SECOND FIVE-YEAR REVIEW REPORT FOR
OESER CO. SUPERFUND SITE
WHATCOM COUNTY, WASHINGTON

Prepared by

U.S. Environmental Protection Agency
Region 10
Seattle, Washington

Cami Grandinetti

Cami Grandinetti
Program Manager
Remedial Cleanup Program

9/2/16

Date

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
cPAH	Carcinogenic Polyaromatic Hydrocarbon
EPA	U.S. Environmental Protection Agency
FYR	Five-Year Review
GAC	Granulated Activated Carbon
HI	Hazard Index
HQ	Hazard Quotient
IC	Institutional Control
LNAPL	Light Non-aqueous Phase Liquid
LSCA	Little Squalicum Creek Area
LUC	Land Use Control
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
MTCA	Model Toxics Control Act
NAPL	Non-aqueous Phase Liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OCCC	Oeser Cedar Cleanup Coalition
OMMP	Operations, Maintenance and Monitoring Plan
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PCP	Pentachlorophenol
PQL	Practical Quantification Limit
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
TBC	To-Be-Considered
TCDD	Tetrachlorodibenzodioxin
TEQ	Toxicity Equivalent Quotient
TPH	Total Petroleum Hydrocarbons
UECA	Uniform Environmental Covenants Act
UU/UE	Unlimited Use and Unrestricted Exposure

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)(40 Code of Federal Regulations Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the second FYR for the Oeser Co. Superfund Site (the Site). The triggering action for this statutory review is the previous FYR. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one operable unit (OU) which will be addressed in this FYR. OU1 addresses all contaminated media at the Site.

The FYR was led by Joe Wallace, EPA. Participants included Kay Morrison, EPA Community Involvement Coordinator and Ryan Burdge and Alison Cattani of Skeo. The review began on 10/1/2015.

Site Background

The Site is located on 47-acres in a mixed residential and industrial area of Bellingham, Washington, and includes both the Oeser Property (a 26-acre active wood-treating facility) and the 21-acre Little Squalicum Creek Area (LSCA) to the south of the Oeser Property and within Little Squalicum Park (Figure C-1). The Oeser Property owner has operated the wood-treating facility on the Oeser Property since 1943. Operations include preparing and treating wood poles for utility companies. Since operations began in 1943, Oeser has discharged treated wastewater and stormwater to Little Squalicum Creek through an underground stormwater drain. The area of the Site where wood-treating operations occur occupies about 3 acres with most of the remaining property dedicated to the transportation and storage of treated and untreated logs. The Oeser Property lies approximately 1,500 feet north of Bellingham Bay at 75 feet above mean sea level. The property is relatively flat, with a general slope of less than 5 percent towards the southwest. Residential neighborhoods are located along the north and east sides of the Oeser Property with an industrial area to the west and Little Squalicum Park to the south (Figure C-2).

Little Squalicum Park, consists of about 21 acres of publicly owned land that surround the Little Squalicum Creek. The park is bordered by Bellingham Bay and a railroad to the south, the Oeser Property to the north and Bellingham Technical College to the east (Figure C-3). Several residences are located adjacent to the park in the vicinity of Marine Drive. Little Squalicum Creek originates at the base of a ravine in the park and is fed primarily by stormwater from the Birchwood residential neighborhood, the Bellingham Technical College and the Oeser Company. Little Squalicum Creek is fed to a lesser extent by local springs and conveys its combined flow into Bellingham Bay.

An underlying shallow perched groundwater aquifer lies confined just beneath the Oeser Property. This aquifer lacks adequate production capabilities to be used as a drinking water source. The deeper groundwater aquifer underlying and surrounding the Oeser Property is classified as a drinking water source although is not currently being used. Some historical use of this deeper aquifer was indicated for the Tilbury Cement Company located cross-gradient of the Oeser Property. EPA sampled the Tilbury wells during the remedial investigation and found no contamination. The deeper aquifer groundwater flows to the southwest toward Bellingham Bay. The Oeser Property receives its water from the City of Bellingham. There are no known water supply wells downgradient of the Site nor domestic wells within 1 mile of the Site.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Oeser Co.		
EPA ID: WAD008957243		
Region: 10	**State:** WA	**City/County:** Bellingham/Whatcom County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA *[If "Other Federal Agency", enter Agency name]*:		
Author name (Federal or State Project Manager): Joe Wallace		
Author affiliation: EPA		
Review period: 10/1/2015 - 9/29/2016		
Date of site inspection: 3/29/2016		
Type of review: Statutory		
Review number: 2		
Triggering action date: 9/29/2011		
Due date *(five years after triggering action date)*: 9/29/2016		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

At the time of the 2003 Record of Decision (ROD) for the Oeser Site, EPA identified that the primary risks to be addressed by remedial actions at the Oeser Property were potential exposures to contaminated surface and subsurface soil, sediment, and surface water by current and future industrial workers via dermal contact, ingestion and inhalation routes. Potential risk to future workers and residents from ingestion of contaminated groundwater was also a concern. For the Oeser Property, cPAHs, Dioxins/furans, PCP, Naphthalene and TPH were identified as COCs.

For the LSCA, EPA identified that the primary risk pathways to Oeser COCs for humans were direct contact, inhalation, and incidental ingestion of soil, and for ecological receptors, exposure through ingestion and dermal contact with contaminated soil and sediment. However, EPA determined that the Oeser-related contaminants within the LSCA did not pose an unacceptable risk to human or ecological receptors, and concluded that cleanup of Oeser-related contaminants within the LSCA was not warranted.

In 2008, based on that new information received from the City of Bellingham, EPA collected additional soil and groundwater data at the LSCA and re-evaluated the related human health and ecological risks. The analysis of this new data resulted in a determination that the LSCA qualified for a removal action under CERCLA. In July 2010, EPA issued an Action Memorandum which selected a non-time-critical removal action for the LSCA portion of the Site.

A complete list of documents reviewed during the FYR process is provided in Appendix A. The site chronology is provided in Appendix B.

Response Actions

The ROD for the Oeser Property was signed in September 2003 and addressed the remediation of the Oeser Property. In addition, a removal Action Memorandum was issued in July, 2010 for the LSCA.

The remedial action objectives (RAOs) for the Oeser Property, as detailed in the ROD, are as follows:

- Reduce ingestion, inhalation, and dermal contact with soil contaminants above industrial cleanup levels on the Oeser Property and reduce migration of soil and shallow groundwater contaminants that could result in deep groundwater contamination exceeding groundwater cleanup levels.
- Restrict ingestion and dermal contact with shallow groundwater, and reduce migration of contaminants from shallow groundwater that could result in deep groundwater contamination exceeding groundwater cleanup levels.
- Restrict ingestion and dermal contact with deep groundwater until the groundwater cleanup levels are achieved and prevent off-property migration of groundwater with contaminants above cleanup levels.

The major remedy components selected in the ROD include:

- Excavation or capping of contaminated soils located on the Oeser Property in the North Pole Yard and South Pole Yard.
- Excavation or capping of contaminated soils on the Oeser Property in the primary wood treating areas (Treated Pole Area, North Treatment Area, East Treatment Area, West Treatment Area, Wood Storage Area) in coordination with RCRA/Washington State Dangerous Waste Regulations requirements (Figure C-4).
- Institutional controls on the Oeser property restricting groundwater use and non-industrial land use.
- Monitoring of groundwater on the Oeser property and passive removal of non-aqueous phase liquids (NAPL), if detected.
- Operation and maintenance (O&M) of the remedy selected above.

The City of Bellingham conducted additional sampling that led to EPA reassessing the LSCA after the Oeser Property ROD was finalized in 2003. Based on that new information, EPA collected additional soil and groundwater data at the LSCA and re-evaluated the related human health and ecological risks. This new information resulted in a determination that the LSCA qualified for a removal action under CERCLA. In July 2010, EPA issued an Action Memorandum to document the selected non-time-critical removal action for the LSCA portion of the Site.

The removal action objectives for the LSCA are as follows:

- Prevent or reduce human exposure (through direct contact, inhalation of dust, incidental ingestion of soil and dermal contact) with contaminated soil that exceeds cleanup levels.

- Prevent or reduce risks to plants, soil invertebrates, insectivorous wildlife and benthos from exposure (through ingestion and dermal contact) to contaminated soil and sediment that exceed cleanup levels at the LSCA.
- Prevent or reduce potential migration of contaminants of concern (COCs) above cleanup levels in soil/sediment at the LSCA to adjacent surface water via surface runoff, erosion and wind dispersion to protect human health and ecological receptors.
- Prevent or reduce potential migration of COCs above cleanup levels in soil and sediment at the LSCA to groundwater and eventual potential recharge to surface water to protect human health and ecological receptors in surface water.

The removal action for the LSCA was completed in three phases (Figure C-3) and included the following:

- Pre-removal and post-removal confirmatory sampling.
- Removal of contaminated soil and sediment to a maximum depth of 6 feet and transportation of the material to a repository constructed on the Oeser Property (Figure C-4). Some material was transported to an offsite RCRA Subtitle D landfill. Excavated areas were backfilled with clean material.
- Re-routing of the creek to facilitate cleanup of the contaminated creek channel and to better accommodate the City of Bellingham's future land use master plan for the Park.
- Institutional controls for covered areas in the LSCA.

The ROD identified cleanup levels for soil and groundwater for the Oeser Property based on industrial use and the Action Memorandum identified cleanup levels for LSCA soil and sediment based on recreational use. The basis for each cleanup level is presented in Table 1. Cleanup levels were not established for surface water or groundwater in the LSCA since the focus of the removal action was soil and sediment. However, screening levels for surface and groundwater were identified to assist in identifying any migration of contaminants from waste left in place during monitoring activities.

Table 1: Cleanup Levels for Soil, Groundwater and Soil/Sediment at the Oeser Property and LSCA

Contaminant	Cleanup Level for Soil (mg/kg)	Cleanup Level for Groundwater (µg/L)	Cleanup Level for Soil/Sediment (mg/kg)
Oeser Property (Industrial Use)			
cPAHs (TEQ)[a]	8.9[b]	0.012[c]	--
Dioxins/furans (TEQ)[a]	0.000875[d]	0.000000583[c,e]	--
PCP	120[b]	1[f]	--
Naphthalene	262[b]	160[c]	--
TPH	1,100[b]	500[g]	--
LSCA (Recreational Use)			
cPAHs (TEQ)[h]	--	--	4.5
Dioxins/furans (TEQ)[i]	--	--	0.000012
Total PAHs[j]	--	--	3.6
PCP[k]	--	--	3.0

Notes:
cPAH = Carcinogenic Polyaromatic Hydrocarbon
TPH = Total Petroleum Hydrocarbons
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
a - Cleanup levels for cPAHs and dioxins/furans are based on benzo(a)pyrene and 2,3,7,8-tetrachlorodibenzodioxin (TCDD) toxic equivalencies (TEQ), respectively.
b - Site-specific cleanup levels based of risk of $1x10^{-5}$ for carcinogens and a hazard index (HI) of 1 for noncarcinogens.
c - Groundwater cleanup level based on Model Toxics Control Act (MTCA) Method B for unrestricted use.
d - The soil cleanup level for dioxins/furans is based on MTCA Method C for industrial properties.
e - Since the cleanup level for dioxins/furans is below the lowest achievable Practical Quantification Limit (PQL), the PQL will represent the cleanup level.
f - The MCL is used for PCP because its risk does not exceed 10^{-5}.
g - The cleanup level for TPH is based on MTCA Method A and applies to diesel-range and gasoline-range organics.
h - Cleanup levels for cPAHs are based on benzo(a)pyrene and risk at this cleanup level is $1x10^{-6}$ based on recreational use.
i - The soil cleanup level for dioxins/furans is based on a background levels calculated by looking at the 90th percentile from 20 soil samples collected by the City of Bellingham during the Oeser remedial investigation (Integral 2008).
j - The cleanup level for total PAHs is based on background soil concentrations.
k - The cleanup level for PCP is based on a site-specific calculation in which the risk at this cleanup level is $1x10^{-6}$ for protection of human (recreational use) and ecological receptors.

Status of Implementation

The PRP completed the 2003 ROD remedial action at the Site in 2009. Remedial actions at the Oeser Property were implemented in two areas: Area 1 and Area 2. The Area 1 remedial action, completed in 2006, included excavation and capping of contaminated soil in the North Pole Yard and the South Pole Yard, including the Wood Debris Area with a geo-textile fabric and gravel cap.

The Area 2 remedial action was completed in two phases and included the West Treatment Area, East Treatment Area, Wood Storage Area and Treated Pole Storage Area (Figure C-4). The remedial action involved gravel cap maintenance, construction of an asphalt cap and a concrete cap and stormwater improvements. Stormwater improvements completed at the Oeser Property included construction of a network of storm drains, catch basins, manholes, two stormwater retention ponds and a bioswale. The northeastern stormwater retention pond and the bioswale were lined with a geomembrane liner.

Removal construction activities at the LSCA were conducted in three phases. Phases 1 and 2, completed from August to November 2010, included the following:

- Pre- and post-excavation sampling.
- Excavation and removal of about 22,021 tons of contaminated soil all of which were transported to the repository at the Oeser Property.
- Backfilling of the excavated areas with clean material.
- Re-routing of storm drains.
- Relocation of Little Squalicum Creek to its former creek channel and revegetated the streambanks and wetlands.
- Creation of a repository for contaminated soil on the Oeser Property (Cells 1 through 4) (Figure C-4).

Phase 3, completed from July to September 2011, and included the following:

- Excavation and removal of about 6,100 tons of contaminated soil, 3,700 tons were hauled to the repository at the Oeser Property and 2,400 tons were hauled off site to a RCRA Subtitle D landfill.
- Post-excavation confirmation sampling.
- Backfilling of the excavated areas with clean material.

Institutional Controls

Institutional controls have not been implemented at the Oeser Property or the LSCA. Land use at the Oeser Property has not changed and is not anticipated to change in the near future. An IC Plan has been drafted which includes a requirement to implement restrictive covenants to prevent future use as a residential or recreational property. The draft IC Plan needs to be updated to reflect current requirements with Washington State and finalized. EPA is working with Washington State to finalize the appropriate language under its Uniform Environmental Covenants Act (UECA). The ICs should also prohibit groundwater use and excavation or disturbance of the capped areas.

The majority of the LSCA is owned by Whatcom County. The City of Bellingham leases the property and operates it as a park. The current lease is valid until 2027. The LSCA must remain a park and will be used in accordance with the City's master plan until the lease expires. The ICs should be finalized and include restrictive covenants to prevent residential use, excavation and/or disturbance of the waste left in place in the LSCA.

IC Summary Table

Table 2: Summary of Planned and/or Implemented ICs

Media, engineered controls and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or Planned)
Soil	Yes	Yes	Oeser Property and LSCA	Land use and excavation restrictions	Restrictive covenant (planned)
Groundwater	Yes	Yes	Oeser Property	Groundwater use restriction for shallow and deep aquifer	Restrictive covenant (planned)

Systems Operations/Operation and Maintenance (O&M)

Oeser Property

The PRP prepared a final O&M plan for the Oeser Property in July 2012. The plan includes semiannual compliance groundwater monitoring, cap inspection and maintenance, stormwater drainage system maintenance, and a soil management plan. Since the previous FYR, groundwater samples were collected and analyzed in accordance with the 2012 O&M Plan in May and November 2013, 2014 and 2015. The PRP conducted the required inspections annually in May.

Since the previous FYR, the PRP repaved and resealed the asphalt cap. The PRP also performed maintenance on the ponds, removing and replacing dead vegetation and keeping the ponds free of debris. A granulated activated carbon (GAC) treatment system is maintained to treat stormwater prior to discharge under a National Pollutant Discharge Elimination System (NPDES) Permit administered by the State of Washington. The NPDES permit has effluent limitations for oil and grease, PCP and pH. During the 2011 1st FYR site visit, ponded water was observed in the eastern portion of the Treated Pole Storage Area (adjacent to the GAC treatment system). The ponded water was located in a low lying area that is part of the asphalt cap design. Since 2012, the Oeser Company has been utilizing a 20,000 gallon tank to collect and store any water that accumulates on the asphalt cap as the result of storm events. This ensures the continued integrity of the asphalt cap in this area.

LSCA

The EPA finalized the LSCA Operations, Maintenance and Monitoring Plan (OMMP) in February 2013. The OMMP includes screening levels and monitoring requirements for surface water and groundwater in the LSCA. Since waste has been left in place at depth, surface water and groundwater monitoring is conducted to assess the performance of the remedy. Surface water and groundwater samples are analyzed for PAHs and PCP; an increase in either constituent could indicate the potential migration of the waste left in place. Results of the monitoring program and details on the screening levels for surface and groundwater are provided in Appendix G.

Monitoring at the LSCA has been conducted since 2013. Surface water sampling in the LSCA was conducted in the wet and dry season of 2013, 2014 and 2015. Groundwater sampling was conducted in the dry season of 2013. The OMMP indicated a wet season groundwater monitoring event was to be conducted in 2015; however this did not occur since O&M responsibilities were then transferred to EPA. The EPA conducted this groundwater monitoring event in February 2016. Surface water samples were also collected at that time.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the **last** FYR as well as the recommendations from the **last** FYR and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2011 FYR

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Short-term Protective	Construction of the remedy for the Oeser Site has recently been completed. The remedy is fully functional and protective of human health and the environment in the short-term; exposure pathways that could result in unacceptable risks are being controlled. An Institutional Controls Plan needs to be finalized and implemented for the Oeser Property. The property use has not changed (the Oeser Property is currently an operating facility). The O&M Plan for the Oeser Property and LSCA needs to be finalized, O&M issues need to be addressed and O&M needs to be performed in accordance with the O&M Plan.

Table 4: Status of Recommendations from the 2011 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
Oeser Property	In the northern portion of the Treated Pole Storage Area, approximately 100 square feet of cracks in the asphalt surface was observed during the site visit. The crack pattern is not deep and appears to be the result of subsurface subsidence. Portions of the cracked area have been repaired. The asphalt surface should continue to be inspected and repaired as part of regular maintenance.	Ensure that the O&M Plan includes requirements for inspection of the asphalt cap and criteria for replacement of aging materials.	Completed	Final O&M Plan completed and contains cap inspection and maintenance requirements and cap has been repaired.	7/30/2012
Oeser Property	During the site visit, ponded water was observed in the eastern portion of the Treated Pole Storage Area (adjacent to the GAC system). The ponded water is located in a low lying area that is part of the asphalt cap design. This area should be inspected more frequently (minimum twice per year) to verify that there are no adverse impacts from ponded water storage.	Ensure that the O&M Plan includes requirements for this area to be inspected more frequently (minimum twice per year) to verify there are no adverse impacts from ponded water storage.	Completed	The O&M Plan indicates annual inspection of the cap for conditions such as water ponding on the cap surface. Monthly inspections are also conducted of the cap area and general site conditions.	7/30/2012
Oeser Property	An O&M program has yet to be implemented at the Oeser Property, including implementation a long-term groundwater monitoring program for shallow and deep aquifers. The O&M Plan is currently in draft form and is being updated to address impacts from the placement of soil from the LSCA removal action.	Finalize the O&M Plan and begin implementation of the requirements presented in the plan.	Completed	The O&M Plan was finalized in July 2012.	7/30/2012
Oeser Property	An Institutional Controls Plan is not available for the Oeser Property. The property use has not changed; the Oeser Property is currently an operating facility.	An Institutional Controls Plan needs to be finalized for the Oeser Property and implemented.	Ongoing	An Institutional Controls Plan is being finalized.	Click here to enter a date

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
LSCA	Residual contamination has been left in place in the upper portion of LSCA	Prepare and finalize a surface and groundwater monitoring plan for the upper portion of the LSCA. Implement the monitoring plan.	Completed	A monitoring plan was prepared and finalized in February 2013. The first round of surface and groundwater monitoring occurred in June 2013.	2/19/2013

In addition to the issues and recommendations above, there were several O&M recommendations in the previous FYR that did not affect current or future protectiveness. They included recommendations to inspect and maintain catch basins, bioswales and ponds. The previous FYR also recommended consulting the GAC design criteria to determine the flow capacity and check if the ponded water volume exceeded the asphalt pad design. These O&M recommendations were addressed in accordance with the final O&M Plan prior to the site inspection for this FYR. Additional details are described in the O&M section above and photos are included in Appendix F.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available in the Bellingham Herald on March 20, 2016 announcing that EPA was conducting a 2nd FYR of the Oeser Superfund Site and inviting the public to submit any comments to the EPA. The notice informed the public that the results of the review and the FYR report will be made available at the site information repository located at the Bellingham Public Library, 1117 12th Street, Bellingham, WA 98225 and at the EPA Superfund Records Center in Seattle, WA.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The results of these interviews are summarized below.

Interviews were conducted with the PRP and representatives from Washington Department of Ecology (Ecology) and the City of Bellingham and community members. Most of the agency interviewees indicated the Oeser Property is well maintained and there are no known issues with the facility. Some interviewees expressed concern that there was contamination left in place at the LSCA at 6 feet below ground surface and had questions on whether monitoring will continue and the duration of monitoring. Many interviewees felt there as a lack of communication from EPA on the status of the cleanup and the results of the monitoring.

Other interviews were conducted with community members and park users. Some of these individuals expressed concerns about air pollution from the Oeser Property and concerns about the safety of the surface water both in the creek as well as other areas in the LSCA Park for their pets and children. All individuals requested to be kept informed about the monitoring that was conducted at both the Oeser Property and the LSCA Park. Many interviewees indicated a desire for an informational kiosk at the park explaining the history, cleanup and monitoring results. The interviews are included in Appendix I.

Data Review

Oeser Property

The PRP conducted semi-annual groundwater sampling in 2013, 2014 and 2015 at the Oeser Property in accordance with the Oeser O&M Plan (AECOM 2012). Groundwater samples were collected from shallow wells MW-100S and Ershigs-1S and deep wells MW-02D, MW-03D, MW-24D, MW-33D, MW-35D, MW-100D and Ershigs-1D (Figure C-5). Groundwater samples were analyzed for diesel-range petroleum hydrocarbons, PAHs and PCP in accordance with the Site's O&M Plan. Although there were detections of contaminants in some of the well samples, there were no exceedances of ROD cleanup levels. Dioxins and gasoline-range organics are listed as COCs in the ROD but are not monitored. Dioxins/furans were included as COCs in the ROD with a cleanup goal due to the calculated risk for residential ingestion/dermal contact that was based on half of detection limits. However, EPA later approved the removal of dioxins from the monitoring requirements in the O&M Plan because the cleanup goal was overly conservative due to the higher background levels of dioxins upgradient of the Site and the fact that none of the concentrations observed during the RI were above their respective screening levels. Total petroleum hydrocarbons (TPH) is analyzed in the diesel range and motor oil during monitoring events, which is consistent with historic use of petroleum hydrocarbons at the Oeser Property.

