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September 24, 2009

Mark Ader, Task Monitor
United States Environmental Protection Agency
1200 Sixth Avenue, Mail Stop ECL-115
Seattle, Washington 98101

Re: Contract Number: EP-S7-06-02
Technical Direction Document Number: 09-03-0006
Anderson Property Auto Wrecking Integrated Assessment

Dear Mr. Ader:

Enclosed please find the Final Integrated Assessment for the Anderson Property Auto Wrecking site located in Port Hadlock, Washington. If you have any questions regarding this submittal, please call me at (206) 624-9537.

Sincerely,
ECOLOGY AND ENVIRONMENT, INC.

Linda E. Costello

Linda Costello
START-3 Project Leader

Attachments:
A Aerial Photographic Log
B Photographic Documentation of the Field Sampling Event
C Chain-of-Custody Documentation
D QA/QC Review, Data Validation Memoranda, and Associated Laboratory Forms
E GPS Coordinates for Sample Locations

cc: Ann Rivers, START-3 Project Manager, E & E, Seattle, Washington

INTEGRATED ASSESSMENT REPORT

Site Name:	Anderson Property Auto Wrecking
EPA ID Number:	WAN001002806
Location:	Township 29 North, Range 1 West, Section 11
Latitude:	48° 01' 55.1"
Longitude:	122° 46' 16.7"
Address:	890 Old Hadlock Road
City:	Port Hadlock
County:	Jefferson
State:	Washington, 98339
Prepared by:	Ann Rivers, Project Manager, E & E, Seattle, Washington
Prepared for:	Mark Ader, Task Monitor, EPA, Seattle, Washington
Date:	September 2009

Site Description

The Anderson Property Auto Wrecking (Anderson) site is located approximately 0.8 miles south of Port Hadlock, Jefferson County, Washington. Port Hadlock is located in the Chimacum Valley on the eastern edge of Jefferson County in the northeastern part of the Olympic Peninsula. Port Townsend Bay is located 1.2 miles east of the Anderson site. Anderson Lake State Park is 1.3 miles west of the site. Figure 1 illustrates the site vicinity.

The Anderson site is zoned rural residential as is the property that borders the site to the south. The property to the north and west is owned by the same persons and zoned for commercial agriculture. The properties to the north, south, and west are mainly open fields. Old Hadlock Road splits the Anderson property along the east boundary, leaving a narrow strip of the site on the southeast side of the road. Beyond Old Hadlock Road to the northeast are a veterinary hospital, Chimacum Road, and a large baseball park with five playing fields. (Jefferson 2009)

The site encompasses approximately 5.4 acres, and is 300 feet long north to south and 800 feet wide east to west. A thick hedge of bushes borders the site to the south, and vacant land and one residence are located to the north.

The Anderson site slopes from east to west towards Chimacum Creek, which borders the site to the west. A wooden fence bordering the site to the north is easily breached. Large bushes bordering the site to the south are essentially impassable. Chimacum Creek on the western border of the site can be crossed on foot to gain access to the site. The site is gated at the Old Hadlock Road entrance. During the site visit, the gate was open, but entry was blocked by large vehicles. Approximately the eastern third of the Anderson property consists of a residence and grounds strewn with auto wrecking debris that extend to the north and south borders of the property. The western two-thirds of the property down to Chimacum Creek is split with open space on the northern half and wrecking debris on the southern half. A dirt and gravel road runs through the wrecking debris east to west and stops approximately 40 feet from Chimacum Creek. A site map is provided in Figure 2. A home located in the southeast corner of the site is rented to an elderly couple (Anderson 2009).

Site History

The Anderson family began on-site vehicle wrecking operations in the early 1970s. Mr. Michael Anderson has worked on the site since he was a child and is the current site landowner and

operator. The property is used by Mr. Anderson to store vehicles for parts used at his auto repair shop located in Irondale, 1.5 miles to the north (Anderson 2009).

