

SITE HAZARD ASSESSMENT  
WORKSHEET 1  
Summary Score Sheet

**SITE INFORMATION:**

Columbia Park Marina (a.k.a The Boat Shop)  
1238 Columbia Drive SE  
Richland, WA 99352

**Parcel ID:** 130992000003000  
**Section/Township/Range:** 30, 9N, 29  
**Latitude:** 46.2382  
**Longitude:** -119.22009  
**Ecology Facility Site ID No.:** 84244226  
**LUST Site ID:** 009266

*Site scored/ranked for the August 3, 2010 update  
July 22, 2010*

**Background and Site Sampling**

The property on which the Columbia Park Marina is located is owned by the U.S. Army Corps of Engineers, leased to Benton County, sub-leased to the City of Richland and sub-leased under a concession agreement to Riversedge Investment, LLC (1,2). The marina has been in operation since the late 1960s. Two 1,000 gallon underground storage tanks (UST) were used to store gasoline until the late 1980s when above ground storage tanks were installed. The tanks were buried end-to-end in an east-west orientation approximately 40 feet from the Columbia River (refer to Appendix I, Figures 1-3). The two UST, along with the piping, were removed by the R.H. Smith Distributing Company on April 8, 1994. White Shield Incorporated (WSI) provided assessment services and performed environmental sampling at the site.

When Charles Robinson of WSI arrived at the site on April 8, 1994 the two tanks had already been removed from the excavation hole. The depth of the excavation hole was approximately eight feet and groundwater was encountered at this depth. Robinson was informed by two employees of Smith Distributing that not all of the gasoline in the tanks could be pumped out of the tanks prior to their removal. When tank #1 was being removed from the excavation hole, gas was observed to be leaking from the tank. Smith employees immediately pumped the gas and groundwater in the bottom of the excavation hole into two 55 gallon drums. Robinson checked both tanks for holes. He found no holes in tank #2 but found two holes and one gash in the bottom of tank #1. All holes were located near the bottom of the tank. Two holes were approximately 0.5 inch in diameter and the gash was approximately two inches in length. Robinson did not speculate whether the holes were preexisting or may have been caused by machinery during the excavation.

Smith employees stockpiled soil from the excavation on the north side of the hole (see Appendix I, Figure 3). WSI employees collected soil samples from the stockpile and analyzed for contaminants. In addition, soil samples were taken from both ends and the sidewalls of the excavation hole.

However, no soil samples were taken from the bottom of the hole because groundwater had seeped into it. A sump pump was lowered into the hole and approximately 125 gallons of contaminated water was collected. However, the bottom of the hole was refilled by groundwater in about 15 minutes. One water sample was collected for analysis with a disposal bailer at a depth of about nine feet. All the samples were analyzed for gasoline, benzene, toluene, ethylbenzene, and xylene (BTEX). The water sample was also analyzed for lead.

Soil samples taken from the sidewalls and the end wall of the excavation had non-detectable levels of contaminants (data not shown). Soil samples taken from the stockpile did have detectable levels of contaminants but levels were below Model Toxic Control (MTCA), Method A Soil Cleanup Levels (see Appendix II, Table 1, "Stock Pile #1). The soil from Stock Pile #1 was eventually used as backfill at the site. Shortly after sampling results were reviewed the owners of the marina began to aerate the water in the bottom of the excavation pit in an attempt to remediate the site. On May 23, 1994 Charles Robinson returned to the site to collect one water sample and one soil sample from the bottom of the pit. The water sample did not show detectable levels of contaminants (Table 3, "Post" sample). This was the last water sample that was collected during the cleanup. The soil sample did contain high levels of contaminants (Table 1, "Bottom of Pit"). Due to the high levels of contaminants in the bottom of the pit, seven more yards of soil were removed. This material was sampled (Table 2, "Stock Pile #2") and one final sample was also taken from the bottom of the pit. All samples contained contaminants but were below MTCA cleanup levels (Table 2). Soil from Stock Pile #2 was disposed at the Richland Landfill.

