Five-year Review Report

First Five-year Review Report

for

The Oeser Company Superfund Site

EPA ID: WAD008957243

City of Bellingham
Whatcom County, Washington

September 2011

PREPARED BY:
United States Environmental Protection Agency
EPA Region 10
Seattle, Washington

Approved by:

Date: 9/30/2011

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U.S. Environmental Protection Agency, Region 10

Executive Summary

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, the U.S. Environmental Protection Agency is conducting the first five-year review of the The Oeser Company Superfund Site. The Oeser Site consists of an operating wood treatment plant and the adjacent Little Squalicum Creek Area located in Bellingham, Whatcom County, Washington. The Oeser Site was placed on the National Priorities List on October 27, 1997, and a Record of Decision was issued in September 2003. The chemicals of concern identified in the human health risk assessment included dioxins/furans, polynuclear aromatic hydrocarbons, and pentachlorophenol in air, groundwater, surface water, sediment, and soil.

The ROD selected the following remedies to achieve the remedial action objectives:

- Excavation or capping of soil on the Oeser Property containing COCs above health-based cleanup levels.
- Institutional controls on the Oeser Property restricting groundwater use and certain nonindustrial land uses.
- Monitoring groundwater and passive removal of non-aqueous phase liquids (NAPL) where detected on the Oeser Property.
- Operations and maintenance of the removal actions taken on the Oeser Property.
- No action for Little Squalicum Park.

Oeser-related contaminants have historically been discharged to the LSCA via Oeser's storm water drainage system. At the time that the Oeser Site ROD was prepared, EPA determined that the Oeser-related contaminants within the LSCA did not pose an unacceptable risk to human or ecological receptors, and that cleanup of Oeser-related contaminants within the LSCA was not warranted under CERCLA. Since that time, based on additional data, the EPA has determined that Oeser-related contamination within the LSCA is subject to cleanup action under CERCLA. There are also other sources of contamination at the LSCA, including non-Oeser storm water runoff and possible spills and dumping. EPA issued an Action Memorandum in July 2010 selecting a non-time-critical removal action to remove contaminated soil from the LSCA. The non-time-critical removal was recently completed in September 2011.

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.

The following actions need to be taken in order to ensure that the remedy remains protective in the long term.

- 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 Operations, Maintenance and Monitoring 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.

The Superfund Sitewide Human Exposure Environmental Indicator Status for the Site remains "Under Control." The Groundwater Migration Environmental Indicator Status for the Site also remains "Under Control."

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Acronyms and Abbreviations

µg/L	microgram per liter
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
E&E	Ecology and Environment, Inc.
EE/CA	Engineering Evaluation/Cost Analysis
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GAC	granulated activated carbon
LSCA	Little Squalicum Creek Area
mg/kg	milligrams per kilogram
mg/kg-day	milligrams per kilogram per day
MOA	mode of action
MTCA	Model Toxics Control Act
NCP	National Contingency Plan
ng/kg	nanograms per kilogram
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
PAH	polynuclear aromatic hydrocarbons
PCP	pentachlorophenol
PQL	practical quantitation limit
RAO	remedial action objective

RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
TEF	toxicity equivalency factor
TEQ	toxicity equivalent
TPH	total petroleum hydrocarbon
WAC	Washington Administrative Code

Five-year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: The Oeser Company Superfund Site (includes the Oeser Company Property and Little Squalicum Creek Area)		
EPA ID *(from WasteLAN)*: WAD008957243		
Region: 10	State: WA	City/County: Bellingham, Whatcom County
SITE STATUS		
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): Construction complete		
Multiple OUs? No	Construction completion date: 9/20/2011	
Has site been put into reuse? Not applicable; site is an operating facility.		
REVIEW STATUS		
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____		
Author name: Howard Orlean		
Author title: Remedial Project Manager	Author affiliation: U.S. Environmental Protection Agency, Region 10	
Review period: October 2006 to September 2011		
Date(s) of site inspection: 04/06/2011, 9/14/2011		
Type of review: First Five-year Review		
Review number: ☒ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify) _____		
Triggering action: Actual RA Onsite Construction at OU #____ Actual RA Start _9/29/06___ Construction Completion ☒ First- Five-year Review Report Other (specify)		
Triggering action date *(from WasteLAN)*: 9/29/06		
Due date *(five years after triggering action date)*: 9-29-2011		

Five-year Review Summary Form, cont'd.

Issues: In relation to the remedial action selected by EPA in the 2003 Record of Decision (ROD) and the removal action selected by EPA in the 2010 Action Memorandum, EPA has concluded that the following additional steps need to be taken to fully implement the response actions at The Oeser Company Site:

- Four cells have been constructed in the northwest portion of the Oeser Property (in the North Pole Yard), where contaminated soil from the Little Squalicum Creek Area has been placed. These cells need to be incorporated in the final Operation, Monitoring and Maintenance Plan for the Oeser Property to ensure that the contaminated soil remains isolated.
- Oeser is currently operating a wood-treating facility on its property and an Institutional Controls Plan needs to be finalized for the Oeser Property and restrictive covenants need to be put in place.
- The Operations, Monitoring and Maintenance Plan for the Oeser Property needs to be finalized and implemented. Groundwater monitoring and passive removal of non-aqueous phase liquids detected on the Oeser Property have not occurred since the last monitoring event in 2009 in the absence of this plan.
- As some residual contamination has been left in place at the upper portion of the Little Squalicum Creek Area, a surface and groundwater monitoring plan needs to be prepared and implemented for this area.

Recommendations and Follow-up Actions:

1) Finalize the Operations, Monitoring and Maintenance Plan for the Oeser Property and begin implementation of this plan.
2) Finalize an Institutional Controls Plan for the Oeser Property.
3) Prepare, finalize and implement a surface and groundwater monitoring plan for the upper portion of the LSCA.

Protectiveness Statement(s):

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.

1. Introduction

1.1 Overview

The U.S. Environmental Protection Agency conducted this five-year review to assess if the remedy implemented at the Oeser Site, the location of which is shown in Figures 1-1 and 1-2, is protective of human health and the environment. The methods, findings, and conclusions of this five-year review are documented herein. The Oeser Site includes both the Oeser Property, at which The Oeser Company continues to operate its wood-treating facility, and the Little Squalicum Creek Area, which is situated adjacent to the Oeser Property and is within the Little Squalicum Park.

A five-year review is required by Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9621 and the National Oil and Hazardous Substances Contingency Plan, 40 C.F.R. §300.430(f)(4)(ii). CERCLA, 42 U.S.C. § 9621 Section 121 states the following:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

EPA has interpreted this requirement further in NCP, 40 CFR §300.430(f)(4)(ii), which states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

This is the first five-year review for the Oeser Site. This statutory five-year review is required because hazardous substances or contaminants remain at the Oeser Site above levels that allow for unlimited use and unrestricted exposure.

1.2 Organization of this Document

This Five-year Review Report follows the guidelines provided in EPA's Comprehensive Five Year Review Guidance (2001) and is composed of the following sections and attachments, of which this Section 1, Introduction, is a part:

- Executive Summary – a brief synopsis of the findings of this Five-year Review Report.
- Section 2, Site Chronology - discusses the various remedial activities that have taken place at the Oeser Site since 1996.

- Section 3, Background - describes the physical characteristics of the Oeser Site, along with a history of contamination at the Site, the initial response, and the basis for taking action at the Site.
- Section 4, Remedial Action - discusses the remedial action objectives, the remedy selection and implementation, and current operation and maintenance activities at the Oeser Property.
- Section 5, Progress Since Last Review - discusses previous five-year review reports, of which there are none for this Site.
- Section 6, Five-year Review Process - discusses the process, data, Site inspections, and Site interviews that were used as the basis for this Five-year Review Report.
- Section 7, Technical Assessment - discusses how well the current remedy is functioning, whether the assumptions upon which the remedy was based have changed, and other information that might affect the effectiveness of the remedy at the Oeser Site.
- Section 8, Issues - identifies any issues that might need addressing at the Oeser Site.
- Section 9, Recommendations and Follow-up Actions - describes recommendations that might affect the current remedy at the Oeser Site.
- Section 10, Protectiveness Statement – evaluates the continuing protectiveness of the selected remedy to human health and the environment.
- Section 11, Next Review - lists the date of the next five-year review.
- Attachment A, List of Documents Reviewed - provides the references for all documents reviewed in the compilation of the report and all documents cited in the main body of this report.
- Attachment B, Site Inspection Photographs – provides a photographic log of site visits conducted during the preparation of this report and the removal activities at the LSCA.
- Attachment C, Site Interview Summary Forms - contains a record of all interviews conducted during the preparation of this report.
- Attachment D, Site Inspection Summary Form - provides a checklist of the various features of the Oeser Site.
- Attachment E, Applicable or Relevant and Appropriate Requirements - provides the ARARs currently in effect at the Oeser Site. These are presented in tables originally provided in the *Addendum Feasibility Study Report* (Ecology and Environment, Inc., 2002) in the Oeser ROD and in the *Action Memorandum* (EPA, 2010a).

2. Site Chronology

The Oeser Site consists of two areas: the Oeser Property and LSCA (Figure 1-2). Table 2-1 summarizes the chronology of events as they occurred at the Oeser Property and the LSCA.

TABLE 2-1
Site Chronology
2011 Five-year Review, Oeser Site

Event	Date
CERCLA Site Assessment	August 1995
Resource Conservation and Recovery Act inspection report prepared	July 30, 1996
First RCRA Notice of Violation issued	October 3, 1996
Oeser notified of potential liability under CERCLA	January 2, 1997
Final listing on EPA CERCLA National Priorities List	October 27, 1997
CERCLA Removal actions conducted (soil excavation, liquid waste, asphalt/gravel cap, storm drain, collection basins)	September 1997 – December 1998
CERCLA Remedial Investigation/Feasibility Study finalized	June (RI) and August (FS) 2002
FS Addendum, Alternative 6, published	December 4, 2002
Second and third RCRA NOVs issued	June 17 and November 22, 2002
ROD with selected remedy finalized	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 Site Hazard Assessment for Little Squalicum Park	Pre-2005 (exact date unknown)
RCRA Consent Agreement and Final Order	February 2005
Model Toxics Control Act Agreed Order Number DE2016 between Ecology and City of Bellingham (to complete and 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 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

TABLE 2-1
Site Chronology
2011 Five-year Review, Oeser Site

Area 1 remedial activities completed, including: 1. Gravel cap installed in North and South Pole Yards	December 8, 2006
All remedial activities completed in Area 2, Phase 1, including: 1. Gravel cap maintenance 2. Storm drain replacement, 180-foot section 3. Base course installation 4. Asphalt removal 5. Asphalt cap 6. Retention pond 2-1 construction 7. Bioswale construction	2007
Pre-Final inspection of Area 1 cap by EPA	March 9, 2007
EPA CERCLA Actionability Evaluation for Little Squalicum Park	May 15, 2007
Final inspection of Area 1 cap – remedy determined adequate	September 24, 2008
Draft-Final RI report for Little Squalicum Park completed by the City of Bellingham.	December 2008
All remedial activities completed in Area 2, Phase 2, including: 1. Site clearing and demolition a. Monitoring well abandonment b. Railroad tracks removal/replacement c. Asphalt removal 2. Concrete cap 3. Wood debris area gravel cap 4. Storm drain installation, including catch basins, manholes, and drainage piping. 5. Retention pond 2-2 construction 6. Base course installation 7. Asphalt cap 8. As-built survey	2009
Little Squalicum Park RI submitted by City of Bellingham under the Agreed Order	May 2009
Termination of MTCA Agreed Order Number DE2016 by Ecology (terminated when EPA notified the City and Ecology that they were going to complete the LSCA Non-Time Critical Removal Action and oversight because portions of the park were shown to be contaminated by past operations at the Oeser Company)	October 2009
Engineering Evaluation/Cost Analysis for Little Squalicum Creek Area issued by EPA	March 2010

TABLE 2-1
Site Chronology
2011 Five-year Review, Oeser Site

EPA issues Action Memorandum selecting the non-time critical removal action for the LSCA	July 2010
Phases 1 and Phase 2 removal actions started at the LSCA	July 2010
Phases 1 and Phase 2 removal actions completed, as follows: 1. Pre-soil/sediment removal sampling, post-removal confirmation sampling 2. Excavation and removal of contaminated soil/sediment to a maximum of 6 feet below ground surface, backfilled with clean material 3. Relocated Little Squalicum Creek and restored stream channel and wetlands 4. Rerouted Bellingham Technical College/Birchwood storm drain and the Oeser/Birchwood storm drain 5. Created repository on the Oeser Property for contaminated soil 6. Transportation of approximately 22,021 tons (16,940 cubic yards) of contaminated soil to the repository on the Oeser Property	October 2010
Phase 3 removal actions completed as follows 1. Excavation and removal of contaminated soil/sediment in the middle and lower portions of Little Squalicum Creek to a maximum of 6 feet below ground surface, backfilled with clean material 2. Restoration of the stream channel 3. Onsite treatment of contaminated surface water and discharge of clean treated water back to lower portion of creek. 4. Removal of approximately 6,100 tons (4,692 cubic yards) of contaminated soil a. Approximately 3,700 tons (2,846 cubic yards) of contaminated soil was transported to the repository at the Oeser Property b. Approximately 2,400 tons (1,846 cubic yards) of contaminated soil was transported to an offsite RCRA Subtitle D landfill	September 2011

Notes:

Ecology = Washington State Department of Ecology
FS = Feasibility Study
LSCA = Little Squalicum Creek Area
MTCA = Model Toxics Control Act
NOV = Notice of Violation
NPL = National Priorities List
RI = Remedial Investigation

3. Background

This section discusses background information for the Oeser Site, including physical characteristics, land resource use, history of contamination, initial response, and the basis for taking action.

3.1 Physical Characteristics

The Oeser Superfund Site, as defined by EPA, includes both the Oeser Property (an active wood-treating facility) at 730 Marine Drive, and the Little Squalicum Creek Area to the south of the Oeser Property and within Little Squalicum Park.

The Oeser Property is approximately 26-acres and is located about 1,500 feet north of Bellingham Bay in Whatcom County, Washington (Figure 1-2). The site is relatively flat with a general slope less than five degrees towards the southwest. Directly to the south of the Oeser Property is an operating BNSF rail line that runs east-west.

Located just southeast of the Oeser Property, Little Squalicum Park is approximately 21 acres of publicly owned land surrounding Little Squalicum Creek (Figure 1-2). The park is bordered by Bellingham Bay and a BNSF rail line to the south, the Oeser Property to the north, and Bellingham Technical College to the east. Several residences are located adjacent to the southwest portion of Little Squalicum Park in the vicinity of Marine Drive. Little Squalicum Creek, which functions primarily as a storm water drainage ditch, is located at the base of a ravine in the park (Figure 1-2). The steep ravine side slopes are thickly vegetated by blackberry and alder and appear relatively undisturbed. However, some soil piles identified during removal actions at the LSCA appear to be material that was previously excavated from the creek bed at the site during past use.

3.2 Land and Resource Use

A sugar beet processing facility operated at the current Oeser Property from 1925 to 1943. Beginning in 1943, the Oeser Company took ownership of the property and began using the site for wood treatment operations. Creosote was used to treat wood products from approximately 1943 until 1984. Pentachlorophenol was introduced to treat wood in the 1970s and is still in use at the facility. The 26-acre Oeser Property to the northwest of LSCA Park continues to operate as a wood treatment facility. Residential neighborhoods are located along the north and east sides of the Oeser Property. The property boundaries and surrounding land uses for both the active wood treating facility and the LSCA are shown in Figure 3-1.

LSCA Park is located in a ravine southeast of the Oeser Property. The park is used by the City of Bellingham and Whatcom County as a conveyance for storm water drainage that discharges into Little Squalicum Creek, which then empties into Bellingham Bay. Runoff from the adjacent neighborhoods, Bellingham Technical College campus, and the Oeser Property is discharged to the creek via two outfalls. In addition to storm water drainage, the creek is fed by local springs, some of which have significant flow year round. The park is the

site of a former gravel mine. The creek and associated springs were also used as a water source for an upland gravel mine. It is thought that the original stream channel that traversed the southeast portion of the park was filled in during past historic aggregate mining operations.

The underlying groundwater aquifer at the Oeser Site is perched and is not used as a drinking water source. The primary groundwater flow direction is to the southwest toward Bellingham Bay. The Oeser Company receives its water from the City of Bellingham and has no onsite water supply wells. There are no known water supply wells downgradient from the Oeser Site or domestic wells within 1 mile of the site. The City of Bellingham supplies its customers with water from a reservoir located about 6.5 miles east of the Oeser Site.

3.3 History of Contamination

Activities at the Oeser Property included treating wood utility poles with creosote from the 1940s until the early 1980s. Oeser began using PCP as a wood treating agent in the 1970s. PCP spills were documented by Oeser in 1971 and 1975. Historically, there have been several violations of various water discharge permits. A 22,000-gallon tank of creosote was stored on the Site until December 1997, at which time it was removed.

The Oeser Company has discharged processed wastewater and/or storm water to Little Squalicum Creek since wood-treating operations began in the 1943. The water is conveyed through the Oeser Property in an underground storm water drain that discharges into the creek. The water from the Oeser Property combines with runoff from the adjacent Birchwood/Alderwood neighborhood northeast of the Oeser Site before discharging into Little Squalicum Creek. Discharges from Oeser Property operations have historically contained contaminants such as PCPs, polynuclear aromatic hydrocarbons, dioxins/furans, creosote, diesel, and oil products. Currently, the Oeser Company has a National Pollutant Discharge Elimination System permit that regulates PCP and petroleum hydrocarbon discharges to the local storm water drainage system.

3.4 Initial Response

EPA performed a CERCLA Site Assessment beginning in August 1995. A Resource Conservation and Recovery Act inspection was conducted in 1996 and EPA issued a Notice of Violation to the Oeser Company in October 1996 for "failure to meet drip pad requirements" and "failure to hold treated wood on the drip pad until drippage has ceased." In January 1997, the Oeser Company was notified of potential CERCLA liability and, in November 1997, the Oeser Site was placed on EPA's National Priorities List. An initial removal action was conducted from September 1997 to December 1998, which included soil excavation, liquid waste removal, installation of gravel/asphalt caps, replacement of storm pipes, and construction of storm water collection basins. In December 1998, 23,000 gallons of creosote were transported offsite. Two more NOVs were issued in June and November 2002 for failure to comply with RCRA/Washington State Dangerous Waste operating and disposal requirements.

3.5 Basis for Taking Action

A Remedial Investigation and Feasibility Study were completed at the Oeser Property by EPA in 2002 (EPA, 2002a,b). The RI/FS identified contaminants in surface and subsurface soil, shallow and deep groundwater, air, surface water, and sediment. Detected contaminants included PAHs, creosote (including most compounds found in creosote), PCP, dioxin (found in PCP treating solutions), and various volatile organic compounds. The RI findings determined that historical wood treatment processes at the facility were the source of contamination in onsite media and storm water that was discharged to Little Squalicum Creek.

Soil and groundwater investigations at both the Oeser Property and the LSCA identified contamination requiring remediation. The need for remediation was based on the results of human health and ecological risk assessments. For the Oeser Property, potential exposures to contaminated surface and subsurface soil, sediment and surface water by current and future workers via the dermal contact, ingestion and/or inhalation routes were determined to be the primary risks that needed to be addressed by remedial actions. While groundwater is not currently being used for drinking water, potential risk to future workers and/or residents from ingestion of contaminated groundwater was also of concern.

For the LSCA, response actions were determined to be needed to prevent or reduce human exposure to contaminated soil and sediment (through direct contact, inhalation of dust, incidental ingestion of soil, and dermal contact). For ecological receptors, response actions were determined to be needed to prevent or reduce risks to plants, soil invertebrates, insectivorous wildlife and benthos from exposure (through ingestion, and dermal contact) to contaminated soil and sediment.

Response actions were also determined to be necessary to prevent or reduce potential migration of contaminants above cleanup levels in soil/sediment at the LSCA to adjacent surface water via surface runoff, erosion, and wind dispersion and to groundwater.

The response actions taken were deemed necessary to protect the public health, welfare, or the environment from actual or threatened releases of hazardous substances in the environment. Consistent with the NCP and EPA policy, a remedial action was determined to be warranted to address these potential risks.

4. Remedial Action

4.1 Oeser Property

4.1.1 Remedial Action Objectives for the Oeser Property

The Record of Decision for the Oeser Property was signed in September 2003. The selected RAOs for the Oeser Property, as detailed in the ROD, are summarized below.

- RAO 1 - 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.
- RAO 2 - 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.
- RAO 3 - Restrict ingestion and dermal contact with deep groundwater until the groundwater cleanup levels are achieved, and prevent off-property migration of deep groundwater with contaminants above cleanup levels.

4.1.2 Remedy Selection at the Oeser Property

The selected remedy as identified in the ROD (Alternative 6) included the following actions:

- Excavation or capping of contaminated soil located on the Oeser Property in the North Pole Yard and South Pole Yard to include a new cap over approximately 1.5 acres of contaminated soil located just south of the East and West Treatment Areas.
- Excavation or capping of contaminated soil on the Oeser Property in the primary wood-treating areas (Treated Pole Area, North Treatment Area, East Treatment Area, West Treatment Area, and Wood Storage Area).
- Collection and treatment of storm water and drainage from the capped areas to minimize the release of contamination to Little Squalicum Creek and surrounding areas.
- Implementation of institutional controls and long-term O&M measures to ensure protectiveness of the caps. Institutional controls were identified to restrict non-industrial use (e.g., residential or recreational use) of the Oeser Property, to limit access, and to restrict the use of the deep groundwater underlying the Oeser Property.
- Implementation of long-term groundwater monitoring combined with a passive contaminant-removal system for the shallow aquifer using oil-absorbing material to remove floating light non-aqueous phase liquid product and related contamination from the wells.

- O&M of the remedy, including an O&M plan requiring inspection of the structural integrity of the cap and related drainage system inspection, with preventative maintenance, cleaning, and repairs as necessary into perpetuity.

The ROD identified cleanup levels for soil and groundwater based on the results of the Risk Assessment. These cleanup levels are presented in Table 4-1.