A search of historical aerial photographs was completed for the site. Photographs were available for 1981, 1985, 1990, 1994, 2000, 2003, 2005, and 2006. A review of the 1981 photograph indicates auto wrecking operations in the northwest corner of the current property boundary with five or more vehicles and a dirt road connecting this area to the property currently to the north. By 1985, approximately three vehicles or other debris appear in the lower southwest area of the site and a dirt road extends from the east border to the center of the property. In 1990, approximately 25 vehicles are located in the lower southwest corner of the property and by 1994 it appears that twice as many vehicles are located in this area. By 2000, numerous vehicles and/or debris are located in the northeast and southwest corners of the Anderson site. The 2003, 2005, and 2006 photographs are similar to the 2000 photo and current site conditions observed during the Superfund Technical Assistance and Response Team's (START's) site visit and sampling activities. An historical aerial photographic log for the years 1981 through 2006 is provided in Attachment A.

Although a detailed property ownership history was not included as a component of this Integrated Assessment (IA), a brief review of Jefferson County records indicates that in October 2005, Robert F. Anderson and Michael D. Anderson acquired the property through a quit claim deed from James B. Crowell (Jefferson 2009). From a discussion with the current property owner, Mr. Michael Anderson, the property was previously owned by his parents.

The Washington State Department of Ecology (Ecology) received a complaint in October 2005 that the Anderson site contained buried batteries and that vehicle fluids had been disposed of on site. The complaint was referred to the Jefferson County Public Health Department (JCPH; JCPH 2006).

In November 2005, a representative of the JCPH visited the site, met with Mr. Anderson, and took photographs. The JCPH reported many solid waste violations including pooled oil on the ground surface, various types of junk vehicles stored within 40 feet of Chimacum Creek, and improperly stored batteries and transmissions (JCPH 2006).

In December 2005, JCPH and Ecology representatives visited the site and met with Mr. Anderson. During the site visit Mr. Anderson shared his operational practices, which included draining fuel tanks on the ground surface prior to crushing the vehicles for on-site storage. The JCPH documented their observations in their Initial Investigation Field Report dated January 3, 2006 (JCPH 2006).

During the site visit in December 2005, JCPH collected four surface soil samples on site and two surface water samples from Chimacum Creek. The samples were submitted to the Manchester Environmental Laboratory of Manchester, Washington for analysis of diesel-range organics by Washington State Method NWTPH-Dx and gasoline-range organics by Washington State Method NWTPH-Gx. The soil sample results indicated the presence of diesel-range organics at levels that exceed the Washington State Model Toxics Control Act (MTCA) Method A cleanup standard in three of the four samples. The maximum concentration detected was 7,800

milligrams per kilogram (mg/kg); as compared to the cleanup standard of 2,000 mg/kg. In addition, two surface soil samples exceeded the MTCA Method A cleanup standard for gasoline-range organics with a maximum concentration of 240 mg/kg. The MTCA Method A cleanup standard for gasoline-range organics is 30 mg/kg. The two surface water samples did not indicate analytes above the instrument detection limit (JCPH 2006).

In April 2006, Mr. Anderson entered a Voluntary Performance Contract with the JCPH. The contract acknowledged that the site was in violation of Washington State and Jefferson County solid waste laws. Some vehicle and scrap removal occurred between May and July 2006; however, when progress ceased, the case was referred to the Jefferson County Prosecuting Attorney since site conditions were still out of compliance. Since December 2007, the county has pursued litigation to clean up the property (JCPH 2007). On December 27, 2007, the JCPH submitted a Site Hazard Assessment Summary Score Sheet to Ecology with a recommendation that the Anderson site be listed on Ecology's Confirmed and Suspected Contaminated Sites List (CSCS; JCPH 2007). Ecology listed the Anderson site on the CSCS on February 3, 2006 and on the Hazardous Site Listing on December 28, 2007 (Ecology 2009a).

In 2008, Jefferson County declared the property a nuisance. In that year, the county removed 51 tons of tires through funding from a free program that pays for the disposal of tires on properties containing more than 801 tires (Boyd 2009).

Sources and Waste Characteristics

The Anderson site has been in operation since the early 1970s (Anderson 2009). Operational practices included draining the vehicle fuel tanks onto the ground surface prior to crushing the vehicles and stacking them. Other vehicle fluids (i.e., oil, antifreeze, transmission fluids) were not reported to be drained at the site. Vehicles are stored within 40 feet of Chimacum Creek as well as in an on-site wetland.