Based on the final sampling results WSI concluded petroleum contaminants remaining in the soil and groundwater within the confines of the excavation did not exceed MTCA cleanup levels. The report indicated that holes were found in tank #2 and the gas may have been leaking into the ground water for an extended period of time. WSI recommended that ground water monitoring wells be installed at the site to meet the requirements of the MTCA (WAC 173-340-450 (3)(a)(iii). Ground water monitoring wells were never installed and the site was backfilled and covered.

### **Site Hazard Assessment**

A site hazard assessment (SHA) was performed on May 18, 2010 by James Coleman of the Benton-Franklin Health District. Also present during the SHA was Amy Ford, one of the current lessees, and Lynn Koehler, lessee of the property when the USTs were removed from the property. Mr. Coleman informed Ms. Ford and Mr. Koehler of why a SHA was being performed and provided them some handouts describing the process. Mr. Coleman also provided Ms. Ford a copy of the cleanup report prepared by White Shield Incorporated because she indicated that she had not seen the report. Mr. Koehler was asked if he recalled the exact area where the UST had been removed. He said could not identify the exact location because the tanks were removed sixteen years ago and many of the previous landmarks like the boat shop, power pole, and chain link fence (see Figure 2) were no longer present. Some landmarks, such as the boat launch, were still present. Measurements were taken and the approximate location of the old excavation site was noted (Figure 1).

The Columbia Park Marina is still operating. The site occupies about 2.6 acres and is covered primarily with an asphalt parking lot to the south of the Columbia River. The site is relatively flat with a slight slope towards the river. In between the parking lot and the river are a grassy storm water

swale and an asphalt bike path. The surface water from the parking drains to the grassy swale where two storm drains/catch basins are located. The drain pipe from both catch basins terminates in the riverbank along the Columbia River (see Appendix III, photos 2-4). The catch basins are located approximately 173 feet and 190 feet west and east of the old excavation site. Farther to the west and east of the site is an undeveloped park area known as Columbia Park. The current above ground storage gasoline storage tanks (2) are located centrally in the south part of the parking lot. Farther to the south are apartment complexes and a commercial district. Major residential areas are found approximately 0.5 mile south of the site. Photos were taken during the SHA (see Appendix III). No groundwater wells were found on the property. According to Washington State Department of Ecology, Water Rights Application System (WRATS), there are numerous domestic groundwater wells and five municipal wells within a two-mile radius of the site. However, some the wells, including three of the municipal wells, are located on the opposite side of the Columbia River (cross-gradient) from the SHA site. The two municipal wells located near the site are no longer being used for domestic purposes (personal communication with Nancy Aldrich at City of Richland). City water is now supplied to many of homes surrounding the site although some residences nearby still use groundwater for drinking purposes.

During the SHA Mr. Coleman tried to ascertain if the holes in tank #1 were pre-existing or whether they were created when the tanks were being removed from the hole. Mr. Koehler seemed to think the holes were created when the tanks were being removed but he also added that he was not on site when the tanks were removed. Mr. Koehler said that he was still in contact with one of the workers, Jerry O’Neal, that present during the tank removal. When Mr. O’Neal was contacted about the holes, he said he thought the holes were created during the tank removal but that he was not entirely confident about the matter since it was so long ago. The WSI report does not speculate on when the holes in the tank were created so the issue remains unclear.

**SPECIAL CONSIDERATIONS (include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site):** None

**ROUTE SCORES:**

Surface Water/Human Health:	<u>NS</u>	Surface Water/Environmental.:	<u>NS</u>
Air/Human Health:	<u>NS</u>	Air/Environmental:	<u>NS</u>
Groundwater/Human Health:	<u>58.2</u>		

**OVERALL RANK: 2**

WORKSHEET 2  
Route Documentation

1. **SURFACE WATER ROUTE – NOT SCORED.** No data or direct observation exists to support that contaminants were released into the Columbia River. The site is covered primarily with asphalt.

a. List those substances to be considered for scoring:

Source:

b. Explain basis for choice of substance(s) to be used in scoring.

c. List those management units to be considered for scoring:

Source

d. Explain basis for choice of unit to be used in scoring:

2. **AIR ROUTE – NOT SCORED**

a. List those substances to be considered for scoring:

Source:

b. Explain basis for choice of substance(s) to be used in scoring:

c. List those management units to be considered for scoring:

Source:

d. Explain basis for choice of unit to be used in scoring:

3. **GROUNDWATER ROUTE**

a. List those substances to be considered for scoring:

Source: 1,2

Gasoline, Benzene, Ethylbenzene, Toluene, and Xylene

b. Explain basis for choice of substance(s) to be used in scoring:

These substances were detected in soil samples and water samples taken from the excavation pit.

c. List those management units to be considered for scoring:

Source: 1,2

Subsurface soil/groundwater.

d. Explain basis for choice of unit to be used in scoring:

Contaminants were detected in soil and water samples at site. Petroleum was spilled into the excavation pit and there was visible as a sheen on the surface of the water.

WORKSHEET 6  
Groundwater Route

**1.0 SUBSTANCE CHARACTERISTICS**

<b>1.1 Human Toxicity</b>										
Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value	
							WOE	PF*		
1 Benzene	5	8	3306	3	ND	ND	A	.029	5	
2 Ethylbenzene	700	4	3500	3	0.1	3	-	-	-	
3 Toluene	2000	2	5000	3	0.2	1	-	-	-	
4 Xylene	10,000	2	50	10	2	1	-	-	-	
5 Lead	15	6	ND	ND	<0.001	10	-	-	-	

\* Potency Factor

Source: 1,2,4

**Highest Value: 10**

(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**

(Max = 12)

<b>1.2 Mobility (use numbers to refer to above listed substances)</b>	
Cations/Anions [Coefficient of Aqueous Migration (K)]	OR Solubility (mg/L)
1= Benzene, 1800 mg/L	1=3
2= Toluene, 540 mg/mL	2=2
3= Ethylbenzene, 150 mg/L	3=2
4=Xylene, 200 mg/L	4=2
5= Lead K=0.1 to 1.0	5=2

Source: 1,2,4,5

**Value: 3**

(Max = 3)

<b>1.3 Substance Quantity:</b>	
<p><b>Explain basis:</b> 1000 gallon UST was abandoned in place. It is doubtful that the tank would have been abandoned full of gasoline. Records indicated that at least 100 gallons of gasoline were still in the tank and as much as 75 gallons may have leaked when the tank was removed. It is possible that more than 200 gallons were in the tank at one</p>	<p>Source: <u>1,2</u> <b>Value: <u>2</u></b> (Max=10)</p>

time.	
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## 2.0 MIGRATION POTENTIAL

		Source	Value
2.1	<b>Containment (explain basis):</b> Leaking UST.	1-3	<b>10</b> (Max = 10)
2.2	<b>Net precipitation:</b> 5" – 3.4" = 1.6"	5	<b>1</b> (Max = 5)
2.3	<b>Subsurface hydraulic conductivity:</b> sands/gravels	1,2	<b>4</b> (Max = 4)
2.4	<b>Vertical depth to groundwater:</b> ~8 feet	1,2	<b>8</b> (Max = 8)

## 3.0 TARGETS<sup>1</sup>

		Source	Value
3.1	<b>Groundwater usage:</b> Private supply, unthreatened alts. avail.	6,7	<b>4</b> (Max = 10)
3.2	<b>Distance to nearest drinking water well:</b> <u>3,900</u> feet	6,7	<b>2</b> (Max = 5)
3.3	<b>Population served within 2 miles:</b> 41 X 3 = $\sqrt{123}$ = 11.1	6,7	<b>11</b> (Max = 100)
3.4	<b>Area irrigated by (groundwater) wells within 2 miles:</b> <b>Greater than 4,500 acres = 50</b>	6,7	<b>50</b> (Max = 50)

<sup>1</sup>Note: Wells located on the opposite side of the Columbia River from the site were not included in the calculations since they are cross-gradient from the source of contamination.

