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FIVE-YEAR REVIEW
AMERICAN CROSSARM & CONDUIT SUPERFUND SITE
CHEHALIS, WASHINGTON

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Second Five-Year Review Report

for

American Crossarm & Conduit
Superfund Site

Chehalis, Washington

SEPTEMBER 2004

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Prepared by:

United States Environmental Protection Agency
Region 10
Seattle, Washington

Approved by:

Daniel D. Opalski, Director
Office of Environmental Cleanup
U.S. EPA, Region 10

Date: 9/30/04

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
Ecology	Washington Department of Ecology
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SDWA	Safe Drinking Water Act
VOC	Volatile Organic Compound

Executive Summary

This report presents the findings of the second five-year review performed for the American Crossarm and Conduit(ACC), Chehalis, Washington. The five-year review was conducted to determine if threats to human health and the environment are being addressed through implementation of the selected remedy.

ACC was a wood treating facility contaminated by years of sloppy operation. The environmental problems were further exacerbated by natural flooding which also spread pentachlorophenol (PCP) and diesel fuel to the nearby residences.
The site has been remediated in full conformance with the ROD, purchased for back taxes and since redeveloped with new land owners and new business structures.
The five-year review was conducted in accordance with the U.S. Environmental Protection Agency (EPA) *Comprehensive Five-Year Review Guidance* (U.S. EPA, 2001) and included the following:

* Review of site data to evaluate compliance with the performance standards specified by the Record of Decision (ROD).
* A site inspection to confirm that the remedy is operating and being maintained consistent with the ROD and RD objectives.
* Interviews with site stakeholders to obtain their appraisal of how the remedy is performing and to identify concerns or suggestions.
* Review of federal and state regulations promulgated since the last five-year review that could affect the remedy's overall protectiveness.

The initial remedial action (RA) for the site was completed in May 1996 and included removal and offsite disposal of drums of contaminated site material, demolition and disposal of the entire site facilities, removal of lagoon sediment and relining of the storm drain, excavation and disposal of contaminated soils from under the site operations area, excavation of soils from the surrounding neighborhood yards and consolidation for burial on the ACC site, and finally placement of clean cover and implementation of institutional controls.

In addition to the site redevelopment other events since the last 5 year review include:

1. Monitoring results from Ecology November 2000 and 2001 were received. Groundwater with Naphthalenes have been observed in down gradient wells at levels below MTCA cleanup standards and Safe Drinking Water Act MCLs. Surface water samples from the drainage ditch between the site land fill and the railroad tracks detected PAHs, but at levels far below established water quality criteria for protection of

human health. Groundwater contamination does not present a threat to human health and the environment because shallow groundwater is not used for any purpose in the vicinity of the site nor is it discharging into local surface water bodies where it could potentially impact ecological receptors.

2. A recent stream survey of Dillenbaugh Creek (2002) detected elevated levels of dioxin in some fish tissue and creek sediments.

Despite these two reports the results of this five-year review indicate that the remedy for the ACC site protects human health and the environment. The most recent report regarding dioxin levels in fish tissue, does raise some concerns that need to be addressed by Ecology in the future.

The next five-year review will be completed by September 2009.

Five-year Review Summary Form

Site Identification

Site Name:	American Crossarm & Conduit
EPA ID Number:	WAD057311094
Region:	10
State:	Washington
City/County:	Chehalis/ Lewis County

Site Status

NPL Status:	Final
Remediation Status:	Complete
Number of OUs:	One
Construction Completion Date:	May 1996

Review Status

Lead Agency:	US EPA
Author Name:	Lee Marshall
Author Title:	Project Manager
Author Affiliation:	EPA, Region 10
Review Period:	August 2004 through September 2004
Date of Site Inspection:	September 9, 2004
Type of Review:	Statutory
Five-Year Review Number:	2
Triggering Action:	Previous Five-Year Review Report
Triggering Action Date (WasteLAN):	September, 1999
Due Date:	September, 2004

Issues

Low level contaminated substances remain onsite under the clean soil cover, per the ROD cleanup plans. Permanent Institutional Controls are in place that run with the deed to the property. It is important to note that a Department of Ecology report in 2001 indicated low levels of naphthalene in a down gradient monitoring well. Also a September 2002 report has described evidence of elevated dioxin levels in Dillenbaugh

Creek both in fish tissue and in some sediments samples. There is insufficient evidence to determine if the dioxin source is from past historic events or if there are new releases of contamination to the creek. The elevated dioxin levels in sediment were observed downstream of the City of Chehalis storm water runoff drain and attached lagoon, which is not on the ACC property and the lagoon is a receiving body for surface water runoff from a large portion of the city of Chehalis. Based on the inspection conducted by EPA and Ecology, there is no evidence the site is an ongoing source and by the cleanup design, the site has effectively been cut off from ever being a source. Monitoring wells have been seriously damaged, and at this time only one down gradient well remains viable. Consideration by Ecology should be made as to whether new monitoring wells need to be installed.

Recommendations and Follow-up Actions

The Department of Ecology assumed responsibility of site O & M in 1996. Therefore it is recommended that EPA should conduct followup communications with Ecology regarding their decision on the monitoring wells and the potential need for replacement. Followup with Ecology should also further evaluate the need for a new study to determine the source of dioxin found in Dillenbaugh Creek.

Protectiveness Statement

The remedy at this site currently protects human health and the environment because the groundwater plume is stable beneath the site and is not a source of drinking water, and the surface soil cover remains clean and intact.

Other Comments

Some re-development of the ACC site has occurred. A second large pad type building has been constructed and is operated as owner occupied business.

Second Five-Year Review Report

American Crossarm & Conduit Superfund Site Chehalis, Washington

I. INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *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 judgement 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.*

The Agency interpreted this requirement further in the 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.*

The US Environmental Protection Agency (EPA), Region 10 conducted the Five-Year Review of the remedy implemented at the American Crossarm & Conduit Site, located in Chehalis, Washington. This second Five-Year Review for American Crossarm & Conduit site was conducted by the EPA Remedial Project Manager (RPM)

from August 2004 through September 2004. This report documents the results of the review.

This is the second five-year review for the ACC site. The triggering action for this review is the completion of the second Five-Year Review Report, dated September, 1999. The five-year review is required because hazardous substances, pollutants, or contaminants remain in the soil and groundwater above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1 Chronology of Site Events
American Crossarm & Conduit

Chronology of Events

Event	Date
Ecology conducts a compliance inspection of ACC. Violations found.	Early 1983
ACC stops wood treating operations	Late 1983
ACC provides contaminated soil to the residential area to be used for fill	1985
Ecology directs ACC to remove contaminated fill from residential lots	1985
ACC abandons the site	Early 1986
Chehalis River floods. PCP left in tanks is spread throughout the neighborhood	November 1986
Emergency removal action taken to cleanup PCP from flood	November 1986
Incinerator brought on-site and burns contaminated debris from the removal action	1988
ACC becomes an NPL site	1989
Remedial Investigation and Feasibility study performed	1989 through 1992
Tanks, piping and asbestos removed from treatment works	June 1992
Proposed plan prepared and reviewed by public	September 1992
Record of Decision signed	June 1993
Remedial design begins	January 1994
Cleanup construction begins.	September 1994
Site floods	November 1995
Site floods	February 1996
Prefinal construction completion inspection performed by EPA and Ecology	April 1996
Site floods	April 1996

Site work is completed	**May 1996**
Site purchased at tax auction	**September 1996**
Site inspection	**November 1998**
Site redevelopment began	**November 1998**
5 Year site inspection w/ Ecology	**September 21, 1999**
5 Year site inspection w/ Ecology	**September 9, 2004**

III. BACKGROUND

Site Location and Description:

The 14-acre former wood treating facility is located on the south edge of Chehalis within the 100-year flood plain of the Chehalis and Newaukam rivers. Most of the facility rested in a marshy lowland on the east margin of a 2- to 3-mile-wide alluvial valley, which is slightly lower than the 100-year flood plain.

The former facility was composed of four areas including wood treatment works, kilns, mill, and a landfill. The wood treatment area, which contained underground tanks, a surface impoundment, and a control room, was used to treat wood with mixture of diesel and PCP. The facility also included an elevated crane-way and eight kilns used to dry timber prior to treatment. The mill was a large wooden structure that contained wood crossbars and conduit manufacturing equipment constructed in a low-lying area on posts/pilings to elevate it to the height of the kilns. The landfill, used from the 1930s to 1985, was located south of the former mill. The landfill was used to dispose of wood waste and other debris from operation of the mill and treatment works.
From the early 1930s to 1983, wood cutting, milling, and treating operations were conducted at the site. Wood waste, a waste stream from the milling operation, was placed in the wetland, creating a landfill. Wood treating began in the early 1930s. Crossarms and conduit for electrical utility poles were treated in open dip tanks with hot or cold creosote and PCP. Tank sludge is suspected to have been disposed of in the landfill. Solvents, paints, paint thinners, lubricating oils, petroleum products, and other miscellaneous wastes may also have been disposed of in the landfill. The contaminants of concern are carcinogenic polyaromatic hydrocarbons (CPAHs), PCP, and dioxin/furans.

The Area of Contamination (AOC) adjacent to the facility area included the Chehalis Avenue area (a commercial/residential section of the city, and playfield), the wetland

south of the landfill and a stormwater discharge lagoon which is located across the railroad tracks, several hundred yards northwest from the site. The lagoon is normally 2 to 3 feet deep and approximately 1/4 acre size, drains into Dillenbaugh Creek. The drain leading to the lagoon is the conduit for surface water runoff for a large part of the city of Chehalis. The drain ran under the mill treatment works and contamination from the operations had infiltrated into the storm drain. This chronic infiltration, as well as historic floods, contributed to the contamination of the lagoon . The remaining wetland area south of the facility (approximately 37 acres) is traversed by the Burlington Northern-Union Pacific (BN-UP) railroad tracks.