Other potential hazards previously reported on the property include:

- Approximately 100 junk vehicles (cars, trucks, boats, and trailers);
- Car batteries; and
- Various containers including a former underground storage tank, 55-gallon drums, and 5-gallon buckets with unknown contents. The quantity of 55-gallon drums and 5-gallon buckets is not known.

Additional information regarding these sources is provided in the Site Visit and Sampling Event section below.

Site Visit and Sampling Event

On April 24, 2009, START personnel conducted a site visit and field sampling event at the site. The START was accompanied by two United States Environmental Protection Agency (EPA) representatives; a JCPH representative; and Mr. Michael Anderson, the property owner. Photographic documentation of the field sampling event is provided in Attachment B.

The site contains of a number of vehicles including flat-bed trailers, trucks, cars, camper trailers, front-end loaders, and boat trailers (Attachment B, photograph 1). A number of tanks were

present including an approximately 1,000-gallon underground storage tank that was being stored on a trailer (Attachment B, photograph 2). The site owner reported this tank was empty. In addition, a 300-gallon gasoline tank and 500-gallon diesel tanks were present at the site (Attachment B, photograph 3). The site owner stated that the tanks were empty; however, based on visual observation of staining near the bottom of one of the tanks, it is possible that residual product remains in the tanks. It was also noted that a new padlock had been installed on the tank. A shipping container also was present, which appeared to contain several full diesel drums. Finally, the northwestern portion of the site consists of a palustrine emergent scrub shrub wetland (Attachment B photograph 1). Wetland vegetation (e.g., horse tail and sedges) was observed in areas where vehicles and debris were present.

Following a walk-through of the site to identify areas of interest, START personnel conducted sample collection activities. A total of 12 samples were collected from the Anderson property and adjacent Chimacum Creek. The samples included five surface soil samples, three subsurface soil samples, and four sediment samples. Sediment samples included three from the creek and one from the on-site wetland near the creek.

During the November 2005 site visit conducted by JCPH, oil puddles were observed on site (JCPH 2006); however, during the START site visit, no puddles were observed. A pile of radiators previously seen on site also was not observed during the site visit.

Sampling Methods and Protocols

A sampling and quality assurance plan (SQAP) for the Anderson Property Auto Wrecking site was developed by the START prior to field sampling (E & E 2009). The SQAP describes the sampling strategy, sampling methodology, and analytical program used to investigate potential hazardous substance sources and potential targets. There were no deviations from the approved SQAP. A list of all samples collected for laboratory analysis is presented in Table 1.

Alphanumeric identification numbers applied by START to each sample location (e.g., AP01SS) are used in the report as the sample location identifiers. The sample code key is presented in Table 2.

Large pebbles, grass, and organic material, and small machine parts, glass, and other debris were removed from the sample material before it was placed into sample containers.

All samples were collected using dedicated stainless steel spoons, homogenized thoroughly in dedicated stainless steel bowls, and placed into pre-labeled sample containers. Samples collected for volatile organic compound (VOC) and gasoline-range hydrocarbons (TPH-Gx) analysis were collected prior to homogenization. Samples were stored on ice in coolers continuously maintained under the custody of START personnel. Chain-of-custody documentation is provided in Attachment C.

The surface soil samples were collected from 0 to 6 inches below ground surface (bgs), and the subsurface soil samples were collected from 12 to 15 inches bgs. Sediment samples were collected from 0 to 6 inches below the sediment surface at a location less than 2 feet from the edge of the water. The sediment sample from the on-site wetland adjacent to the Chimacum

Creek main channel was collected in a grassy area between the creek and upland areas of the Anderson property.

All samples were analyzed for pesticides/polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), VOCs, diesel- and gasoline-range organics, and Target Analyte List (TAL) metals. A quality assurance/quality control (QA/QC) check was performed on all samples by an EPA chemist with a review by an E & E chemist. The QA/QC review is provided in Attachment D. Additionally, the data validation memoranda and associated laboratory forms are provided in Attachment D.

Trimble GeoXH mapping grade Global Positioning System (GPS) units were used by START personnel to approximate the sample location coordinates of the Anderson site samples. The GPS coordinates for the sample locations is provided in Attachment E.

