FINAL
6 JANUARY 2015

Five-Year Review Report

Third Five-Year Review for
Sites 302, 303, and 304
Fleet Logistics Center Puget Sound (FLCPS)
Naval Base Kitsap Manchester, Washington

Prepared By:

Department of the Navy
Naval Facilities Engineering Command Northwest
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Silverdale, WA 98315

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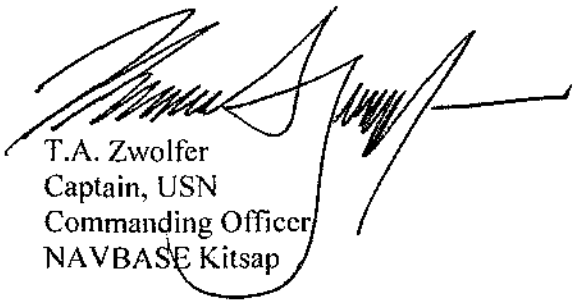
Five-Year Review
Concurrence and Signature Page

This Five-Year Review addresses Sites 302, 303, and 304 at Fleet Logistics Center Puget Sound (FLCPS), Naval Base Kitsap Manchester, Washington. The lead agency for this Review is the United States Navy (Navy).

Approval of this review is provided by Naval Base Kitsap.

Approved by:



T.A. Zwolfer
Captain, USN
Commanding Officer
NAVBASE Kitsap

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Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: FISC Puget Sound Manchester Fuel Depot Sites 302, 303, and 304		
EPA ID: N/A		
Region: *10*	State: WA	City/County: Manchester / Kitsap

SITE STATUS	
NPL Status: Non-NPL	
Multiple Sites? Yes	Has the site achieved construction completion? Yes

REVIEW STATUS
Lead agency: Other Federal Agency If "Other Federal Agency" was selected above, enter Agency name: Dept. of Navy
Author name (Federal or State Project Manager): Grady May and Pamela Sargent
Author affiliation: Naval Facilities Engineering Command Northwest
Review period: 01 / 2010 – 12 / 2014
Date of site inspection: March 13, 2014
Type of review: Statutory
Review number: 3
Triggering action date: January 6, 2010
Due date *(five years after triggering action date)*: January 6, 2015

Five-Year Review Summary Form (continued)

Issues/Recommendations				
Site(s) without Issues/Recommendations Identified in the Five-Year Review:				
None				
Issues and Recommendations Identified in the Five-Year Review:				
Site(s): 302, 303, and 304	**Issue Category: No Issue**			
	Issue: NA			
	Recommendation: The Navy shall consult with Ecology concerning land use changes that could affect the protectiveness of the remedies at Sites 302, 303, and 304.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	Ongoing
Site(s): 302, 303, and 304	**Issue Category: No Issue**			
	Issue: NA			
	Recommendation: The continued implementation of land use restrictions at Site 302, 303, and 304 should be evaluated at the time of the next Five-Year Review.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	During Fourth Five Year Review
Site(s): 302, 303, and 304	**Issue Category: Institutional Controls**			
	Issue: Land use controls for Sites 302, 303, and 304 are not formalized.			
	Recommendation: The Navy should implement land use controls for Sites 302, 303, and 304 through formal written instructions or standard operating procedures.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	12/31/2015

Five-Year Review Summary Form (continued)

Site(s): 302, 303, and 304	**Issue Category: Institutional Controls**			
	Issue: There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Sites, 302, 303, and 304.			
	Recommendation: The Navy should implement a formal written excavation permitting process for Sites 302, 303, and 304.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	12/31/2015
Site(s): 302	**Issue Category: Institutional Controls**			
	Issue: Fill excavated from Beaver Creek was recently placed on the western part of the site and excess soil from two other facility projects has been placed on the site.			
	Recommendation: The Navy shall discontinue the practice of placing excess soil from various projects at Site 302.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	01/06/2015
Site(s): 302	**Issue Category: Institutional Controls**			
	Issue: The excess soil placed at Site 302 has not been tested for PCBs.			
	Recommendation: The excess soil placed at Site 302 should be tested for PCBs and other potential contaminants based on generator knowledge. Soil that contains contaminants exceeding MCTA Method A levels shall be removed and disposed of off-site at a disposal facility that is licensed and permitted to accept the material.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	12/30/2015

Five-Year Review Summary Form (continued)

Site(s): 302	Issue Category: Operations and Maintenance			
	Issue: Areas where additional fill was placed and the area just inside the Alder Loop Road gate are not vegetated.			
	Recommendation: Site 302 should be revegetated in the areas where additional fill was placed and in the area just inside the Alder Loop Road gate. Grading of Site 302 prior to revegetation is recommended so that future site inspections can confirm that no additional soil has been placed at the site. A follow-up inspection should be performed during the following growing season to ensure that vegetation has taken hold.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	No	Federal Facility	State	06/30/2016 for grading and revegetation 06/30/2017 for follow-up inspection

Site(s): 302	Issue Category: Operations and Maintenance			
	Issue: Two sections of the Site 302 fence have been damaged by fallen trees.			
	Recommendation: Repair/replace the two damaged sections of Site 302 fence.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	No	Federal Facility	State	12/31/2015

Site(s): 304	Issue Category: Institutional Controls			
	Issue: There are no warning signs present to indicate that soil contamination is present and that unauthorized excavations were prohibited.			
	Recommendation: Warning signs should be placed at Site 304 to warn of the presence of contaminated soil.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	Federal Facility	State	12/31/2015

Five-Year Review Summary Form (continued)

Protectiveness Statement(s)		
Site: Site 302	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* NA
Protectiveness Statement: Site 302 at FISC Manchester was issued an NFA determination by Ecology in 2000 because it was determined that no further action was required to protect human health and the environment based primarily on the current and future land use at the site. There has been no new evidence that would change this. The remedy at this site remains protective of human health and environment.		
Site: Site 303	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* NA
Protectiveness Statement: Site 303 at FISC Manchester was issued an NFA determination by Ecology in 2001 because it was determined that no further action was required to protect human health and the environment based primarily on the current and future land use at the site. There has been no new evidence that would change this. The remedy at this site remains protective of human health and environment.		
Site: Site 304	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* NA
Protectiveness Statement: Site 304 at FISC Manchester was issued an NFA determination by Ecology in 2001 because it was determined that no further action was required to protect human health and the environment based primarily on the current and future land use at the site. There has been no new evidence that would change this. The remedy at this site remains protective of human health and environment.		
Sitewide Protectiveness Statement (if applicable)		
For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.		
Protectiveness Determination: Protective		*Addendum Due Date (if applicable):* NA
Protectiveness Statement: Sites 302, 303, and 304 at FISC Manchester were issued NFA determinations by Ecology in 2000 and 2001 because it was determined that no further action was required to protect human health and the environment based primarily on the current and future land use at the site. There has been no new evidence that would change this. The remedies at all three sites remain protective of human health and environment.		

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EXECUTIVE SUMMARY

This Five-Year Review addresses Sites 302 [Polychlorinated Biphenyl (PCB) Site], 303 (D Tunnel Tanks), and 304 (Industrial Area) at Fleet and Industrial Supply Center (FISC) Puget Sound Manchester Fuel Department in Manchester, Washington. This is the third Review for these three sites.

Although FISC Manchester [also known as Fleet Logistics Center Puget Sound (FLCPS)] is not listed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priority List (NPL) and two of the sites, Site 303 (D Tunnel Tanks) and Site 304 (Industrial Area), involve petroleum which is not a hazardous substance under CERCLA, the Navy, as a matter of policy, follows the CERCLA process to the maximum extent practical at non-NPL sites. Additionally, as remedies for the sites include institutional controls through land use restrictions, a Five Year Review is required pursuant to Navy policy and a periodic review by the Department of Ecology is required pursuant to Model Toxics Control Act (MTCA) Cleanup Regulation (WAC 173-340). In addition, this Review evaluates the implementation and performance of remedies to determine if the remedies are and will continue to be protective of human health and the environment. This Review also identifies possible deficiencies and recommends corrective actions, as appropriate.

This Five-Year Review was conducted in accordance with the United States Navy (Navy) policy, Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Five Year Reviews, dated May 2011, the Department of Defense Manual (DoDM) 4715.20, "Defense Environmental Restoration Program (DERP) Management," dated March 9, 2012 with update dated May 16, 2014 and U.S. Environmental Protection Agency (USEPA) Comprehensive Five-Year Review Guidance, Office of Solid Waste and Emergency Response (OWSER) No. 9355.7-03B-P, dated June 2001. This Five-Year Review also provides information to the Washington State Department of Ecology (Ecology) for the periodic review pursuant to WAC 173-340-420.

The Review process consists of the Navy establishing a Review Team; notifying potentially interested parties and involving the community in the review process; developing the draft Review report (document reviews, site inspections, interviews, and data evaluation); submitting to Ecology and Suquamish Tribe for review; and ultimately signing and submitting the final Review report. The Suquamish Tribe is an interested party.