A perched aquifer remains contaminated by contact with contaminated soils beneath the process area. This aquifer has been capped to prevent infiltration of stormwater and further prevent the movement of the contaminated perched groundwater. The groundwater level in this aquifer is gauged semi-annually in accordance with the Oeser O&M Plan and has decreased since the construction of the asphalt/concrete cap and the implementation of the stormwater collection system. If light non-aqueous phase liquid (LNAPL) is detected in the perched aquifer gauging wells, it is bailed until any remaining LNAPL layer is less than 0.1 foot thick. LNAPL was present and was bailed in gauging well MW-26S in May and November 2014 and May 2015 with respective thicknesses of 1.13, 0.6 and 1.36 feet. A LNAPL layer was measured at a thickness of 0.1 feet in November 2015 but was too thin to be recovered.

Except for one occurrence, all shallow and deep well results from May and November 2015 were below detection limits for all analyzed site COCs. There was one detection in May 2015 for TPH motor oil at MW-24D (0.24 mg/L, slightly above the MDL of 0.20 mg/L). Several constituents were detected in 2013 and 2014; however most detections were very low and just slightly above the detection limit. There were no exceedances of cleanup levels in shallow or deep groundwater during this FYR period. A table of results from this FYR period were included in the 2015 Annual Monitoring Report (Appendix A) and are provided in Appendix G (Table G-1). A figure showing concentrations over time from 1999 to 2015 was also included in the 2015 Annual Monitoring Report and is provided in Appendix G (Figure G-1). The results for individual cPAHs are reported in the annual reports, however a total cPAH is not calculated because no individual cPAH were detected above detection limits. If one or more individual cPAHs were detected, the total cPAH would have to be calculated to assess compliance with the cleanup goal.

The Oeser Property has an active NPDES discharge permit, managed by the State, for PCP in their process wastewater. Compliance sampling is conducted monthly at Outfall 002, located on the Oeser Property. The results of these sampling events are outside the scope of this FYR; however there have been two warning letters issued by the State of Washington for the Oeser Property during this FYR period. The first was issued in June 2015 for late discharge permits in 2013, 2014 and 2015. The second was for a violation of the PCP discharge standard of 9 µg/L with a reported value of 15.5 µg/L in the October 2015 sample. Oeser responded accordingly and immediately serviced the treatment system to remedy the problem, fulfilling the permit requirements. There have been no other violations or exceedances of the discharge standards during this FYR period.

LSCA

Soil

Cleanup in the LSCA was driven by potential human health risk from exposure to cPAHs and PCP in soils; and by potential ecological risk from exposure to PAHs, PCP, and dioxins and furans in surface soils. Because of the greater number and better distribution of PAH and PCP data and because dioxins and furans, where detected during the RI, were in all but one instance co-located in predictable concentrations with PAHs and/or PCP, the extent of the removal action was guided by the PAH and PCP cleanup levels.

Post-excavation sampling was conducted after Phase 1 and 2 of the remedy was completed in 2010. Post-excavation sampling for Phase 3 occurred in 2011. Results were provided in the LSCA Construction Completion Report. After contaminated soil was excavated at the LSCA, confirmation samples were collected from the base of the excavation to determine the residual contaminant concentration remaining in place. Samples were analyzed for PAHs, PCP and dioxins.

The Action Memorandum for the LSCA stated that contamination above cleanup levels will be removed to a depth of 6 feet below final grade and backfilled with clean fill, and that Land Use Controls (LUCs) will be in place if contamination in post-cleanup confirmation samples at the base of the excavation exceeds the cleanup levels. Figure G-2 and G-3 (Appendix G) from the Construction Completion Report shows the post-cleanup confirmation soil sample locations and analytical results where the carcinogenic polyaromatic hydrocarbon (cPAH) and total PAH cleanup levels were exceeded during each phase. Analytical tables were provided in Appendix C of the Construction Completion Report including the PCP and dioxin data. As shown in Figure G-2, samples collected from Phase 1 and 2 of the remedy exceeded the cleanup goals throughout the base of the excavation area. Results were highest in the upper portion of the LSCA where the creek was located prior to excavation. Results along the new creek channel were much lower. As shown in Figure G-3, two of four confirmation samples exceeded the cleanup goals for PAH and cPAH.

Since waste was left in place, surface and groundwater monitoring started in 2013 to evaluate remedy effectiveness and if there was any observed effect on groundwater or surface water quality.

Groundwater

In June 2013, two upper aquifer wells (CH-MW-02 and CH-MW-05) and three lower aquifer wells were installed (CH-MW01, CH-MW-03 and CH-MW-04) and sampled for PAH and PCP constituents. These wells are screened in the shallow alluvial deposits. The purpose of groundwater monitoring is to measure potential changes in groundwater quality conditions over time, determine the potential effects of residual LSCA contamination in groundwater quality, and evaluate groundwater as a potential pathway to surface water.

EPA collected groundwater samples in February 2016 from CH-MW-01 through CH-MW-05 and SB-27. Results were compared to the lowest screening level of the following applicable criteria: Water Quality Standards for Groundwaters of the State of Washington Administrative Code (WAC) 173-200, Model Toxics Control Act (MTCA) Method A and MTCA Method B. All results were either non-detect or had very low detections for the analyzed constituents and there were no exceedances of the lowest applicable screening level. The screening levels for groundwater, the 2013 results and the 2016 results are provided in Appendix G (Tables G-2, G-3 and G-4).

Surface Water

Surface water monitoring was conducted to evaluate potential contaminant loading to the creek from residual contamination left in place in the LSCA. Surface water monitoring was conducted semi-annually in May and November in 2013, 2014 and 2015 at several locations including upstream of the waste left in place (SW-1), at the middle reach of the creek (SW-7) and downstream prior to entering Bellingham Bay (SW-2). Surface water is also monitored at five stormwater outfalls discharging to the creek within the LSCA (SW-1, SW-3, SW-4, SW-5, SW-6 and SW-7). In accordance with the O&M Plan, only samples collected from SW-1, SW-2 and SW-7 are analyzed for the COCs. Results are compared to the lowest applicable freshwater criteria as defined in the LSCA

OMMP (Table G-5). If any screening criteria are exceeded, then the additionally sampled location samples are submitted for analysis (Table G-6).

There were no exceedances of the lowest applicable criteria in 2013, 2014 or May 2015 at any location. In November 2015, detections above the lowest screening level were observed in SW-1, although SW-1 is located upstream of the waste left in place, for benzo(b)fluoranthene, chrysene and PCP. The samples from SW-3 or SW-4 were not submitted for analysis.

EPA conducted a surface water sampling event in February 2016 and collected samples from SW-2, SW-8, SW-7, SW-9-A, SW-4 and SW-3. A map of these locations is provided in Appendix G (Figure G-4). A surface water sample was not collected at location SW1 as planned due to a misidentification error. Instead, the SW-1A sample was collected at location SW9-Alocated approximately 150 feet downstream from the original SW-1 location. There were no exceedances of the lowest screening level at any of the surface water monitoring location during the February 2016 sampling event. The 2013-2015 and 2016 results are provided in Appendix G (Tables G-7 and G-8).

Site Inspection

The inspection of the Site was conducted on 3/30/2016. In attendance were Joe Wallace, EPA, Alison Cattani and Ryan Burdge of Skeo, and Chris Secrist of Oeser. The purpose of the inspection was to assess the protectiveness of the remedy.

The site inspection included both the Oeser Property and the LSCA. Based on the site inspection, the remedy is performing as expected in both areas. The asphalt and gravel caps were in good condition and drainage on the Oeser property is performing appropriately. The detention ponds were also well maintained and no issues were observed. The LSCA was also in good condition. Vegetation is well established and sampling locations are generally clear and secure. There was some minor indication that homeless people may be using areas with denser vegetation, but no active encampments were observed during the site inspection.

The Site Inspection Checklist is included as Appendix E. The Site Inspection photos are included as Appendix F.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

The remedy at both the Oeser Property and the LSCA is mostly functioning as intended by the decision documents.

The capped areas on the Oeser Property are functioning as designed and the cleanup levels for groundwater are consistently being achieved. Since implementation of the monitoring program in 2013, there have been no exceedances of the cleanup goals; however dioxins and TPH-gasoline range are not being analyzed. These omissions are in accordance with the O&M plan. Dioxins were excluded from the monitoring program due to the background levels of dioxins upgradient of the Site, and the fact that none of the concentrations observed during the RI exceeded their respective screening levels. The COC TPH is defined as applying to both diesel-range and gasoline-range organics in the 2003 ROD; however only diesel range and motor oil are being sampled for during the monitoring events. The removal of these constituents from the Site monitoring plan should be documented in a memorandum to the file.

The remediation at the LSCA is functioning as intended. Vegetative cover is well established and monitoring indicates no ongoing contamination of surface water or groundwater. Data consistently meet the most stringent

VI. ISSUES/RECOMMENDATIONS

Issues and Recommendations Identified in the Five-Year Review:

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: Per the Operations, Maintenance, and Monitoring Plan, the monitoring frequency starting in 2016 for groundwater and surface water sampling in the LSCA is to be determined.			
	Recommendation: An evaluation on the groundwater and surface water monitoring results to date should be conducted to determine if additional groundwater or surface water monitoring is necessary.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	9/29/2017

OU(s): Sitewide	Issue Category: Institutional Controls			
	Issue: There are no institutional controls in place for the Oeser Property.			
	Recommendation: An Institutional Control Plan needs to be finalized for the Oeser Property and implemented.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	9/29/2017

OU(s): Sitewide	Issue Category: Institutional Controls			
	Issue: There are no institutional controls for the LSCA.			
	Recommendation: An Institutional Control Plan needs to be finalized for the LSCA and implemented.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	9/29/2017

OTHER FINDINGS

In addition, the following are recommendations that were identified during the FYR but do not affect current and/or future protectiveness:

- The removal of dioxins and TPH-GRO was documented in the Site O&M plan; however, EPA should document the change in a memorandum to the file.

criteria for human health exposure. The sample results at SW-1 in November 2015 exceeded some cPAH standards; however these results were only slightly higher than the method detection limit and this monitoring location is upstream of the waste left in place. The most recent sampling in 2016 did not sample at this location, but a sample collected 150 feet downstream at SW-9A was non-detect. The OMMP provided a monitoring schedule through 2016 for both groundwater and surface water. An evaluation of the groundwater and surface water monitoring results to date should be conducted to determine if additional ongoing monitoring is necessary.

The institutional controls required in the ROD are not in place at the Oeser Property. The property is zoned industrial and Oeser Company still owns and maintains the caps. Based on the results of the confirmation sampling, the LSCA need LUCs to restrict land use and disturbance to be protective of human health and the environment. The LSCA is slated to remain a park until 2027. Institutional controls or LUCs are not currently in place for either the Oeser Property or the LSCA as indicated by a review of the available deed information. An Institutional Control Plan for both areas should be finalized and implemented.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Question B Summary:

The exposure assumptions and RAOs have not changed since the remedy was implemented with the exceptions described below. Some of the toxicity data and applicable or relevant and appropriate requirements (ARARs) have been modified; however, the cleanup goals for soil and groundwater at the Oeser Property and soil and sediment at the LSCA remain protective of human health and the environment. Additional details on the ARARs and toxicity analysis are provided in Appendix H.

The MTCA Method C for dioxins in soil have changed since the 2003 ROD. There are now two values, one for cancer and one for non-cancer. Both values are less restrictive than the 2003 cleanup goal. The cleanup goals for cPAH, PCP and naphthalene in soil at the Oeser Property and cPAHs and PCP in soil and sediment at the LSCA are risk-based. A screening level risk evaluation using EPA's Regional Screening Levels (RSLs) indicated that the cleanup levels remain valid and within EPA's acceptable risk management range of 1×10^{-6} to 1×10^{-4}.

QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

No other information has been identified during this five-year review that calls into question the protectiveness of the remedy for the Oeser Property or the LSCA.

VII. PROTECTIVENESS STATEMENT

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The remedy at the Site currently protects human health and the environment in the short term because exposure pathways that could result in unacceptable risks are being controlled. However, in order for the remedy to be protective in the long term, the following actions need to be taken: surface water and groundwater monitoring results need to be evaluated at both the Oeser Property and the LSCA to determine if future monitoring is necessary and at what frequency. The O&M Plans need to be updated with this information. An Institutional Control Plan needs to be implemented for both the Oeser Property and the LSCA.

VIII. NEXT REVIEW

The next five-year review report for the Oeser Co. Superfund Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

2013 Annual Groundwater Monitoring Report Oeser Superfund Site. Bellingham, Washington. AECOM, Inc. January 2014.

2013 Annual Surface Water Monitoring Report for the Little Squalicum Creek Area, Oeser Superfund Site. Bellingham, Washington. AECOM, Inc. February 2014.

2014 Annual Groundwater Monitoring Report Oeser Superfund Site. Bellingham, Washington. AECOM, Inc. February 2015.

2014 Annual Surface Water Monitoring Report for the Little Squalicum Creek Area Oeser Superfund site. Bellingham, Washington. AECOM, Inc. February 2015.

2015 Annual Groundwater Monitoring Report Oeser Superfund Site. Bellingham, Washington. AECOM, Inc. March 2016.

2015 Annual Summary Report Operations and Maintenance Plan, Oeser Superfund Site. Bellingham, Washington. The Oeser Company. March 2016.

2015 Annual Surface Water Monitoring Report for the Little Squalicum Creek Area, Oeser Superfund Site. Bellingham, Washington. AECOM, Inc. March 2016.

Action Memorandum for a Non-Time-Critical Removal Action at the Little Squalicum Creek Area of the Oeser Company Superfund Site. Bellingham, Washington. U.S. Environmental Protection Agency Region 10. July 2010.

Consent Agreement and Final Order, Docket No. RCRA-10-2007-0174. U.S. Environmental Protection Agency. July 2007.

Engineering Evaluation/Cost Analysis Little Squalicum Creek Site. Bellingham, Washington. Ecology and Environment. Inc. March 2010.

Final Report Focused Environmental Site Characterization, Little Squalicum Creek Estuary Project. Herrenkohl Consulting LLC. June 2013.

Five Year Review Report for The Oeser Company Superfund Site. City of Bellingham, Whatcom County, Washington. U.S. Environmental Protection Agency Region 10. September 2011.

Little Squalicum Creek Area Operations, Maintenance, and Monitoring Plan. CH2MHILL. February 2013.

Little Squalicum Creek Area Remedy Effectiveness Monitoring Field Data Report. CH2MHILL. October 2013.

Little Squalicum Creek Estuary Soil and Groundwater Characterization. State of Washington Department of Ecology. February 2013.

Little Squalicum Creek Removal Action Construction Completion Report. CH2MHILL. July 2012.

Operation and Maintenance Plan, Oeser Superfund Site. Bellingham, Washington. AECOM Inc. July 2012.

Record of Decision, Oeser Company Superfund Site Remedial Action. Bellingham, Washington. U.S. Environmental Protection Agency Region 10. September 2003.

The Oeser Company Superfund Site Feasibility Study Report. Bellingham, Washington. U.S. Environmental Protection Agency Region 10 Superfund Technical Assessment and Response Team. August 2002.

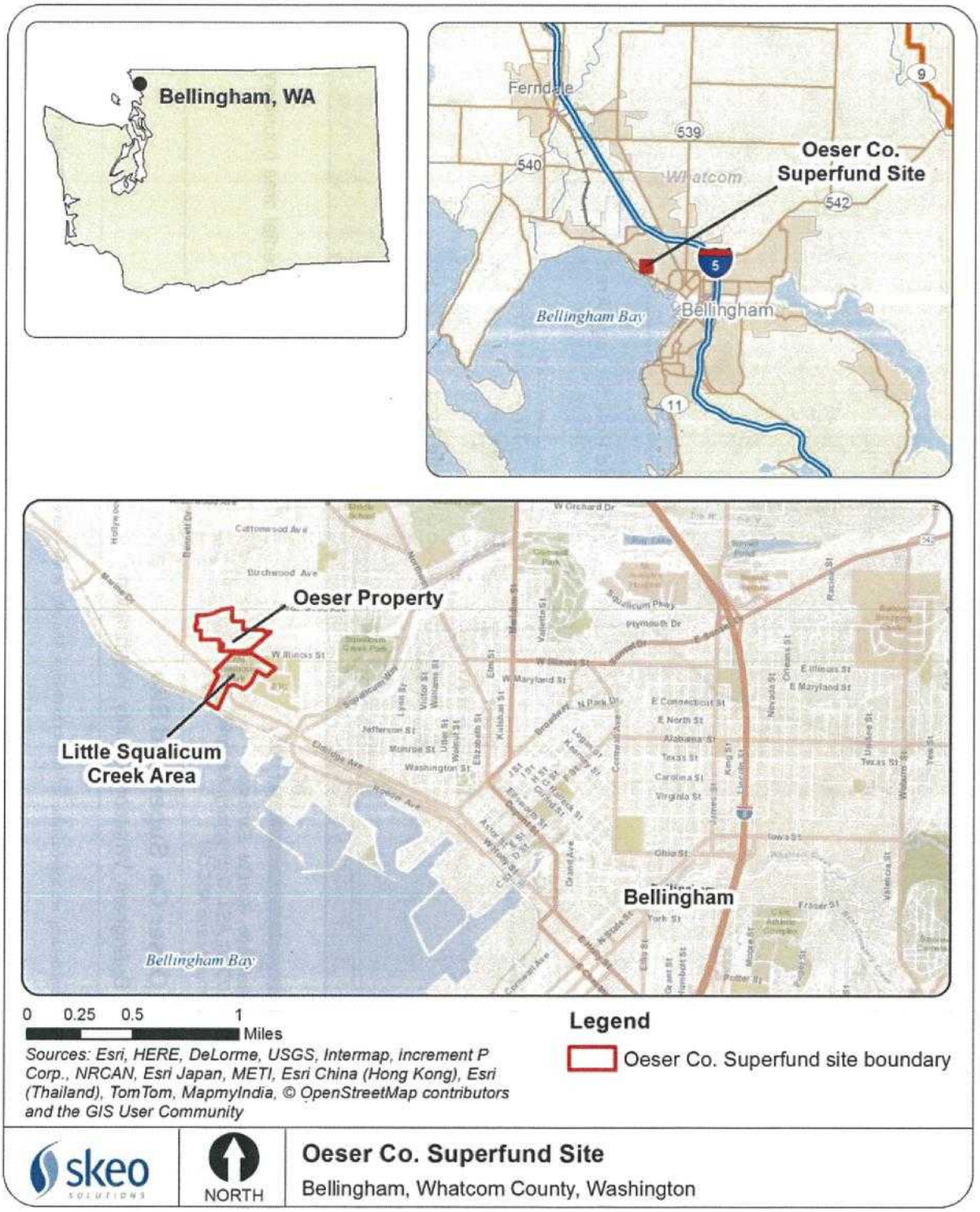
The Oeser Company Superfund Site Remedial Investigation Report. Bellingham, Washington. U.S. Environmental Protection Agency Region 10 Superfund Technical Assessment and Response Team. June 2002.