Investigation-Derived Waste

Investigation-derived waste (IDW) generated during the sampling effort included disposable personal protective clothing and sampling equipment (i.e., dedicated bowls and spoons). The solid IDW was bagged in opaque plastic garbage bags and disposed of at the local municipal landfill. No liquid IDW was generated during the sampling effort. No IDW remains at the site.

Analytical Results Evaluation Criteria

The summary tables present all analytes detected above laboratory detection limits in bold type. Analytical results indicating significant concentrations of contaminants in source samples and elevated concentrations of contaminants in target samples with respect to background concentrations are shown underlined and in bold type. For the purposes of this investigation, significant or elevated concentrations are those concentrations that are:

- Equal to or greater than the sample's Contract-Required Quantitation Limit (CRQL), or the Sample Quantitation Limit (SQL) when a non-CLP laboratory was used; and
- Equal to or greater than the background sample's CRQL or SQL when the background concentration was below detection limits; or
- At least three times greater than the background concentration when the background concentration equals or exceeds the detection limits.

The analytical summary tables present all detected compounds, but only those detected analytes at potential sources or targets meeting the significant or elevated concentration criteria are discussed in the report text. All detected concentrations are also discussed for the background samples. When samples were diluted for reanalysis at a laboratory, the dilution results were considered for evaluation and are provided in the tables.

The analytes aluminum, calcium, iron, magnesium, potassium, and sodium are common earth crust elements. Based on EPA Region 10 policy, these common earth crust elements will not be discussed in this report.

Background Sample Locations and Results

A total of three background samples were collected: two from Chimacum Creek and one upslope of the vehicle wrecking area. Locations of the samples are presented in Figure 3. Background sample results are provided in the first column of the analytical results summary tables.

- **Background Sample Locations**
  A background surface soil sample (BG01SS) was collected from the east side of Old Hadlock Road in the southeast corner of the Anderson property. This sample is comparable to the downslope surface and subsurface soil samples because it is from a similar soil type.

  Two Chimacum Creek background sediment samples were collected, one from the east fork and one from the west fork. The Chimacum Creek east fork background sample BG01SD was collected approximately 160 feet upstream from the confluence. The Chimacum Creek west fork background sample BG02SD was collected approximately 20 feet above the confluence. The samples are appropriate background samples because they are from a contiguous water body with a similar flow rate, sediment type, and sample depth.

- **Background Sample Results**
  Results for the background surface soil sample are presented in Table 3. The results for the background soil sample (BG01SS) indicated the presence of eight TAL metals (barium, chromium, copper, lead, manganese, nickel, vanadium, and zinc) and two VOCs (2-butanone and acetone). No PCBs, SVOCs, or gasoline- or diesel-range organics were present above CRQLs.

  The results for the background sediment samples are presented in Table 5. Sample results indicate the presence of 10 TAL metals (arsenic, barium, chromium, cobalt [one background sediment sample only], copper, lead, manganese, nickel, vanadium, and zinc) and one VOC (acetone). No PCBs, SVOCs, or gasoline- or diesel-range organics were present above CRQLs.

Source Surface and Subsurface Soil Sample Locations and Results

A total of seven soil samples were collected: four surface soil samples and three subsurface soil samples. Sample locations are presented on Figure 3.

- **Surface and Subsurface Soil Samples Locations**
  Sample locations were selected by the EPA Task Monitor (TM) based on visual observations and previous areas of concern. The samples were all collected from areas near the gravel road that cuts through the site. Sample AP01SS was collected from beneath a rusted 55-gallon drum shell and close to two aboveground storage tanks. Sample AP02SS was collected from the south side of the road in an area that was previously noted to have a puddle with a sheen. Sample AP03SS was collected on the north side of the road. Sample AP04SS was collected from the center of the site approximately 30 feet south of the road. Sample AP05SB was collected from the south side of the road near a front-end loader. Sample AP06SB was collected from the north

side of the road near a puddle and close to the on-site wetland. Finally, sample AP07SB was collected from the north side of the road in a grassy area near the on-site wetland.