The Superfund Site was placed on the National Priorities List (NPL [Superfund List]) in September 1989.

Early Investigations

In early 1983, the Washington State Department of Ecology (Ecology) conducted a compliance inspection of the ACC facility. The inspection determined the facility was not in compliance with state waste handling requirements. Ecology required ACC to eliminate discharges of wastewater to the environment, to prepare a wastewater treatment and disposal plan, and to redirect all boiler blowdown to the sanitary sewer collection system. In late 1983, ACC stopped the wood milling and treatment operations.

Early Actions and Enforcement activities

Several floods occurred in the next few years, releasing contamination to the surrounding area. In 1986, the Chehalis River flooded ACC spreading approximately 10,000 gallons of PCP-diesel solution to the Chehalis Avenue area and potentially to the wetlands and Dillenbaugh Creek. An emergency CERCLA action was taken to clean up contamination from this flood. Contaminated soil, debris, furniture, and other material generated from the cleanup, that was considered the principle threat to human health and the environment, were stored on the facility. In 1988, an incinerator was brought on the facility to incinerate the contaminated material, generating approximately 207 tons of ash. Prior to that in 1987, contaminated sludge and sediment were removed from the surface wood treatment impoundment and also incinerated .

Remedial Investigation/Feasibility Study

In 1989, the U.S. EPA initiated a remedial investigation and feasibility study (RI/FS). The FS was completed in September 1992.

In 1991 and 1992, the EPA undertook an action to further reduce the potential for spread of contaminants. In 1991, clean imported gravel was spread over the former wood treatment area to keep fugitive dust containing wood treating chemicals from becoming airborne. Above ground tanks and piping in the treatment works were decontaminated and the steel taken to a recycler in 1992. Laboratory chemicals and

PCB-containing electrical equipment were collected from various buildings and secured by placing them in overpacks. Asbestos was removed from exposed pipe and placed in sealed drums.

Record-of-Decision (ROD)

On 10 May 1993, a Record of Decision (ROD) was signed, describing the remedial action to be taken in response to the contamination at the site. The selected remedy was the final response of a series of actions that were conducted at ACC.

Remedial Action Objectives

The site remediation based on the ROD involved the following objectives:

- Excavation of low-level contaminated soil in the Chehalis Avenue area to meet Washington State Model Toxics Control Act (MTCA) Method B (residential) cleanup standards.
- Demolition of facility structures and recycling of material.
- Excavation of ACC facility soil from the most contaminated areas and disposal at an approved off-site hazardous waste landfill.
- Removal of contaminated sediment in the lagoon and stormwater sewer to meet ambient water criteria (AWQC) and MTCA cleanup standards for surface water in Dillenbaugh Creek.
- Removal of floating product underneath the treatment works to meet Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) and MTCA cleanup levels of groundwater at the facility boundary.
- Site regrading and installation of a vegetated soil cover to meet MTCA cleanup standards through containment and institutional controls.

IV. REMEDIAL ACTIONS

Specific remedial action activities were performed to implement the selected remedy are discussed below:

- Abandonment of wells. (Five existing off-site monitoring wells were maintained for performance monitoring).

- Removal and off-site disposal of drums containing filtercake, contaminated soil and water, chemicals, PCB capacitors, sludges and solvents.

- Demolition and disposal/recycling of the treatment works, mill, kiln, above- and belowground tanks, foundations, loading docks, concrete-lined trenches, sheds and other support facilities.

- Removal of lagoon sediment, reconfiguration of the lagoon and relining of the storm drain sewer from Chehalis Avenue to the lagoon to mitigate infiltration into the buried pipeline.
- Excavation of soil from in and under the surface impoundment, under and around the treatment works, between the mill and kilns, and from the remaining surface locations of the treatment area.
- Collection of floating product found in the excavations under the treatment works.
- On-site treatment and off-site disposal of the soil and sediment removed from the lagoon and from beneath the treatment area and surface impoundment.
- Excavation of soil in the residential area and consolidation on the ACC facility. Backfill of residential area with clean soil and revegetation.
- Placement of clean soil cover on the entire ACC facility, fine grading of the cover and revegetation.
- Installation of site access controls (fencing) around the entire perimeter of the ACC facility.
- Implementation of institutional controls to control site use and prohibit any intrusive work.

REMEDIAL CONSTRUCTION ACTIVITIES

General Facility Support

Construction of the general facility support area included office building demolition, contaminated soil excavation, clearing and grubbing, construction of the haul road, construction of the decontamination pad and secondary containment area, utility installation, and other items.

Wood debris was segregated, stockpiled, and hauled off as nonhazardous waste to the Stafford Creek Landfill in Aberdeen.

Approximately 2,105 cubic yards of contaminated soil was excavated from the office area. All excavated soil was consolidated on the landfill located at the south end of the ACC site.

Site Debris Removal

The site debris removal and consolidation work consisted of removal of various piles of wood debris located throughout the site. The wood, determined to be nonhazardous by sampling and analysis, was taken to a local landfill for disposal. All wood was removed to within 6 inches of the ground. Approximately 130 tons of wood and miscellaneous debris was hauled off-site for disposal at the Stafford Creek Landfill.

Drum Removal

Off-site disposal of drums was conducted after contents were properly identified and the disposal site was verified appropriate for the designated material. Approximately 152 drums of material (93 drums of miscellaneous wastes and 59 drums of filter cake) were disposed off-site. Most drum contents were transported to Arlington, Oregon, for disposal.

Structure Demolition

Structure demolition, recycle, and disposal work was performed by the subcontractor Iconco, Inc., Seattle, Washington. Prior to commencement of work, the subcontractor submitted complete demolition work plan and conducted a field structural survey of the buildings to evaluate demolition strategy.

Mill concrete footings were dropped into the mud under the former mill and incorporated into the subgrade to provide stability. Salvaged steel was transported to General Metals, a metal recycler in Tacoma, Washington. Clean noncontaminated salvaged timber in reasonable condition was processed and inventoried at a local yard and sold to the public or sent elsewhere for use. Wood of lower quality was sent to a recycler to be used for fiber recovery or as boiler fuel. Wood debris was also sent to a local nonhazardous landfill for disposal. Approximately 20,000 cubic yards of wood was generated from demolition of site structures. Of that total, 90% was recycled or reused.

The treatment works and kiln boiler room buildings were demolished and the resulting debris sent to the Chemical Waste Management hazardous waste landfill in Arlington, Oregon. This debris was handled as hazardous waste due to severe staining and saturation with wood treating compounds. Clean concrete from the treatment works building foundation was broken into 1-foot pieces and buried near the kilns to provide subgrade stability.

Stormdrain Cleaning and Relining

A dam was built across the stormdrain outlet section of the lagoon with cement blocks. This part of the lagoon was pumped dry before a camera was sent through the drain pipe for a television inspection of the pipe's internal conditions. The 36 inch stormdrain line was then cleaned and videotaped before installing the Cured-In-Place-Pipe (CIPP).

The required length of the CIPP was measured (830 feet) and transported on site packed in ice.

The CIPP placed in the stormdrain consisted of a 12-mm-thick polyester fabric impregnated with resin. The pipe was placed inside the existing drain using hydrostatic pressure from a water column outside the manhole. Once the pipe was placed, the water inside the pipe was heated to activate the resin and cure the pipe into a rigid lining. A post-installation television inspection was performed on the completed drain pipe to verify the integrity of the relined pipe .

Lagoon Sediment Removal/Disposal Restoration

The city surface water lagoon is located at the outlet of the stormdrain flowing east to west across the ACC site.

A temporary bypass lagoon to accept future stormwater run off was constructed and a sheet pile isolation wall was installed at the outlet of the original lagoon, isolating it from Dillenbaugh Creek. A water treatment system consisting of filtration and carbon adsorption was installed to treat wastewater, pumped from the now isolated lagoon. Approximately twenty 20,000-gallon tanks were brought on-site and set in a secondary containment cell. Surface water in the lagoon was pumped to the tanks and then treated. Wastewater generated from lagoon and sediment dewatering was treated to meet Ambient Water Quality Criteria (AWQC) and then discharged to Dillenbaugh Creek. Sediments were excavated to clean native soil. The sediment was de-watered, blended with cement kiln dust (CKD) and transported to the RCRA hazardous waste landfill operated by Chemical Waste Management in Arlington, Oregon.

The sheet pile isolation wall was removed. Erosion control matting was placed over the reconfigured banks and the bypass system was removed allowing water to flow through the reconfigured lagoon. The lagoon area was hydroseeded. The temporary lagoon was backfilled. The bypass manhole and 30-inch metal culvert were left in place.

Tank and Pipe Removal

Tank and pipe removal work was performed by the subcontractor Echeco Environmental Services, Blackfoot, Idaho. The four tanks on-site were reportedly 1,000, 6,000, 6,000, and 10,000-gallon in size and contained diesel, creosote, creosote and process residuals, respectively.

After the tanks were removed, and the residual sludge removed for off-site disposal at a hazardous waste landfill. The tanks were cut into pieces and taken off-site to a steel recycler.