APPENDIX B – SITE CHRONOLOGY

Event	Date
EPA conducts CERCLA site assessment	August 1995
EPA prepared RCRA inspection report	July 30, 1996
Washington State issued first RCRA Notice of Violation	October 3, 1996
EPA notifies Oeser of potential liability under CERCLA	January 2, 1997
EPA lists Site on CERCLA National Priority List	September 25, 1997
PRP conducted CERCLA removal actions (soil excavation, liquid waste, asphalt/gravel cap, storm drain, collection basins)	September 1997 – September 1998
EPA finalized Remedial Investigation/Feasibility Study	June (RI) and August (FS) 2002
EPA published the FS Addendum, Alternative 6	December 4, 2002
Washington State issued second and third RCRA NOVs	June 17 and November 22, 2002
EPA finalized the ROD	September 18, 2003
Little Squalicum Park listed on the Washington State Department of Ecology's Confirmed and Suspected Contaminated Sites List.	January 14, 2004
Ecology performed a Site Hazard Assessment for Little Squalicum Creek	Pre-2005 (exact date unknown)
RCRA Consent Agreement and Final Order	February 7, 2005
Model Toxics Control Act Agreed Order Number DE2016 between Ecology and City of Bellingham to complete an RI/FS for the park	March 2005
Creosote tank removal activities	October 17 – November 4, 2005
Consent Decree entered into with EPA to implement remedial activities	November 7, 2005
Butt Tank/Thermal Treating Hoist (Stiff Leg) dismantled and removed	July 10-14, 2006
Remedial design work plan separates the Oeser remedy into Area 1 and Area 2	August 2006
Area 1 remedial activities started	September 29, 2006
Design for Area 1 remedial activities finalized	October 16, 2006
Area 1 remedial activities completed	December 8, 2006
Area 2, Phase 1 remedial activities completed	2007
EPA performed pre-final inspection of Area 1 cap	March 9, 2007
EPA published CERCLA Actionability Evaluation for Little Squalicum Park	May 15, 2007
EPA performed final inspection of Area 1 cap	September 24, 2008
City of Bellingham completed Draft-Final RI report for Little Squalicum Park	December 19, 2008
City of Bellingham submitted Little Squalicum Creek Park RI under the Agreed Order	May 2009
All remedial activities completed in Area 2, Phase 2 at Oeser	June 2009
Ecology terminated MTCA Agreed Order Number DE2016 when EPA agreed to completed the LSCA Non-Time Critical Removal Action	October 2009
EPA issued Engineering Evaluation/Cost Analysis for LSCA	March 2010
EPA issued Action Memorandum selecting the Non-Time Critical Removal Action for the LSCA	July 2, 2010
Phase 1 and Phase 2 removal actions started at LSCA	August 23, 2010
Phase 1 and Phase 2 removal actions completed at LSCA	October 25, 2010
Phase 3 removal action started at LSCA	July 11, 2011
Phase 3 removal action completed at LSCA	September 14, 2011
EPA published Construction Completion Report for LSCA	July 5, 2012
PRP finalized Operation and Maintenance Plan for Oeser Property	July 30, 2012
EPA finalized LSCA Operations, Maintenance, and Monitoring Plan	February 20, 2013
EPA reported first round of groundwater sampling in the LSCA in the Remedy Effectiveness Monitoring Field Data Report	October 15, 2013

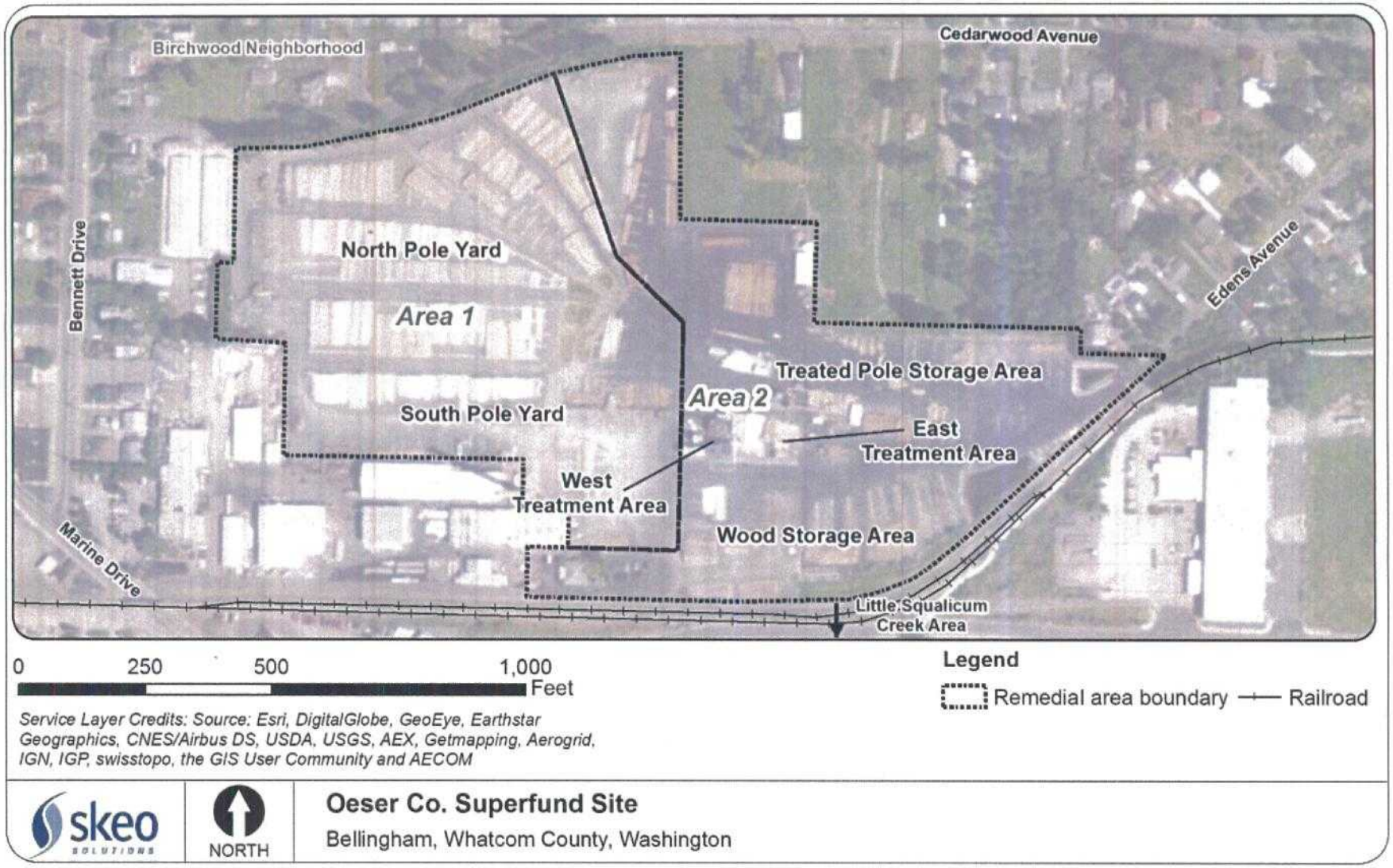
APPENDIX C – SITE MAPS

Figure C-1. Site Vicinity Map



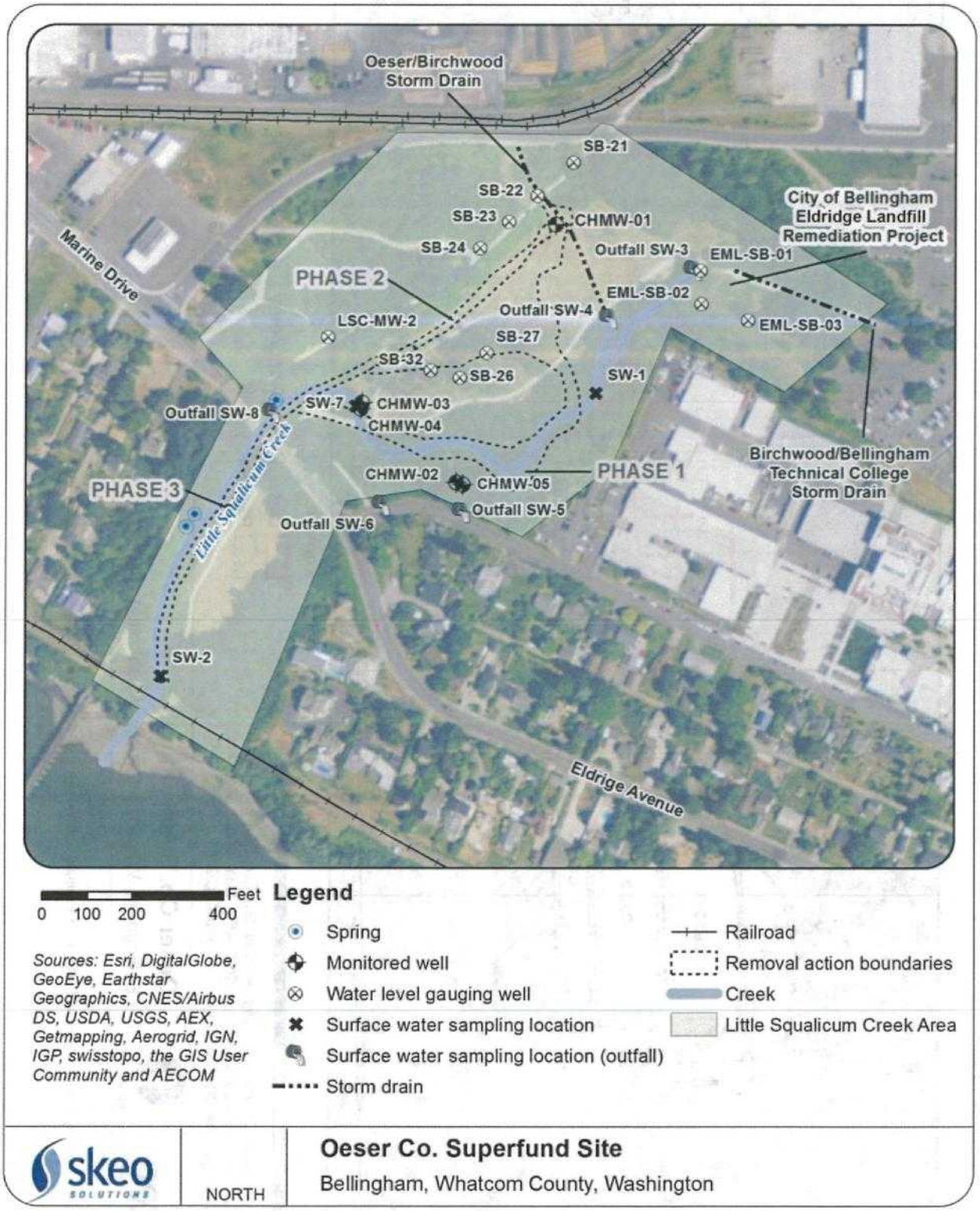
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure C-2. Oeser Property Site Plan Map



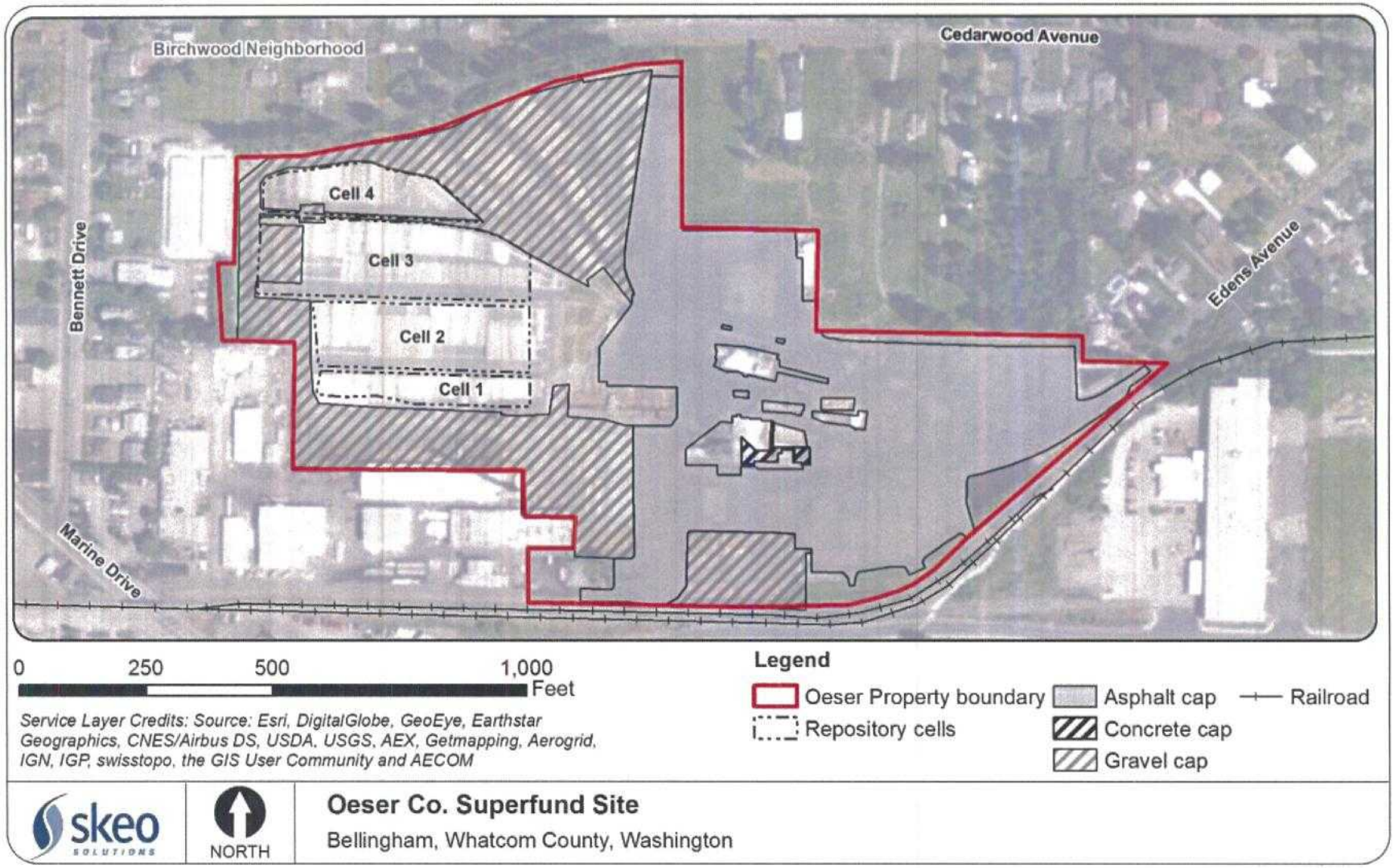
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure C-3. LSCA Site Plan Map



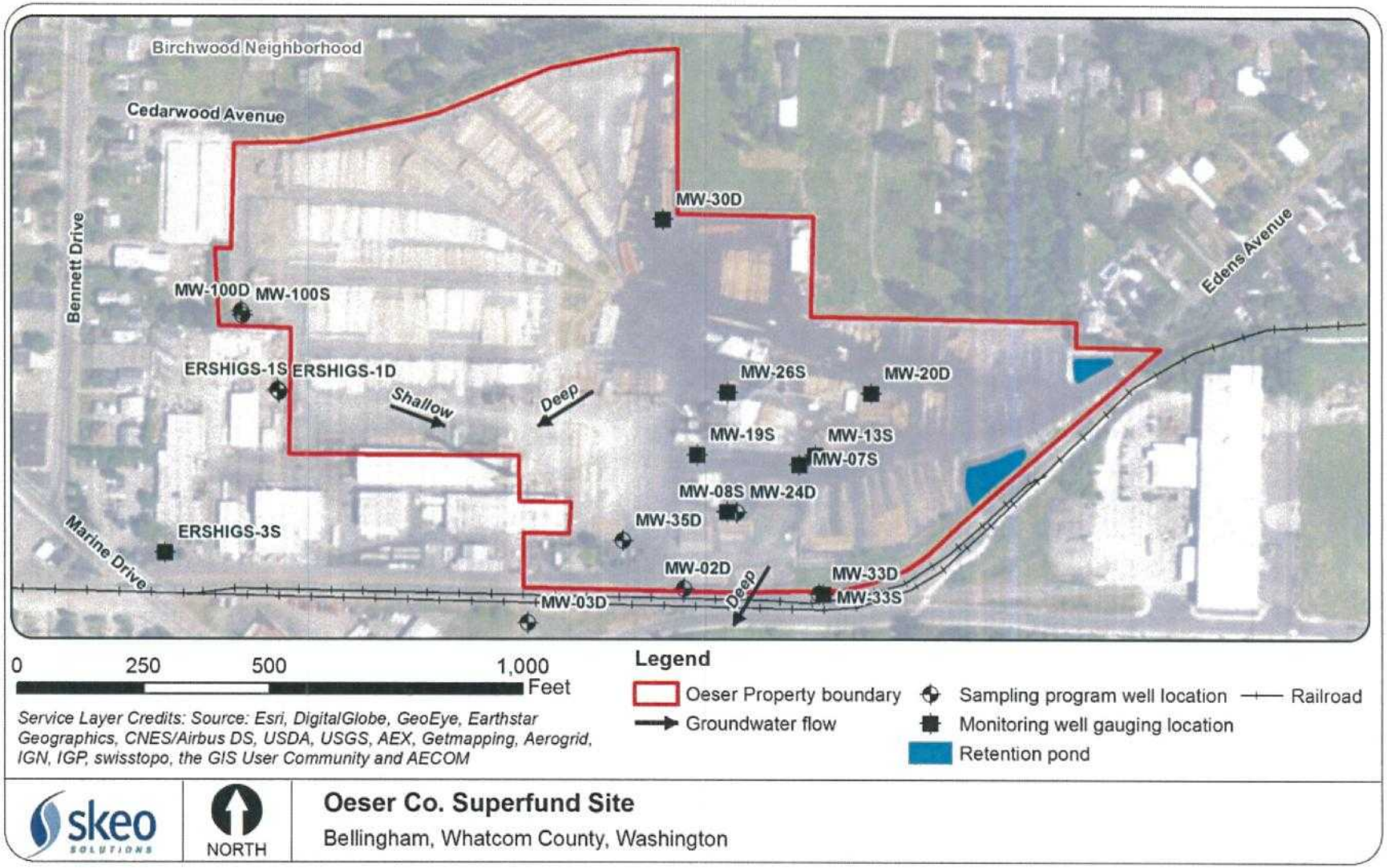
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure C-4. Location of On-Site Repository and Capped Areas – Oeser Property



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure C-5. Oeser Property Monitoring Locations Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

APPENDIX D – PRESS NOTICE

News | 7A

Whatcom County summer camps sought for listing

SOAP

IF MY READERS CAN BECOME INSPIRED BY ANY OF THE PROJECTS IN THE BOOK, THEN I'LL BE THRILLED.

Cities worldwide mark Earth Hour

Nonprofits sought to operate booths at Lynden fair

EPA

Cleanup Measures Reviewed for Oeser Site and Little Squalicum Creek Area

We Want to Hear From You

As someone living close to the site we want to keep you informed. Also you may know of or have observed things that can help our review team. If you have information or concerns about the Oeser Company Site or Little Squalicum Creek Park you would like us to consider during our review, please contact Joe Wallace, EPA Project Manager, no later than March 31, 2016.

Contact Information:
Joe Wallace (206) 553-4470
Wallace.joe@epa.gov

More Information Is Available
Prior Five-Year Reviews, site information, and other documents are available.
Online:
https://yosemite.epa.gov/R10/CLEANUP.NSF/sites/OeserCompany

And at these locations:
Bellingham Public Library
210 Central Avenue
Bellingham, WA 98225
360 778 7323
or
EPA Region 10
Superfund Record Center
1200 Sixth Avenue, Suite 900
Seattle WA 98101
(206) 553-4494
1-800-424-4372 ext. 4494

Background
The U.S. Environmental Protection Agency will begin its second Five-Year Review of the environmental cleanup at the Oeser Company Superfund Site at the end of March, 2016. The Oeser Company is a wood treatment facility that has produced telephone poles since 1942. The Site is located on 27 acres of land in Bellingham, Washington in a mixed commercial and residential area. The site includes the Little Squalicum Creek Area (LSC Area) which includes the 21 acre Little Squalicum Park.

Oeser Site and Little Squalicum Creek Cleanup
The EPA began a long-term cleanup for the Oeser Company site in 2005 and the cleanup for the LSC Area in 2010. The cleanup includes:

- identifying water, soil and sediment contamination;
- the removal and safe disposal of contaminated materials;
- rerouting Little Squalicum Creek to facilitate Park development;
- capping contaminated areas; and
- providing safe access and use of Squalicum Creek Park.

Five-Year Reviews
The previous 2011 Five-Year Review confirmed that conditions remain safe and past cleanup measures continue to be effective. The review required that some maintenance be completed on an asphalt cap on the Oeser Company Site and that Operation and Maintenance Plans be formalized for both the Oeser Company Site and the LSC Area. These items have been completed. The next (Second) Five-Year Review will assess the continuing effectiveness of the cleanup. The Second Five-Year Review report is scheduled to be available to the public on October 1, 2016.

TDD and/or TTY users may call the Federal Relay Service at 800-877-8339. Give the operator number (206) 553-4470.

APPENDIX E – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Oeser Company	**Date of Inspection:** 03/30/2016
Location and Region: Bellingham, Washington 10	**EPA ID: WAD008957243**
Agency, Office or Company Leading the Five-Year Review: EPA Region 10	**Weather/Temperature:** Sunny, 55 degrees F

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Ground water pump and treatment
- ☒ Surface water collection and treatment
- ☐ Other: _____
- ☐ Monitored natural attenuation
- ☐ Ground water containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** — Chris Secrist (Name) — O&M Site Manager (Title) — 03/30/2016 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☒ Report attached: _____

2. **O&M Staff** — David Hurd (Name) — O&M Staff (Title) — 3/30/16 (Date)
   Interviewed X☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

Agency	Contact (Name)	Title	Date	Phone No.
Washington Department of Ecology	Mary O'Herron	Environmental Specialist	03/29/2016	360-715-5224
Washington Department of Ecology	Kurt Baumgarten	Water Quality Specialist	03/29/2016	360-715-5210
City of Bellingham	Tim Wahl	_____	03/22/2016	360-778-7016
City of Bellingham	Analiese Burns	Habitat and Restoration Manager	03/25/2016	360-778-7968

Problems/suggestions ☒ Report attached: _____ (for each agency)

		Title		
Problems/suggestions ☐ Report attached: _____				
Agency Bellingham Park and Recreation Dept.				
Contact	Leslie Bryson	Director	03/31/2016	360-778-7000
	Name	Title	Date	Phone No.
Problems/suggestions ☐ Report attached: _____				

4. **Other Interviews** (optional) ☐ Report attached: _____

Mark Longtine, E&E, 03/25/2016, mlongtine@ene, 206-794-9750

Paul Townley, CH2MHill, 03/24/2016, paul.townley@ch2m.com, 425-233-3302

Jack Weiss, Ex City of Bellingham Council, 03/30/2016

April Barker, Birchwood neighborhood, 03/30/2016, abarker@cob.org

Rodd Pemble, Sanitary Service Company, 04/05/2016, Rodd@ssc-inc.com

Sue Denadel, Birchwood Neighborhood Association, 04/04/2016

Shannon Libby, public, 03/29/2016

David Nellis, public, 03/29/2016

5 LSCA Park users, 03/29/2016

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1.	**O&M Documents**				
	☒ O&M manual	☒ Readily available	☐ Up to date	☐ N/A	
	☒ As-built drawings	☒ Readily available	☐ Up to date	☐ N/A	
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☐ Up to date	☐ N/A	
	☒ Contingency plan/emergency response plan	☒ Readily available	☐ Up to date	☐ N/A	
	Remarks: _____				
3.	**O&M and OSHA Training Records**	☒ Readily available	☐ Up to date	☐ N/A	
	Remarks: _____				
4.	**Permits and Service Agreements**				
	☒ Air discharge permit	☒ Readily available	☒ Up to date	☐ N/A	
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☐ N/A	
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☐ N/A	
	☒ Other permits: NPDES	☒ Readily available	☒ Up to date	☐ N/A	
	Remarks: _____				
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A	

Remarks: _____

7. **Ground Water Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A

Remarks: _____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air ☐ Readily available ☐ Up to date ☒ N/A

☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☒ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☒ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A
Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A
Remarks: _____

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): None

Frequency: N/A

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☒ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A
Remarks: There are no ICs in place for the Oeser Property or the LSCA.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks: _____

2. **Land Use Changes On Site** ☒ N/A
Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A
Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☒ N/A

1. **Roads Damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A
Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident
   Arial extent: _____ Depth: _____
   Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
   Lengths: _____ Widths: _____ Depths: _____
   Remarks: PRP repaired asphalt recently and no cracking was observed.