- **Soil Sample Results**
  Sample results are presented in Table 3. Sample results indicate the presence of diesel-range organics at a significant concentration with respect to the background in one sample (AP01SS). Two SVOCs (bis[2-ethylhexyl]phthalate and butylbenzylphthalate) were detected at significant concentrations with respect to background concentrations. A total of 10 TAL metals (arsenic, cadmium, chromium, cobalt, copper, lead, manganese, mercury, vanadium, and zinc) were detected at significant concentrations with respect to background concentrations. Of these TAL metals, arsenic was detected at significant concentrations in all of the soil samples ranging from 2.5 to 7.2 micrograms per kilogram (mg/kg). Two VOCs (2-butanone and toluene) were detected at significant concentrations with respect to background concentrations. No PCBs or gasoline-range organics were detected above the CRQLs.

  There is no evidence of a maintained engineered cover, a functioning and maintained run-on control system and run-off management system, or liner with a functioning leachate collection and removal system in areas containing contaminated soil. All sample points that exhibited significant concentrations of hazardous substances were connected to determine the area of on-site contamination. This area was determined to be 174,240 square feet.

Surface Water Pathway Targets

The surface water migration pathway target distance limit (TDL) begins at the probable point of entry (PPE) of surface water runoff from the site to a surface water body and extends downstream for 15 miles. Figure 4 illustrates the surface water migration pathway 15-mile TDL.

One PPE is present for the site at the on-site wetland which borders Chimacum Creek. The TDL extends for 3.32 miles downstream to the mouth of Chimacum Creek where it enters into Port Townsend Bay within Puget Sound, ending in a radial arc 11.68 miles to the south and 11.68 miles to the north. Given the gentle slope of the site and upland area, Old Hadlock Road is a feature that likely prevents upland runoff from entering the site; therefore, the drainage is estimated to be the acreage of the property at approximately 5.4 acres (Google 2009; Jefferson 2009).

The historical annual stream flow for Chimacum Creek in 1957 was 13.6 cubic feet per second (cfs) as measured from a station approximately a mile upstream in the west fork (USGS 2009). During the field sampling event, the flow of Chimacum Creek was estimated at 12 cfs.

The soils on the upper third of the property towards Old Hadlock Road consist of the San Juan Series, a gravelly sandy loam with 0 to 8% slopes, slow runoff, slight erosion, that is somewhat excessively drained. Other soil series on the property are the Semiahmoo muck and Mukilteo peat in the northwest corner of the site, the Tisch loam in the west central area, and the Wapato loam along Chimacum Creek and in the center of the site (USDA 1975).

The Semiahmoo muck is a moderately shallow variant, which consists of 0 to 2% slopes, the drainage is very poor, runoff is very slow or ponded, and the erosion hazard is slight or nonexistent. The upper layer consists of 10 to 15 inches of black muck and in several areas two to four layers of muck and mucky peat over mineral soil. A diatomaceous layer 2 to 5 inches thick is generally located 10 to 18 inches below the surface. Mineral soil located 24 to 48 inches below the surface includes sandy clay, clay, sandy loam, sandy clay loam, and loamy sand (USDA 1975).

The Mukilteo peat is a moderately shallow variant occurring in depressions or basin areas. The upper layer consists of up to 50 inches of peat over mineral soil, which is primarily loam and sandy loam. The Tisch silt loam has a 0 to 2% slope and is located near shallow muck and peat soils. The Wapato silty clay loam is located in basin areas with 0 to 3% slopes. The Mukilteo, Tisch, and Wapato soil is very poorly drained, and has very slow runoff and slight to nonexistent erosion potential (USDA 1975).

The 2-year 24-hour rainfall event is 2.0 inches (NOAA 1973). The average annual perception is 18.69 inches as measured at Port Townsend, Washington (WRCC 2008). The western half of the site is located in a 100-year floodplain, although a narrow section in the center (i.e., roughly parallel to Chimacum Creek and approximately 20 feet in width) is in a 500-year floodplain. The remaining eastern portion of the site is in a minimal floodplain (FEMA 1982).

Chimacum Creek is listed on the State of Washington's 303(d) list for contamination due to fecal coliform and temperature. The 303(d) list is a registry of all state surface waters (e.g., lakes, rivers, streams) designated for beneficial use (e.g., drinking water, recreation, aquatic habitat, and industrial use) and impaired by environmental pollutants. This list is a requirement of the federal Clean Water Act (Ecology 2008).