Facility Soil Removal

Soil excavation was performed on the most highly contaminated surface and subsurface soil as determined by sampling performed during the RI. The approach taken was to excavate to the design depths or until the clean native clay (unweathered or visually free from stain or oxidation) was observed.

The bottom of the excavations in the treatment and kiln areas were visually observed to be a clean light brown clay. The area behind the kilns were excavated to depth at which point a clean blue clay was encountered. The light brown clay and blue clay visually signified that the stained contaminated soil had been removed down to clean soil.

The wood treatment impoundment area excavation was based on an alternative optimization evaluation performed in the feasibility study from the subsurface soil sampling conducted in the remedial investigation. It was determined that 70% of the total contamination could be removed by excavating 25% of the soil. This approach optimized the balance between contamination removal, treatment, and cost, consistent with WAC 173-340-360(5)(d).

Soil was excavated and stockpiled in an area directly in front of the former kilns in a pile approximately 15 to 20 feet high and 150 feet long. In almost all places in the treatment works and kiln area the bottom of the completed excavation was visually observed to be a clean brown clay. A total of 18,137 cubic yards of soil on the ACC facility was excavated and transported off-site for disposal.

After demolition of the mill structures, a small area of surface soil was found that had creosote contamination associated with leaks and drips from a former creosote drip tank located in the former mill. The area was approximately 20 feet wide by 20 feet long and was located under the northwest corner of the mill. The soil was excavated from this area and segregated from the PCP contaminated soil. Determination of extent of excavation was made by visual observation. This soil was manifested and disposed off site as hazardous waste

Wastewater generated from decontamination and other on-site activities was either used for dust suppression on the contaminated soil or was filtered to meet City of Chehalis POTW permit requirements and discharged to the public-owned treatment works (POTW). Most of the decontamination water was used for dust suppression.

Minimal floating product was observed in the excavations. No floating product was found in the 10 foot deep excavation under the treatment works. A small quantity of dark thick oil (< 1 gallon) was seen floating on the water in the 10-foot-deep excavation under the surface former impoundment. This oil was soaked up using oil absorbent pads. The pads were disposed off-site at the hazardous waste landfill used for soil disposal.

Residential Soil Removal/Restoration

Soil in 26 residential lots was excavated to a depth of approximately 8 to 12 inches.

Prior to the excavation, soil in each lot to be excavated was sampled at depth of 8 to 12 inches to verify that CPAH and PCP contamination was below the action level.

Compound	Maximum Soil Concentration before cleanup	Cleanup Level Soil
CPAH	258,000 µg/kg	172 µg/kg[a]
PCP	250,000 µg/kg	8,330 µg/kg[a]
TCDD	143,000 ng/kg	0.0066 ng/kg[a]

Notes:

[a] MTCA Method B (Carcinogenic) for benzo-a-pyrene. Total CPAH cleanup concentration established by Washington State department of Ecology is 1204 µg/kg.

Soil excavated from yards was loaded into dump trucks and placed temporarily near the north end of the ACC landfill. Approximately 2,500 cubic yards of soil was excavated from residential lots. When excavation in a lot was complete, the lot was filled with clean imported topsoil and re-sodded. The contaminated yard soil was later buried in the excavated impoundment area.

In total 32,416 tons of soil, including stabilizing agent (cement kiln dust), was removed from the ACC site and taken to the hazardous waste landfill in Arlington, Oregon, for disposal.

On November 29, 1995, shortly after the last of the contaminated soil was removed from the site, the area was again flooded by fall storms. The site was covered by 6 feet of water. No problems due to the flood occurred and construction was resumed within a few days, when flood waters had receded.

Monitoring/Production Well Abandonment

One on-site production well and several groundwater monitoring wells were abandoned as part of the remedial activities. The wells were abandoned in accordance with Washington State Regulation (WAC 173-160) by a driller licensed in the state of Washington.

Air Emissions

Dust control measures were implemented to minimize generation of fugitive dust during all construction activities. Water spray was used to prevent migration of dust particles from the site.
The ambient air monitoring program was implemented at the site to document ambient air quality prior to, during, and subsequent to remedial activities. The monitoring program accomplished this objective by identifying the most likely airborne migration directions and collecting data using real-time particulate monitors and time-integrated ambient air sampling methods. After the final soil cover was placed and the area hydroseeded, another round of air monitoring samples was taken on 23, 25 and 26 April

1996, to determine post-remediation air quality. This air monitoring found no detectable concentrations of PCP or PAHs which was indicative of the effectiveness of the remedy.

Facility Backfilling and Grading

As specified in the ROD, ash from incineration of contaminated materials (soil, wood, debris and other miscellaneous items contaminated from flooding in 1988 and 1989) were consolidated with the Chehalis Avenue residential soil. This ash was determined by Ecology and EPA to be noncontaminated. The consolidated soil and ash were used to backfill excavations under the treatment works and surface impoundment.

The ROD also required the entire facility to be covered with clean topsoil, properly sloped and contoured and revegetated with grass. Covering the entire facility with clean soil and revegetation protected human health by eliminating soil ingestion, dermal contact, and dust inhalation pathways.

The excavated areas in the treatment works were filled to an elevation approximately 2 feet below street level with imported fill and 6-inch stones. The round stone was used stabilize the soft soil and provide a stable sub-base.

The all areas of the site were rough graded and covered with 1 foot of pit-run gravel. The soil underneath the former mill area had such little structural strength that six-inch round stone were also mixed with the soil to provide stability. The stone was added to the soil up to the edge of the standing water that eventually formed a small on-site pond/wetland habitat which drained to the existing wetland.

After the mill and treatment area had been stabilized and cut to proper subgrade, geotextile was placed over these areas. The geotextile was used to provide additional stability to the subgrade and keep the soil from pumping through the clean imported fill. These areas were then covered with an additional 1 foot of pit run. After all areas had been covered and graded, 6 inches of topsoil was placed over the fill and graded. This area was then hydroseeded and fertilized.

Approximately 26,800 tons of 6-inch round stone was used to stabilize soft soil. The quantity of cover soil used was 40,100 tons. 17,200 tons of topsoil was used.

From 7 February 1996 through 12 February 1996, work had to be shutdown again due to flooding of the site. No damage occurred to the site. Earthwork resumed on 7 May 1996, and was completed on 11 May 1996.

A Pre-final and a Final site inspections were conducted with EPA, Ecology and the contractor on April 17, 1996 and May 14, 1996 respectively, to insure that all phases of the construction were satisfactorily completed and to insure that the response action was fully implemented to meet the ROD requirements.

On August 12,1996 Ecology sent EPA a letter, in which they assumed responsibility for the site O&M and acknowledged the Remedial Action Objectives had been completed in a satisfactory manner.

V. Progress Since Last Review

A. Protectiveness Statement from the [First] Five-Year Review

"The remedy selected for this site remains protective of human health and the environment. The remedy is meeting the performance goals in the ROD."

B. Status of the Recommendations and Follow-up Actions from First Five-Year Review
The recommendations in the last five year review were to continue to review state ground water monitoring results to insure the site was continuing to function as constructed. Review state annual inspection reports to determine and insure that new construction was being conducted consistent with the institutional controls. If water quality monitoring results continue to demonstrate compliance, strong consideration should be given to de-listing the site after an opportunity to confer with Ecology.

Ecology monitoring data has been reviewed but in light of the most recent reports cited above, no de-listing discussions have taken place. New construction at the site has proceeded in conformance with the ICs which include:

Construction of buildings must be conducted with out penetration of the soil cover and plans must be reviewed by EPA/Ecology

No installation of groundwater wells or other use of groundwater

The property shall not be used for agriculture or residential use

VI. Five-Year Review Process:

The Five Year Review was conducted according to procedures in OSWER Directive 9355.7-03B-P, Comprehensive Five-Year Review Guidance. Activities in this review consisted of:

1) Review of site-related documents

2) Review of monitoring data,

3) Discussions with the Trust

4) Site visit and inspection,

5) Preparation of the Five-Year Review report.

Documents reviewed for this report include:

Record of Decision, U.S. Environmental Protection Agency, May 10, 1993

Maintenance & Monitoring Plan, ACC, Environmental Protection Agency June 1996

The First Five Year Report, ACC, Environmental Protection Agency, September, 1999

Remedial Action Report, ACC, Prepared by Weston Environmental for EPA, 1996

American Crossarm and Conduit Monitoring Results November 2000 and April 2001, Ecology, June 2001

Reconnaissance Survey of Dioxins and Furans in Dillenbaugh Creek and the Chehalis River Near the ACC Site, Ecology, September, 2002

Current Status

A site visit was conducted on September 9, 2004. The purpose of the on site visit was two fold, one, to conduct interviews and two, to observe site conditions as part of the five-year review. No issues were raised during the interviews conducted with the land owners. A site inspection report was completed during the visit and is attached in the Appendix with labeled photographs that support the findings from that visit. The visit was jointly conducted by Dom Reale, Ecology Site Manager and Lee Marshall, EPA Site Manager.

Conditions and progress

1. The site was purchase at a Tax Auction by the Darrel Peterson Construction Company in 1996. After approval from EPA and WDOE, additional fill was placed over portions of the site to provide a base for construction of a new building. Construction methods were designed to be non intrusive to the soil cover and to be protective of the

existing remedy. The ACC site is now occupied by two large pad style metal buildings. A pole type structure housing a machine shop was constructed on the site in 1998. The second building is of similar construction but, it is a larger two story construction, completed in 2002. The properties are occupied by the current owners, Guy Simons, of Simons Hydraulic Co. and the other by Dale Pullin, of Chehalis Fitlife Center, respectively. Both Structures were built on filled soil pads constructed above the site wide soil cover, and in conformance with the IC's. The front of both buildings have paved parking lots and appropriate landscaping normally found in business parking lots.