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Arial extent: _____ Depth: _____
   Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
   Arial extent: _____ Depth: _____
   Remarks: _____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established
   ☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)
   Remarks: N/A

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A
   Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
   Arial extent: _____ Height: _____
   Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident
   ☐ Wet areas ☐ Location shown on site map Arial extent: _____
   ☐ Ponding ☐ Location shown on site map Arial extent: _____
   ☐ Seeps ☐ Location shown on site map Arial extent: _____
   ☐ Soft subgrade ☐ Location shown on site map Arial extent: _____
   Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
   ☒ No evidence of slope instability
   Arial extent: _____
   Remarks: _____

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1.	**Flows Bypass Bench**	☐ Location shown on site map	☒ N/A or okay
	Remarks: _____		
2.	**Bench Breached**	☐ Location shown on site map	☒ N/A or okay
	Remarks: _____		
3.	**Bench Overtopped**	☐ Location shown on site map	☒ N/A or okay
	Remarks: _____		
C. Letdown Channels		☐ Applicable	☒ N/A
	(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	**Settlement** (Low spots)	☐ Location shown on site map	☐ No evidence of settlement
	Arial extent: _____		Depth: _____
	Remarks: _____		
2.	**Material Degradation**	☐ Location shown on site map	☐ No evidence of degradation
	Material type:_____		Arial extent: _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☐ No evidence of erosion
	Arial extent: _____		Depth: _____
	Remarks: _____		
4.	**Undercutting**	☐ Location shown on site map	☐ No evidence of undercutting
	Arial extent: _____		Depth: _____
	Remarks: _____		
5.	**Obstructions**	Type: _____	☐ No obstructions
	☐ Location shown on site map	Arial extent: _____	
	Size: _____		
	Remarks: _____		
6.	**Excessive Vegetative Growth**	Type: _____	
	☐ No evidence of excessive growth		
	☐ Vegetation in channels does not obstruct flow		
	☐ Location shown on site map	Arial extent: _____	
	Remarks: _____		
D. Cover Penetrations		☐ Applicable	☒ N/A
1.	**Gas Vents**	☐ Active	☐ Passive
	☐ Properly secured/locked	☐ Functioning	☐ Routinely sampled ☐ Good condition
	☐ Evidence of leakage at penetration		☐ Needs maintenance ☐ N/A
	Remarks: _____		

2. **Gas Monitoring Probes**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☒ Applicable ☐ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A

☒ Siltation not evident

Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____

☒ Erosion not evident

	Remarks: _____		
3.	**Outlet Works**	☒ Functioning	☐ N/A
	Remarks: _____		
4.	**Dam**	☐ Functioning	☒ N/A
	Remarks: _____		
H. Retaining Walls		☐ Applicable	☒ N/A
1.	**Deformations**	☐ Location shown on site map	☐ Deformation not evident
	Horizontal displacement: _____		Vertical displacement: _____
	Rotational displacement: _____		
	Remarks: _____		
2.	**Degradation**	☐ Location shown on site map	☐ Degradation not evident
	Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge		☐ Applicable	☒ N/A
1.	**Siltation**	☐ Location shown on site map	☐ Siltation not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	**Vegetative Growth**	☐ Location shown on site map	☐ N/A
	☐ Vegetation does not impede flow		
	Area extent: _____		Type: _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	**Discharge Structure**	☐ Functioning	☐ N/A
	Remarks: _____		
VIII. VERTICAL BARRIER WALLS		☐ Applicable	☒ N/A
1.	**Settlement**	☐ Location shown on site map	☐ Settlement not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	**Performance Monitoring**	Type of monitoring: _____	
	☐ Performance not monitored		
	Frequency: _____		☐ Evidence of breaching
	Head differential: _____		
	Remarks: _____		
IX. GROUND WATER/SURFACE WATER REMEDIES		☒ Applicable	☐ N/A
A. Ground Water Extraction Wells, Pumps and Pipelines		☐ Applicable	☒ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A

Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☒ Applicable ☐ N/A

1. **Collection Structures, Pumps and Electrical**

☒ Good condition ☐ Needs maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: Did not observe underground pipes

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: None observed

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

☐ Metals removal ☒ Oil/water separation ☐ Bioremediation

☐ Air stripping ☒ Carbon adsorbers

☒ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☒ Good condition ☐ Needs maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of ground water treated annually: _____

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☒ Good ☐ Needs maintenance

condition

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☒ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☒ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☒ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☒ Ground water plume is effectively contained ☒ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☒ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The remedy at the Oeser Property is designed to restrict contact with soil contaminants and shallow groundwater and reduce migration of contaminants from shallow groundwater to deep groundwater. The remedy is effective and functioning. Shallow and deep groundwater results indicate compliance with

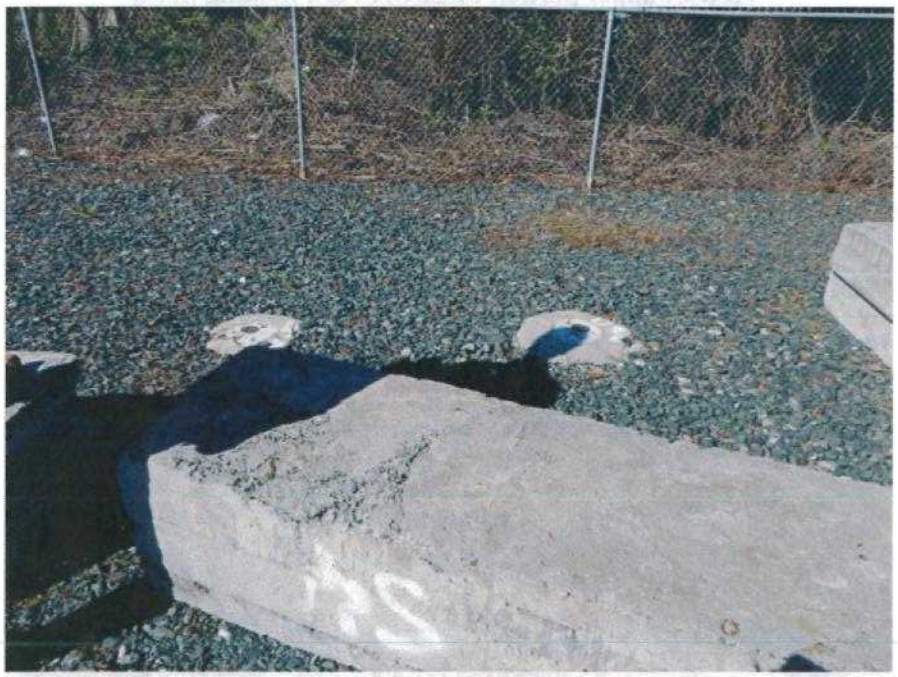
	cleanup criteria. Soil caps, treatment system and ponds are in good condition. The O&M Plan is effectively maintaining the remedy. The Institutional Control Plan has not yet been finalized. The remedy at the LSCA is designed to prevent exposure to contaminated soil above cleanup levels and prevent migration of contaminants to surface water and groundwater. The surface water and groundwater data indicate the remedy is functioning and effective.
B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. The Institutional Control Plan needs to be finalized for the Oeser Property and the LSCA. The final O&M Plan at both areas are effective in maintaining the remedy.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. _____
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. _____

APPENDIX F – SITE INSPECTION PHOTOS

Gravel cap area and southern edge of Cell 1 Repository

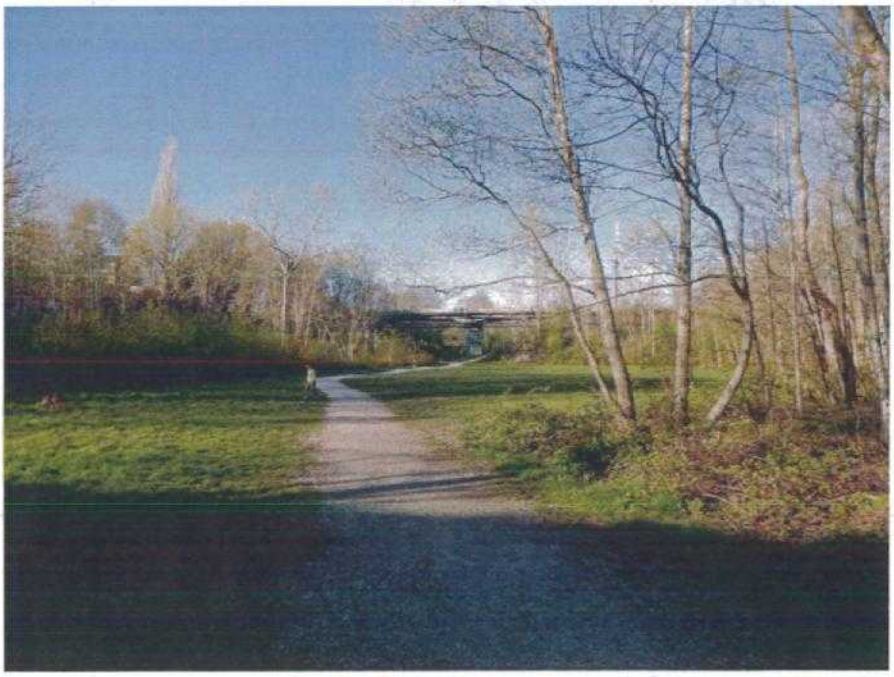
Repaired asphalt in Treated Pole Storage Area

Retention Pond in northeast corner of Oeser Property



Monitoring wells MW-100D and MW-100S

View of upper portion of LSCA Park looking north



View of lower portion of LSCA Park looking north

APPENDIX G – DATA REVIEW

Table G-1. Summary of 2013-2015 Groundwater Analytical Results – Oeser Property

Table 4
Summary of 2013-2015 Groundwater Analytical Data
The Oeser Company
Bellingham, Washington

Well Number		MW-100S						Ershigs-1S						Ershigs-1D					
Sample Date		7/2/2013	11/20/2013	5/7/2014	11/12/2014	5/13/2015	11/30/2015	5/30/2013	11/19/2013	5/6/2014	11/12/2014	5/13/2015	11/30/2015	5/30/2013	11/19/2013	5/6/2014	11/12/2014	5/13/2015	11/30/2015
Analyte	Unit																		
Acenaphthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	ug/l	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10
Anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	ug/l	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10
Benzo (ghi) perylene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz (a,h) anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenzo furan	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	ug/l	**0.13**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno (1,2,3-cd) pyrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Naphthalene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1-Methyl naphthalene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
2-Methyl naphthalene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pentachloro phenol	ug/l	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 UJ	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50	< 0.50 UJ	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50
Phenanthrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	ug/l	**0.19**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Benzo fluoranthenes	ug/l	< 0.20	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20
Diesel Range Hydrocarbons	mg/l	< 0.10	< 0.10	**0.17 J**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.6 J**	**0.15 J**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Motor Oil	mg/l	< 0.20	< 0.20	**0.31 J**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	**0.77 J**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Diesel Range Hydrocarbons w/SGCU	mg/l	NA	NA	**0.10 J**	< 0.10	NA	NA	NA	NA	**0.16 J**	< 0.10	NA	NA	NA	NA	NA	< 0.10	NA	NA
Motor Oil w/SGCU	mg/l	NA	NA	< 0.20	< 0.20	NA	NA	NA	NA	< 0.20	< 0.20	NA	NA	NA	NA	NA	< 0.20	NA	NA

Note:
[1] PCP was analyzed by EPA Method 8041 in November 2014 due to laboratory error.
Bold font indicates detected analytes.
NA - Not analyzed.
SGCU - Silica gel cleanup
UJ - Not detected, estimated quantity

March 2016
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Table 4
Summary of 2013-2015 Groundwater Analytical Data
The Oeser Company
Bellingham, Washington

Well Number		MW-02D							MW-03D					
Sample Date		5/30/2013	5/30/2013 (Duplicate)	11/20/2013	5/6/2014	11/12/2014	5/14/2015	11/23/2015	5/30/2013	11/20/2013	5/6/2014	11/12/2014	5/14/2015	11/30/2015
Analyte	Unit													
Acenaphthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Acenaphthylene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10 UJ
Anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Benzo(a)anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Benzo(a)pyrene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10 UJ
Benzo (ghi) perylene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Chrysene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Dibenz (a,h) anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Dibenzo furan	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Fluoranthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Fluorene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Indeno (1,2,3-cd) pyrene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Naphthalene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
1-Methyl naphthalene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
2-Methyl naphthalene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Pentachloro phenol[1]	ug/l	< 0.50 UJ	< 0.50 UJ	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50	< 0.50 UJ	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50 UJ
Phenanthrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Pyrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ
Total Benzo fluoranthenes	ug/l	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20 UJ
Diesel Range Hydrocarbons	mg/l	< 0.10	< 0.10	< 0.10	<0.10	<0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Motor Oil	mg/l	< 0.20	< 0.20	< 0.20	<0.20	<0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Diesel Range Hydrocarbons w/SGCU	mg/l	NA	NA	NA	NA	< 0.10	NA	NA	NA	NA	NA	< 0.10	NA	NA
Motor Oil w/SGCU	mg/l	NA	NA	NA	NA	< 0.20	NA	NA	NA	NA	NA	< 0.20	NA	NA

Note:
[1] PCP was analyzed by EPA Method 8041 in November 2014 due to laboratory error.
Bold font indicates detected analytes.
NA - Not analyzed.
SGCU - Silica gel cleanup
UJ - Not detected, estimated quantity

Table 4
Summary of 2013-2015 Groundwater Analytical Data
The Oeser Company
Bellingham, Washington

Well Number		MW-24D											MW-33D					
Sample Date		5/30/2013	11/19/2013	11/19/2013 (Duplicate)	5/6/2014	5/6/2014 (Duplicate)	11/11/2014	11/11/2014 (Duplicate)	5/13/2015	5/13/2015 (Duplicate)	12/1/2015	12/1/2015 (Duplicate)	5/30/2013	11/20/2013	5/6/2014	11/12/2014	5/13/2015	11/23/2015
Analyte	Unit																	
Acenaphthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10
Anthracene	ug/l	< 0.10	**0.11**	< 0.10	**0.13**	**0.11**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10
Benzo (ghi) perylene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz (a,h) anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenzo furan	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno (1,2,3-cd) pyrene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Naphthalene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.11**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1-Methyl naphthalene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
2-Methyl naphthalene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pentachloro phenol[1]	ug/l	< 0.50 UJ	< 0.50	< 0.50	< 0.50	< 0.50	**0.51 J**	< 0.25 UJ	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 UJ	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50
Phenanthrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Benzo fluoranthenes	ug/l	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.10	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20
Diesel Range Hydrocarbons	mg/l	**0.10**	< 0.10	< 0.10	**0.17 J**	**0.18 J**	**0.16 J**	**0.16 J**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	**0.11 J**	< 0.10	< 0.10	< 0.10
Motor Oil	mg/l	< 0.20	< 0.20	< 0.20	**0.27 J**	**0.32 J**	< 0.20	< 0.20	< 0.20	**0.24**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Diesel Range Hydrocarbons w/SGCU	mg/l	NA	NA	NA	< 0.10	< 0.10	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	< 0.10	NA	NA
Motor Oil w/SGCU	mg/l	NA	NA	NA	< 0.20	< 0.20	< 0.20	< 0.20	NA	NA	NA	NA	NA	NA	NA	< 0.20	NA	NA

Note:
[1] PCP was analyzed by EPA Method 8041 in November 2014 due to laboratory error.
Bold font indicates detected analytes.
NA - Not analyzed.
SGCU - Silica gel cleanup
UJ - Not detected, estimated quantity

Table 4
Summary of 2013-2015 Groundwater Analytical Data
The Oeser Company
Bellingham, Washington

Well Number		MW-35D						MW-100D					
Sample Date		5/30/2013	11/19/2013	5/6/2014	11/12/2014	5/14/2015	11/23/2015	7/2/2013	11/20/2013	5/7/2014	11/12/2014	5/13/2015	11/30/2015
Analyte	Unit												
Acenaphthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	ug/l	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10	< 0.10	< 0.10
Anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	ug/l	< 0.10 UJ	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10 UJ	< 0.10 UJ	< 0.10	< 0.10	< 0.10
Benzo (ghi) perylene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz (a,h) anthracene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenzo furan	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno (1,2,3-cd) pyrene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Naphthalene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1-Methyl naphthalene	ug/l	< 0.10 UJ	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
2-Methyl naphthalene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pentachloro phenol	ug/l	< 0.50 UJ	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.25	< 0.50	< 0.50
Phenanthrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	ug/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Benzo fluoranthenes	ug/l	< 0.20 UJ	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20	< 0.20	< 0.20 UJ	< 0.20 UJ	< 0.10	< 0.20	< 0.20
Diesel Range Hydrocarbons	mg/l	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Motor Oil	mg/l	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Diesel Range Hydrocarbons w/SGCU	mg/l	NA	NA	NA	< 0.10 UJ	NA	NA	NA	NA	NA	< 0.10	NA	NA
Motor Oil w/SGCU	mg/l	NA	NA	NA	< 0.20 UJ	NA	NA	NA	NA	NA	< 0.20	NA	NA

Note:
[1] PCP was analyzed by EPA Method 8041 in November 2014 due to laboratory error.
Bold font indicates detected analytes.
NA - Not analyzed.
SGCU - Silica gel cleanup
UJ - Not detected, estimated quantity

Table G-2. LSCA Groundwater Screening Levels

TABLE 4-5
Groundwater Screening Levels

Chemical	Water Quality Standards for Groundwaters of the State of Washington WAC 173-200 (µg/L)	MTCA Method A Cleanup Level (µg/L)[a]	MTCA Method B Cleanup Level (µg/L)[a]	Lowest Screening Level (µg/L)
HYDROCARBONS (TOTAL)[b]				
Carcinogenic PAHs (cPAHs):				
Benzo(a)anthracene	NE	NE	0.12	0.12
Benzo(a)pyrene	0.008	0.1	0.012	0.008
Benzo(b)fluoranthene	NE	NE	0.12	0.12
Benzo(k)fluoranthene	NE	NE	1.2	1.2
Chrysene	NE	NE	12	12
Dibenzo(a,h)anthracene	NE	NE	0.012	0.012
Indeno(1,2,3-cd)pyrene	NE	NE	0.12	0.12
Total cPAHs	NE	NE	NE	NE
Noncarcinogenic PAHs:				
Acenaphthene	NE	NE	960	960
Acenaphthylene	NE	NE	NE	NE
Anthracene	NE	NE	4800	4800
Benzo(g,h,i)perylene	NE	NE	NE	NE
Fluoranthene	NE	NE	640	640
Fluorene	NE	NE	640	640
Naphthalene	NE	160	160	160
Phenanthrene	NE	NE	NE	NE
Pyrene	NE	NE	480	480
PAH	0.01	NE	NE	0.01
Total PAHs[c]	NE	NE	NE	NE
OTHER SEMIVOLATILE ORGANIC COMPOUNDS				
Pentachlorophenol	NE	NE	0.219	0.219

Notes:
a = Washington State Department of Ecology, MTCA Statute and Regulation, Chapter 173-340 WAC, Water Quality Standards for Surface Waters of the state of Washington, November 2007.
b = Screening levels for PAHs are based on benzo(a)pyrene toxicity equivalencies.
c = Total PAHs include both carcinogenic and noncarcinogenic PAHs listed in this table as defined in WAC 173-340-200
-- = Not applicable
NE = Not Established

Table G-3. LSCA 2013 Groundwater Sample Results

TABLE 2-1
Groundwater Sample Results
Oeser Superfund Site, Little Squalicum Creek Area

Location ID				CH-MW-01		CH-MW-02		CH-MW-12		CH-MW-03		CH-MW-04		CH-MW-05		SB-27	
EPA Sample ID				13244200		13244201		13244202		13244203		13244204		13244205		13244206	
Sample Type				N		N		FD		N		N		N		N	
Sample Date				18-Jun-13		17-Jun-13		17-Jun-13		17-Jun-13		17-Jun-13		18-Jun-13		18-Jun-13	
Chemical Group	Analyte Name	Units	Regulatory Screening Levels														
PAH	9H-Fluorene	µg/L	640	**0.81**		0.034	U	0.033	U	0.032	U	0.031	U	**0.054**		0.031	U
PAH	Acenaphthene	µg/L	960	**1.3**		0.034	U	0.033	U	0.032	U	0.031	U	**1.6**		0.031	U
PAH	Acenaphthylene	µg/L	--	0.031	U	0.034	U	0.033	U	0.032	U	0.031	U	**0.039**		0.031	U
PAH	Anthracene	µg/L	4,800	**0.09**	J	0.034	U	0.033	U	**0.037**		0.031	U	**0.058**		0.031	U
PAH	Benzo(g,h,i)perylene	µg/L	--	0.031	UJ	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	Fluoranthene	µg/L	640	**0.79**		0.034	U	0.033	U	0.032	U	0.031	U	**0.72**		0.031	U
PAH	Naphthalene	µg/L	160	**3.1**		0.034	U	0.033	U	0.032	U	0.031	U	**0.07**		0.031	U
PAH	Phenanthrene	µg/L	--	**2.5**	J	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	Pyrene	µg/L	480	**0.68**		0.034	U	0.033	U	0.032	U	0.031	U	**0.79**		0.031	U
PAH	Benzo(a)anthracene*	µg/L	0.12	**0.031**		0.034	U	0.033	U	0.032	U	0.031	U	**0.083**		0.031	U
PAH	Benzo(a)pyrene*	µg/L	0.008	0.031	UJ	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	Benzo[b]Fluoranthene*	µg/L	0.12	0.031	UJ	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	Benzo[k]fluoranthene*	µg/L	1.2	0.031	UJ	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	Chrysene*	µg/L	12	**0.043**		0.034	U	0.033	U	0.032	U	0.031	U	**0.056**		0.031	U
PAH	Dibenzo[a,h]anthracene*	µg/L	0.012	0.031	UJ	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	Indeno(1,2,3-cd)pyrene*	µg/L	0.12	0.031	UJ	0.034	U	0.033	U	0.032	U	0.031	U	0.036	U	0.031	U
PAH	CPAH	µg/L	--	**0.074**		0.034	U	0.033	U	0.032	U	0.031	U	**0.139**		0.031	U
PAH	Total PAHs	µg/L	--	**9.418**		0.034	U	0.033	U	**0.037**		0.031	U	**3.609**		0.031	U
PCP	Pentachlorophenol	µg/L	0.219	**0.17**	J	0.076	UJ	0.079	UJ	0.078	UJ	0.078	UJ	0.081	UJ	0.08	UJ
Field	Dissolved Oxygen	mg/L	--	0		0		--		0		0		0.18		0	
Field	ORP	mV	--	-38		135		--		-196		-526		168		-37	

TABLE 2-1
Groundwater Sample Results
Oeser Superfund Site, Little Squalicum Creek Area

Location ID				CH-MW-01	CH-MW-02	CH-MW-12	CH-MW-03	CH-MW-04	CH-MW-05	SB-27
EPA Sample ID				13244200	13244201	13244202	13244203	13244204	13244205	13244206
Sample Type				N	N	FD	N	N	N	N
Sample Date				18-Jun-13	17-Jun-13	17-Jun-13	17-Jun-13	17-Jun-13	18-Jun-13	18-Jun-13
Chemical Group	**Analyte Name**	**Units**	**Regulatory Screening Levels**							
Field	pH	pH	--	6.51	6.68	--	6.57	7.48	7.31	6.93
Field	Specific Conductance	mS/cm	--	0.9	0.975	--	0.9	0.9	0.9	0.9
Field	Temperature	C	--	12.58	12.82	--	13.56	13.96	12.85	14.23
Field	Total Dissolved Solids	mg/L	--	1.25	0.62	--	1.02	0.2	1.25	0.84
Field	Turbidity	NTU	--	35	27.3	--	241	447	126	108

