Evergreen Park Expansion Project Sites / Background Information

- Five properties make up the Site, also know as the “Evergreen Park Expansion Project”, including the southeast portion of Evergreen Park, the former City Depot, Brem-Air Disposal, Lofthus site, and Puget Sound Energy Site.
- Evergreen Park is bordered on the north by Park Drive, 14th Street on the south, Park Avenue on the west, and Port Washington Narrows to the east.
- The former City Depot is bordered by Evergreen Park on the north and Brem-Air on
  the east.
- Brem-Air, Puget Sound Energy (PSE), and Lofthus are bounded by Smith Cove, and Sheldon Boulevard.
- All the properties are located in the vicinity of Smith Cove, a saline water body with moderate, daily tidal fluctuations; however the southern portion of Evergreen Park is bordered by Washington Narrows, which has currents up to 35 miles per hour.
- Between 1911 and 1968, fill from unknown sources was deposited in Smith Cove building up the shoreline where the properties are now located.

Current Site Owner

- The City of Bremerton owns all the properties.

Documents\Provisions of the Existing Agreed Order

- In 2000, the City of Bremerton entered an Agreed Order for the upland portion of the Site (above ordinary high water) with Ecology for all five properties: southern portion of Evergreen Park, former City Depot, Brem-Air, Lofthus, and former Puget Sound Energy Site.
- Ecology approved a “Remedial Investigation Report” dated July 1997 prepared by PTI that summarized prior site investigations.
- Ecology approved a “Focused Feasibility Study” dated August 1998 by Exponent that described the evaluation of remedial options for the site.
- Ecology approved an “Interim Action Work Plan and Engineering Design Report” dated November 1998 by Exponent that described the proposed remedial actions to be performed pursuant the Agreed Order.

Evergreen Park Historical Site Use

- The site is a former incinerator/landfill that was covered with 2 feet of soil and converted to a city park. The estimated area of the landfill is estimated to be approximately 4 acres.
- The City of Bremerton operated a small sanitation receptacle facility including an incinerator and an oil house in the southwestern portion of Evergreen Park from 1947 through 1968.
- The Evergreen Park shoreline was filled with both clean and waste materials between 1918 and 1950s.
- According to a 1928 Sanborn map, a buried, steel ship hull was used to store fuel oil in the southwestern portion of Evergreen Park.

City Depot Historical Site Use

- 1947 to 1995, Automobile maintenance facility
- The site is unpaved, and all buildings have been removed.

Brem-Air Historical Site Use

- From 1911 to 1977, the site operated as Coal Platform and Model Steam Laundry operation, including coal, wood, and gasoline fueled these operations.
- 1936 to 1977, Bremerton Oil Delivery Company operated as a bulk fuel storage facility located on the southern portion of the property, including eight crude oil fuel storage tanks and buried submarine.
- 1946 to 1955, Standard Concrete Products operated at the western tip of Smith's Cove.
- In 1977, the buried submarine was filled in place with sand.
- 1990 to 1994. All in One Boating performed small craft repair and maintenance, including one UST on the northern part of the Brem-Air property.
- 1970 to 1999, Brem-Air Disposal demolished the Bremerton Oil structures and built new structures, including a fueling island with 6 USTs, wash rack, paint spray booths, 3 hydraulic lifts, and ASTs.

Lofthus Lumber and Oil Company Historical Site Use

- 1904 to 1918, a sawmill was built on platforms over the tidelands.
- 1920 to 1940, Lofthus lumber yard assumed operation of the sawmill
- 1947 to 1970, a sheet metal shop operated on the property.
- 1950 to 1975, Hebb Painting and Tucka Painting operated on the property.
- 1990, R & H Auto Repair operated on the property for an unknown duration.
- 1940 to 1999, Lofthus operated a bulk fuel storage facility with ASTs and suspect asbestos containing materials.
- A former drainage ditch trending north to south on the western portion of the Site conveyed storm water off the site to Smith Cove near the former fueling pier.
- A former fueling pier and 12 creosote piles were formerly located in Smith Cove. These structures were removed, under a Corps. Of Engineers Nationwide Permit, as part of the remedial action specified in the approved Focused Feasibility Study Report.

