

CHRISTENSEN PROPERTY – SUPPLEMENTAL OFF SITE
ASSESSMENT
Enumclaw, WA

Brownfields Assessment Fact Sheet # 2August 2011

Project Name	Christensen Property, Supplemental Off Site Assessment.
Location	1117 Washington Avenue, Enumclaw, WA 98038.
Site Description	<p>The Christensen property is a 0.41 acre parcel located at the northwest corner of Washington Avenue and Railroad Street in Enumclaw, WA. It is currently empty. Petroleum contamination from this site has migrated off the property into the city’s right of way on Railroad Street to the east and beneath a paved alley on the west side of the parcel. These two areas are the focus of this assessment.</p>
Site History	<p>In 1928, Shell Oil Company established a bulk oil distribution facility on the property that included 4 above ground storage tanks (ASTs) and 2 underground storage tanks (USTs) with a combined capacity of over 73,000 gallons. The facility supplied fuel dealers in the area with a variety of petroleum products which were shipped into and out of the facility by truck. Besides leaded gasoline (both regular and high octane ethyl), diesel fuel, heating oil/kerosene, and lubricating oils were handled at the site. Hans Christensen purchased the property from Shell Oil Company in 1970 and operated the business until 1983 when he leased it to Associated Petroleum Products (AAP) of Tacoma. The facility was decommissioned in the late 1980s and the last of the tanks removed in 1992. The property has been vacant since then.</p> <p>In 1996, the Railroad Street site it was listed on the Washington State Department of Ecology’s list of Confirmed and Suspected Contaminated Sites after petroleum contamination was found during utility work in 1994 to replace an old wooden storm drain in the city’s right of way on the east side of the property.</p> <p>In 2006, the King County Brownfields Program conducted a Phase II site assessment on the property. Test pit samples and soil borings confirm the release of gasoline and diesel petroleum products. These hydrocarbons are generally confined to the central interior of the site and the northeast corner of the property. Contaminants that exceed the state’s cleanup standards include benzene (0.16-5.2 mg/kg), ethylbenzene, xylenes and diesel range petroleum hydrocarbon (2,300 to 13,000 mg/kg). On site contamination is no deeper that 8 feet below ground surface which puts it well within the range of recovery by excavation. Soil contamination extends off site along Railroad Street in the vicinity of the old abandoned wooden storm drain line. It is also</p>

	<p>believed that soil contamination has migrated beneath a paved alley on the west side of the property. The offsite contamination was not been delineated in the 2006 assessment. Based upon this study, between 2,700 and 4,500 tons of soil may have to be removed and/or treated to achieve cleanup of the property. The “unrestricted use” cleanup levels for soil set by the state are 2,000 mg/kg for diesel range hydrocarbons, 0.03 mg/kg for benzene, 6 mg/kg for ethylbenzene and 9 mg/kg for xylenes.</p>
<p>King County Brownfields Program</p>	<p>The King County Solid Waste Division has received grant funds from the U.S. Environmental Protection Agency (EPA) to conduct environmental assessment on contaminated Brownfield properties. King County’s Brownfields Program uses the funds to hire consultants to conduct the assessment work on behalf of public and nonprofit entities. For more information on the Brownfields Program visit the website at your.kingcounty.gov/solidwaste/brownfields/index.asp.</p>
<p>Assessment Description</p>	<p>Using its consultant, the King County Brownfields Program conducted a supplemental Phase II site assessment on city owned rights of way beneath Railroad Street and in the alley west of the property in May 2011. Prior to mobilizing to the field, the consultant prepared a Quality Assurance Program Plan (QAPP), describing the project scope/objectives, field sampling procedures, analytical methods, and laboratory information (reporting limits, QA/QC information, etc.). The QAPP was reviewed and approved by EPA on May 2, 2011.</p> <p>A direct-push technology (DPT) drilling machine was mobilized to the site on May 17 and 18 and completed nine borings to depths up to 20 feet below ground surface (bgs). Soils were field screened for organic vapors to assist with sample comparison and collection. Twelve soil samples and two duplicates were collected from eight of the nine borings. Groundwater was collected from eight of the nine borings. A water sample was not collected from the boring B-13 because an insufficient volume of water for sampling.</p> <p>Soil and groundwater samples were sent to a laboratory to be analyzed by one or more of the following analytical methods: TPH-G by Northwest Method NWTPH-Gx; TPH-D and TPH-O by Northwest Method NWTPH-Dx, BTEX by EPA Method 8021, and halogenated VOCs by EPA Method 8260B. A final report was prepared by the contractor in June, and a planning level cleanup cost estimate was prepared in July, 2011.</p>
<p>Reason for Assessment</p>	<p>The city of Enumclaw wishes to acquire the Christensen property for possible redevelopment. In 2010, the city applied for an EPA American Reinvestment and Recovery Act (ARRA) cleanup grant under the Washington State Department of Commerce’s Brownfields Revolving Loan Fund (RLF) program to clean up the Christensen property. However, before proceeding with purchase of the site and acceptance of the grant funds, the city wants to know what the potential liability and cleanup costs might be for contamination that migrated off site, specifically under Railroad Street in the area of the former wooden storm sewer line. The purpose of this assessment is to address those questions.</p>
<p>Results</p>	<p>The investigation identified gasoline-range hydrocarbon contamination and benzene at concentrations exceeding the MTCA Method A cleanup levels in soil samples collected from two borings in the west side of Railroad Street. Soil contamination does not appear to extend beyond (east) of the center line of Railroad Street and does not appear to extend deeper than approximately 16 feet below ground surface.</p>

	<p>Gasoline and/or diesel and oil-range hydrocarbon concentrations exceed one or more MTCA Method A cleanup levels in groundwater samples collected from three located in the west side of Railroad Street. The off-site extent of hydrocarbon contamination in groundwater appears similar to the observed extent of soil contamination. Hydrocarbons were not detected in soil or groundwater samples collected from the two borings advanced in the paved alley west of the site, nor were halogenated VOCs detected in soil or groundwater samples collected from the boring advanced in the north portion of the property near the auto shop.</p>
Conclusions/ Next Steps	<p>Due to the relatively shallow depth and limited off-site extent of contamination found during this investigation, the consultant recommends a remediation strategy of soil excavation to remove contaminated source material from within the property limits. The apparent limited extent of off-site soil and groundwater contamination does not warrant excavation beyond the property line to the north or west. To address groundwater impacts in the area beneath Railroad Street, dewatering of the excavation, combined with source removal is likely to result in greatly reduced contaminant concentrations in groundwater following site restoration. Residual hydrocarbons in off site areas would be addressed through natural attenuation.</p> <p>The consultant estimates that to remediate the site, up to 4450 tons of soil would have to be removed for off site disposal. Goundwater would have to be pumped to holding tanks during excavation and tested for contamination before being either disposed of off site or discharged to the city’s stormwater system. Various work plans,permits, quality assurance and health and safety plans would have to be prepared or obtained, and monitor wells installed and sampled. A consultant would be retained to provide remedial oversight and documentation for Ecology.</p>
Contact Information	<p><u>City of Enumclaw Contact:</u> Erika Shook, Community Development Director, City of Enumclaw, 360-825-3593, eshook@ci.enumclaw.wa.us.</p> <p><u>King County Contact:</u> Lucy Auster, Senior Planner, King County Solid Waste Division, 206-296-8476, lucy.auster@kingcounty.gov.</p>

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