

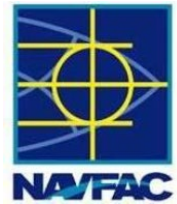


# PROPOSED PLAN

## Site 25 – Camp Moffett Southern Fill Area

### Naval Station Great Lakes (NSGL), Great Lakes, Illinois

The Department of Defense and the Navy have completed the investigation of surface and subsurface soil and groundwater at Site 25, Camp Moffett Southern Fill Area, at Naval Station Great Lakes, Great Lakes, Illinois. The site history and current conditions indicate that a response action is necessary at this site.



#### THE PROPOSED PLAN

Site 25 – Camp Moffett Southern Fill Area is located at **Naval Station Great Lakes (NSGL)**, Illinois. Site 25 is approximately 9.8 acres in area and directly south of Building 7122 and Kentucky Street. The site is bounded by Buckley Road to the south, paved walkways to the west, and Route 137/Bobby E Thompson Expressway to the east as shown on Figure 3. Previous investigations identified contaminated shallow soil/fill and groundwater within the Camp Moffett Southern Fill Area which require remedial action.

After careful study, and in accordance with federal and state laws, the Navy has identified its preferred cleanup approach to achieve the **Remedial Action Objectives (RAOs)**, and it consists of the following components:

- **Land Use Controls (LUCs)** to reduce potential risks from leaving the subsurface soil/fill and the existing vegetated topsoil (which serve as a natural barrier/cap to prevent exposure) in place. **LUCs** will restrict groundwater use with the existing NSGL Base Instruction 11130.1 that prohibits the potable use of groundwater. The **LUCs** will also incorporate deed restrictions.
- Annual Inspections to confirm compliance with the **LUCs**.
- Repair of the eroded area on the southern side of the site; and replacement of the storm sewer between the manhole that overflows during some storm events, and the connection to the main storm sewer system.
- Five-Year Reviews of the remedy to ensure continued protection of human health and the environment.

#### LET US KNOW WHAT YOU THINK

*Mark Your Calendar!*

**PUBLIC COMMENT PERIOD:  
MARCH 1 TO 30, 2023**

You do not have to be a technical expert to comment. If you have a concern, question or preference, the Navy and the Illinois Environmental Protection Agency (EPA), state regulator, want to hear it before making a final decision.

The Navy will accept written comments (see last page) on the Site 25 Proposed Plan. Send written comments postmarked or e-mailed no later than March 30, 2023 to:

Dept. of the Navy, Naval Station Great Lakes  
Attn: Public Affairs Office  
2601E Paul Jones Street  
Great Lakes, IL 60088  
Or E-mail to: [nsgl-pao@us.navy.mil](mailto:nsgl-pao@us.navy.mil)

The comment period includes an opportunity to request a public meeting at which the Navy would present more detailed site information. A meeting will be held if there is a request from members of the public before the end of the comment period.

The Navy will provide formal written responses to all written comments received during the public comment period. These responses will be in the Responsiveness Summary, which will be included as part of the Final Record of Decision (ROD) for this site.

The comments will be considered before a final decision about site cleanup is reached.

#### What's Inside

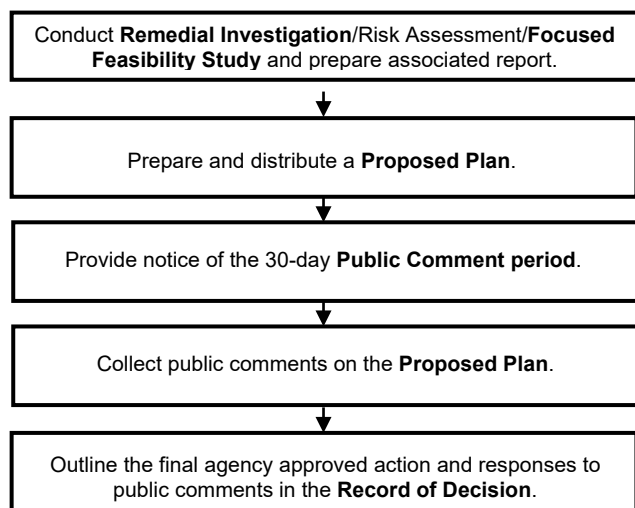
<u>Section</u>	<u>Page</u>
About This Document	2
Site Background	3
Site Characteristics	3
Investigation Activities	4
Investigation Findings	4
Scope and Role of Response Action	7
Summary of Site Risks	7
Remedial Action Objectives	9
Summary of Remedial Alternatives	10
Evaluation of Alternatives	11
Preferred Alternative	12
Community Participation	12
Glossary of Terms	14

*(Bolded terms throughout this Proposed Plan are defined in the Glossary.)*

## ABOUT THIS DOCUMENT

This **Proposed Plan** provides information on the Navy's preferred cleanup plan to address contaminated surface and subsurface soil and groundwater at Site 25 – Camp Moffett Southern Fill Area at NSGL. This plan has been prepared to inform the community of the Navy's proposed approach to address historical contamination and to encourage community input. To aid in understanding, a glossary of terms and acronyms is provided at the end of this document.

Federal and state environmental laws govern cleanup activities at federal facilities. Investigating and cleaning up impacts from releases of hazardous materials to the environment are conducted under the Navy's environmental restoration/cleanup in accordance with the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** Section 300.430(f)(2) and Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, also known as Superfund. Figure 1 summarizes the **CERCLA** process flow and public participation steps in achieving remedy selection. This **Proposed Plan** was developed by the United States Navy, the lead agency, to fulfill public participation requirements under **CERCLA** and the **NCP**.



**Figure 1: CERCLA Process Flow and Public Participation Steps**

The Navy is the lead agency for all investigations and cleanups at NSGL. Since NSGL is not on the United States Environmental Protection Agency (USEPA) National Priorities List, the USEPA is not directly involved but would be consulted as needed. Instead, the state regulatory agency, the Illinois EPA, provides direct

regulatory support to the Navy. The Navy and the Illinois EPA work closely together to achieve the objectives of the Navy's environmental restoration program.

The purpose of this **Proposed Plan** is to:

- Provide background information on Site 25, which includes a description of the site, a summary of the results of investigations, and the conclusions of the human health and ecological risk assessments.
- Describe cleanup alternatives (Remedial Alternatives) that have been considered for Site 25.
- Identify and explain the Navy's preferred cleanup plan for Site 25.
- Encourage public review and comment on the proposed remedy for Site 25.

This **Proposed Plan** summarizes and highlights information found in greater detail in the **Remedial Investigation (RI)/Risk Assessment (RI/RA) report, Focused Feasibility Study (FFS)**, and other Site 25 documents. As required by **CERCLA**, these documents, which form the basis for the selection of a response action (cleanup), are available for review at the NSGL **Administrative Record** which is accessible at the **Information Repository**, located at the North Chicago Public Library, 2100 Argonne Drive, North Chicago, Illinois 60064; Phone Number – (847) 689-0125 and via a public website at: <https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Great-Lakes-NS/> with the NSGL Administrative Records specifically located within the website at: <https://administrative-records.navfac.navy.mil/?PO367VGQ7R6WG4WVKO>.