Considerable attention has been given to the environmental health and restoration of Chimacum Creek. In 2001 and 2003, restoration projects involved the restoration of juvenile Coho salmon habitat and long-term monitoring programs (NOAA 2009). In 2006, restoration work at the mouth of Chimacum Creek on Port Townsend Bay was completed to restore the estuary for salmon habitat (Kitsap Sun 2006).

Surface water is not used as a drinking water source within the TDL. Admiralty Inlet is a major recreation area.

Chimacum Creek is considered a salmonid species habitat [e.g., spring, summer, and fall Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Oncorhynchus kisutch*), Sockeye salmon (*Oncorhynchus nerka*), Pink salmon *(Oncorhynchus gorbuscha)*, Chum salmon (*Oncorhynchus keta*), Winter and Summer Steelhead (*Oncorhynchus mykiss*), Coastal and Sea-run Cutthroat trout (Oncorhynchus *clarki*), and Dolly Varden/Bull trout (*Salvelinus confluentus)*] (Jefferson 2009; Wydoski and Whitney 2003). Fishing on Chimacum Creek is allowed by the State for trout and other game fish during the months of June through August (WDFW 2009). Fish catch data is not maintained for Chimacum Creek; therefore, START assumes that greater than 0 to less than 100 pounds are harvested annually.

The most recent sport fish catch data available is for the 2002–2003 fishing season (WDFW 2008). The 15-mile TDL is within the Admiralty Inlet and the fish catch data for this area is provided for Chinook salmon (*Oncorhynchus tshawytscha*), Chum salmon (*Oncorhynchus keta*), Coho salmon (*Oncorhynchus kisutch*), Pink salmon (*Oncorhynchus gorbuscha*), Sockeye salmon (*Oncorhynchus nerka*), Steelhead (*Oncorhynchus mykiss*), White Sturgeon (*Acuteness transmontanus*), and Dungeness crab (*Cancer magister*). A total of 538,379.25 pounds of fish and crab were caught in the Admiralty Inlet reporting area (WDFW 2008). Since approximately 40% of the fish harvest and 30% of the crab harvest in the TDL is within the reporting area, it is estimated that 203,592.9 pounds of fish and crab were harvested (i.e., 154,058.3 x 40% = 61,623.3, and 473,232 x 30% = 141,969.6; therefore, 61,623.3 + 141,969.6 = 203,592.9) within the TDL (Wydoski and Whitney 2003). Sport catch data and calculations used for estimating purposes are presented in Table 4.

The lower northwest section of the Anderson site is designated as freshwater emergent wetland (Maguire 2009). The on-site wetland acreage is approximately 1.54 acres (Maguire 2009a). This area is partially covered with vehicles and scrap metal as shown in the historical photographs provided in Attachment A and the START photographic log in Attachment B.

There are 5.26 miles of wetland frontage within the 15-mile TDL, and, of that, there are 1.1 miles on Chimacum Creek and 4.16 miles on the Puget Sound (Maguire 2009a).

Within the TDL, sensitive habitat species are found in Puget Sound and Chimacum Creek, as noted below.

- Puget Sound: Federal-listed threatened Puget Sound Evolutionarily Significant Unit (ESU) Steelhead (*Oncorhynchus mykiss*) and Hood Canal ESU Chum (*Oncorhynchus keta*); the Critical Spawning Area for the Pacific Herring *(Clupea harengus pallasi)*, (Surf) Smelt *(Hypomesus pretiosus)*, and (Pacific) Sand Lance *(Ammodytes hexapterus)*.
- Chimacum Creek: Federal-listed threatened Puget Sound ESU Steelhead (*Oncorhynchus mykiss*) and Hood Canal ESU Chum (*Oncorhynchus keta*) (Maguire 2009b; Wydoski and Whitney 2003; WDFW 2009b).

Sediment Samples Locations and Results

Two sediment samples were collected, one from Chimacum Creek and one from the wetland adjacent to Chimacum Creek. Sample locations are depicted on Figure 3.

- **Sediment Sample Locations**

  The Chimacum Creek sediment sample CC01SD was collected from the east bank of the creek at the confluence of the east and west forks.

  The wetland sediment sample WD01SD was collected from a location approximately 80 feet downstream of the Chimacum Creek east and west fork confluence and 12 feet east of the creek.

