

**TECHNICAL MEMORANDUM  
BENEFICIAL LAND AND WATER USE SURVEYS**

**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**

February 21, 2003



Prepared by:

*EnviroLogic Resources, Inc.*  
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February 25, 2003  
10077.004

Oregon Department of Environmental Quality  
Northwest Region  
2020 SW Fourth Avenue  
Suite 400  
Portland, Oregon 97201-4987

**VIA Hand Delivery**

**Attention: Anna Coates**

**Subject: Technical Memorandum  
Beneficial Land and Water Use Surveys  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon  
DEQ ECSI File #2277**

Dear Ms. Coates:

Enclosed are three bound and one unbound copies of the above-referenced document. This technical memorandum is being submitted to you on behalf of the Astoria Area-Wide PRP group as described in "RI/FS and IRAM Development Work Plan, Phase 1," dated July 15, 2002. These investigations have been conducted under DEQ Order No. ECSR-NWR-01-11.

Please call me at (503)768-5121 if you have any questions or comments.

Sincerely,  
***EnviroLogic Resources, Inc.***

Thomas J. Calabrese, R.G.  
Principal/Hydrogeologist

cc: Distribution list attached

clients/port of astoria/004GWCharacterizatioon/BeneficialUseSurvey/deq022503.doc

Ms. Anna Coates  
February 25, 2003  
Page 2

**ASTORIA AREA-WIDE PETROLEUM SITE  
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Astoria Area-Wide Petroleum Site  
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**February 21, 2003**

**Prepared for**

**Astoria Area-Wide PRP Group**

**Prepared by:**

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**February 21, 2003**

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This report has been prepared by *EnviroLogic Resources, Inc.*, of Portland, Oregon.

*EnviroLogic Resources, Inc.* Project No. 10077.004

By

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## **BENEFICIAL LAND AND WATER USE SURVEYS**

### **Remedial Investigation/Feasibility Study**

#### **Astoria Area-Wide Petroleum Site**

#### **Astoria, Oregon**

### **1.0 INTRODUCTION**

This technical memorandum presents the results of an evaluation of the current and reasonably likely future land and water uses at the Astoria Area-Wide Petroleum Site in Astoria, Oregon. The Oregon Department of Environmental Quality (DEQ) issued a unilateral order requiring the investigation and potential cleanup of properties in an area near the Port of Astoria in Astoria, Oregon. The Order (DEQ Unilateral Order No. ECSR-NWR-01-11) was issued to several of the current and former facility operators, property owners, and leaseholders that have engaged in industrial and commercial activities. ChevronTexaco Products Company (ChevronTexaco), Delphia Oil Company (Delphia), McCall Oil and Chemical Company (McCall), Ed Niemi Oil Company (Niemi Oil), Flying Dutchman and Harris Enterprises (Harris/Van West), Port of Astoria (the Port), Qwest Communications International (Qwest), and Shell Oil Company (Shell), collectively potentially responsible parties (PRPs), are identified in the Order and have agreed to comply with its requirements. The area of interest is termed the Astoria Area-Wide Petroleum Site (Astoria Area-Wide) and the Regional Study Area (RSA) within which investigations will be focused is shown on Figure 1.

Background information, including a summary of previous investigations, is provided in the “RI/FS and IRAM Development Work Plan, Phase 1” (Work Plan) by *EnviroLogic Resources*, dated July 15, 2002 (*EnviroLogic Resources*, 2002). The Work Plan is on file at the DEQ’s Northwest Region offices and can be viewed at the following URL: <http://www.h2ogeo.addr.com/Astoria/index.php>. Soil and ground-water samples were collected from soil borings drilled at the Astoria Area-Wide site during August and

September 2002 following the procedures in the Work Plan and are reported in “Technical Memorandum, Phase 1 Source/Soil Characterization,” dated January 30, 2003 (*EnviroLogic Resources*, 2003).

As part of evaluating the possible risk posed to human health or the environment by petroleum compounds encountered at the site, beneficial land and water uses within the RSA are identified. In addition to risk assessment, the beneficial use determinations are critical in selecting protective and appropriate remedial options (interim and final) at the site. Current and reasonably likely future land and water uses for the Astoria Area-Wide site and the surrounding area were reviewed for this survey.