The public is invited to participate in the remedy selection process by reviewing and commenting on the alternatives presented in this **Proposed Plan**. New information or comments received during the public comment period could result in the selection of a remedial action that differs from the Preferred Alternative.

Once the public has had the opportunity to review and comment on this **Proposed Plan**, the Navy and the Illinois EPA will carefully consider all comments received, and based on the comments, could modify the cleanup plan or select a plan different from the one currently proposed. Ultimately, the selected remedy will be documented in a **Record of Decision (ROD)** for Site 25. The Navy will respond to all written comments received during the comment period.

## SITE BACKGROUND

**Location:** NSGL is located in Lake County, Illinois, and is approximately 1,202 acres in size. NSGL is located in the northeastern portion of the state within the municipality of North Chicago approximately 35 miles north of the central business district of Chicago, and 65 miles south of Milwaukee, Wisconsin (Figure 2). Site 25 is located in the north central portion of NSGL.

Construction of NSGL was commissioned in 1905 and was finished for dedication in 1911. After 1911, NSGL grew to accommodate training requirements during World War I, World War II, the Korean Conflict, and the Vietnam War. In 1994, NSGL became home to the Navy's only recruit training command. NSGL administers base operations and provides facilities and related support to training activities (including the Navy's only boot camp) as well as a variety of other military commands located on the base.

Site 25 covers approximately 9.8 acres directly south of Building 7122 and Kentucky Street. The site is bounded by Buckley Road to the south, paved walkways to the west, and Route 137/Bobby E Thompson Expressway to the east (Figure 3). A paved 0.25-mile running track (used by Navy recruits) occupies part of the northwestern portion of the site.

**Site History:** The site has been reworked several times since construction of barracks in the 1940s. The barracks were demolished in stages, and a few other buildings were built and razed. The track has been replaced and relocated twice. Multiple construction projects at the site have resulted in the deposition of fill material.

The exact extent of the fill area is unknown. Because the fill could potentially be contaminated with medical wastes, asbestos-containing material, demolition materials, or miscellaneous base-generated refuse, the Navy completed a **RI/RA** in 2018 and **FFS** in 2021.

## SITE CHARACTERISTICS

The fill ranges from 2 and 15 feet thick across the site and consists primarily of reworked native soil based on the past excavations. The upper portion of fill contains construction debris. Beneath the fill lies native soil consisting of mostly clay of the Equality Formation.

Constituents detected in media from the site are metals and to a lesser degree, **polycyclic aromatic hydrocarbons (PAHs)**, which are present at low to insignificant concentrations, and the extent of contamination is limited to shallow soil/fill within the site

vicinity. Samples collected from surface soil, subsurface soil, and groundwater media show concentrations of metals and **PAHs** that range from near background to screening limits, with few exceptions.

The site-specific surface features, drainage, geology, and hydrogeology provide the background for assessing the physical environment at and beneath Site 25.

### Surface Features and Drainage

Surface water at the site is collected by local drainage ways, ditches, and storm sewers. No other surface water exists on the site. No wetland areas have been observed on the site. Site surface water drains to Pettibone Creek which flows to Lake Michigan.

### Site Geology

Soil borings have confirmed that the fill thickness across the site ranges between approximately 2 and 15 feet, with the thickest fill located in the northwest and southeast portions of the site. The fill consists primarily of reworked native soils including dark gray and brown sandy lean clay with occasional poorly graded sand. With the exception of the approximate southern one-third of the site, the upper portion of fill contains construction debris consisting of pieces of bricks, glass, asphalt, slag, wood, angular gravel, and occasional asbestos-containing materials. The site's southern third contains mainly fill and trace amounts of construction debris.

The native subsurface soil encountered beneath the fill at the site consists mostly of clay of the Equality Formation, and also includes poorly graded fine to medium sand, silty sand, sandy lean clay, and silt.

### Site Hydrogeology

The water table occurs within the silt, sand, and clay of the Equality Formation beneath the site and is part of the local flow system beneath NSGL. Groundwater occurs between approximately 7 and 10 feet below ground surface (bgs). Horizontal groundwater flow within the more permeable portions (fine to medium sand and silty sand) of the formation beneath the site is to the south.

Most precipitation drains as surface runoff to local ditches and streams such as Pettibone Creek, for eventual discharge to Lake Michigan. Surface water in the Camp Moffett area is generally not in contact with waste materials, and the surface water contaminant migration pathway is not considered to be complete. However, a storm sewer manhole in the southern part of the site overflows during some storm events, and the flowing water has eroded the surface soil and exposed subsurface soil.

Precipitation that infiltrates the ground surface recharges area groundwater. Groundwater recharge occurs at the water table within 10 feet bgs. Flow in the fine-grained sediment is predominantly downward toward the dolomite bedrock aquifer.

### **Conceptual Site Model**

Camp Moffett lies between the regional aquifer recharge areas west of Lake County, and the regional discharge area, Lake Michigan. Local recharge from the Camp Moffett area is insignificant to the bedrock aquifer because of the low flow rate in the overlying soil. In the bedrock, groundwater flows readily from west to east where it discharges to Lake Michigan.

The conceptual site model is very simple because of the well-defined geologic conditions, horizontal geologic layers, and flat-lying topography (Figure 4). The only potential contaminant transport pathway from the site is groundwater. The uppermost aquifer is more than 100 feet bgs, and a thick layer of fine-grained sediment confines it. Flow is chiefly downward at an extremely low flow rate.

Because of the fine-grained and dense soil and lack of permeable material, potential contaminant migration in soil is severely limited. The soil to groundwater migration pathway is not considered to be complete in the Camp Moffett area.

## **INVESTIGATION ACTIVITIES**

### **General**

Past excavations in the area uncovered small bottles that were possibly consistent with disposal of medical wastes. Site walkovers noted the presence of asbestos-containing material within surface soil. A limited subsurface investigation was conducted in 2009 at the southern end of the site. Based on this information a **RI** was recommended for the site.

### **RI Field Investigation**

A **RI** field investigation was completed between July 8, 2013 and January 29, 2014 to document the nature and extent of contamination in the site fill area, assess exposure and potential risk to human and ecological receptors, and evaluate site closure alternatives. The **RI** consisted of the following activities:

- A geophysical survey including electromagnetic and magnetic surveys to map the lateral fill limits.
- Collection of surface soil samples (0 to 0.5 feet bgs) from 10 direct push technology (DPT) borings.
- Collection of subsurface soil samples from 24 DPT borings (1 to 15 feet bgs): 8 borings within the fill area and an additional 16 borings coincident with

geophysical anomalies and the delineated extent of fill.

- Completion of 11 test trenches across the interpreted limit of fill.
- Installation of four temporary well points within the fill area and groundwater sampling.
- Installation of four groundwater monitoring wells at locations around the perimeter of the fill area outside the limits of fill, and groundwater sampling.
- Laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), dioxins/furans, organochlorine pesticides, polychlorinated biphenyls (PCBs), organophosphorus pesticides, and herbicides.

