#### **Alternative 5: Focused ERH, Limited Excavation, Off-Base Treatment (incineration) and Disposal, Capping, Monitoring, and LUCs**

The first component of this alternative would consist of installing and operating an in-situ **ERH** system in the area of greatest soil and pore water contamination. Soil contamination greater than the remedial goal that is not treated via **ERH** would be excavated. The excavated material would be transported to a permitted off-base treatment, storage, and disposal facility where, depending on the concentrations of **COCs**, it would be pre-treated with chemical oxidation or incineration and subsequently landfilled. The asphalt cover and HDPE liner currently present at the site would be left in place. Monitoring and **LUCs** would be very similar to those described for Alternative 2.

### **Use of ARARs in the Evaluation Process**

**Applicable or relevant and appropriate requirements (ARARs)** are federal and state environmental requirements to evaluate the appropriate extent of site cleanup, to scope and formulate remedial alternatives, to identify cleanup levels, and to control the implementation and operation of a selected cleanup action. Potential chemical-, location-, and action-specific **ARARs** that apply to Site 22 are presented in Section 2.0 of the **FS** Report. Each alternative was evaluated to determine its compliance with **ARARs**.

### **Detailed Analysis of Cleanup Alternatives**

In accordance with **CERCLA**, a detailed analysis of each alternative must be conducted with respect to the nine **CERCLA** evaluation criteria to select a site remedy. These include two threshold criteria (Overall Protection of Human Health and the Environment and Compliance with **ARARs**), five balancing criteria (Long-Term Effectiveness and Permanence; Reduction of Toxicity, Mobility, and Volume through Treatment; Short-Term Effectiveness; Implementability; and Cost), and two modifying criteria (State Acceptance and Community Acceptance). An analysis of these criteria was performed for each cleanup alternative, and summary comparisons of these analyses are presented in Table 1. Consult the Site 22 **FS** Report for more detailed information.

State (Illinois EPA) acceptance of the proposed alternative was secured during the development of this Proposed Plan following the **ERH** Treatability Study. During the upcoming comment period, the Navy and Illinois EPA also welcome your comments on the proposed cleanup plan and on other technical approaches that were evaluated.

### **Why Active Remediation is Considered Complete**

The Navy's **ERH** Treatability Study resulted in the following conclusions:

- Areas of soil and pore water where concentrations of PCE exceeded U.S. EPA and Illinois EPA criteria were treated during the Focused **ERH** Treatability Study.

- Based on results from 15 sampling locations, the average concentration of PCE in soil after the **ERH** Treatability Study was reduced by 99 percent from a pre-remediation concentration of 445 mg/kg to 4 mg/kg, meeting the **RAOs** identified in this Proposed Plan.
- Based upon results from three pore water samples collected in the area of highest previous contamination, the average concentration of PCE in pore water was reduced by 99 percent after the Focused **ERH** Treatability Study. The current pore water concentrations slightly exceed U.S. EPA Maximum Contaminant Levels and Illinois EPA criteria.
- An estimated total of 1,200 pounds of **cVOC** was removed from the treatment area through the vapor recovery system.
- The human health risk assessment based on current and future site conditions concluded that no pathways pose a threat to the public health and the environment and that the remaining risk to hypothetical future residents are within the U.S. EPA target risk range ( $1 \times 10^{-4}$  to  $1 \times 10^{-6}$ ) and slightly exceed the Illinois EPA goal ( $1 \times 10^{-6}$ ).

Based on these conclusions, soil and pore water contamination that posed unacceptable human health risk are no longer present at the site. Limited excavation, off-base treatment (incineration) and disposal, capping, and monitoring are no longer required. Therefore, only the **LUCs** component of Alternative 5 is necessary.