## **2.0 HYDROGEOLOGIC SITE CHARACTERIZATION**

The Astoria Area-Wide site comprises properties located at and near the Port in Astoria, Oregon (Figure 1). The Regional Study Area (RSA) includes the Astoria Area-Wide site and the surrounding areas as shown on Figure 2. The RSA is located in Section 7, Township 8 North, Range 9 West, and Section 12, Township 8 North, Range 10 West, Willamette Base and Meridian. The RSA extends beyond the Astoria Area-Wide subject site: to the northeast beyond the West Mooring Basin and to Youngs Bay to the southwest. Within the RSA is the Astoria Area-Wide site, which includes that property bounded by Marine Drive to the southeast, Portway to the northeast, the Columbia River to the northwest, and Hamburg Street (including the former McCall bulk plant) to the southwest.

A topographic high to the east forms a prominent hill overlooking the RSA. West Marine Drive (US Highways 26, 30, and 101) is located on a topographic bench approximately 15 feet above the level of the Port facilities. The Columbia River flows to the west on the north side of the Astoria Area-Wide site. Young's Bay lies to the southwest.

### **2.1 LOCALITY OF THE FACILITY**

Any point where a human or ecological receptor contacts or is reasonably likely to contact chemical constituents from the Astoria Area-Wide site is considered the locality of the facility. This includes areas where there is a likelihood of migration of chemicals over time. Chemical data from soil, ground water, and sediment samples have been reviewed from past investigations and is currently being collected for the Astoria Area-Wide site. Because the locality of the facility is currently being defined through the remedial investigation (RI) process, the RSA will serve as the locality of the facility for this beneficial land and water use survey. As the RI is being completed, the locality of the facility will be determined and this document will be updated accordingly.

## **2.2 CONCEPTUAL SITE MODELS**

A conceptual site model (CSM) identifies all potential or suspected sources of contamination, potentially contaminated media, potential pathways of exposure, and potential receptors. The conceptual human health site exposure model is discussed in Section 2.5.1 and ecological receptors are discussed in Section 2.5.2 of the Work Plan (*EnviroLogic Resources, 2002*). Potential receptors for the conceptual human health site exposure model include on-site workers and future trench workers. These receptors could be exposed by ingestion and dermal contact with soil, ingestion and dermal contact with contaminated ground water, and inhalation of vapors from constituents in the soil and ground water. Potential ecological receptors include aquatic species inhabiting the waters and sediment of the adjacent surface water bodies.

## **2.3 HYDROGEOLOGY IN THE REGIONAL STUDY AREA**

The Work Plan (*EnviroLogic Resources, 2002*) presents a detailed discussion of the local hydrogeology of the area. Much of the RSA has been filled with dredged spoils based on historical photographic information and information gleaned from previous subsurface investigations, and the most recent soil investigation conducted at various locations at the Astoria Area-Wide site. The Columbia River historically flowed over much of the northern portion of the RSA, as shown in photographs taken in 1915 and 1920. Since 1915, dredged spoils were used to fill much of this area, creating additional land base. Piers 1, 2, and 3 were constructed to service Slips 1 and 2. The Port maintains these slips by generally dredging annually. The dredged spoils are deposited in the river on the outgoing tide from November to the end of February under a flow-lane permit. When dredging is conducted at other times, the dredged material is stored in-water at the base of Slip 2 until it can be disposed.

Boring logs recorded during previous and current investigations indicate that the soil types are highly variable across the site. However, most soils on the properties below West Marine Drive are sands with occasional layers of silt. The deposition of the fill materials was not

conducted in a single event, and may have involved different source materials from different source locations. The variability in the soil types is demonstrated on a cross section of the conceptual hydrogeologic model shown on Figure 3 in the Work Plan (*EnviroLogic Resources, 2002*). Boring logs from the current investigation at the Astoria Area-Wide site are presented in Appendix A of the Phase 1 Source/Soil Characterization report (*EnviroLogic Resources, 2003*).

The depth to ground water is variable across the site, ranging from 7 feet in depth near the Columbia River, to 19 feet in depth near West Marine Drive. Variation in the ground-water elevation generally reflects the topography, as the properties along West Marine Drive are approximately 15 feet higher in elevation than those along Industry Street and near the Columbia River. A retaining wall is present along the north sides of several of the sites along West Marine Drive.

Ground water is believed to generally flow in a northwest direction except where diverted by storm-water management features and other intersecting utility lines.

### **3.0 LAND USE DETERMINATION**

The designated zonings in the RSA are Shoreland-Marine Industrial (S-1) primarily within the slips and northwest of the piers; Aquatic Development (A-1, A-2, and A-2A) within the slips, west of Pier 3, and east of the West Mooring Basin; and General Commercial (C-2 and C-3) (Figure 3). Southwest of Pier 3 is Aquatic Natural (A-4), and west of Pier 3 is Aquatic Conservation area (A-3).