## **INVESTIGATION FINDINGS**

The borings completed across the site confirmed fill thickness ranging between approximately 2 and 15 feet thick. Fill thickness is less in the central portion and along the margins of the site. As logged in the borings and test trenches, the fill consists of primarily of reworked native soil including dark gray and brown sandy lean clay with occasional poorly graded sand. With the exception of the approximate southern one-third of the site, the upper portion of fill contains construction debris consisting of pieces of bricks, glass, asphalt, slag, wood, angular gravel, and occasional, potential asbestos-containing materials. The site's southern third is mainly fill materials, containing trace amounts of construction debris.

Constituents detected in media from the site are metals and to a lesser degree **PAHs**, which are present at low concentrations and the extent of contamination is limited to shallow soil/fill within the site vicinity. Results of **RI/RA** samples collected from surface soil, subsurface soil, and groundwater media show that concentrations range from near background to screening limits (with few exceptions).

### **Nature and Extent of Contamination**

Metals and **PAHs** are the constituents widely detected at Camp Moffett. Metals were detected in the surface and subsurface soil samples at concentrations that are consistent with background concentrations in the clay till that dominates the stratigraphic column in northern Illinois. Several metals were detected at concentrations that exceeded USEPA Regional Screening Levels (RSLs) based on residential receptors.

The **PAH** detections are typical of mixed soil fill, soil, and construction rubble. Several **PAH** parameters exceeded the USEPA RSLs for residential receptors in the surface and subsurface soil.

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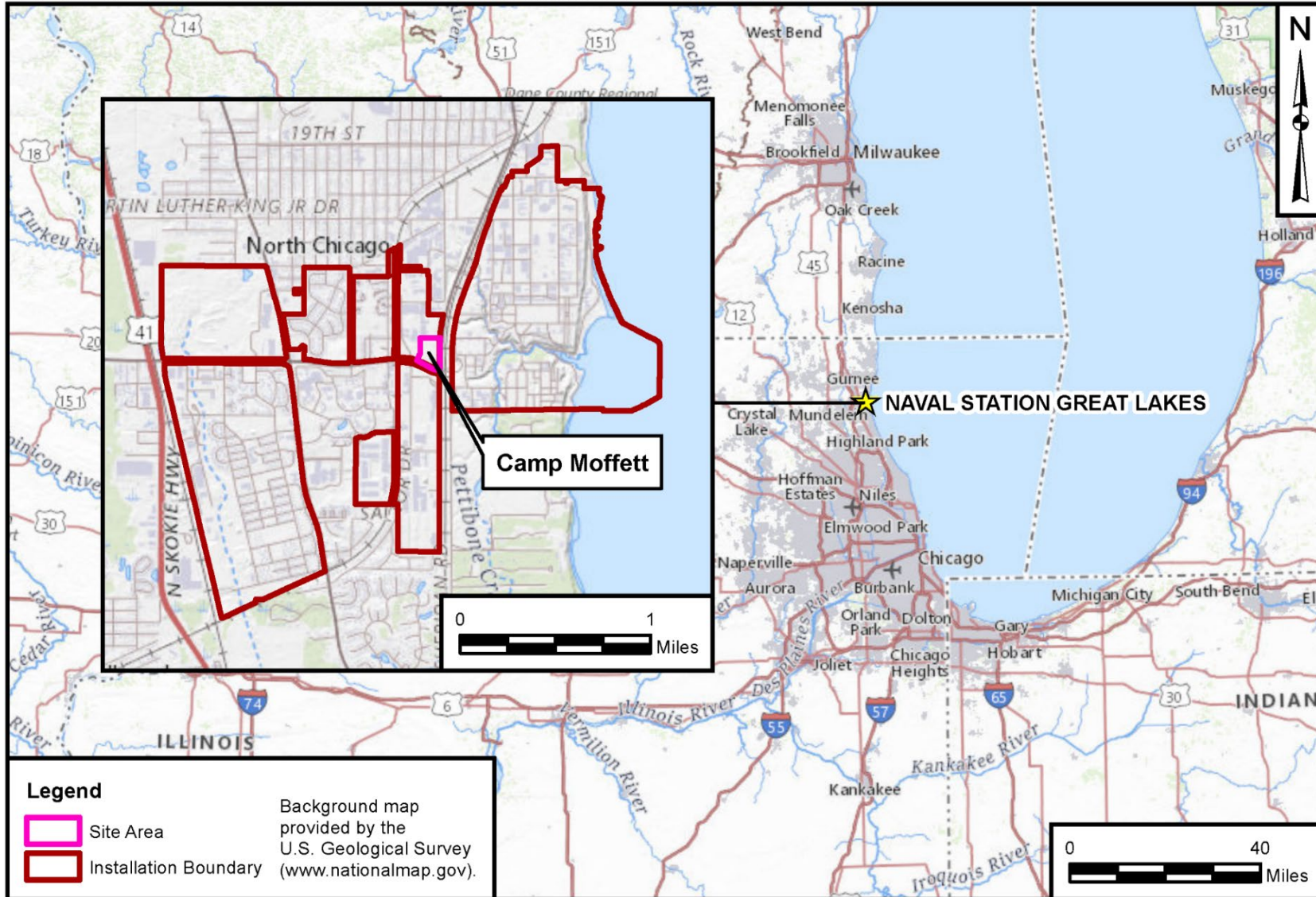