### **A Closer Look at the Proposed Cleanup Plan**

A modified version of Alternative 5, Focused **ERH**, Limited Excavation, Off-Base Treatment (Incineration) and Disposal, Capping, Monitoring, and **LUCs**, was selected to address the soil and pore water contamination at Site 22. The Focused **ERH** Treatability Study conducted at the site reduced contaminant concentrations significantly and removed over 1,200 pounds of **VOCs** from the soil and pore water within the treatment area. The concentrations of **cVOCs** were reduced such that they no longer pose unacceptable risks to human health and the environment; therefore, no additional active **CERCLA** remedial action (off-base treatment, disposal, or monitoring) is necessary for Site 22 soil and pore water for protection of human health and the environment. The selected components of the modified version of Alternative 5 are:

#### **Component 1: Focused In-Situ ERH (Completed)**

The objective of this component was achieved during the Focused **ERH** Treatability Study. This component consisted of installing and operating an in-situ **ERH** system in the area of greatest soil contamination. This area was expanded from the estimated 1,400 square feet identified in the **FS** Report to 2,400 square feet to incorporate the areas with soil concentrations exceeding the Illinois EPA criteria that required excavation in the **FS**. The Focused **ERH** Treatability Study system consisted of 16 **ERH** electrodes installed to depths ranging from 8 to 25 feet below ground surface to heat the subsurface soil.

Table 1 - Summary of Comparative Evaluation of Remedial Alternatives

| Evaluation Criterion   | Alternative 1:<br>No Action  | Alternative 2:<br>In-Situ Chemical<br>Oxidation, Monitoring,<br>and LUCs   | Alternative 3:<br>In-Situ ERH,<br>Monitoring, and LUCs  | Alternative 4:<br>Excavation, Off-Base<br>Treatment and Disposal,<br>Monitoring, and LUCs  | Alternative 5:<br>Focused ERH, Limited<br>Excavation, Off-Base<br>Treatment and Disposal,<br>Capping, Monitoring, and<br>LUCs  |
|--|--|--|---|--|--|
| Overall Protection of Human Health and Environment   | Not protective. Could result in exposure to contaminated soil and pore water.  | Protective of human health receptors. Less protective than Alternatives 3, 4, and 5.   | More protective of human health receptors than Alternatives 2 and 5.  | More protective of human health receptors than Alternatives 2 and 5.   | Slightly less protective of human health receptors than Alternatives 3 and 4.  |
| Compliance with ARARs and TBCs:<br>Chemical-Specific<br>Location-Specific<br>Action-Specific | Would not comply<br>Would not comply<br>Not applicable   | Would comply<br>Would comply<br>Would comply   | Would comply<br>Would comply<br>Would comply  | Would comply<br>Would comply<br>Would comply   | Would comply<br>Would comply<br>Would comply   |
| Long-Term Effectiveness and Permanence   | Not effective and permanent.   | Effective and permanent. Pilot-scale study would be required to obtain design parameters.  | More effective and permanent than Alternative 2. Pilot-scale study would be required.   | Most effective and permanent.  | More effective and permanent than Alternative 2. Residual contamination may remain at the site.  |
| Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment                     | None.  | Approximately 1,700 pounds of cVOCs would be irreversibly and permanently removed for reduction of toxicity, mobility and volume through in-situ chemical oxidation.       | Approximately 1,700 pounds of cVOCs would be irreversibly and permanently removed for reduction of toxicity, mobility and volume through in-situ ERH.   | Approximately 1,700 pounds of cVOCs would be irreversibly and permanently removed for reduction of toxicity, mobility and volume through off-base incineration and chemical oxidation. | Approximately 1,350 pounds of cVOCs would be irreversibly and permanently removed for reduction of toxicity, mobility and volume through in-situ ERH in the area of focused treatment.   |
| Short-Term Effectiveness   | No relevant issues to address.   | Would be effective.<br>Slight risk of exposure to workers.<br>No risk to surrounding community or environment.<br>Timeframe to achieve RAOs would be approximately 1 year. | Would be effective.<br>Slight risk of exposure to workers.<br>Slight risk to surrounding community or environment from exposure to contaminated vapors.<br>Timeframe to achieve RAOs would be approximately 1 year. | Would be effective.<br>Significant risk of exposure to workers.<br>Risk surrounding community or environment.<br>Timeframe to achieve RAOs would be approximately 6 months.            | Would be effective.<br>Risks will likely be more than Alternative 3 but less than Alternative 4 because of the excavation.<br>Slight risk of exposure to workers.<br>Slight risk to surrounding community or environment from exposure to contaminated vapors.<br>Timeframe to achieve RAOs would be approximately 6 months. |
| Implementability   | Nothing to implement.  | May be difficult to implement. Underground Injection Control permit would be required.   | Less difficult to implement than Alternative 2. No Underground Injection Control permit required.   | Most difficult to implement. Would require shoring and dewatering. RCRA permit requirements, Land Disposal Restrictions, and manifesting of the excavated soil required.               | Approximately as difficult to implement as Alternative 3.  |
| Costs:<br>Capital<br>NPW of O&M<br>NPW   | \$0<br>\$0<br>\$0  | \$1,326,000<br>\$0<br>\$1,326,000  | \$3,078,000<br>\$0<br>\$3,078,000   | \$9,340,000<br>\$0<br>\$9,340,000  | \$990,000<br>\$0<br>\$990,000  |
| State Acceptance   | Illinois EPA concurs with the selection of Alternative 5 as the Preferred Alternative. They agree with the results from the Focused ERH and only require Capping and LUCs at the site. |  |   |  |  |
| Public Acceptance  | Public acceptance of Alternative 5 as the Preferred Alternative will be determined following the period of public comment.   |  |   |  |  |