Puget Sound Energy Historical Site Use

- A transmission tower is located on the northern edge of the property boundary. This tower is surrounded by a fence, which will remain as part of the proposed park design.
- A vacant building is located on the southern property boundary, which was formerly used for a Plumber's Union.

Site Investigations / Reports Prepared for Cleanup Actions

- Lofthus – In 1992, an SHA of 1 was determined for the Lofthus site.
- Evergreen Park – In 1992, two test pits were excavated in the northeast portion of Evergreen Park for a shoreline redevelopment project.
- Brem-Air – In 1992, one sediment sample (SD-Sheldon) was collected in Smith Cove by Parametrix, and analyzed for total lead, mercury, and PAHs.
- Brem-Air – In 1993, soil samples were collected during a limited subsurface investigation and samples were analyzed for diesel, heavy oil, gasoline, and metals.
- Brem-Air – On October 1993, a Release Report was submitted, including subsurface soil boring results, and collection of two surface sediment samples (SED-1, SED-2). The sediment samples were collected along the Smith Cove shoreline, and analyzed for gasoline, diesel, heavy oil, lead, chromium, copper, and zinc.

- Brem-Air – One sub tidal sediment sample (SD-Sheldon) was collected at the head of Smith Cove, and analyzed for SVOCs, and metals (lead, chromium, copper, zinc and mercury).
- Evergreen Park – In 1994, soils contaminated with TPH- (diesel, oil), metals, and asbestos were discovered along the southern boundary of Evergreen Park when the City of Bremerton was installing a storm drain. Soil was excavated only to the specifications of the trench. Delineation of remaining contamination did not occur; however, soil samples were analyzed for offsite disposal designation. The stockpiled soil samples contained TPH-diesel, oil, and cPAHs significantly above the respective MTCA cleanup levels. To date, 2,200 tons of impacted soil was disposed at the King County Landfill.
- Evergreen Park – In 1994, DLH collected two composite samples (stockpiles) from two test pits excavated under Highland Avenue. The chemical results were reported in a letter report dated January 1995. The samples were analyzed for TPH-diesel, and TPH-oil.
- Evergreen Park – In 1996, PTI submitted two Independent Remedial Action reports to Ecology for the northern portion of Evergreen Park. Based on low concentrations of PAHs, diesel and heavy oil in soil, an asphalt cap with institutional controls (Restrictive Covenant) was approved by Ecology.
- Evergreen Park – On October 1996, an NFA was issued for the northern section of the park.
- Evergreen Park – In 1996, three sediment samples were collected from the northern shore of Evergreen Park, and south of the suspected outfall to support the first phase of park expansion.
- Brem-Air, Lofthus, City Depot, and Evergreen Park Sites – On April 1997, a total of 100 soil samples, and 35 groundwater samples were collected to verify the results of previous investigations on the Selected samples were submitted for analyses of gasoline, BTEX, extractable petroleum hydrocarbons (EPH), PAHs, and Volatile Petroleum Hydrocarbons (VPH), PCBs, and metals.
- Lofthus property – As part of the RI investigation (1997), a sediment sample was collected from a ditch located near the Smith Cove shoreline, and analyzed for gasoline, BTEX, extractable petroleum hydrocarbons (EPH), PAHs, and Volatile Petroleum Hydrocarbons (VPH), PCBs, and metals.
- Brem-Air Property – On May 2000, City of Bremerton completed UST decommissioning and Site Assessment Work to meet the requirements of the Agreed Order. The work included the decommissioning of 5 4,000-gallon USTs, 1 8,000-gallon UST, former U.S. Navy gun-boat converted for oil storage, and removal of three hydraulic lifts. A minimum of two samples were collected from the sidewalls, 1 bottom, and 1 sample from the piping every 50 ft. The samples from the excavations were analyzed for TPH-gas, diesel, oil, and BTEX.