This Review determined that the remedies implemented at Sites 302, 303, and 304 are functioning as intended; that exposure assumptions, toxicity data, cleanup levels, and remedial action objectives remain valid, and that no other information has come to light that could call into question the protectiveness of the remedies.
This Review discusses the progress from the last Review, provides both general and site

specific recommendations and follow-up actions. The following recommendations / follow-up actions are made with regard to Sites 302, 303, and 304 at FISC Manchester:

- The Navy shall consult with Ecology concerning land use changes that could affect the protectiveness of the remedies at Sites 302, 303, and 304;
- The continued implementation of land use restrictions at Sites 302, 303, and 304 should be evaluated at the time of the next Five Year Review;
- The Navy shall discontinue of the practice of placing excess soil from various projects at Site 302;
- The excess soil placed at Site 302 should be tested for PCBs and other potential contaminants based on generator knowledge. Soil that contains contaminants exceeding MCTA Method A levels shall be removed and disposed of off-site at a disposal facility that is licensed and permitted to accept the material.
- Site 302 should be revegetated in the areas where additional fill was placed and in the area just inside the Alder Loop Road gate. Grading of Site 302 prior to revegetation is recommended so that future site inspections can confirm that no additional soil has been placed at the site. A follow-up inspection should be performed during the following growing season to ensure that vegetation has taken hold.
- The Navy should place warning signs at Site 304 to warn about the presence of contaminated soil;
  The Navy should implement land use controls for Sites 302, 303, and 304 through formal written instructions or standard operating procedures, and
- The Navy should implement a formal written excavation permitting process for Sites 302, 303, and 304.

This Review also provides protectiveness statements. The following comprehensive protectiveness statement is made and addresses the remedies implemented at all three sites:

> Sites 302, 303, and 304 at FISC Manchester were issued NFA determinations by Ecology in 2000 and 2001 because it was determined that no further action was required to protect human health and the environment based primarily on the current and future land uses at the sites. There has been no new evidence that would change this. The remedies at all three sites remain protective of human health and the environment.

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
Bunker C	No. 6 fuel oil
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTO	Contract Task Order
dioxins	polynuclear chlorinated diobenzodioxins
Ecology	Washington State Department of Ecology
FISC	Fleet and Industrial Supply Center
FLCPS	Fleet Logistics Center Puget Sound
furans	chlorinated dibenzofuran
JP-5	jet petroleum #5
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
MW	monitoring well
NAVFAC NW	Naval Facilities Engineering Command Northwest
NAPL	Non-Aqueous Phase Liquid
NFA	No Further Action
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
OSWER	Office of Solid Waste and Emergency Response
OWS	oil/water separator
PAH	Polynuclear Aromatic Hydrocarbon
PCB	polychlorinated biphenyl
ppm	parts per million
RAP	Remedial Action Plan
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SQS	Sediment Quality Standards
TEC	The Environmental Company, Inc.
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
U.S. Navy	United States Navy

VOC	volatile organic compound
WAC	Washington Administrative Code
yd^3	cubic yards

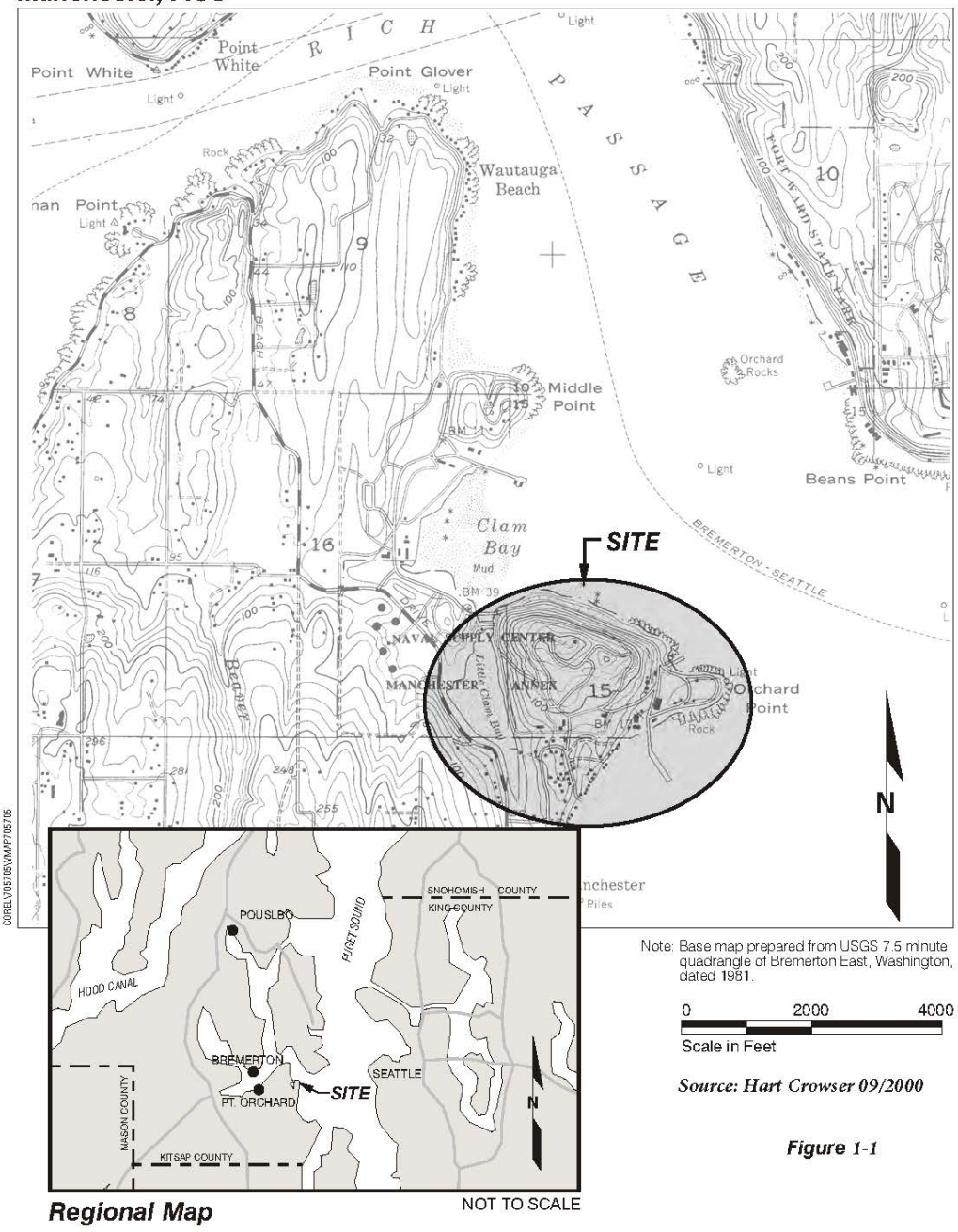
1 Introduction

This report presents the results of the third five-year review conducted for three sites at Fleet and Industrial Supply Center (FISC) Puget Sound, Manchester Fuel Department in Manchester, Washington. FISC Manchester [also known as Fleet Logistics Center Puget Sound (FLCPS)] is not listed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priority List (NPL) and two of the sites, Site 303 (D Tunnel Tanks) and Site 304 (Industrial Area), involve petroleum which is not a hazardous substance under CERCLA. As a matter of policy, the Navy follows the CERCLA process to the maximum extent practical at non-NPL sites. Additionally, as remedies for the sites include institutional controls through land use restrictions, a Five Year Review is required pursuant to Navy policy. This Review evaluates the implementation and performance of remedies to determine if the remedies are and will continue to be protective of human health and the environment. This Review also identifies possible deficiencies and recommends corrective actions, as appropriate.

This Review is conducted by the United States Navy (Navy) in accordance with Navy policy, Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Five Year Reviews, dated May 2011, the Department of Defense Manual (DoDM) 4715.20, "Defense Environmental Restoration Program (DERP) Management," dated March 9, 2012 with update dated May 16, 2014 and U.S. Environmental Protection Agency (USEPA) Comprehensive Five-Year Review Guidance, Office of Solid Waste and Emergency Response (OWSER) No. 9355.7-03B-P, dated June 2001. This Five-Year Review also provides information to the Department of Ecology for the periodic review pursuant to WAC 173-340-420.

FISC Manchester is located in eastern Kitsap County one mile north of Manchester near Rich Passage and Clam Bay (Figure 1-1). The three sites covered under this review are Site 302 [polychlorinated biphenyls (PCB) site], Site 303 (D-Tunnel Tanks), and Site 304 (Industrial Area), shown in Figure 1-2. Site 302 was a dumping ground for various industrial wastes, and Sites 303 and 304 have historically been contaminated with petroleum. More background information is provided in the subsequent chapters.

Vicinity Map
Manchester, FISC



Note: Base map prepared from USGS 7.5 minute quadrangle of Bremerton East, Washington, dated 1981.