The rest of the site remains unchanged from the completion of construction in 1996. This portion of the site is still owned by Darrell Peterson Of Toledo, WA. Mr. Peterson put the restrictive covenants on the property the run with that run with the deed at EPA's request. He later sold off the parcel as described above. The are no other new structures and site wide inspection revealed the soil cover remains intact, with no signs of any erosion. The drainage features remain intact and appear to be functioning as designed. The site remains free of debris and a cover of grasses and native shrubs are growing on most of the site where new grading and filling have not recently disturbed the surface.

Photographs from the 9/09/04 inspection of the site are attached in the Appendix.

2. The Site groundwater monitoring system has degraded significantly. Only one groundwater monitoring remains intact from the original four. We were unable to actually view the well do to a heavy increase in vegetative growth. Ecology personnel have made recent visible inspections of the well.

3. The surface water lagoon and the outfall are in good shape and appear to be in similar condition to the final inspection and the last five year inspection with the exception of the increased growth of vegetation and blackberry brambles.
The surface water lagoon and other waterways around the site appear to be clear of debris and functioning properly.

4. A drive through the nearby neighborhood did not reveal any noticeable changes to the yards and median strips that had been remediated and re-sodded. Some areas did show an increase in the population of common weeds.

5. Post-Remediation Water Quality Monitoring - Groundwater and surface water quality monitoring has been conducted by The Department of Ecology in 1997, 1998,1999 and most recently in 2000 and 2001. To date some low levels of PAH's (Naphthalenes) have been observed. All values have been below MTCA Method A cleanup standards, and Drinking Water Act MCLs.

All surface water samples detected PAH's far below established water quality criteria for freshwater. Pentachlorophenol was tentatively detected in September 1999 but has not been detected since. Chlorinated PAHs have not been detected in the groundwater monitoring wells in the last two rounds of sampling.

6. A reconnaissance survey of dioxins and furans was conducted by WDOE in September 2002. The results and conclusion indicated elevated levels of dioxins in Dillenbaugh Creek sediments and in certain species of fish tissue. There is concern that the elevated levels in fish tissue exceed EPA screening values for recreational and subsistence fishers. The levels are high enough in some samples that Ecology has expressed concern for the protection of wildlife, however, no action has been taken to date. The appendix contains the results of this study and the comparison charts. Ecology is considering additional studies in this area.

Community Notification:

There has been no recent community involvement action from Ecology or EPA, nor has there been any interest expressed from the community in the last five years. Community interest in this site is considered low. A public notice of the this five year review will be put into the local newspaper. If comments are received those comment will be appended to this report and addressed.

VII. Technical Assessment:

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

Yes. The review of documents and data, and the results of the site inspection indicates that the remedy is functioning as intended by the ROD.

The soil cap is in place and fully functioning; Groundwater Monitoring Data do not indicate any exceedance of the cleanup standards established in the ROD.

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

Yes. There are no changes in the physical conditions of the site that would affect the protectiveness of the remedy. This site is zoned industrial/ commercial and the surface soil cleanup levels are consistent with that use. There have no changes to the regulations that would call into question the protectiveness of the remedy.

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

No. The remedial actions appear protective for the long-term. There are Institutional Controls in place. Hazardous substances remain onsite in the deeper subsurface soils and in the groundwater. The Dillenbaugh Creek dioxin levels may represent historical artifacts from pre-clean up activities and does not call into question the effectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed and the site inspection, the remedy is functioning as intended by the ROD. There have been no physical changes of the site that would affect the effectiveness of the implemented remedial actions.

VIII. Issues

The major issue concerning this site are presented in the table below:

Table for Listing Issues

Issues	Affects Protectiveness (Y/N)	
	Current	Future
Monitoring frequency and well needs should be assessed and a decision about replacement resolved by Ecology .	N	N
Dioxin Survey for Dillenbaugh Creek should be followed up to determine the need for further action.	N	N

IX Recommendations and Follow-up Actions

Table for Listing Recommendations and Follow-up Actions

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
				Current	Future
Contact Ecology to resolve monitoring well issues and additional testing of Dillenbaugh Creek and/or other locations	Ecology	EPA	3/15/05	N	N

X. Statement of Protectiveness:

Based on the Technical Assessment for the American Crossarm & Conduit Site, the remedy for the site currently protects human health and the environment because the contaminated groundwater and surface soil in the source area are below any action levels. ICs are in place and functioning as designed. Site development has proceeded consistent with the remedy. Exposure pathways have been removed by the remedy.

XI. Next Review

Based on site conditions and the fact that hazardous substances remain on site, the next Five-Year Review is required by September, 2009.

APPENDICES

Tables and Figures*
Site Inspection Check List
Interview Records
Site Photographs

PHOTOGRAPHS
American Crossarm and Conduit Site Inspection 09/09/04

Photo #1 Site surface water runoff system
View westerly toward RR tracks

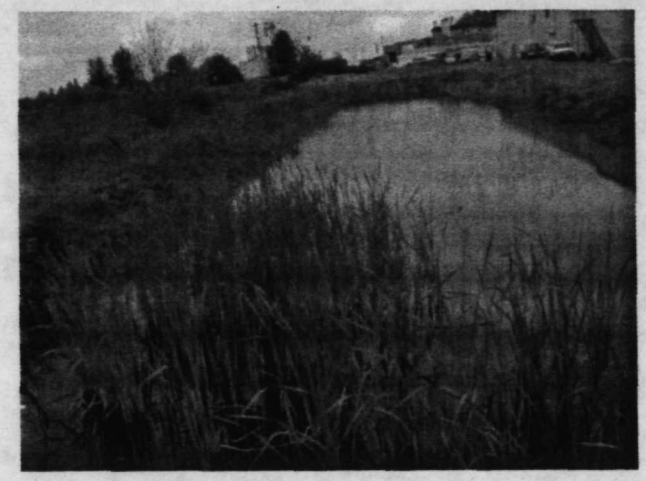


Photo # 2 Same water feature looking northward

Photo # 3 Back of Simon's Hydraulics Facility

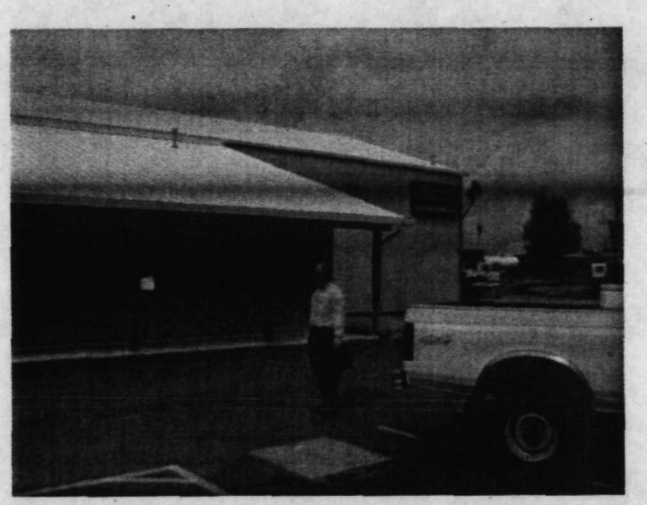


Photo # 4 Front of Simon's Hydraulics Facility

American Crossarm & Conduit 9/9/04

Photo # 5 Former Landfill (undeveloped)

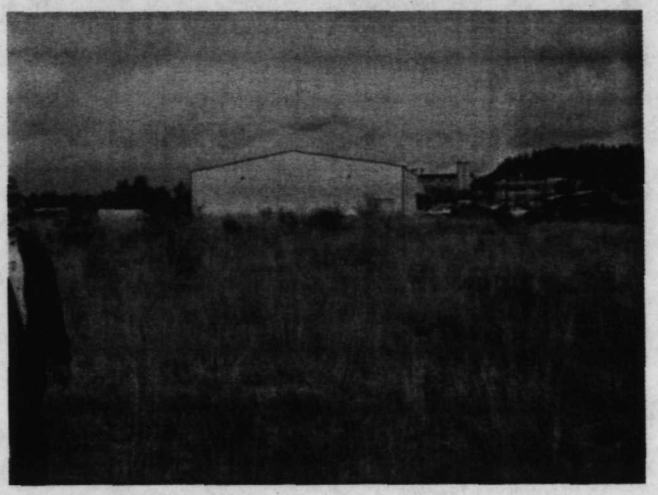


Photo # 6 End of Fitlife Building

Five-Year Review Site Inspection Checklist (Template)

(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: ACC	**Date of inspection:** SEPT 9, 2004
Location and Region: CHEHALIS WA	**EPA ID:** WAD057311094
Agency, office, or company leading the five-year review: EPA WITH ECOLOGY	**Weather/temperature:** SUNNY 75°

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other EXCAVATION & REMOVAL OF CONTAMINATED SOIL
- ☒ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** DOM REALE (Name) SITE MGR (Title) 9/9/04 (Date)
   Interviewed ☒ at site ☒ at office ☐ by phone Phone no. 360 407 6266
   Problems, suggestions; ☐ Report attached _____

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 _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____

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

INSPECTION & INTERVIEWS CONDUCTED
BY: LEE MARSHALL EPA SITE MGR
DOM REALE ECOLOGY SITE MGR.