## 4.0 RELEASE

		Source	Value
	<b>Explain basis for scoring a release to groundwater:</b> Confirmed release to groundwater.	1,2	<b>5</b> (Max = 5)

## SOURCES USED IN SCORING

1. LUST Closure/Interim Cleanup Report-The Boat Shop-WSDOE Site ID #009266-Richland, WA. Report prepared by Charles O. Robinson of White Shield Incorporated. June 27, 1994.
2. Site Hazard Assessment site visit by James Coleman, Benton-Franklin Health District, May 18, 2010.
3. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992

4. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
5. Washington Climate – Net Rainfall Table
6. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site.
7. Washington Department of Health, Sentry Internet Database printout for public water supplies.

## **Appendix I: Figures**





Figure 1. Aerial photo of Columbia Park Marine. Arrow shows the approximate location of the underground storage tanks (UST) that were removed in April 1994.

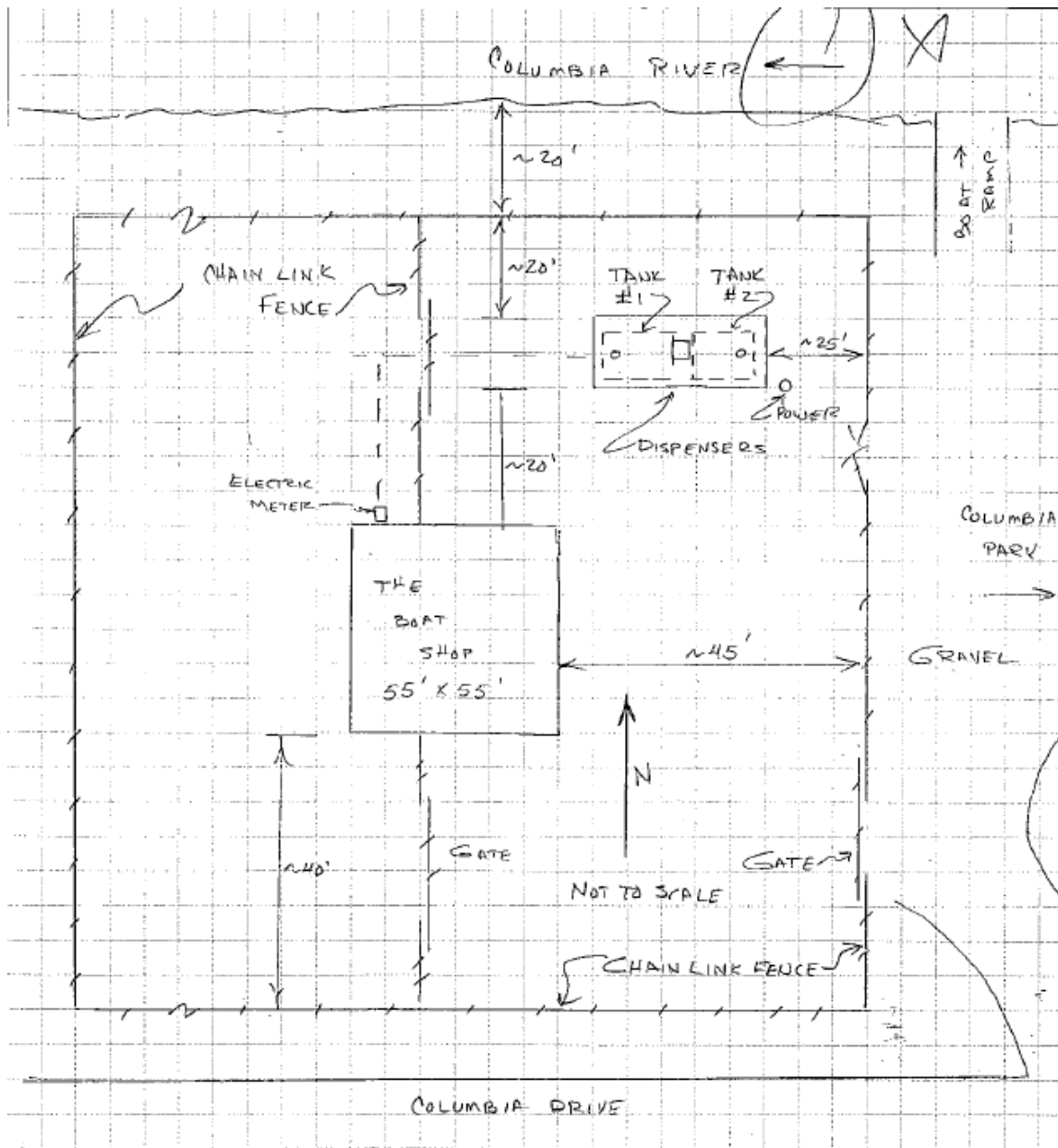


Figure 2. Site diagram showing underground storage tanks #1 and #2 and other landmarks on the site. Source of diagram is the White Shield Report (see reference 1)