0 2000 4000
Scale in Feet

Source: Hart Crowser 09/2000

Figure 1-1

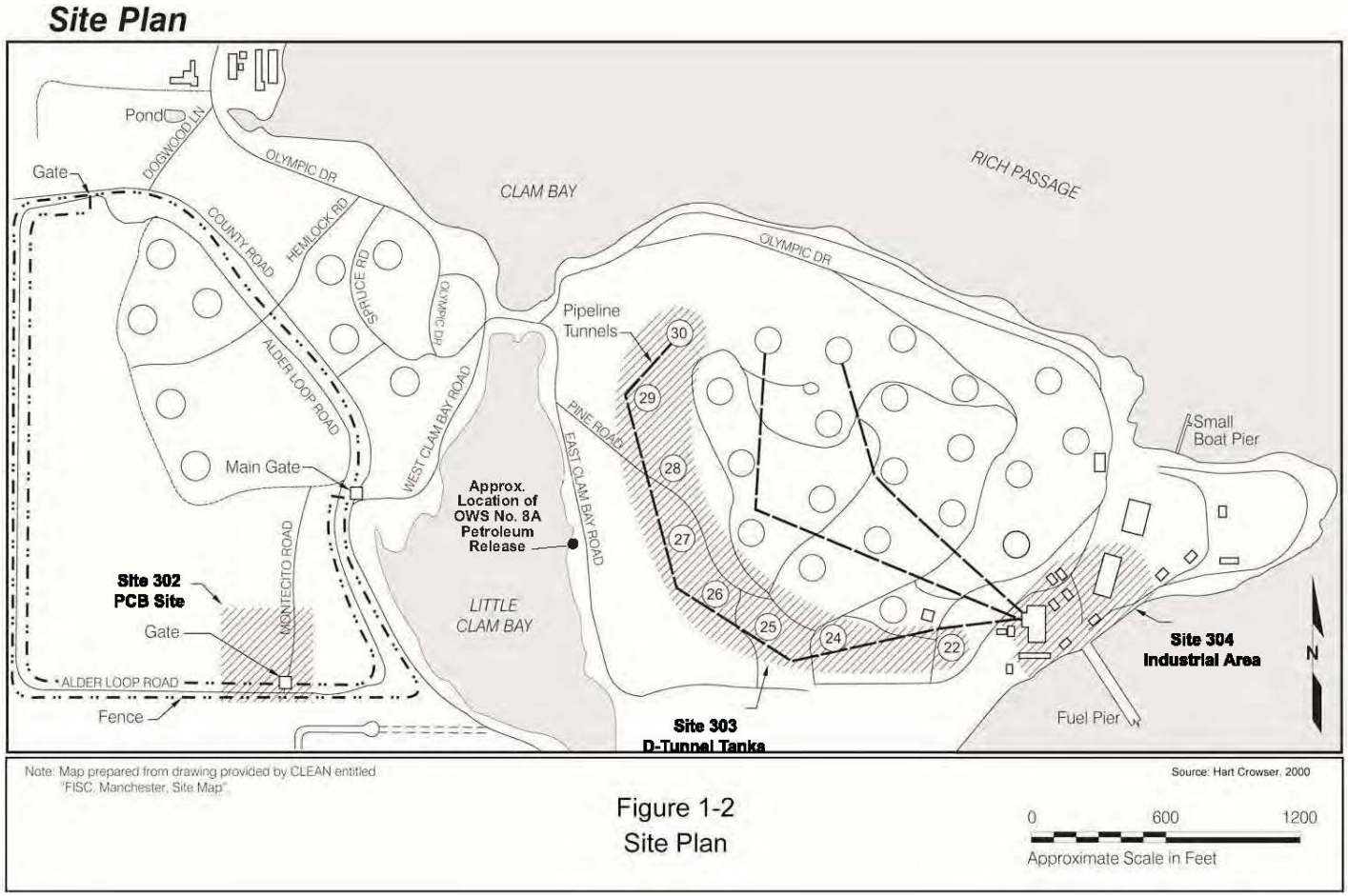


Figure 1-2
Site Plan

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2 Site Chronology

2.1 Site 302 (PCB Site)

The following is a chronology of major environmental activities that have been conducted at Site 302:

- The Navy began an investigation of contamination at the site in 1983.
- Investigation activities were completed by 1990 when a Remedial Investigation/Feasibility Study (RI/FS) was published (Hart Crowser, 1990a).
- A Remedial Action Plan (RAP) was completed in 1990 (Hart Crowser, 1990c).
- The Record of Decision (ROD) was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendments and Reauthorization Act, and the National Oil and Hazardous Substances Pollution Contingency Plan.
- A ROD was issued by the Navy as the lead agency in 1991 and amended in 1992 (U.S. Navy, 1991, 1992).
- Site cleanup was conducted in 1993 (Hart Crowser, 2000a).
- Post-closure monitoring was conducted from 1993 through 2000 (Hart Crowser, 2000a).
- The Washington Department of Ecology (Ecology) issued a No Further Action (NFA) Determination in 2000 (Ecology, 2000).
- The Navy issued the First Five-Year Review Report for Sites 302, 303, and 304 at Fleet and Industrial Supply Center Puget Sound Manchester Fuel Depot on September 20, 2004 (U.S. Navy, 2004).
- The Navy issued the Second Five-Year Review Report for Sites 302, 303, and 304 at Fleet and Industrial Supply Center Puget Sound Manchester Fuel Depot on January 6, 2010 (U.S. Navy, 2010).

2.2 Site 303 (D-Tunnel Tanks)

The following is a chronology of major environmental activities that have been conducted at Site 303:

- Petroleum spill recovery operations were conducted for spills that occurred in 1990 (GeoEngineers, 1990).
- An underground vapor monitoring system was installed in 1995 (URS, 1995b).
- A cone penetrometer boring characterization was completed in 1997 (U.S. Navy, 1997).
- A site assessment was conducted at the Corliss Lane Marsh site in 1998 (Hart Crowser, 1998).

- A sediment and groundwater characterization was conducted in 1999 and 2000 (Hart Crowser, 2000b) pursuant to the Washington State Department of Ecology Model Toxics Control Act Cleanup Regulation, WAC 173-340.
- Ecology issued a NFA Determination in 2001 (Ecology, 2001a).
- The Navy issued the First Five-Year Review Report for Sites 302, 303, and 304 at Fleet and Industrial Supply Center Puget Sound Manchester Fuel Depot on September 20, 2004 (U.S. Navy, 2004).
- The Navy issued the Second Five-Year Review Report for Sites 302, 303, and 304 at Fleet and Industrial Supply Center Puget Sound Manchester Fuel Depot on January 6, 2010 (U.S. Navy, 2010).

2.3 Site 304 (Industrial Area)

The following is a chronology of major environmental activities that have been conducted at Site 304:

- A fuel pier construction investigation was conducted in 1989 (Dames and Moore, 1989).
- UST closures were conducted at Buildings 1 and 12 in 1993 (Severson Construction, 1993).
- A subsurface investigation was conducted in 1995 (URS, 1995a).
- A rapid removal response to contamination was conducted in 1996 (Foster Wheeler, 1996).
- A cone penetrometer boring characterization was completed in 1997 (U.S. Navy, 1997).
- A sediment and groundwater characterization was conducted in 1999 and 2000 (Hart Crowser, 2000b) pursuant to the Washington State Department of Ecology Model Toxics Control Act Cleanup Regulation, WAC 173-340.
- Ecology issued a NFA Determination in 2001 (Ecology, 2001a).
- The Navy issued the First Five-Year Review Report for Sites 302, 303, and 304 at Fleet and Industrial Supply Center Puget Sound Manchester Fuel Depot on September 20, 2004 (U.S. Navy, 2004).
- The Navy issued the Second Five-Year Review Report for Sites 302, 303, and 304 at Fleet and Industrial Supply Center Puget Sound Manchester Fuel Depot on January 6, 2010 (U.S. Navy, 2010).

3 Background

FISC Manchester was developed into a major fuel storage facility at the beginning of World War II in the early 1940s. The majority of the facility is used for fuel storage including underground and aboveground petroleum storage tanks, associated pipelines, and a fuel pier. An industrial area with support and administrative buildings is located adjacent to the fuel pier. Fuel products that have been stored at FISC Manchester have included Navy Special Fuel [No. 6 fuel oil (Bunker C)], marine diesel fuel, jet fuel, lube oil, and aviation gasoline.

Several areas of the facility have been impacted by past releases of petroleum products, including Site 302 (PCB) site), Site 303 (D-Tunnel Tanks), and Site 304 (Industrial Area), as shown in Figure 1-2.

Site 302 is a 1.4 acre area that is located in the southwest portion of FISC Manchester (see Figure 1-2). The site was used as a dumping area for ship bilge waste, transformer oil, and other petroleum waste from local naval facilities from about 1955 through 1976. No estimate of the amount of waste disposed of at the site is available. Use of the site for waste disposal was discontinued when an oil waste treatment plant was constructed in the mid-1970s. PCBs were identified as a contaminant of concern at the site.