- July 2000, Parametrix performed site remedy, as specified in the Agreed Order.
- September 6, 2000, Parametrix faxed a technical memorandum to Judith Aitken, regarding the groundwater monitoring well installations. The memorandum indicated that MW-1 will provide tidal influence information. Additionally, MW-3 was sited based on possible groundwater contamination from UST decommissioning activities, and MW-3 would provide tidal influence information.
- In 2000, the City's consultant, Parametrix, installed and developed five (5) groundwater monitoring wells. The wells were installed such that the screen interval was located approximately between 13 feet and 7 feet in relationship to the Mean Lower Low Water (MLLW) level.
- November 2001, Parametrix submitted fourth quarter groundwater monitoring results, as per the Agreed Order. The samples from the monitoring wells were analyzed for TPH-gas, TPH-diesel, TPH-oil, MTBE, and BTEX. Additionally, field parameter measurements included time, water level, hydrogen-ion activity (pH), temperature, dissolved oxygen (DO), salinity, oxygen reduction potential (Redox), and specific conductance.
- Groundwater monitoring samples were analyzed for anions (chloride, and total carbonate) to evaluate the possible mixing zones between fresh water and seawater.

Proposed Site Remedy/Remedial Actions under Agreed Order

- Demolish and remove existing buildings and structures to allow park development.
- Removal of existing USTs located on the Brem-Air property, including removal of potential LNAPL from tank excavations.
- During UST removal, any LNAPL observed in the excavations will be removed (vacuumed), and extraction wells will be installed, if necessary.
- Demolish and remove fuel pier that extends from Lofthus property into Smith Cove, including creosote pilings, piping, and potential residual product.
- Limited sediment sample collection (Maximum of 3 samples) around the former fuel pier (Lofthus Site), and analyzing samples for TOC, acid/base/neutral compounds, and Ecology recommended protocols using EPA Method 8270.
- Backfill and cap site with soil to final grade, and develop cap into multipurpose open grass areas, and other park surfaces. The cap consists of 12 inches of imported soil, and 6 inches of topsoil, including sediments in ditch (Lofthus Property).
- Quarterly groundwater monitoring for the first year, and semiannually thereafter for up to a 5-year period, including tidal monitoring on newly installed wells (Up to 8 wells), and geochemical monitoring (specific conductance, and anion testing).

- Tidal stage influence monitoring was required at the beginning of each monitoring session using data loggers and transducers that will simultaneously record hourly water level measurements at each well for a minimum of 72 hours.
- As specified in the approved Focused Feasibility Study Report (1998), the qualitative goal of the groundwater monitoring program, as a means of assessing potential impacts on surface water is using concentrations of 1 mg/L for gasoline-range hydrocarbons, and 10 mg/L for diesel-range hydrocarbons (MTCA Method A Unrestricted). Additionally, the ambient water quality criteria for protection of marine organisms should be utilized, if available for COCs.
- Up to eight (8) monitoring wells, and up to four (4) extraction wells (if needed) will be installed after the cap is installed.
- Four (4) of the eight (8) wells are anticipated to be point of compliance wells (MW-2 through MW-5), and four extraction wells will be installed in areas determined to require further remediation of light, non-aqueous phase liquid (LNAPL).
- The shoreline along Smith Cove will be armored with riprap to stabilize the existing bank that consisted of highly eroded fill materials.
- Install institutional controls, such as zoning restrictions and vegetative barriers along the shoreline to prevent access to Smith Cove.

Contaminants of Concern from Previous Site Investigations

The following chemical results are summarized in the Site Assessment Report from Underground Storage Tank Decommissioning activities that occurred on the Brem-Air Property on May 2000. The decommissioning activities included the removal of 6 USTs, and one set of hydraulic lifts (Large and Small). Tanks (T1 through T4) were located beneath a former Pump Island Concrete Pad, and the hydraulic lifts and Tank 6 were formerly located on the eastern side of the property along the Lofthus Site boundary. Tank 7 (T7) was formerly located on the northern side of the property, near the Evergreen Park boundary. The following soil concentrations are representative of soil sample results collected during decommissioning activities. The excavations were backfilled with clean fill, and approximately 440 tons of petroleum contaminated soil was transported offsite for disposal. Groundwater is present on the Brem-Air property at 4- to 6.5-feet below ground surface (bgs).