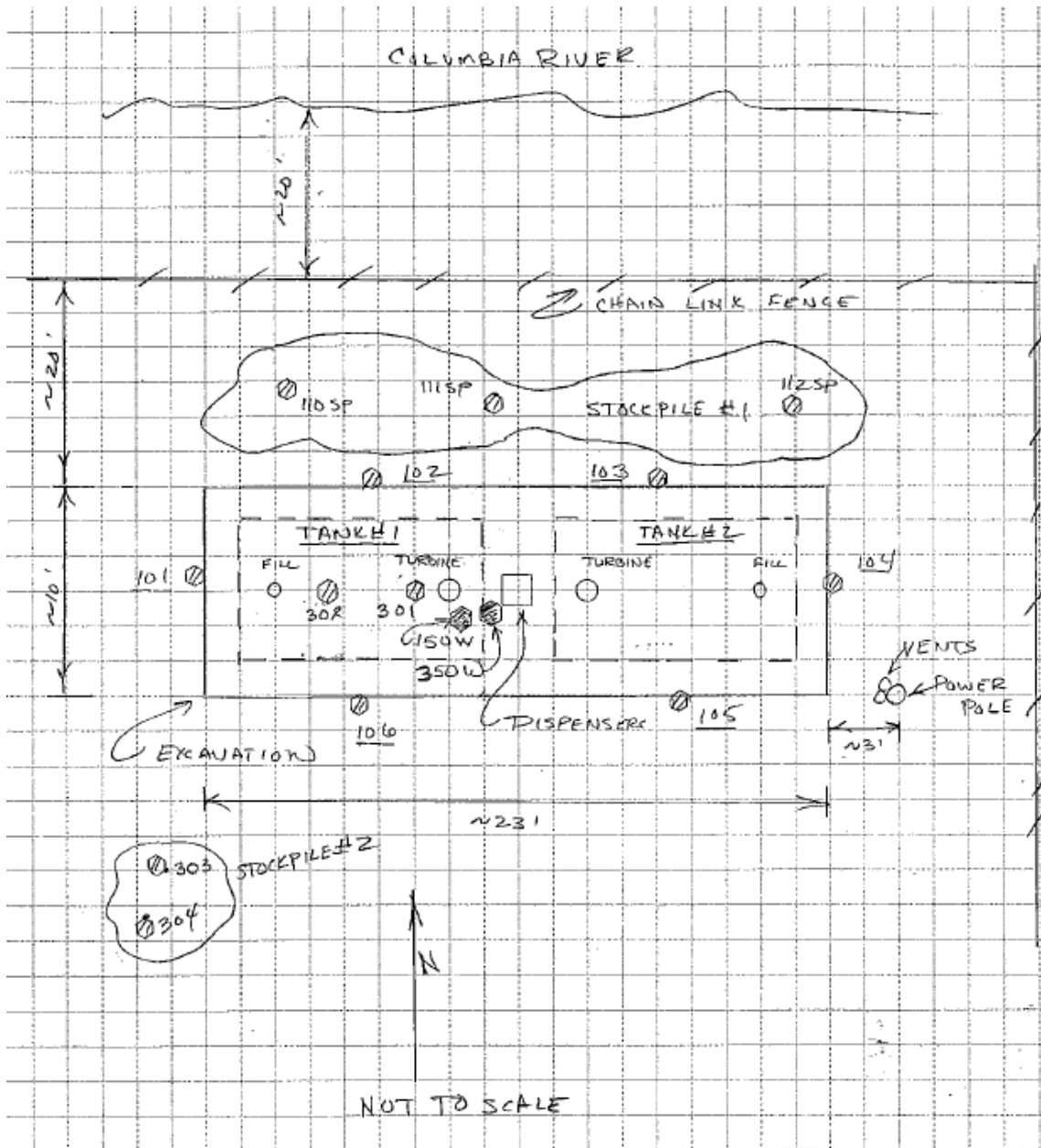


Figure 3. Diagram showing the location of environmental sampling sites. All samples are soil samples except for those with sample number identification followed by a “w”.

## **Appendix II: Tables**

Table 1. Soil Data Pre-Cleanup<sup>1</sup> from Bottom of Excavation Pit and Stock Pile #1

	Bottom of Pit (mg/kg)	Stock Pile #1 ( 1 of 2) (mg/kg)	Stock Pile #1 (2 of 2) (mg/kg)	MTCA Cleanup Levels <sup>3</sup> (mg/kg)
Gasoline	6300	6	ND <sup>2</sup>	100
Benzene	12	ND <sup>2</sup>	0.017	0.03
Toluene	302	0.012	0.062	7
Ethyl Benzene	105	0.007	0.012	6
Total Xylenes	637	0.63	0.069	9

<sup>1</sup> Samples taken April 8, 1994 except for "Bottom of Pit" which was not taken until May 23, 1994.

<sup>2</sup> ND=Not Detected

<sup>3</sup> MTCA, Method A Soil Cleanup Levels for Unrestricted Land Uses

Table 2. Soil Data Post-Cleanup<sup>1</sup> from Bottom of Excavation Pit and Stock Pile #2

	Bottom of Pit (mg/kg)	Stock Pile #2 ( 1 of 2) (mg/kg)	Stock Pile #2 (2 of 2) (mg/kg)	MTCA Cleanup Levels <sup>3</sup> (mg/kg)
Gasoline	66	8.6	36.4	100
Benzene	ND <sup>2</sup> <0.1	0.16	0.22	0.03
Toluene	0.27	0.27	0.93	7
Ethyl Benzene	0.25	ND<0.1	0.36	6