TABLE 4-1
Cleanup Levels for Soil, Groundwater, and Soil/Sediment at the Oeser Property and Little Squalicum Creek Area
2011 Five-year Review, Oeser Site

Contaminant	Cleanup Level for Soil (mg/kg)	Cleanup Level for Groundwater (µg/L)	Cleanup Level for Soil/Sediment (mg/kg)
Oeser Property			
cPAHs[a]	8.9	0.012	—
Dioxins/furans	0.000875[b]	0.000000583[c]	—
PCP	120	1[d]	—
Naphthalene	262	160	—
TPH	1,100	500[e]	—
Little Squalicum Creek Area			
cPAHs[f]	4.5	—	—
Dioxins/furans[g]	—	—	0.000012
Total PAHs[h]	3.6	—	—
PCP[i]	—	—	3.0

Notes:
[a] Cleanup levels for cPAHs and dioxins/furans are based on benzo(a)pyrene and 2,3,7,8-TCDD equivalencies, respectively.
[b] The soil cleanup level for dioxins/furans is based on MTCA Method C for industrial properties.
[c] Since the cleanup level for dioxins/furans is below the lowest achievable PQLs, the PQL will represent the cleanup level.
[d] The Maximum Contaminant Level is used for PCP because its risk does not exceed 10^{-5}.
[e] The cleanup level for TPH is based on MTCA Method A and applies to diesel-range and gasoline-range organics.
[f] Cleanup levels for cPAHs are based on benzo(a)pyrene and risk at this cleanup level is $1x10^{-6}$.
[g] The soil cleanup level for dioxins/furans is based on a background level calculated by looking at the 90th percentile from 20 soil samples taken from the City of Bellingham during the Oeser remedial investigation
[h] The cleanup level for total PAHs is based on background soil concentrations.
[i] 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 humans and ecological receptors.

Sources:
Oeser Property: Final Record of Decision (EPA, 2003).
Little Squalicum Creek Area: Action Memorandum for a Non-Time-Critical Removal Action (EPA, 2010a).

µg/L = micrograms per liter
mg/kg = milligrams per kilogram
cPAH = carcinogenic polycyclic aromatic hydrocarbon
MTCA = Model Toxics Control Act
PAH = polycyclic aromatic hydrocarbon
PCP = pentachlorophenol
PQL = practical quantitation limit
TCDD = tetrachlorodibenzo-p-dioxin
TPH = total petroleum hydrocarbons

4.1.3 Remedy Implementation at the Oeser Property

Initial pre-ROD time critical removal actions were conducted by EPA at the Site in 1997 and 1998 and are described in more detail in the ROD (EPA, 2003). The Oeser Company completed subsequent, post-ROD remedial action at the Oeser Property in 2009. The Oeser Company has also completed closure activities for waste management units on the Oeser Property, which are regulated under RCRA.

Alternative 6, as described above in Section 4.1.2, was the remedy selected by EPA for implementation (EPA, 2002c). A summary of the post-ROD remedial action activities is provided below.

The implementation of the post-ROD remedial actions at the Oeser Property was divided into two areas: Area 1 and Area 2 (as-builts of these areas are shown in Figures 4-1 and 4-2). The Area 1 removal action was completed in 2006. The Area 2 remedial action was completed in two phases: Phase 1 was completed in 2007 and Phase 2 in 2009.

Area 1

Area 1 remedial actions included excavation and capping of contaminated soil located in the North Pole Yard and the South Pole Yard, including the Wood Debris Area (see Figure 1-2).

Area 2 – Phase 1

The Phase 1 remedial actions in Area 2 of the Oeser Property included the following:

- Gravel cap maintenance
- Storm drain replacement (180-foot-long section)
- Base course installation
- Asphalt removal
- Asphalt cap
- Retention pond 2-1 construction
- Bioswale construction

Area 2 – Phase 2

The Phase 2 remedial actions in Area 2 of the Oeser Property included the following:

- Site clearing and demolition
  - Monitoring well abandonment
  - Railroad tracks removal/replacement
  - Asphalt removal
- Concrete cap
- Wood debris area gravel cap
- Storm drain installation, including catch basins, manholes, and drainage piping
- Retention pond 2-2 construction
- Base course installation
- Asphalt cap
- As-built survey

An Institutional Controls Plan, which will include restrictive covenants on the Oeser Property to prevent future use as residential or recreational property, is in the process of being finalized.

4.1.4 Operation and Maintenance at the Oeser Property

Compliance monitoring at the Oeser Property is required as specified in the ROD (EPA. 2003), the Consent Decree (EPA, 2005c) with the Oeser Company, and the Statement of Work included in the Consent Decree to confirm the long-term effectiveness of the remedial action completed at the Oeser Property.

The ROD requires up to 30 years of groundwater monitoring. The Draft O&M Plan (AECOM, 2009) lists the groundwater sampling schedule as follows:

- **Year 1** (2010): Quarterly monitoring
- **Year 2** (2011): Semi-annual monitoring in May (post wet weather) and November (post dry weather)
- **Year 3 through 5** (2012 through 2014): Annual monitoring
- **Year 6 through 30:** The need for and frequency of continued sampling after year 5 is to be assessed during the 5-year review.

Baseline groundwater samples were collected in May 2009 (i.e., the first set of samples collected after completion of the remedial action) and the analytical results are presented in the Draft O&M Plan (AECOM, 2009b). A comparison of the groundwater analytical results from May 2009 and the 2006 sampling results (RETEC, 2006c) indicate that contaminant concentrations are stable or decreasing. No additional groundwater sampling has been conducted since 2009.

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 Operations and Maintenance Plan for the Oeser Property 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

O&M costs include cap and drainage structure maintenance and groundwater monitoring for each quarter, year, and NAPL monitoring event. The costs for O&M presented in the ROD are listed in Table 4-2.

TABLE 4-2
Estimated Annual Operations and Maintenance Costs for the Oeser Property
2011 Five-year Review, Oeser Site

O&M Costs	Unit Cost	Unit	Qty	Total
Institutional Controls				
Total annual monitoring cost for years 1 through 5	$33,200.00	year	1	$33,200.00
Total annual monitoring cost for years 6 through 30	$16,600.00	year	1	$16,600.00
Repairs and Maintenance				
Top seal coating – once every 2 years	$0.35	square yard	36,348	$12.720.00
Patching ACPs and paving fabric 3% annually	$17.44	square yard	1,090	$19,010.00
Patching ACPs and paving fabric 6% annually	$17.44	square yard	2,180	$38,020.00
Patching ACPs and paving fabric 10% annually	$17.44	square yard	3,630	$63,310.00
NAPL Removal				
Crew	$150.00	hour	16	$2,400.00
Oil-only SOC (flexible absorbent tube)	$48.18	case	1	$48.18
Disposal of absorbent material	$0.36	pound	44	$15.84
Annual NAPL Removal Costs				$2,500.00

Assumptions:
Accuracy: (-30% to +50%)
Base year: 2003
Discount rate: 5%
O&M: 30 years

Source: Final Record of Decision (EPA 2003).

4.2 Little Squalicum Creek Area

4.2.1 Removal Action Objectives for the LSCA

The only significant changes to response actions for the Oeser Site involve the LSCA. At the time the ROD was prepared, EPA determined that the Oeser-related contaminants within the LSCA did not pose an unacceptable risk to human or ecological receptors, and that cleanup of Oeser-related contaminants within the LSCA was not warranted under CERCLA. Since that time, new information was discovered. Based on this new information, EPA has recalculated the human and ecological risks assessment at the LSCA, which resulted in a determination that the LSCA qualified for a removal action under CERCLA.

There are also other sources of contamination at the LSCA, including non-Oeser storm water runoff and spills and dumping from non-Oeser sources. However, only a portion of the park was addressed by this CERCLA removal action. EPA addressed only those areas determined to pose an unacceptable risk to human health and the environment as a result of

contamination from historic Oeser Property wood treating operations. Other areas of the LSCA (contaminated by other unrelated or non-source-point contaminants) that may require assessment and cleanup action will be addressed by the property owners, the City of Bellingham and Whatcom County.

In its July 2, 2010, Action Memorandum for LSCA, EPA determined that (1) the conditions at the LSCA may present an imminent and substantial endangerment to public health or welfare or the environment, and (2) the conditions at the LSCA meet the criteria of the NCP, 40 CFR § 300.415, for a removal action. A non-time-critical removal action was conducted to address risk to human health and the environment from exposure to hazardous substances, pollutants, and contaminants present at the LSCA. EPA has established an Administrative Record for this removal action.

Phases 1 and 2 of the removal action were completed in 2010 and Phase 3 was completed in September 2011 (see Section 4.2.3). Contaminated soil and sediment with concentrations of COCs above the cleanup levels were excavated and transported to the Oeser Property for placement in the containment cells in the North Pole Yard (Figure 4-3) with a small amount of soil going to a Subtitle D landfill. Excavated areas at the LSCA were backfilled with clean material and revegetated per the design. Pre-removal and post-removal confirmatory samples were collected to define removal action excavation limits.

Consistent with the RAOs in the ROD for the Oeser Site, the 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 the contaminated soil that exceeds cleanup levels.
- Prevent or reduce risks to plants, soil invertebrates, insectivorous wildlife, and the benthos from exposure (through ingestion and dermal contact) to contaminated soil and sediment that exceed cleanup levels.
- Prevent or reduce potential migration of 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/sediment at the LSCA to groundwater and eventual potential recharge to surface water to protect human health and ecological receptors in surface water.

The Action Memorandum (EPA 2010a) identified the selected removal action described below and cleanup levels for soil and sediment based on the results of the risk assessment. These cleanup levels are presented in Table 4-1.

4.2.2 Removal Action Selection at the LSCA

The removal action selected for the LSCA for contaminated soil and sediments with concentrations of COCs above cleanup levels included the following:

- Pre-removal confirmatory sampling

- Removal of contaminated soil and sediment for consolidation and containment onsite (some material may be removed to the Oeser Property and/or disposed offsite).
- Post-removal confirmatory sampling
- Rerouting of the creek so it flows through a portion of the historical creek channel where the contaminated soil will have been removed
- Institutional controls

4.2.3 Removal Action Implementation at the LSCA

Removal construction activities have been recently completed at the LSCA. Phases 1 and 2 were completed in 2010 and included the following:

- Performed pre-excavation contaminant delineation soil sampling, Excavated and removed approximately 22,021 tons (16,940 cubic yards) of contaminated soil to a maximum of 6 feet below ground surface and backfilled with clean material
- Conducted post-excavation confirmation sampling
- Re-routed both the Oeser/Birchwood and Bellingham Technical College/Birchwood storm drains
- Relocated Little Squalicum Creek to its former creek channel and restored the streamside wetlands
- Installed wood habitat structures in the relocated creek channel and revegetated the streambanks and wetlands
- Created a repository for contaminated soil on the Oeser Property

Phase 3 was completed in September 2011 and included the following:

- Excavated and removed approximately 6,100 tons (4,692 cubic yards) of contaminated soil to a maximum of 6 feet bgs and backfilled with clean material. Of this contaminated soil, 3,700 tons (2,846 cubic yards) were hauled to the repository at the Oeser Property and 2,400 tons (1,846 cubic yards) were hauled off site to a RCRA Subtitle D landfill
- Conducted post-excavation confirmation sampling
- Backfilled the excavated areas with clean material.

Institutional controls will be implemented in accordance with the Institutional Controls Plan to be developed for the Site.

5. Progress Since Last Review

This is the first five-year review of the Oeser Site.

6. Five-year Review Process

6.1 Administrative Components

This five-year review was conducted by EPA Region 10 staff with the assistance of CH2M HILL under EPA Contract No. 68-S7-04-01. The review was conducted consistent with EPA's *Comprehensive Five-year Review Guidance* (EPA, 2001). The evaluation was performed between March and July 2011.

6.2 Community Involvement

A public notice announcing the five-year review process for the Oeser Site was published in the May 5, 2011, edition of the *Bellingham Herald*. The public notice solicited public comments related to the performance of the remedy for the Oeser Site. No comments were received during the public comment period.

6.3 Document Review

Historical site documentation was reviewed to support this five-year review. A list of this documentation is provided in Attachment A. Documents or information reviewed included the ROD, Consent Decree, Action Memorandum, annual groundwater monitoring data, soil sampling data, and sediment sampling data. Applicable soil, groundwater, and sediment cleanup standards, as listed in the 2003 ROD and the 2010 Action Memorandum, were also reviewed (see Attachment A).

6.4 Data Review

6.4.1 Oeser Property

Area 1

Soil samples collected within Area 1 during the remedial action met the cleanup levels for PCP, naphthalene, and total petroleum hydrocarbon at all locations. One location contained carcinogenic PAH above the cleanup level and five locations contained dioxins/furans above the cleanup level. Figures and tables depicting contaminant concentrations in soil prior to implementation of the remedial action were presented in the ROD (EPA 2003). A gravel cap was extended over areas identified as having soil concentrations above cleanup levels, as well as additional areas that were not identified as requiring the gravel cap.

Area 2

Baseline groundwater samples were collected in May 2009 (i.e., the first set of samples collected after completion of the removal action) and the analytical results are presented in the Draft O&M Plan (AECOM, 2009b). A comparison of the groundwater analytical results from May 2009 and the 2006 sampling results (RETEC, 2006c) indicate that contaminant concentrations are stable or decreasing. With the exception of shallow groundwater wells located in the Treated Pole and East and West Treatment Areas, contaminants of concern in

all shallow groundwater monitoring wells are below cleanup levels. Concentrations of contaminants of concern in all deep groundwater monitoring wells are below cleanup levels. No additional groundwater sampling has been conducted since 2009 because the 2009 Draft O&M Plan has not been finalized.

An Institutional Controls Plan is not yet in place for the Oeser Property, but is currently in the process of being finalized. The Institutional Controls Plan will include proprietary controls on the Oeser Property. A draft environmental covenant has been prepared and will be revised to include the repository that resulted from the LSCA removal.

6.4.2 Little Squalicum Creek Area

Soil and groundwater samples were collected at selected locations during the two RIs that were conducted for the LSCA. These data were compiled in the Engineering Evaluation/Cost Analysis for LSCA which was prepared by EPA (EPA, 2010). Subsequently, during the LSCA non time critical removal action, 12,000 cubic yards of soil that was above the cleanup levels, up to a maximum depth of 6 feet bgs, was excavated. 10,000 cubic yards of soil was transferred to the repository at the Oeser Property. The remaining 2,000 cubic yards of soil was transported to a RCRA Subtitle D landfill. Post-removal confirmation samples (Figure 6-1) were collected prior to the excavation being backfilled with clean material to ensure attainment of cleanup levels. The non time critical removal action was completed in September 2011. A preliminary construction completion report is being prepared and will present the final confirmation soil sampling data.

6.5 Review of Applicable and Relevant and Appropriate Requirements

A review of the ARARs was conducted as part of the five-year review. The objective of the ARAR review was to identify federal or state regulatory standards promulgated since the remedy was implemented that might affect the protectiveness of the remedy. EPA's *Comprehensive Five-year Review Guidance* (EPA, 2001) specifies that newly promulgated or revised regulatory standards, which may affect previous conclusions about the protectiveness of the remedy, be identified and evaluated during the five-year review. Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment (40 CFR 300.430(f)(ii)(B)(1)).

ARARs for the selected remedy were identified in the ROD and Action Memorandum as those provided in the FS Addendum (EPA, 2002c) and EE/CA (EPA, 2010). The ARARs for the Oeser Site have been consolidated and are provided in Attachment E to this five-year review document. There have been no changes to the ARAR requirements that would significantly impact the current removal actions or cleanup standards, except as follows:

- Changes to cleanup standards as noted in Section 7.2.2 and 7.2.3
- Changes to Washington Administrative Code 173-160, *Minimum Standards for Construction and Maintenance of Wells* (rule changes adopted December 2006). New

groundwater monitoring wells, direct-push resource wells, etc. installed or abandoned at the site shall be in compliance with this updated regulation.

Neither of these changes affects the protectiveness of the remedy.

6.6 Site Inspection

A Site inspection was conducted on April 6, 2011, as part of the five-year review process. The Site visit was conducted to identify any problems associated with the remedy and ongoing Site O&M that might interfere with remedy protectiveness. The following individuals participated in the Site visit:

- Mary Jane Nearman, EPA Region 10, Remedial Project Manager
- Paul Townley, CH2M HILL, EPA Contractor
- Mike Reimbold, CH2M HILL, EPA Contractor
- Guy Caley, CH2M HILL, EPA Contractor
- Chris Secrist, Oeser Company

Based on the Site inspection, the remedy is performing as expected and the related O&M activities appear adequate. However, groundwater has not been monitored since 2009, as the O&M Plan has not yet been finalized. Site inspection photographs and the Site inspection checklist form are included in Attachments B and D, respectively.

6.7 Interviews

Several individuals were interviewed as part of the five-year review process. The interviews were conducted to identify successes or problems related to the remedy and O&M activities. The following individuals were interviewed:

- Chris Secrist, The Oeser Company
- Mary O'Herron, Washington State Department of Ecology
- Lori LeVander, Washington State Department of Ecology
- Byung Maeng, Washington State Department of Ecology
- Galen Tritt, Washington State Department of Ecology
- Leslie Bryson, City of Bellingham Department of Parks
- Tim Wahl, City of Bellingham Parks and Recreation
- Mike McFarlane, Whatcom County Parks & Recreation
- Eve Magyar, Bellingham Technical College
- Sue DenAdel, Birchwood Neighborhood Association

Based on the interviews, the remedy is performing as expected and the related O&M activities appear adequate. Summaries of the above referenced interviews are provided in Attachment C.

7. Technical Assessment

As indicated in Section 4.1, the remedial actions for the Oeser Property included the following:

- Excavation and capping of onsite contaminated soil
- Collection and treatment of capped area runoff
- Completion of an O&M program and implementation of institutional controls for the capped areas
- Implementation of a long-term groundwater monitoring program for the shallow and deep aquifers
- Establishment of restrictive covenants for groundwater use and non-industrial land use

Note that the technical assessment performed for this five-year review did not specifically address the LSCA. The LSCA removal action was still in progress at the time the five-year review was conducted; therefore, no information is available on remedy performance and functionality.

The following technical assessment of the Oeser Property remedy examines the following three questions:

- Question A: Is the remedy functioning as intended?
- Question B: Have the assumptions upon which the remedy was based changed?
- Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

7.1 Is the Remedy Functioning as Intended?

Yes, however, to ensure that it continues to do so for the long term, the O&M Plan needs to be completed and both O&M and ICs need to be implemented.

7.1.1 Excavation and Capping of Onsite Contaminated Soil at the Oeser Property

Excavation

The EPA completed a removal action at the Oeser Property portion of the Site in November 1998. During the removal 8,456 tons of the most contaminated soil were excavated to a depth of twenty (20) feet and transported offsite by rail for disposal. Concurrent to the excavation, 26,948 gallons of liquid waste from the excavated pit were transported offsite by vacuum truck for treatment and disposal. A 60-foot section of storm pipe running through the most highly contaminated area was also removed and replaced during this time. All the excavated areas were backfilled with clean soil and compacted. New stormwater collection basins were also constructed.

The Oeser Company excavated soil in the vicinity of the charge switching area. In this area 244 cubic yards of soil was excavated and transported to Utah for incineration and disposal. This excavation as the RCRA closure of the charge switching area and the work is discussed in detail in the RCRA Closure Plan submitted to the EPA on April 22, 2008, and the RCRA Completion Report submitted to EPA on November 21, 2008.

Asphalt Cap

Asphalt capping (minimum of 6 inches) was conducted as part of the remedial activities. Approximately 4,005 tons of Class E asphalt and 3,140 tons of Class B asphalt were used for capping. See Figure 4-1 for the as-built of the capped areas at the Oeser Property.

In the northern portion of the Treated Pole Storage Area, an area of 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. The asphalt surface will continue to be inspected and repaired as part of O&M Plan.

Also during the site visit, ponded water was observed in the eastern portion of the Treated Pole Storage Area (adjacent to the granulated activated carbon 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.

Gravel Cap

A gravel cap was placed in the South Pole Yard, West Treatment Area, and Wood Storage Yard. Prior to placement of the gravel cap, the ground was compacted to a firm condition using a mechanical roller. The graded area was then covered with geotextile fabric with a minimum of 12-inch overlap at the seams. A layer of crushed asphalt 6 inches thick was placed on the geotextile, followed by a 6-inch layer of gravel (approximately 2,496 tons of 2-inch clear gravel) on top of the crushed asphalt.

During the LSCA removal action, soil that was above the cleanup levels, up to a depth of 6 feet bgs, was excavated and transferred to four cells in the North Pole Yard at the Oeser Property. These cells were covered with a gravel cap. Sampling of the soil in the cells was performed in August 2011, since only post-removal confirmation samples (Figure 6-1) were collected at the LSCA. Preliminary analytical results show that the soil within the repository is below cleanup action levels.

The effectiveness of surface water drainage at the North Pole Yard (identified in the Oeser Removal Action Work Plan [AECOM 2010b]) will be verified in the fall of 2011.

The gravel cap at the Oeser Property uses 2-inch or larger gradations of gravel. At the time of this five-year review, it does not appear that surface water is infiltrating through the cap.

Collection and Treatment of Capped Area Runoff

As part of the response actions at the Oeser Property, two retainage ponds and a bioswale were constructed to store and treat surface water runoff. In addition, a water treatment system was installed to treat surface water runoff from the Treated Pole Storage Area. Observations during the Site visit identified the following actions that need to be performed:

- Inspect pipes and catch basins for debris collection, and clean as needed to keep them clear, especially pipes installed at a lower gradient than desired (e.g., pipes A1, B3, C2).
- Consult the GAC design basis documentation and O&M Plan. Check if ponded water volume on the asphalt pad exceeds the design criteria. Follow maintenance requirements as specified for the system for any needed remedies.
- Mow bioswales as prescribed in the O&M Plan or per standard practices.
- Check sediment level in Swale 3 when drained and dry. If the site sediment has sealed the bottom, replace and recondition the soil layer in conformance with the O&M Plan or per standard practices.
- Replace dead vegetation in Pond 2/1 with original plants.
- Remove and prevent bark debris from entering into the ponds.
- Finalize the O&M Plan and implement institutional controls for the capped areas.

The O&M program has yet to be fully implemented at the Oeser Property. The O&M Plan (AECOM, 2009b) is currently in draft form and is being updated to address impacts from the placement of contaminated soil from the LSCA removal action in containment cells at the Oeser Property. Some actions such as inspection and repair of the asphalt caps as identified in the draft O&M Plan have been implemented at the Oeser Property, other actions such as continued groundwater monitoring have not yet been implemented.

7.1.2 Implementation of Long-term Groundwater Monitoring Program for Shallow and Deep Aquifers

The long-term groundwater monitoring program for shallow and deep aquifers has not been implemented because the O&M plan for the Oeser Property is currently in the draft stage.

7.1.3 Establishment of Restrictive Covenants for Groundwater Use and Non-industrial Land Use

The restrictive covenant identified in the Consent Decree includes land and groundwater use restrictions. There has been no significant change of land use within the Oeser Property since the ROD was issued in 2002 (EPA, 2003). The institutional controls included in the ROD are as follows:

- Restrict residential, recreational, and specific commercial uses for the entire Oeser Property unless the Site is cleaned up to be protective for residential use or other non-industrial uses.
- Preserve the integrity of the caps to ensure that they are not breeched without prior EPA approval.
- Enforce operational use restrictions on the cap to preserve the integrity of the cap and ensure long-term protection of human health and the environment.

