

Property Review

North Coast Chemical Company

6300-17th Ave. S.
Seattle, WA 98108

Prepared for

Toxics Cleanup Program
Northwest Regional Office
Washington State Department of Ecology
Bellevue, Washington

Prepared by



Science Applications International Corporation
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

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General Facility Information

Facility Name: Former North Coast Chemical Company
Facility Physical Address: 6300-17th Avenue S.
Seattle, WA 98108
Current Facility Name: Ultrablock, Inc.
Current Physical Address: 1615 S. Graham St.
Seattle, WA 98018
Current Facility Telephone Number: 206-768-0149
Current Facility Owner: Ultrablock, Inc.
Current Facility Operator: Same
Property Owner: North Coast Land Corporation (formerly known as Savolite, Inc.)
1607 Derwent Way
Delta, British Columbia V3M 6KB, Canada
Contact: Ken Hallat
Site Drainage: I-5 Storm Drain

Current Facility Information

The site is the location of the former North Coast Chemical Company facility, owned by North Coast Land Corporation, a Canadian company formerly known as Savolite, Inc. North Coast Land Corporation currently owns the 2.22-acre parcel. The site is located between I-5 and KCIA, approximately one mile east of the Lower Duwamish Waterway (Figure 1).

Land use in the vicinity is industrial. The site is bounded on the southwest by the Union Pacific railroad tracks, on the northwest by Marine Vacuum Service (a tank and bilge pumping and cleaning business), on the northeast by I-5, on the south by a Puget Sound Energy storage yard (used for storage of piping and equipment), and on the southeast by the Terranna Ruth et al. property (currently occupied by a retail tire and automotive supply business that previously stored used batteries). To the north of the site are various commercial businesses and a Big Brothers-Big Sisters facility along S. Graham St.

The current tenant is a company called Ultrablock, Inc., a manufacturer of concrete ecology blocks. Manufacturing activities take place in the west-southwestern portion of the site. Finished product is stored across the site, with the exception of the undeveloped northeast corner [16]. All of the historic structures on the site have been demolished, although most of the concrete building floor slabs remain in place [16]. In addition, Ultrablock has placed sections of concrete slab over the central area of the site where manufacturing activities are conducted. Ultrablock has reportedly made no improvements to the stormwater collection or conveyance systems at the site [16].

Ultrablock reportedly does not use or store hazardous chemicals. A nonhazardous form oil manufactured by RoMix Chemical & Brush, Inc. (RoMix), which contained food-grade mineral oil and other nonregulated proprietary ingredients, was previously used in their manufacturing process. Due to increases in concentrations of diesel-range organics and/or heavy oil-range organics (as mineral oil) in groundwater that have been attributed to the RoMix product (known as Ro-396 Release Agent), Ultrablock discontinued use of RoMix and substituted a pure vegetable oil-based form oil [16].

The site elevation is approximately 30 to 35 feet above mean sea level, except for the north-northeastern portion, which slopes up to an elevation of approximately 55 feet above mean sea level along S. Graham Street. The sloped area in the north-northeastern portion has not been developed and remains vegetated. The eastern area of the site includes a drainage ditch that collects runoff from the vegetated slopes on the north-northeastern portion of the site and from the adjacent property to the east [16]. Flow in the drainage ditch is to the south, where runoff discharges to a catch basin (Figure 2). The catch basin discharges into the stormwater system, which conveys the flow to the I-5 storm drain and ultimately to Slip 4, according to City of Seattle drainage maps.

The site is underlain by fill (maximum thickness of 4 feet) consisting of silty sand and gravel. Groundwater at the site is very shallow (generally between 0 and 7 feet bgs). There is a potential aquiclude (a thicker layer of silt) at 29 to 35 feet bgs. The gradient of the shallow water-bearing zone ranges from nearly flat to over 2 percent, fluctuating seasonally. The groundwater flow direction is variable, but is generally toward the Duwamish River. Hydraulic conductivity ranges from 6.4×10^{-5} to 1.8×10^{-7} meters per second in shallow groundwater.

Surface water in the eastern portion of the site flows to the Eastern Drainage Ditch. This open ditch begins in the northeastern portion of the site and extends along the eastern and southern borders before discharging into a culvert that passes beneath the Puget Sound Energy property to the south and ultimately to Slip 4 via the I-5 Storm Drain (Figure 2).

The current facility does not have a stormwater permit or a RCRA ID number.

Inspections

Ecology site inspections were conducted at North Coast Chemical on October 25, 1984; May 22, 1986; and March 27, 1987. On July 24, 1987, Ecology and Environment, Inc. conducted a site inspection for the U.S. Environmental Protection Agency (EPA). A preliminary hazard ranking score of "1" was assigned to the site because of the potential for surface water contamination with organic chemicals [8]. No action was recommended at the site because (a) the site was being monitored by Ecology and METRO; (b) the facility was upgrading its wastewater collection and discharge system, was constructing a runoff collection system, and was constructing a containment system for the bulk storage tanks; (c) the site has a low potential for causing human health problems or environmental damage; and (d) housekeeping practices appeared orderly.

