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U.S. NAVY

Naval Air Station, Oceana

**Proposed
Remedial Action Plan
for SWMUs 11, 16, 16GC, 21
22, & 26**

August 16, 2001



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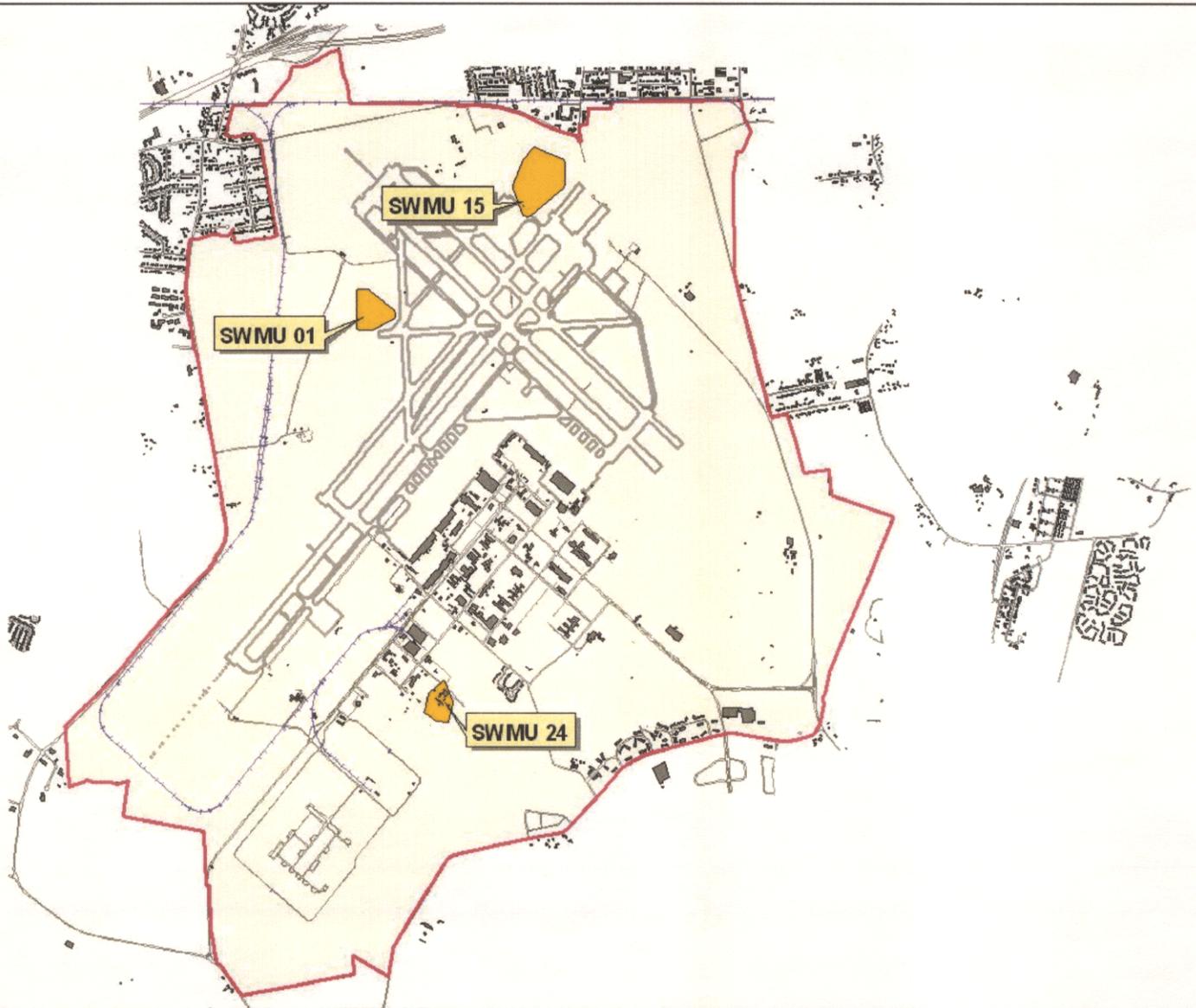
Proposed Remedial Action Plan for SWMUs 1, 15, & 24

August 16, 2001



Proposed Remedial Action Plan

- Documents the Navy's preferred alternatives for SWMUs 1, 15, and 24
- Public comment period on the preferred alternatives: August 13, 2001 - September 12, 2001
- All comments must be postmarked no later than September 12, 2001
- All documents located in the Va. Beach Public Library



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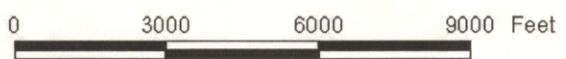


Figure 1
SWMU 1, 15, & 24 Location Map
NAS Oceana, Virginia Beach, Virginia



SWMU 1-West Woods Oil Disposal Pit

- An open pit (app. 50-100 feet in diameter) where approximately 110,000 gallons of waste oil, fuels, paints, and solvents were disposed of from the mid-1950s to the late 1960s
- In the late 1960s, the oil disposal pit flooded
- Waste disposal was discontinued, and the pit was filled with soil



SWMU 1-Previous Investigations

- Initial Assessment Study: December 1984
- Phase I Verification Study: October 1986
- Interim RCRA Facility Investigation: August 1991
- Phase I RCRA Facility Investigation: December 1993
- Corrective Measures Study: November 1995
- Phase III RCRA Facility Investigation: August 1999
- Additional groundwater sampling investigation: January 2000