- Restrict the use of shallow and deep groundwater at the Oeser Property, including prohibiting the installation of wells for use as potable water until the groundwater meets cleanup levels for use as drinking water.

The Institutional Controls Plan, which is in the process of being finalized, will include the restrictive covenants that are set forth in the Consent Decree for the Oeser Property. An environmental covenant is drafted and will be reviewed to ensure that it includes the repository created by the LSCA removal. Once it is in final form, it will be filed with the County. The IC Plan will also include a contingency for any ICs that may be necessary in the LSCA. The ICs in the LSCA will likely be governmental ICs, since the LSCA is owned by the City of Bellingham or Whatcom County and may already be in place.

A NPDES permit approved by the Washington State Department of in September 2006 provides conditions for discharge of storm water containing PCP and petroleum hydrocarbons from the Oeser Property. In May 2011, a NPDES permit renewal application was submitted to Ecology and the City of Bellingham. The application provides updated information for the installation of additional catch basins and diversion of surface water flow to the existing storm water management system from the capped areas of the Oeser Site.

7.2 Have the Assumptions Upon Which the Remedy Was Based Changed?

Yes, some assumptions have changed, the most significant of which is that action was determined to be necessary in the LSCA based on new information.

7.2.1 Exposure Assumptions

Current and anticipated future land and water uses at or near the Oeser Property and the LSCA have not changed significantly since the ROD was prepared; therefore, the exposure pathways evaluated in the Baseline Risk Assessment (see Appendix M of the RI Report in EPA, 2002a) remain valid at this time. The ecological exposure pathways evaluated in the Baseline Risk Assessment did not indicate that facility-related chemicals appear to pose a serious threat to ecological populations; therefore, cleanup levels targeted only human health risks. However, EPA reevaluated ecological risks in the March 2010 EE/CA based on new information provided in the City of Bellingham's RI regarding contaminant concentrations found within the LSCA. The original risk assessment and EPA's CERCLA risk evaluation both evaluated current and future exposure scenarios for onsite workers, onsite and offsite residents, and offsite recreational visitors. The exposure assumptions for these scenarios were evaluated as part of the five-year review and found to be consistent with current guidance.

7.2.2 Toxicity Factors

Several toxicity factors (cancer slope factors and reference doses) used during the baseline human health risk assessment for derivation of cleanup levels have been revised since the ROD was issued. These changes are discussed below for the identified COCs (carcinogenic PAHs, dioxin/furan congeners, naphthalene, and PCP).

Carcinogenic PAHs

Carcinogenic PAHs were evaluated as benzo(a)pyrene equivalents, which were calculated by multiplying each carcinogenic PAH by its relative potency factor and then by summing the result. Because the relative potency factors have not changed since the ROD was issued, the estimated B(a)P equivalents also have not changed. The oral slope factor for B(a)P has not changed, but the inhalation slope factor has increased slightly from 3.1 to 3.85 milligrams per kilogram per-day^{-1}, making it more conservative now than at the time the human health risk assessment was performed.

On March 29, 2005, EPA issued its revised *Guidelines for Carcinogen Risk Assessment* (EPA, 2005a), along with an associated document, entitled *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (EPA, 2005b). These documents provide guidance for assessing carcinogens considered to have a mutagenic mode of action. If a chemical has been determined to cause cancer by a mutagenic MOA, EPA has noted that it is possible that exposures to that chemical in early life may result in higher lifetime cancer risks than a comparable duration adult exposure (EPA, 2009). Carcinogenic PAHs are chemicals that have been considered to have a mutagenic MOA, whereas the ROD did not consider this designation. Since the mutagenic MOA approach only affects early-life stages, this issue only affects the residential and recreational exposure scenarios, which are not applicable to the Oeser Property because of its industrial categorization. However, the recreational exposure scenario is valid for the LSCA and EPA reevaluated risks for the LSCA in the March 2010 EE/CA.

Dioxin Toxicity Equivalents

Dioxins/furans were evaluated individually as 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalents. The 2,3,7,8- tetrachlorodibenzo-p-dioxin TEQ was calculated by multiplying each dioxin congener by its respective toxicity equivalency factor (Van den Berg et al., 1998) and then summing the results. The TEFs were updated in 2005 (Van den Berg et al., 2006), after the ROD was issued. The 2005 TEFs are three-fold more stringent for octachlorodibenzodioxin and octachlorodibenzofuran, but are 40 percent less stringent for 1,2,3,7,8-pentachlorodibenzofuran and 2,3,4,7,8- pentachlorodibenzofuran. To the extent these specific congeners contributed to the TEQs used to assess risk, the resulting risk estimates would be influenced accordingly by use of the more current TEFs.

Since the ROD was issued, the oral slope factor for dioxin TEQ has been lowered from $1.5x10^{+5}$ to $1.3x10^{+5}$ mg/kg-day^{-1}, making it slightly less conservative. This change would mean that the risk-based cleanup level would be about 15 percent higher using the current slope factor. Noncancer toxicity factors for dioxins were not available at the time of the ROD, but are currently available. It is uncertain whether including a noncancer assessment for dioxins (based on current toxicity factors) would alter the conclusions of no unacceptable risk for the offsite residential scenario, which was based on $1x10^{-4}$ specific risk. No removal actions were proposed for offsite areas based on this conclusion. However, the concentrations detected at some offsite residences (e.g., RES-D-5 and RES-D-6; see Table 4-11 of RI Report in EPA, 2002a) exceeded EPA's current proposed residential remediation goal based on noncancer effects of 72 nanograms per kilogram.

EPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in EPA and other federal agencies, as well as scientific

experts in the private sector and academia. The Agency followed current cancer guidelines and incorporated the latest data and physiological/biochemical research into the assessment. The results of the assessment have currently not been finalized and have not been adopted into state or federal standards. EPA anticipates that a final revision to the dioxin toxicity numbers may be released by the end of 2011. In addition, EPA/OSWER has proposed to revise the interim preliminary remediation goals for dioxin and dioxin-like compounds, based on technical assessment of scientific and environmental data. However, EPA has not made any final decisions on interim preliminary remediation goals at this time. Therefore, the dioxin toxicity reassessment for this Site will be updated during the next Five Year Review.

On December 30, 2009, EPA released the *Draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) Sites* (EPA, 2010d). The guidance proposes updated risk-based remediation goals of 72 and 950 ng/kg TEQ for residential and commercial/industrial worker exposure scenarios, respectively. It is important to note that these recommended remediation goals are based on noncancer effects, and that noncancer toxicity factors were not available at the time the ROD was issued. However, the proposed commercial/industrial remediation goal is only slightly higher (less stringent by about 9 percent) than the ROD cleanup level for dioxins of 875 ng/kg TEQ, which was based on $1x10^{-4}$ specific risk. The proposed residential remediation goal of 72 ng/kg TEQ is more stringent than the ROD cleanup level.

Naphthalene

At the time the ROD was prepared, only noncancer toxicity factors were available for naphthalene, providing the basis for the cleanup level. Since that time, naphthalene has been classified as a carcinogen via the inhalation route. The current EPA regional screening level (EPA, 2010b) for industrial exposure to soil is 18 mg/kg based on $1x10^{-6}$ specific risk, or 1,800 mg/kg based on $1x10^{-4}$ specific risk. Therefore, the ROD cleanup level of 260 mg/kg for naphthalene is protective of human health and the environment for soil within the target risk range of $1x10^{-6}$ to $1x10^{-4}$.

Pentachlorophenol

Since the ROD was signed, the oral slope factor for PCP has been raised from 0.12 to 0.4 mg/kg-day^{-1}, representing a 3.3-fold increase. The inhalation slope factor has been lowered from 0.12 to 0.018 mg/kg-day^{-1}, which is less conservative now. Using the most recent oral slope factor, the cleanup level for soil would be lower (about 30 percent) than the value cited in the ROD.

Although some minor changes to the ecological effects criteria have occurred since the ROD was signed, the changes do not affect the protectiveness of the remedy because human health pathways were the drivers for the remedy.

7.2.3 Changes in Risk Assessment Methodology

EPA has published several new risk assessment guidance documents since the ROD was prepared, some of which were discussed above. The following is a list of these new guidance documents:

- EPA. 2004. *Risk Assessment Guidance for Superfund–Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.*
- EPA. 2005a. *Guidelines for Carcinogen Risk Assessment.*
- EPA. 2005b. *Supplemental Guidance for Assessing Cancer Susceptibility from Early-Life Exposure to Carcinogens.*
- EPA. 2009. *Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual - Part F, Supplemental Guidance for Inhalation Risk Assessment.*
- EPA. 2010c. *Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds.*

7.2.4 Cleanup Levels

The Washington State Model Toxics Control Act Cleanup Regulations (WAC 173-340) provides cleanup standards for soil, groundwater, surface water, and air in Washington State. The Oeser Property is zoned and used for industrial purposes and generally qualifies for the MTCA Method C cleanup levels. For soil, the ROD established site-specific cleanup levels for carcinogenic PAHs, PCP, naphthalene, and TPH in soil. MTCA Method C industrial standards were selected for dioxins/furans. For groundwater, the MTCA Method B (unrestricted use) calculation was used to establish a cleanup level for the deep groundwater aquifer. At the LSCA, the Action Memorandum (EPA, 2010a) selected soil and sediment cleanup levels that were based on the MTCA Method B levels for unrestricted use.

Since issuance of the ROD in 2003, a MTCA rule amendment adopted in October 2007 required the following changes to cleanup level development and is consistent with the recent revisions in the toxicity factors discussed in Section 7.2.2:

- Cleanup level calculations will use the most current TEF values, including:
  - TEFs for dioxins/furans recommended by the World Health Organization (Van den Berg et al., 2006)
  - Potency equivalency factors for carcinogenic PAHs adopted by the California Environmental Protection Agency (EPA, 2010e)
- Use of a modified gastrointestinal absorption fraction default value specified in WAC 173-340-740 and -745 for soil cleanup levels for dioxin and furan mixtures from 1.0 (100 percent) to 0.6 (60 percent).

7.3 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 first five-year review that calls into question the protectiveness of the remedy for the Oeser Property.

ARARs for the selected remedy for the Oeser Property were identified in the ROD. ARARs for the LSCA were identified in the Action Memorandum. The ARARs for the Oeser Site have been consolidated and are provided in Attachment E to this five-year review document. There have been no changes to the ARAR requirements that would significantly

impact the protectiveness of the remedial action or cleanup levels for the Oeser Property, except as follows:

- Changes to cleanup standards as noted in Sections 7.2.2 and 7.2.3
- Changes to WAC 173-160, *Minimum Standards for Construction and Maintenance of Wells* (rule changes adopted December 2006). New groundwater monitoring wells, direct-push resource wells, etc. installed or abandoned at the site will need to be in compliance with this updated regulation.

7.4 Technical Assessment Summary

Based on a review of the historical site data, a site inspection, and interviews with site stakeholders, the remedy as implemented is functioning as designed, however the IC Plan remains to be completed and implemented, the O&M Plan needs to be completed, and the following O&M issues identified in this review need to be addressed:

- The O&M program has yet to be implemented at the Oeser Property, including implementation of a long-term groundwater monitoring program for the 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 at the Oeser Property.
- There are some areas where the asphalt caps are in need of repair. In addition, the gravel cap in the North Pole Yard where the soil from the LSCA removal action has been placed needs to be evaluated when the gravel cap is completed.
- Maintenance of the retention ponds and drainage swales need to be performed as intended. However, several maintenance issues were identified including sedimentation and vegetation maintenance (i.e., mowing). In addition, storm water drainage from the gravel cap in the North Pole Yard where the soil from the LSCA removal action has been placed needs to be evaluated when the gravel cap is completed.

Other than the need to perform the removal action in the LSCA that was recently completed, there have been no changes in exposure assumptions, standards, toxicity, or other new information that calls into question the protectiveness of the remedy.

8. Issues

Outstanding issues identified by the five-year review have been described in detail elsewhere in this report and are summarized in Table 8-1 below:

TABLE 8-1
Summary of Issues at the Oeser Site
2011 Five-year Review, Oeser Site

Issues	Affects Current Protectiveness	Affects Future Protectiveness
Oeser Property		
In the northern portion of the Treated Pole Storage Area, approximately 100 square feet of cracks in the asphalt surface were 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.	N	Y
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.	N	Y
The O&M program has yet to be implemented at the Oeser Property, including implementation a long-term groundwater monitoring program for the 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.	N	Y
An Institutional Controls Plan needs to be finalized for the Oeser Property and enforceable restrictive covenants that run with the land need to be put in place. The property use has not changed; the Oeser Property is currently an operating facility.	N	Y
Little Squalicum Creek Area		
An O&M Plan needs to be developed which addresses surface water and groundwater monitoring.		Y

The following operation and maintenance issues which do not affect current or future protectiveness were also identified during the Five-Year Review:

- Observations from the site inspection identified the following actions that need to be performed:

- Inspect pipes and catch basins for debris collection, and clean as needed to keep them clear, especially pipes installed at a lower gradient than desired (e.g., pipes A1, B3, C2).
- Consult the GAC design basis documentation and O&M Plan to determine the flow capacity. Check if ponded water volume on the asphalt pad exceeds design criteria. Follow maintenance requirements as specified for the system for any needed remedies.
- Mow bioswales as prescribed in the O&M Plan or per standard practice.
- Check sediment level in Swale 3 when drained and dry. If site sediment has sealed the bottom, replace and recondition the soil layer in conformance with the O&M Plan or per standard practice.
- Replace dead vegetation in Ponds 2/1 with plants equivalent to or similar to those required by the original design.
- Remove bark debris and prevent bark debris from entering into the ponds in the future.
- Inspect surface water drainage system in the North Pole Yard to ensure it is functioning effectively.

9. Recommendations and Follow-Up Actions

Table 9-1 lists the recommended follow-up actions based on the technical assessment findings identified in Section 7 and the summary of issues presented in Section 8.

TABLE 9-1
Recommendations and Follow-up Actions
2011 Five-year Review, Oeser Site

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Dates	Affects Protectiveness	
					Current	Future
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.	Oeser	EPA	2012	N	Y
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 that there are no adverse impacts from ponded water storage.	Oeser	EPA	2012	N	Y

TABLE 9-1
Recommendations and Follow-up Actions
2011 Five-year Review, Oeser Site

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Dates	Affects Protectiveness	
					Current	Future
An O&M program has yet to be implemented at the Oeser Property, including implementation a long-term groundwater monitoring program for the 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.	Oeser	EPA	2012	N	Y
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.	Oeser	EPA	2012	N	Y
Little Squalicum Creek Area						
Residual contamination has been left in place in the upper portion of the LSCA	Prepare and finalize a surface water and groundwater monitoring plan for the upper portion of the LSCA. Implement the monitoring plan.	Oeser/EPA	EPA	2012	N	Y

The following are operation and maintenance recommendations related to issues which do not affect current or future protectiveness identified during the Five-Year Review:

- Ensure that the O&M Plan includes requirements for inspection of the surface water drainage system at the Oeser Property
    - Inspect pipes and catch basins for debris collection, and clean as needed to keep them clear, especially pipes installed at a lower gradient than desired (e.g., pipes A1, B3, C2).
    - Consult the GAC design basis documentation and O&M Plan to determine the flow capacity. Check if ponded water volume on the asphalt pad exceeds design

criteria. Follow maintenance requirements as specified for the system for any needed remedies.

- Mow bioswales as prescribed in O&M Plan.
- Check sediment level in Swale 3 when drained and dry. If site sediment has sealed the bottom, replace and recondition the soil layer in conformance with the O&M Plan.
- Replace dead vegetation in Ponds 1 and 2 with plants equivalent to or similar to those required by the original design.
- Remove bark debris and prevent bark debris from entering into the ponds in the future.
- Inspect surface water drainage system in the North Pole Yard to ensure it is functioning effectively.

10. Protectiveness Statement

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.

11. Next Review

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

ATTACHMENT B

Site Inspection Photographs

ATTACHMENT B1

Oeser Property

B1-1. PONDS AT NORTH POLE YARD.

B1-2. PONDED WATER AT NORTH POLE YARD CELL 3.

B1-3. OIL/WATER SEPARATOR AND PRE-FILTERS IN GRANULATED ACTIVATED CARBON (GAC) BUILDING.

B1-4. CARBON FILTER TANKS IN GAC BUILDING.

B1-5. PONDED RUNOFF AT GAC BUILDING.

B1-6. POND 2/2 OUTLET PIPE AND SLOPE EROSION.

B1-7. LOG DEBRIS AT POND 2/1.

B1-8. POND 2/1 OUTLET PIPE.

B1-9. SWALE 1.

B1-10. SWALE 2.

B1-11. BIOSWALE 3 LOOKING TOWARD MANHOLE 5.

B1-12. MANHOLE 5 WITH 8-INCH UNDERDRAIN AND OVERFLOW.

B1-13. RETORT SHOWING ZERO DISCHARGE AREA MARKED IN YELLOW.

B1-14. COMPLETED GRAVEL CAP BETWEEN CELLS 1 AND 2 OF NORTH POLE YARD.

B1-15. SOIL PILE FROM LITTLE SQUALICUM CREEK AREA (LSCA) IN CELL 4 OF NORTH POLE YARD.

B1-16. ASPHALT CRACKING IN TREATED POLE STORAGE AREA.

B1-17. ASPHALT CRACKING IN NORTH TREATED POLE STORAGE AREA.

B1-18. ASPHALT CRACKING IN NORTH TREATED POLE STORAGE AREA.

B1-19. PONDED WATER IN NORTH TREATED POLE STORAGE AREA.

B1-20. ASPHALT CAP CROSS-SECTION (TYPICAL) AT SWALE 1.

21. CONCRETE CAP AT EAST TREATMENT AREA.

ATTACHMENT B2

Little Squalicum Creek Area

B2-1. OESER PROPERTY PRIOR TO INITIATION OF LSCA REMOVAL ACTION. NOTE SOIL IN CELL 2 BEING PLACED INTO CELL 1.

B2-2. LITTLE SQUALICUM CREEK (LSC) PARK PRIOR TO INITIATION OF LSCA REMOVAL ACTION.

B2-3. INITIAL SHRUB AND TREE CUTTING IN PREPARATION FOR SOIL EXCAVATION AT LSC PARK.

B2-4. OESER PROPERTY DURING LSCA REMOVAL ACTION. NOTE EXCAVATED SOIL FROM LSC PARK NOW PLACED IN CELLS 2 AND 3.

B2-5. VIEW TO THE SOUTHWEST, SHOWING INITIAL SOIL EXCAVATION IN UPPER PORTION OF LSC PARK. THE RECONSTRUCTED STREAM CHANNEL IS VISIBLE ON LEFT SIDE OF PHOTO.

B2-6. VIEW TO THE NORTHEAST, SHOWING UPPER PORTION OF LSC PARK. NEW STORMWATER LINES ARE IN PLACE (TOWARD CENTER OF PHOTO) AND THE NEW STREAM CHANNEL IS UNDER CONSTRUCTION (SHOWN AT RIGHT OF PHOTO).

B2-7. OESER PROPERTY DURING LSCA REMOVAL ACTION. EXCAVATED SOIL FROM LSC PARK HAS BEEN PLACED IN CELLS 3 AND 4; CELLS 1 AND 2 HAVE BEEN COVERED WITH GRAVEL CAP.

B2-8. UPPER PORTION OF LSC PARK. THE GREEN AREA (CENTER OF PHOTO) IS LOCATION OF HYDROSEEDING. NOTE CEMENT TRUCK HEADED TOWARD MANHOLES 1 AND 2 NEAR THE BOX CULVERT.

B2-9. UPPER PORTION OF LSC PARK. THE NEW STREAM CHANNEL IS UNDER CONSTRUCTION (TO THE RIGHT OF THE CONSTRUCTION SITE).

B2-10. VIEW TO THE NORTH, SHOWING LSC PARK AND THE OESER PROPERTY. BELLINGHAM TECHNICAL COLLEGE IN THE FOREGROUND.

B2-11. VIEW OF ENTIRE LSC PARK, WITH THE OESER PROPERTY IN THE BACKGROUND. CONSTRUCTION DURING SUMMER 2010 IS NEAR COMPLETION.

B2-12. UPPER PORTION OF LSC PARK. DIVERSION OF THE STREAM HAS BEEN COMPLETED AND EXCAVATION OF THE PREVIOUS STREAM CHANNEL WITH A BACKHOE IS UNDERWAY (AS SHOWN TOWARD UPPER LEFT OF PHOTO).

B2-13. LOWER PORTION OF LSC PARK. CONSTRUCTION TO BE COMPLETED SUMMER 2011.

ATTACHMENT B3

Little Squalicum Creek Removal Action
Final Walk-through, September 14, 2011

B3-1. MANHOLES 1 AND 2 OF THE OESER/BIRCHWOOD STORM DRAIN. NOTE STRAW WATTLES AND HYDROSEEDING FOR EROSION CONTROL.

B3.2. OVERVIEW OF PARK ABOVE MARINE DRIVE BRIDGE (PHOTO TAKEN FROM BAKER TO BAY TRAIL). IN UPPER LEFT OF PHOTO, NOTE ONGOING EXCAVATION BY CITY OF BELLINGHAM AT THE ELDRIDGE LANDFILL.

B3-3. OVERVIEW OF PARK ABOVE MARINE DRIVE BRIDGE (COTTONWOOD GALLERY). (PHOTO TAKEN FROM BAKER TO BAY TRAIL.)

B3-4. OVERVIEW OF PARK ABOVE MARINE DRIVE BRIDGE. IN UPPER RIGHT OF PHOTO, NOTE NEW CULVERT FOR RELOCATED LSC (PHOTO TAKEN FROM BAKER TO BAY TRAIL).

B3-5. OVERVIEW OF PARK ABOVE MARINE DRIVE BRIDGE (PHOTO TAKEN FROM LINDBERGH AVENUE).

B3-6. RELOCATED AND RESTORED UPPER LSC STREAM CHANNEL AND WETLANDS AFTER ONE GROWING SEASON.

B3-7. OVERVIEW OF RESTORED LOWER PARK (PHOTO TAKEN FROM MARINE DRIVE BRIDGE).
NOTE PLANTING OF MULCHED PORTION OF STREAM BANK SCHEDULED FOR FALL 2011 BY CITY OF BELLINGHAM.

B3-8. RESTORED LOWER LSC STREAM CHANNEL AND STREAM BANK. NOTE PLANTING OF MULCHED PORTION OF STREAM BANK SCHEDULED FOR FALL 2011 BY CITY OF BELLINGHAM.