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

   Remarks

2. **Site-Specific Health and Safety Plan** — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Contingency plan/emergency response plan — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks N/A

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

   Remarks N/A

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 — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks N/A

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks N/A

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks N/A

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

   Remarks

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

   Remarks N/A

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Water (effluent) — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks N/A

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

    Remarks N/A

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 _____

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: N/A

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

A. Fencing

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

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☒ N/A
Remarks _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

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

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency ANNUAL
Responsible party/agency WASHINGTON DEPT of ECOLOGY
Contact DOM REALIS Site MGR 360 407 6266
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

N/A

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 2 BUILDINGS ON SITE

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 _____

N/A

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 _____

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 _____

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
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ 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 Vegetation off the site property in the vicinity of the monitoring wells was excessive

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 _____ Depth _____
☑ Erosion not evident
Remarks _____

3. **Outlet Works** ☑ Functioning ☐ N/A
Remarks _____

4. **Dam** ☐ Functioning ☑ N/A
Remarks _____

H. Retaining Walls ☐ Applicable ☑ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement_____ Vertical displacement_____
Rotational displacement_____
Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☑ Siltation not evident
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 _____

2. **Surface Water Collection 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 _____

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_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☑ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   ☑ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks_____

4. **Discharge Structure and Appurtenances**
   ☑ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks_____

5. **Treatment Building(s)**
   ☑ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
   ☐ Chemicals and equipment properly stored
   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☑ N/A
   Remarks_____

D. Monitoring Data

1. Monitoring Data
   ☑ Is routinely submitted on time ☑ Is of acceptable quality

2. Monitoring data suggests:
   ☑ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. 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 ONLY 2 WELLS ARE FUNCTIONING

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.).

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.

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

INTERVIEW RECORD

Site Name: AMERICAN CROSSARM & CONDUIT	EPA ID No.: WAD057311094
Subject:	Time: / Date: 9/16/04
Type: ☑ Telephone ☐ Visit ☐ Other Location of Visit:	☐ Incoming ☐ Outgoing

Contact Made By:

Name: LEE MARSHALL	Title: SITE MGR	Organization: EPA

Individual Contacted:

Name: DARYL PETERSON	Title: OWNER	Organization: PETERSON CONSTRUCTION
Telephone No: 360-864-4059 Fax No: E-Mail Address:	Street Address: 153 SKYHAWK ROAD City, State, Zip: TOLEDO WA 98591	

Summary Of Conversation

MR. PETERSON STATED THAT HE DID NOT HAVE ANY CONCERNS ABOUT THE SITE. HE BELIEVED THAT HE WAS PROPERLY IMPLEMENTING THE IC'S. HE ALSO STATED HE WAS PLANNING TO ADD MORE FILL OVER THE EXISTING SOIL COVER FOR POTENTIAL FUTURE DEVELOPMENT

Page 1 of ____

INTERVIEW RECORD

Site Name: AMERICAN CROSSARM & CONDUIT	EPA ID No.: WAD 057311094
Subject: 5 YR REVIEW	Time: / Date: 9/9/04
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit:	☐ Incoming ☐ Outgoing

Contact Made By:

Name: LEE MARSHALL	Title: SITE MGR	Organization: EPA

Individual Contacted:

Name: DALE PULLIN	Title: OWNER	Organization:
Telephone No: 360-~~264~~/748-7163 Fax No: — E-Mail Address: — or 360 269-3413	Street Address: 91 CHEHALIS AVE City, State, Zip: CHEHALIS WA 98532	

Summary Of Conversation

Mr. Pullin had no questions or concerns about the 5 yr review. He indicated that in the construction of his New Fitlife Center, he filed for all permits in accordance with the ICs. He stated that he spent an additional $100K in fill material to meet the no intrusion of the soil cap requirements of the ICs. Dan Reale explained Ecology was thinking about retesting the creek for Dioxins

INTERVIEW RECORD

Site Name: AMERICAN CROSSARM & CONDUIT	EPA ID No.: WAD 057311094
Subject: 5YR REVIEW	Time: Date: 9/9/04
Type: ☐ Telephone ☑ Visit ☐ Other Location of Visit:	☐ Incoming ☐ Outgoing

Contact Made By:

Name: LEE MARSHALL	Title: SITE MGR	Organization: EPA

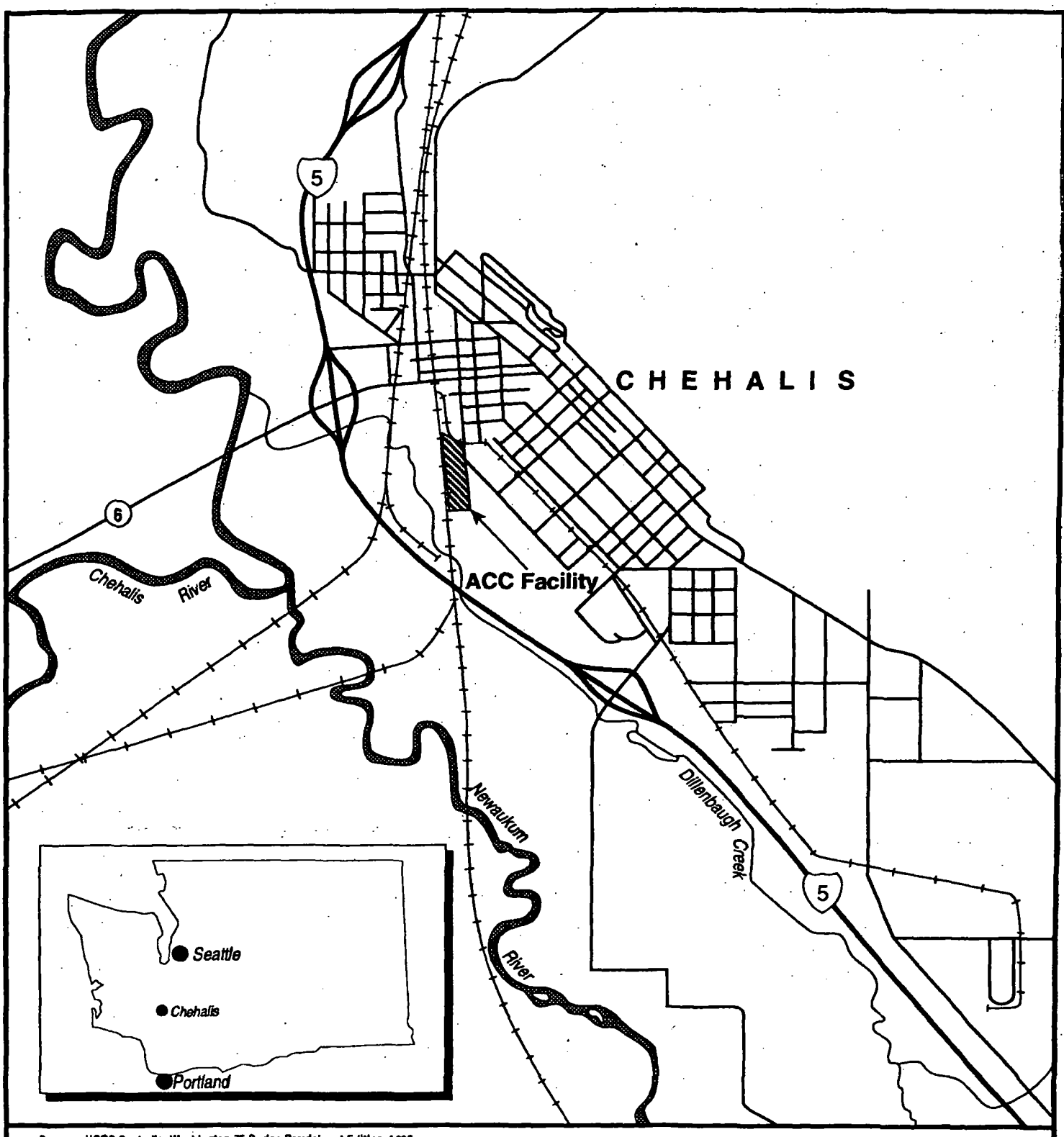
Individual Contacted:

Name: GUY SIMON	Title: OWNER	Organization: SIMONS MOBILE HYDRAULIC CO
Telephone No: 360-740 1910 Fax No: 360-740-4207 E-Mail Address:	Street Address: 85 SW CHEHALIS AVE City, State, Zip: CHEHALIS WA 98532	

Summary Of Conversation

MR SIMON INDICATED HE WAS NOTIFIED OF THE IC'S, HAD NO WELLS, NO PROBLEMS AND NO ISSUES OR QUESTIONS REGARDING THE 5YR. REVIEW. DOM REALE DEPT. OF ECOLOGY EXPLAINED THAT THE STATE WAS THINKING ABOUT RETESTING THE CREEK FOR DIOXINS. HE WAS NOT HAVING ANY PROBLEMS WITH THE REMEDY.