“Development Aquatic areas are designated to provide for navigation and other identified needs for public, commercial, and industrial water-dependent uses. The objective of the Development Aquatic designation is to ensure optimum utilization of appropriate aquatic areas by providing for intensive development. Such areas include deepwater adjacent to or near shoreline, navigation channels, sub-tidal areas for in-water disposal of dredged material, areas of minimal biological significance needed for uses requiring alteration of the estuary, and areas that are not in Conservation or Natural designations” (City of Astoria, 1998).

“Natural Aquatic areas are designated to assure the protection of significant fish and wildlife habitats; of continued biological productivity within the estuary; and of scientific, research, and educational needs. These areas are managed to preserve natural resources in recognition of dynamic, natural, geological, and evolutionary processes. Natural Aquatic areas include all major tidal marshes, tide flats, and seagrass and algae beds. The designation is relatively free of human influence” (City of Astoria, 1998).

“Conservation Aquatic areas are designated for long-term uses of renewable resources that do not require major alterations of the estuary, except for the purpose of restoration. They are managed for the protection and conservation of the resources found in these areas. The Conservation Aquatic designation includes areas needed for the maintenance and enhancement of biological productivity, recreational resources, aesthetic features and aquaculture. The Conservation Aquatic designation includes areas that are smaller or of less biological importance than Natural Aquatic areas. Areas that are partially altered possess the

resource characteristics of other aquatic areas are also included in this designation” (City of Astoria, 1998).

Southeast of the commercial zoning are high-density residential-zoned areas (R-3). A portion of the R-3 zoned area is along the south side of West Marine Drive, along the southern edge of the RSA. The majority of the properties within the southeast portion of the RSA are commercial (C-3).

The RSA is within the Port of Astoria Subarea Plan in the Astoria Comprehensive Plan (City of Astoria, 1998). Aquatic features of the RSA within this Subarea include deep waters off of the Port piers and the West Mooring Basin. Much of the aquatic habitat is said to already be degraded due to Port and mooring basin use and historic cannery use. The area is almost entirely developed for Port facilities. The only shoreland vegetation consists of upland grasses, scotch broom, and other shrubs located on and adjacent to Pier 3. The subarea has little wildlife value (City of Astoria, 1998).

In the marine industrial area, which includes the properties north of Industry Street and the Piers, uses currently include the Port of Astoria office and shop buildings, the Oregon State Police station, Bergeson, Cowlitz Clean Sweep, and vacant land used as storage areas for commercial fishing supplies. The vacant land once housed a veneer warehouse and a steel-works plant. Southwest of this area at the current location of Cowlitz Clean Sweep was the former Mobil/Niemi Oil Bulk Plant. Most of the fuel storage structures have been demolished and or removed from this site. The general commercial area southeast of Industry Street and northwest of West Marine Drive currently includes Delphia Oil, Niemi Cardlock Facility, Qwest garage, ILWU Local 50 (one building), Youngs Bay Texaco gas station with a carwash facility, a 4-apartment residential building, Chevron Lube and Oil, and Val’s Automotive. Southwest of Marine Drive are more small commercial businesses including Johnson’s One Stop gas station. Along Industry Street is the trolley line with the trolley barn across from Qwest on the northeast side of Industry Street. The Portway Tavern is on the east side of Portway Street. The Red Lion Hotel is to the northeast of the Astoria

Area-Wide site along the Columbia River. West of Hamburg Street is the former Chevron/McCall Bulk Plant that is currently vacant land. Outside of the Astoria Area-Wide site are Do-It Best/Darigold Feed Store, Astoria Mini Storage, and the Bayshore Motor Inn.

Pier 1 is currently vacant with one small structure. The Marine Spill Response Corporation, Astoria Pacific Foods, and West Bay Sardine and Seafood Producers currently occupy Pier 2. Piers 1 and 2 also provide berthing for vessels calling at the Port of Astoria. Pier 3 is currently vacant with demolition/construction operations occurring toward the west side of the pier.

The reasonably likely future land use of the RSA and more specifically the Astoria Area-Wide site is expected to be similar to current uses. Parts of the Astoria Area-Wide site are currently undergoing redevelopment, but the uses will remain industrial and commercial as the zoning permits. In the future, there may be marine storage and services on Pier 3. Redevelopment plans of the Port of Astoria on properties the Port owns within the RSA include a marine store on the former Chevron/McCall Bulk Plant site and possibly on the former Mobil/Niemi Oil Bulk Plant site. In addition, the Port's charter prohibits residential (e.g., waterfront condos) development on Port property.