B3-9. MARINE DRIVE STORM DRAIN (AT LEFT) AND ADJACENT SPRING (AT RIGHT) UNDER MARINE DRIVE BRIDGE.

B3-10. RESTORED LSC STREAM CHANNEL LOOKING DOWNSTREAM UNDER MARINE DRIVE BRIDGE.

B3-11. ONGOING EXCAVATION BY CITY OF BELLINGHAM AT THE ELDRIDGE LANDFILL NEAR BELLINGHAM TECHNICAL COLLEGE ENTRANCE.

B3-12. OVERVIEW OF PARK ABOVE MARINE DRIVE BRIDGE (PHOTO TAKEN FROM LINDBERGH AVENUE).

ATTACHMENT C

Site Interview Records

INTERVIEW RECORD

Site Name: Oeser		EPA ID No.: WAD008957243
Subject: Five Year Review		Time: 1600 / Date:6 April 2011
Type: Telephone Visit Other Location of Visit:		Incoming Outgoing
Contact Made By:		
Name: Mark Longtine	Title: E & E Project Manager	Organization: Ecology and Environment, Inc.
Individual Contacted:		
Name: Leslie Bryson	Title: Interim Director	Organization: City of Bellingham Parks and Recreation
Telephone No: 360-778-7000 Fax No: 320-778-7001 E-Mail Address: LBryson@cob.org		Street Address: 3424 Meridian Street City, State, Zip: Bellingham, WA 98225

Summary Of Conversation

GENERAL NOTE: Ms. Bryson noted that she, and COB staff in general, had little involvement in the cleanup on the Oeser property, which lies outside of Bellingham's city limit. Her and COB's involvement with the larger Oeser site is predominantly associated with the cleanup of LSC. As such, Ms. Bryson's responses to the questions asked in this interview are primarily geared toword LSC.

1. **What is your overall impression of the project? (general sentiment)**

From a property management/public agency/public trust/propanent standpaint, there was a disappointment thot, at first, the Oeser cleanup did not address cantominotion in Little Squolicum Creek (LSC). The City of Bellingham (COB) initiated a separate process, using Brawnfields grants, Department of Ecology grants, and COB funds, to further assess the need for a cleanup at LSC. COB received o lot of input from the cammunity to do so. Ms. Bryson stated that for much of the process it was generolly felt at COB that EPA did not adequotely address the community's and COB's concerns. Ms Bryson stoted that once EPA, in approximately 2006, started to further evaluate contamination issues in LSC, there were difficulties associated with uncertainties during the planning process about who would perform the cleanup construction, and whether the work would be performed odequately. There were concerns that the cleanup approoch initially presented by EPA and its consultants wasn't in the best interest of COB and did not adequately account for the preferred alternative of COB's Little Squalicum Pork Master Plan. Ms. Bryson noted that she oppreciated that Oeser, in its communicotions with COB, appeored willing to conduct the cleanup in a manner that oppeared closer to the Master Plan preferred alternotive. Ms. Bryson added that, even though the LSC construction didn't get completed during the 2010 seasan, as COB suspected wauld be the case, she thinks construction did generally go better than expected. Ms. Bryson noted that ot times over the period leading up to the 2010 cleanup activities, there was confusion about EPA staff's roles and responsibilities and less than ideal communication approaches. Ms. Bryson stoted thot, once the cleonup design process storted, COB was pleased with the quolity of the planning process ond documentation.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Yes, between the period from approximately 2004 to the present, COB hos conducted numerous communications and activities, including further investigation of LSC by COB and its consultants associated with park Master Plan development. Ms. Bryson stated that the purpose of the additional investigation was to drive a cleanup of what COB believed to be unacceptable Oeser-related contamination at LSC. Ms. Bryson stated that the result of the additional investigation was further activity by EPA leading to the removal action at LSC.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

Ms. Bryson stated that COB has received various complaints regarding the site that required a response by COB, described below:

- *When COB posted signs in Little Squalicum Park warning park users of contamination in the creek water, COB received a few complaints that the signs were not visible at some locations or were missing from others. COB responded by moving and replacing signs.*
- *When the 2010 LSC removal action construction began, COB received several complaints from community members regarding the extensive removal of trees completed as part of the cleanup preparation activities.*
- *COB also received complaints from community members that stated they were unaware of the removal action and park closure until after the construction activities commenced. The focus of these complaints and several other complaints centered around closure of the park during construction.*
- *During public meetings held by COB, several community members expressed concerns that health issues they reported experiencing could be caused by Oeser-related contamination. Several others expressed general concern about whether work being conducted on the Oeser property was being done properly.*

Ms. Bryson stated she was not aware of any violations requiring a response by COB. Ms, Brysan noted that COB was provided a copy of a violation notice prepared by Washington Department of Ecology pertaining to an erosian/sedimentation concern at LSC during the winter of 2010-2011; na response was required by COB.

Ms. Brysan stated that na incidents occurred that required a response by COB.

4. Do you feel well informed about the site's activities and progress?

Ms. Bryson responded that she does feel well informed about the site activities and progress related to LSC. She stated she does not feel well infarmed about site activities and progress related to the Oeser property CERCLA action. As indicoted abave, Ms. Bryson noted that she, and COB staff in general, had little involvement in the cleanup on the Oeser property, which lies outside of Bellingham's city limit. Her

and COB's involvement with the larger Oeser site is predominantly associated with the cleanup of LSC. As such, Ms. Bryson's responses to the questions asked in this interview are primarily geared toward LSC.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Ms. Bryson stated that COB, once the LSC removal action construction began, felt generally more confident than previously that the cleonup would be performed in a monner thot addressed COBs concerns. She specifically complimented Oeser's construction team's organization and stoffing, ond Oeser's willingness to construct a repository of excavated contaminoted materiol on the Oeser property rother thon constructing o repository in LSC.

Ms. Bryson indicoted that COB has concerns regording the removol activities in the Lindberg Avenue area, where the extent ond of degree of contomination encountered during construction wos found to be greoter thon previously onticipated. COB is concerned that contominotion left in ploce at depth (generally opproximotely 6 feet below grade) could be a source of contaminotion that may impact groundwoter, surfoce water, and sediment in the future. COB is concerned about how such potential contominotion will be monitored in the future.

INTERVIEW RECORD

Site Name: Oeser		**EPA ID No.: WAD008957243**
Subject: Five-Year Review		**Time: 1900** / **Date: 13 April 2011**
Type: Telephone Visit Other **Location of Visit:**		Incoming Outgoing
Contact Made By:		
Name: Mark Longtine	**Title: E & E Project Manager**	**Organization: Ecology and Environment, Inc.**
Individual Contacted:		
Name: Sue DenAdel	**Title: Former President of Oeser Cedar Cleanup Coalition; presently Board Member of Birchwood Neighborhood Association**	**Organization: Oeser Cedar Cleanup Coalition (former President); Birchwood Neighborhood Association (presently Board Member)**
Telephone No: (360) 733-5954 **Fax No:** **E-Mail Address: suedenadel@hotmail.com**		**Street Address: 3005 Edens Avenue** **City, State, Zip: Bellingham, WA 98225**

Summary Of Conversation

1. **What is your overall impression of the project? (general sentiment)**

Ms. DenAdel stated that her overall impression of the Oeser cleanup is of disappointment and concern, stemming largely from the long time it took to clean up the site and from staff turnover within EPA. Ms. DenAdel has been involved with the Oeser cleanup from approximately 1996 to early 2011 when the Oeser Cedar Cleanup Coalition (OCCC) disbanded. She stated that, early on in the cleanup, during the data gathering stage, she believes OCCC experienced a good working relationship with EPA, in which OCCC's input was well received by EPA, and in which OCCC and EPA coordinated closely to inform the public about the CERCLA process. She stated, however, that the process took so long and the EPA staff experienced turnover, which she believes resulted in a lessened understanding and concern within EPA about the impact of the Oeser site on the community. She cited as a specific example of this sentiment a meeting between herself, Jack Weiss (OCCC), Rod Pemble (OCCC), and Mark Herrenkohl (consultant to OCCC) and representatives of EPA held at EPA's Seattle office sometime between completion of the Oeser Remedial Investigation (RI) field work and publication of the Oeser Record of Decision (ROD). She stated that, at the meeting, EPA representatives did not appear to take seriously OCCC's appeal for EPA to conduct additional investigation (soil borings) in the Little Squalicum Creek (LSC) area where contamination had been identified by EPA during the Oeser RI. She stated that, subsequent to EPA's refusal to perform additional investigation, the ROD was published without adequately addressing OCCC's concerns about contamination in LSC, and that the City of Bellingham (COB) and Whatcom County therefore hired a consultant to perform additional investigation at LSC, and as a result of the additional investigation even more contamination than OCCC had expected was identified. She stated that a lot of time and money was spent in the process of better understanding the extent of the contamination in the LSC area, and that in the interim people and pets were exposed to contamination

in the creek.

Ms. DenAdel added that now, after some of the removal action construction has been completed at the LSC as part of the EPA LSC removal action, even after excavoting down to six feet below grade, and down to nine feet locally, that there are still locations where the remaining soil is heavily contaminated. She believes that, based on these observations, the LSC area should have been included in the Oeser cleanup from the outset.

Ms. DenAdel noted her concern about how, as part of the LSC removal oction, numerous truckloads of contaminated soil were hauled from LSC to the Oeser property through the Birchwood neighborhood. She stated that she believes it is ironic thot such soils were hauled to the Oeser property (for placement in a repository) after, during the removol action ot the Oeser property, numerous trucks had hauled contaminated soil oway from the Oeser property. She odded that she was concerned that the trucks houling contominoted soil through the neighborhood during the 2010 LSC removal actian did not use tarps and that the conditions were dusty. She stated thot she is concerned that Oeser is responsible for maintaining and monitoring the soil repository on the Oeser property because she does not trust that Oeser will perfarm these octivities responsibly. She stated that the reason she doesn't trust Oeser to carry out these responsibilities is thot Oeser has a history of contamination releases and violations and associoted fines.

2. What effects have site operations had on the surrounding community?

Ms. DenAdel stated thot one direct impoct the Oeser cleonup operations hove had on the community was the severe pounding ond shoking of the ground that occurred during the installatian of pilings to shore up the wolls of the soil excovotion during the Oeser removal action in the late 1990's.

She stoted thot onother impoct on the Birchwood neighborhood was the heovy truck traffic through the neighborhood during the 2010 LSC removal action, in which trucks hauled contominoted soil from LSC to the Oeser property without precoutions taken to protect the neighborhood from dust. She added that the front of her house, which is located olong the haul route neor the Oeser property entrance, hod o heavy cooting of dust caused by the soil houling. Ms. DenAdel stated that she is concerned that the heolth of neighborhood members moy be affected as o result of the dust.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Ms. DenAdel stated that she hos concerns about Oeser's industrial operotions on the community, specifically citing oir emissions from the retort (pentochlorophenol/diesel and, historicolly, creosote). She stated that she believes these air emissions hove resulted in neighborhood residents experiencing headoches, migraines, respirotory issues. She olso stoted that severol neighborhood dogs experienced tumors and had to be put down, and that she is concerned that the dogs experienced the tumors as o result of living neor the Oeser property as well os woding in Little Squalicum Creek. She noted thot Oeser hos recently converted from using diesel in its pentachlorophenol mixture, ond is now using biofuel instead. She stoted that, as o result, the odors ossociated with Oeser's industrial air emissions have decreased, but she is still concerned about whether the emissions are toxic.

Ms. DenAdel stoted that she believes the community is generally concerned about whether Oeser con be trusted to maintain ond monitor the soil repository canstructed at the property in 2010. She stated that community members ore concerned abaut whether EPA will provide odequote oversight of Oeser. She added that this sentiment is based on the sentiment that some EPA workers have not been oware of

issues at the Oeser site, and have oppeored, during o public meeting, to be dismissive of the community's concerns about heolth risks that the community believed moy be posed by air emissions from Oeser's wood treoting operations.

Ms. DenAdel noted thot community members ore concerned thot the Oeser site will negotively affect property values.

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

Ms. DenAdel stated that there was a fire on the Oeser property (that she noted was mentioned in the Oeser RI report) that required a response by the fire department. She added that she believes that the fire department was not adequately prepared to handle the chemicals associated with the fire, and that there was inadequate communication with the community regarding the fire and potential health risks posed by the fire.

5. Do you feel well informed about the site's activities and progress?

Ms. DenAdel stated that she does not believe the community is well informed about the site's progress. She stated specifically that the community has little information regarding the soil repository constructed on the Oeser property as part of the LSC removal action in 2010. She added that there is little information regarding how EPA will oversee the monitoring and maintenance of the repository.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Ms. DenAdel suggested that EPA should continue to remain involved, and more closely than in the last few years, in the Oeser cleanup, particularly since there is now a repository of contaminated soil on the Oeser property. She suggested that EPA and other agencies continue to monitor the site as well as air and water emissions.

INTERVIEW RECORD

Site Name: Oeser		**EPA ID No.: WAD008957243**
Subject: Five Year Review		**Time: 1330** **Date: 14 April 2011**
Type: Telephone Visit Other **Location of Visit:**		Incoming Outgoing
Contact Made By:		
Name: Mark Longtine	**Title: E & E Project Manager**	**Organization: Ecology and Environment, Inc.**
Individual Contacted:		
Name: Eve Magyar	**Title: Capital Projects Manager**	**Organization: Bellingham Technical College**
Telephone No: (360) 752-8302 **Fax No:** **E-Mail Address: emagyar@btc.ctc.edu**		**Street Address: 3028 Lindbergh Avenue** **City, State, Zip: Bellingham, WA 98225**

Summary Of Conversation

1. **What is your overall impression of the project? (general sentiment)**

Ms. Magyor noted that her involvement with the Oeser site is limited to the time since 2004 when she arrived at Bellingham Technical College (BTC). Furthermore, she wos not involved with the cleanup activities conducted on the Oeser property. Her involvement in the Oeser site is limited to the activities conducted in the Little Squalicum Creek (LSC) areo of the site, starting ot the time that the City of Bellingham (COB) began the Remedial Investigation at Little Squolicum Park (LSP). Her involvement has been in the capocity of a neighborhood representotive. Most of her involvement hos been in association with the 2010 LSC removal action activities and associoted planning. Parking lots and access roads on BTC property were used by Oeser for access ond haulage during the 2010 construction.

Ms. Magyar stated that she hos no knowledge of the site issues or cleonup activities associated with the Oeser property. She stoted that she thinks the cleanup activities associoted with the LSC areo have gone pretty well. They stated that EPA's planning for a removol action at LSC, conducted largely concurrently with efforts by COB to develop o Master Plon for LSP, were well coordinated. She stated that she thinks that, although there were times during the LSC cleonup planning process when EPA didn't provide many status updates (e.g., meetings), overoll there was o lot of interaction between EPA and stokeholders thot resulted in a good outcome to date. She specifically noted thot EPA and COB worked closely enough that elements of the LSC cleonup will fit well into COB's implementation of the LSP Master Plon.

2. **What effects have site operations had on the surrounding community?**

Ms. Magyor noted thot truck access to the LSC area included portions of the Birchwood neighborhood as well as o BTC parking lot. She stated that, because there was o lot of truck traffic associoted with the 2010 LSC removol action construction, thot there was o large traffic-reloted impact on the

neighborhood. Ms. Magyar made the following observations regarding Oeser's efforts to mitigate the impact:

- *Oeser was conscientious about washing the trucks leaving the LSC area.*
- *Oeser named BTC as additionally insured to cover potential damages to BTC property resulting from the truck traffic. There was no damage during the 2010 construction activities.*
- *Oeser utilized a flagger to coordinate traffic.*
- *Oeser worked closely with BTC to coordinate scheduling of truck access and BTC activities.*

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Ms. Magyar stated that her understanding of community concerns regarding the Oeser site is based on her attendance of Birchwood neighborhood association meetings. She stated the following are community concerns she is aware of:

- *There is a general sentiment in the community that Oeser presents an ongoing problem for the community because of its wood treating industrial operations.*
- *The LSC cleanup took too long to be conducted.*
- *There is concern about whether all the contamination at LSC was identified and if enough was removed.*
- *There is concern about storing the material excavated from LSC in a repository at the Oeser property rather than disposing of it off-site.*
- *There is a general sense of distrust and discomfort centered around the level of investigation and cleanup at LSC.*

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

Ms. Magyar stated that there were no events or incidents that required emergency responses from local authorities. She stated that she is not aware of any vandalism, and that she expects that trespassing likely occurred.

5. Do you feel well informed about the site's activities and progress?

Ms. Magyar stated that she does feel well informed about the site's activities and progress (referring to LSC, not the Oeser property).

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Ms. Magyar stated that she does not have any comments, suggestions, or recommendations regarding the site's management or operation.

INTERVIEW RECORD

Site Name: Oeser		EPA ID No.: WAD008957243
Subject: Five-Year Review		Time: 1000 / Date: 11 April 2011
Type: Telephone Visit Other Location of Visit:		Incoming Outgoing
Contact Made By:		
Name: Mark Longtine	Title: E & E Project Manager	Organization: Ecology and Environment, Inc.
Individual Contacted:		
Name: Michael McFarlane	Title: Director	Organization: Whatcom County Parks and Recreation
Telephone No: (360) 733-2900 Fax No: E-Mail Address: mmcfarla@co.whatcom.wa.us	Street Address: 3373 Mount Baker Highway, City, State, Zip: Bellingham, WA 98226	

Summary Of Conversation

1. **What is your overall impression of the project? (general sentiment)**

Mr. McFarlane noted that his office wos not involved with the cleanup activities conducted on the Oeser property. The involvement of the Whatcom County Park and Recreation (Parks) office in the Oeser site is limited to the octivities conducted in Little Squolicum Pork (Little Squalicum Creek, LSC). He added that, since the City of Bellingham (COB) is the lessee of the County-owned property in LSC, that Parks deferred to COB on those aspects of the LSC cleanup pertinent to Whatcom County.

Mr. McFarlane stoted that, initially, the process leading to the removal action at LSC was unclear. He stated that there was uncertointy regarding who had jurisdiction over further investigation and cleonup at LSC, stating specifically that it was uncleor whether EPA of Washington Department of Ecology was the lead ogency. He stated it was also unclear what cleanup work was going to be performed. He stated that, as o result of the confusion that the County expended a lot of time and effort trocking the LSC process to the point where the cleanup work started. However, he stated thot it eventuolly become apporent that EPA wos assuming the lead, and once EPA ossumed the lead, there was much clearer direction and less effort expended by the County.

2. **Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.**

No. Since Whatcom County leases the County-owned property at LSC to COB, the County deferred to COB for conducting communications ond activities regarding the LSC site.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

Mr. McFarlane stated that no incidents occurred that required a response by the County. Mr. McFarlane noted that several responses were required by COB, including some in response to COB's posting of warning signs in Little Squalicum Park regarding contamination in surface water.

4. Do you feel well informed about the site's activities and progress?

Mr. McFarlane stated that he does feel well informed about the sit's activities and progress, stating specifically that EPA has done a good job of informing his office via email, written correspondence, and meetings.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Mr. McFarlane stated that, since the County is deferring to COB for the LSC cleanup work underway, that he would defer to COB for specific suggestions and recommendations regarding the management and operotion of the LSC site cleanup activities. He mentioned Gina Austin in particular, as the COB staff member that has been most closely involved with the LSC cleanup. Mr. McFarlane stated thot once the LSC on-site construction began that the work generally seemed to go well. He noted thot the remaval activities in the vicinity of Lindberg Avenue did experience some complicotions stemming from the presence of more extensive contomination than wos anticipoted and difficult terroin conditions, and thot there was a lock of consensus on how to handle the complexities, but that the measures implemented seemed to be the best olternotive considering the circumstonces. He added that he believes thot Oeser put forth o good foith effort to implement the cleanup octivities thus far. He further odded thot EPA and Oeser have been very responsive to the County's requests for information.

INTERVIEW RECORD

Site Name: Oeser	**EPA ID No.: WAD008957243**	
Subject: Five-Year Review	**Time: 1000**	**Date: 13 April 2011**
Type: Telephone Visit Other **Location of Visit:**	Incoming Outgoing	

Contact Made By:

Name: Mark Longtine	**Title: E & E Project Manager**	**Organization: Ecology and Environment, Inc.**

Individual Contacted:

Name: Mary O'Herron	**Title: Environmental Specialist**	**Organization: Washington Department of Ecology (Ecology), Toxics Cleanup Program**

Telephone No: (360) 715-5224	**Street Address: 1440 10th St., Ste. 102**
Fax No:	**City, State, Zip: Bellingham, WA 98225**
E-Mail Address: mohe461@ecy.wa.gov	

Summary Of Conversation

1. **What is your overall impression of the project? (general sentiment)**

Ms. O'Herron noted that she was not involved with the cleanup activities conducted on the Oeser property. Her involvement in the Oeser site is limited almost exclusively to the activities conducted ot the Little Squalicum Creek (LSC) portion of the Oeser site. She noted that most of her involvement in the LSC cleonup was primarily limited to the period of time between when Ecology identified contamination in Little Squalicum Creek [conducted under an agreed order with the City of Bellingham (COB)] that Ecology believed was attributable to Oeser and the early stages of the LSC removal action construction activities. Ms. O'Herron noted that her involvement in the LSC removal actian once construction activities were underway was limited primarily to the first several weekly construction status update meetings and a few visits to the LSC.

Ms. O'Herron recammended that, considering her limited involvement at the Oeser site, that EPA consider interviewing the following Ecology staff for additional Ecology perspectives on the Oeser cleanup: 1) Byung Maeng, Ecology Hazardous Waste program; 2) Galen Tritt, Ecology Hazardous Woste; 3) Lori Levonder, Ecology's staff member that oversees the Oeser's NPDES permit; and 4) Kurt Baumgorten, Ecology Water Quality Speciolist.

Ms. O'Herron's impression of the period between the time that Ecalogy's investigotive activities ot Little Squalicum Pork identified contamination in Little Squalicum Creek that Ecalogy believed was attributable to Oeser and the time that EPA indicoted that EPA would perform additionol work at the Little Squalicum Creek (LSC) area under CERCLA due to Oeser-reloted contomination at levels actionoble under CERCLA follows. Ms. O'Herron stated that it seemed to take a long time for EPA to arrive ot the decision to oddress the LSC areo under CERCLA, and thot the process that EPA emplayed to arrive at that decisian was opaque. She stated thot more communication by EPA on its decision-making process ond schedule

would have been helpful to Ecology. Ms. O'Herron stated that it seemed during this period that EPA was reluctant to re-engage in the process of addressing contamination at LSC at this time because the Oeser site cleanup work (on the Oeser property) was already underway.