SWMU 1-Risk Assessments

- **Human Health Risk Assessment: January 2001**
 - Carcinogenic risk is expressed as an upper bound probability, specifically, a "1 in 10,000 chance"
 - No carcinogenic risks at SWMU 1
 - Noncarcinogenic Risk quantified by a Hazard Index; if the Hazard Index is greater than one, then there is a noncarcinogenic risk
 - Noncarcinogenic risk from naphthalene in groundwater to a child or adult resident under a potential future residential scenario
- **Ecological Risk Assessment: June 2001**
 - Based on the ecological risk assessment and risk management decisions, no further action is necessary at SWMU 1 from an ecological risk perspective



SWMU 1-Remedial Action Objective

- **Prevent unacceptable risks to potential human receptors from groundwater**



SWMU 1-Preferred Remedial Alternative

- **Free-Product Removal and Institutional Controls with Long-term Monitoring of Groundwater**
 - Achieves the remedial action objective
 - Meets the ARARs
 - Protects human health
 - Is cost-effective



SWMU 15-Abandoned Tank Farm

- Served as the primary source of aircraft fuel for the North Station area (mid-1950s to the mid-1970s)
- Six tanks: a 414,000-gallon tank used to store jet fuel, two 50,000-gallon concrete tanks used for aviation gas, and three adjacent 12,000- to 18,000-gallon tanks believed to be used for automotive fuel, kerosene, or lube oil
- Tanks were emptied of fuel and filled with water after they were abandoned in the mid-1980s



SWMU 15-Previous Investigations

- **Preliminary Investigation: 1982**
- **Initial Assessment Study: December 1984**
- **RCRA Facility Assessment: August 1988**
- **Phase I RCRA Facility Investigation: December 1993**
- **Phase II RCRA Facility Investigation: February 1995**
- **Corrective Measures Study: March 1996**
- **Monitored Natural Attenuation Study: April 2001**



SWMU 15-Risk Assessments

- **Human Health Risk Assessment: January 2001**
 - **Carcinogenic risk is expressed as an upper bound probability, specifically, a "1 in 10,000 chance"**
 - Carcinogenic risk to current and potential future industrial workers and potential future resident exposed to surface soil
 - Risk to potential future residents from exposure to groundwater
 - **Noncarcinogenic Risk quantified by a Hazard Index; if the Hazard Index is greater than one, then there is a noncarcinogenic risk**
 - Noncarcinogenic risk to a potential future resident exposed to soil and groundwater and a construction worker exposed to groundwater



SWMU 15-Risk Assessments

- The contaminants of concern in soil are:
 - Arsenic and PAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene]
- The contaminants of concern in groundwater are:
 - Benzene, chloroform, methylene chloride, naphthalene, arsenic, iron, and manganese



SWMU 15-Risk Assessments

- **Ecological Risk Assessment: June 2001**
 - Based on the ecological risk assessment and risk management decisions, further action is necessary to protect ecological receptors from PAHs in surface soil and inorganic contaminants in groundwater



SWMU 15 -Remedial Action Objectives

- **Prevent or minimize direct contact of human and ecological receptors with surface soil that may pose unacceptable risk**
- **Prevent unacceptable risks to potential human receptors from groundwater**



SWMU 15-Preferred Remedial Alternative

- **Long-Term Monitoring of Groundwater with Institutional Controls and Soil Landfarming**
 - At SWMU 15, there are no receptors, and the plume has only moved 300 ft in 30 years due to the flat gradient
 - Achieves the remedial action objectives
 - Meets the ARARs
 - Guards against future risk
 - Is cost-effective



SWMU 24-Bowser Building 840

- An area near Building 840 which contained a waste-oil bowser (a portable tank)
- Waste solvents and oils generated at the equipment maintenance garage in Building 840 were hand carried and poured into the bowser; staining was observed
- Current practice is to dispose of waste oil in drums that are transported to the base hazardous waste lot, where they are disposed or recycled appropriately



SWMU 24-Previous Investigations

- RCRA Facility Assessment: August 1988
- Phase I RCRA Facility Investigation : December 1993
- Phase II RCRA Facility Investigation : February 1995
- Phase III RCRA Facility Investigation: June 1999
- POL Corrective Measures Study: October 1994
- Corrective Measures Study: March 1996
- NoVOCs™ In-situ Aeration Pilot Study & Implementation: April 1997
- Additional groundwater sampling investigation: January 2000



SWMU 24-Risk Assessments

• Human Health Risk Assessment: January 2001

- Carcinogenic risk is expressed as an upper bound probability, specifically, a "1 in 10,000 chance"
- Noncarcinogenic Risk quantified by a Hazard Index; if the Hazard Index is greater than one, then there is a noncarcinogenic risk
 - Future potential carcinogenic and noncarcinogenic risks to children and adults would result from the ingestion of groundwater, if the site were used as a residential area
 - The chemicals of concern identified in groundwater were cis-1,2-DCE, arsenic, iron, and manganese



SWMU 24-Risk Assessments

• Ecological Risk Assessment: October 1999

- Based on the ecological risk assessment, no exposure pathways exist, therefore no further action is necessary at SWMU 24 from an ecological risk perspective



SWMU 24-Remedial Action Objective

- Prevent unacceptable risks to potential human receptors from groundwater



Preferred Remedial Alternative SWMU 24

- **Institutional Controls with Long-term Monitoring of Groundwater**
 - Achieves the remedial action objective
 - Meets the ARARs
 - Guards against future risk
 - Is cost-effective



Next Steps

- **The Navy, VDEQ, and USEPA support the preferred alternative for each SWMU**
- **Final concurrence with the preferred alternatives will be provided following review of all comments received during the public comment period**
- **The preferred alternatives could change based on public comments**
- **Selected remedies and all responses to public comments will be documented in the Record of Decision**



Questions/Comments?