In March 1988, the North Coast Chemical Company site was added to Ecology's Confirmed and Suspected Contaminated Sites List.

The Seattle Public Utilities/King County joint inspection team conducted an initial site visit to UltraBlock, Inc. on June 16, 2004¹. The facility was not in compliance at this time. The following corrective actions were requested:

- Improve or create spill response procedures
- Improve or purchase adequate spill response materials
- Properly educate employees

As of June 2005, a follow-up site visit had not been conducted.

Past Site Use

Three known business operations have been documented at the site since 1919. North Coast Chemical Company operated from 1919 through 1983; Savolite, Inc., which acquired North Coast Chemical in 1983, operated the facility under the North Coast name until 1991; and Ultrablock, Inc. has leased the site since 2000. Prior to 1919, the site was undeveloped.

The Former North Coast Chemical Company site operated from approximately 1919 to May 1991, and produced soap and other cleaning products. The plant was destroyed by fire in 1954 and was rebuilt in 1956. Another fire destroyed part of the main building in 1990. Although many of the former buildings had been removed by early 2000, old concrete foundations and abandoned buildings still exist.

North Coast Chemical Company used more than 600 chemicals in the manufacture of over 300 products. These consisted mostly of dry detergents and cleaners; liquid detergents and cleaners; bleach; petroleum fuel-based solvents; ammonium hydroxide; nitrate fertilizer; fabric-cleaning products; fuel oil additives; methylene chloride-based and cresylic acid-based carburetor cleaners; and parts degreasers. Classes of chemicals used in the manufacturing process included acids, bases, solvents (petroleum-based and chlorinated), oils (mineral and various vegetable-based oils), waxes, and surfactants. Heavy metals were not used in the finished products, although small quantities of copper sulfate were used in a hydrochloric acid-based product, and copper was added as a nutrient in fish fertilizer [16].

Prior to the fire in 1954, the majority of the site was unpaved, and the Main Plant Building was the central location of facility operations. Following the fire, reconstruction continued into the 1960s to include several new buildings (Figure 2). The main areas and structures at the site included:

- The Main Plant Building, located in the southwestern area of the site, which housed the Dry Mixing Plant and Dry Raw Material Storage Area.

¹ King County and Seattle Public Utilities Source Control Program for the Lower Duwamish Waterway, January 2005 Progress Report.

- The Solvent Mixing Plant, located at the base of the vegetated slope in the northeastern part of the site, which was constructed in 1986 to house petroleum fuel-based solvent mixing after three underground storage tanks (USTs) were removed in 1986 (see Bleach Plant below).
- An unpaved Drum Storage/Rinse Area, located directly west of the Solvent Mixing Plant, where raw material and returned drums were stored and washed; rinsate flowed to a sump that discharged to the sanitary sewer.
- The Finished Product Warehouse, Bleach Plant, and Boiler Room, located south of the Drum Storage/Rinse Area on the northern portion of the site; this area included four USTs which were removed in 1986, as described below.
- The Aboveground Tank Storage Area, a concrete paved area that contained five 8,000-gallon aboveground storage tanks (for wax, sodium hydroxide, mineral oil, No. 2 diesel fuel, and PS-300 boiler fuel); the area included a 10,000-gallon capacity dike to contain potential releases.
- The Liquid Soap Plant, Acid Plant, Laboratory, and Storage Area, located in the central portion of the site.
- The Outside Warehouse, located southeast of the Liquid Soap Plant, was used primarily for equipment storage
- The Flammable Storage Shed, on the southern portion of the site
- The Ammonia Plant, located southeast of the Main Plant Building

Four USTs were located at the site [16]:

- An 8,000-gallon UST located north of the Bleach Plant was installed in 1969 and stored isopropanol-kerosene-based fuel oil additive; it was removed in 1986.
- Two 12,000-gallon USTs located north of the Finished Product Warehouse were installed in 1974 and used to store isopropanol-kerosene-based fuel oil additive; when they were removed in 1986, they were observed to contain corrosion holes at the 8- to 10-foot bgs level.
- A 14,000-gallon UST (although site personnel indicated it was a 20,000-gallon capacity tank) that stored PS-300, a heavy fuel oil; the date this tank was installed is unknown. It was removed in 1986.

Prior to 1980, surface runoff was directed to the drainage ditch along the east side of the property and other unpaved areas. In the early to mid-1980s, the site was paved and improvements were made to capture runoff and direct it into the sanitary sewer system under Metro Waste Discharge Permit No. 7108 [16]. Areas that continued to discharge runoff directly to the ground included the area around the Ammonia Plant, the unpaved area west of the Main Plant Building, and an unused and unpaved area east of the Outside Warehouse [16].