Figure 2: Site 25, Camp Moffett Southern Fill Area Location

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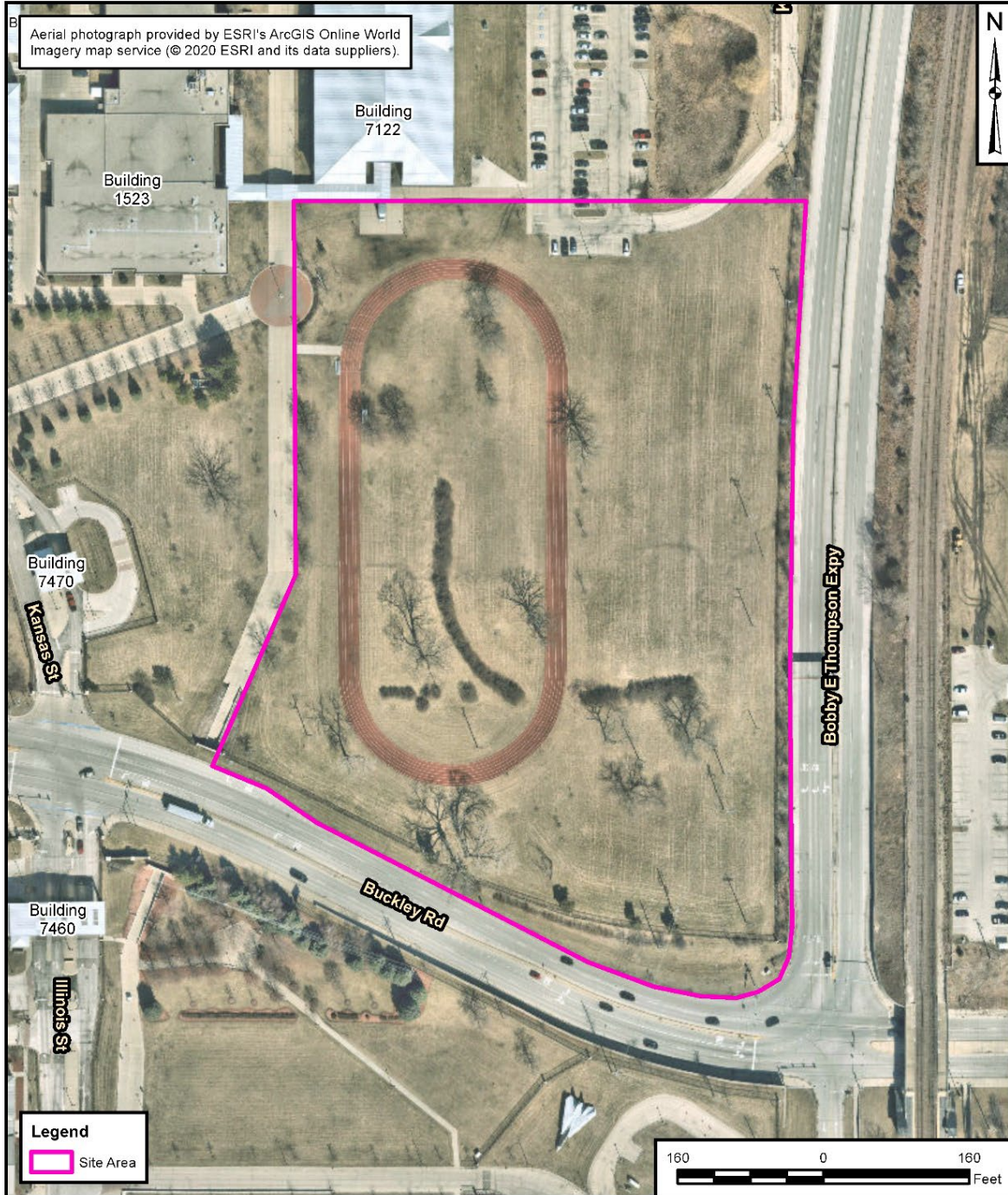
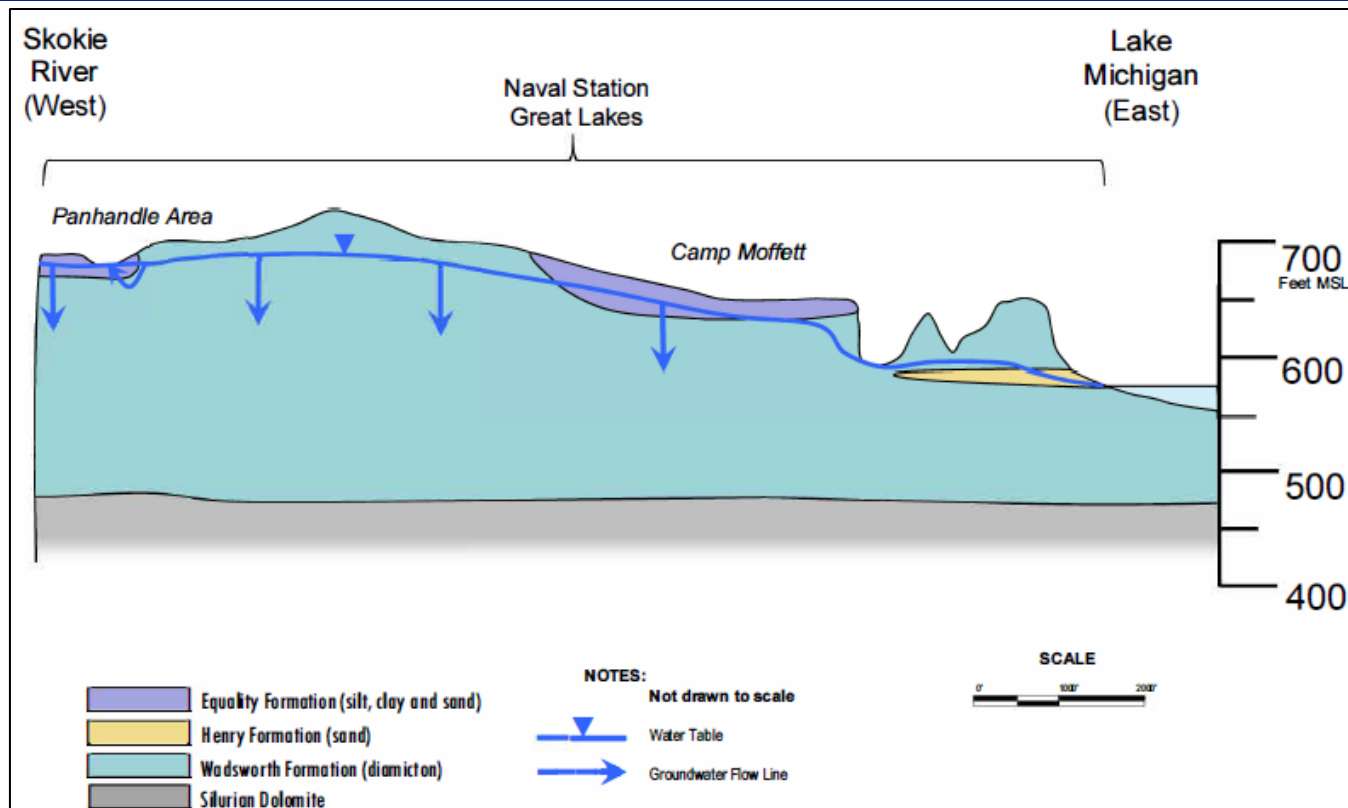


Figure 3: Site Features



**Figure 4: Conceptual Site Model**

Construction debris exists across much of the site. The previous investigation showed that construction debris was mostly in the northern two thirds of the site in the upper portion of the fill above the native soil. Trace amounts of construction debris was found in the southern third of the site. In the site's southern third, a geotextile was placed beneath 6 inches of topsoil to help with erosion on the sloping bank.

Analysis of groundwater samples indicated little contamination in shallow groundwater at the site. The most significant detections were metals, and no other compounds had numerous or consistent detections. Two **PAHs** were detected in one groundwater sample at concentrations above USEPA tap water RSLs. One pesticide in one sample was detected at a concentration that exceeded the USEPA tap water RSL. Arsenic and lead were detected at concentrations greater than the USEPA maximum contaminant levels. Arsenic, iron, lead, and manganese were detected at concentrations above the Illinois Administrative Code 620 Groundwater Quality Standards.

#### **Site Fate and Transport**

Metals and **PAHs** persist in soil and groundwater because they do not readily break down or attenuate. Transport

from the site can only occur through groundwater migration, as these chemical classes do not volatilize. Groundwater flow is highly restricted because of the thick layer of fine-grained soil at the site.

#### **SCOPE AND ROLE OF RESPONSE ACTION**

Site 25 is one of 27 areas of potential hazardous material releases that were identified as part of the environmental investigation and cleanup program at NSGL. The proposed remedial actions presented in this document are expected to be the final remedy for Site 25. The other identified sites at NSGL are in various stages of being investigated and remediated (e.g., determinations of no further action made, **RODs** signed, **RODs** being prepared, and remedial actions have occurred or are in progress).

#### **SUMMARY OF SITE RISKS**

The baseline **human health risk assessment (HHRA)** and screening level **ecological risk assessment (ERA)** incorporated analytical results from surface soil, subsurface soil, and groundwater samples collected at the Camp Moffett Southern Fill Area site as part of the **RI/RA**.