Site 303 consists of eight 20,000 to 50,000 barrel (840,000 to 2,100,000 gallons) concrete underground storage tanks (USTs) used to store marine diesel fuel. The USTs are located on the D-tunnel line which extends from Tank 30 to Building 12 in the Industrial Area (Site 304) as shown on Figure 1-2. The USTs are typically covered with 4 to 6 feet of soil with the base of the tanks extending from 30 to 32 feet below ground surface (bgs). The USTs are surrounded by a drain field extending approximately 6 to 8 feet outside the exterior tank wall. Drain tile systems located at the base of the outside tank walls drain into oil/water separator (OWS) collection systems.

Two significant fuel spills have been documented at Site 303. A spill occurred at Tank 30 in February 1990 that involved the release of approximately 38,000 to 40,000 gallons of diesel fuel. Another spill occurred at Tank 24 in March 1990 that involved the release of approximately 10,000 gallons of diesel fuel.

The Site 304 (Industrial Area) is located in the eastern portion of FISC Manchester as shown in Figure 1-2. It is comprised of maintenance, administration, fuel pumping, and water treatment buildings. Site 304 is the central transfer point for most of the petroleum products stored at FISC Manchester. Petroleum products (including Bunker C, marine diesel, jet fuels, aviation gasoline, and lube oil) are transported through a network of pipelines which run from the fuel pier to storage tanks located throughout the facility. The original pipelines were drained and closed in-place in 1982. New pipelines are contained in concrete underground trunks and utility corridors.

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4 Remedial Actions

4.1 Site 302 (PCB Site)

Prior to remediation in 1993, PCBs were detected in the majority of surface soil samples at the site at concentrations ranging from 0.1 to 1,500 parts per million (ppm). PCBs greater than 1 ppm were confined primarily to the immediate disposal site area. PCB concentrations above 5 ppm were confined primarily to the top 1 to 2 feet of soil. In addition to PCBs, other contaminants detected at elevated concentrations included polynuclear chlorinated dibenzodioxins (dioxins), chlorinated dibenzofurans (furans), polynuclear aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). The concentrations of these other compounds were determined to be located in the areas with the highest PCB concentrations. PCBs were also detected in surface water and sediment samples down gradient of the site. PCBs were not detected in fish tissue or shellfish collected from Little Clam Bay.

The major components of the ROD included:

- Excavation of soil with PCB concentrations greater than 10 ppm;
- Treatment of excavated soil using solvent extraction;
- Off-site incineration of oil/PCBs extracted in the treatment process;
- Off-site incineration or chemical-waste landfilling of treated soil with residual PCB concentrations greater than 2 ppm;
- Placement of treated soil on the site;
- Installation of a soil cover over all soils containing PCB concentrations greater than 1 ppm;
- Construction of diversion trenching to prevent draining onto the site;
- Land use restrictions against residential use of the site; and
- Post construction monitoring of soil, sediment, and surface water.

Due to difficulties in locating contractors with experience in conducting treatment of PCB soils using solvent extraction and the higher than expected costs associated with this treatment method, the ROD was amended in 1992. The treatment method of soils with PCB concentrations greater than 10 ppm was changed to off-site incineration instead of solvent extraction.

The amended ROD was implemented beginning in 1993. Approximately 3,000 cubic yards (yd^3) of contaminated soil were removed for off-site incineration. Excavated areas then received a minimum of 1 foot of granular fill material followed by capping with 4 inches of topsoil over the entire site. Certain areas received an additional foot of top soil in 1998.

Following remediation, two years of surface water and sediment sampling (4 rounds of

semi-annual events) were conducted from October 1993 to 1995. Samples were collected at six locations adjacent to Site 302 along freshwater drainage pathways. Samples in the first year were analyzed for PCBs. Samples in the second year were analyzed for PCBs and petroleum hydrocarbons. PCBs and petroleum hydrocarbons were not detected in the surface water samples, except in a seep that was only observed during one of the four rounds. PCBs were detected in sediment samples located along the shore of Little Clam Bay with most concentrations significantly lower than the cleanup level and Marine Sediment Quality Standards (SQS). One PCB sediment concentration [12.9 milligrams per kilogram (mg/kg)] slightly exceeded the SQS of 12 mg/kg.

In 1997, the Navy requested a NFA determination from Ecology. Ecology requested further monitoring be completed at the seep location and along the eastern shore of Little Clam Bay. Beginning in October 1997, two additional years of surface water and sediment sampling (four rounds of semi-annual events) were completed at three locations, per Ecology's request. Sediment samples were analyzed for PCBs and surface water samples were analyzed for PCBs and petroleum hydrocarbons. PCBs and petroleum hydrocarbons were not detected in any surface water samples. PCBs were detected in sediment samples but at concentrations less than the cleanup level and the SQS.

Based on the results of the post remediation monitoring and anticipated future industrial use of the FISC Manchester facility, Ecology issued a NFA determination for Site 302 in a letter dated 25 September 2000 (Ecology, 2000).

4.2 Site 303 (D-Tunnel Tanks)

An approximately 38,000-40,000 gallon diesel spill occurred at Tank 30 in February 1990. Most of the spill was apparently contained by the footing drainage system under the tank and directed to an OWS where it was recovered. Diesel fuel that was not contained by the drainage system flowed down the steep slope north of the tank. Some of this fuel flowed into the North Dike and was recovered. The remaining portion of the fuel infiltrated into the ground where some of it discharged through seeps along the steep slopes and beaches to the north of Tank 30. Collection sumps and sorbent pads were used to collect fuel from the beach areas. Petroleum Non-Aqueous Phase Liquid (NAPL) and/or sheens were observed in monitoring wells and test pits installed along the beach to the north and test pits along Pine Road to the west.

An approximately 10,000 gallon diesel fuel spill occurred at Tank 24 in March 1990. Most of the spill was apparently recovered on the Base. Approximately 100 to 200 gallons leaked off base into the marsh area adjacent to Corliss Lane. A subsequent environmental investigation in the marsh area indicated that natural attenuation processes had decreased the petroleum concentrations in the marsh to below cleanup standards. An underground vapor monitoring system was installed around the D-Tunnel tanks in 1995. Soil samples that were collected during the system installation indicated that petroleum contaminated soil was present in the immediate vicinity of all eight tanks.

Cone penetrometer borings were installed adjacent to Tanks 24, 29, and 30 in 1997 in an attempt to characterize the extent of petroleum contamination in the soil using laser induced fluorescence. The results of the investigation were generally inconclusive.

A groundwater investigation was conducted in 1999 and 2000 to determine if releases from Site 303 were adversely impacting the adjacent marine environment to FISC Manchester. Groundwater samples were collected from 5 monitoring wells and two seeps to the north and east of Site 303. This investigation concluded that the marine environment was not being unacceptably impacted by contamination emanating from Site 303.

At the conclusion of the groundwater investigation, the Navy requested a NFA determination at Site 303 from Ecology based on the lack of impacts to the marine environment and the anticipated future industrial land use of FISC Manchester. Ecology granted a NFA determination in a letter dated 17 January 2001 (Ecology, 2001a). The land use at Site 303 is restricted to industrial use as a fuel storage facility.

4.3 Site 304 (Industrial Area)

In 1989, a soil investigation was conducted as part of a construction project at the fuel pier. Jet fuel was found in one sample collected at the water table.

A site assessment was performed in 1993 to support the closure and removal of three USTs located near Building 1 (UST P-3) and Building 12 (USTs T-4 and T-5). Diesel was detected in soil samples above cleanup levels. Approximately 120 cubic yards of contaminated soil was excavated. Soil concentrations remaining in the excavation were below cleanup levels.

A subsurface soil and groundwater investigation was performed in 1995 to assess petroleum contamination at Site 304. Total Petroleum Hydrocarbon (TPH) concentrations above cleanup levels were found in 12 of the 50 soil samples collected. Most of the exceedances were found at depths ranging from 4 to 12 feet bgs. TPH concentration in two monitoring wells [monitoring well (MW)-3 and MW-4] exceeded the Model Toxics Control Act (MTCA) Method A groundwater cleanup level.
An expedited removal action was performed in 1996 to support construction of a secondary containment boom around oily waste tanks 115 and 116. Free product oil and approximately 174 tons of visibly contaminated soil were removed from the area. No confirmation soil sampling was conducted following the removal action.

A site characterization of Site 304 was conducted in 1997 using cone penetrometer borings. Soils were screened for the presence of petroleum hydrocarbons using laser induced fluorescence. Evidence of petroleum contamination [including diesel, jet petroleum #5 (JP-5), and heavy oil] was found in many borings throughout Site 304.
A groundwater and sediment investigation was conducted in 1999 and 2000 to determine if releases from Site 304 were adversely impacting the adjacent marine environment to

FISC Manchester. Sediment samples were collected from ten locations offshore of Site 304. Groundwater samples were collected from four monitoring wells and one seep at Site 304. This investigation concluded that the marine environment was not being unacceptably impacted by contamination emanating from Site 304.

At the conclusion of the groundwater investigation, the Navy requested a determination of NFA at Site 304 from Ecology based on the lack of impacts to the marine environment and the anticipated future industrial land use of FISC Manchester. Ecology granted a NFA determination in a letter dated 17 January 2001 (Ecology, 2001a). The land use at Site 304 is restricted to industrial use as a fuel storage facility.