Ms. O'Herron's impression of the period following EPA's decision to address LSC under CERCLA (approximately spring or summer of 2009) is that EPA proceeded very quickly in its efforts, and that the work conducted was very well coordinated. She indicated that EPA appeared willing to consider input from COB, agencies, and the public during the development of the LSC EE/CA and removal design. She stated that the on-site LSC removal construction work, including site preparation, road construction, and provision of equipment, seemed to go very well.

Ms. O'Herron stated that, at this time, it is not clear to her what the final outcome of the LSC cleanup will be, and what EPA's plan is to monitor groundwater and surface water to assess the effectiveness of the cleanup, but that she is optimistic.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Ms. O'Herron stated that during the period leading up to when EPA indicated it would take the lead on a cleanup at LSC that she participated regularly in meetings and other communications regarding LSC. She continued to stay somewhat involved with LSC after that time, as well, until a couple weeks after the LSC removal action construction began, including participation in the first several weekly construction coordination meetings. The purpose of her participation was after EPA indicated it would take the lead on a cleanup at LSC was to remain apprised of the process as an interested observer. Subsequent to that time, she communicated with COB and visited the site a couple times while the LSC construction was underway. She noted that the purpose of the communications and site visits was not directly related to the LSC removal construction activities, but rather to oversee the activities performed by COB at the Eldridge Municipal Landfill site, which is also located within Little Squalicum Park coinciding with a portion of the LSC removal action area. The LSC removal action included construction of a channel between relocated the Bellingham Technical College stormwater outfall and the relocated channel of Little Squalicum Creek. During excavation of that channel, landfill materials associated with the Eldridge Municipal Landfill were encountered. The result so the communications with COB and the site visits was that Ms. O'Herron was informed of aspects of the LSC removal action.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

Ms. O'Herron stated that Ecology investigated a potential erosion/sedimentation issue that could potentially be associated with ground disturbance from the LSC removal action. She did not provide further details, but suggested that EPA contact Mr. Kurt Baumgarten for further information.

Ms. O'Herron stated that she received approximately three or four telephone calls during the first couple weeks of LSC removal action construction from neighborhood residents complaining or inquiring about construction activities, including truck traffic. Ms. O'Herron noted that the callers contacted her because they incorrectly believed either that Ecology was leading the LSC cleanup effort or that the caller confused Ecology with EPA. In each case, Ms. O'Herron provided the caller the contact information for EPA.

4. Do you feel well informed about the site's activities and progress?

Ms. O'Herron stated that she feels somewhat poorly informed about the site's activities and progress. She cited specifically that she is not aware of when removal action construction is expected to resume at LSC in 2011. Ms. O'Herron also cited her uncertainty about how an area of contamination encountered near Lindberg Avenue during the LSC removal action in 2010 may have affected EPA's removal action. She stated that she does not feel well informed about the specifics of the extent and degree of the contamination encountered during the removal action in the Lindberg Avenue area of the excavation, what decisions were made by EPA to address it, or how plans for monitoring surfoce water and groundwater may be affected. She added that the existing monitoring wells are not well positioned to evaluate graundwater in the Lindberg Avenue area of the LSC.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Ms. O'Herron commented that she thinks there is generally insufficient public outreach by EPA regarding cleanup activities both for the Oeser property and the LSC area. She specifically stoted that she is not aware of EPA public meetings for Oeser between about 1998 or 1999 and 2009. She recommended that EPA attempt to provide mare information to the public in the form of mailings.

INTERVIEW RECORD

Site Name: Oeser		EPA ID No.: WAD008957243
Subject: Five Year Review		Time: 1430 / Date: 14 April 2011
Type: Telephone Visit Other Location of Visit:		Incoming Outgoing
Contact Made By:		
Name: Mark Longtine	Title: E & E Project Manager	Organization: Ecology and Environment, Inc.
Individual Contacted:		
Name: Chris Secrist	Title: President	Organization: The Oeser Company
Telephone No: (360) 734-1480 Fax No: E-Mail Address: chriss@oeserco.com	Street Address: 730 Marine Drive City, State, Zip: Bellingham, WA 98225	

Summary Of Conversation

GENERAL NOTE: Mr. Secrist was interviewed to provide his perspective on considerations related to the construction as well as the performance and operation and maintenance (O&M) of the site cleanup. He addressed both the Oeser property ond the Little Squalicum Creek (LSC) area of the Oeser site. The interview was carried out by discussing pertinent aspects of each of these site areas separately.

Oeser Property

1. **What is your overall impression of the project? (general sentiment)**

Mr. Secrist stoted that his overall impression of the project is that there was o successful callaboration between EPA and Oeser to achieve the objectives af the ROD that, in the end, resulted in the project being even mare effective than what was called far in the ROD.

2. **Is the remedy functioning as expected? How well is the remedy performing?**

Mr. Secrist stated that, based on limited monitoring informatian available to date, the remedy oppears to be effective.

3. **What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?**

Mr. Secrist stated that, based on the limited informatian manitoring infarmation available to date, that there appear to be decreasing trends in cantaminant levels.

4. **Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.**

Mr. Secrist stated that, although an O&M Plan is not yet in place, the Oeser Company is an active wood treating operation, and that inspections of the property essentially occur routinely on a daily basis. He further stated that, as an active wood treating operation, maintenance also occurs routinely on a daily basis. He noted that although the inspections and maintenance are not performed expressly for the remedy, that the inspections and maintenance are consistent with and complementary to the overall goals of O&M of the remedy. He cited as an example the maintenance of the gravel and asphalt caps.

5. **Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.**

Not applicable.

6. **Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.**

Not applicable.

7. **Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.**

Not applicable.

8. **Do you have any comments, suggestions, or recommendations regarding the project?**

Mr. Secrist stated that he believes Oeser has a positive working relationship with EPA's site managers, and that he expects to be able to continue to work productively with EPA in the future.

<u>Little Squalicum Creek Area</u>

1. **What is your overall impression of the project? (general sentiment)**

Mr. Secrist stated that, without elaborating on his view regarding the necessity of the removal action at LSC, he believes that the end result of the LSC cleanup will be conditions that are protective of human health and the environment, and more protective than the conditions that existed prior to the cleanup.

2. **What is the current status of construction (e.g., budget and schedule)?**

Mr. Secrist stated that cost overruns were incurred. He stated that he believes ninety percent of the LSC project is completed. He noted that budgeting and contracting for the completion of the project was being discussed between EPA and Oeser.

3. **Have any problems been encountered which required, or will require, changes to this remedial design or this ROD?**

Mr. Secrist stated that unexpected conditions were encountered during the 2010 LSC construction, and that these conditions were addressed in the field through close coordination between Oeser and the EPA On-Scene Coordinator.

4. **Have any problems or difficulties been encountered which have impacted construction progress or implementability?**

Mr. Secrist stated that a lot of problems arose during the 2010 LSC construction, including unexpectedly

bad weather, but that they were adequately handled.

5. **Do you have any comments, suggestions, or recommendations regarding the project (i.e., design, construction documents, constructability, management, regulatory agencies, etc.)?**

Mr. Secrist stated that, with the benefit of hindsight, there would be minor suggestions, but his overarching comment is that the key to the success of the project is the flexibility built into the original cleanup design ond the ability of the OSC to implement appropriate field decisions.

ATTACHMENT D

Site Inspection Checklist

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: OESER COMPANY	**Date of inspection: 04/06/2011**
Location and Region: Bellingham, WA (Region 10)	**EPA ID: WAD008957243**
Agency, office, or company leading the five-year review: CH2M HILL	**Weather/temperature: Sunny and partly sunny, 50-55°F**

Remedy Includes: (Check all that apply)

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

Attachments: ☒ Inspection team roster attached

- Mary Jane Nearman, EPA Region 10, Remedial Project Manager
- Paul Townley, CH2M HILL, EPA Contractor
- Mike Reimbold, CH2M HILL, EPA Contractor
- Guy Caley, CH2M HILL, EPA Contractor

☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Chris Secrist (Name) O&M Site Manager (Title) 04-06-11 site/office 04-14-2011 phone (Date)
   Interviewed ☒ at site ☒ at office ☒ by phone Phone no. (360) 734-1480
   Problems, suggestions; ☒ Report attached See Attachment C to First Five-year Review Report

2. **O&M staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   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, etc.) Fill in all that apply.

Agency Washington State Department of Ecology

Contact Mary O'Herron Environmental Specialist 04-13-2011 (360)715-5224

Name Title Date Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review Report

Agency Washington State Department of Ecology

Contact Galen Tritt Hazardous Waste Specialist 05-13-2011 (360)715-5232

Name Title Date Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review

Agency Washington State Department of Ecology

Contact Lori LeVander Statewide Aquaculture Specialist 05-13-2011 (425)649-7039

Name Title Date Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review

Agency Washington State Department of Ecology

Contact Byung Maeng Environmental Engineer 05-17-2011 (425)649-7253

Name Title Date Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review

Agency Whatcom County Parks and Recreation

Contact Michael McFarlane Director 04-11-2011 (360)733-2900

Name Title Date Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review Report

Agency City of Bellingham Parks and Recreation

Contact Leslie Bryson Director 04-06-2011 (360)778-7000

Name Title Date Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review Report

Agency City of Bellingham Parks and Recreation

Contact Tim Wahl | Greenway Program Coordinator | 05-16-2011 | (360)778-7000

Name | Title | Date | Phone no.

Problems; suggestions; ☒ Report attached See Attachment C to First Five-year Review Report

4. **Other interviews** (optional) ☐ Report attached.

Sue DenAdel, Former President of Oeser Cedar Cleanup Coalition; currently Board Member of Birchwood Neighborhood Association, 04-13-2011, (360) 733-5954

Eve Magyar, Capital Projects Manager, Bellingham Technical College, 06-14-2011, (360) 752-8302

III. ON-SITE DOCUMENTS & 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

Remark: The draft O&M Plan and as-built drawings were reviewed prior to and during the site visit. No maintenance has been implemented since preparation of the O&M Plan is currently in progress.

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: Not reviewed

3. **O&M and OSHA Training Records** Readily available ☐ Up to date ☐ N/A

Remarks Not reviewed

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: The previous permit for this facility was accepted by the Washington State Department of Ecology (Ecology) on November 8, 2005. An application for permit renewal was to be submitted by the Oeser Company to Ecology within a week after the site visit.

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. **Groundwater Monitoring Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: No groundwater monitoring records were reviewed since preparation of the O&M Plan is currently in progress.

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

☒ Other: ___Oeser Site Record of Decision_____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place

Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ ☐ Breakdown attached

Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached

Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ Breakdown attached
Date Date Total cost

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):

Preparation of an IC Plan is currently in progress.

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)

_____

Frequency _____

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

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks

2. **Land use changes on site** ☒ N/A

Remarks: The Oeser Property is still zoned industrial

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
   Areal extent_____ Depth_____
   Remarks_____

2. **Cracks** ☒ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks: Lengths vary. In the northern portion of the Treated Pole Storage Area, an area of 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.

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
   Areal 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 (armored rock, concrete, etc.)** ☒ N/A
   Remarks_____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas ☐ Location shown on site map Areal extent_____

☒ Ponding ☐ Location shown on site map Areal extent_____

☐ Seeps ☐ Location shown on site map Areal extent_____

☐ Soft subgrade ☐ Location shown on site map Areal extent_____

Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☒ No evidence of slope instability

Areal 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

(The channel is 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** ☐ Location shown on site map ☐ No evidence of settlement

Areal extent_____ Depth_____

Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal 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 Areal 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. **Leachate Extraction Wells**

☐ 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** Areal extent_____ Depth_____ ☒ N/A
   ☒ Siltation not evident
   Remarks

2. **Erosion** Areal extent Near Outlet Pond 2/2 Depth_____
   ☐ Erosion not evident
   Remarks Liner is exposed where rocks have been disturbed near outlet.

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
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal 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
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater 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: Observations for ponds, miscellaneous structures provided below.

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 groundwater treated annually_____

☐ Quantity of surface water treated annually_____

Remarks: System functioning when observed. Follow O&M per design/manufacturer.

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

☐ N/A ☐ Good condition ☐ Needs Maintenance

Remarks: Not observed

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 Not observed

D. Monitoring Data

1. Monitoring Data

☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:

☐ Groundwater 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 which are 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 to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The O&M program has yet to be fully implemented at the Oeser Property. The O&M Plan (AECOM, 2009b) is currently in draft form and in being updated to address impacts from the placement of contaminated soil from the LSCA removal action in containment cells at the Oeser Property. It is unclear whether any actions identified in the O&M Plan have been implemented at the Oeser Property.

Excavation: The only excavation that occurred during the cleanup action at the Oeser Property was in the vicinity of the charge switching area (CSA), where 244 cubic yards of soil was excavated and transported to Utah for incineration and disposal. This removal was completed in conjunction with the RCRA closure of the CSA; the work is discussed in detail in the RCRA Closure Plan submitted to EPA on April 22, 2008, and the RCRA Completion Report submitted to EPA on November 21, 2008.

Asphalt Cap: Asphalt capping (minimum of 6 inches) was conducted as part of Phase 2 remedial activities. Approximately 4,005 tons of Class E asphalt and 3,140 tons of Class B asphalt were used for capping. (See Figure 4-1 of the Five-Year Review Report for the as-built drawing of the capped areas at the Oeser Property.)

Gravel Cap: A gravel cap was placed in the South Pole Yard, West Treatment Area, and Wood Storage Area. Prior to placement of the gravel cap, the ground was compacted to a firm condition using a mechanical roller. The graded area was then covered with geotextile fabric with a minimum of 12-inch overlap at the seams. A layer of crushed asphalt 6 inches thick was placed on the geotextile, followed by a 6-inch layer of gravel (approximately 2,496 tons of 2-inch clear gravel) on top of the crushed asphalt.

Collection and Treatment of Capped Area Runoff: As part of the removal actions at the Oeser Property, two retainage ponds and a bioswale were constructed to store and treat surface water runoff. In addition, a water treatment system was installed to treat surface water runoff from the Treated Pole Storage Area.

Implementation of Long-term Groundwater Monitoring Program for Shallow and Deep Aquifers: The long-term groundwater monitoring program for the shallow and deep aquifers has not been implemented because the O&M Plan for the Oeser Property is currently in the draft stage.

Establishment of Restrictive Covenants for Groundwater Use and Non-industrial Land Use: The restrictive covenant identified in the Consent Decree includes land and groundwater use restrictions. There has been no significant change of land use within the Oeser Property since the ROD was issued in 2002 (U.S. EPA, 2003). The institutional controls included in the ROD are as follows:

- Restrict residential, recreational, and specific commercial uses for the entire Oeser Property unless the site is cleaned up to be protective for residential use or other non-industrial uses.

- Preserve the integrity of the caps to ensure that they are not breeched without prior EPA approval.
- Enforce operational use restrictions on the cap to preserve the integrity of the cap and ensure long-term protection of human health and the environment.
- Restrict the use of shallow and deep groundwater at the Oeser Property, including prohibiting the installation of wells for use as potable water until the groundwater meets cleanup levels for use as drinking water.

The Institutional Controls Plan, which is in the process of being finalized, will include the restrictive covenants that are set forth in the Consent Decree.

An NPDES permit approved by the Washington State Department of Ecology (Ecology) in September 2006 provides conditions for discharge of stormwater containing PCP and petroleum hydrocarbons from the Oeser Property. In May 2011, an NPDES permit renewal application was submitted to Ecology and the City of Bellingham. The application provides updated information for the installation of additional catch basins and diversion of surface water flow to the existing stormwater management system from the capped areas of the Oeser Site.

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.

An Institutional Controls Plan needs to be finalized 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 has not been finalized. As a result, monitoring of the caps and monitoring of groundwater and passive removal of non-aqueous phase liquids detected on the Oeser Property has not occurred since the last monitoring event in 2009.

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.

In the northern portion of the Treated Pole Storage Area, an area of 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. The asphalt surface will continue to be inspected and repaired as part of O&M Plan.

Also during the site visit, ponded water was observed in the eastern portion of the Treated Pole Storage Area (adjacent to the granulated activated carbon [GAC] system). The ponded water is located in a low lying area that is part of the asphalt cap design, which should be inspected more frequently (minimum twice per year) to verify that there are no adverse impacts from ponded water storage.

During the LSCA removal action, soil that was above the cleanup levels, up to a depth of 6 feet below ground surface, was excavated and transferred to cell 2 or 3 in the North Pole Yard at the Oeser Property. Cell 2 is now covered with a gravel cap. Sampling of the soil in the cells will be performed since only post-removal confirmation samples were collected at LSCA. The removal action at LSCA is in progress, with the final field effort planned for the summer of 2011. Sampling of the cells at the Oeser Property should occur during the summer of 2011, after

additional soil from the LSCA is placed in cells 3 and 4 at the Oeser Property.

Once the additional soil from the LSCA is placed in cells 3 and 4 at the Oeser Property during the summer of 2011, the effectiveness of surface water drainage at the North Pole Yard (identified in the Oeser Removal Action Work Plan) will be verified.

The gravel cap at the Oeser Property uses 2-inch or larger gradations of gravel. At the time of this five-year review, it does not appear that surface water is infiltrating through the cap. Monitoring of the cap for infiltration is needed to verify that no surface water infiltration is occurring. Should infiltration be detected, the gradation of the gravel will be reduced to decrease permeability and infiltration of water through the cap.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

As part of the removal actions at the Oeser Property, two retainage ponds and a bioswale were constructed to store and treat surface water runoff. In addition, a water treatment system was installed to treat surface water runoff from the Treated Pole Storage Area. Observations during the site visit identified the following actions that need to be performed:

- Inspect pipes and catch basins for debris collection, and clean as needed to keep them clear, especially pipes installed at a lower gradient than desired (e.g., pipes A1, B3, C2).
- Consult the GAC design basis documentation and O&M Plan. Check if ponded water volume on the asphalt pad exceeds the design criteria. Follow maintenance requirements as specified for the system for any needed remedies.
- Mow bioswales as prescribed in the O&M Plan or per standard practices.
- Check sediment level in Swale 3 when drained and dry. If the site sediment has sealed the bottom, replace and recondition the soil layer in conformance with the O&M Plan or per standard practices.
- Replace dead vegetation in Pond 2/1 with original plants.
- Remove and prevent bark debris from entering into the ponds.

ATTACHMENT E

Applicable or Relevant and Appropriate Requirements

Table 4-4

POTENTIAL ACTION-SPECIFIC ARARS FOR CAPPING THE OESER COMPANY SUPERFUND SITE BELLINGHAM, WASHINGTON

Citation	Description
Federal Action-Specific ARARs	
40 CFR 122	EPA CWA NPDES permit regulations
40 CFR 260-273	EPA RCRA standards for owners and operators of hazardous waste TSD facilities
40 CFR 264	EPA RCRA standards for owners and operators of hazardous waste TSD facilities, including surface water control and cap design requirements
49 CFR 171 - 180	DOT Hazardous materials table, communication, emergency response, instructions for shippers, instructions for packaging
State Action-Specific ARARs	
WAC 173-220-130	Ecology NPDES Program Regulations: Permit requirements
WAC 173-303-141 to -270	Ecology Dangerous Waste Regulations: TSD and transportation of dangerous waste
WAC 173-303-646	Ecology Dangerous Waste Regulations: Corrective action
WAC 173-303-665	Ecology Dangerous Waste Regulations: Landfills
WAC 173-340-350	Ecology MTCA: Remedial investigations and feasibility studies
WAC 173-340-410	Ecology MTCA: Compliance monitoring
WAC 173-340-440	Ecology MTCA: Institutional controls
WAC 173-160	Ecology Minimum Standards For Construction and Maintenance of Wells

Key:

ARARs = Applicable or relevant and appropriate requirements.
CFR = Code of Federal Regulations.
CWA = Clean Water Act.
DOT = United States Department of Transportation.
Ecology = Washington State Department of Ecology.
EPA = United States Environmental Protection Agency.
MTCA = Model Toxics Control Act.
NPDES = National Pollutant Discharge Elimination System.
RCRA = Resource Conservation and Recovery Act.
TSD = Treatment, storage, and disposal.
WAC = Washington Administrative Code.

Sourec for Oeser Property ARARs: E&E (2002c)

Table 4-6

POTENTIAL ACTION-SPECIFIC ARARs FOR EXCAVATION
THE OESER COMPANY SUPERFUND SITE
BELLINGHAM, WASHINGTON

Citation	Description
Federal Action-Specific ARARs	
40 CFR 260-273	EPA RCRA: Regulations for identification, generation, TSD, and transportation of hazardous wastes
40 CFR 268	EPA RCRA: Land disposal requirements
40 CFR 262	EPA RCRA: Hazardous waste determination
40 CFR 264	EPA RCRA standards for owners and operators of hazardous waste TSD facilities, including surface water control
49 CFR 171-180	DOT Hazardous materials table, communication, emergency response, instructions for shippers, instructions for packaging
State Action-Specific ARARs	
WAC 173-303-071	Ecology Dangerous Waste Regulations: Excluded categories of waste for building demolition
WAC 173-303-080 to -100	Ecology Dangerous Waste Regulations: Dangerous waste lists, characteristics, criteria
WAC 173-303-141 to -270	Ecology Dangerous Waste Regulations: TSD and transportation of dangerous wastes
WAC 173-303-140	Ecology Dangerous Waste Regulations: Disposal Restrictions
WAC 173-303-646	Ecology Dangerous Waste Regulations: Corrective action
WAC 173-340-350	Ecology MTCA: Remedial investigations and feasibility studies
WAC 173-340-440	Ecology MTCA: Institutional controls
WAC 173-340-410	Ecology MTCA: Compliance monitoring
WAC 173-160	Ecology Minimum Standards For Construction and Maintenance of Wells

Key:

ARARs = Applicable or relevant and appropriate requirements.
CFR = Code of Federal Regulations.
DOT = United States Department of Transportation.
Ecology = Washington State Department of Ecology.
EPA = United States Environmental Protection Agency.
MTCA = Model Toxics Control Act.
RCRA = Resource Conservation and Recovery Act.
TSD = Treatment, storage, and disposal.
WAC = Washington Administrative Code.