## Human Health Risk Assessment

The primary objective of the **RI/RA** and the baseline **HHRA** for the Camp Moffett Southern Fill Area was to evaluate whether activities at the site have potentially impacted the soil and groundwater at concentrations that may pose unacceptable risk to human health.

**Human Health Risks:** The HHRA evaluated carcinogenic (cancer causing) risks and noncarcinogenic (non-cancer causing) hazards. The likelihood of any kind of cancer resulting from exposure to site-related contamination is generally expressed as a probability; the USEPA acceptable cancer risk range is between  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ . For non-cancer health effects, a hazard index (**HI**) is calculated. The **HI** is a threshold level below which non-cancer health effects from exposure to site-related contamination are unlikely to occur even in sensitive subpopulations. USEPA considers an acceptable **HI** to be a value of 1 or less.

For the Site 25 **HHRA**, surface and subsurface soil and groundwater were evaluated quantitatively. **Chemicals of potential concern (COPCs)** for the **HHRA** were selected using screening levels.

Under current land use, access to and use of the site is primarily limited to occupational workers exposed to surface soil and subsurface soil, and trespassers exposed to surface soil. Per the **FFS**, current and future scenarios assume that subsurface soil may be excavated and brought to the surface; therefore, occupational workers were evaluated for exposure to subsurface soil. Future use scenarios were evaluated for these same populations; for construction workers exposed to surface soil, subsurface soil, and groundwater; and for site residents exposed to surface soil, subsurface soil, and groundwater under the unlikely premise that the site could be developed for residential use. The potential risks to human receptors were estimated based on the assumption that no actions would be taken to control contaminant releases or exposure.

Cancer risk estimates for occupational workers, trespassers, and construction workers exposed to surface soil, subsurface soil, and groundwater at Site 25 do not exceed the USEPA target cancer risk range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ . Cancer risk estimates for occupational workers exposed to surface soil, subsurface soil, and groundwater slightly exceed the Illinois EPA target risk level of  $1 \times 10^{-6}$  due to concentrations of arsenic in subsurface soil.

**HI**s were less than 1 for the occupational workers, trespassers, and construction workers based on

exposure to surface soil, indicating that adverse non-carcinogenic health effects are not anticipated for these receptors based on exposure to surface soil at Site 25. **HI**s were less than 1 for the occupational workers and construction workers exposed to subsurface soil at Site 25, indicating that adverse non-carcinogenic health effects are not anticipated for these receptors based on exposure to subsurface soil at Site 25. **HI**s were less than 1 for the construction worker based on exposure to groundwater.

The total carcinogenic risks and non-carcinogenic **HI**s for exposure to the surface soil, subsurface soil and groundwater are presented in Table 1.

For the residential exposure evaluation of soil and groundwater, residential **risk-based remediation goals (RBRGs)** were developed in the **FFS** for each media of concern and compared to **COPC** concentrations at each sample location. Based on this evaluation, there is no unacceptable risk to potential residential receptors exposed to surface soil.

**Table 1: Summary of Total Carcinogenic Risks and Non-Carcinogenic **HI**s.**

Receptor	Total Carcinogenic Risk	Total Non-Carcinogenic Hazard ( <b>HI</b> )
Construction Worker	$5 \times 10^{-7}$	0.3
Occupational Worker	$5 \times 10^{-6}$	0.08
Adult Trespasser	$1 \times 10^{-6}$	0.02
Child Trespasser	$4 \times 10^{-6}$	0.02
Age-adjusted Trespasser	$5 \times 10^{-6}$	--

-- Noncancer **HI**s are not age-adjusted

Results of the comparison of **COPC** concentrations in subsurface soil to residential **RBRGs** indicate that concentrations of the following eight **COPCs** exceeded the residential **RBRGs** in subsurface soil: benzo[a]anthracene, benzo[a]pyrene, benzo[b]-fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-cd]-pyrene, arsenic, iron and manganese. Therefore, hypothetical future residents exposed to subsurface soil at Site 25 could experience unacceptable risks if a CERCLA remedial action is not taken.

Arsenic concentrations in subsurface soil were re-evaluated in the **FFS** and found to be within the range of naturally occurring background concentrations. Based on



this comparison, arsenic was removed from consideration as a **COC** for potential residential receptors exposed to subsurface soil.

Despite the exceedance of the iron criterion at one subsurface soil location, its marginal exceedance does not warrant that iron be retained as a **COC** for subsurface soil, and details are provided in the **FFS**. Therefore, iron was not included as a **COC**.

Results of the comparison of **COPC** concentrations in groundwater to the residential **RBRGs** indicate exceedances for three **COPCs**, which were retained as **COCs**: arsenic, iron, and manganese. Therefore, hypothetical future residents exposed to groundwater at Site 25 could experience unacceptable risks if a CERCLA remedial action is not taken.

In summary, the following **chemicals of concern (COCs)** were retained for subsurface soil, and groundwater:

- **Surface Soil:** no **COCs**.
- **Subsurface Soil** (residential exposure only): **PAHs** (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene); metals (arsenic and manganese).
- **Groundwater** (residential exposure only): arsenic, iron, and manganese.

### Ecological Risk Assessment

The **ERA** estimated risks to ecological receptors potentially exposed to chemicals that may have been released to soil as a result of past land development activities at Site 25, Camp Moffett Southern Fill Area.,. These were the ERA objectives:

- Determine whether any complete exposure pathways exist between site soil and ecological receptors in the investigation area.
- Screen the concentrations of chemicals detected in surface soil against media-specific ecological risk-based screening criteria for areas with complete exposure pathways.
- Identify chemicals detected at concentrations above the screening criteria for further evaluation.
- Evaluate the potential for chemicals found to exceed screening criteria to cause unacceptable adverse effects to ecological receptors.

**Ecological Risks:** The **ERA** completed in the **R/RA** focused on the surface soil migration pathways. The source of exposure for ecological receptors is surface soil at Site 25 that is potentially contaminated as a result of historical use. The results of the ecological risk

assessment indicated that there is a low potential of unacceptable ecological risk to terrestrial plants from exposure to chromium and vanadium concentrations in site soil. For most **COPCs**, risk is driven by concentrations at a few locations and is not widespread across Site 25. The potential risk to terrestrial plants and invertebrates from exposure to chromium in soil is based on conservative benchmark values with uncertainties that tend to overestimate risk. Because of these uncertainties and the lack of potential risk to Site 25 wildlife, risk to ecological receptors at Site 25 is considered to be acceptable and no further action is required to protect ecological receptors.

### Risk Assessment Conclusions

The Navy's current judgment is that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. The Navy's environmental studies of Site 25 resulted in the conclusion that as a result of past activities, several chemicals are present in subsurface soil and groundwater that may result in unacceptable human health risk under potential future residential site use and is the basis for the current RAOs.