5 Progress since Last Review

The protectiveness statement from the last review determined that the remedies at all three sites remain protective of human health and the environment. However two issues were identified that may affect the remedies. An update is provided below.

During the previous Five-Year Review, petroleum sheen was observed on Little Clam Bay west of Tanks 28 and 29 at Site 303 near the outfall of OWS No. 8A. The investigation of the source of the oil was still ongoing at the end of the last review. Since the last review, both OWS 8 and 8A were replaced in the fall of 2013. No petroleum sheen has been observed since, and none was observed during the site visit in March 2014. Aside from routine maintenance of the tanks and oil water separators, no major activities including excavations, had taken place at Site 303.

At Site 304, the recommendation in the last Five-Year Review was that the soil to vapor pathway may need to be evaluated to ensure that potential vapor intrusion from contaminated soil and groundwater into indoor air was not an exposure concern. This was based on a 2001 amendment to MTCA which recommended evaluation of the soil to vapor pathways when certain conditions were present. One of these conditions was when diesel is present at concentrations exceeding 10,000 mg/kg. A review of available information show that diesel concentration only exceeded 10,000 mg/kg in one sample collected about 20 years ago. Due to the nature of the operations at Site 304 as a fuel storage facility and that there was only one exceedance approximately 20 years ago, it was decided that an evaluation of the soil to vapor pathway was not necessary.

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6 Five-Year Review Process

As described in the USEPA *Comprehensive Five-Year Review Guidance*, the review process consists of establishing a Review Team; notifying potentially interested parties and involving the community in the review process; developing the draft Five-Year Review report (document reviews, site inspections, interviews, and data evaluation); and ultimately signing and submitting the final Five-Year Review report.

6.1 Review Team

The U.S. Navy is the lead agency responsible for the conduct of the Five-Year Review of Sites 302, 303, and 304 at FISC Manchester.

The Team established for this Review consists of a member from Naval Facilities Engineering Command (NAVFAC) Northwest with consultation with Mr. Grady May and Ms. Pamela Sargent, the remedial project managers, and Mr. Doug Tailleur, the FISC Manchester Environmental Specialist.

6.2 Notifying Potentially Interested Parties and Involving the Community

Notification to potentially interested parties that a Five-Year Review was to be conducted at Sites 302, 303, and 304 at FISC Manchester was made in May 2014 (Appendix A). This notification consisted of the publication of a Notice of Intent (NOI) in the Kitsap Sun on May 23-25, 2014. The NOI provided the information recommended by the USEPA *Comprehensive Five-Year Review Guidance* (i.e., identification and location of the contaminated sites, identification of the U.S. Navy as the lead agency conducting the review, descriptions of remedies, summaries of contamination, a description of community involvement measures, contact information, and a scheduled completion date).

Community involvement (i.e., community relations) has been a component of this Review. Community relations have included the following activities:

- An initial publication of the NOI was made in the local newspapers (as previously described);
- A 30-day public comment period was publicized for the Five-Year Review in the NOI; and
- No public comments were received.

6.3 Developing the Five-Year Review Report

The development of this Review Report consists of four primary activities: document reviews, site inspections, personnel interviews, and data consolidation and evaluation.

6.3.1 Document Reviews

Document reviews were conducted by the Review Team throughout the development of this Review of Sites 302, 303, and 304 at FISC Manchester. These documents included hard-copy information (e.g., previous studies and reports, technical memoranda, regulatory agency correspondence) and electronic (e.g., database downloads of monitoring data). Source references for the various data and information presented in this Review are listed in Chapter 10 References. References in addition to those source references presented in this Review are included in Chapter 10 as this reference list is intended to provide a complete list of the documents reviewed in support of this Review.

6.3.2 Site Inspections

As detailed in the USEPA *Comprehensive Five-Year Review Guidance*, a Five-Year Review is to include recent site inspections. For the purpose of a Five-Year Review, the USEPA interprets "recent" as no more than nine months from the expected signature date of the review. Site inspections were conducted by Review Team members at the three subject areas at FISC Manchester on 13 March 2014. The purpose of these site inspections was to obtain information regarding each site's status and to visually confirm and document the conditions of remedy implementation, the contaminated area, and/or surrounding properties. Appendix B contains digital photographs of the sites taken at the time of the site inspections.

6.3.3 Personnel Interviews

Interviews were conducted with Doug Tailleur.

6.3.4 Data Consolidation and Evaluation

Data generated as a result of document reviews, site inspections, and personnel interviews were consolidated and evaluated. Data that is significantly relevant to this Review is either included and/or included by reference in this document, as appropriate.

7 Technical Assessment and Issues of Concern

This section presents the technical assessment of the remedy implemented at each of the sites at FISC Manchester and issues of concern.

The purpose of the technical assessment during the Five-Year Review is to assess the protectiveness of the remedy at a site. In accordance with the USEPA *Comprehensive Five-Year Review Guidance*, this assessment examines three questions that serve as the criteria for ensuring that relevant issues are considered in determining the protectiveness of a particular remedy. These assessment criteria are:

- Is the remedy functioning as intended by the decision documents?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

Information necessary for Ecology to perform the periodic review for Sites 303 and 304 pursuant to WAC 173-340-420 is provided in Appendix E.

7.1 Site 302 (PCB Site)

7.1.1 Discussion

Ecology issued a NFA determination for Site 302 in 2000 (Ecology, 2000) based on the fact that "review of relevant remedial action reports and subsequent monitoring which indicates that contaminants found during investigation of this property were either properly remediated or do not pose a risk to human health and the environment."

Site 302 was inspected on March 13, 2014 in support of this Five Year Review. Photographs taken during that site visit are provided in Appendix B. The following observations were made during the site visit:

- Vegetation, primarily grass, covers the entire area. The vegetation appeared to be thriving with no obvious areas of stress.
- Fill excavated from Beaver Creek was recently placed on the western part of the site.
- Topsoil from a spot in the northwest quadrant of the site was excavated and placed in the surrounding area. Contaminated soil was not exposed during the excavation.
- Excess soil from other facility two projects has been placed on the site.
- There were no significant signs of erosion observed at Site 302. Minor channeling from runoff was observed on the higher sloped terrain in the northern portion of Site 302. This channeling did not appear to be causing significant soil

erosion as grasses were present.

- The diversion ditch that was installed along Alder Road up gradient of the site was in place. Standing water was present in the ditch during the visit.
- The fence surrounding Site 302 was present and largely intact, except for two locations along the western boundary where the fence was damaged by falling trees. The gate at the southern perimeter (Alder Road) was locked. Signs on the fence in this area identified the presence of PCB contaminated soil in the area. The primary fence that surrounds the facility prevents non-base personnel from accessing Site 302. The interior fence that surrounds Site 302 was not part of remedy specified in the ROD.
- There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Site 302.
- There is no formal process in place to prevent placement of excess soil at Site 302.

Site 302 issues are summarized in Table 7-1.

Table 7-1: Site 302 Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Land use controls for Site 302 are not formalized.	**N**	**Y**
There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Site 302.	**N**	**Y**
Fill excavated from Beaver Creek was recently placed on the western part of the site and excess soil from two other facility projects has been placed on the site.	**N**	**Y**
The excess soil placed at Site 302 has not been tested for PCBs.	**N**	**Y**
Areas were additional fill was placed and the area just inside the Alder Loop Road gate are not vegetated.	**N**	**N**
Two sections of the Site 302 fence have been damaged by fallen trees.	**N**	**N**

7.1.2 Technical Assessment

The remedial action conducted at Site 302 intended to remove the majority of contamination and prevent exposure to remaining contamination through a soil cap and land use restrictions. The exposure assumptions, toxicity data, cleanup levels, and

remedial action objectives used at the time of remedy selection are still valid. The site conditions that were in place at the time that Ecology issued the NFA determination have not changed. The minor excavation in the northwest part of Site 302 does not impact the integrity of the cap. The remedy is functioning as intended. No new information has come to light that would call into question the protectiveness of the remedy. The Navy shall consult with Ecology if there is any planned land use change of the area which could potentially affect the integrity of the remedy. The Navy should formalize land use controls through formal written instructions or standard operation procedures.

7.2 Site 303 (D-Tunnel Tanks)

7.2.1 Discussion

Ecology issued a NFA determination for Site 303 in 2001 (Ecology, 2001a) based on the fact that "review of relevant remedial action reports and subsequent monitoring which indicates that contaminants found during investigation of this property were either properly remediated or do not pose a risk to human health and the environment."

Site 303 was inspected on March 13, 2014 in support of this Five Year Review. Photographs taken during that site visit are provided in Appendix B. The following observations were made during the site visit:

- There were no signs of unauthorized excavations in the vicinity of the tanks where most of the contaminated soil is located.
- The areas surrounding the tanks were either paved or vegetated. The vegetation appeared to be healthy with no obvious signs of stress.
- Warning signs were present at various locations to indicate that soil contamination was present and that unauthorized excavations were prohibited.
- The beach to the north of Tank 30 was inspected, including areas where petroleum seeps were present at this beach after the 1990 spill. No signs of contamination were observed.
- No oil sheens were observed in any of the dikes to the northeast of Tank 30.
- No oil sheen was observed on Little Clam Bay to the west of Tanks 28 and 29, near the outfall for OWS No. 8A, shown in Figure 1-2.
- The dike to the south of Tank 24 and Corliss Marsh were inspected. No evidence of contamination (sheens) was observed.
- General area of soil contamination is marked on the base facilities map.
- There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Site 303.