SOIL

UST Number	Location	FT bgs	Diesel mg/kg	Oil mg/kg	Gas mg/kg	B mg/kg	T mg/kg	E mg/kg	X mg/kg
T1	Sidewall	5	—	—	4600	30	2.7	160	193.1
T1/ T2	Sidewall	5	—	—	510	2.1	0.59	3.3	3.13
T1	Bottom	8	140	91	—	—	—	—	—
T2	Sidewall	5	—	—	1,000	9.2	0.86	42	14.6
T2	Bottom	9	16	28	4.6	0.29	ND	0.17	0.323
T3	Sidewall	5	—	—	1,800	1.2	1.7	18.0	10.8
T3	Sidewall	5	3,100	4,700	790	0.12	0.56	4.6	6.1
T3	Bottom	8	1,700	130	710	0.06	0.26	6.0	10.2
T4	Sidewall	5	38	87	—	—	—	—	—
T4	Sidewall	5	—	—	1,600	3.2	0.9	22	90
T6	Sidewall	6	18,000	2,200	2,300	ND	0.33	2.4	13.1
T6	Sidewall	9	6,800	750	720	ND	0.71	0.78	3.4
T6	Bottom	10	ND	ND	12	ND	0.019	0.021	0.035
T7	Sidewall	5	—	—	ND	0.023	0.029	0.022	0.038
T7	Sidewall	5	—	—	24	0.21	ND	0.02	0.04
T7	Bottom	7.5	—	—	13	0.014	0.019	0.017	0.025
A1 Lift	Sidewall		44	63	—	—	—	—	—
A1 Lift	Bottom		36	73	—	—	—	—	—
Large Lift	Sidewall		1900	32,000	—	—	—	—	—
Large Lift	Bottom		790	13,000	—	—	—	—	—
Small Lift	Sidewall		240	2,500	—	—	—	—	—
Small Lift	Bottom		29	350	—	—	—	—	—
MTCA Method A Unrestricted			**2,000**	**2,000**	**30**	**0.03**	**7.0**	**6.0**	**9.0**

The following chemical results of soil are representative of highest concentrations from previous subsurface investigations. To simplify the evaluation, the properties were separated to show areas of concern for each property. The following chemical results were reported in the Focused Feasibility Study Report (Exponent, 1998), with the exception of Highland Avenue. In 1994, two test pits were excavated under Highland Avenue, and ten soil samples were composited (five from each of the two test pits), and analyzed for diesel, and heavy oil. The sample locations are shown on the provided figure.

SOIL

Sites/COCs	Sample Id	Depth (Ft) bgs	Highest [ ] mg/kg	MTCA-A \ B mg/kg
Evergreen Park				
TPH-Diesel	EP (01-04)	NA	—	2,000
TPH-Oil	EP-04	6-9	1,150	2,000
Arsenic	NA	NA	42	20
Brem-Air				
TPH-Oil	BA-06	6-9	8,210	2,000
TPH-Diesel	BA-05	9-12	10,500	2,000
Lofthus Site				
TPH-Oil	LF-03	0-3	7,000	2,000
TPH-Oil	LF-07	6-9	3,270	2,000
TPH-Diesel	LF-04	6-9	4,600	2,000
Total Benzofluoranthenes	LF-07	NA	0.60	0.137
Puget Sound Energy				
TPH-Diesel	PP (01-02)	0-3	—	2,000
TPH-Oil	PP-02	0-3	103	2,000
Former City Depot				
TPH-Diesel	CB (01-03)	NA	—	2,000
TPH-Oil	CB-02	0-3	2,000	2,000
TPH-Oil	CB-01	6-9	64	2,000
Benzo(a)pyrene	CB-02	0-3	1.3	0.137
Total cPAHs	CB-02	NA	0.6	1.0
Highland Avenue				
TPH-Diesel	11395-01-05	Stockpile	1,100	2,000
TPH-Diesel	11395-06-10	Stockpile	1,300	2,000
TPH-Oil	11395-01-05	Stockpile	590	2,000
TPH-Oil	11395-06-10	Stockpile	840	2,000

GROUNDWATER

The following groundwater chemical results are representative of highest concentrations of contaminants detected during the RI from each of the subject properties. The boreholes were drilled during the RI in areas most likely affected from historical site operations.