### **REMEDIAL ACTION OBJECTIVES**

The **FFS** identified the following **RAOs** for soil at Site 25:

- **RAO 1:** Prevent residential exposure through ingestion, dust inhalation, and dermal contact to contaminated subsurface soil and fill with **COC** concentrations exceeding **preliminary remediation goals (PRGs)**.
- **RAO 2:** Prevent exposure through ingestion, dust inhalation, and dermal contact of occupational (industrial/commercial) workers and trespassers to contaminated subsurface soil and fill with **COC** concentrations exceeding **PRGs**.
- **RAO 3:** Return the groundwater resource to beneficial use, if practicable, and address human health risks associated with groundwater consumption.

### Preliminary Remediation Goals

Human health risk-based **PRGs** were developed for Site 25 to prevent exposure to soil and groundwater with concentrations of site-related constituents that may present human health risk above USEPA target levels.

**Subsurface Soil PRGs:** PRG concentrations for residential exposure are included as a benchmark for the areal extent of remedy components (such as LUCs) to prevent residential exposure. Six chemicals in subsurface soil are retained as COCs based on residential exposure and assigned PRG concentrations: benzo(a)anthracene (1.6 milligrams per kilogram [mg/kg]), benzo(a)pyrene (0.16 mg/kg), benzo(b)fluoranthene 1.6 mg/kg, dibenz(a,h)anthracene (0.16 mg/kg), indeno(1,2,3-cd)pyrene (1.6 mg/kg) and manganese (1,600 mg/kg).

**Groundwater PRGs:** Based on permanent monitoring well results and residential exposure, and using Illinois EPA Class I groundwater standards where available, the following COCs were assigned PRGs: arsenic (10 micrograms per liter [ $\mu\text{g/L}$ ]), iron (5,000  $\mu\text{g/L}$ ), and manganese (150  $\mu\text{g/L}$ ).

## SUMMARY OF REMEDIAL ALTERNATIVES

Remedial alternatives for Site 25 were developed based on site-specific conditions to achieve the RAOs.

### Alternative 1: No Action

The NCP requires that a No Action alternative be considered as part of the evaluation of alternatives. Under this alternative, no action (i.e., no administrative controls, engineering controls, or other **actions**) would be taken to limit or prevent contact with potential COCs in site media. The subsurface soil/fill would be left in place without additional mitigating response actions such as removal or treatment, monitoring, maintenance, construction of a soil cover, monitoring wells, or LUCs to restrict intrusive activities. The No Action alternative provides a baseline for comparison and evaluation of other alternatives as required by CERCLA.

This alternative would not meet the RAOs because contaminant concentrations greater than the PRGs would be left on-site and there would be no reductions in risk through exposure control or treatment.

No costs would be associated with implementing Alternative 1.

### Alternative 2: Land Use Controls

Alternative 2 would implement LUCs to reduce the potential risk to human health of leaving the subsurface soil/fill and existing vegetated surface soil in place.

The existing vegetated surface soil would act as a barrier to prevent exposure by occasional occupational workers to subsurface soil contaminants exceeding industrial/commercial criteria. A LUC Remedial Design

would be prepared that restricts the disturbance of contaminated soil to prevent exposure to COCs. The areas to which the LUCs would apply would be identified and surveyed.

LUCs would also be implemented to restrict groundwater use. Because Site 25 is considered part of NSGL, the station-wide prohibition of the use of groundwater for potable purposes would apply, and there would be no need for long-term groundwater monitoring.

A storm sewer manhole overflows during some storm events, and the flowing water has eroded the surface soil and exposed subsurface soil. The eroded area would be backfilled, covered with topsoil, and reseeded with grass. To prevent erosion of the soil again, riprap would be placed over the path of the water flow. In addition, the storm sewer between the manhole and the connection to the main storm sewer system may need to be replaced.

As part of the Navy's current long-term operational plan for this site, the current budget included repairing the eroded area by backfilling, covering with topsoil, reseeded with grass and placed riprap over the path of the water flow to prevent erosion of the soil again. These efforts were completed in October 2022. The Navy also plans to replace or repair the storm sewer between the manhole and the connection to the main storm sewer system. The storm sewer repairs are currently in the planning stages and expected to be completed by 2025.

Annual inspections would be conducted to confirm compliance with LUC objectives, and an annual compliance certificate would be prepared and approved by the necessary agencies. The LUCs would be permanent in the event of a change in land use or ownership.

Five-Year Reviews would be required since concentrations of contaminants would remain in soil and groundwater above concentrations acceptable for unlimited use and unrestricted exposure at the site.

### Alternative 3: Soil Cover and Land Use Controls

Alternative 3 would cover the approximately 8.5-acre area with a 2.5-foot soil cover consisting of 2 feet of clean soil and 6 inches of topsoil. Clearing and grubbing would remove vegetation and root systems from the area. The cut vegetation would be evaluated for composting; and if suitable, would be ground up, composted, and stockpiled separately for potential reuse.

The area would be covered with 2 feet of clean soil and graded based on the final design to promote surface

water runoff and site reuse. Grading would tie into the surrounding area, including the track. Site restoration would consist of placing a minimum of 6 inches of topsoil which would sustain plant growth, reduce erosion, and promote drainage. The topsoil would be vegetated with native grasses consistent with the current cover.

The eroded area would be repaired, and the storm sewer replaced as described in Alternative 2. **LUCs** and Five-Year Reviews would be implemented as described in Alternative 2.

#### **Alternative 4: Excavation and Land Use Controls**

In Alternative 4, the top 2.5 feet of the site would be excavated and replaced with clean fill. A large portion of the contaminated soil would be removed, and **LUCs** would prevent exposure to the deeper soil. An area of approximately 8.5-acre area (excluding the track) would be excavated and replaced with 2 feet of clean fill and 6 inches of topsoil. Clearing and grubbing would remove vegetation and root systems from the area. The cut vegetation would be evaluated for composting; and if suitable, would be ground up, composted, and stockpiled separately for potential reuse.

Approximately 46,600 tons (31,100 cubic yards) of soil would be excavated and disposed off-site as non-hazardous waste. Prior to excavation, soil samples would be collected and analyzed for asbestos and for waste characterization. Because of the potential for asbestos emissions, dust control measures (primarily soil wetting with water sprays) would be used.

The placement of fill and topsoil would return the area to its original contours. Site restoration would include placement of a minimum of 6 inches of topsoil which would sustain plant growth, reduce erosion, and promote drainage. The topsoil would be vegetated with native grasses consistent with the current cover.

The eroded area would be repaired, and the storm sewer may need to be replaced as described in Alternative 2. **LUCs** and Five-Year Reviews would be implemented as described in Alternative 2.

### **EVALUATION OF ALTERNATIVES**

The CERCLA evaluation criteria for the comparative analysis also include the nine criteria (see Figure 5) specified by the **NCP** (40 Code of Federal Regulations 300.430(e)(9)(iii)). The alternatives were compared against each other with respect to each criterion. A summary of the comparative analysis of the remedial alternatives is provided in Table 2. In the Site 25 **FFS** in

2021, each alternative identified was individually analyzed with respect to these nine criteria. Estimated costs presented in the **FFS** included capital and **net present worth (NPW)** costs. Consult the Site 25 **FFS** Report for more detailed information.

#### **Threshold Criteria:**

1. Overall Protection of Human Health and the Environment: Will it protect you and the plant and animal life on and near the site? The Navy will not choose a plan that does not meet this basic criterion.
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs): Does the alternative meet all federal environmental, state environmental, and facility siting statutes, regulations and requirements? ARARs were determined and presented in the **FFS**. The chosen cleanup plan must meet this criterion.