#### **4.0 CURRENT AND REASONABLY LIKELY FUTURE BENEFICIAL WATER USES**

Existing water resources in the RSA include the City of Astoria municipal water supply, ground water, and surface water. The city water supply is readily available in and around the RSA and users in the area rely exclusively on the municipal water system to meet drinking and other water needs. Municipal water in and adjacent to the RSA is currently used for drinking and domestic, industrial (e.g., industrial process water uses), and engineering (e.g., heat exchange, fire suppression) uses. The municipal water supply system will continue to be the reasonably likely future water source for users in the RSA and surrounding areas.

Based upon a well survey, there are no ground water supply wells within the RSA. The well survey is described in more detail in Section 4.2. The RSA and adjacent areas do not currently use ground water to meet drinking and other water needs and ground water is not likely to be a water source in the future because all water is supplied by the City of Astoria.

Surface waters bordering the RSA include the Columbia River on the east and northwest and Youngs Bay to the west. Beneficial surface water uses include commercial navigation, commercial and recreational fishing, aquatic life/habitat, recreation, and aesthetic quality. The river and sediment pore water serve as or contribute to habitat for aquatic life, including mammals, birds, fish, macroinvertebrates, and benthic organisms. Slips 1 and 2 are used primarily for commercial/marine use. Boats dock at Piers 1, 2, and the West Mooring Basin.

No current water diversions from the Columbia River have been identified in the RSA. A former water tower existed within the RSA on Port of Astoria property. This 10,000-gallon water tank, which was used to store Columbia River water for on site fire suppression, was removed in April 2002.

#### **4.1 WATER SUPPLIER**

According to Mike Caccavano of the City of Astoria Public Works engineering department, the source of drinking water in and near the RSA is the City water system. All residences and commercial buildings within and near the RSA are connected to the city water supply. From the 1880s to the present, the City of Astoria has received its principal water supply from the Bear Creek Basin, a forested watershed on the west slopes of Wickiup Mountain. This watershed is capable of and will continue to be the City of Astoria's water supply in the foreseeable future. The City does not operate ground-water supply wells or surface-water diversions/intakes within or near the RSA. The City also does not have water rights near the RSA.

#### **4.2 WELL SURVEY**

This beneficial use evaluation included a ground-water well survey. A water well log search was performed using the Ground-water Resource Information Distribution (GRID) database provided on the Oregon Water Resources Department (WRD) website to determine if there is a record of beneficial uses of ground water in the RSA. The area searched includes Sections 7 and 18, Township 8 North, Range 9 West, and Sections 12 and 13, Township 8 North, Range 10 West, Willamette Base and Meridian. No water-supply wells were identified within the RSA. Because there are no water-supply wells in the RSA, and all property owners have access to City water, a door-to-door/postcard survey was not performed. No agricultural land use requiring ground water currently exists in the RSA and will not likely occur in the future. The only wells located within the RSA and adjacent areas are ground-water monitoring wells used to assess ground-water quality and hydrologic parameters. Ground-water supply is not likely to become a water-supply source in the foreseeable future because all water is supplied by the City of Astoria.

### **4.3 WATER RIGHTS**

A water rights search was performed on the Water Right Information System (WRIS) on the WRD website. The area searched includes Township 8 north, Range 10 west, Sections 12 and 13; and Township 8 north, Range 9 west, Sections 7 and 18. The RSA is included within this broader area. Four water-right permits belonging to the City of Astoria were listed: S-27092, S-31880, S-31881, and S-13424. The water sources for these rights include Youngs River and Youngs River Reservoir, Bear Creek and Reservoir, and Cedar Creek. These water rights are not within or near the RSA.

### **4.4 DEVELOPMENT TRENDS AND PATTERNS**

Parts of the Port of Astoria property in the RSA are currently being redeveloped. Historically the property has been primarily industrial with commercial business. The trend appears to be toward more commercial/marine with less emphasis on industrial development. According to the City of Astoria Comprehensive Plan (1998d), “major Port development will be encouraged at the existing Port docks.” The water supply for these future developments is reasonably likely to remain municipal, and the City of Astoria’s sources are capable of providing for this development. The City of Astoria Land Use and Zoning Map (City of Astoria, 1998) shows the land area around the Astoria Area-Wide site is primarily zoned for commercial and industrial uses along with aquatic development within the Slip and river areas.

## 5.0 REFERENCES

City of Astoria, 1998, Astoria Comprehensive Plan, 1979, Updated May 1998.