Page 1 of _____



Source: USGS Centralia, Washington 75 Series Provisional Edition, 1985

0 2000 4000
1000 1000 3000 5000
Scale In Feet

N

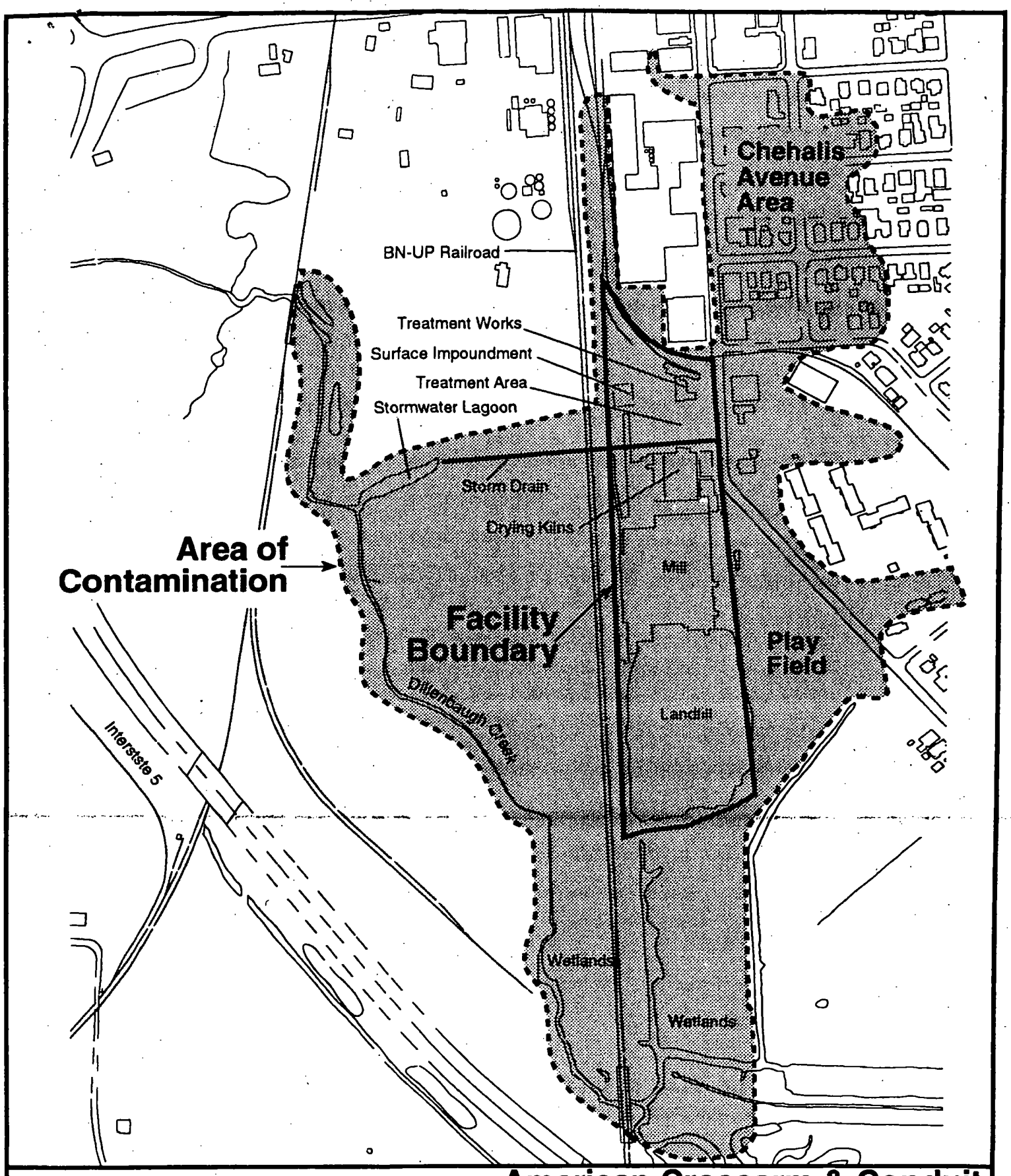
American Crossarm & Conduit Site Location

FIGURE

1-1

WESTON
MANAGERS DESIGNERS/CONSULTANTS

4000-30-01-3400
December 1994

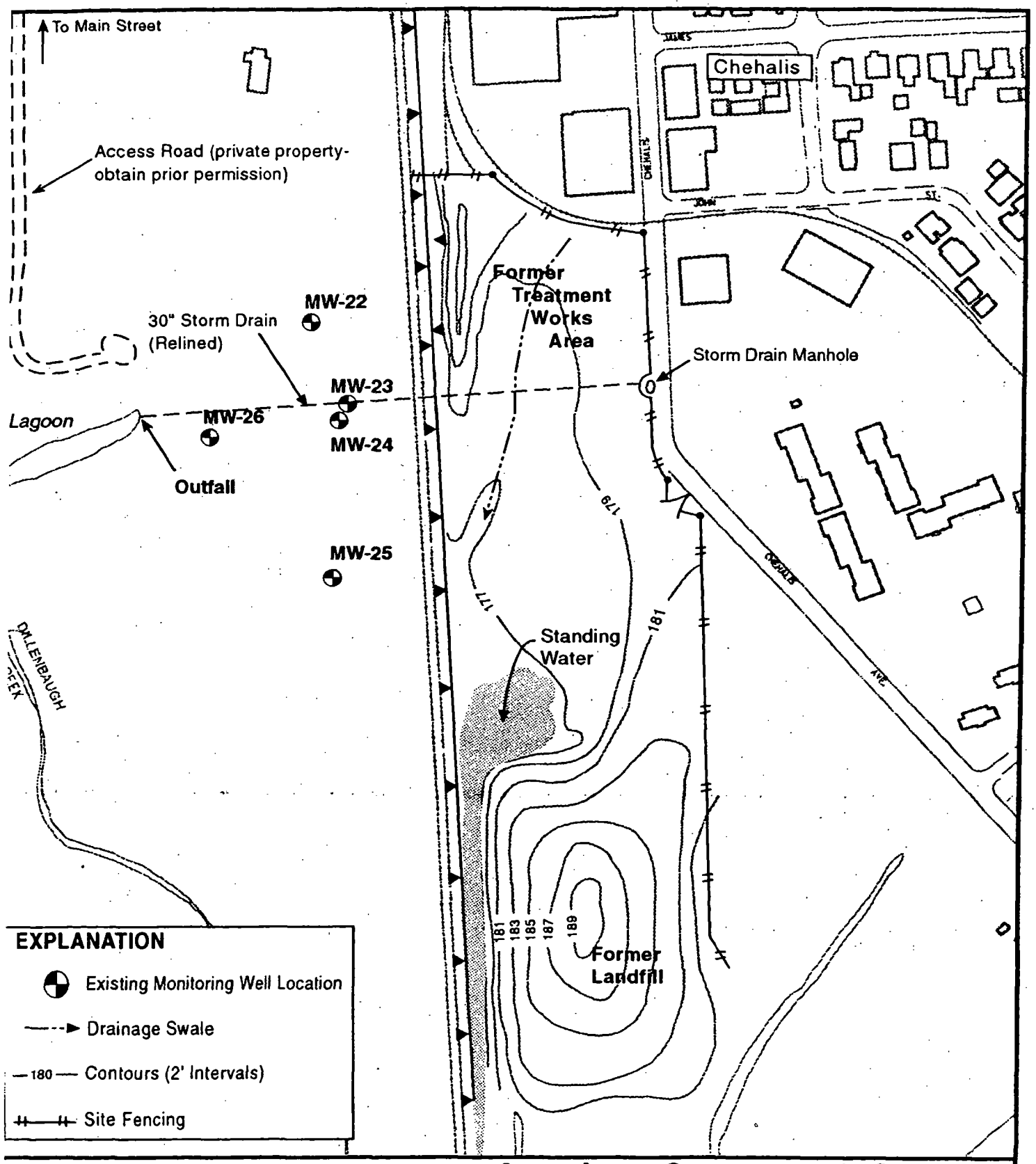


American Crossarm & Conduit Facility and AOC Features

WESTON
MANAGERS DESIGNERS/CONSULTANTS

4000-30-01-3400
December 1994

FIGURE
1-2



American Crossarm & Conduit Current Site Conditions

WESTON
MANAGERS DESIGNERS/CONSULTANTS

4000-30-01-5000
June 1996

FIGURE
1-3

Summary of Analytes Detected (ug/L) at American Crossarm and Conduit in June 2000

Sample Station	MW-25	MW-25A (Duplicate)	ACCSW1	ACCSW2
Polynuclear Aromatic Hydrocarbons				
Naphthalene	0.022	0.019	0.037	0.016
Acenaphthylene	0.0067 U	0.0067 U	0.0067 U	0.0067 U
Acenaphthene	0.0067 U	0.0067 U	0.1	0.058
Fluorene	0.0067 U	0.0067 U	0.057	0.039
Phenanthrene	0.0067 U	0.0067 U	0.068	0.047
Anthracene	0.0067 U	0.0067 U	0.026	0.018
Sum LPAH	0.022	0.019	0.288	0.178
Fluoranthene	0.0067 U	0.0067 U	0.055	0.046
Pyrene	0.0067 U	0.0067 U	0.026	0.021
Benzo(a)anthracene	0.0067 U	0.0067 U	0.0058 J	0.0051 J
Chrysene	0.0067 U	0.0067 U	0.0075	0.0041 J
Benzo(b)fluoranthene	0.0067 U	0.0067 U	0.0067	0.0046 J
Benzo(k)fluoranthene	0.0067 U	0.0067 U	0.006 J	0.0056 J
Benzo(a)pyrene	0.0067 U	0.0067 U	0.0085	0.0067 U
Ideno(1,2,3-cd)pyrene	0.0067 U	0.0067 U	0.0031 J	0.0067 U
Dibenzo(a,h)anthracene	0.0067 U	0.0067 U	0.0067 U	0.0067 U
Benzo(ghi)perylene	0.0067 U	0.0067 U	0.003 J	0.0067 U
Sum HPAH	0.0067 U	0.0067 U	0.1216 J	0.0864 J
2-Methylnaphthalene	0.016	0.014	0.038	0.013
1-Methylnaphthalene	0.011	0.01	0.029	0.015
Dibenzofuran	0.0067 U	0.0067 U	0.0067 U	0.0067 U
Retene	0.0067 U	0.0067 U	0.0067 U	0.0067 U
Chlorinated Phenolics				
2,4,6-Trichlorophenol	0.04 U	0.04 U	0.042 U	0.04 U
2,4,5-Trichlorophenol	0.04 U	0.04 U	0.042 U	0.04 U
2,3,4,6-Tetrachlorophenol	0.037 U	0.037 U	0.038 U	0.036 U
2,3,4,5-Tetrachlorophenol	0.037 U	0.037 U	0.038 U	0.036 U
Pentachlorophenol	0.033 U	0.033 U	0.035 U	0.033 U

U = The analyte was not detected at or above the reported value.