Source for Oeser Property ARARs: E&E (2002c)

Applicable or Relevant and Appropriate Requirements Attachment B

Standard, Requirement, Criterion, or Limitation	Citation	Description	ARAR
Chemical-Specific			
Federal			
Resource Conservation and Recovery Act (RCRA), Identification and Listing of Hazardous Wastes	40 CFR 261 et seq.	Specifies how to determine whether a solid waste is considered hazardous (whether listed or based on characteristic).	Relevant and appropriate (state is authorized for RCRA)
Washington State			
Model Toxics Control Act (MTCA), Cleanup Standards	WAC 173-340-700 through 173-340-760	Provides standards for cleanup of contamination in soils, surface water and groundwater.	Applicable
Freshwater Sediment Quality Values	Washington Department of Ecology. 2003. Development of Freshwater Sediment Quality Values for Use in Washington State, Publication No. 03-09-088, prepared by Avocet Consulting, Kenmore, WA.	Provides freshwater sediment quality values as guidelines—not meant to replace bioassays as the definitive determination of sediment toxicity.	To be considered
Other			
Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems	MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Arch. Environ. Contam. Toxicol. 39:20-31.	Provides consensus-based sediment quality guidelines for 28 chemicals of concern.	To be considered
Location-Specific			
Federal			
Endangered Species Act	16 USC 1531 et seq. 50 CFR 402	Requires action to conserve endangered species and critical habitat.	Applicable
Fish and Wildlife Coordination Act	16 USC 661 et seq. 40 CFR 6.302	Requires coordination with Federal and State agencies to provide protection of fish and wildlife.	Applicable
Native American Graves Protection and Repatriation Act	25 USC 3001 et seq. 43 CFR 10	Regulations that pertain to the identification, protection and appropriate disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony.	Applicable
Clean Water Act (CWA), Section 401 and 404	33 USC 1344 40 CFR 230 33 CFR 320-330	Restricts discharge of dredged or fill material into surface waters, including wetlands. If wetlands are disturbed, the disturbance should comply with the substantive requirements of the U.S. Army Corps of Engineers Nationwide Permit 38.	Applicable
Washington State			
MTCA, Site Cleanup and Monitoring	WAC 173-340-400 through 173-340-440	Provides requirements for implementation of the cleanup action, compliance monitoring, periodic review, interim action and institutional controls.	Applicable
Action-Specific			
Federal			
Clean Air Act (CAA), National Ambient Air Quality Standards	42 USC 7401 et seq. 40 CFR 50	Provides air quality standards for six criteria pollutants, including particulate matter, to protect public health and welfare.	Applicable
CWA, National Pollutant Discharge Elimination System (NPDES) Permitting Program	40 CFR 122-125	Establishes discharge limits and monitoring requirements for direct discharges to surface waters.	Applicable

Applicable or Relevant and Appropriate Requirements

RCRA, Corrective Action Management Unit (CAMU)	40 CFR 264.552	Specifies requirements for use of a CAMU. A CAMU is an area within a facility that is used only for managing CAMU-eligible wastes for implementing corrective action or cleanup at the facility. A CAMU must be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the CAMU originated.	Applicable (if a CAMU is used).
RCRA, Land Disposal Restrictions	40 CFR 268	Regulates the disposal of hazardous waste on land without prior treatment.	Applicable (if soil determined to be hazardous and a land disposal unit is included in the cleanup action).
RCRA, Hazardous Waste Management, Contained-In Policy for Contaminated Environmental Media	Not codified; EPA. 1998. Management of Remediation Waste Under RCRA (EPA530-F-98-026, October 1998).	Specifies how to determine whether contaminated environmental media (such as soil) contains hazardous waste, and how RCRA regulations apply to the movement of contaminated media.	To be considered
RCRA Hazardous Waste Management	40 CFR Part 261 et seq.	Specifies how to manage hazardous waste and contaminated media.	Relevant and appropriate
Hazardous Materials Transportation Act	49 USC 1801-1813 49 CFR 107, 171-177	Regulates the transportation of hazardous waste.	Applicable (if offsite disposal included in cleanup action).
Land Use in the CERCLA Remedy Selection Process	EPA Policy, OSWER Directive No. 9355.7-04, May 1995	Addresses consideration of future land use in cleanup decisions	To be considered
Washington State			
Ambient Air Quality Standards for Particulate Matter	WAC 173-470	Establishes maximum acceptable levels for particulate matter in the ambient air.	Applicable
Dangerous Waste Regulations	WAC 173-303	Regulates the handling and disposal of solid waste considered to be dangerous to public health or the environment.	Applicable.
Solid Waste Handling Standards	WAC 173-350	Regulates the handling and disposal of solid waste.	Applicable

Key:

ARAR = Applicable or Relevant and Appropriate Requirement
CAMU = Corrective Action Management Unit
CFR = Code of Federal Regulations
CAA = Clean Air Act
CWA = Clean Water Act
EPA = United States Environmental Protection Agency
NCP = National Oil and Hazardous Substances Pollution Contingency Plan
NPDES = National Pollution Discharge Elimination System
PAH = polycyclic aromatic hydrocarbon
PRG = Preliminary Remediation Goal
RCRA = Resource Conservation and Recovery Act
RCW = Revised Code of Washington
MTCA = Model Toxics Control Act
USC = United States Code

Source for LSCA ARARs: U.S. EPA (2010a)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL CLEANUP

JUL 0 2 2010

ACTION MEMORANDUM

SUBJECT: Action Memorandum for a Non-Time-Critical Removal Action at the Little Squalicum Creek Area of The Oeser Company Superfund Site, Bellingham, Washington

FROM: Howard Orlean, Superfund Project Manager
Site Cleanup Unit 3, Office of Environmental Cleanup

THRU: Diane Dettling, On-Scene Coordinator
Emergency Response Unit, Office of Environmental Cleanup

Chris D. Field, Unit Manager
Emergency Response Unit, Office of Environmental Cleanup

Beth Sheldrake, Acting Unit Manager
Site Cleanup Unit 4, Office of Environmental Cleanup

Jennifer MacDonald, Assistant Regional Counsel
Office of Regional Counsel

TO: Daniel D. Opalski, Director
Office of Environmental Cleanup

SITE ID: CERCLIS ID - WAD008957243

I. PURPOSE

The purpose of this Action Memorandum is to request and document the U.S. Environmental Protection Agency, Region 10's (EPA) approval of the selected non-time-critical removal action described herein for the Little Squalicum Creek Area (LSCA) of The Oeser Company Superfund Site, Bellingham, Whatcom County, Washington (Figure 1). This removal action will address contaminated soil and sediment in the LSCA. The LSCA lies within the Lower Squalicum Park which consists of approximately 21 publicly-owned acres in Bellingham, Washington (Figure 2). Approximately five acres will be addressed by the scope of this removal action. The exact number of acreage to be addressed will be determined during the removal design phase.

Within the LSCA, the chemicals of concern (COCs) for human health in the contaminated soil are carcinogenic polycyclic aromatic hydrocarbons (cPAHs). The COCs for ecologic risk in sediment and soil include: total PAHs (tPAHs), pentachlorophenol (PCP), and dioxins/furans. Dioxins/furans are found in impurities of PCP which was released from the Oeser facility, and thus have been found to be co-located with PCP. Dioxins/furans also exist widely in the environment as a result of combustion of wood and other sources and could have been released to the LSCA via storm drains and other sources which are not related to the Oeser facility.

Contaminated soil and sediments with concentrations of COCs above cleanup levels will be excavated, consolidated and capped, or removed. Excavated areas will be backfilled with clean material and revegetated where necessary. Pre-removal and post removal confirmatory sampling will be conducted.

Consistent with the Remedial Action Objectives for the Oeser 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 the 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 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; and

- Prevent or reduce potential migration of COCs above cleanup levels in soil/sediment at the LSCA to groundwater and eventual potential recharge to surface water to protect human health and ecological receptors in surface water.

By approval of this memorandum, EPA determines that: 1) the conditions at the Site may present an imminent and substantial endangerment to public health, or welfare or the environment; and 2) the site conditions meet the criteria of the National Contingency Plan (NCP), 40 CFR § 300.415, for a removal action. The removal action is being conducted to address risk to the public and the environment from uncontrolled hazardous substances, pollutants and contaminants at the LSCA. An administrative record has been prepared for this removal action.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

This is a non-time-critical removal action at the LSCA within the boundaries of the Oeser Superfund Site in Bellingham, WA (see Figure 2). The Oeser Site was listed on the National Priorities List (NPL), pursuant to Section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9605, on October 27, 1997. The CERCLIS ID number is WA008957243.

The LSCA is south of the Oeser Company property. The LSCA is located on the northeast shore of Bellingham Bay and is in Whatcom County. Parts of the LSCA are in the City of Bellingham. The City of Bellingham owns part of the LSCA and the County owns other parts of the LSCA. The City leases the County's portion of the LSCA for improvement and management as a park. The area being developed by the City is called Little Squalicum Park and comprises 21 acres. Little Squalicum Creek is approximately a mile long and runs through the park down to Bellingham Bay.

Soil, sediment, surface water, and groundwater at the LSCA have been found to contain chemicals that are associated with wood-treating operations. The Oeser Company (Oeser), an active wood-treating facility that has operated since the 1940s, has been identified as a source of some of these contaminants within the LSCA. Oeser-related contaminants have historically been discharged to the LSC Site via Oeser's stormwater drainage system. At the time that the Oeser Site Record of Decision (ROD) (EPA 2003) was prepared, EPA determined that the Oeser-related contaminants within the LSCA did not pose an unacceptable risk to human or ecological receptors, and that cleanup of Oeser-related contaminants within the LSCA was not warranted under CERCLA. Since that time, based on additional data, the EPA has determined that Oeser-related contamination within the LSCA is subject to cleanup action under CERCLA. There are also other sources of contamination at the LSCA, including non-Oeser stormwater runoff and possible spills and dumping.

Ecology entered into a Model Toxics Control Act (MTCA) Consent Order with the City of Bellingham to address contamination from all sources within the entire park. The City conducted a Remedial Investigation (RI) of the park from 2005 through 2008. A portion of the RI work was paid for by an EPA Brownfields grant. A Draft Final RI report was produced by the City in 2008 under the Ecology Order. Ecology terminated the Order in January 2009. However, only a portion of the park is being addressed by this CERCLA removal action. EPA is addressing only those areas that we have determined are sufficiently contaminated to trigger CERCLA action and that contain Oeser-related contaminants.

The Oeser Company has completed remedial action activities on the Oeser facility property which is upgradient from the LSCA. That remedial action included source control via asphalt and gravel caps along with stormwater controls. These activities were conducted pursuant to a CERCLA Consent Decree. EPA approved the remedial action completion for the Oeser facility work on March 3, 2010.

1. Removal Site Evaluation

There is an operating railroad line between the Oeser property and Little Squalicum Creek. Little Squalicum Creek which functions primarily as a storm water drainage ditch (over 90% of average annual water flow) is located at the base of a ravine. The steep ravine side slopes are thickly vegetated by blackberry and alder and are relatively undisturbed. Some spoils piles are located along the creek which appear to be excavated material from the creek bed.

The City of Bellingham and Whatcom County use the Little Squalicum Creek and ravine as an outlet for their storm drain system. Runoff from the Birchwood neighborhood, including Oeser, is released to the creek via the Oeser and Birchwood outfalls. The Marine Drive outfall collects runoff from areas south and west of Oeser and flows into the creek above the Marine Drive Bridge. Although the majority of the water in the creek is from stormwater drainage, the creek is also fed by local springs. The upper portion of the creek does not support fish, although it does support aquatic insects and a benthic invertebrate community. Salmon fingerlings have been periodically spotted in the lower reaches of the creek. In addition, there are several identified wetlands within the LSCA.

A second active rail line runs parallel to Bellingham Bay about 100 feet from the shore. A rail line existed along the west side of the creek in the past but has been removed. The old rail bed has been renovated and now serves as a footpath. A second trail along the east side of the ravine runs from the nearby college to the Bay. The LSCA is surrounded by mixed use properties, including the college, residences and industry.

A portion of the property in the ravine was acquired by the Eiford family and the upland portion was obtained by the Bellingham School District in 1955, which subsequently deeded the land in 1993 to the Washington State Board for Community Colleges and Technical Colleges. Bellingham Technical College (BTC) is currently located on this 21-acre site.

In 1977, the City constructed an underground stormwater pipeline through the upper part of the ravine. Stormwater from approximately 3 square miles of the Birchwood neighborhood, including the BTC parking lot, is conveyed through the 36-inch underground pipeline and discharged into the creek. Although water is diverted directly into the Birchwood neighborhood storm drain during larger rainstorms (defined as being larger than 6-month storms), reportedly most BTC runoff (approximately 90 %) flows through the composted leaf media before discharging into Little Squalicum Creek (Integral 2008). It is not known whether the composted leaf media is monitored or maintained.

The City of Bellingham owns 8.7 acres of Little Squalicum Park and leases 12.3 acres of County-owned property at the LSCA. Currently, a lease agreement between the City Parks and Recreation Department and Whatcom County Parks Department stipulates that the City will manage and operate the area as a park for 35 years (to about 2025) with a renewal provision for another 35 years.

The Oeser Cedar Company (currently known as The Oeser Company) purchased the nearby U&I property in 1943 and has continuously manufactured poles for utility companies

since that date. In records dating back to 1953, the process included segregating poles by length and class, incising some or all of the poles, and subjecting them to "oil treatment" using creosote. Finished poles were shipped offsite by rail on tracks adjacent to the OPC plant spur. In the mid 1950s, the company also started treating wood using 5 percent PCP in an oil-based solvent. Oeser stopped using creosote to treat wood in the early 1980s; however, PCP treatment continues to be utilized at the facility.

The Oeser Company has discharged processed wastewater and/or contaminated stormwater to the creek since operations began in the late 1940s. The water enters an underground stormwater line that crosses Oeser property and then discharges into the creek. Stormwater flows in the Oeser/Birchwood culvert originate in a portion of the residential Birchwood/Alderwood neighborhood lying northeast of the Oeser plant. The Oeser/Birchwood culvert and the flows received from above the plant follow an old creek channel that was apparently filled during construction of the sugar beet plant or for the site's conversion by The Oeser Company. This Oeser/Birchwood neighborhood drainage enters the creek adjacent to the outfall from the BTC/Birchwood neighborhood drainage to the east. In addition to water, discharges from Oeser have historically been known to contain contaminants such as creosote, PCP, dioxins/furans (associated with PCP), diesel fuels and related oil products. Oeser has long had a National Pollutant Discharge Elimination System Waste Discharge Permit and that permit currently allows PCP and petroleum hydrocarbons in effluent discharged to local stormwater.

Stormwater drainage from the Birchwood neighborhood (via the Oeser/Birchwood and Bellingham Technical College/Birchwood drainages as well as several small, localized stormwater outfalls) is also likely a source of petroleum hydrocarbons and heavy metals to the Creek. The petroleum hydrocarbons and heavy metals in this stormwater are from motor vehicle and mixed commercial/residential use throughout this drainage area.

2. Physical Location

The LSCA consists of approximately 21 publicly owned acres located next to the Birchwood and Alderwood neighborhoods of northeast Bellingham and its Urban Growth Site. The park is bordered by Bellingham Bay, the BNSF mainline, several homes and Bellingham Technical College (BTC) to the south and east, and by several residences, an interim BTC building and the Oeser facility on the north and west.

The property to the north/northwest of the trail and adjacent to Marine Drive (on the OPC Pier Railroad Parcel, which runs just west of Little Squalicum Creek) is zoned for light impact industrial use. A portion of this area was recently developed into a parking lot by the City to provide improved access to the park and area trails. The rest of the property is zoned for recreational open space.

The creek corridor and the park are currently used for recreational activities such as walking, bicycling, play, and birding. The Site provides open space, wildlife habitat and stormwater conveyance services. Public investments have currently been limited to improvements involving two major trails. One of these trails passes through the park on the

OPC pier railroad and the other on the old road between Lindbergh Avenue and the BNSF Bridge.

The City has developed a Master Plan for the park which calls for enhancing the recreational activities in the park by constructing trails, water features and park amenities, and by realigning and day-lighting Little Squalicum Creek and stromwater flows within the park. The Master Plan also calls for enhancing the fish and wildlife habitat, including construction of wetlands, ponds, and channels to increase water storage and water release periods.

3. Site Characteristics/Conceptual Site Model

This removal action addresses contaminated soil, sediment, groundwater, and surface water associated with stormwater drainage and with historical releases from wood treatment activities at Oeser. Dioxins/furans from Oeser are found as impurities in PCP product and are therefore generally collocated with PCP in contaminated soil and sediment at the LSCA. As such, all known locations of dioxins/furans within the LSCA removal action area that are above the action level will be addressed by excavating and/or covering soils above the action levels for PCP and PAHs. The approximate boundaries of the removal action are shown in Figure 3. During design, some adjustments may be made to the boundary based on site conditions. Contaminants detected, spatial distribution and concentrations are described below, and site exposure and associated risk are described in Section III.

a. Release Mechanisms/Transport Mechanisms

Contaminants of concern have historically been released from the Oeser facility in stormwater and process wastewater mixed with stormwater via an outfall to the creek (Oeser continues to discharge contaminants of concern in stormwater discharges under an NPDES permit). Discharged stormwater and process wastewater infiltrated to the groundwater and contaminated soil and sediment were redistributed as the creek was rerouted and various activities, including historic gravel mining, occurred within the Site. There are also non-Oeser sources of the contaminants of concern that are and have been transported to the LSCA in a variety of ways, including stormwater runoff. The discontinuous occurrence of non-aqueous phase liquid (NAPL) or sheen in discrete areas of the site occurs primarily as isolated globules, and the likely mode of emplacement of contamination discussed above, suggests that little or no mobile NAPL exists at the Site.

b. Exposure Media/Secondary Sources

The primary media impacted by releases are soil and sediment within and adjacent to the present and historical channels of Little Squalicum Creek. Several contaminated areas further from the channels may have been impacted by other sources and/or redistribution of contaminated creek sediment and soils. Partitioning and leaching/infiltration appear to have caused secondary media, such as surface water and groundwater, to become impacted by COCs. However, existing groundwater data indicate that groundwater contamination by the COCs appears to be limited to localized areas in close proximity to the creek channel or other areas exhibiting soil contamination. No continuous groundwater plume is evident. Furthermore,

existing data indicate that COCs were either not detected or were detected at low concentrations in surface water samples collected at locations along the creek within and downgradient of the gaining reach, suggesting that significant migration of COCs from contaminated soils and associated groundwater to surface water in Little Squalicum Creek is not occurring. It should be noted that, as discussed in Section 2.6 of the EE/CA, much of the water within Little Squalicum Creek originates from stormwater runoff entering the creek through the Birchwood/Oeser storm drain, the Birchwood/BTC storm drain, and the Marine Drive storm drain outfalls. Stormwater from all of these sources are likely historical and ongoing sources of COCs in the creek.

c. Exposure Routes/Receptors

Human users of the LSCA may be exposed to chemicals of potential concern (COPCs) in environmental media in a variety of ways, including inhalation, dermal contact, and ingestion. However, given the tendency of the contaminants to sorb to solids, contaminant distributions in Site media (limited mainly to solids in the present and historical creek channel and adjacent soils), and recreational use of the Site, dermal contact with contaminated sediment/soil and ingestion of contaminated sediment/soil by recreational users appear to be the primary routes for human exposure. Ecological receptors at the LSCA may be similarly exposed, although bioaccumulation also plays a role in ecological exposure. The ecological receptors evaluated were vegetation, soil invertebrates, benthic invertebrates, insectivorous wildlife and birds, specifically the robin and the shrew

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Human health risks are summarized in Section 4.1 and evaluated in Appendix C of the EE/CA. Risks to ecological receptors are summarized in Section 4.2 and evaluated in Appendix C of the EE/CA.

The primary contaminants of concern include PCP and total and carcinogenic PAHs (e.g., benzo(a)pyrene) which are hazardous substances or pollutants or contaminants as defined by Sections 101 (14) and 101 (33) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. § 9601 (14) and (33) that were detected above levels deemed acceptable based on site-specific human health and ecological risk assessments and ARARs. Low levels of dioxins and furans were also detected in a few LSCA samples; however, as was found during the investigations and cleanup of the Oeser facility and during the investigations of the LSCA, these contaminants are generally co-located with the PCP. Therefore, EPA has determined that dioxins and furans which could be associated with PCP releases from the Oeser facility will be addressed by the response actions being taken to address the LSCA COCs.

The table below lists the maximum concentrations of COCs and their associated human health risk level:

Contaminant	Media	Maximum Concentration	Human Health Risk (Recreational User)
cPAHs	Subsurface soil Surface water	510 mg/kg 140 ug/l	$2.76E^{-5}$ (cancer risk) $6.52E^{-5}$ (cancer risk)
TPAHs	Subsurface soil	800 mg/kg	$4.01E^{-1}$ (non-cancer risk)
PCP	Subsurface soil	6.4 mg/kg	$1.94E^{-5}$ (non-cancer risk)
Dioxin/Furans	Surface soil	0.00137 mg/kg	$4.69E^{-6}$ (cancer risk)

cPAHs = carcinogenic PAHs TPAHs = total PAHs
mg/kg = milligram per kilogram ug/l = microgram per liter

EPA evaluated the potential risk or hazard posed to recreational receptors exposed to contaminants in surface soil, subsurface soil, sediment, and surface water at the LSCA. Using maximum detected site concentrations, the cancer risk for the site as a whole is 8.0E-4, above the EPA threshold of 1.0E-4. Non-cancer hazard quotients were below the EPA benchmark of 1.0.

Creosote and PCP related contaminants are also found in sediments in the upper creek and lower creek areas. Contaminated sediment is more extensive in the upper creek area and associated with groundwater discharging to this area of the creek. The extent of contamination is mostly localized in the lower creek, generally confined to surface sediments and bank soils transported from areas upstream.

The presence of hazardous substances at the LSCA, or the past, present, or potential migration of hazardous substances currently located at or emanating from the LSCA, constitute actual and/or threatened "releases" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22). Section III of this Action Memorandum provides a discussion of potential exposure and risk to Site receptors and Section V includes a table of Contaminants of Concern and cleanup levels.

5. NPL Status

The LSCA is located within the boundaries of the Oeser Superfund Site, which was listed on the NPL on October 27, 1997.

6. Maps, pictures and other graphic representations

Relevant figures are attached to this memorandum.

B. Other Actions to Date

1. Previous Actions

There have been no previous CERCLA removal actions or cleanup activities in the LSCA. However, there have been several previous investigations in the LSCA which are summarized in the EE/CA.

The Oeser Company has completed construction of the remedial action and source control activities for the upgradient Oeser facility. The Oeser Company has also completed closure activities for waste management units on the Oeser facility which are regulated under the Resource Conservation and Recovery Act (RCRA).

The City of Bellingham has submitted a Draft Final RI Report for the park. The RI was conducted pursuant to a Consent Order with Ecology. The Ecology Consent Order was terminated in January 2009.

2. Current Activities

There are no other removal actions associated with the LSCA. Operation, maintenance and monitoring activities of the remedial action are ongoing at the upgradient Oeser facility. The City plans on developing the park once funding becomes available and after completion of the non-time-critical removal action.