City of Astoria, 2002, Astoria Development Code, October 1992, Updated January 2002.

*EnviroLogic Resources, Inc.*, 2002, RI/FS and IRAM Development Work Plan Phase 1, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated July 15, 2002.

*EnviroLogic Resources, Inc.*, 2003, Technical Memorandum, Phase 1 Source/Soil Characterization, Remedial Investigation/Feasibility Study, Astoria Area-Wide Petroleum Site, Astoria, Oregon: consultant report dated January 30, 2003.

Oregon Department of Environmental Quality, 1997a, Waste management and cleanup environmental cleanup statues and rules: Oregon Department of Environmental Quality, June 1997.

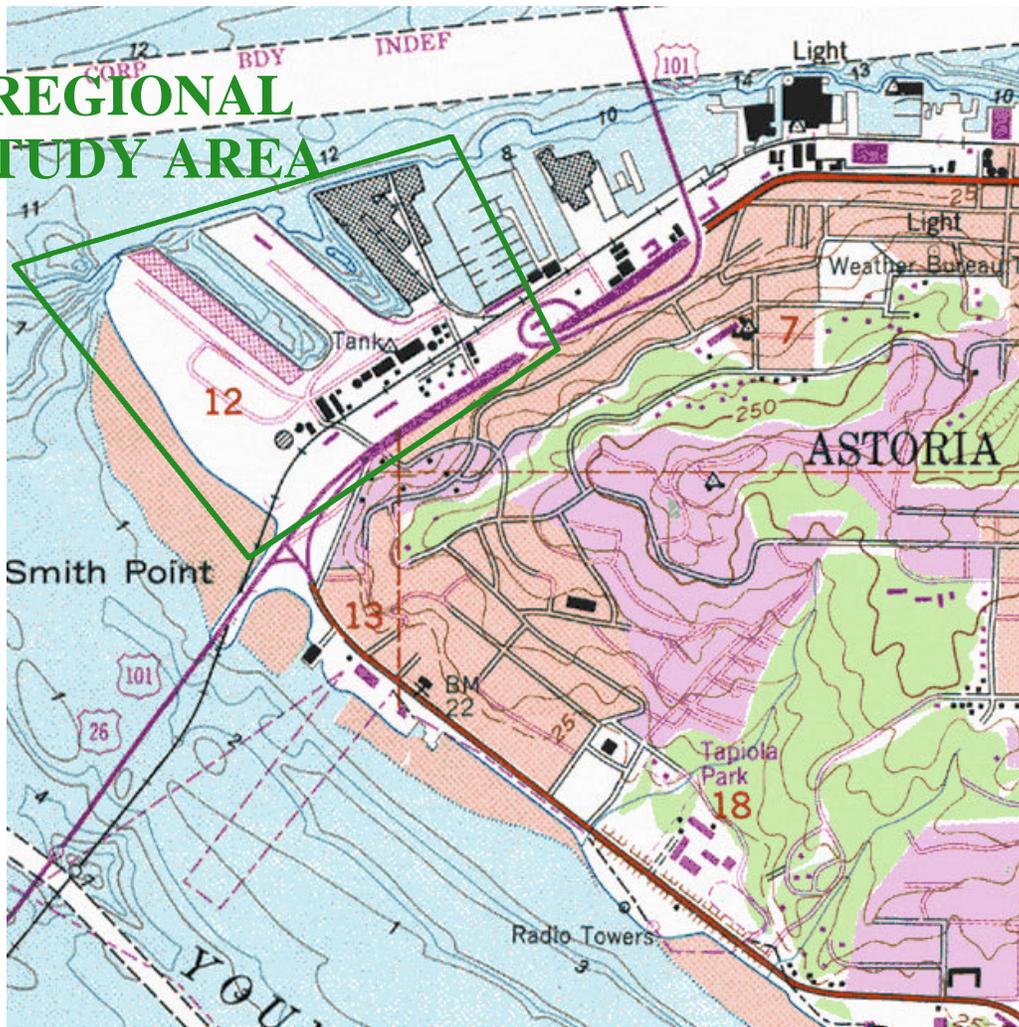
Oregon Department of Environmental Quality, 1998c, Final Guidance, Consideration of Land Use in Environmental Remedial Actions: Oregon Department of Environmental Quality, Waste Management and Cleanup Division, July 1, 1998.

Oregon Department of Environmental Quality, 1998d, Final, Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites: Oregon Department of Environmental Quality, Waste Management and Cleanup Division, July 1, 1998.