- **Sediment Samples Results**
  Sample results are presented in Table 5. Three VOCs (2-butanone, acetone, and toluene) were detected at elevated concentrations with respect to background concentrations. Of these VOCs, acetone was not detected at significant concentrations in the source soil samples; therefore, this analyte cannot be attributed to site sources. No TAL metals, SVOCs, PCBs, or diesel- or gasoline-range organics were detected at elevated concentrations with respect to background concentrations.

Soil Exposure Pathway

The soil exposure pathway is evaluated based on the threat to residents, workers, and nearby populations from soil contaminants within the first 2 feet of the ground surface.

There are 1,600 people and five schools located within 1 mile of the site; approximately 1,181 students attend these schools. The total population of residents and students is 2,781.

At least one person is reported to work at the site (Mr. Anderson); however, he did state that occasionally a friend will help him out. One on-site residence, occupied by two people, is present at the site and within 200 feet of contamination.

There are a total of 91.1 acres of wetlands within 1 mile of the site, including 0.74 acres on site (Maguire 2009a). No resources such as commercial agriculture, silviculture, livestock production, or livestock grazing occur within an area of observed contamination or within 200 feet of the site.

Conclusions

The Anderson Property Auto Wrecking site is located approximately 0.8 miles south of Port Hadlock, Jefferson County, Washington. The site encompasses approximately 5.4 acres, and is 300 feet long north to south and 800 feet wide east to west. The surrounding area is rural. The site is bordered by Chimacum Creek to the west and Old Hadlock Road to the east. A thick hedge of bushes borders the site to the south, and vacant land and one residence are located to the north. Chimacum Creek flows into Port Townsend Bay within the Admiralty Inlet of Puget Sound.

The site has operated as a family business since the early 1970s and is currently owned and operated by Mr. Michael Anderson. One residence located on site is rented and occupied by an elderly couple. In October 2005, Ecology received a compliant involving a release of vehicle fluids from the site to the adjacent Chimacum Creek. In response to the complaint, the JCPH visited the site in November 2005 and returned in December 2005 with Ecology representatives to collect four surface soil samples from the property around the vehicles and two surface water samples from the adjacent Chimacum Creek. The samples were analyzed for NWTPH-Dx and NWTPH-Gx. The soil sample results revealed TPH-Dx and TPH-Gx at levels that exceeded state MTCA cleanup levels. No analytes were detected in the surface water samples.

As part of this IA, START collected a total of eight soil samples including one background sample, three sediment samples from Chimacum Creek including two background samples, and

one wetland sediment sample. All samples were analyzed for PCBs, SVOCs, VOCs, TAL metals, and TPH-Dx and TPH-Gx. No PCBs were detected in any of the samples.

The naturally occurring lead soil levels in the area range from 2.1 mg/kg to 207.5 mg/kg with a 90th percentile value of 24.02 mg/kg. One lead result (435 mg/kg) from the Anderson site soil samples is greater than the upper limit of the range of naturally occurring lead soil levels. The naturally occurring mercury soil levels range from 0.012 mg/kg to 0.094 mg/kg with a 90th percentile value of 0.07 mg/kg. Mercury results (i.e., ranging from 0.16 mg/kg to 0.42 mg/kg) in four of the Anderson site soil samples are greater than the upper limit of the range of naturally occurring mercury soil levels. The naturally occurring zinc soil levels range from 12 mg/kg to 132.5 mg/kg with a 90th percentile value of 85.06 mg/kg. Zinc results (i.e., ranging from 152 mg/kg to 285 mg/kg) in three of the Anderson site soil samples are greater than the upper limit of the range of naturally occurring zinc soil levels. The naturally occurring arsenic levels in the area range from 1.45 mg/kg to 17.17 mg/kg with a 90th percentile value of 7.30 mg/kg. Arsenic was detected in all soil sample results ranging from 2.5 mg/kg to 7.2 mg/kg which is within the range of naturally occurring arsenic in the area (Ecology 1994). Sediment arsenic results were significantly higher in the west channel background sample (18.2 mg/kg) than in the east channel background sample (5.2 mg/kg). Based on the soil and sediment arsenic results the levels detected are not attributed to onsite sources.