Site 303 issues are summarized in Table 7-2.

Table 7-2: Site 303 Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Land use controls for Site 303 are not formalized.	**N**	**Y**
There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Site 303.	**N**	**Y**

7.2.2 Technical Assessment

The remedial action at Site 303 relies on land use restrictions to ensure continued protection of human health and the environment. The land use restrictions remain effective in preventing exposure of site workers to contaminated soil and groundwater. The Navy shall consult with Ecology if there is any planned land use change of the area which could potentially affect the integrity of the remedy. The Navy should formalize land use controls through formal written instructions or standard operation procedures.

7.3 Site 304 (Industrial Area)

7.3.1 Discussion

Ecology issued a NFA determination for Site 304 in 2001 (Ecology, 2001a) based on the fact that "review of relevant remedial action reports and subsequent monitoring which indicates that contaminants found during investigation of this property were either properly remediated or do not pose a risk to human health and the environment." Site 304 was inspected on March 13, 2014 in support of this Five Year Review. Photographs taken during that site visit are provided in Appendix B. The following observations were made during the site visit:

- Site 304 is predominately asphalted or covered with impervious surfaces (buildings, aboveground tanks, etc.). There are some grassy areas, primarily adjacent to the shoreline.
- There did not appear to be any way for personnel to come into contact with contaminated soil and groundwater other than through excavation.
- No signs of petroleum seeps and contamination were found in the beach to the south of Site 304.
- There were no warning signs present to indicate that soil contamination was present and that unauthorized excavations were prohibited.
- General area of soil contamination is marked on the base facilities map.
- There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Site 304.

Site 304 issues are summarized in Table 7-3.

Table 7-3: Site 304 Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Land use controls for Site 304 are not formalized.	**N**	**Y**
There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Site 302.	**N**	**Y**
There are no warning signs present to indicate that soil contamination is present and that unauthorized excavations were prohibited.	**N**	**Y**

7.3.2 Technical Assessment

The remedial action at Site 304 relies on land use restrictions and physical barriers to protect human health from soil and groundwater contamination. Previous sampling showed that the marine environment was not being unacceptably impacted by the soil and groundwater contamination at Site 304. The remedy is functioning as intended. The site conditions and exposure assumptions that were in place at the time that Ecology issued the NFA determination have not changed.

It is recommended that warning signs be posted at Site 304 to guard against exposure to contaminated soil. The Navy shall consult with Ecology if there is any planned land use change of the area which could potentially affect the integrity of the remedy. The Navy should formalize land use controls through formal written instructions or standard operation procedures

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8 Recommendations and Follow-up Actions

The recommendations / follow-up actions made with regard to Sites 302, 303, and 304 at FISC Manchester are presented in Table 8-1.

- The Navy shall consult with Ecology prior to any planned land use changes that could affect the protectiveness of the remedies at Site 302, 303, and 304;
- The continued implementation of land use restrictions at Sites 302, 303, and 304 should be evaluated at the time of the next Five Year Review;
- The practice of placing excess soil at Site 302 should be discontinued;
- The excess soil placed at Site 302 should be tested for PCBs and other potential contaminants based on generator knowledge and soil that that contains contaminants exceeding MTCA Method A levels shall be removed and disposed of off-site at a disposal facility that is licensed and permitted to accept the material by 2015;
- Site 302 should be revegetated in the areas where additional fill was placed and in the area just inside the Alder Loop Road gate by 2015;
- Grading of Site 302 prior to revegetation is recommended so that future site inspections can confirm that no additional excess soil has been placed at the site;
- A follow-up inspection should be performed during the following growing season (in 2016) to ensure that the vegetation has taken hold;
- Warning signs should be placed at Site 304 to warn about the presence of contaminated soil and groundwater by 2015;
- The Navy should implement land use controls through formal written instructions and adopting a standard operation procedure by 2015; and
- The Navy should implement a formal written permitting process for excavations by 2015.

Table 8-1: Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
	The Navy shall consult with Ecology concerning land use changes that could affect the protectiveness of the remedies at Sites 302, 303, and 304.	Federal Facility	State	Ongoing	N	Y
	The continued implementation of land use restrictions at Site 302, 303, and 304 should be evaluated at the time of the next Five-Year Review.	Federal Facility	State	During the Fourth Five-Year Review	N	Y
Land use controls for Sites 302, 303, and 304 are not formalized.	The Navy should implement land use controls for Sites 302, 303, and 304 through formal written instructions or standard operating procedures.	Federal Facility	State	12/31/2015	N	Y
There is no formal excavation permit process in place at FISC Manchester to prevent unauthorized excavations at Sites 302, 303, and 304.	The Navy should implement a formal written excavation permitting process for Site 302, 303, and 304.	Federal Facility	State	12/31/2015	N	Y
Fill excavated from Beaver Creek was recently placed on the western part of the site and excess soil from two other facility projects has been placed on the site.	The Navy should discontinue the practice of placing excess soil from various projects at Site 302.	Federal Facility	State	01/06/2015	N	Y

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
The excess soil placed at Site 302 has not been tested for PCBs.	The excess soil placed at Site 302 should be tested for PCBs and other potential contaminants based on generator knowledge. Soil that contains contaminants exceeding MCTA Method A levels shall be removed and disposed of off-site at a disposal facility that is licensed and permitted to accept the material.	Federal Facility	State	12/31/2015	N	Y
Areas were additional fill was placed and the area just inside the Alder Loop Road gate are not vegetated.	Site 302 should be revegetated in the areas where additional fill was placed and in the area just inside the Alder Loop Road gate. Grading of Site 302 prior to revegetation is recommended so that future site inspections can confirm that no additional soil has been placed at the site. A follow-up inspection should be performed during the following growing season to ensure that vegetation has taken hold.	Federal Facility	State	06/30/2016 for grading and revegetation 06/30/2017 for follow-up inspection	N	N
Two sections of the Site 302 fence have been damaged by fallen trees.	Repair/replace the two damaged sections of Site 302 fence.	Federal Facility	State	12/31/2015	N	N
There are no warning signs at Site 304 present to indicate that soil contamination is present and that unauthorized excavations were prohibited.	Warning signs should be placed at Site 304 to warn of the presence of contaminated soil.	Federal Facility	State	12/31/2015	N	Y

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9 Protectiveness Statement and Next Five-Year Review

9.1 Protectiveness Statement

Sites 302, 303, and 304 at FISC Manchester were issued NFA determinations by Ecology in 2000 and 2001 because it was determined that no further action was required to protect human health and the environment based primarily on the land uses at the sites. There has been no new evidence that would change this. The remedies at all three sites remain protective of human health and the environment.

9.2 Subsequent Five-Year Review

A subsequent Five Year Review will be completed for Site 302, 303, and 304 at FISC Manchester on or before 5 years from the signature date of this review.

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Appendix A

Notice of Intent

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PUBLIC NOTICE

NAVY ANNOUCES A NOTICE OF INTENT TO CONDUCT A FIVE-YEAR REVIEW FOR FLEET LOGISTICS CENTER PUGET SOUND, MANCHESTER FULE DEPARTMENT (FLCPS FD), NAVAL BASE KITSAP MANCHESTER, WASHINGTON SITES 302, 303, AND 304

This notice is to inform the public that the U.S. Navy intends to conduct a five- year review of Sites 302, 303, and 304 at Fleet Logistics Center Puget Sound (FLCPS), Naval Base Kitsap Manchester, Washington to ensure that environmental remedies implemented at these sites are protective of human health and the environment.

Sites 302, 303, and 304 are areas at FLCPS Manchester where environmental contamination was identified in the past. These sites have undergone environmental investigation and/or remediation to address the potential impacts of the contamination to human health and the environment. Based on this work, the sites have been issued "No Further Action Determinations" by the Washington State Department of Ecology.

Navy policy requires that if the remedy(s) will result in hazardous substances, pollutants, or contaminants remaining on a site above levels that allow for unlimited use and unrestricted exposure, a review must be conducted no less often that every five years after the initiation of the remedial action to ensure that the remedy is operating as planned and remains protective of human health and the environment. The five-year review is also intended to identify possible deficiencies and recommend corrective actions. This is the third five-year review for these sites.