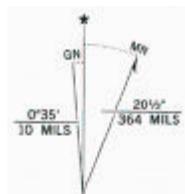
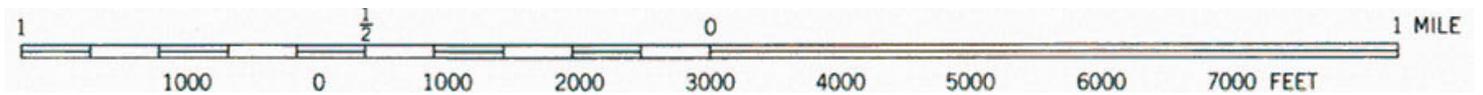
***FIGURES***

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# REGIONAL STUDY AREA



(from USGS, Astoria {1984}, OR 7.5' Quadrangles)



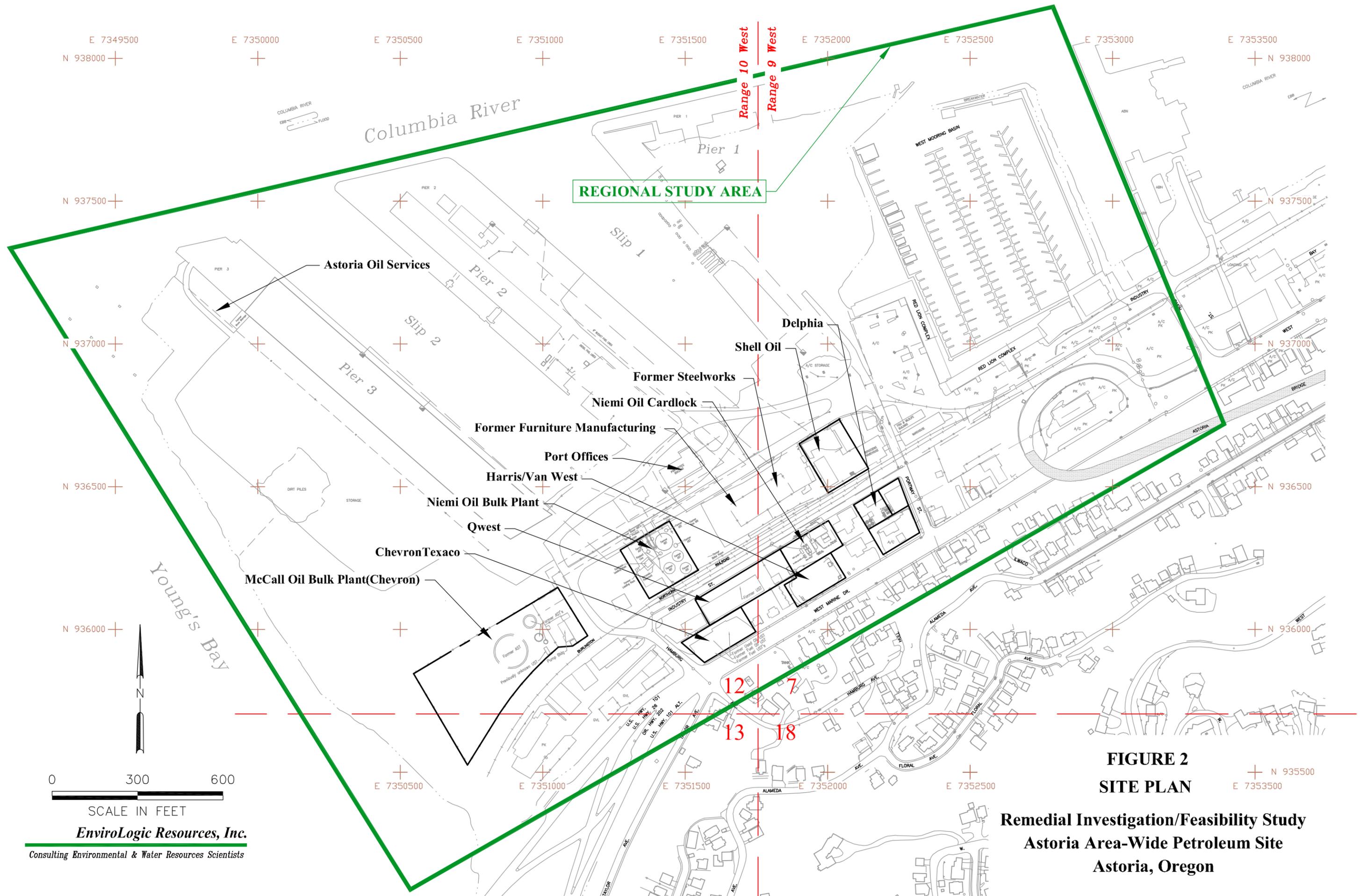