The borehole locations are shown on the provided Figure.

Groundwater

Sample Id	TPH-Gas µg/L	TPH-Diesel µg/L	TPH-Oil µg/L	Benzene µg/L
EP-01 [1]	NA	NA	1,060	NA
CB-03 [2]	NA	NA	325	NA
BA-05 [3]	810 (J,N)	8,460	NA	150
LF-04 [4]	1,900 (J,N)	30,800 (J,N) [6]	NA[7]	NA
LF-06	88 (J,N)	NA	NA	NA
PP-01 [5]	NA	375 (J,N)	NA	NA

Notes:

1. The borehole was drilled on the northern section of Evergreen Park
2. The borehole was drilled on the former City Depot
3. The borehole was drilled on the Brem-Air Site, next to former dispenser island.
4. The borehole was drilled on the western side of the Lofthus Site.
5. The borehole was drilled on the Puget Power Site
6. The analyte was positively identified, unknown bias is an estimate.
7. NA=Not Analyzed

The following monitoring well chemical concentrations are from the fourth quarter groundwater monitoring round (Parametrix, November 2001). The groundwater monitoring well locations, diesel isoconcentration contours, and general direction of groundwater is shown on the Figure.

Groundwater

Sample Id	TPH-Gas µg/L	TPH-Diesel µg/L	TPH-Oil µg/L	Lead	Arsenic	Specific Conductance µS/cm	Chloride
MW-1	ND	352	273	NA	ND	1,030	2400
MW-2	309	4,230	696	NA	NA	763	240
MW-3	95	987	238	NA	NA	1,650	180
MW-4	67.8	2,760	1,340	NA	NA	1,200	24
MW-5	ND	ND	ND	ND	NA	440	18
MTCA-A (µg/L)	**800**	**500**	**500**				

Notes:

1. Groundwater samples that are less than 1,000 µS/cm are representative of groundwater not seawater.
2. MW-2 is an up gradient monitoring well that was sited to detect potential off-property impacts.

Conclusion:

- Based on quarterly groundwater monitoring data, the groundwater flow direction is towards the north (Evergreen Park) and Smith Cove shoreline. It is unknown, if groundwater from the Evergreen Park sites is impacting the Chevron Property.
- The approved Feasibility Study Report indicated TPH-gas and TPH-diesel groundwater cleanup levels based on former MTCA criteria. These cleanup levels should be adjusted in the amended Agreed Order, as per the current MTCA requirements.
- The latest groundwater monitoring and sampling results (November 2001) reported the amended MTCA Method A Unrestricted cleanup levels. The surface water ARARS for protection of aquatic life does not include TPH constituents, including BTEX.
- Based on groundwater data from the latest quarterly groundwater monitoring report, contaminated groundwater is discharging into Smith Cove.
- The Interim Action Work Plan indicated that up to 8 groundwater monitoring wells would be installed to provide chemical characteristics of groundwater at the point of compliance; however, the City has only installed 5 monitoring wells.
- Only four quarterly groundwater monitoring and sampling rounds have occurred for the Sites covered under the Agreed Order. The Agreed Order indicated that semi-annual groundwater monitoring was required, after the first year for up to 5 years.
- Based on the specific conductance screening results, and chloride analytical results from groundwater samples collected from MW-1, MW-3, and MW-4 (November 2001), saltwater from Smith Cove is affecting the groundwater quality in the point of compliance wells.
- MW-2 is an up gradient monitoring well that was sited to monitor the migration of potential off-property contaminants from up gradient locations. The groundwater sample from MW-2 indicated the highest concentration of TPH-diesel and TPH-gas. Based on specific conductance and chloride results, this well is not influenced by Smith Cove.
- MW-5 is an up gradient monitoring well located on the former Lofthus Site, and chemical results of groundwater samples were ND. However, a down gradient monitoring well should be installed on the former Lofthus Site to evaluate groundwater flow direction on the eastern portion of the Evergreen Park and delineate the groundwater contamination plume.