Non-contact water associated with boiler blowdown in the Boiler Room, the Ammonia Plant, and the Liquid Soap Plant was discharged to the drainage ditch along the east side of the property [16]. After 1986, boiler blowdown water was discharged to the sanitary sewer system.

North Coast Chemical Company ceased operations in 1991.

Spills and Releases

A chemical analysis of stormwater samples, conducted in 1977, showed that wastes from the North Coast Chemical site were adding contaminants to the Eastern Drainage Ditch, which flows to Slip 4. Sampling results for pH, conductivity, total phosphate, and ammonia were outside of acceptable discharge limits.

Subsurface investigations beginning in 1987 confirmed a release of petroleum hydrocarbons, and three separate areas where chlorinated solvents were released to the soil and groundwater. Elevated concentrations of dissolved arsenic have been confirmed in groundwater but may be associated with natural mineral content of the soil.

Past releases of halogenated volatile organic compounds (HVOCs), petroleum hydrocarbons, and dissolved arsenic to soil and groundwater have been inferred based on the results of site investigations. The HVOCs in soil and groundwater are attributed to historical releases that occurred during facility operations from 1919 to 1991 [14]. The releases at the Liquid Soap Plant included tetrachloroethene (PCE) and/or trichloroethylene (TCE), chloroform, petroleum hydrocarbons as gasoline-range organics (GRO), and benzene, toluene, ethylbenzene, and xylenes (BTEX). Chlorobenzene and dichlorobenzene isomers have also been detected in groundwater.

The suspected release of PCE was likely associated with formulation of fabric cleaners. Releases of TCE were likely associated with the formulation of degreasers. These products were known to have been mixed at the Liquid Soap Plant. Releases of chloroform were likely to be associated with the production of cleaning solvent products [14].

The concentrations of GRO and BTEX are not believed to be associated with a release of gasoline because available information does not indicate that gasoline was used or stored at the site. It is more likely, based on the facility's operational history, that mineral spirits and petroleum solvents (which were used as raw chemicals) may have been released [14].

Environmental Sampling and Remediation

Site investigation activities were conducted between 1987 and 2002 by the following firms: Ecology and Environment; Northwest Environmental Services, Inc.; AGI; Enviro, Inc.; Harding Lawson Associates; EMCON Northwest, Inc.; Kennedy/Jenks; Farallon Consulting; and Hart Crowser, Inc. A number of hazardous substances have been confirmed as being present in soil and/or groundwater at the site, including:

- Total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO), diesel-range organics (DRO), and oil-range organics (ORO);
- Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs)
- Tetrachloroethene (PCE)
- Trichloroethylene (TCE)
- cis-1,2-Dichloroethene (cis-1,2-DCE)
- trans-1,2-Dichloroethene (trans-1,2-DCE)
- 1,1-Dichloroethene (1,1-DCE)
- Vinyl chloride
- 1,1,1-Trichloroethane (1,1,1-TCA)
- 1,1-Dichloroethane (1,1-DCA)
- 1,2-Dichloroethane (1,2-DCA, also known as EDC)
- Chlorobenzene
- 1,2-, 1,3-, and 1,4-Dichlorobenzene
- Methylene chloride
- Chloroform
- Arsenic
- Cadmium
- Chromium
- Lead

In June 2000, Farallon conducted an interim remedial action to remove a source of PCE in soil near the Drum Storage Area in the northern portion of the site. Approximately 325 cubic yards of soil was removed; approximately 71 tons (containing PCE) was transported offsite for disposal. The remainder was left on site for use as fill during grading activities.

From 2000 to 2003, quarterly groundwater monitoring was conducted. Results indicate that two water-bearing zones are present under the site. Groundwater flow direction in the northwestern portion of the site was generally to the west; in the central/southern portions of the site, the flow direction varied from south/southeast to south and west [16]. Natural attenuation of HVOCs via biodegradation appeared to be occurring throughout the site; concentrations above MTCA Method C cleanup levels remained along the southern and western property boundaries.

In November/December 2003, additional subsurface investigation was performed to better characterize the horizontal and vertical distribution of HVOCs in soil in preparation for developing a comprehensive cleanup action.

In August 2005, Farallon Consulting submitted a scope of work for an interim remedial action in the central area of the site (near the Liquid Soap Plant) [14]. The proposed action included treatment of saturated soil and groundwater by enhanced bioremediation through injection of HRC as the preferred electron donor to increase the abundance of dehalococoides bacteria (DHCs). The DHCs include a consortium of bacterial strains that are known to biodegrade a variety of HVOCs, including PCE and TCE and their degradation products. Microbial testing conducted during the Focused Feasibility Study (FFS) showed that concentrations of DHCs

increased in the presence of HRC, and that competing bacteria consistently decreased [16]. The results of the FFS indicated that enhanced bioremediation is a viable remedial alternative at the Former North Coast Chemical Company site. The interim remedial action in the central portion of the site was intended to provide information to support the effective application of this technology at the central area as well as other source areas of HVOCs that have been identified [14].