Total Xylenes	4.1	0.94	3.0	9

<sup>1</sup> Samples taken June 3, 1994

<sup>2</sup> ND=Not Detected

<sup>3</sup> MTCA, Method A Soil Cleanup Levels for Unrestricted Land Uses

Table 3. Water Samples Taken from the Bottom of the Excavation Pit (Pre and Post Final Cleanup Excavation)

	Pre <sup>1</sup> (ug/L)	Post <sup>2</sup> (ug/L)	MTCA Cleanup Levels <sup>4</sup> (ug/L)
Gasoline	39	ND <sup>3</sup> <50	800
Benzene	1.1	ND<1	5
Toluene	0.73	ND<1	1000
Ethyl Benzene	4.6	ND<1	700
Total Xylenes	5.1	ND<3	1000
Lead	0.087	Not sampled	15

<sup>1</sup> Samples taken April 8, 1994

<sup>2</sup> Samples taken May 23, 1994

<sup>3</sup> ND=Not Detected

<sup>4</sup> MTCA, Method A Cleanup Levels for Ground Water

### **Appendix III: Photos**



**Photos Taken During SHA on 5/18/2010**

Photo 1



Photo 2



Photo 3



Photos Taken During SHA on 5/18/2010



Photo 4



Photo 5

Key to Photos.

Photo 1. Looking to the NE towards the marina.

Photo 2. Looking to the west. Photo shows swale with drain.

Photo 3. Photo showing drain outlet flowing in the Columbia River.

Photo 4. Looking to west. Shows swale, bike path, and Columbia River

Photo 5. Current above ground gasoline storage tanks on site.