C. State and Local Authorities

1. State and local actions to date

The Oeser Superfund Site is an EPA lead site. EPA is the lead for the non-time-critical removal action at the LSCA. Ecology has reviewed and commented on the draft EE/CA and other documents associated with the removal action. Ecology has also participated in stakeholder meetings on the LSCA and on the park. As a landowner of the LSCA, the City of Bellingham is a Potentially Responsible Party and has actively participated in meetings concerning the LSC Area. The City has also commented on the Draft EE/CA and other documents associated with the LSCA. The City also conducted an RI of the park under State oversight (pursuant to the Ecology Consent Order). Other stakeholders that were provided an opportunity to participate include Whatcom County and the Lummi Nation.

2. Potential for continued State/local response

The removal action at the LSCA will be conducted under CERCLA authority. Coordination efforts with state and local authorities will continue throughout the project.

Other areas of the park (those not contaminated by Oeser-related contaminants) that may need to be addressed will be handled by the City and the State.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

As required by § 300.415(b)(2)(i) of the NCP, actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants at the LSCA are documented in Sections A and B below.

A baseline human health risk assessment and ecological risk assessment were conducted for the Oeser Site as part of the Oeser Site RI in 2002. These risk assessments included the LSCA. Based on these assessments, EPA determined that cleanup action at the LSCA was not warranted. This no-action determination for the LSCA was documented in the September 2003 CERCLA Record of Decision for the Oeser Site. Subsequent investigations at the LSCA by Ecology and the City provided additional data regarding contamination in the LSCA.

Consistent with EPA guidance for conducting an EE/CA, a streamlined risk evaluation was conducted for the LSCA (Section 4 of the EE/CA). The streamlined risk evaluation addresses human health and ecological risk from exposure to contaminated soil, sediments and groundwater in the absence of a removal action.

A. Threats to Public Health or Welfare

At the LSCA, potential exposure pathways for human health risks include direct contact with, inhalation from, or ingestion of contaminated surface and subsurface soil or sediment by recreational users. The contaminants of concern for soil and sediment are PCP and PAHs. The risk evaluation found that when exposure to maximum concentrations at the LSCA as a whole was evaluated, the potential cumulative risk to the adolescent recreational user from exposure primarily to cPAHs in LSCA soils approximated or exceeded the EPA cancer threshold of 1 in 10,000 (10-4).

Based on the concentrations detected in soil and sediments at the LSCA and the potential direct and indirect exposure pathways identified, EPA has determined that a removal action is required to mitigate impacts to public health, or welfare, or the environment. The removal action will eliminate the exposure pathways to PCP, PAHs and co-located dioxins/furans in soil and sediments within the removal area, which will lower unacceptable risks to users of the LSCA.

B. Threats to the Environment

The ecological risk evaluation concluded that levels of soil and sediment contamination at the LSCA are great enough to pose a risk to plants, soil invertebrates, insectivorous wildlife, and benthos, and that TPAHs are the principal chemicals of concern. Potential risks from PCP and dioxins/furans in soil and sediment were found to be much lower than those due to PAHs for all receptors evaluated (plants, soil invertebrates, insectivorous wildlife, and benthos).

Insectivorous mammals (e.g., shrew) using the LSCA may be impacted by total PAHs in soil in the historic and upper creek areas and by dioxins/furans in soil in the historic, upper, and lower creek areas.

Two Federal listed species, the bald eagle (*Haliaeetus leucocephalus*) and the bull trout (*Salvelinus confluentus*), may be present in the site vicinity. In addition, five species of concern may be present in the site vicinity, including the Pacific lamprey (*Entosphenus tridentata*), river lamprey (*Lampetera ayresi*), long-eared myotis (*Myotis evotis*; a bat), long-legged myotis (*Myotis volans*; a bat), and peregrine falcon (*Falco peregrinus*). Occurrence of these species have been documented at the LSCA.

Use of Little Squalicum Creek by fish is thought to be limited, though salmon fingerlings have been spotted periodically in Little Squalicum Creek's lower reaches.

Based on the PCP, PAH and dioxin/furan concentrations detected in soil and sediments at the LSCA, and known or potential ecological pathways identified, EPA has determined that a removal action will reduce potential impacts to the environment.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

In general, the contaminated soil and sediment with the highest concentrations of PCP, PAHs, and dioxins/furans will be removed, and remaining soil and sediments, which have lower concentrations, will be consolidated and covered with clean backfill material. Through an evaluation of effectiveness, implementability, and costs, along with input from the public, a modification of Alternative 4, which will include some elements of Alternatives 5 and 2 as described in the EE/CA, was selected as the removal alternative (Figure 3).

The LSCA is part of Little Squalicum Park. The park is used for recreational purposes and thus the human health cleanup levels for the LSCA are based on an adolescent recreational use scenario. Conservative cleanup levels which are protective of ecological receptors at the LSCA are based on screening levels and background concentrations of PCP, PAHs, and dioxins/furans.

1. Proposed action description

As described further below, the following response actions will be implemented to achieve the Removal Action Objectives for the LSCA, which are consistent with the Remedial Action Objectives for the Oeser site as a whole, through this removal action: pre-removal and post-removal confirmatory sampling; removal of contaminated soil and sediment for consolidation and containment on-Site (some material may be moved to the Oeser Company property and/or disposed off site); re-routing of the creek so that it flows through a portion of the

historical creek channel where the contaminated soil will have been removed; and institutional controls.

- Removal and Consolidation With Backfilling and/or Containment

Approximately 10,000 cubic yards of contaminated material will be excavated from the existing creek channel, the historical creek channel, and within what is referred to as the "paddle area" (Figure 3). It is expected that the majority of the excavated material will be from the historical creek channel and the paddle area. Prior to excavation of contaminated material, the removal action areas would be cleared and grubbed using a bulldozer or other suitable equipment. Contaminated soil/sediment above cleanup levels will be removed in lifts until confirmation sampling shows cleanup goals have been achieved or a depth of six feet is reached. Contaminated soil deeper than 6 feet is not expected to be removed because it does not currently pose an unacceptable risk to ecological receptors or humans. However, if contamination is visually apparent and accessible below 6 feet, additional material may be removed.

It is anticipated that all or most of the excavated material will be consolidated and contained on the Oeser plant. Some material may be placed within the upper reach of the existing creek channel (repository area) prior to backfilling. The function of the backfill will be to provide a physical barrier to protect users of the park from exposure to any residual contamination. Soil/sediment which meets RCRA requirements for Subtitle C disposal will be transported to a landfill that meets ARARs. None of the material known or suspected to be found in the LSCA area exceeds levels that would require treatment prior to disposal or on-site consolidation.

- Creek Rerouting

The existing creek will be re-routed from the upper portion of the existing creek to the lower historical creek channel (Figure 3). Approximately 700 linear feet of the existing upper creek will be permanently impacted while implementing the removal action. However, approximately 1,300 linear feet of new and historical channel will be constructed that will have greater functions and values than the existing channel. The creek will not be rerouted through the City's proposed estuary area in the southern portion of the LSCA.

- Bellingham Technical College (BTC) Outfall Rerouting

The BTC Outfall pipe will be shortened so that it no longer enters the creek near the Birchwood/Oeser Outfall, but instead would enter the creek just south of the existing BTC trail.

- Restoration of the Removal Action Areas

The excavated areas will be backfilled with clean material. It is anticipated that the backfill material may come from clean soil excavated as part of the construction project to create a new parking lot at the adjacent Bellingham Technical College, or from material used to create the new upper creek channel. Sampling will be conducted prior to use of backfill to confirm it is below any action levels for the cleanup action. Impacted wetlands will be restored or mitigated.

A wetland delineation will be performed prior to construction, and the details of wetland restoration/mitigation will be determined during the engineering design process.

- Repository Areas

Two repositories – one located at the Oeser plant and one within the upper reach of the existing Little Squalicum Creek – will be constructed to consolidate the contaminated material as described below. The preferred option is to place the contaminated material on the Oeser property.

Oeser Repository: This repository will be excavated in the western part of the Oeser property. The contaminated material excavated from the LSCA will be covered with 6 inches of clean gravel. Institutional controls including stormwater controls, monitoring and maintenance of this repository by the Oeser Company will be required.

Little Squalicum Creek: The upper reach of the existing Little Squalicum Creek (upstream from the Marine Drive Bridge) may be converted into a soil repository. The stream will be diverted to the historical channel in this area. After excavation of the contaminated material within the upper reach of the creek channel, clean fill will be placed in the excavation to raise the level of the channel above the 100-year floodplain. Contaminated material will be placed above the clean fill and covered with an 8-inch gravel layer and 2 feet of clean topsoil. Upon completion, the repository will be seeded and mulched. Institutional controls to include monitoring and maintenance of the soil cover will be implemented.

- Sampling

To better delineate the extent of contamination in the excavation areas, pre-removal soil sampling will be performed. Based on the preliminary removal design, the "paddle area" in the north central portion of the LSCA (Figure 3) presents the greatest uncertainty regarding soil contaminant levels. As such, this area presents the greatest uncertainty regarding the volumes of soil to be excavated and the methods and locations of consolidation or disposal. Therefore pre-excavation sampling will focus on this area.

Post-removal confirmatory sampling for COCs will also be performed in and around excavations to ensure cleanup levels and/or the six-foot excavation depth limit depth have been attained throughout the LSCA.

- Institutional Controls

Wherever material containing COCs above the cleanup levels established for protection of human health and the environment is left in place, clean fill will be used as a cover to create a physical barrier and the area(s) will be subject to institutional controls (ICs). The objectives of the ICs are to protect the integrity of the cover and guide how to handle any soils exposed in the future to protect against unacceptable human exposures and/or migration of contaminants from the covered areas to other areas and/or media. Annual inspections and maintenance (as needed) of the covered areas will also be conducted.

2. Contribution to remedial performance

The LSCA is located within the boundaries of the Oeser Superfund Site. Completion of all remedial actions for the Oeser Superfund Site will be accomplished upon completion of the LSCA non-time-critical removal action. In addition, the removal action is designed to immediately address contaminated soil and sediment within the LSCA and reduce exposures to recreational users and ecological receptors so that the City of Bellingham can proceed with further cleanup and development of Little Squalicum Park should they choose.

3. Description of alternative technologies

Candidate technologies for soil, sediment, and surface water remediation were identified and screened prior to developing alternatives for further engineering analysis. General categories of removal action technologies considered at the screening stage included: no action, institutional controls, surface water controls, stabilization/containment, and excavation and removal to both onsite and offsite locations. Each of these candidate technologies were evaluated based on effectiveness, implementability, and cost. Technologies were eliminated from further consideration due to low expected technical feasibility or effectiveness. Technologies that were not cost-effective relative to other equally-protective options were also not retained. Technologies determined to be potentially applicable to the LSCA removal action included institutional controls, surface water controls, containment, removal, and disposal.

4. Engineering Evaluation/Cost Analysis (EE/CA)

EPA prepared an EE/CA Approval Memorandum (December 21, 2009) for this removal action. EPA, with contractor assistance, then prepared the EE/CA which documents the development and evaluation of removal action alternatives and discusses the rationale for the recommended alternative. A 30-day public comment period on the EE/CA was held from March 18, 2010, to April 19, 2010. EPA prepared a response to public comments (Attachment A).

5. Applicable or Relevant and Appropriate Requirements (ARARs)

For on-site activities, all state and federal ARARs will be complied with.
A comprehensive list of ARARs for the removal action is provided in Table 4 of the EE/CA and the final ARARs list is included herein as Attachment B. Primary federal ARARs for the removal are the Clean Water Act Sections 401 and 404; and RCRA requirements. Primary state ARARs include: a) the Washington State Model Toxics and Control Act (MTCA) requirement that cleanup levels be established for unrestricted use at $1x10^{-6}$ for individual carcinogens and total excess cancer risk does not exceed $1x10^{-5}$, and for noncarcinogens at a Hazard Index of 1 or less, and that where the cleanup is protective but cannot attain those levels throughout the site, Institutional Controls will be put into place; and b) dangerous waste regulations.

Off-site activities will comply with all applicable local, state, and federal laws, including the Off-Site Disposal Rule (40 CFR § 300.440).

6. Cleanup Levels

The table below lists cleanup levels for the LSCA and the basis for those cleanup levels.

LSCA Contaminants of Concern and Cleanup Levels

Contaminant	Media	Maximum Concentration	Cleanup Level
Carcinogenic PAHs[a]	Soil	510 mg/kg	4.5 mg/kg
Dioxins/Furans[b]	Soil/Sediment	0.00137 mg/kg	.000012 mg/kg
Total PAHs[c]	Soil	800 mg/kg	3.6 mg/kg
Pentachlorophenol (PCP)[d]	Soil/Sediment	6.4 mg/kg	3.0 mg/kg

a = Clean up levels for cPAHs are based on benzo(a)pyrene and risk at this cleanup level is $1x10^{-6}$.
b = The soil cleanup level for dioxins/furans is based on a background level calculated by looking at the 90th percentile from 20 soil samples taken from the City of Bellingham during the Ocser remedial investigation.
c = The cleanup level for Total PAHs is based on background soil concentrations.
d = 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 humans and ecological receptors
cPAHs = Carcinogenic polycyclic aromatic hydroearbons

Sections of the MTCA, specifically WAC 173-340-740 which establishes soil cleanup standards, are applicable for this response action. In this case, site-specific cleanup levels were developed based on an adolescent recreational use scenario for human health and for protection of ecological receptors, and the more stringent of the two was selected as the cleanup level. For Total PAHs, a site-specific area background level was determined and selected as the cleanup level to be protective of human health and the environment. For cPAHs, the cleanup level is based on protection of human health. For PCP, there are soil screening levels but not applicable standards, so the cleanup level is based on protection of human health (1×10^{-6}) and ecological protection (for plants and birds). For dioxin/furans, the cleanup level is based on a background level which has been determined to be protective of ecological receptors. Note that the marine sediment standards were determined not to be relevant and appropriate for the limited amount of freshwater sediments in the creek bed.

Cleanup in the LSCA is 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, were in all but one instance co-located with PAHs and/or PCP, the extent of the removal action will be guided by the PAH and PCP cleanup levels. Because dioxins and furans are co-located with the COCs, it follows that the removal action will also address dioxin and furan contamination. In addition, the cleanup level for dioxins and furans in soils in the LSCA has been determined to be 0.000012 mg/kg or 12 parts per trillion (ppt) (the background concentration determined for this area). This cleanup concentration for dioxins and furans is well below the 10^{-6} risk threshold for the adolescent recreational user scenario which equates to 0.00027 mg/kg or 270 ppt.

With regard to the limited contaminants detected in groundwater and surface water, the EE/CA concluded that past deposition had contaminated soils which were the source of contaminants in ground and surface water such that remediation of soils would eliminate the risk

from those pathways, or at least reduce those risks to acceptable levels. Therefore, the cleanup objectives are focused on eliminating the risk from exposure to soils and the potential for further migration, and no cleanup levels for groundwater or surface water are required. Post-removal surface water and groundwater will be monitored to ensure that the removal action objectives as stated in Section I of this Action Memorandum are met.

7. Project schedule

The project schedule for the LSCA will be set forth in the EPA Statement of Work for this removal action. The construction phase of this project is currently scheduled for August 2010 through September 2010.

B. Estimated Costs

The projected costs to implement this non-time-critical removal action are estimated at $1.5 million (see Table D5 of the EE/CA).

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Should the proposed action be delayed or not taken:

- Contamination may continue to adversely affect human health and the environment at concentrations exceeding CERCLA risk-based levels.
- Hazardous substances present at the Site will remain as a continuous source to Little Squalicum Creek.
- Remedial action for the Oeser Superfund Site may not be completed.

VII. OUTSTANDING POLICY ISSUES

Clean Water Act (CWA) Sections 401 and 404 have been identified as ARARs for the LSCA. These ARARs restrict the disturbance of wetlands. Several possible wetlands have been identified at the LSCA which may be disturbed by removal action activities. A wetlands delineation will be conducted by EPA as part of the removal design process. The wetlands delineation will enable EPA to determine which wetlands at the LSCA may be impacted by removal activities and whether mitigation measures in compliance with CWA Sections 401 and 404 may be necessary.

VIII. COMMUNITY INVOLVEMENT

The EE/CA was available for public review and comment from March 18 through April 19, 2010. Notice of this comment period was published in The Bellingham Herald at the start of the 30-day public comment period. Notice of the comment period, public meeting, and a summary of the proposed EE/CA alternatives were described in a Little Squalicum Creek Fact Sheet (March 2010) that was mailed to approximately 772 addresses. Announcements were also placed on EPA's website and the City of Bellingham's website. The City of Bellingham posted

project updates on their website and issued a press release regarding the availability of the Draft EE/CA for public review.

EPA held a public meeting in the Bellingham City Council Chamber on March 31, 2010. The meeting was attended by approximately 108 people. Public comments were recorded by a court reporter and the City of Bellingham videotaped the meeting for later viewing on the City's public television station and website.

EPA received 71 comment letters and comment forms during the public comment period, and 18 individuals provided spoken comments at the public meeting. Original public comment documents and the transcript from the public meeting are provided in the administrative record. Responses to all significant comments are provided in the Responsiveness Summary (Attachment C). As a result of comments received on the EE/CA and preferred alternative, EPA has changed the preferred alternative from EE/CA Alternative 3 to a combination of Alternatives 4, 5, and 2 which provides at least as much protectiveness, mitigates for the loss of wetlands, and will be more consistent with the reasonably anticipated future land use (i.e., recreational) and the City's Master Plans for greater use of the LSCA as a public park and recreation area.

An Administrative Record was prepared for this action. The Administrative Record was available at EPA, and copies of key documents were made available at the Bellingham Central Library information repository, and on the EPA web site for the Oeser Superfund Site.

During preparation of the EE/CA, EPA had several meetings with key stakeholders including the City of Bellingham, Whatcom County and the Oeser Company. Ecology, the City and the Oeser Company reviewed and provided comments on the proposed cleanup levels for the removal action. EPA also participated in stakeholder meetings conducted by the City of Bellingham during the development of the City's Master Plan for Little Squalicum Park.

IX. ENFORCEMENT

See separate confidential enforcement addendum.

X. RECOMMENDATION

This decision document represents the selected removal action for the LSCA, located within the boundaries of the Oeser Superfund Site, Bellingham, Washington, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the LSCA.

Conditions at the LSCA meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. None of the removal project costs come from the Regional Removal allowance. Please indicate your approval or disapproval below.

Approve:  Date: 7/2/2010

Disapprove:_____ Date:_____

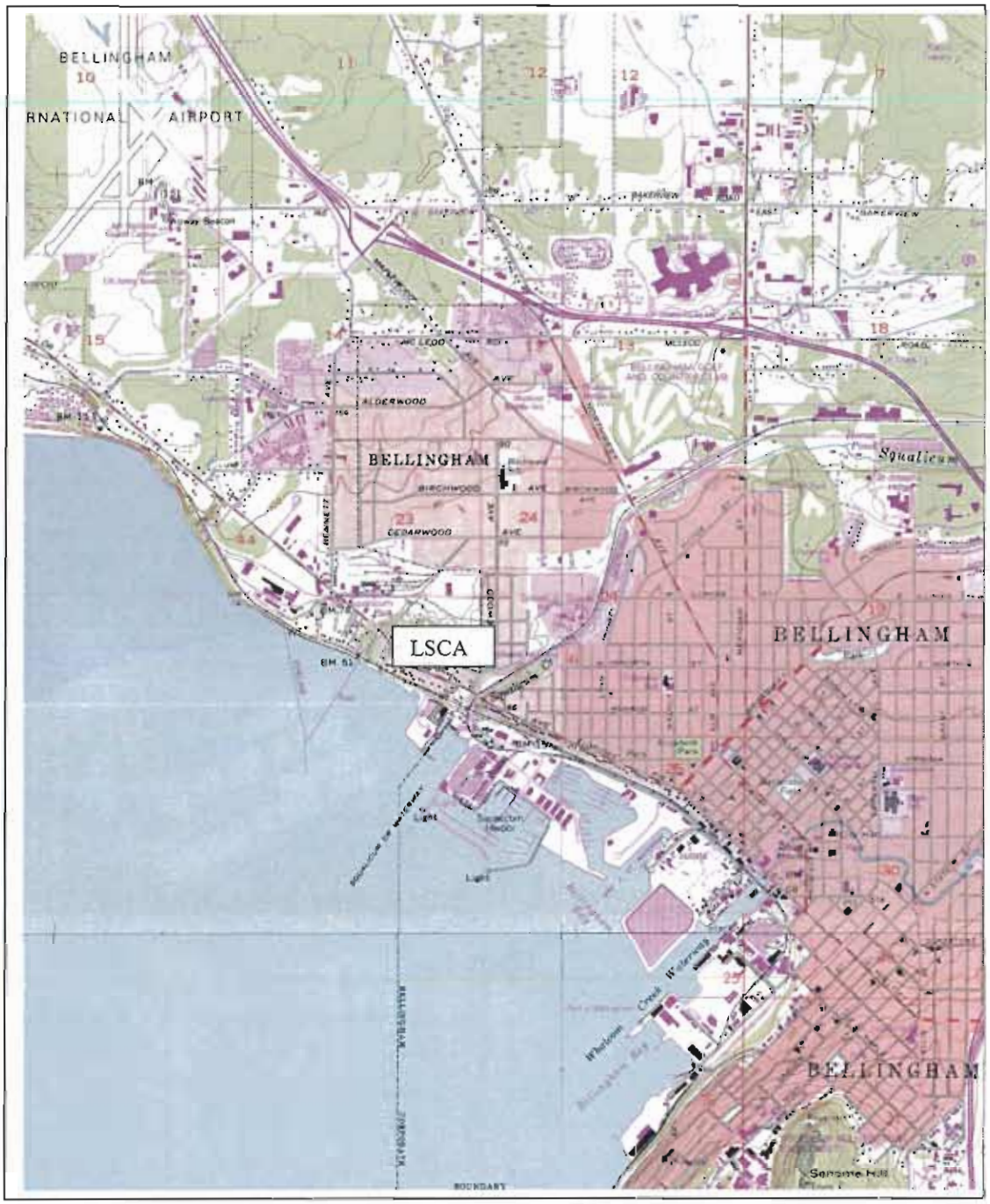

BELLINGHAM
RNATIONAL AIRPORT
ALDERWOOD
BELLINGHAM
BIRCHWOOD
CEDARWOOD
LSCA
BELLINGHAM
Squalicum
BELLINGHAM
Whatcom Creek Waterway
Light
BOUNDARY

Figure 1


Oeser Company the Plant
Oeser Co
Little Squalicum Creek Area
© 2010 Google
Image © 2010 DigitalGlobe
© 2010 Tele Atlas
Google
Imagery Date: Sep 7, 2008
48°46'09.57" N 122°30'53.74" W elev 75 ft
Eye alt 3358 ft