## Component 2: LUCs

This component would prepare and implement appropriate **LUCs** at the site, such as property, soil, and groundwater/pore water use restrictions. The future land use of the site will be industrial/commercial, most likely as a parking lot, and the property **LUCs** would prevent future residential development. The current asphalt cover and HDPE liner would continue to be utilized and maintained to prevent contact with site soil. The **LUCs** would specify that prior to any other site use, the human health risks be recalculated and re-evaluated based on the potential future site use.

Also, the **LUCs** would prohibit the installation of groundwater wells, other than for use as environmental monitoring wells. **LUCs** would be incorporated to make sure that the restrictions (property use, groundwater, disturbance of soil) established in the **LUC** Memorandum of Agreement are applied and enforceable at this site. Additionally, **LUCs** would require review of construction activities and intrusive work at the site to protect workers and confirm proper management of contaminated materials.

The **LUCs** would be developed and implemented by a **LUC** Remedial Design that would identify the objectives, implementation, and enforcement of the **LUCs**. Annual site inspections would be conducted to verify continued implementation of these **LUCs**.

Based on the information currently available, the Navy and Illinois EPA believe the Preferred Alternative meets the threshold criteria and provides for the best balance of trade-offs among the other alternatives with respect to the balancing and modifying criteria. The Navy and Illinois EPA expect the Preferred Alternative to satisfy the following statutory requirements of **CERCLA** Section 121(b): (1) be protective of human health and the environment; (2) comply with **ARARs**; (3) be cost effective; (4) utilize permanent solutions to the maximum extent practical; and (5) satisfy the preference for treatment as a principal element.

## **What impacts would the cleanup have on the local community?**

- The No Action Alternative (Alternative 1) would not prevent exposure to site contaminants and would result in unacceptable human health risks.
- Alternatives that involve the treatment and handling of contaminated soil or pore water during construction and/or maintenance (Alternatives 2, 3, 4, and 5) could pose a limited risk to construction workers or maintenance personnel. However, measures would be taken to minimize the risks associated with handling hazardous contaminated soil or pore water.
- Alternatives that involve the transportation of contaminated soil or pore water and treatment for off-site disposal (Alternatives 2, 3, 4, and 5) could pose a risk to nearby communities. However, measures would be taken to minimize and control these risks.
- Alternatives that do not immediately achieve cleanup goals (Alternative 5) or require restrictions in future site use (Alternative 5) include administrative action to restrict land use and periodic site re-evaluations. This may affect future use of the property.

- Alternatives that involve on-site treatment and/or site construction activities (Alternatives 2, 3, 4, and 5) would occupy the site. This would limit use and/or development of the site for the duration of the cleanup.

## **Why Does the Navy Recommend this Proposed Alternative?**

The proposed alternative (Alternative 5) is recommended for the following reasons:

- It has met the **RAOs**.
- **LUCs** would effectively prevent exposure to contaminated soil and pore water until concentrations have naturally decreased to less than the U.S. EPA Maximum Contaminant Levels and Illinois EPA criteria.
- **LUCs** at Site 22 are in accordance to the Naval Station Great Lakes Base Master Plan and are not overly burdensome.
- It would protect human health and the environment.
- It is deemed to be cost effective and represents a reasonable value for the money to be spent.