Notes:
µg/L = micrograms per liter
C = centigrade
FD = field duplicate
mg/L = milligrams per liter
J = The identification of the analyte is acceptable; the reported value is an estimate.
mS/cm = milliSiemens per cm
mV = millivolt
N = normal sample
NTU = nephelometric turbidity unit
PAH = polynuclear aromatic hydrocarbons, method 8270D SIM
PCP = pentachlorophenol, method 8041A
U = The analyte was not detected at or above the reported value.
UJ = The analyte was not detected at or above the reported value. The reported value is an estimate.
* = Carcinogenic PAH (CPAH), total of detected results.
Not established screening levels are represented with "--".
Bold = Detected result

Table G-4. LSCA 2016 Groundwater Sample Results

Table 2
Groundwater Sample Results
Little Squalicum Creek Area Groundwater and Surface Water Monitoring Oeser Superfund Site
Bellingham, Washington

Sample ID				**2016-W-CHMW-01**	**2016-W-CHMW-01-FD-01**	**2016-W-CHMW02**	**2016-W-CHMW03**	**2016-W-CHMW04**	**2016-W-CHMW05**	**2016-W-SB-27**
EPA Sample ID				16084200	16084201	16084206	16084202	16084203	16084205	16084204
Sample Type				N	FD (of 2016-W-CHMW-01)	N	N	N	N	N
Sample Date				02/22/16	02/22/16	02/23/2016	02/22/2016	02/22/2016	02/24/2016	02/23/2016
Parameter	**Analyte Name**	**Units**	**Lowest Applicable Screening Level**							
PAH	9H-Fluorene	µg/L	640	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	**0.04**	0.029 U
PAH	Acenaphthene	µg/L	960	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	**0.21**	0.029 U
PAH	Acenaphthylene	µg/L	--	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	Anthracene	µg/L	4,800	**0.035**	**0.041**	0.029 U	**0.17**	0.029 U	0.031 U	**0.34**
PAH	*Benzo(a)anthracene*	µg/L	0.12	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	**0.037 JH**
PAH	*Benzo(a)pyrene*	µg/L	0.008	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	Benzo(g,h,i)perylene	µg/L	--	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	*Benzo(b)fluoranthene*	µg/L	0.12	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	*Benzo(k)fluoranthene*	µg/L	1.2	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	*Chrysene*	µg/L	12	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	**0.036**
PAH	*Dibenzo(a,h)anthracene*	µg/L	0.012	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	Fluoranthene	µg/L	640	0.029 U	0.029 U	0.029 U	0.029 U	**0.11 JH**	0.031 U	**0.17 JH**
PAH	*Indeno(1,2,3-cd)pyrene*	µg/L	0.12	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U

Table 2
Groundwater Sample Results
Little Squalicum Creek Area Groundwater and Surface Water Monitoring Oeser Superfund Site
Bellingham, Washington

Sample ID				2016-W-CHMW-01	2016-W-CHMW-01-FD-01	2016-W-CHMW02	2016-W-CHMW03	2016-W-CHMW04	2016-W-CHMW05	2016-W-SB-27
PAH	Naphthalene	µg/L	160	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	**0.3**	**0.032**
PAH	Naphthalene, 2-methyl	µg/L	--	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.031 U	0.029 U
PAH	Phenanthrene	µg/L	--	0.029 U	0.029 U	0.029 U	0.029 U	**0.083**	0.031 U	**0.15**
PAH	Pyrene	µg/L	480	0.029 U	0.029 U	0.029 U	0.029 U	**0.057 JH**	0.031 U	**0.096 JH**
cPAH	cPAH	µg/L	--	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	**0.004 JH**
TPAH	TPAH	µg/L	--	**0.035**	**0.041**	Not detected	**0.17**	**0.250 JH**	**0.55**	**0.861 JH**
PCP	Pentachlorophenol	µg/L	0.219	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U	0.078 U	0.074 U
Field Water Quality Parameters										
pH	pH	S.U.		5.21	see 2016-W-CHMW-01	6.56	5.43	5.94	7.05	6.39
Specific Conductance	Specific Conductance	mS/cm		0.443	see 2016-W-CHMW-01	0.304	0.334	0.334	0.278	0.405
Temperature	Temperature	°C		12.3	see 2016-W-CHMW-01	9.89	12.51	9.04	9.1	10.07
Dissolved Oxygen	Dissolved Oxygen	mg/L		0	see 2016-W-CHMW-01	1.3	0	0	12.09	0
Oxidation-Reduction Potent	Oxidation-Reduction Potential	mV		-26	see 2016-W-CHMW-01	93	-98	21	89	-17
Turbidity	Turbidity	NTU		6.3	see 2016-W-CHMW-01	0	7.3	7.5	13.7	102

Notes:

Italicized analytes are Washington Department of Ecology and EPA carcinogenic PAHs (cPAHs

Bold results = Detected result

Key:

µg/L = micrograms per lite

cPAH = Carcinogenic PAH. cPAH values calculated using toxicity equivalency factors in Table 708-2, Chapter 173-340 WA FD = field duplicate

Table 2
Groundwater Sample Results
Little Squalicum Creek Area Groundwater and Surface Water Monitoring Oeser Superfund Site
Bellingham, Washington

Sample ID		2016-W-CHMW-01	2016-W-CHMW-01-FD-01	2016-W-CHMW02	2016-W-CHMW03	2016-W-CHMW04	2016-W-CHMW05	2016-W-SB-27

H = High bias

J = The identification of the analyte is acceptable; the reported value is an estimate mg/L = milligrams per lite

mS/cm = milliSiemens per cm mV = millivolt

N = normal sample

NTU = nephelometric turbidity uni

°C = degrees Celsius

PAH = polynuclear aromatic hydrocarbons, method 8270D SIM PCP = pentachlorophenol, method 8041A

S.U. = Standard units

TPAH = Total PAHs. Calculated TPAH values calculated by summing detected concentrations U = The analyte was not detected at or above the reported value

UJ = The analyte was not detected at or above the reported value. The reported value is an estimate

Table G-5. LSCA Surface Water Screening Levels

TABLE 4-4

Surface Water Screening Levels

Chemical	State Freshwater Acute Surface Water Quality Criteria for the Protection of Aquatic Life (µg/L)[a]	State Freshwater Chronic Surface Water Quality Criteria for the Protection of Aquatic Life (µg/L)[a]	Human Health Freshwater Water AWQC for Consumption of Organisms and Water (µg/L)[b]	National Recommended Human Health Freshwater Quality Criteria (µg/L)[c]	Lowest Screening Level (µg/L)
HYDROCARBONS (TOTAL)[d]					
Carcinogenic PAHs (cPAHs):					
Benzo(a)anthracene	NE	NE	0.0038	0.0028	0.0028
Benzo(a)pyrene	NE	NE	0.0038	0.0028	0.0028
Benzo(b)fluoranthene	NE	NE	0.0038	0.0028	0.0028
Benzo(k)fluoranthene	NE	NE	0.0038	0.0028	0.0028
Chrysene	NE	NE	0.0038	0.0028	0.0028
Dibenzo(a,h)anthracene	NE	NE	0.0038	0.0028	0.0028
Indeno(1,2,3-cd)pyrene	NE	NE	0.0038	0.0028	0.0028
Total cPAHs	NE	NE	NE	NE	NE
Noncarcinogenic PAHs:					
Acenaphthene	NE	NE	670	NE	670
Acenaphthylene	NE	NE	NE	NE	NE
Anthracene	NE	NE	8300	9600	8300
Benzo(g,h,i)perylene	NE	NE	NE	NE	NE
Fluoranthene	NE	NE	130	300	130
Fluorene	NE	NE	1100	1300	1100
Naphthalene	NE	NE	NE	NE	NE
Phenanthrene	NE	NE	NE	NE	NE
Pyrene	NE	NE	830	960	830
Total PAHs[c]	NE	NE	NE	NE	NE
OTHER SEMIVOLATILE ORGANIC COMPOUNDS					
Pentachlorophenol	20.27	12.79	0.27	0.28	0.27

Notes:
a = Washington State Department of Ecology, MTCA Statute and Regulation, Chapter 173-201A WAC
b = National Recommended Water Quality Criteria (EPA, 2009)
c = 40 CFR 131 National Toxics Rule
d = Screening levels for PAHs are based on benzo(a)pyrene toxicity equivalencies.
-- = Not applicable
NE = Not Established

Table G-6. Sample Rationale for Surface Water Sampling

Surface Water Monitoring Location	Location Category	Sample Analysis
Upper Little Squalicum Creek		
SW-1	Primary	Yes
SW-3	Secondary	Hold (dependent on SW-1 results)
SW-4	Secondary	Hold (dependent on SW-1 results)
Middle Little Squalicum Creek		
SW-7	Primary	Yes
SW-5	Secondary	Hold (dependent on SW-7 results)
SW-6	Secondary	Hold (dependent on SW-7 results)
Lower Little Squalicum Creek		
SW-2	Primary	Yes
SW-8	Secondary	Hold (dependent on SW-2 results)

Table G-7. LSCA 2013 – 2015 Surface Water Sample Results

Table 3
2013-2015 Surface Water Results for Little Squilicum Creek
The Oeser Company
Bellingham, Washington

Sample Area	Upper					Middle						
Location	SW-1	SW-1	SW-1	SW-1	SW-1	SW-7	SW-7 (Duplicate)	SW-7	SW-7	SW-7	SW-7[d]	Lowest Screening Level [a, b, c]
Chemical / Sample Grab Date / Units	11/20/13 (µg/L)	05/22/14 (µg/L)	11/11/14 (µg/L)	05/14/15 (µg/L)	11/17/015 (µg/L)	11/20/13 (µg/L)	11/20/13 (µg/L)	05/22/14 (µg/L)	11/11/14 (µg/L)	05/14/15 (µg/L)	11/16/15 (µg/L)	(µg/L)
Carcinogenic PAHs (cPAHs)[e, f]:												
Benzo(a)anthracene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Benzo(a)pyrene	< 0.10 UJ	< 0.01	< 0.01	< 0.01	< 0.01	< 0.10 UJ	< 0.10 UJ	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Benzo(b)fluoranthene	< 0.20 UJ	< 0.02	< 0.02	< 0.02 [h]	0.024 *	< 0.20 UJ	< 0.20 UJ	< 0.02	< 0.02	< 0.02 [h]	< 0.02 [h]	0.003
Benzo(k)fluoranthene	< 0.20 UJ	< 0.02	< 0.02	NV	NV	< 0.20 UJ	< 0.20 UJ	< 0.02	< 0.02	NV	NV	0.003
Chrysene	< 0.10	< 0.01	< 0.01	< 0.01	0.015	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Dibenzo(a,h)anthracene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.010	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Indeno(1,2,3-cd)pyrene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Total cPAHs	NA	NA	NA	NA	0.003	NA	NA	NA	NA	NA	NA	NV
Noncarcinogenic PAHs:												
Acenaphthene	< 0.10	< 0.01	**0.014**	<0.01	<0.01	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	**0.011 J**	670
Acenaphthylene	< 0.10	< 0.01	< 0.01	<0.01	< 0.010	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	NV
Anthracene	< 0.10	< 0.01	< 0.01	<0.01	<0.01	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	8,300
Benzo(g,h,i)perylene	< 0.10	< 0.01	< 0.01	<0.01	**0.012**	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	NV
Fluoranthene	< 0.10	< 0.01	< 0.01	<0.01	**0.015**	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	130
Fluorene	< 0.10	< 0.01	< 0.01	<0.01	< 0.010	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	1,100
Naphthalene	< 0.10	< 0.01	< 0.01	<0.01	**0.032**	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	NV
Phenanthrene	< 0.10	< 0.01	< 0.01	<0.01	<0.01	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	NV
Pyrene	< 0.10	< 0.01	< 0.01	<0.01	**0.016**	< 0.10	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	830
Total PAHs	NA	NA	**0.014**	NA	**0.075**	NA	NA	NA	NA	NA	**0.011**	NA
Other Semivolatile Compounds:												
Pentachlorophenol	< 0.50	0.49	< 0.25	< 0.25	0.40	< 0.50	< 0.50	< 0.25	< 0.25	< 0.25	**0.27**	0.270

Notes:
[a] = Washington State Department of Ecology, MTCA Statute and Regulation, Chapter 173-201A WAC
[b] = National Recommended Water Quality Criteria (EPA, 2009)
[c] = 40 CFR 131 National Toxics Rule
[d] = Screening levels for PAHs are based on benzo(a)pyrene toxicity equivalencies.
[e] = The laboratory was unable to separate the benzo(b)fluoranthene and benzo(k)fluoranthene isomers chromatographically; therefore, the benzo(b)fluoranthene result is reported as a total of the B and K isomers and the benzo(k)fluoranthene result is r
[f] = Total PAHs summed using detected values only.
[g] = Due to a laboratory error, samples were not extracted within the recommended 7 day holding time for analysis. All of the results reported here are considered estimated.
-- = Not applicable
BOLD – A concentration in bold text was detected above the the laboratory detection limit.
BOLD – A concentration in bold text was detected above the the lowest regulatory screening level.
J – Estimated value
NA – Not Applicable
NV – No Value
UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise. See the associated data validation memo for more information.
µg/L – micrograms per liter

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Table 3
2013-2015 Surface Water Results for Little Squilicum Creek
The Oeser Company
Bellingham, Washington

Sample Area	Lower									
Location	SW-2	SW-2	SW-2 (Duplicate)	SW-2	SW-2 (Duplicate)	SW-2	SW-2 (Duplicate)	SW-2[g]	SW-2[g] (Duplicate)	Lowest Screening Level [a, b, c]
Chemical / Sample Grab Date / Units	11/20/13 (µg/L)	05/22/14 (µg/L)	05/22/14 (µg/L)	11/11/14 (µg/L)	11/11/14 (µg/L)	05/14/15 (µg/L)	05/14/15 (µg/L)	11/16/15 (µg/L)	11/16/15 (µg/L)	(µg/L)
Carcinogenic PAHs (cPAHs)[d]:										
Benzo(a)anthracene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Benzo(a)pyrene	< 0.10 UJ	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Benzo(b)fluoranthene	< 0.20 UJ	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02 [f]	< 0.02 [f]	< 0.02 [f]	< 0.02 [f]	0.003
Benzo(k)fluoranthene	< 0.20 UJ	< 0.02	< 0.02	< 0.02	< 0.02	NV	NV	NV	NV	0.003
Chrysene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Dibenzo(a,h)anthracene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Indeno(1,2,3-cd)pyrene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.003
Total cPAHs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NV
Noncarcinogenic PAHs:										
Acenaphthene	< 0.10	**0.027**	**0.027**	**0.032**	**0.026**	**0.031**	**0.029**	**0.018 J**	**0.017 J**	670
Acenaphthylene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	NV
Anthracene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	8,300
Benzo(g,h,i)perylene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	NV
Fluoranthene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	130
Fluorene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	1,100
Naphthalene	< 0.10	**0.011**	**0.012**	**0.021**	**0.020**	**0.025**	**0.024**	**0.023 J**	**0.022 J**	NV
Phenanthrene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	NV
Pyrene	< 0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	830
Total PAHs[f]	NA	**0.038**	**0.039**	**0.053**	**0.046**	**0.056**	**0.053**	**0.041**	**0.039**	NA
Other Semivolatile Compounds:										
Pentachlorophenol	< 0.50	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	0.270

Notes:
[a] = Washington State Department of Ecology, MTCA Statute and Regulation, Chapter 173-201A WAC
[b] = National Recommended Water Quality Criteria (EPA, 2009)
[c] = 40 CFR 131 National Toxics Rule
[d] = Screening levels for PAHs are based on benzo(a)pyrene toxicity equivalencies.
[f] =The laboratory was unable to separate the benzo(b)fluoranthene and benzo(k)fluoranthene isomers chromatographically; therefore, the benzo(b)fluoranthene result is reported as a total of the B and K isomers and the benzo(k)fluoranthene result is reported as NV.
[g] = Total PAHs summed using detected values only.
[h] = Due to a laboratory error, samples were not extracted within the recommeded 7 day holding time for analysis. All of the results reported here are considered estimated.
-- = Not applicable
BOLD = A concentration in bold text was detected above the the laboratory detection limit.
BOLD = A concentration in bold text was detected above the the lowest regulatory screening level.
J = Estimated value
NA = Not Applicable
NV = No Value
UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise. See the associated data validation memo for more information.
µg/L = micrograms per liter

Table G-8. LSCA 2016 Surface Water Sample Results

Table 3
Surface Water Sample Results
Little Squalicum Creek Area Groundwater and Surface Water Monitoring
Oeser Superfund Site
Bellingham, Washington

Sample ID				2016-W-SW2	2016-W-SW8	2016-W-SW7	2016-W-SW7-FD-1	2016-W-SW1	2016-W-SW4	2016-W-SW3
EPA Sample ID				16084207	16084208	16084209	16084210	16084211	16084212	16084213
Sample Type				N	N	N	FD (of 2016-W-SW7)	N	N	N
Sample Date				02/24/2016	02/24/2016	02/24/2016	02/24/2016	02/24/2016	02/24/2016	02/24/2016
Parameter	**Analyte Name**	**Units**	**Lowest Applicable Screening Level**							
PAH	9H-Fluorene	µg/L	1,100	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	Acenaphthene	µg/L	670	**0.033**	0.029 U	0.032 U	0.032 U	0.030 U	**0.094**	0.031 U
PAH	Acenaphthylene	µg/L	--	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	**0.066**	0.031 U
PAH	Anthracene	µg/L	8,300	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	**0.043**	0.031 U
PAH	*Benzo(a)anthracene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	*Benzo(a)pyrene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	Benzo(g,h,i)perylene	µg/L	--	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	*Benzo(b)fluoranthene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	*Benzo(k)fluoranthene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	*Chrysene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	*Dibenzo(a,h)anthracene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	Fluoranthene	µg/L	130	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	*Indeno(1,2,3-cd)pyrene*	µg/L	0.0028	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	Naphthalene	µg/L	--	**0.054**	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	Naphthalene, 2-methyl-	µg/L	--	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U

Table 3
Surface Water Sample Results
Little Squalicum Creek Area Groundwater and Surface Water Monitoring
Oeser Superfund Site
Bellingham, Washington

Sample ID				2016-W-SW2	2016-W-SW8	2016-W-SW7	2016-W-SW7-FD-1	2016-W-SW1	2016-W-SW4	2016-W-SW3
PAH	Phenanthrene	µg/L	--	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
PAH	Pyrene	µg/L	830	0.031 U	0.029 U	0.032 U	0.032 U	0.030 U	0.036 U	0.031 U
cPAH	cPAH	µg/L	--	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
TPAH	TPAH	ug/L	--	**0.087**	Not detected	Not detected	Not detected	Not detected	**0.203**	Not detected
PCP	Pentachlorophenol	µg/L	0.27	0.078 U	0.074 U	**0.11**	**0.1**	**0.13**	**0.24**	0.078 U
Field Water Quality Parameters										
pH	pH	pH	--	6.2	6.76	7.22	see 2016-W-SW7	7.51	7.31	7.35
Specific Conductance	Specific Conductance	mS/cm	--	0.33	0.377	0.274	see 2016-W-SW7	0.273	0.294	0.229
Temperature	Temperature	°C	--	8.96	8.32	8.17	see 2016-W-SW7	9.11	8.45	9.25
Dissolved Oxygen	Dissolved Oxygen	mg/L	--	11.71	12.73	12.98	see 2016-W-SW7	13.16	10.05	11.68
Oxidation-Reduction Potential	Oxidation-Reduction Potential	mV	--	205	157	131	see 2016-W-SW7	111	111	-12
Turbidity	Turbidity	NTU	--	3.6	7.9	5.2	see 2016-W-SW7	5.2	4.5	2.7

Notes:
Italicized analytes are Washington Department of Ecology and EPA carcinogenic PAHs
Bold results = Detected result
Key:
µg/L = micrograms per liter
cPAH = Carcinogenic PAH. cPAH values calculated using toxicity equivalency factors in Table 708-2, Chapter 173-340 WAC FD = field duplicate
J = The identification of the analyte is acceptable; the reported value is an estimate mg/L = milligrams per liter
mS/cm = milliSiemens per cm mV = millivol
N = normal sample
NTU = nephelometric turbidity unit
oC = degrees Celsius

Table 3
Surface Water Sample Results
Little Squalicum Creek Area Groundwater and Surface Water Monitoring
Oeser Superfund Site
Bellingham, Washington

Sample ID		2016-W-SW2	2016-W-SW8	2016-W-SW7	2016-W-SW7-FD-1	2016-W-SW1	2016-W-SW4	2016-W-SW3

PAH = polynuclear aromatic hydrocarbons, method 8270D SIM PCP = pentachlorophenol, method 8041A
S.U. = Standard units
TPAH = Total PAHs. Calculated TPAH values calculated by summing detected concentrations
U = The analyte was not detected at or above the reported value.
UJ = The analyte was not detected at or above the reported value. The reported value is an estimate.