Figure 2

Figures

Figure 1-1
Oeser Site Location Map
2011 Five-Year Review
Oeser Site

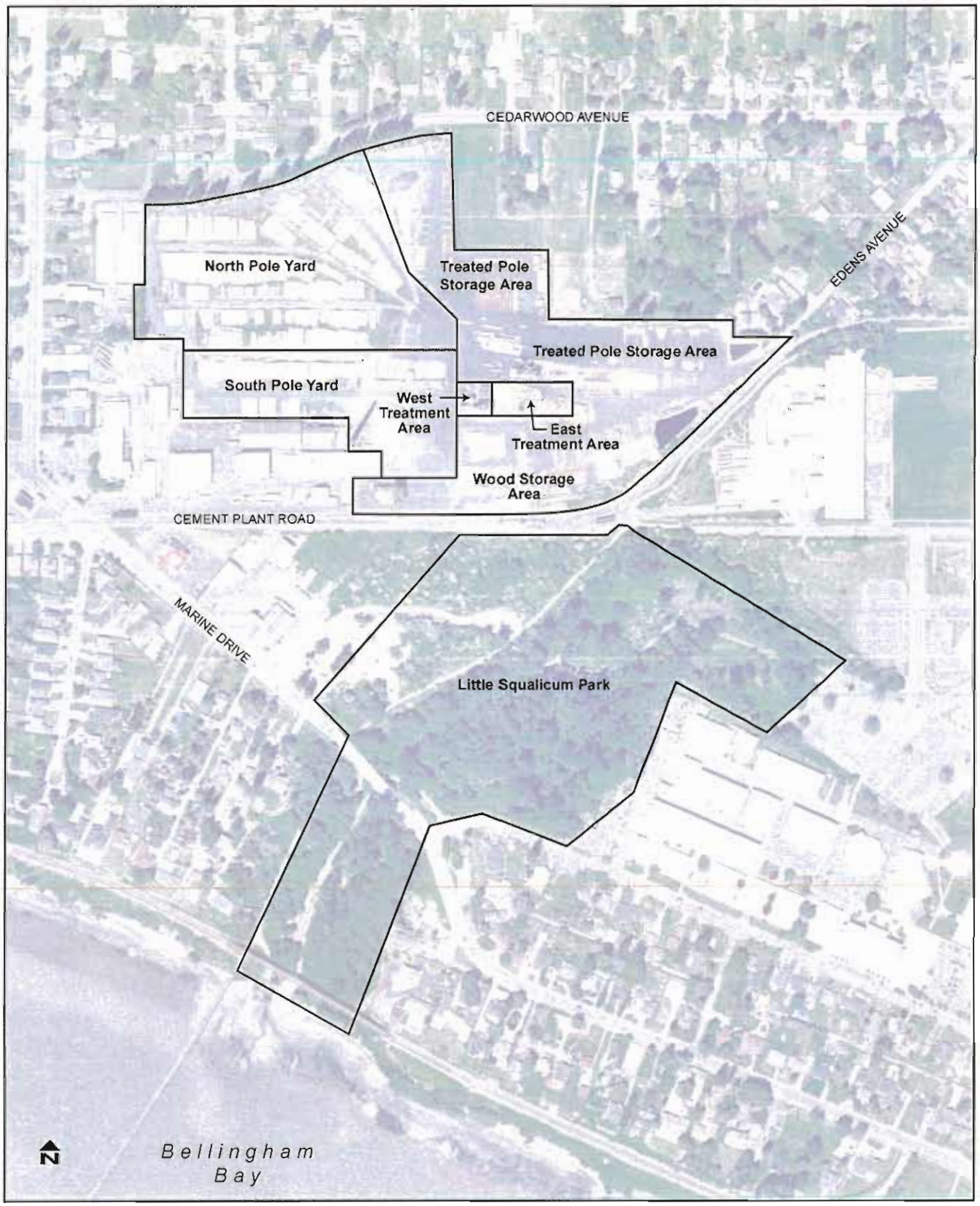


Figure 1-2
Oeser Site Map
2011 Five-Year Review
Oeser Site

Little Squalicum Creek Site
Engineering Evaluation / Cost Analysis

Bellingham, Washington

Figure 3-1
Little Squalicum Creek Park
Property Boundaries and Ownership
2011 Five-Year Review
Oeser Site

Source: A&E (2010).

350543.FR.07.01_ES032311173556SEA, Fig. 3-1 Property Boundaries and Ownership.ai , 4/28/11 , dk

EPA

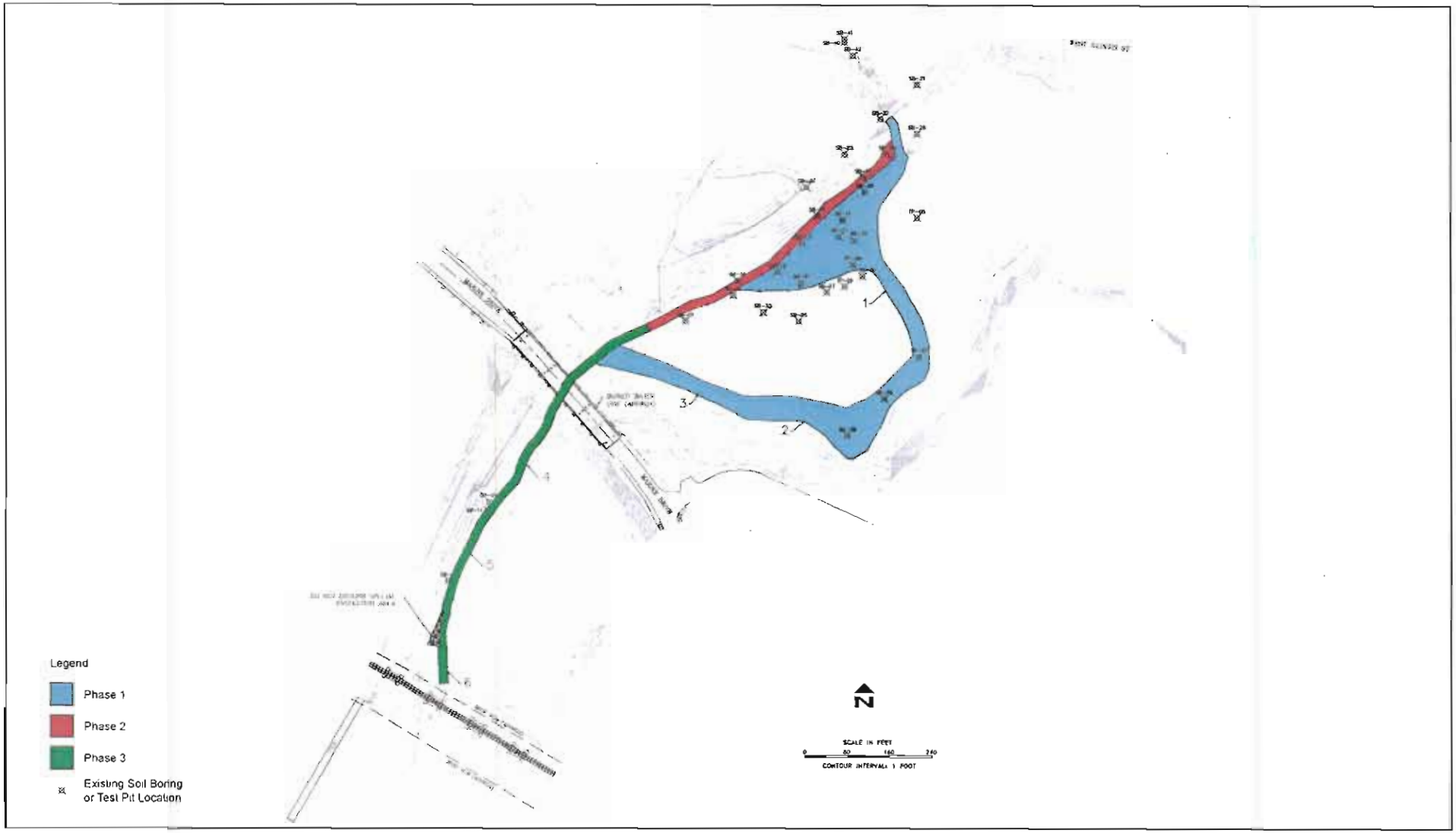
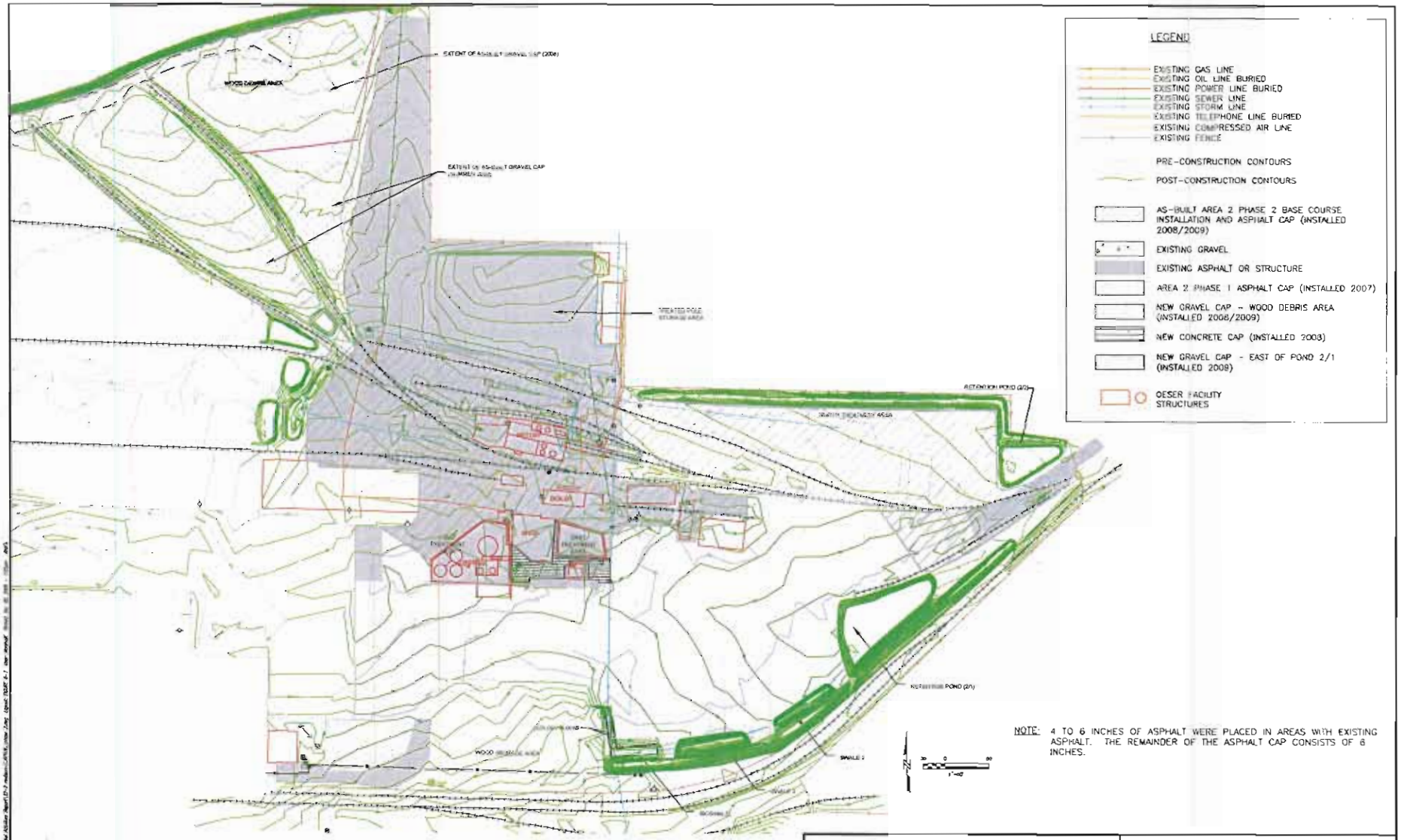
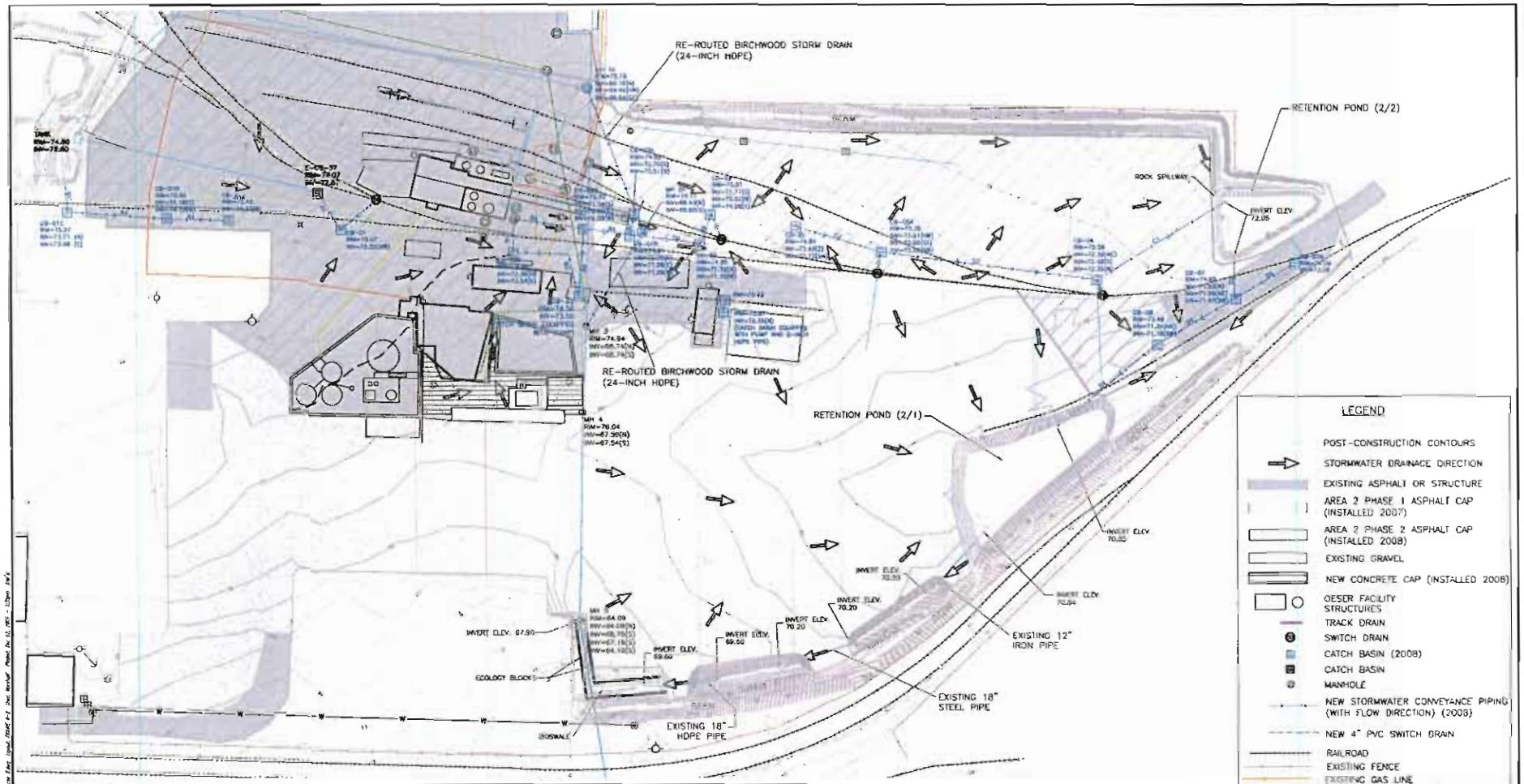


Figure 3-2
Little Squalicum Creek Area
Removal Action Phasing Plan
2011 Five-Year Review
Oeser Site

EPA


LEGEND
EXISTING GAS LINE
EXISTING OIL LINE BURIED
EXISTING POWER LINE BURIED
EXISTING SEWER LINE
EXISTING STORM LINE
EXISTING TELEPHONE LINE BURIED
EXISTING COMPRESSED AIR LINE
EXISTING FENCE
PRE-CONSTRUCTION CONTOURS
POST-CONSTRUCTION CONTOURS
AS-BUILT AREA 2 PHASE 2 BASE COURSE INSTALLATION AND ASPHALT CAP (INSTALLED 2008/2009)
EXISTING GRAVEL
EXISTING ASPHALT OR STRUCTURE
AREA 2 PHASE 1 ASPHALT CAP (INSTALLED 2007)
NEW GRAVEL CAP - WOOD DEBRIS AREA (INSTALLED 2008/2009)
NEW CONCRETE CAP (INSTALLED 2008)
NEW GRAVEL CAP - EAST OF POND 2/1 (INSTALLED 2008)
OESER FACILITY STRUCTURES
NOTE: 4 TO 6 INCHES OF ASPHALT WERE PLACED IN AREAS WITH EXISTING ASPHALT. THE REMAINDER OF THE ASPHALT CAP CONSISTS OF 6 INCHES.
AECOM
Source: AECOM (2010)
OESER SUPERFUND SITE
BELLINGHAM, WASHINGTON
12520-002-830
DATE: 12/2/09
DRWN: E.M./SEA
Figure 4-1
Area 2, Phase 2 Remedial Activities
As-built Capping Plan
2011 Five-Year Review
Oeser Site



PIPE ID	PIPE DIAMETER (INCHES)	PIPE MATERIAL	PIPE ID	PIPE DIAMETER (INCHES)	PIPE MATERIAL
Pipe A2	8	Corrugated HDPE	Pipe B7	6	Corrugated HDPE
Pipe A3	8	Corrugated HDPE	Pipe B8	6	Corrugated HDPE
Pipe A4	8	Corrugated HDPE	Pipe C1	6	Corrugated HDPE
Pipe A5	8	PVC	Pipe C2	6	Corrugated HDPE
Pipe B1	4	PVC	Pipe C3	6	Corrugated HDPE
Pipe B2	2	PVC	Pipe D1	12	Corrugated HDPE
Pipe B3	12	Corrugated HDPE	Pipe D2	12	Corrugated HDPE
Pipe B4	12	Corrugated HDPE	Pipe D3	12	Corrugated HDPE
Pipe B5	12	Corrugated HDPE	Pipe D4	6	Corrugated HDPE
Pipe B6	12	Corrugated HDPE			

AECOM

Source: AECOM (2010).

OESER SUPERFUND SITE
BELLINGHAM WASHINGTON
12520-002-830

DATE 12/2/09 | DRWN. E.M./SEA

Figure 4-2
Area 2, Phase 2 Remedial Activities
As-built Stormwater Drainage Plan
2011 Five-Year Review
Oeser Site

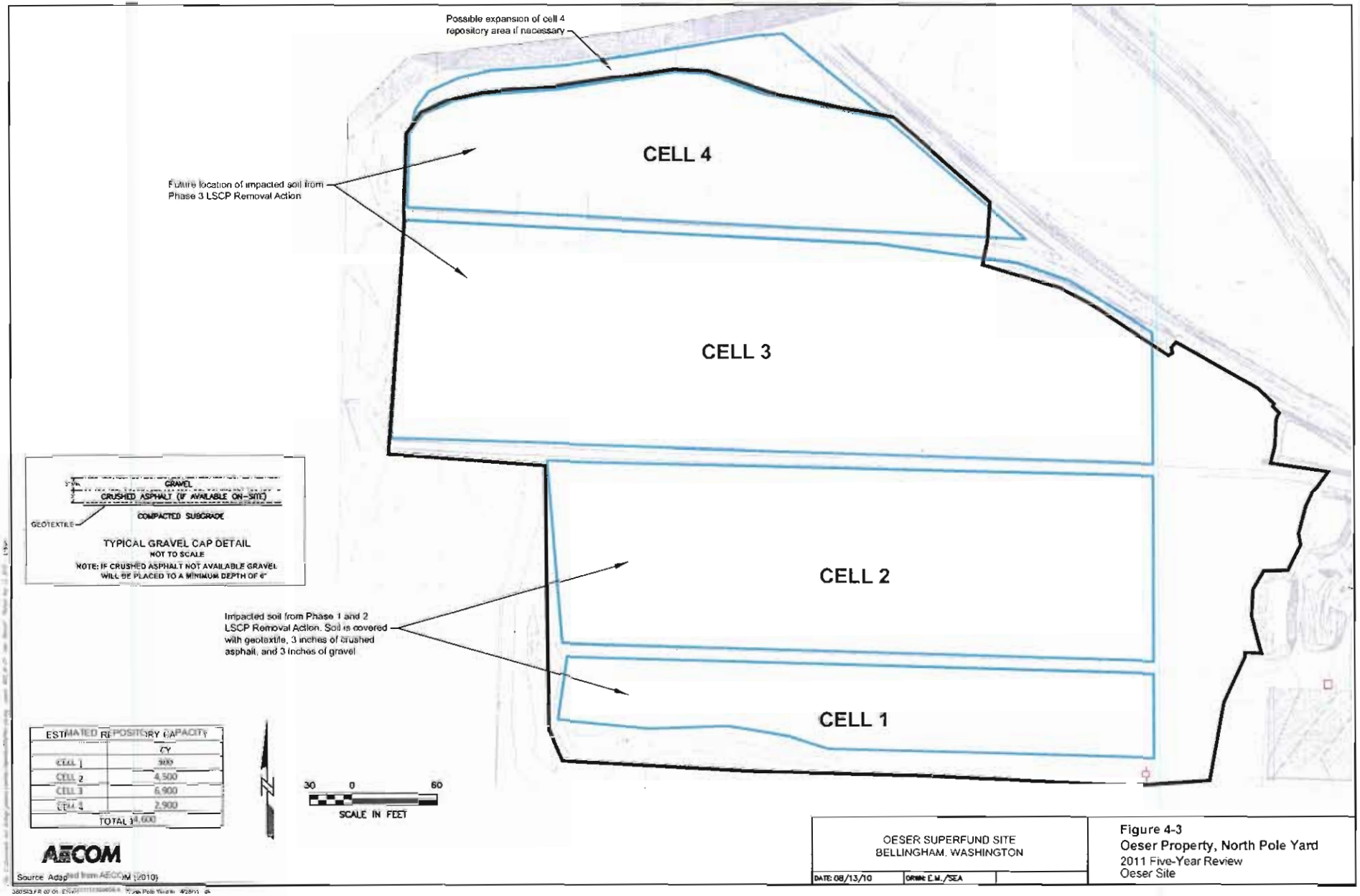


Figure 4-3
Oeser Property, North Pole Yard
2011 Five-Year Review
Oeser Site

Figure 6-1
In-Place Contaminated Soil Concentrations after Completion of Phase 1 and 2 Removal Action, Little Squalicum Creek Area
2011 Five-Year Review
Oeser Site

EPA