J = The analyte was positively identified. The associated numerical value is an estimate.

Summary of Analytes Detected (ug/L) at American Crossarm and Conduit in June 1999

Sample Station	MW-24	MW-24A (Duplicate)	MW-25	ACCSW1	ACCSW2
Polynuclear Aromatic Hydrocarbons					
Naphthalene	0.0063 U	0.0063 U	0.0063 U	0.088	0.099
Acenaphthylene	0.0032 U	0.0032 U	0.0032 U	0.0066	0.0051
Acenaphthene	0.0032 U	0.0032 U	0.00014 J	0.24	0.12
Fluorene	0.0032 U	0.0032 U	0.0032 U	0.15	0.086
Phenanthrene	0.0063 U	0.0063 U	0.0063 U	0.22	0.096
Anthracene	0.0063 U	0.0063 U	0.0063 U	0.074	0.035
Sum LPAH	0.0063 U	0.0063 U	0.00014 J	0.7786	0.4411
Fluoranthene	0.0063 U	0.0063 U	0.0063 U	0.18	0.041
Pyrene	0.0063 U	0.0063 U	0.0063 U	0.11	0.018
Benzo(a)anthracene	0.0063 U	0.0063 U	0.0063 U	0.017	0.0077
Chrysene	0.0063 U	0.0063 U	0.0063 U	0.024	0.0067
Benzo(b)fluoranthene	0.0063 U	0.0063 U	0.0063 U	0.012	0.0041 J
Benzo(k)fluoranthene	0.013 U	0.013 U	0.013 U	0.012 J	0.0084 J
Benzo(a)pyrene	0.0063 U	0.0063 U	0.0063 U	0.01	0.0076
Ideno(1,2,3-cd)pyrene	0.013 U	0.013 U	0.013 U	0.018	0.013 U
Dibenzo(a,h)anthracene	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U
Benzo(ghi)perylene	0.0063 U	0.0063 U	0.0063 U	0.014 J	0.0063 U
Sum HPAH	0.0063 U	0.0063 U	0.0063 U	0.397 J	0.0935 J
2-Methylnaphthalene	0.0063 U	0.0063 U	0.0063 U	0.1	0.03
1-Methylnaphthalene	0.0063 U	0.0063 U	0.0063 U	0.088	0.037
Dibenzofuran	0.0063 U	0.0063 U	0.0063 U	0.066	0.043
Retene	0.0063 U	0.0063 U	0.0063 U	0.018	0.0063 U
Chlorinated Phenolics					
2,4,6-Trichlorophenol	0.05 U	0.049 U	0.048 U	0.049 U	0.049 U
2,4,5-Trichlorophenol	0.05 U	0.049 U	0.048 U	0.049 U	0.049 U
2,3,4,6-Tetrachlorophenol	0.046 U	0.045 U	0.044 U	0.045 U	0.045 U
2,3,4,5-Tetrachlorophenol	0.046 U	0.045 U	0.044 U	0.045 U	0.045 U
Pentachlorophenol	0.041 U	0.041 U	0.04 U	0.04 U	0.041 U

U = The analyte was not detected at or above the reported value.

J = The analyte was positively identified. The associated numerical value is an estimate.

Analytical Results

Analytical results of PAH and chlorinated phenolics analysis for November 2000 are summarized in Table 3.

Table 3: Summary of Analytical Results (ug/L) for November 17, 2000

Sample Station	Groundwater MW-25		Groundwater MW-26		Surface Water ACESW-1		Surface Water ACESW-2	
Polynuclear Aromatic Hydrocarbons								
Naphthalene	**0.014**		**0.018**		**0.028**		**0.012**	J
Acenaphthylene	0.01	U	0.01	U	0.02	U	0.01	U
Acenaphthene	0.01	U	0.01	U	**0.074**		**0.03**	
Fluorene	0.01	U	0.01	U	**0.028**		**0.025**	
Phenanthrene	0.01	U	0.01	U	**0.028**		**0.028**	
Anthracene	0.01	U	0.01	U	**0.04**		**0.025**	
Sum LPAH	**0.014**		**0.018**		**0.198**		**0.12**	J
Fluoranthene	0.01	U	0.01	U	**0.10**		**0.056**	
Pyrene	0.01	U	0.01	U	**0.071**		**0.034**	
Benzo(a)anthracene	0.01	U	0.01	U	**0.013**		**0.007**	
Chrysene	0.01	U	0.01	U	**0.03**		**0.013**	
Benzo(b)fluoranthene	0.01	U	0.01	U	**0.018**		0.01	U
Benzo(k)fluoranthene	0.01	U	0.01	U	**0.011**		**0.009**	J
Benzo(a)pyrene	0.01	U	0.01	U	**0.009**		0.01	U
Ideno(1,2,3-cd)pyrene	0.01	U	0.01	U	**0.01**		0.01	U
Dibenzo(a,h)anthracene	0.01	U	0.01	U	0.01	U	0.01	U
Benzo(ghi)perylene	0.01	U	0.01	U	**0.005**	J	0.01	U
Sum HPAH	0.01	U	0.01	U	**0.267**	J	**0.119**	J
2-Methylnaphthalene	**0.009**		**0.011**		**0.02**		**0.008**	J
1-Methylnaphthalene	0.01	U	0.01	U	**0.016**		**0.008**	J
Dibenzofuran	0.01	U	0.01	U	0.01	U	0.01	U
Retene	0.01	U	0.01	U	**0.05**		0.01	U
Chlorinated Phenolics								
2,4,6-Trichlorophenol	0.056	U	0.056	U	0.058	U	0.057	U
2,4,5-Trichlorophenol	0.056	U	0.056	U	0.058	U	0.057	U
2,3,4,6-Tetrachlorophenol	0.051	U	0.051	U	0.053	U	0.053	U
2,3,4,5-Tetrachlorophenol	0.051	U	0.051	U	0.053	U	0.053	U
Pentachlorophenol	0.047	U	0.046	U	0.048	U	0.048	U

U : The analyte was not detected at or above the reported value.

J : The analyte was positively identified. The associated numerical result is an estimate.

Bold: Detected value.

In November, naphthalene and 2-methylnaphthalene were the only PAHs detected in the wells monitored. Concentrations for naphthalene ranged from 0.014 to 0.018, while 2-methylnaphthalene ranged from 0.009 to 0.011 ug/L. Chlorinated phenolics were not detected in either of the wells during this round of sampling.

Most of the target PAHs were detected at both surface water stations.

Results of organics analysis of samples collected in April 2001 are summarized in Table 4.

Table 4: Summary of Analytical Results (ug/L) for April 27, 2001

Sample Station	Groundwater				Surface Water			
	MW-25		MW-26		ACC SW1		ACC SW2	
Polynuclear Aromatic Hydrocarbons								
Naphthalene	**0.044**		**0.038**		**0.15**		**0.11**	
Acenaphthylene	0.007	U	0.007	U	0.007	U	0.006	U
Acenaphthene	0.007	U	0.007	U	**0.65**		**0.079**	
Fluorene	0.007	U	0.007	U	**0.30**		**0.059**	
Phenanthrene	0.007	U	0.007	U	**0.15**		**0.035**	
Anthracene	0.007	U	0.007	U	**0.14**		**0.057**	
Sum LPAH	**0.044**		**0.038**		**1.39**		**0.34**	
Fluoranthene	0.007	U	0.007	U	**0.44**		**0.04**	
Pyrene	0.007	U	0.007	U	**0.34**		**0.006**	J
Benzo(a)anthracene	0.007	U	0.007	U	**0.06**		0.006	U
Chrysene	0.007	U	0.007	U	**0.08**		0.006	U
Benzo(b)fluoranthene	0.007	U	0.007	U	**0.04**		0.006	U
Benzo(k)fluoranthene	0.007	U	0.007	U	**0.19**	J	0.006	U
Benzo(a)pyrene	0.007	U	0.007	U	**0.16**		0.006	U
Ideno(1,2,3-cd)pyrene	0.007	U	0.007	U	**0.18**		0.006	U
Dibenzo(a,h)anthracene	0.007	U	0.007	U	0.066	U	0.006	U
Benzo(ghi)perylene	0.007	U	0.007	U	**0.009**	J	0.006	U
Sum HPAH	0.007	U	0.007	U	**1.499**	J	**0.046**	J
2-Methylnaphthalene	**0.036**		**0.051**		**0.20**		**0.028**	
1-Methylnaphthalene	**0.014**		**0.02**		**0.18**		**0.024**	
Dibenzofuran	0.007	U	0.007	U	**0.14**		**0.032**	
Retene	0.007	U	**0.012**	J	**0.09**		0.006	U
Chlorinated Phenolics								
2,4,6-Trichlorophenol	0.10	U	0.10	U	0.098	U	0.11	U
2,4,5-Trichlorophenol	0.10	U	0.10	U	0.098	U	0.11	U
2,3,4,6-Tetrachlorophenol	0.092	U	0.092	U	0.090	U	0.097	U
2,3,4,5-Tetrachlorophenol	0.092	U	0.092	U	0.090	U	0.097	U
Pentachlorophenol	0.084	U	0.084	U	0.082	U	0.088	U

U : The analyte was not detected at or above the reported value.