Figure G-1. Oeser Property Groundwater Monitoring Results

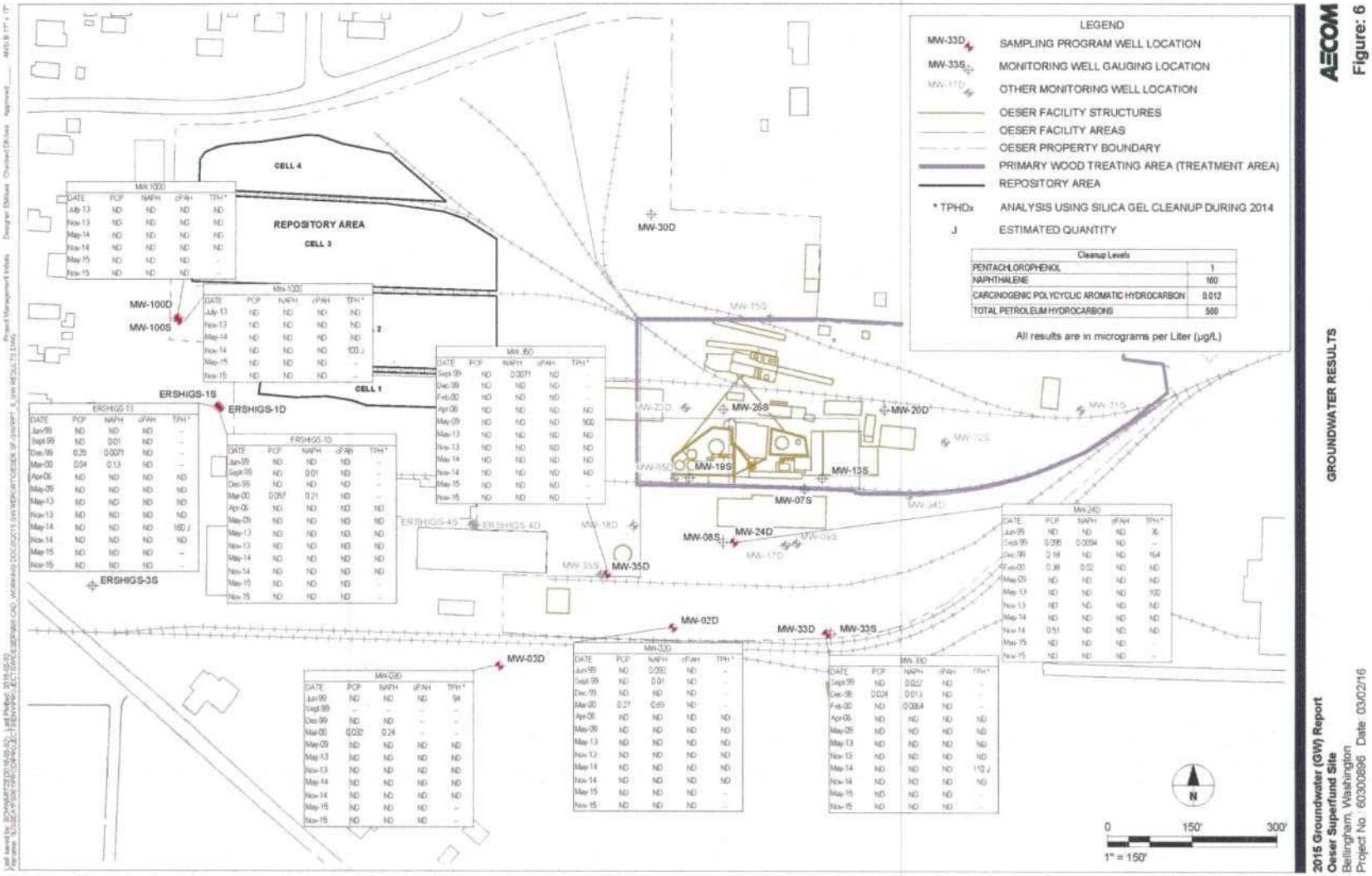


Figure G-2. LSCA Confirmation Sampling Results – Phase 1 and 2

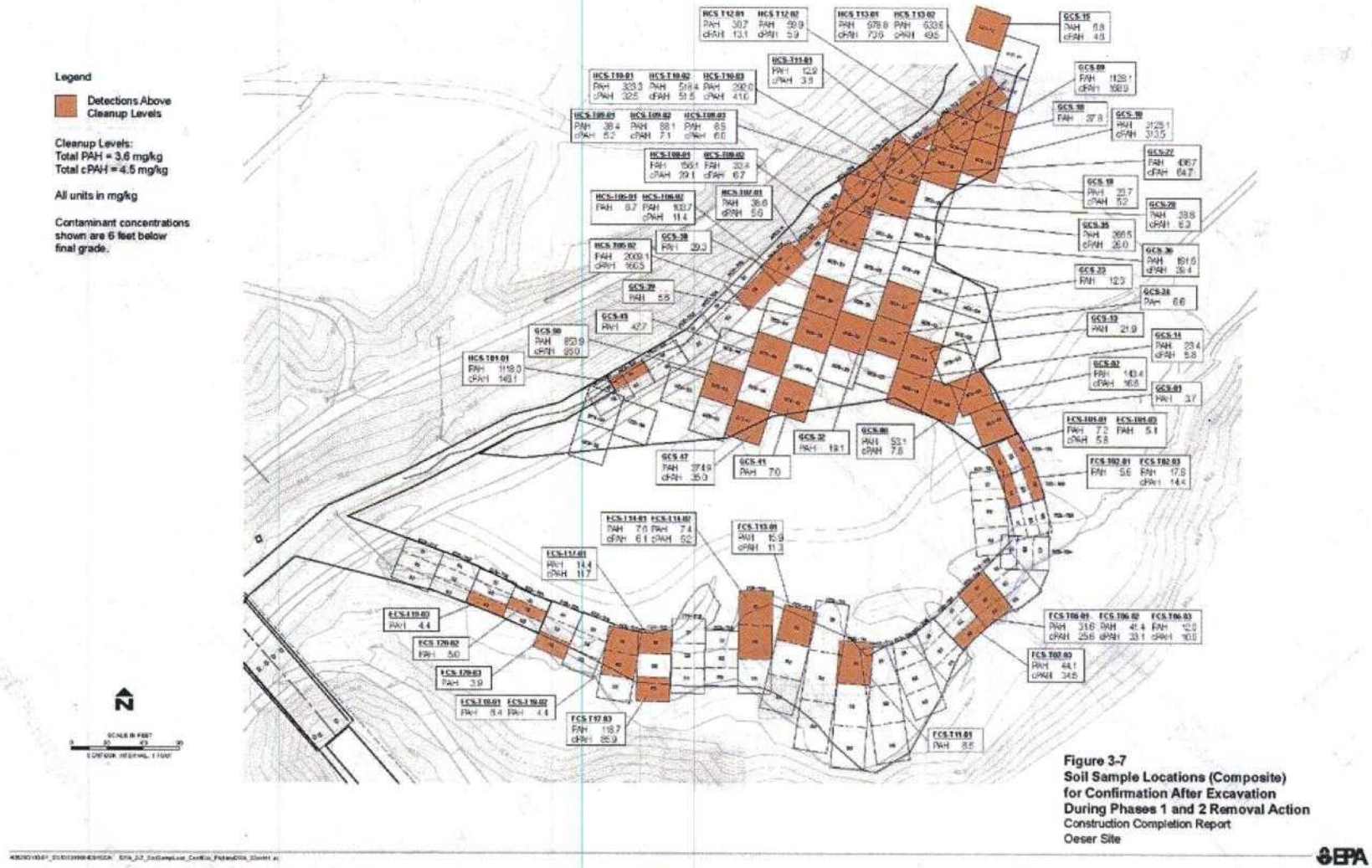


Figure 3-7
Soil Sample Locations (Composite) for Confirmation After Excavation During Phases 1 and 2 Removal Action
Construction Completion Report
Oeser Site

EPA

Figure G-3. LSCA Confirmation Sampling Results – Phase 3

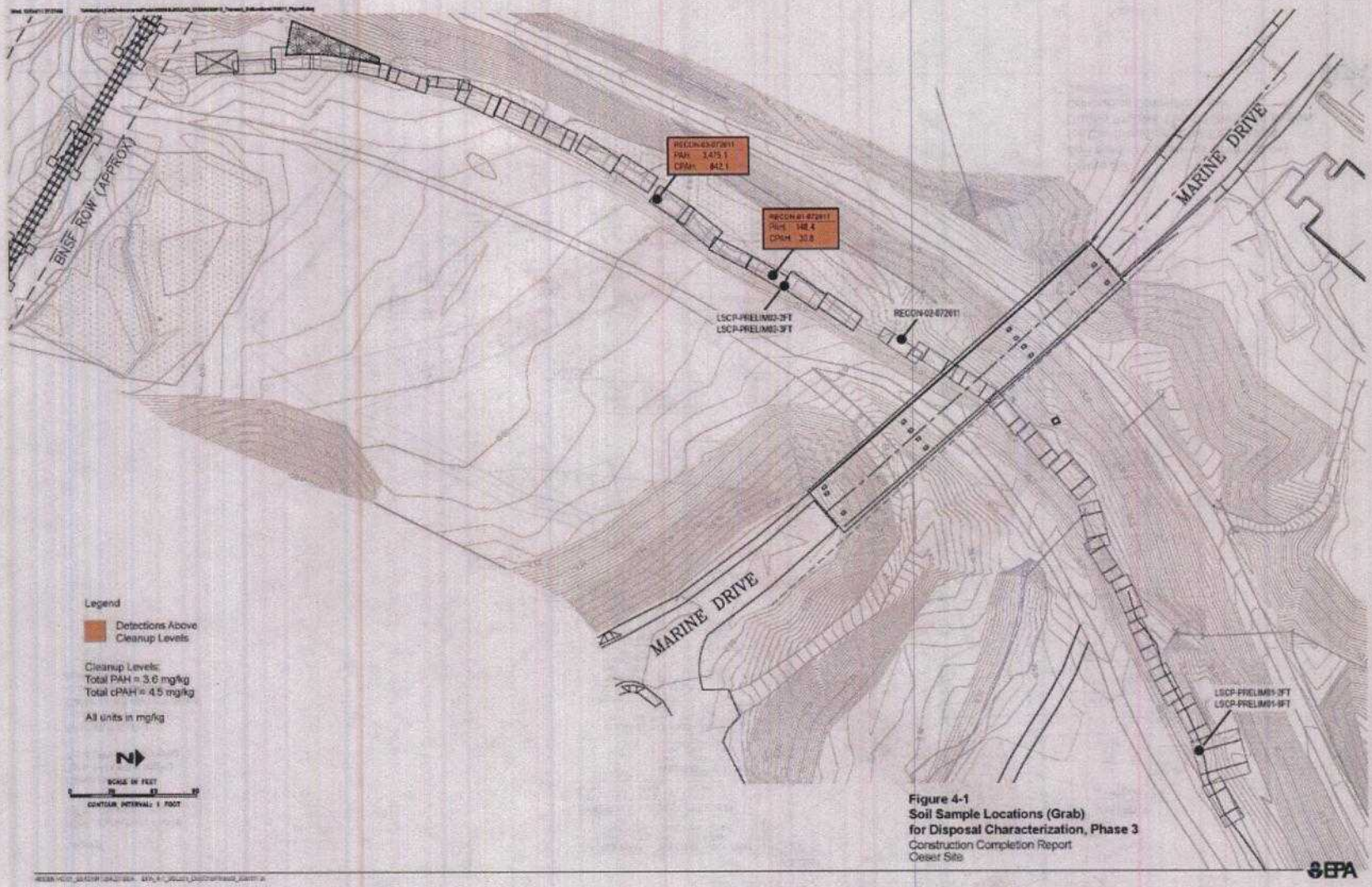
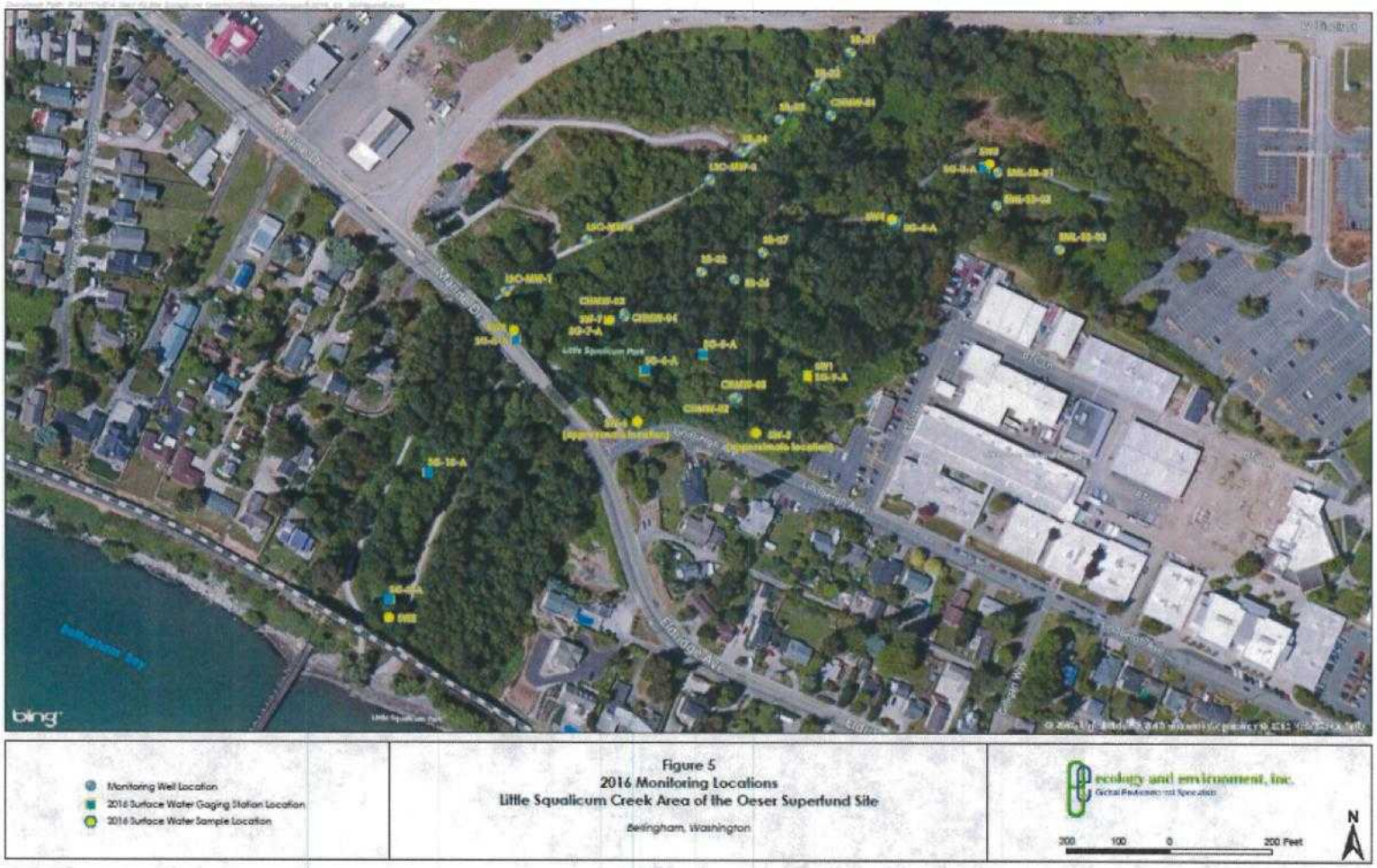
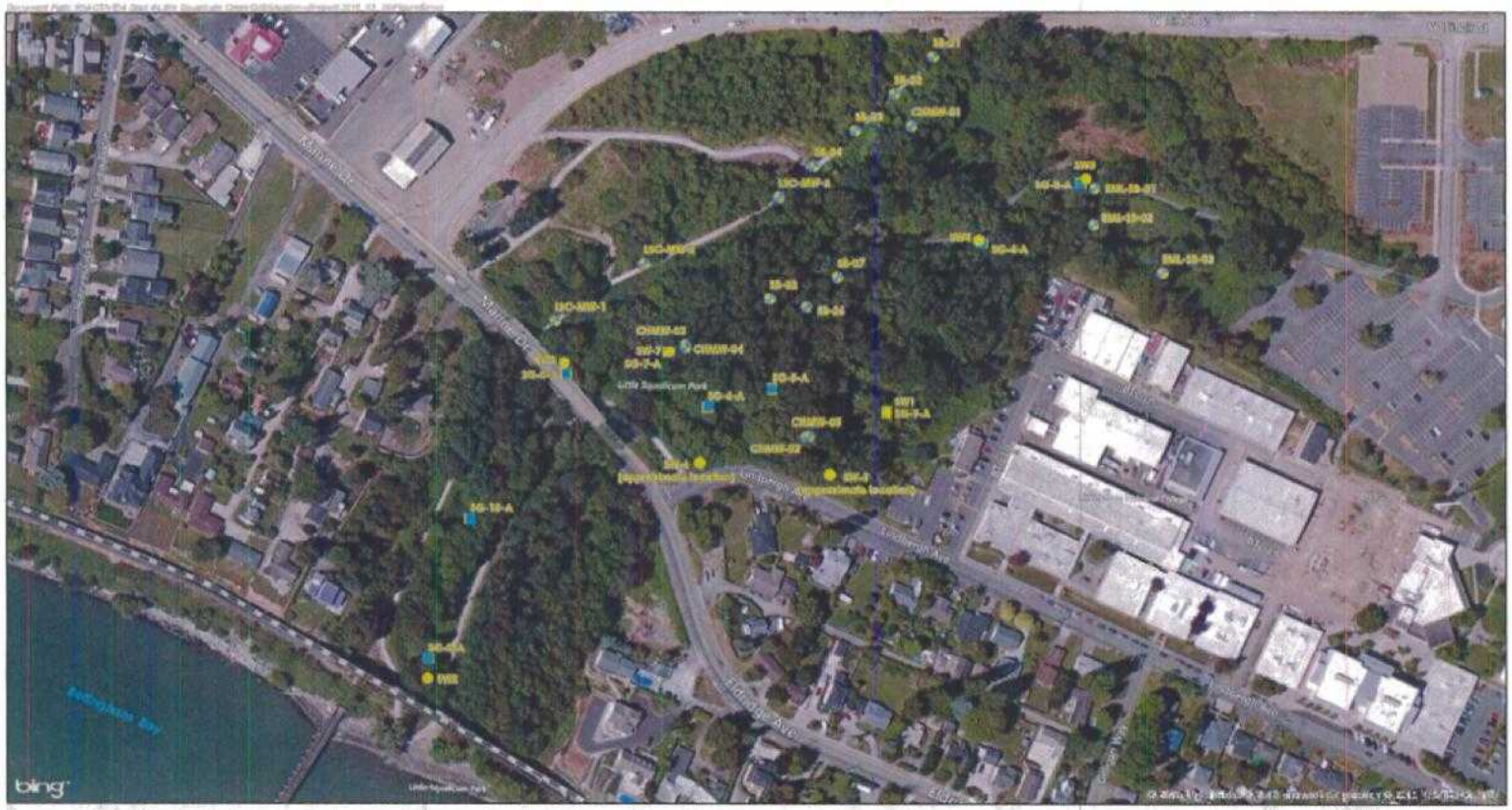


Figure G-4. 2016 Surface Water Sampling Locations




Monitoring Well Location
2016 Surface Water Gaging Station Location
2016 Surface Water Sample Location
Figure 5
2016 Monitoring Locations
Little Squalicum Creek Area of the Oeser Superfund Site
Bellingham, Washington
ecology and environment, inc.
200 100 0 200 Feet
N

APPENDIX H – ARARs AND TOXICITY REVIEW

Changes in Standards and To-Be-Considered (TBC) Criteria

The current applicable groundwater standards for the Oeser Property have not changed from the 2003 ROD cleanup goals for cPAHs, PCP, naphthalene and TPH. The current applicable criteria for dioxins is less restrictive (Table H-1). The 2003 ROD soil cleanup goal for dioxins was based on the 2,3,7,8-TCDD equivalency for MTCA Method C at 0.000875 mg/kg. The current MTCA Method C non-cancer is 0.00408 and for cancer is 0.00168 mg/kg which is less restrictive. The MTCA Method C standards takes into account the most current toxicity scenario.

Table H-1. ARARs Comparison Table

Media	COC	2003 ROD Cleanup Goal (µg/L)	Current Applicable Standard	ARAR Change
Groundwater	cPAHs[a]	0.012	0.012[c]	None
	Dioxins/furans[b]	0.000000583	0.000000673[c]	Less stringent
	PCP	1	1[d]	None
	Naphthalene	160	160[c]	None
	TPH	500	500[c]	None
Soil	Dioxins/furans	0.000875	0.00408[e]/0.00168[f]	Less restrictive

Notes:
a – Based on benzo(a)pyrene equivalency.
b – Based on 2,3,7,8-TCDD equivalency.
c – MTCA Method B standards (https://fortress.wa.gov/ecy/clarc/FocusSheets/Groundwater%20Methods%20B%20and%20A%20and%20ARARs.pdf , accessed 4/5/2016).
d – Federal MCL (https://www.epa.gov/your-drinking-water/table-regulated-drinking-water-contaminants , accessed 4/5/2016).
e – MTCA Method C noncancer (https://fortress.wa.gov/ecy/clarc/FocusSheets/Soil%20Methods%20C%20and%20A%20industrial.pdf , accessed 4/5/2016).
f – MTCA Method C cancer (https://fortress.wa.gov/ecy/clarc/FocusSheets/Soil%20Methods%20C%20and%20A%20industrial.pdf , accessed 4/5/2016).

The cleanup goals for cPAH, PCP and naphthalene in soil at the Oeser Property and cPAHs and PCP in soil and sediment at the LSCA were risk-based and are discussed below.

Changes in Toxicity and Other Contaminant Characteristics

Oeser Property

The Oeser Property is zoned for industrial use. The 2003 ROD soil cleanup goals for cPAHs, PCP, naphthalene and TPH were site specific and based on industrial exposure and an acceptable risk of 1 x 10^{-5} for carcinogens and an acceptable hazard index (HI) of 1 for noncarcinogens.

The soil cleanup goal of 8.9 mg/kg that EPA established for cPAHs in soil remains valid. The carcinogenic toxicity values have not changed since the 2003 ROD. In addition, the toxicity equivalency factors (TEFs) used to convert the seven carcinogenic PAHs to benzo(a)pyrene equivalent (TEQ) concentrations have not changed since they were established by EPA in 1993. A screening level risk evaluation of the 2003 ROD cleanup goal for cPAHs was conducted to further support that the cleanup goal remains valid. The 2003 ROD soil cleanup goal based on a site-specific industrial worker were compared to the EPA's Regional Screening Levels (RSLs) based on a standard default industrial worker. As demonstrated in Table H-2, the 2003 ROD cleanup goal is equivalent to a cancer risk level that falls within EPA's risk management range of 1×10^{-6} to 1×10^{-4}. EPA has not established a noncancer toxicity value for cPAHs, thus, the evaluation focused only on carcinogenic effects. These results demonstrate that the cleanup goals for soil remain valid.

The same screening level risk evaluation was conducted for the other site-specific soil cleanup goals. The results demonstrate that the cleanup goals for soil remain valid. Dioxins were not evaluated since they are based on the MTCA Method C Industrial (included in Table H-1).

Table H-2: Screening-level Risk Evaluation of the 2003 Oeser Property Site-Specific ROD Soil Cleanup Goals

COC	2003 ROD Cleanup Goal (mg/kg)	Industrial Worker RSL[a]		Screening Level Industrial Risk Evaluation[b]	
		Risk-based (1×10^{-6})	Hazard Quotient (HQ) (HQ=1)	Risk	HI
cPAH	8.9	0.29	NA	3×10^{-5}	NA
PCP	120	4.0	2,800	3×10^{-5}	0.04
Naphthalene	262	17	590	1.5×10^{-5}	0.4

Notes:

a. The current EPA RSLs, dated November 2015, are available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2015 (accessed 3/24/16).

b. Screening level risk calculations were performed as follows:
Cancer risk = (Cleanup goal/risk-based RSL) x 1×10^{-6}
Noncancer HI = (Cleanup goal/HQ-based RSL)

NA – toxicity value not available.
mg/kg – milligrams per kilogram.