This recommended alternative can change in response to the public comments or based on receipt of new information.

## **Next Steps:**

By May 2008, the Navy expects to have reviewed comments and signed the **Record of Decision (ROD)** describing the chosen cleanup plan. The **ROD**, which includes a summary of responses to public comments, will then be made available to the public at Naval Station Great Lakes. The Navy will also announce its decision through the local news media.

## **For More Detailed Information:**

To help the public understand and comment on the proposal for the site, this publication summarized a number of reports and studies. The technical and public information prepared to date for the site are available at Naval Station Great Lakes, 201 Decatur Avenue, Building 1A, Environmental Department, Great Lakes, IL 60088.

## Glossary of Terms

This glossary defines the terms used in this Proposed Plan. The definitions in this glossary apply specifically to this Proposed Plan and may have other meanings when used in different circumstances.

**Applicable or relevant and appropriate requirements (ARARs):** The federal, state, and local environmental rules, regulations, and criteria that must be met by the selected remedy under CERCLA.

**Chemical of concern (COC):** A substance detected at a concentration and/or in a location where it will have an adverse effect on human health and the environment.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** A federal law also known as "Superfund." This law was passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). This law created a special tax that goes into a trust fund to investigate and cleanup abandoned or uncontrolled hazardous waste sites.

**Electric Resistance Heating (ERH):** A remedial technology that uses an array of electrodes and electricity to heat the subsurface to evaporate VOCs. The VOCs in vapor are captured and treated as needed.

**Feasibility Study (FS):** A report that presents the development, analysis, and comparison of cleanup alternatives.

**Initial Assessment Study (IAS):** A report that describes several sites and documents the types and locations of environmental contaminants.

**Land Use Controls (LUCs):** Engineered and non-engineered measures formulated and enforced to regulate current and future land use options. Engineered measures include fencing and posting. Non-engineered measures typically consist of administrative deed restrictions that prohibit residential development and/or groundwater use.

**Record of Decision (ROD):** An official document that describes the selected Superfund remedy for a specific site. The ROD documents the remedy selection process and is issued by the Navy, with concurrence of Illinois EPA following the public comment period.

**Remedial Action Objectives (RAOs):** A cleanup objective agreed upon by the Navy and Illinois EPA. One or more RAOs are typically formulated for each environmental site.

**Remedial Investigation/Risk Assessment (RI/RA):** A report that describes the site, documents the type and location of environmental contaminants, and presents the results of the risk assessment.

**Volatile organic compounds (VOCs):** Organic compounds that evaporate readily at normal ambient temperatures. Typical VOCs include light-fraction components of gasoline, such as benzene, toluene, ethylbenzene, and xylenes, and low molecular weight chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), and dichloroethene (DCE). VOCs can become soil and groundwater contaminants or air pollutants.

### What's a Formal Comment?



Formal comments are used to improve the final decision for site cleanup. During the 30-day formal comment period, the Navy will accept formal written comments and hold a meeting, if requested, to accept formal verbal and written comments. To make a formal comment, you need to present your views during the public meeting or submit a written comment during the comment period.

A request for an extension to the public comment period (minimum of 30 days) must be made in writing. A request for a public meeting to present your formal comments must also be made in writing. These requests must be postmarked no later than March 5, 2008. Written comments and requests for a public meeting or an extension of the public comment period should be sent to:

Department of the Navy  
Naval Station Great Lakes  
NAVFAC MW  
Attn: Howard Hickey  
201 Decatur Avenue  
Building 1A, Code EV  
Great Lakes, IL 60088  
Email: [howard.hickey@navy.mil](mailto:howard.hickey@navy.mil)



Federal regulations require the Navy to distinguish between "formal" and "informal" comments. Although the Navy uses public comments throughout site investigation and cleanup activities, the Navy is only required to respond in writing to formal comments on the Proposed Plan. If a public meeting is held, there will be no Navy verbal responses to your comments during the formal meeting portion of the meeting. After the formal portion of the public meeting is closed, the Navy may respond to informal questions.

The Navy will review the transcript of formal comments received at the meeting and written comments received during the formal comment period before making a final decision. They will then prepare a written response to formal comments. The transcript of formal comments and the Navy's written responses will then be included in the Responsiveness Summary, issued as part of the final ROD.