Prior to HRC injection, a baseline groundwater sampling event was to be conducted at 10 site monitoring wells. Forty-one injection borings spaced 10 feet apart were proposed to be drilled in the target area to a depth of 20 feet below ground surface (bgs) to inject HRC. Two additional shallow groundwater monitoring wells were proposed to be installed downgradient of the injection area. According to the project schedule, the interim remedial action was scheduled to be completed in May 2006; implementation of the final cleanup action was to take place during September to December 2006 [14].

Although none of the samples collected at this site were analyzed for polychlorinated biphenyls (PCBs), information on historic and current site use does not indicate the presence of any PCB sources.

Potential for Sediment Recontamination

Concentrations of HVOCs and petroleum hydrocarbons have been confirmed in soil and groundwater throughout the site. The direction of groundwater flow suggests that contaminants in groundwater may be discharged to the southern portion of the east drainage ditch, although this has not been confirmed. Results from monitoring well MW-4 (adjacent to the southern portion of the drainage ditch) indicate that low concentrations of TCE, DCE isomers, and vinyl chloride may potentially leach into the drainage ditch surface water. However, the half-lives of these volatile chemicals in surface water are short, and degradation and/or volatilization would be expected to occur rapidly. It is believed to be unlikely that HVOCs in groundwater will reach Slip 4.

Detected chemicals in soil or groundwater for which sediment screening levels have been developed are 1,2-dichlorobenzene, 1,4-dichlorobenzene, arsenic, lead, naphthalene, cadmium, and chromium. Maximum detected concentrations of these contaminants in soil and groundwater were compared to soil-to-sediment and groundwater-to-sediment screening levels², as shown below. Contaminants present in soil or groundwater at concentrations below these screening levels are not likely to pose a significant risk of sediment recontamination.

²Soil and Groundwater Screening Criteria, Source Control Action Plan, Slip 4, Lower Duwamish Waterway. Prepared for Washington State Department of Ecology by Science Applications International Corporation (SAIC), Bothell, WA. August 2006.

| Chemical | Max. Detect in Soil (mg/kg) | Soil-to-Sediment Screening Level (mg/kg) | Max. Detect in Groundwater (ug/L) | Groundwater-to-Sediment Screening Level (ug/L) |
|---------------------|------------------------------------|---|--|---|
| 1,2-Dichlorobenzene | 14 | 0.068 | 640 | 5.2 |
| 1,4-Dichlorobenzene | 5.3 | 0.27 | 230 | 21 |
| Arsenic | 7.8 | 12,000 | 52.7 | 370 |
| Lead | 50 | 1,300 | 14.3 | 13 |
| Naphthalene | ND | | 16.87 | 92 |
| Cadmium | ND | | 15.1 | 3.4 |
| Chromium | ND | | 17.8 | 320 |

Maximum detected concentrations of 1,2-dichlorobenzene and 1,4-dichlorobenzene in soil and groundwater exceed their respective screening levels. In addition, lead and cadmium in groundwater slightly exceed the groundwater-to-sediment screening levels. However, concentrations of 1,2- and 1,4-dichlorobenzene in the monitoring well closest to the east drainage ditch (MW-4) have consistently been below detection in the 12 rounds of sampling conducted between June 1993 and September 2004, except for two detections of 1,2-dichlorobenzene (8.07 ug/L in June 2000 and 1.15 ug/L in September 2001).

Because monitoring well MW-4 has generally been free of contaminants of concern with respect to sediment recontamination, and because the site is currently undergoing remediation to mitigate the release of HVOCs and other contaminants, historic practices at this site do not pose a significant risk of Slip 4 sediment recontamination.

Although none of the samples at this site were analyzed for PCBs, no historic or current sources of PCBs were identified. Therefore, this site is not believed to represent a potential source of PCBs to the storm drain system or Slip 4 sediments.

An inspection of the operations of Ultrablock, Inc., the current site tenant, was conducted in June 2004, and several recommendations were made to reduce the potential for contamination of storm water. It is not known whether these recommendations were implemented. The compliance status of Ultrablock, Inc. is considered a data gap.

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| Facility Name | Former North Coast Chemical Company |
| Current Use | Manufacture of Ecology blocks (Ultrablock, Inc.) |
| Chemicals of Concern for Sediment Recontamination | dichlorobenzene, metals |
| Pathways to Sediments | I-5 Storm Drain |
| Data Gaps | Stormwater compliance status of Ultrablock, Inc. |