- Based on groundwater analytical results, groundwater samples from MW-4 are impacted by diesel and oil above the respective MTCA Method A Unrestricted cleanup levels. Additionally, the groundwater quality of MW-4 is diluted by saltwater intrusion from Smith Cove. This monitoring well was sited to monitor contaminants from the former UST locations.
- A drainage ditch was formerly located on the Lofthus property that discharged surface water east of the former fueling pier. A surface sediment sample (LF-03) was collected at the head of the ditch, and oil-range hydrocarbons (7,000 ppm) were detected above MTCA Method A Unrestricted cleanup level (2,000 ppm). The surface soils on the Lofthus property, including sediments within the ditch are predominantly sands.
- Based on the Site Assessment Report from UST decommissioning activities, “bleb” of heavy oil was observed in the T1/T4 and T6 excavations. Additionally, LNAPL sheen was observed on groundwater from Geoprobe boreholes at depths ranging from 6- to 12-ft bgs.
- LNAPL is suspected on the Brem-Air property based on residual soil concentrations of diesel (6,800 to 18,000 ppm) from Tank 6, and the small and large lift residual oil concentrations (2,500 to 32,000 ppm), as specified in the Tank Decommissioning Report (Parametrix, 2000).
- Institutional controls outlined in the Interim Action Work plan, and Engineering Design Report included deed restrictions, cap integrity inspections, perimeter vegetation around Smith Cove, signs along Smith Cove shoreline, and shoreline stabilization measures along Smith Cove.
- One provision of the Agreed Order is that Ecology would provide the City of Bremerton with written notification that remedial activity has been completed as required by the Agreed Order. Additionally, Ecology will make the final determination that substantive requirements of the Agreed Order have been met by the City of Bremerton.
- No Substantiate Requirement letter was issued by Ecology to the City of Bremerton.
- As part of the Site remedy under the Agreed Order, the City removed the former fuel pier, and creosote pilings, under the Corps of Engineers Nationwide Permit, however sediment samples were not collected to evaluate potential sediment impacts from historical site use of the pier.

Recommendation:

- As per the Agreed Order, limited sediment sampling should be conducted around the former fuel pier (Lofthus Site) to determine potential impacts from historical site use.
- Historical sediment chemistry from samples collected in Smith Cove should be evaluated to assess potential sediment impacts from Sites covered under the Agreed Order.
- Tidal influence monitoring should be conducted in conditional point of compliance wells, as per the Agreed Order.
- The monitoring wells should be sampled during low tide to mitigate saltwater intrusion from Smith Cove. Additionally, correction factors for chloride and specific conductance results should be implemented to assess groundwater quality along the Smith Cove shoreline.
- One groundwater monitoring well should be installed near the former Tank 6 location, and former Large and Small Lift area, which indicated elevated concentrations of residual TPH-diesel, and TPH-Oil.
- As per the existing Agreed Order, extraction well (s) should be installed if LNAPL is observed on the groundwater table in the newly installed groundwater monitoring well location (Tank 6).
- Groundwater remedial alternatives and/or source control measures should be discussed (negotiated) with the City of Bremerton to mitigate groundwater impacts to Smith Cove.
- One groundwater monitoring well should be installed down gradient of MW-5 to further assess groundwater flow direction on the eastern portion of Evergreen Park and delineate the down gradient extent of groundwater contamination.
- Additional institutional controls should be discussed with the City of Bremerton to mitigate public exposure to potentially contaminated sediments, and/or groundwater discharges.
- Groundwater monitoring and sampling should be initiated for the Sites covered under the existing Agreed Order, and the Chevron Property.
- The cause of the elevated concentrations of TPH-diesel, and TPH-oil in groundwater samples collected from MW-2 should be investigated. For example, tidal influence data may indicate groundwater flow reversal.
- Ecology should follow up with the City of Bremerton regarding the analytical results of two composite soil samples from two test pits that were excavated under Highland Avenue. The samples indicated TPH-diesel of 1,300 ppm, and 1,100 ppm, and TPH-oil of 590 ppm and 890 ppm.
- Habitat restoration measures should be negotiated, as part of the amended Agreed Order to improve the shoreline along Smith Cove.