LSCA

Cleanup goals at the LSCA were established for soil/sediment based on risk or background concentrations. Washington State sediment standards were determined to not be relevant and appropriate for the limited amount of sediments in the creek bed. The soil/sediment cleanup goals for cPAH and PCP were based on a site-specific adolescent recreational use scenario for human health which were also protective of ecological receptors. The total PAH cleanup goal was based on background soil concentration that is protective of human health and the environment (3.6 mg/kg), which is lower than the cleanup goal for cPAH at 4.5 mg/kg. The screening level risk evaluation for the cleanup goal for cPAH (Table H-3) can also be applied to the total PAH cleanup goal. The dioxins background level is based on the 90th percentile from 20 soil samples collected by the City of Bellingham during the Oeser Property Remedial Action. This value, 0.000012 mg/kg, is within the EPA risk management range of 1 x

10^{-4} to 1 x 10^{-6} and below EPA's noncancer threshold of 1 for residential use, which is more stringent than recreational.

To determine if the cleanup goals for cPAH and PCP remain valid, a risk-based analysis was used to develop equivalent levels based on current toxicity information from EPA. Using the exposure factors from the 2002 risk assessment (frequency and duration, bodyweight, adherence factor, and fraction of soil contacted) in conjunction with EPA's current toxicity values and risk characterization formulas, the action memo cleanup goals for cPAH (and total PAH) and dioxins were determined to remain valid since the equivalent cancer risk is within the EPA risk management range of 1 x 10^{-4} to 1 x 10^{-6} and below EPA's noncancer threshold of 1.

Table H-3: Screening-level Risk Evaluation of the 2010 LSCA Action Memo Cleanup Goals

COC	2010 Action Memo Cleanup Goal (mg/kg)	Screening Level Recreational Adolescent User Risk Evaluation[a]	
		Risk	HI
cPAH	4.5	5.7 x 10^{-6}	NA
PCP	3.0	9.6 x 10^{-8}	0.0003
	Total	5.7 x 10^{-6}	0.0003

Notes:
a. Risk and noncancer HI was calculated using EPA Superfund Risk Assessment Guidance for Superfund, current toxicity values and exposure assumptions from the 2002 HHRA.
NA – toxicity value not available.
mg/kg – milligrams per kilogram.

Table H-4: Recreational Risk Input Values and Results – cPAHs and PCP

VALUES USED FOR DAILY INTAKE CALCULATIONS
Site Name

Medium:	Soil
Exposure Medium:	Soil
Receptor Population:	Recreational
Exposure Route:	Dermal
Receptor Age:	Adult

Intake Equation:
DAD=CS x ABS x IF
Intake Factor Equation:
IF=SA x CF x AF x EF x ED x 1/BW x 1/AT

Parameter Code	Parameter Definition	Units	VRP Default Value	Rationale/ Reference	User Defined Value	Rationale/ Reference
DAD	Dermally Absorbed Dose	mg/kg-day				
CS	Chemical Concentration in Soil	mg/kg				
CF	Conversion Factor	kg/mg	1E-06			
AF	Soil to Skin Adherence Factor	mg/cm^2	0.1	HHRA 2002		
ABS	Absorption Factor	unitless	Chemical Specific	EPA, 1995 (5) and EPA 2001		
SA	Skin Surface Area Available for Contact	cm2/day	2,500	HHRA 2002		
EF	Exposure Frequency	days/years	104	HHRA 2002		
ED	Exposure Duration	years	11	HHRA 2002		
BW	Body Weight	kg	49	HHRA 2002		
AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989		
AT-N	Averaging Time (Non-Cancer)	days	4,015	EPA, 1989		
IF-C	Intake Factor (Cancer)	days^-1	2.28E-07	calculated		
IF-N	Intake Factor (Non-cancer)	days^-1	1.45E-06	calculated		

EPA, 1989- Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response. EPA/540/1-89/002.

EPA, 1991- Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Office of Solid Waste and Emergency Response. OSWER Directive 9285.6-03

EPA, 1992- Dermal Exposure Assessment: Principles and Applications. Office of Health and Environmental Assessment. EPA/600/8-91/011B.

EPA, 1996- Assessing Dermal Exposure from Soil. Region III. Office of Superfund Programs. EPA/903-K-95-003.

EPA, 1997- Exposure Factors Handbook. Office of Research and Development. EPA/600/P-95/002Fa.

EPA, 2004- EPA RAGS, Part E

VALUES USED FOR DAILY INTAKE CALCULATIONS
Site Name

Medium:	Soil
Exposure Medium:	Soil
Receptor Population:	Recreational
Exposure Route:	Ingestion
Receptor Age:	Adult

Intake Equation:
CDI = CS x IF
Intake Factor Equation:
IF= IR-S x FI x EF x ED x CF x 1/BW x 1/AT

Parameter Code	Parameter Definition	Units	VRP Default Value	Rationale/ Reference	User Defined Value	Rationale/ Reference
CDI	Chronic Daily Intake	mg/kg-day				
CS	Chemical Concentration in Soil	mg/kg				
CF	Conversion Factor	kg/mg	1E-06			
IR-S	Ingestion Rate Soil	mg/day	100	EPA,1991		
FI	Fraction Ingested from source	unitless	0.25	HHRA 2002		
EF	Exposure Frequency	days/years	104	HHRA 2002		
ED	Exposure Duration	years	11	HHRA 2002		
BW	Body Weight	kg	49	HHRA 2002		
AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989		
AT-N	Averaging Time (Non-Cancer)	days	4,015	EPA, 1989		
IF-C	Intake Factor (Cancer)	days^-1	2.26E-08	calculated		
IF-N	Intake Factor (Non-Cancer)	days^-1	1.45E-07	calculated		

EPA, 1989= Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response. EPA/540/1-89/002.
EPA, 1991= Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Office of Solid Waste and Emergency Response. OSWER Directive 9285.6-03
EPA, 2011= EPA Exposure Factors Handbook: 2011 Edition

VALUES USED FOR DAILY INTAKE CALCULATIONS
Site Name

Medium:	Soil
Exposure Medium:	Air
Receptor Population:	Recreational
Exposure Route:	Inhalation
Receptor Age:	Adult

Intake Equation:
EC=EPC*EF*ED*(ET/24)/AT

Parameter Code	Parameter Definition	Units	VRP Default Value	Rationale/ Reference	User Defined Value	Rationale/ Reference
CA	Chemical Concentration in Air	mg/m^3	(1)			
EF	Exposure Frequency	days/year	104	2002 HHRA		
ED	Exposure Duration	years	24	EPA, 1991		
ET	Exposure Time	hours/day	4	a		
AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989		
AT-N	Averaging Time (Non-Cancer)	days	8,760	EPA, 1989		

a= Professional Judgement
EPA, 1989= Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response. EPA/540/1-89/002.
EPA, 1991= Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Office of Solid Waste and Emergency Response. OSWER Directive 9285.6-03

(1) Air concentrations may be estimated by applying the volatilization factor (VF) or particulate emission factor (PEF) to soil concentrations as described in Soil Screening Guidance: Technical Background Document. U. S. EPA, Office of Solid Waste and Emergency Response. May 1996. (EPA/540/R-95/128) and Soil Screening Guidance: User's Guide. U. S. EPA, Office of Solid Waste and Emergency Response. April 1996. (EPA/540/R-96/018)

Chemical of Potential Concern	Soil Concentration (CS) mg/kg	Cancer Risk (DADc*CSFd) Dermal unitless	Adjusted Dermal Reference Dose (chronic) RfDd mg/kg-day	Hazard Quotient (DADn/RfDd) Dermal unitless	Absorption Factor (ABS)	Exposure Point Concentration (Oral) (CS) mg/kg	Oral Cancer Slope Factor CSFo 1/(mg/kg-day)	Cancer Risk (CDIc*CSFo) Oral unitless	Oral Reference Dose (chronic) RfDo mg/kg-day	Hazard Quotient (CDIn/RfDo) Oral unitless	Soil Concentration mg/kg	Exposure Point Concentration (Inhalation) (CA) mg/m3	Inhalation Unit Risk IUR (mg/m3)-1	Cancer Risk (EPC*IUR) unitless	Inhalation Reference Concentration (chronic) RfCi mg/m3	Hazard Quotient (CDIn/RfDi) unitless	Volatilization Factor (VF) m3/kg	Total Cancer Risk	Total Hazard Quotient
Benzo(a)pyrene	4.50E+00	2.66E-06			1.30E-01	4.50E+00	7.30E+00	3.00E-06			4.50E+00	2.78E-07	1.10E+00	4.57E-09			1.62E+07	5.67E-06	0.00E+00
Pentachlorophenol	3.00E+00	6.85E-08	5.00E-03	2.18E-04	2.50E-01	3.00E+00	4.00E-01	2.74E-08	5.00E-03	8.72E-05	3.00E+00	3.27E-06	5.10E-03	2.71E-10			9.18E+05	9.62E-06	3.05E-04
Total		2.73E-06		2.18E-04				3.03E-06						4.84E-09		0.00E+00		5.76E-06	0.000305284

APPENDIX I – INTERVIEW FORMS

Interviewee #1 (City of Bellingham Representative):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

Please Note - In past Five-Year Reviews, interview responses have been published in the final document along with the names of those being interviewed. Due to increasing concern regarding the release of Personally Identifiable Information, names of the interviewees will not be published with their interview responses in this final document.

Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   I know a lot, but certainly not all. The question is too general. Glad to respond point by point.

2. Where do you get your information about the Site?
   Childhood. Peers. Parents. Contacts with Oeser owners. Land use history research. Personal visits to the site. Review of US EPA and WA Ecology reports and staff contacts.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   Periodic air quality issues upwind. Continuing releases of stormwater affected by current and historic site uses. Disruption of non-motorized neighborhood travel opportunities due to location, shape and management of Oeser site. Cleanup status has forever damaged realty use patterns/opportunities on and adjacent to Oeser site.

4. Please describe any concerns you have about the use of the Park.
   Lack of clear and conclusive story/account of clean-up process leading to current and future conditions. Example: there is still public concern about exposure of children, pets etc to creek surface water, notably over tidelands at low tide. People understand there has been a clean-up but there is little trust in public messaging, partly due to inconsistent use of warning signs in past and vague messages.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Many people are concerned. They see the post cleanup condition, have never understood the nature of the contamination and have never received clear advisories re pets and children, for instance. Lack of information can cause uncertainty. People who have lived in the area generally understand that clean-up efforts have not involved the beach or railroad property and that Oeser continues to discharge into the stream

6. Do you use the Park? And if so, please describe how you use the Park.

Yes. Beach walks, trail travel, birding, photography, plant material location/ID.

7. What other uses or activities would you like to see for the Park?
   Tidal estuary basin creation now proposed at site of old asphalt batch plant is desirable. Dog running and waste handling need more emphasis in ongoing management. Law enforcement practices should be evaluated for area-wide application and adjustment. (City-County jurisdiction has complicated matters.) EPA should not just ditch the site and claim victory through ignorance: the uncertainties involving groundwater quality and movement should be disclosed without being alarmist. Area opposite Oeser plant (SW of W. Illinois) needs suitable programming/improvements for walk-, bike-in activities in order to displace squatters and some criminal activity.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   Not particularly.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Not generally and specifically only from certain parties.

   If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    I would have lots of comments but am otherwise directed and otherwise occupied.

11. Are there any questions which you think were not asked here or should be asked?
    Yes.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #2 (PRP Contractor):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS
OESER SUPERFUND SITE
including LITTLE SQUALICUM CREEK PARK
BELLINGHAM WASHINGTON

Please Note - In past Five-Year Reviews, interview responses have been published in the final document along with the names of those being interviewed. Due to increasing concern regarding the release of Personally Identifiable Information, names of the interviewees will not be published with their interview responses in this final document.

Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park.
   I have been involved with site working for EPA for years, going back to mid-1990s. Ninety-nine percent of my information is from my work for EPA. The other 1 percent from being a resident.

   My work with EPA began in 1995/96 under the technical assistance team, or the START contract. I participated as a geologist in some of the site assessment on Oeser property. That led to additional work done by EPA and E&E, under the RI/FS although I was not directly involved in RI/FS. Much of the investigation work I worked on was presumably included in the RI, including soil sampling and well installation.

   Under the remedial program, I was theproject manager for E&E, supporting CH2MHill. Initially, I was to review an RI prepared by City for LSC Park. The City had gathered new subsurface information to characterize contamination in the park. E&E reviewed those data to assess if the contamination was attributable to Oeser and to assess potential risk. We concluded, yes, Oeser related contamination was present. We did not get into attribution, but collectively did agree it posed potential risk. Concurrently, with CH2MHill, E&E reviewed and oversaw RD/RA at Oeser property. I do not recall any significant differences from the RD during implementation.

   We did a lot of geoprobe soil sampling and groundwater sampling. Later on, well installations. Sampling for Oeser COPCs included PAHs and PCP. I am not certain if dioxins were sampled then. We found contamination in soil and groundwater and some NAPL on the Oeser plant near their ASTs. I recall it was all in the shallower intervals, down to maybe 15 feet. We saw a series of thin fine grain layers, mixed silt and clay, apparently/likely inter-fingering, constituting a confining layer. No single connected layer, but lots of thin ones collectively. I remember looking at the published RI and saw they did additional characterization of these layers.

   Prior to the remedial action most of the surface was not paved. I believe runoff was collected and eventually run into the storm drain originating in Birchwood neighborhood north that piped through Oeser due south into LSC. Oeser tied into this pipe.

2. Where do you get your information about the Site?
   Already responded (see question 1).

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   I do not have concerns. Remedial actions by Oeser and the RCRA program work and reduced impacts to environment. Foremost, there is no more contamination entering LSC. Oeser maintains a NPDES permit for discharge into storm drain. I cannot speak to the monitoring results, but I am not aware of any exceedances.

   The RA also addressed the other concerns. Oeser made big changes to drainage system, also performed a lot of covering of surficial hotspots with pavement or gravel to eliminate direct contact. The caps prevent precipitation from infiltrating.

4. Please describe any concerns you have about the use of the Park.
   The removal action appears effective. I do know contamination was left in place in some soils and that there is ongoing groundwater and surface water monitoring.

   Prior to stream channel straightening, there were releases that contamination in sediment and soil. Also, some releases when channel was straightened, so there was Oeser material in both stream alignments. E&E was doing field samples, but my involvement was limited. Construction went through multiple seasons. My involvement ended after the first year. Oeser conducted the removal. They adopted the removal design and performed the action with CH2MHill and E&E support and construction oversight.

   I do not know the details of any other potential sources, but I know there is a MTCA site near the park. I'd guess they removed. I do recall sampling of some of the soil south of the bridge, away from the creek as potential borrow source. The Results should be available somewhere.

   I am not aware of any study to attribute the LSC contamination to Oeser. It is probably understood that there are non-Oeser sources as well.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   I cannot speak for individual concerns, but during the first FYR I helped with the interviews. People expressed concern about potential contamination, but the construction was not yet done at that time.

6. Do you use the Park? And if so, please describe how you use the Park.
   I do not use the park.

7. What other uses or activities would you like to see for the Park?
   No response.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No, I have not.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed? If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)
   I am curious about issues and want to be kept informed by EPA newsletter. I understand they are written for public, and I can obtain additional info if needed.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    No. I am aware of EPA monitoring, which I believe is appropriate. I do not have any additional suggestions.

11. Are there any questions which you think were not asked here or should be asked?
    The first FYR did a brief review of the Oeser O&M plan. I reviewed a draft of that plan and provided a recommendation for additional groundwater monitoring. The reason was that contamination was placed in a repository on the Oeser facility. I thought it made sense to sample downgradient of that area.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #4 (Birchwood Neighborhood Representative):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

Please Note - In past Five-Year Reviews, interview responses have been published in the final document along with the names of those being interviewed. Due to increasing concern regarding the release of Personally Identifiable Information, names of the interviewees will not be published with their interview responses in this final document.

Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   Belonged to the Oeser Cleanup Coalition, and the Birchwood Neighbors Assn. Live close to the Oeser Site.

2. Where do you get your information about the Site?
   Personal experience and discussion with interested persons, government officials, regulators, and Oeser officers.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   No concerns now – much improved. Occasional odors. Used to have heavy odors, mosquitos breeding in ponds, windblown sawdust covering local neighborhood, trucks accessing facility from residential streets, blocking access.

4. Please describe any concerns you have about the use of the Park.
   No concerns about the Park.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   No response.

6. Do you use the Park? And if so, please describe how you use the Park.
   Doesn't use the Park.

7. What other uses or activities would you like to see for the Park?
   No response.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No unusual activities noticed. Odors (styrene) still noticeable from Ershigs fiberglass manufacturer.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?

Fact sheet or update mailings.

If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
No comments.

11. Are there any questions which you think were not asked here or should be asked?
No other questions.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #6 (Whatcom County Parks Representative):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   Well versed on the history, issues, scope and clean-up of the site.

2. Where do you get your information about the Site?
   County owner and PPL of portion of site.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   Concern for potential of any future migration of contaminants from Oeser property.

4. Please describe any concerns you have about the use of the Park.
   Maintaining separation and contact by the public and wildlife with any remaining contaminants.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Yes. 1) Concerned for any future migration of contaminants into the park from adjoining lands or movement of those that were left on the site. 2) Impact of development activities disturbing contaminants on the park site. 3) Water quality from storm and subsurface sources and its potential adverse impact on Bellingham Bay and aquifers.

6. Do you use the Park? And if so, please describe how you use the Park.
   Yes, for trail walking.

7. What other uses or activities would you like to see for the Park?
   Prefer to leave as a passive use area with walking trails and some open grass areas.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   Some camping use by homeless occurring in park.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Test results from monitoring wells.

   If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?) Email preferred.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties? It would be helpful to have a white paper on the results of the sampling and clean-up efforts after this five year period which can be made available to the public.

11. Are there any questions which you think were not asked here or should be asked?
    No

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #7 (Washington Department of Ecology):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   LSCA used to be Ecology's site. Started as a mystery – was it Oeser? During storm events the water would come up and go down and for years there were anecdotal stories of pets getting sick/dying from exposure to the water. Ecology got together with city and did in depth investigations in the park and found contamination. Further investigations led to more contamination findings. They were seeing sheen in the water, excavation of saturated soils, etc. Various hypotheses on how the contamination came to be and push back from EPa/Oeser that it wasn't theirs. Issues is that EPA didn't do TPH and Ecology did. What was done much exceeded what they expected.

   Ecology would have excavated to a greater depth than 6 feet (maybe more like 15). Found contamination in an area they hadn't realized before. EPA Left contamination in place and monitor and see if that's an issue and Ecology wouldn't have done that. Monitoring feedback – Ecology had a difference in opinion where the monitoring wells are located. Contamination left in place – monitoring wells are not located downgradient.

   Park was a gravel mine and had log staging which changed the configuration of the creek. Ecology found high hits of aromatics in the original creek bed area. Contamination left at depth exceeding criteria. Surface water sampling and groundwater sampling – is it monitoring in place contamination appropriately?

   Used to be very wet and mosquitos were terrible.

   Eldridge municipal landfill – CD just entered into at the end of 2015. Excavated almost entire site with a little left in place in a few areas.

   Pathway for exposure will continue to be contact at the beach especially. Ingestion for wildlife. Ingestion for kids?

   Ecology would get calls about issues and forward on to EPA.

Ecology has been involved with the Site as early as early 90s with reports on a sheen on the SW. Mary started on it 2004-2005.

2. Where do you get your information about the Site?
   Oeser – she knows very little about it. Public and private meetings with Oeser but not much to do with the facility.
3. Please describe any concerns you have about the operations at the Oeser Company facility.
   No concerns about the Oeser facility. Never any sign of release from Oeser or difficulties with stormwater.
4. Please describe any concerns you have about the use of the Park.
   See above – monitoring appropriately?
5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Historically, problems in town with aromas from a different wood treatment plant and it would be blamed on Oeser (because of stack).

   People most concerned with their kids on the beach and hands in water.
6. Do you use the Park? And if so, please describe how you use the Park.
   Does not use it recreationally.
7. What other uses or activities would you like to see for the Park?
   No.
8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   Some use in the park picking up (Frisbee) but mostly passive use. Homeless when there was more vegetation. Not aware fo current problem with squatters. As vegetation fills in, may see homeless come in.
9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Any complaints should be sent to Ecology if EPA received them. Data, specifically TPH would be useful to Ecology. Ecology seems especially concerned with TPH.

   Estuary – In borrow pit area - Ecology's EA came in and punched a bunch of holes and got a hit of TPH at depth. Didn't see anything that would prevent estuary from being constructed.

   Sampling results ahead of time (ahead of mass distribution) would be helpful. Draft monitoring report to Ecology, City for review. City attorney – Amy Kraham would be a good person to receive the draft reports.
10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Site has been so off the radar.

    Birchwood neighborhood associations should be kept informed somehow.
11. Are there any questions which you think were not asked here or should be asked.

Would like to know more about the data and then might have more pointed questions.

Theory on sheen – extended Oeser pipe had a clay bowl at depth that may have been a source of stormwater sheen (if there is a sheen still).

Target groundwater and surface water standards that ecology would use – drinking water standards since homeless people were living in the park. Sediment standards for creek – new standards. Beach sediment testing occurred but the beach material was pebbly and analysis was not possible.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #8 (PRP):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   Quite a bit – PRP.

2. Where do you get your information about the Site?
   N/A

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   In response to the odor issues from the Site:

   Had a lot of issues with odor in the past (~10 years ago) and then a new oil product became available that remedied the issue and have not had a verified odor issue in ~7 years. Northwest Clean Air Agency is in charge of their air permits and verifying complaints.

   Would like to reduce monitoring to every 5 years and would like to submit the request for the upcoming May sampling event.

   O&M plan eliminated need to sample dioxins and TPH-GRO.

4. Please describe any concerns you have about the use of the Park.
   Contamination was left in place and hopes the remedy will be effective long-term. Six feet depth was used since it should be outside the depth of burrowing animals. City is not supposed to dig or disturb waste in the area due to an IC in place (deed restrictions are supposed to be in place). No waste was left above 6 feet bgs.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Suspects there will always be concerns but has not heard from anyone in the last few years.