#### **Balancing Criteria:**

1. Short-Term Effectiveness: How soon will site risks be adequately reduced? Could the cleanup cause short-term hazards to workers, residents, or the environment?
2. Long-Term Effectiveness and Permanence: Will the effects of the cleanup plan last or could contamination cause future risk?
3. Reduction of Toxicity, Mobility or Volume: Using treatment, does the alternative reduce the harmful effects of the contaminants, the spread of contaminants, and the amount of contaminated material?
4. Implementability: Is the alternative technically feasible? Are the right goods and services (e.g., treatment machinery) available for the plan?
5. Cost: What is the total cost of an alternative over time? The Navy must find a plan that gives necessary protection for a reasonable cost.

#### **Modifying Criteria:**

1. State Acceptance: Does the state agree with the proposal?
2. Community Acceptance: What objections, suggestions, or modifications do the public offer during the comment period?

**Figure 5: Evaluation Criteria for Superfund Remedial Alternatives**

## PREFERRED ALTERNATIVE

**Alternative 2: Land Use Controls:** The Navy prefers Alternative 2 for Site 25 which consists of **LUCs** to reduce potential risks from leaving the subsurface soil/fill and the existing vegetated surface soil (which serve as a natural barrier/cap to prevent exposure) in place. **LUCs** will restrict groundwater use with the existing NSGL Base Instruction 11130.1 that prohibits the potable use of groundwater. The **LUCs** will also incorporate deed restrictions. Repairs to the eroded area on the southern side of the site, and replacement of the storm sewer may be needed to stop the manhole overflows.

As part of the Navy's current long-term operational plan for this site, the current budget included repairing the eroded area by backfilling, covering with topsoil, reseeding with grass and placed riprap over the path of the water flow to prevent erosion of the soil again. These efforts were completed in October 2022. The Navy also plans to replace or repair the storm sewer between the manhole and the connection to the main storm sewer system. The storm sewer repairs are currently in the planning stages and expected to be completed by 2025.

**LUCs** would be established and maintained to reduce potential risks by leaving the existing vegetated surface soil in place to act as a barrier, prohibiting the disturbance of the subsurface soil/fill in the area, and prohibiting potable groundwater use by referring to the station-wide groundwater restriction. With the station-wide restriction, there would be no long-term groundwater monitoring needed. **LUCs** would be implemented in accordance with the **LUC Memorandum of Agreement** between the Navy and Illinois EPA. Implementation of **LUCs** would be protective of human health by preventing unacceptable risks resulting from direct exposure to subsurface soil/fill and groundwater.

Since the contaminants will remain at Site 25, annual inspections will be conducted to confirm compliance with **LUC** objectives, and a review of site conditions and risks will be conducted every 5 years, as required by **CERCLA**.

Based on the information currently available, the Navy believes the Preferred Alternative meets threshold criteria and provides the best balance and tradeoffs among the four alternatives with respect to the balancing criteria. In addition, the Navy expects the Preferred Alternative will satisfy the following statutory requirements of **CERCLA** Section 121(b): adequately protect human health and the environment; comply with **ARARs**; be cost effective; and meet the **RAOs**.

The Preferred Alternative can change in response to

public comment or if new information is obtained. The Navy and Illinois EPA will select a final remedial alternative after the public comments have been considered.

### WHAT ARE ARARs?

As defined by the NCP, **ARARs** are placed into three classifications: applicable requirements, relevant and appropriate requirements, and other requirements to be considered. Applicable requirements are promulgated statutory or regulatory cleanup standards and environmental protection criteria that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site. Included are federal requirements that are directly applicable, as well as those incorporated by a federally authorized state program. State standards that are more stringent than federal requirements may be applicable. Relevant and appropriate requirements are promulgated statutory or regulatory cleanup standards and environmental protection criteria that, while not directly applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site, would address similar situations or problems to those encountered. Other environmental and public health guidelines that may be considered to help determine remedial alternatives, but are not **ARARs**, are termed "To Be Considered." A requirement may be either "applicable" or "relevant and appropriate," but not both. Three categories of **ARARs** are considered: chemical-specific, location-specific, and action-specific.

### COMMUNITY PARTICIPATION

Community input to the Preferred Alternative is the next step in the **CERCLA** decision process. After the **Proposed Plan** is approved, the **ROD** will be prepared and signed by the Navy and Illinois EPA.

The public is encouraged to participate in the decision-making process for the cleanup of Site 25 by reviewing and commenting on this **Proposed Plan** during the **public comment period**, which is **March 1 to 30, 2023**. You do not have to be a technical expert to comment. If you have a comment or question, the Navy wants to hear it before beginning the cleanup.

Federal regulations make a distinction between "formal" comments or questions received during the 30-day comment period and "informal" comments or questions received outside this comment period. Although the Navy uses comments throughout the cleanup process to help make cleanup decisions, it is required to respond to formal comments and questions. Your formal comments or questions will become part of the official record for

Table 2: Summary of Evaluation Criteria

EVALUATION CRITERIA	REMEDIAL ALTERNATIVES			
	Alternative 1 No Action	Alternative 2 Land Use Controls	Alternative 3 Soil Cover and LUCs	Alternative 4 Excavation and LUCs
<b>Threshold Criteria - Must be met in order to be eligible for selection</b>				
Overall Protectiveness of Human Health and the Environment	○	●	●	●
Compliance with <b>ARARs</b>	○	●	●	●
<b>Primary Balancing Criteria - Weigh the relative merits of the alternatives</b>				
Short-Term Effectiveness	■	■	▣	□
Long-Term Effectiveness and Permanence	□	▣	■	■
Reduction of Toxicity, Mobility, or Volume through Treatment	□	□	□	□
Implementability	■	■	▣	□
Cost (Net Present Worth)	\$0	\$533,000	\$2,643,000	\$7,889,000
Time for Construction	N/A	N/A	1 year	1 year
Time to Achieve Cleanup Objectives	N/A	3 years	3 years	3 years
<b>Modifying Criteria - Considered after public comment is received on this Proposed Plan</b>				
State/Support Agency Acceptance	TBD – will be determined during the public comment period for the PP			
Community Acceptance	TBD - Will be determined after the public comment period for the PP			

● – Satisfies/Passes

○ – Does Not Satisfy/Fails

■ – Performs well according to this criterion and compared against the other alternatives

▣ – Performs average according to this criterion and compared against the other alternatives

□ – Performs poorly according to this criterion or compared against the other alternatives

TBD – To Be Determined

Alternative 2 (highlighted) is the preferred alternative

Site 25 Camp Moffett Southern Fill Area. This is a crucial element in the decision-making process for the site.

To make a formal comment or question on this **Proposed Plan**, you need to do one of the following:

- Send formal written comments or questions, by U.S. mail, postmarked no later than **March 30, 2023**.
- Send formal written comments or questions, by e-mail, dated no later than **March 30, 2023**.
- Request a public information session or public meeting, by U.S. mail postmarked no later than **March 30, 2023** or by e-mail no later than **March 30, 2023**, and offer formal written comments or questions during this session.