The Navy welcomes written comments from the community during the Five-Year Review Process until June 29, 2014. A Notice of Completion is anticipated to be published in August of 2014.
For more information or to provide comments, please contact:
Leslie Yuenger
Naval Facilities Engineering Command Northwest
Public Affairs Officer
Leslie.yuenger@navy.mil

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Appendix B

Site Photographs

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Site 302
Security Gate

Site 302
Vegetative Cover

Site 302 Additional Fill from Beaver Creek

Site 302 Topsoil Removal at Northwest Corner

Site 302 Additional Fill Added to the Cap

Site 302 Diversion Ditch along Alder Loop Road

Site 302 Damaged Fence at Western Boundary Looking Northwest

Site 302 Damaged Fence at Western Boundary looking Southwest

Site 303 Ground Surface at Tank 29

Site 303 Ground Surface at Tank 27

Site 303 Dike Northeast of Tank 30

Site 303 Dike South of Tank 24

Site 303 Beach at OWS 8A outfall

Site 303 OWS 8A

Site 303 Warning Sign at Tank 29

Site 304 - Building 217, Administrative Building

Site 304 Beach Looking Towards Fuel Pier

Site 304 Excavation to Repair Water Main Break

Appendix C

Response to Public Comments

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A Notice of Intent was published and no public comments were received.

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Appendix D

Response to Regulatory Comments

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Document Title: Draft Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington

Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology

#	Doc/Para No.	Comment	Response
1	General	As there are significant comments to address, we suggest that a new draft is prepared for Ecology review and final comment.	Upon agreement between the Navy and Ecology on the response to comments, a redline of the draft will be forwarded to Ecology for final review.
2	General	a. Upon review of the draft report, it is apparent that the authorities cited needed to be adjusted. This site is regulated for toxic cleanup purposes by the department of ecology under the Model Toxic Control Act Cleanup Regulations (WAC 173-340).	a. FLCPS contains three sites: Site 302 (PCB Site), Site 303 (D Tunnel Tanks), and Site 304 (Industrial Area). Site 302 is not a MTCA site and therefore the regulatory authorities cited in the draft report are appropriate. Sites 303 and 304 are MTCA sites. The Navy proposes to revise paragraph 2 of the Executive Summary and paragraph 1 of Section 1 of the report to include the following language: "In addition, since Ecology issued a no further action opinion for Sites 303 and 304 and institutional controls are place, a periodic review is required pursuant to WAC 173-340-420".
		b. Apparently, Ecology has been the only such regulator for this site and EPA has not taken jurisdiction under CERCLA for the remedial actions at this site. The requirement for a periodic review comes from WAC 173-340-420. This citation provides the specific criteria for this review.	b. The Navy proposes to add an additional appendix to this report to provide a crosswalk between CERCLA five-year review elements and the MCTA periodic review criteria with appropriate references to this appendix in Sections 7 and 9 of this report.

Document Title: Draft Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington

Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology

#	Doc/Para No.	Comment	Response
3	General	a. In reviewing the two NFA letters and the regulatory bases for these letters in WAC-173-340-310(5)(d)(ii), it is apparent that NFA letters can be rescinded, if certain deficiencies are found at a site that has been given an NFA letter.	a. Comment noted. No specific deficiencies were cited. No changes to the report were made to address this comment.
		b. In the 2001 NFA letter for sites 303 and 304, the letter requires that periodic (5-year) reviews should continue for this site. The rule note above also requires periodic reviews must occur if there are institutional controls in place for a remediated site. So, it is appropriate that a 5-year review is performed for this site.	b. Agreed. As Ecology issued a no further action opinion for Sites 303 and 304 and institutional controls are place, a periodic review is required pursuant to WAC 173-340-420. See response to Comment 2a.
		c. The 5-year review is also a good opportunity to determine if further actions are needed at this site.	c. Comment noted. No changes to the report were made to address this comment.
4	General	Based on the draft report review, the site visit and the facility operational parameters, this site is considered an important site by Ecology. In the discussions with the Navy, and in review of the draft report, it is apparent that there is little, if any, relevant monitoring data for this site over the past 15 years or so since the site was remediated. It is difficult to assess a site like the Navy's Fuel	Post-remedy monitoring was completed at Site 302. Documentation was provided to and reviewed by Ecology. The No Further Action (NFA) Determination states "Recent review of the Final Post-Closure Monitoring Report, August 24, 2000, concludes monitoring requirements imposed by the Washington State Department of Ecology Model Toxics Control Cleanup Regulation, Chapter 173-340 WAC have been met." The NFA did not require or recommend further monitoring at Site 302.

Document Title: Draft Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington			
Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology			
#	**Doc/Para No.**	**Comment**	**Response**
		Depot without appropriate monitoring data. In the Model Toxics Control Act (MTCA), at the end of Section RCW 70.105D.030 (1)(b), you will find a reference for "adequate monitoring". Specific monitoring requirements are found throughout WAC 173-340 for the environmental media at this site. I recommend that the Navy develop a Long Term Monitoring (LTM) plan for this site and obtain monitoring data in order to do an adequate assessment during the next and subsequent 5-year review periods. This recommendation should be added to the 5-year report recommendations section.	The NFA Determination for Sites 303 and 304 stated that "there continues to be a need for institutional controls which would prevent exposure to residual soil contaminants" but did not require or recommend long term monitoring (LTM) at these sites. The Navy agrees that institutional controls are required by MTCA for sites with residual contamination above clean-up levels. No changes to the report were made to address this comment.
5	General	Since there are no reported spills or similar occurrences that would justify rescinding the 2001 NFA at this time, Ecology will no consider doing so as a result of this review. However, adequate monitoring data will be needed for the next 5-year review to justify NFA status at this site.	Comment noted. No changes to the report were made to address this comment.

Document Title: Draft Final Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington			
Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology			
#	**Doc/Para No.**	**Comment**	**Response**
1	General	First, there has been nearly 3 months since Ecology reviewed the draft report and now we have received the draft final with only 3 days to make comments.	The Navy provided a response to Ecology's comments on the Draft Third Five Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington to both Ecology and the Suquamish Tribe on November 23, 2014. The Navy met with Ecology on November 24, 2014 to discuss the response to comments. The two issues raised by Ecology during this meeting were long-term monitoring (addressed in the response to Ecology's comments) and Kitsap County Health Department review of the Five Year Review (an additional comment by Ecology not included in comments on the Draft Five-Year Review). The Navy stated during this meeting that the No-Further-Action Determinations for the three sites issued by Ecology did not require or recommend long-term monitoring and that there were no remediation goals established for the sites. The Navy also stated that the Kitsap County Health Department (now known as the Kitsap Public Health District) had the opportunity to comment on the Five-Year Review during the public comment period as a member of the public and that no public comments were received. As the lead regulatory agency for these sites, Ecology had the opportunity to consult with other agencies during the formal comment period and subsequently while the Navy was preparing the response to Ecology's comments. Subsequent to the November 24, 2014 meeting, the Navy did receive an email from Ecology on December 5, 2014 stating that Ecology could not make any commitment on the response to comments until after consultation with the Suquamish Tribe and that Ecology wanted to give the Health Department another opportunity to review the Third Five-Year Review. The Navy did not receive any rebuttal to the response to comments from the Tribe. The comments were incorporated into the Draft Final version of the Third Five-Year

Document Title: Draft Final Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington

Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology

#	Doc/Para No.	Comment	Response
			Review as drafted. A redline version of Draft Final Third Five-Year Review was forwarded to Ecology and the Suquamish Tribe December 8, 2014 stating that the Navy was in the process of finalizing this document for NBK- Bremerton Commanding Officer's signature to meet the due date of January 6, 2015 and that should there be any final questions on this document, the Remedial Project Manager should be contacted before close-of-business on Thursday December 11th. This period of time was not intended to be another formal comment period. No changes to the report were made to address this comment.
2	General	Ecology believes it is unfortunate that the limited review time will not allow for Ecology to consult with stakeholders and interested parties. The Suquamish Tribe has the same limitations as you are giving Ecology. And, it is now impractical to work with the Kitsap County Health Department to determine if they have comments. The public notice procedures you used appear to be excessively limiting and not in the spirit of a 5-year review process.	Active stakeholders and the public were afforded a formal comment period on the Draft Third Five Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington. The Navy forwarded Ecology and the Suquamish Tribe the Draft Third Five Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester on August 5, 2014 for comment with a request that comments be provided back to the Navy by September 4, 2014. The Navy received comments from Ecology on September 11, 2014. No comments were received from the Suquamish Tribe. A public notice was published in the Kitsap Sun on May 9, 10, and 11, 2014 regarding the Third Five Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington and the public comment period closed on Jun 29, 2014. No public comments were received. No changes to the report were made to address this comment.

Document Title: Draft Final Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington			
Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology			
#	**Doc/Para No.**	**Comment**	**Response**
3	General	Since site 302 is a PCB site and has been remediated under CERCLA, this review needs to have EPA involvement and concurrence. Please make such arrangements.	The Navy interacts with the lead regulatory agency. It is incumbent upon Ecology as the lead regulatory agency to solicit input from the EPA. As the lead regulatory agency for these sites, Ecology had the opportunity to consult with other agencies during the formal comment period and subsequently while the Navy was preparing the response to Ecology's comments. No changes to the report were made to address this comment.
4	General	In reviewing the report, the draft final is a vast improvement over the draft report. Most of Ecology's comments on the draft have been adequately addressed. However, the issue of needing a Long-Term Monitoring (LTM) program for this site remains. In your response to comments for General Comment #4, the Navy did not address the need for an LTM program. This issue should result in a recommendation in Section 8 of the report. Ecology recommends that the Navy include a recommended task to occur in the first year after the 5-year review is signed that the Navy will consul t with Ecology and interested parties and stakeholders on the need for an LTM program at this site. The rationale for this recommendation is as follows:	See responses to Comment 4 on the Draft Third Five-Year Review and Comment 1 on the Draft Final Third Five-Year Review. No changes to the report were made to address this comment.