6. Do you use the Park? And if so, please describe how you use the Park.
   No.

7. What other uses or activities would you like to see for the Park?

Picnic tables with gravel and covered pavilions and information kiosk about the park history.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   If anything comes up about the cleanup in the park, would like to know about it.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Believes concerned residents would like to hear from the EPA, city and Ecology more often than every 5 years in regards to the remedy and monitoring. Assure concerned elements of the community that Oeser and EPA are monitoring the Site regularly.

11. Are there any questions which you think were not asked here or should be asked.
    Do you believe the remedy is effective? (His answer is yes).

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #9 (PRP Contractor):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   First field season - Oeser did the initial work on the upper portion of the park and in second season then an EPA contractor (TQM) came in and did the lower portion of the park and CH2MHill did oversight.

   Phase 1 and 2 Oeser completed in November 2010.

   Phase 3 – CH2MHill/TQM completed in July – September 2011 CH2MHill

2. Where do you get your information about the Site?
   He was the PM for Oeser Site awhile back. At the time he was focused on LSC, they did the design to remediate the creek and LSCA including the park. He worked on the first FYR and it had little information on LSCA. The Construction Completion Report was not finalized at the time of the last FYR.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   Soil that was removed from creek bed was stockpiled at the Oeser facility and covered with asphalt and gravel/crushed rock. Oeser installed drain lines around the pile and those lines go to the treatment plant and then it runs out to two retention ponds and then runs through a bioswale. At the time of the last FYR pavement was cracking in certain areas, debris present in ponds and dead vegetation in ponds. Oeser needed to maintain catch basins and keep clean and free of debris. Institutional controls were not in place at the time of the last FYR. I believe that is still the situation and nothing has been done yet. I thought they were going to install new wells and take some wells out of service. He doesn't know if that occurred.

   My sense of the Site was that it was fairly well maintained. Has been on several wood treatment facilities and this Site was well maintained and in good shape.

4. Please describe any concerns you have about the use of the Park.
   When he first started work at the Site, there as a trail down to the park that was full of dense vegetation and had squatters. Oeser cleared the park of almost all vegetation before remediation. When he left after remediation of the LSCA, there were nice trails, grassy areas. It was working well within the park

area. There was planted vegetation along the creek that was well established when he was there in 2011. There was erosion of the creek when they started the remediation and they rebuilt the creek after removing the contaminated soil, the park and stream he believes are much better off. He was not been up since the last FYR. He was very proud of what was accomplished at the park. Oeser is supposed to maintain the park with mowing.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   No.

6. Do you use the Park? And if so, please describe how you use the Park.
   No.

7. What other uses or activities would you like to see for the Park?
   Concerts/amphitheater was something the City indicated they wanted.

   Oeser started removing material at asphalt batch plant but Howard stopped them. My concern with the estuary plan is that it would change the hydraulics of the system and probably contaminated soil is located beneath 5 feet. Main areas that contamination remains is the uphill side of the bridge along the creek and it was left due to slope instability. Groundwater and surface water needed to be monitored due to contamination left in place. Most of the contamination below 6 feet was minor and generally immobile prior to remediation. All contaminated media went up to the Oeser site and not anywhere else. Ramp is composed of contaminated media as well.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   NA

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   General interest due to history with the Site and would be interested in annual sampling finding and if the remedy is working. Email would be easiest.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Oeser was supposed to do well installation and monitoring above and below and the estuary. Need to stay on top of things and ensure things are going as planned. Oeser was at times difficult to work with but they did get things done.

11. Are there any questions which you think were not asked here or should be asked?
    No.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #13 (Washington Department of Ecology):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   Been on the LSCA site and did a discharge permit inspection. When the site was being remediated, met with former remedial project manager (RPM) and did a site inspection at LSCA. Lives near the Park and Site. Acting under state discharge permit authority during remediation at the LSCA site. High risk of turbidity and stormwater concerns during remediation. Was somewhat dissatisfied with the cleanup and EPA's role. BMPs were light and there was constant traffic between the Oeser property and the LSCA which made it difficult to control.

   NPDES permit for Oeser for industrial stormwater. Have an individual permit in lieu of general permit. Have effluent limits for PAHs and PCP but not dioxins. He's not sure why, should be in a fact sheet. Person who managed permit has retired and that position has not been replaced.

2. Where do you get your information about the Site?
   Historic experiences and stormwater permit.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   Concerns that they were working in their containment area and not storing or tracking out treated materials outside their treatment area. Treatment should occur only in treatment area/containent area. Slipline pipe (municipal pipe) that bypasses stormwater drain needs to monitored and maintained/inspected appropriate (run a camera through it?). Does not know if that has happened. Recontamination is my biggest concern through that pipe. Doesn't think that runoff goes into treatment system. Where are they doing the permit sampling? What has happened with the slipline? Lori Lavandar was the retired permit manager.

4. Please describe any concerns you have about the use of the Park.
   Had surface water health concerns but saw the results of the sampling and felt better. How long are they monitoring surface water and groundwater? Wants to make sure there will be ongoing monitoring since there was contamination left in place. Part of Bay to Baker trail system (last section).

Is aware of the estuary plan and plan to move trail on the other side of railroad and trestele and have the estuary. Is aware of some contamination is down there from former Asphalt plant (?). Municipal landfill is ongoing.

Not aware of any other planned phases for the park.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Residents downwind are concerned about air quality from Oeser. Concerned about recontamination from Oeser. When they bought their house, they did get a notice that they were near the superfund site (possible IC?).

6. Do you use the Park? And if so, please describe how you use the Park.
   Yes, walking dog and kids play and wade in stream.

7. What other uses or activities would you like to see for the Park?
   No. Would like to see Pier removed. Lummi tribe would like to see the Pier removed. City would like to shorten and use it as a Pier.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   Occasional homeless camp and drug problems/drink and litter. Use to be frequent but not recently (signs were put up). Beach is port property and City and County all intersect. He thinks City has an agreement with County to manage the park. Park technically closes at sunset.

   Not aware of problems with Oeser.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Results of water quality sampling on a regular basis through the city/park website. The public needs to know that it is being sampled and maintained and that recontamination is not happening. Thinks public needs to know that ICs are in place to protect.

   EPA will make sure City gets a copy of the 2016 results.

   Is interested in fact sheets/emails about the Site.

   Two neighborhood associations – Columbia and Birchwood Neighborhood associations.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Ongoing monitoring, inspection and maintenance of stormwater facilities.

11. Are there any questions which you think were not asked here or should be asked.
    Did the cleanup do enough/go far enough? Did not do complete removal of the contamination – was that appropriate?

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #18 (City of Bellingham Council Member):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   My in depth experience with Oeser started with the 1994 butt tank fire they caused. The low temperature penta/diesel mixture burned with a toxic plume of smoke that covered the Birchwood neighborhood. My subsequent door-to-door interviews with people home on my street alone showed that 12 people had respiratory problems for days after the fire, including my former wife. That was about 80% of the people home at the time of the fire. The lack of government action to this mess caused the neighborhood to press to deal with this site including listing it with the EPA, starting remediation and doing simple things like fencing it off so that children stopped playing on the property.

2. Where do you get your information about the Site?
   Historically, I was the executive director for the EPA TAG organization, Oeser Cedar Cleanup Coalition (OCCC) and received all communications regarding the remediation determination and the cleanup. This information was passed along to our board members. Since the wrap up of the cleanup and the unwillingness of the EPA to fund OCCC for monitoring activities, the EPA has not provided additional information concerning monitoring or other post-event activities. If information is given to Bellingham City government, then it is not forwarded to the neighborhood.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   The EPA completely ignored the recommendations of the OCCC board and its consultant to remove known pollutants from the Oeser site and the adjacent park. Instead this dioxin-ladened soil was encapsulated in asphalt and gravel on the site. This ill-chosen alternative continues to put the neighborhood at risk now and into the future.

4. Please describe any concerns you have about the use of the Park.
   There is not much one can do other than walk the trails and throw balls for dogs. The fields are often muddy. They also were never graded well enough for field use and are a trip hazard for the public. The

only "activity" that is in the park are a few large boulders disposed into the park by Chris Secrist during the remediation. These boulders certainly represent a fall hazard for children as they might attempt to leap from boulder to boulder. I is too bad Mr. Secrist could not have provided seed money for a playground instead.

Even though the park site was mostly low-grade alders and cottonwoods, nearly all of them were removed, many more than what was called for in the remediation plan. The remaining "heritage" cottonwood specimens are slowly dying off as they are subjected to the brunt of windstorms without having an adjacent forest to protect them. The Record of Decision only provided for replacement plantings around the creek bed but nowhere else. Oeser has left a tremendous cost to the City to capitalize and maintain replacement trees.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   No. But that could be because of a lack of information flow.

6. Do you use the Park? And if so, please describe how you use the Park.
   2-3 times per week the park is part of my neighborhood walking route.

7. What other uses or activities would you like to see for the Park?
   Picnic shelter and scattered tables and benches at a minimum. Outside of that, there needs to be a decision of how much this park will be a wildlife area or a park for people. Funds need to be identified to realize that use.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Since the completion of the remediation, what monitoring activities have been done and what results have been determined? What is the modified future schedule for monitoring activities since scheduled monitoring between (at least) 2005 and 2011 was not conducted?

   The 2011 5-year Report listed asphalt cracking in the new cap as well as significant ponding problems in this new construction. What actions have been taken to correct these problems? How confident should the public and neighborhood be to the integrity of this asphalt if the cap was not properly constructed in the first place?

   The public has never been given a financial report on this cleanup. What costs were accrued since EPA's initial involvement in 1995? What reimbursement did the EPA eventually receive from Oeser directly and also from Oeser's insurance carriers? Are you aware of Washington State Department of Ecology added costs? Of the City of Bellingham added costs? Did EPA reimburse these agencies and if so, how much?

   If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)

   Email.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties? In 2010, EPA mailed out 772 notices for comments on the Engineering Evaluation/Cost Analysis for the Little Squalicum Creek remediation. EPA held a public meeting attended by 108 people with 71 written comments and 18 verbal statements. Yet, for the 2011 5-year Report, only one member of the public (Sue Den Adel) was interviewed or provided comments. Some institutional staff were interviewed but this is not the public. How can the EPA do such a good job in 2010 to solicit input but fail to do it in the following year?

    The 2011 5-year Report interviewees all stated that they are under-informed about the remediation and monitoring activities. The only exception was the site owner, Chris Secrist. I would strongly suggest EPA implement a notification system so that the public can be made aware of new information as it is available to the agency.

11. Are there any questions which you think were not asked here or should be asked?

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #20 (Community Member):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   I am quite familiar with both as a resident one block away since 1996, and time serving as a Oeser Cedar Clean-up Coalition board member.

2. Where do you get your information about the Site?
   EPA and DoE documents and websites.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   The facility seems to be cleaner and with fewer noxious air emissions of late; I cannot speak to how well their stormwater system is working to reduce contaminants entering waters of the state. I have noticed in the park some damage to the wellheads for water sampling – these should be inspected and repaired if needed – vandals? Along the Greenways Trail adjacent to Oeser, there is surface or near subsurface water collecting in a shallow ditch along the trail – it is often discolored, occasionally a bit stinky, not sure if it's carrying contaminants from Oeser toward the park, or if it poses any public health exposures. There is no signage, not sure anyone is monitoring it. Is it safe for dogs or kids to be drinking or walking in, as dogs and kids are wont to do?

4. Please describe any concerns you have about the use of the Park.
   It is not clear from signage if the upper water of the creek and any ponding that occurs at the foot of the bluff below the BTC Overflow Parking lot on W Illinois are safe for dogs or kids to enter. The same water seeps out across the upper grassy meadow – any concerns for exposure there either?

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   I have not spoken to anyone lately about either one.

6. Do you use the Park? And if so, please describe how you use the Park.
   I walk my dog daily in the park, and frequent it with my family and friends.

7. What other uses or activities would you like to see for the Park?
   Some picnic tables or benches would be appropriate for users of all ages. Dog waste stations are needed due to high volume of dog walkers in the off leash area. Picnic areas have litter and recycling cans, so dog areas should have waste facilities as well, it's just logical.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   Some evidence of homeless camps in the thick brush along the new creek drainage.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Ongoing performance under their permit(s), especially related to stormwater and air emissions. For the park, the plans to create a new estuary are of great interest.

   If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)
   Email is fine for me.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Have they done any recent updates to the neighborhood association meetings? Are they planned after the 5 year review? They should be!

11. Are there any questions which you think were not asked here or should be asked? And if so, what are they?

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #24 (City of Bellingham Public Works):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   The City of Bellingham Parks and Recreation Department manages Little Squalicum Park and worked with Ecology, EPA and the Oeser Company on the cleanup action in the park. Bellingham Public Works Natural Resources conducted nearshore assessments along the marine shoreline and habitat designs for an estuary within the southern portion of the Park.
2. Where do you get your information about the Site?
   Dept. of Ecology, EPA, and the City
3. Please describe any concerns you have about the operations at the Oeser Company facility.
   N/A
4. Please describe any concerns you have about the use of the Park.
   Public Works Natural Resources envisions the Park as an active public park and habitat for fish and wildlife species. Our concerns are listed below.
5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Public Works Natural Resources is not confident we understand the level of public concern about the Park and Oeser Facility. While we understand EPA has reached out to specific individuals, but we are not aware of a comprehensive outreach plan. Has EPA requested input from the Neighborhood Associations, Mayor's Neighborhood Advisory Council Members, Bellingham Technical College, surrounding businesses, Whatcom County, Port of Bellingham, etc.? The City has not received a general outreach request, we are aware of only limited interviews on 3/29/16.

   Public Works Natural Resources is concerned the remaining contaminated soil and groundwater will migrate south and possibly interfere with the proposed estuary.

6. Do you use the Park? And if so, please describe how you use the Park.
   City staff conduct maintenance and restoration activities at the Park. We also host community work parties to weed and maintain native vegetation.

7. What other uses or activities would you like to see for the Park?
   We expect to construct the estuary shown in the Little Squalicum Park Master Plan, construction is planned for 2016-2017. In addition, the Parks Dept. envisions expanded parking and restroom facility at West Illinois entrance; access to the Tilbury Pier; and a possible play structures or picnic shelter.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Public Works Natural Resources requests monitoring data be distributed to the City as well as to the public.

   If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)
   E-mail, Bellingham Herald, letter.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Continue testing for groundwater contamination. We respectfully request the public be allowed to view and comment on the 5 year monitoring results. How will monitoring results be made available? If results show contamination above thresholds, what is EPA's plan to address?

11. Are there any questions which you think were not asked here or should be asked?

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #25 (Community Member):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

Please Note - In past Five-Year Reviews, interview responses have been published in the final document along with the names of those being interviewed. Due to increasing concern regarding the release of Personally Identifiable Information, names of the interviewees will not be published with their interview responses in this final document.

Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   Nothing.
2. Where do you get your information about the Site?
   N/A.
3. Please describe any concerns you have about the operations at the Oeser Company facility.
   N/A
4. Please describe any concerns you have about the use of the Park.
   N/A
5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   N/A
6. Do you use the Park? And if so, please describe how you use the Park.
   N/A
7. What other uses or activities would you like to see for the Park?
   N/A
8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   N/A
9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   N/A
10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?

N/A

11. Are there any questions which you think were not asked here or should be asked.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #26 (Community Member):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   The Oeser facility appears well maintained – not much activity at the Site. The park looks new, kept up, looks nice, peaceful and calm. Maybe some homeless people sleeping in the bushes.

2. Where do you get your information about the Site?
   Observations from the College, last year use of Park, and EPA interviewer.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   No concerns mentioned. Reassured that Site is clean.

4. Please describe any concerns you have about the use of the Park.
   No concerns with Park. Possible homeless person occupancy, littered drug paraphernalia, trash, tarps, although not nearly as bad as with other parks. Unfortunately, there are no restrooms, trash cans. On a lighter note, it was good seeing a track team set up and use an obstacle course at the Park.

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Welding shop at BTC just across a parking lot from the Oeser facility so the welding equipment may create an ignition hazard for possible VOC releases for Oeser.

6. Do you use the Park? And if so, please describe how you use the Park.
   Use the Park to walk to the beach.

7. What other uses or activities would you like to see for the Park?
   Install monkey bars, slide, play structure – playground equipment.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No issues with Oeser except too bad they are cutting down trees for their business. For Park, see #4 above.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?
   Please email any announcement about changes to Site, meetings, etc.
10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    No.
11. Are there any questions which you think were not asked here or should be asked.
    No.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #27 (City of Bellingham Council Member):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).

I know that the City of Bellingham manages Little Squalicum Park and worked with varies agencies and Oeser Company on the cleanup of the Park and storm water. In know that our Public Works is advocating for further improvements along the shoreline and has worked on designs for an estuary in the park. I know that Oeser has paved their land to push storm water to where it can be filtered before it goes into our Bay.

2. Where do you get your information about the Site?

I live a stones throw away. I had received some literature in the mail when the planning for the clean-up started. Mostly the paperwork was about cost options. Once the project got started I heard very little from City, EPA, Oesure etc. ReSources sent me an email inviting me to an Oeser tour 2015. I learned a lot from that event. I was able to send the event out to our membership and several other neighbors came as well (I was the Birchwood Neighborhood President at the time).

3. Please describe any concerns you have about the operations at the Oeser Company facility.

We live very close to Oeser. It is noisy and sometimes we need to call the clean air agency when we smell weird stuff in the air. Its hard to tell which manufacture down wind is the one responsible. They are good neighbors and are responsive when we call and ask them to mow around their fence line etc. Overall, our only major concerns are any further impacts they might have on our Bay.

4. Please describe any concerns you have about the use of the Park.

I'm concerned about the capped material. This is not known to the general public. It is a very wet area and I wouldn't be surprised if the contaminated material migrated. I hope this is being watch and will be watched/tested for in the future. There is very little education of the history of the area on site. It would be great to have literature posted in various areas to educate people on the history, improvements, wildlife, salmon etc. The Park has issues of illegal camping, drug use and lots of dog waste. These are hard issues to deal with since those living unsheltered are increasing in numbers, the Park is dark and heavily vegetated which is great but allows for hiding spots for irresponsible and inappropriate activity and it's a great off leash area but with little spots to throw away waste—so many don't make the effort. I'm concerned about the large open area with few cotton wood trees. They don't seem very healthy and there is very little revegetation with large evergreen trees.

5. Do you know anyone who has concerns about the Park or the Oeser Facility?

I have heard similar concerns about Oeser and Park that I already mentioned. After inquiring, I realized many of our neighbors have no idea that Oeser is a Superfund site. I would add that to a worry of lack of communication with the residents and greater community. Working with the neighborhood association I know we were never directly contacted about the clean-up plans or the actual clean up. I am now a Council Member, so when I received the opportunity to comment I posted it to our blog site and asked the current President to send it out to the Membership email list. This still limits the communication to those who have computers and internet access and those few people we actually have emails for. Getting the word out should not rest on the volunteer neighborhood association.

6. Do you use the Park? And if so, please describe how you use the Park.

Daily! It is a huge asset to the community. It is an off leash area and is heavily used....hard to keep dogs out of the water... and disappointing to see what seems to be a permanent beach contamination sign. We jog through there and hang out on the beach a ton searching for agates.

7. What other uses or activities would you like to see for the Park?

MORE DOG WASTE STATIONS! A restroom and handicap access to the park. Currently one can park at BTC to access park but I don't imagine that access will stay over the years. IT would be great to have a parking lot that allows for handicap access from Illinois. I would love to see the pier accessible and a restroom so those living unsheltered won't pollute the creek and Bay with their waste....It is also a long corridor so, a restroom would be well used. I think it would be great to have a ramada (covering) and seating for people to enjoy the area. Electricity would be great so we could hold events down at the Park. It is a natural amphitheater and I think the community would enjoy music and activities to bring awareness to the importance of picking up waste and taking care of our valued resources.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?

Cited above

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?

I would like to know what actions are being taken to ensure the capped material stays capped. I would like more opportunities to learn what Oeser is doing to ensure no contamination reaches the creek and ultimately the Bay.
If so, how? (email, post cards, texts, newsletter, Facebook, Twitter ...?)

This is important enough for all of us living near and those who use the park the information should be mailed and posted through the Park on the trails and at the beach.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities the EPA and/or other government entities conduct at those properties?

Continue testing for groundwater contamination. I would like to see the comments of others and the results of monitoring. I would like to know the EPA has a plan if results reach unhealthy levels etc.

11. Are there any questions which you think were not asked here or should be asked?
My name?

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.

Interviewee #28-32 (Community Members):

EPA OESER FIVE-YEAR REVIEW INTERVIEW QUESTIONS

OESER SUPERFUND SITE

including LITTLE SQUALICUM CREEK PARK

BELLINGHAM WASHINGTON

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Please answer the following questions.

1. What do you know about the Oeser Superfund Site? Please note: The Oeser Superfund Site (Site) includes both the Oeser Company Facility and the Little Squalicum Creek Park (Park).
   One person knew the area was a Superfund Site, most knew the park was built but not the reasons.

2. Where do you get your information about the Site?
   Conversations with others, historical knowledge.

3. Please describe any concerns you have about the operations at the Oeser Company facility.
   Most said none, a few indicated general concerns about the industries in the area around and including Oeser contributing to air pollution. Want the park to be clean but aren't sure how that relates to the Oeser facility.

4. Please describe any concerns you have about the use of the Park.
   Concerns are centered around whether the surface water is safe for their dogs to drink (throughout the park including the creek and wetlands) and safe for kids to play in (pertaining to the area nearer the beach).

5. Do you know anyone who has concerns about the Park or the Oeser Facility? If so, what are their concerns?
   Same as above.

6. Do you use the Park? And if so, please describe how you use the Park.
   Everyone indicated using the park to walk their dogs. Appreciate that it is an off leash park.

7. What other uses or activities would you like to see for the Park?
   Most said none, that they appreciate the park for what it is. A couple indicated picnic tables or play areas for kids.

8. Have you noticed any unusual activities or other problems occurring at the Oeser Facility or in the Park?
   No.

9. Are there any issues regarding the Oeser Superfund Site (including the Park) for which you would like to be kept informed?

Water quality results. Everyone indicated that some signage would be appreciated explaining what has been done at the park and why and whether the park is safe for their kids and pets.

10. Do you have any comments, suggestions, or recommendations regarding any aspect of the Oeser and Park properties or the activities that EPA and/or other government entities conduct at those properties?
    Some signs explaining the history and current status of the park.
    No.

11. Are there any questions which you think were not asked here or should be asked.
    No.

Please contact Joe Wallace at 206 553 4470 or wallace.joe @epa.gov with any questions or concerns.