J : The analyte was positively identified. The associated numerical result is an estimate.

Bold: Detected value.

Table 4. PCDD/PCDF Concentrations in Fish Tissue (ng/Kg wet weight basis)

		Station Name, Lab ID Number, and Fish Species									
		DILLEN7F		DILLEN7F		CHEHAL1F		CHEHAL2F		CHEHAL3	
		98238090		98238091		98238092		98238093		98238094/	
Compound	TEF	Cutthroat Trout skin on fillet		Brown Bullhead whole body		Mt Whitefish skin on fillet		Lgscale Sucker whole body		Lgscale Suc whole bod	
% lipids		1.7	%	3.2	%	5.4	%	1.8	%	2	
2,3,7,8-TCDD	1	0.26	J	0.48	J	0.17	J	0.29	J	0.095	J
1,2,3,7,8-PeCDD	0.5	1.3	J	2	J	0.23	J	0.29	J	0.115	J
1,2,3,4,7,8-HxCDD	0.1	0.7	NJ	1.6	J	0.1	U	0.19	J	0.1	U
1,2,3,6,7,8-HxCDD	0.1	7.9		14.3		0.35	J	0.1	U	0.535	J
1,2,3,7,8,9-HxCDD	0.1	0.7	J	1.1	NJ	0.1	U	0.1	U	0.1	U
1,2,3,4,6,7,8-HpCDD	0.01	8.3		14.5		0.41	NJ	0.68	J	1.9	J
OCDD	0.001	8.9		16.3		1.9	J	5.3		10.45	
2,3,7,8-TCDF	0.1	0.65		0.71		0.7		0.42	J	0.315	J
1,2,3,7,8-PeCDF	0.05	0.43	J	0.8	J	0.08	J	0.06	U	0.06	U
2,3,4,7,8-PeCDF	0.5	0.87	J	1.4	J	0.15	NJ	0.07	U	0.145	J
1,2,3,4,7,8-HxCDF	0.1	0.78	J	1.5	J	0.08	J	0.07	U	0.065	U
1,2,3,6,7,8-HxCDF	0.1	0.33	J	0.6	NJ	0.05	U	0.06	U	0.065	U
2,3,4,6,7,8-HxCDF	0.1	0.5	NJ	0.99	J	0.09	NJ	0.09	U	0.08	J
1,2,3,7,8,9-HxCDF	0.1	0.1	U	0.2	U	0.06	U	0.1	U	0.08	U
1,2,3,4,6,7,8-HpCDF	0.01	1.5	J	2.1	J	0.06	U	0.1	U	0.5	J
1,2,3,4,7,8,9-HpCDF	0.01	0.2	U	0.3	U	0.08	U	0.2	U	0.1	U
OCDF	0.001	0.93	J	1.9	J	0.1	U	0.4	U	1.5	J
TEQ		**2.64**		**4.50**		**0.51**		**0.55**		**0.38**	
% 2,3,7,8 TCDD		10%		11%		32%		48%		24%	
% PCDDs		73%		74%		66%		81%		64%	
% PCDFs		27%		26%		34%		19%		36%	
TEQ-lipid		155		141		9		31		19	

* Mean of duplicate (split) samples 98239094 and 98239095; the most conservative qualifier is reported here
TEF Toxicity equivalency factor (Barnes, 1989)
TEQ 2,3,7,8-TCDD toxicity equivalent
J Analyte was positively identified and the associated numerical result is an estimate
NJ There is evidence that the analyte is present and the associated numerical result is an estimate
U Analyte was not detected at or above the reported result
UJ Analyte was not detected at or above the reported estimated result

Table 3. PCDD/PCDF Concentrations in Dillenbaugh Creek and Chehalis River Sediments (ng/Kg dry weight basis)

		Station Name and Lab ID Number							
Compound	TEF	CHEHALS1 98238080	CHEHALS2 98238081	CHEHALS3 98238082	DILLEN1 98238083	DILLEN2 98238084	DILLEN3 98238085	DILLEN4* 98238086/87	DILLEN6 98238088
2,3,7,8-TCDD	1	0.28 J	0.2 U	0.3 J	0.51 J	1.3	0.53 J	1.9	0.6 U
1,2,3,7,8-PeCDD	0.5	0.5 J	0.3 NJ	0.88 J	1.2 J	19.2	1.6 J	41.9	1.9 J
1,2,3,4,7,8-HxCDD	0.1	0.53 J	0.37 J	1.3 J	2.2 J	72.5	2.8 J	147.5	3.1 J
1,2,3,6,7,8-HxCDD	0.1	2.2 J	0.8 UJ	9	8.7	700	12.4	2865 J	15.4
1,2,3,7,8,9-HxCDD	0.1	1.9 J	1.2 UJ	3.9 J	5.6 J	159	7.8 J	362	10.8
1,2,3,4,6,7,8-HpCDD	0.01	31.5	6.8	171	164	11340 J	256	39370 J	542
OCDD	0.001	216	46.7	1190	1260	67800 J	2210	168810 J	5080 J
2,3,7,8-TCDF	0.1	0.68	0.7 U	0.92	1.7	5.4	3.3	25.05	3.8
1,2,3,7,8-PeCDF	0.05	0.46	0.35	0.6 NJ	1.2 J	18.4	1.6 J	87.5	2 NJ
2,3,4,7,8-PeCDF	0.5	0.55 UJ	0.46 UJ	0.8 NJ	1.6 J	21.4	2.4 J	84.8	5.8
1,2,3,4,7,8-HxCDF	0.1	1.3 UJ	0.8 UJ	3.2 UJ	3.6	142	4.7 J	493.5	7.9
1,2,3,6,7,8-HxCDF	0.1	0.53 UJ	0.36 UJ	1.3 UJ	1.9	49.8	2.2 UJ	178.5	3.1 J
2,3,4,6,7,8-HxCDF	0.1	0.68	0.3 NJ	2.3	3.2	128	3.9 J	443	7.2
1,2,3,7,8,9-HxCDF	0.1	0.2 U	0.2 U	0.41	0.5 NJ	22.3 J	1.6 J	44.6 J	47.5
1,2,3,4,6,7,8-HpCDF	0.01	9.4	1.7 UJ	59.6	42.1	2610 J	47.2	5215 J	63.4
1,2,3,4,7,8,9-HpCDF	0.01	0.63	0.24	3.5	2.7 J	165	3 J	394	3.7 J
OCDF	0.001	29.2	3 J	201	130	9600 J	112	11815 J	135
TEQ		**2.1**	**0.8**	**6.9**	**8.2**	**369.0**	**11.8**	**1156.0**	**25.4**
% 2,3,7,8 TCDD		12%	17%	4%	6%	<1%	4%	<1%	2%
% PCDDs		67%	58%	71%	69%	77%	71%	80%	58%
% PCDFs		33%	42%	29%	31%	23%	29%	20%	42%

* Mean of replicate samples 98238086 and 98238087; the most conservative qualifier is reported hen

TEF Toxicity equivalency factor (Barnes, 1989)

TEQ 2,3,7,8-TCDD toxicity equivalent

J Analyte was positively identified and the associated numerical result is an estimate

NJ There is evidence that the analyte is present and the associated numerical result is an estimate

U Analyte was not detected at or above the reported result

UJ Analyte was not detected at or above the reported estimated result

Table 8. Fish Tissue PCDD/PCDF Concentrations Compared to Fish Tissue Quality Criteria and Guidelines

Station Name	Species	Tissue Type	TEQ ng/Kg ww (pptr)	Protection of Human Health					Protection of Wildlife	
				NTR[a]	EPA[b]	EPA[c]	US FDA[d]	HWC[e]	NY DEC[f]	NY DEC[g]
		guideline value (pptr)		*0.07*	*0.0315*	*0.256*	*1.0*	*20*	*2.3*	*3.0*
DILLEN7F	Cutthroat Trout	Fillet	2.6	X	X	X	X		X	
DILLEN7F	Brown Bullhead	Whole	4.5	X	X	X	X		X	X
CHEHAL1F	Mountain Whitefish	Fillet	0.5	X	X	X				
CHEHAL2F	Largescale Sucker	Whole	0.6	X	X	X				
CHEHAL3F	Largescale Sucker	Whole	0.4	X	X	X				

X Exceeds guideline value

a National Toxics Rule (40 CFR 131.36) Criterion for Human Health based on 10E-06 risk level.

b U.S. Environmental Protection Agency (EPA), 2000a. Screening value for subsistence fisher based on a 10E-05 risk level and a consumption rate of 142.4 grams per day.

c EPA, 2000a. Screening value for recreational fisher based on a 10E-05 risk level and a consumption rate of 17.5 grams per day.

d U.S. Food and Drug Administration (FDA), 1997. Level of concern for dioxin in farmed catfish.

e Health and Welfare Canada (H&WC), 1990. Maximum level in fish tissue; stipulated in Canadian Food and Drug Administration.

f New York Department of Environmental Conservation (NY DEC), 1987. 10E-02 cancer risk criterion for piscivorous wildlife.

g NY DEC, 1987. Non-carcinogenic final fish flesh criterion for piscivorous wildlife.