Document Title: Draft Final Third Five-Year Review for Sites 302, 303 and 304 Fleet Logistics Center Puget Sound (FLCPS) Naval Base Kitsap Manchester, Washington

Comments by: John Blacklaw, P.E., Cleanup Project Manager, Washington State Department of Ecology

#	Doc/Para No.	Comment	Response
		• There is a large quantity of diesel fuel and aviation fuel stored at this facility and distributed by ship, at the adjacent pier and otherwise. This entails tanks, piping, pumps, connection s, and valves, all with complicated procedures. No doubt the Navy does an excellent job. However, the sheer volumes are significant. • There are oil water separators, drainage systems, disposal systems and other methods in place for addressing any inefficiency in the process, where fuels are not adequately controlled. This is the secondary line of defense. • There have been two significant releases that occurred about 15 years ago. This indicates that releases are possible, if not likely over long periods of operation. • Other regulatory and operational programs monitor the facility, but information from those programs is not coordinated with or evaluated by the 5-year review process. • This is an operating facility, not a static cleanup site. This requires different strategies. • Current operations do not appear to	

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#	**Doc/Para No.**	**Comment**	**Response**
		include "adequate monitoring" as defined in MTCA. See RCW 70. l 05D.030(l)(b) and WAC 173-340 for specific citations on monitoring requirements. • 5-year review s need adequate information in order to reliably make protectiveness determinations and recommendations.	

Appendix E

Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

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Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

CERCLA Five Year Review Element	MTCA Periodic Review Criteria	Site 302 Discussion[1]	Site 303 Discussion[2]	Site 304 Discussion[2]
Is the remedy functioning as intended in the decision documents?		Yes. See Section 7.1.2.	Yes. See Section 7.2.2.	Yes. See Section 7.3.2.
Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?		Yes. See Sections 7.1.1 and 7.1.2.	Yes. See Section 7.2.1 and 7.2.2.	Yes. See Sections 7.3.1 and 7.3.2.
Has other information come to light that could call into question the protectiveness of the remedy?		No. See Sections 7.1.1, 7.1.2 , and 9.	No. See Sections 5, 7.2.1 , 7.2.2, and 9.	No. See Sections 5, 7.3.1, 7.3.2, and 9.
	The effectiveness of ongoing or completed clean-up actions, including the effectiveness of engineering controls and institutional controls in limiting exposure to hazardous substances remaining at the site [WAC 173-340-420 (4) (a)]	Discussed in Section 7.1.1 and 7.1.2.	Discussed in Sections 5, 7.2.1, and 7.2.2.	Discussed in Sections 5, 7.3.1, and 7.3.2.

[1] This is a CERCLA site.

[2] This is not a CERCLA site but the Navy, as a matter of policy, follows the CERCLA five-year review process to the maximum extent practical at non-NPL sites.

Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

CERCLA Five Year Review Element	MTCA Periodic Review Criteria	Site 302 Discussion[1]	Site 303 Discussion[2]	Site 304 Discussion[2]
	New scientific information for individual hazardous substances or mixtures present at the site [WAC 173-340-420 (4) (b)]	Not applicable – not a MTCA site.	New information since the last (Second) Five-Year Review is provided in Section 5, paragraph 1.	New information since the last (Second) Five-Year Review is provided in Section 5, paragraph 2.
	New applicable state and federal laws for hazardous substances present at the site [WAC 173-340-420 (4) (c)]	Not applicable – not a MTCA site.	The characterization at the Site 303 was governed by Chapter 173-340 WAC [1996 ed.]. WAC 173-340 (12) (b) [2007 ed.] provides that, "In reviewing the adequacy of independent remedial actions, the department shall determine the cleanup level that applies to a release based on the rules in effect at the time of the final cleanup actions for that release began or in effect when the department reviews that cleanup action, whichever is less stringent." Groundwater samples were screened against marine surface water criteria, WAC 173-201A and sediment samples	The characterization at the Site 304 was governed by Chapter 173-340 WAC [1996 ed.]. WAC 173-340 (12) (b) [2007 ed.] provides that, "In reviewing the adequacy of independent remedial actions, the department shall determine the cleanup level that applies to a release based on the rules in effect at the time of the final cleanup actions for that release began or in effect when the department reviews that cleanup action, whichever is less stringent." Groundwater samples were screened against marine surface water criteria, WAC 173-201A and sediment samples

Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

CERCLA Five Year Review Element	MTCA Periodic Review Criteria	Site 302 Discussion[1]	Site 303 Discussion[2]	Site 304 Discussion[2]
			were screened against marine sediment cleanup standards of the Sediment Management Standards, WAC 173-204 to ensure that petroleum hydrocarbons were not migrating from the site to the marine environment as required by WAC 173-340. There were no screening criteria exceedances from anthropogenic sources. A No Further Action Determination was issued by Ecology in January 2001. Further, WAC 173-340-702(12) (c) [2007 ed.] provides that, "A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels,	were screened against marine sediment cleanup standards of the Sediment Management Standards, WAC 173-204 to ensure that petroleum hydrocarbons were not migrating from the site to the marine environment as required by WAC 173-340. There were no screening criteria exceedances from anthropogenic sources. A No Further Action Determination was issued by Ecology in January 2001. Further, WAC 173-340-702(12) (c) [2007 ed.] provides that, "A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels,

Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

CERCLA Five Year Review Element	MTCA Periodic Review Criteria	Site 302 Discussion[1]	Site 303 Discussion[2]	Site 304 Discussion[2]
			unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment." Revisions to the Surface Water Cleanup Standards (WAC 173-340-730) and the Water Quality Standards for Surface Waters of the State of Washington since 2000 do not appear to affect the characterization at Site 303 as the groundwater and seep sample petroleum hydrocarbon results do not exceed the current Method A Cleanup Levels for Ground Water (comparison allowed by (WAC 173-340-730 (3) (b) (iii) (C). The Sediment Management Standards (WAC 173-204) were	unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment." Revisions to the Surface Water Cleanup Standards (WAC 173-340-730) and the Water Quality Standards for Surface Waters of the State of Washington since 2000 do not appear to affect the characterization at Site 304 as the groundwater and seep sample petroleum hydrocarbon results do not exceed the current Method A Cleanup Levels for Ground Water (comparison allowed by (WAC 173-340-730 (3) (b) (iii) (C). The Sediment Management Standards (WAC 173-204) were

Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

CERCLA Five Year Review Element	MTCA Periodic Review Criteria	Site 302 Discussion[1]	Site 303 Discussion[2]	Site 304 Discussion[2]
			revised in 2013; these revisions do not appear to affect the characterization at Site 303 as the current sediment cleanup objectives and clean-up screening levels are the same as those used in the sediment characterization in 2000. No further action is required at Site 303 beyond institutional controls to be protective of human health and the environment.	revised in 2013; these revisions do not appear to affect the characterization at Site 304 as the current sediment cleanup objectives and clean-up screening levels are the same as those used in the sediment characterization in 2000. No further action is required at Site 304 beyond institutional controls to be protective of human health and the environment.
	Current and project site and resource uses [WAC 173-340-420 (4) (d)]	Not applicable – not a MTCA site.	The Site is currently used for industrial purposes. There have been no changes in current or projected future Site or resource uses. See Section 4.2, last paragraph.	The Site is currently used for industrial purposes. There have been no changes in current or projected future Site or resource uses. See Section 4.3, last paragraph.
	The availability and practicality of more permanent remedies [WAC 173-340-420 (4) (e)]	Not applicable – not a MTCA site.	The institutional controls in place for this Site prevent exposure to residual soil contaminants. While higher preference	The institutional controls in place for this Site prevent exposure to residual soil contaminants. While higher preference

Crosswalk between CERCLA Five-Year Review Elements and the MCTA Periodic Review Criteria

CERCLA Five Year Review Element	MTCA Periodic Review Criteria	Site 302 Discussion[1]	Site 303 Discussion[2]	Site 304 Discussion[2]
			cleanup technologies may be available, they are still not practicable or necessary at this Site to be protective of human health and the environment.	cleanup technologies may be available, they are still not practicable or necessary at this Site to be protective of human health and the environment.
	The availability of improved analytical techniques to evaluate compliance with clean-up levels [WAC 173-340-420 (4) (f)]	Not applicable – not a MTCA site.	The analytical methods used at the time of the remedial investigation and issuance of the No Further Action opinion were capable of detection below MTCA cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.	The analytical methods used at the time of the remedial investigation and issuance of the No Further Action opinion were capable of detection below MTCA cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.