A comment form is provided for your convenience at the end of this **Proposed Plan**. A request for a public meeting to present your formal comments or questions must also be made in writing.

The Navy will consider and address the public comments or questions received during the **public comment period**. The responses to written comments or questions will be anonymously included in the **Responsiveness Summary** in the **ROD**, which will document the final **CERCLA** remedy selected by the Navy and Illinois EPA for Site 25. After the **ROD** is signed, it will be made available to the public in the **Administrative Record** which is accessible at the **Information Repository**, located at the North Chicago Public Library, 2100 Argonne Drive, North Chicago, Illinois 60064; Phone Number (847) 689-0125 and via a public website at: <https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Great-Lakes-NS/> with the Great Lakes Records specifically located within the website at: <https://administrative-records.navfac.navy.mil/?PO367VGQ7R6WG4WVKO>.

Send written comments or questions postmarked or e-mailed no later than **March 30, 2023**, to:

Department of the Navy  
NAVSTA Great Lakes  
Attn: Public Affairs Office  
2601E Paul Jones Street  
Great Lakes, IL 60088  
Email: [nsgl-pao@us.navy.mil](mailto:nsgl-pao@us.navy.mil)

This **Proposed Plan** was prepared to help the public understand and comment on the preferred cleanup alternative for this site and provides a summary of a

number of reports and studies.

As required by **CERCLA**, the Navy has notified the public of its restoration activities and its preferred remedy, and has solicited the public's review for NSGL's Site 25 by publishing notices in local newspapers (Pioneer Press and Lake County News Sun). For the on-base community at NSGL, the notification was published in the Great Lakes Bulletin.

## GLOSSARY OF TERMS

This glossary defines the bolded 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.

**Administrative Record:** The complete body of documents pertaining to the investigation and restoration of an environmental site. The body of documents is kept at a location where it can be accessed by the public.

**Applicable or Relevant and Appropriate Requirements (ARARs):** The federal, state, and local environmental rules, regulations, and criteria that must be met by the selected cleanup action under **CERCLA**.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** A federal law enacted in 1980 and amended by the Superfund Amendments and Reauthorization Act (SARA) in 1986. **CERCLA**, administered by the USEPA and commonly known as "Superfund," outlines a process to evaluate hazardous waste sites that may pose a threat to human health and/or the environment.

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

**Chemical of potential concern (COPC):** Primary chemical identified through the **Remedial Investigation** that should be evaluated during the risk assessment process.

**Ecological risk assessment (ERA):** A study that evaluates the potential risk to ecological receptors (various types of plants and animals) from contaminants.

**Focused Feasibility Study (FFS):** An engineering report identifying and evaluating the most appropriate approaches for addressing contamination at a site. Includes a comparison of alternatives, which concentrates on a particular contaminated medium or a discrete portion of the site that does not need added

investigation in order to progress forward in the remedial process.

**Hazard index (HI):** The measure of the likelihood of adverse effects occurring to humans from non-cancer-causing chemicals.

**Human health risk assessment (HHRA):** An evaluation of the potential for adverse human health effects from exposure to site contaminants.

**Information Repository:** A public file containing technical reports, reference documents, and other materials relevant to the site cleanup.

**Land Use Controls (LUCs):** Engineered and non-engineered measures formulated and enforced to regulate current and future land use. Engineered measures include fencing and signage. Non-engineered measures typically consist of administrative controls or procedures that prohibit activities such as residential development.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP):** The federal government's plan for responding to oil spills and hazardous substance releases. Following the passage of Superfund legislation in 1980, the **NCP** was broadened to cover releases at hazardous waste sites requiring emergency removal actions. A key provision involves authorizing the lead agency to initiate appropriate removal actions in the event of a hazardous substance release.

**Net present worth (NPW):** A costing technique that expresses the total of initial capital expenditure and long-term operation and maintenance costs in terms of present-day dollars.

**Polycyclic aromatic hydrocarbons (PAHs):** Hydrocarbon compounds with multiple benzene rings. **PAHs** are typical components of asphalts, fuels, oils, and greases. They are also called polynuclear aromatic hydrocarbons.

**Preliminary Remediation Goal (PRG):** Chemical-specific concentration goal for a site contaminant that when achieved will pose acceptable risk for the targeted receptor.

**Proposed Plan:** A public participation document detailing the proposed response action at a site.

**Public Comment Period:** A legally required opportunity for the community to provide written and oral comments on a proposed environmental action at a hazardous waste site.

**Record of Decision (ROD):** A public document explaining selected cleanup alternatives at a site. It is based on information and technical analysis and on consideration of public comments and concerns. The **ROD** is issued and signed by the Navy and the Illinois EPA at the completion of the **R/RA** and **FFS** and after community acceptance of the **Proposed Plan**.

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

**Risk Assessment (RA):** Characterizes the nature and magnitude of risks to human health for various populations, and estimates risks to ecological receptors, including plants, birds, other wildlife, and aquatic life.

**Remedial Investigation (RI):** An in-depth study to determine the nature and extent of contamination.

**Responsiveness Summary:** A section of the **ROD** summarizing the public comments received during the **Proposed Plan public comment period** and the responses to those comments.

**Risk-Based Remediation Goal (RBRG):** Concentration of a chemical determined to be protective of the health of people who could potentially be exposed to land impacted by it. Hazards or risks to human health arising from exposure to soil and/or groundwater with concentrations lower than this are considered to be minimal.

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# Formal Public Comments

The Navy wants your formal written comments or questions on the options under consideration for Site 25 – Camp Moffett Southern Fill Area **Proposed Plan**. Please provide them in the space below (use a separate sheet of paper, if needed). A request for a public meeting to present your formal comments must also be made in writing. Please mail or e-mail written comments, questions, or request for a public meeting to the address below:



Dept. of the Navy, Naval Station Great Lakes  
Attn: Public Affairs Office  
2601E Paul Jones Street  
Great Lakes, IL 60088  
E-mail to: [nsgl-pao@us.navy.mil](mailto:nsgl-pao@us.navy.mil)



Include your name, address, and telephone number so we can contact you, if necessary. Names will not be included in the Responsiveness Summary. Comments and questions will be considered in the final response decision (**ROD**) for Site 25.

Comments, questions, and request for a public meeting must be postmarked or e-mailed by **March 30, 2023**.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone Number:  Home  Mobile \_\_\_\_\_

### Mailing List Update

If you would like to be added or removed from the Naval Station Great Lakes environmental mailing list, please check the appropriate box, and fill in the correct address information to your left.

Expect 1 to 3 e-mail notifications per year. One email will be provided each October with a summary of work in past year and what is planned in the following year. An additional e-mail will be sent if a public meeting is scheduled and/or if any disruptive field actions are expected.

- Address change
- Add to mailing list
- Delete from mailing list

Comments and Questions: \_\_\_\_\_

\_\_\_\_\_

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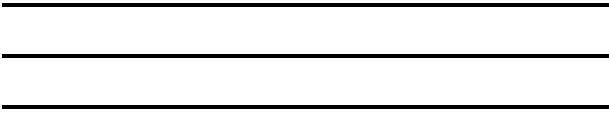
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GREAT LAKES, IL 60088**



(Fold on line, tape open edges, stamp, and mail)