**FIGURE 1**

## **SITE LOCATION**

**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**

***EnviroLogic Resources, Inc.***

*Consulting Environmental & Water Resources Scientists*



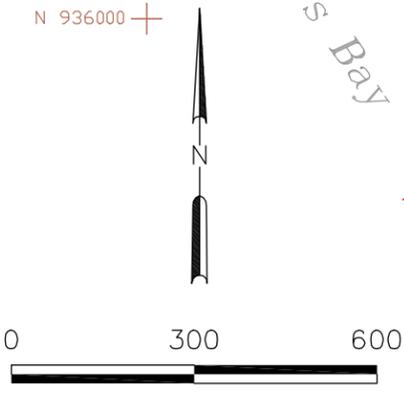
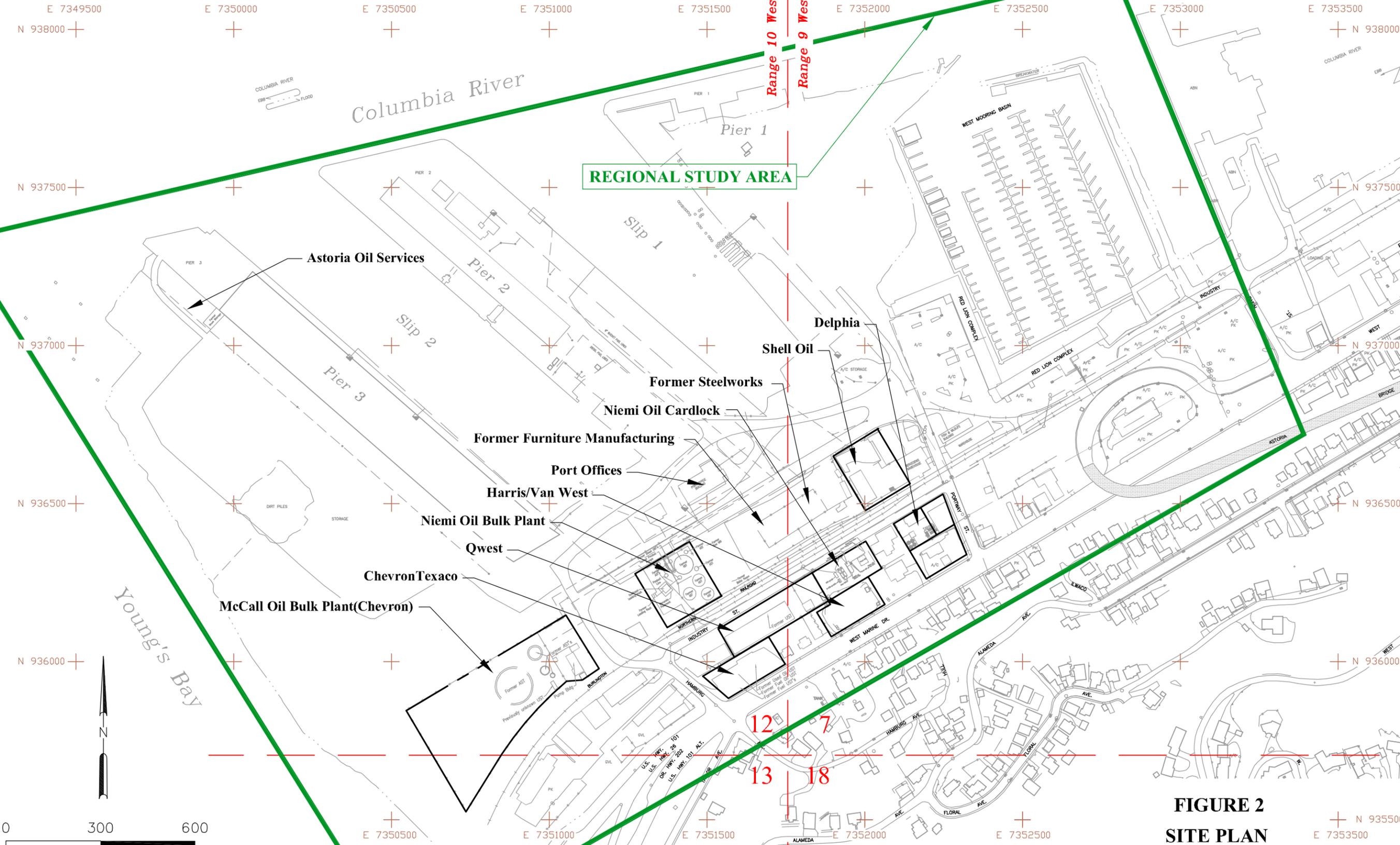
**REGIONAL STUDY AREA**