The VOC results detected 2-butanone and acetone, which are common laboratory contaminants, and toluene, a constituent in petroleum products. Acetone was detected in the background sediment samples. Acetone and 2-butanone were detected in the background soil sample. Toluene was detected in one onsite soil sample and undetected in the background sample. Based on the VOC results 2-butanone and acetone are not contaminants of concern, and toluene is a constituent of petroleum.

Based on the limited detections of CERCLA hazardous substances, mostly low level concentrations of inorganic analytes, the Anderson Property does not appear to be a source of contamination warranting further action by EPA.

References

Alaska Department of Fish and Game (ADFG), July 2009, *Dungeness Crab: Wildlife Notebook Series.*

Anderson, Michael, April 2009, personal communication during START site visit and sampling fieldwork activities.

Boyd, Marjorie, July 2009, Jefferson County Public Health, Environmental Health Department, Environmental Health Specialist, personal communication regarding site activities with Ann Rivers, Ecology and Environment, Inc., Seattle, Washington.

Ecology and Environment, Inc. (E & E), April 2009, Sampling Quality Assurance Plan, Anderson Property Auto Wrecking Site, Port Hadlock, Washington, prepared for the United States Environmental Protection Agency, Contract Number EP-S7-06-02, Seattle, Washington.

Federal Emergency Management Agency (FEMA), July 1982, *Flood Insurance Rate Map for Jefferson County, Washington, Unincorporated Areas, Panel 170 of 1625, Community-Panel Number 530069 0170 B.*

Google Earth, 2009, historical aerial photographs.

Jefferson County (Jefferson), 2009, on-line map service includes data on parcel maps, assessor data, and environmental sensitive information, http://www.co.jefferson.wa.us/idms/mapserver.shtml.

Jefferson County Public Health Department (JCPH),. 2007, *Site Hazard Assessment Worksheet 1 Summary Score Sheet, Anderson Property, Old Hadlock Road.*

_____, 2006, Initial Inspection Field Report, ERTS Number 551003.

Kitsap Sun, 2006, news article, *Chimacum Creek Beach Given New Lease on Life,* by Christopher Dunagan.

Maguire, Andrew, 2009a, Memorandum on the National Wetland Inventory Map and Census data, E & E, Seattle, Washington.

_____, 2009b, Memorandum on the Threatened and Endangered Species, E & E, Seattle, Washington.

MapQuest, 2009, http://www.mapquest.com/.

National Oceanic and Atmospheric Administration (NOAA), 2009, *NOAA Fisheries Office of Habitat Conservation, Restoration Center.*

_____, 1973, *Precipitation-Frequency Atlas for the Western United States, Volume X-Washington.*

United States Department of Agriculture (USDA), 1975, *Soil Survey of Jefferson County, Washington.*

United States Geological Survey (USGS), 2009, archived Web search data for stream flow discharge, *National Water Information System: Web Interface, USGS Surface-Water Annual Statistics for Washington, USGS 12051500, Chimacum Creek near Chimacum, WA.*

Washington Department of Ecology (Ecology), 2009a, Hazardous Sites List Site Register.

_____, 2009b, *River and Stream Flow Monitoring,* stream flow monitoring station number 17B050 for Chimacum Creek near the mouth.

_____, 2008, *Water Quality 303(d)-5List: Quilcene/Snow, Water Resource Inventory Area (WRIA) 17*, GIS Technical Services.

_____, October 1994, *Natural Background Soil Metals Concentrations in Washington State*, Toxics Cleanup Program, Publication #94-115, Olympia, Washington.

Washington State Department of Fish and Wildlife (WDFW), 2009, Washington Sport Fishing Rules, 2009/2010 Pamphlet Edition.

_____, 2009b, Forage Fish, Internet search, http://wdfw.wa.gov/fish/forage/herring.htm.

_____, 2008, *Washington Sport Fish Catch Report 2002.*

Western Regional Climate Center (WRCC), 2008, *Period of Record Monthly Climate Summary, Port Townsend, Washington, 456678, Average Total Annual Precipitation.*

Wydoski, Richard S., and Richard R. Whitney, 2003, *Inland Fishes of Washington, Second Edition*, American Fisheries, Bethesda, Maryland.