**Range 10 West**

**Range 9 West**

**FIGURE 2  
SITE PLAN**

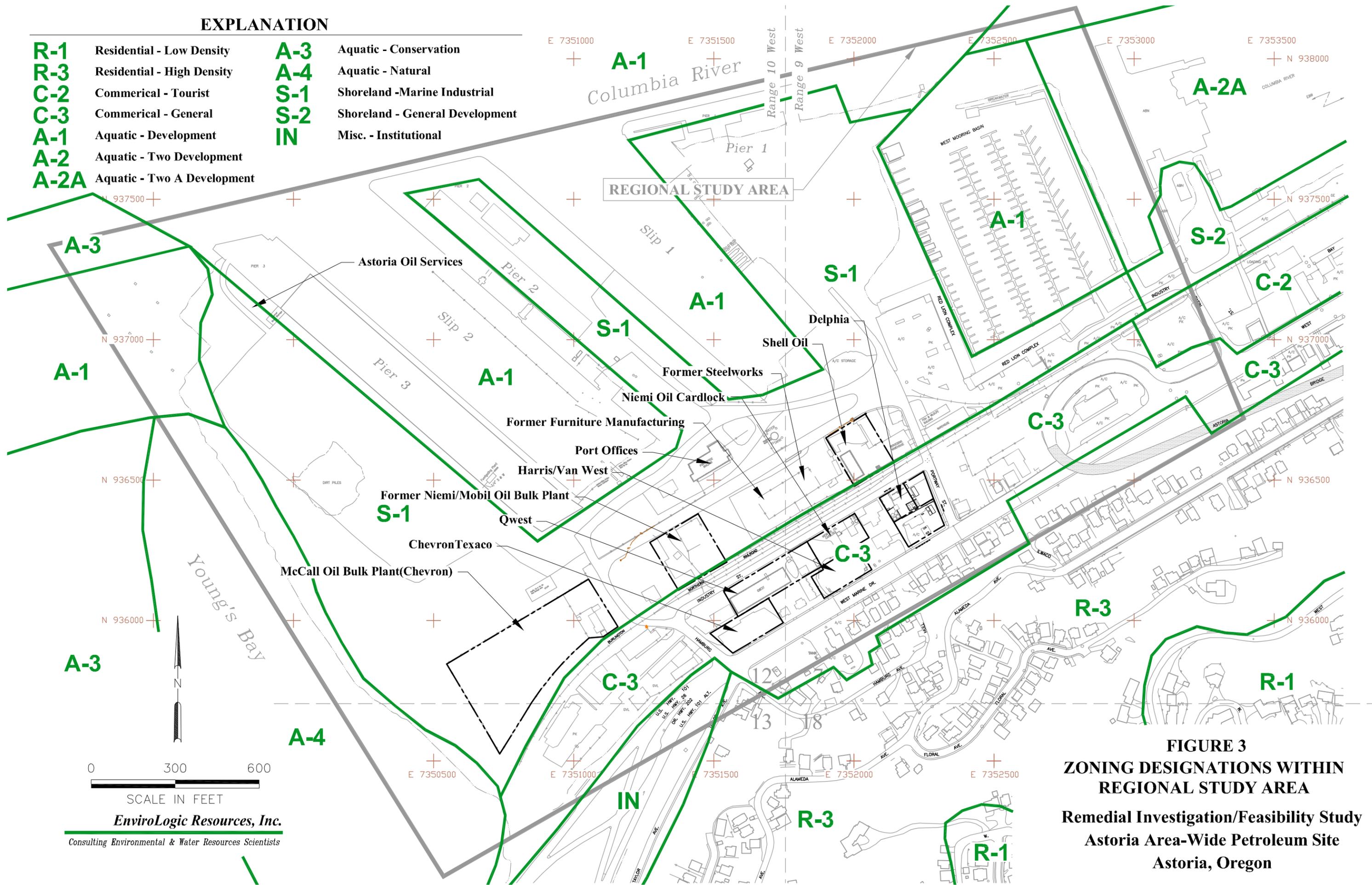
**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**



**EnviroLogic Resources, Inc.**  
Consulting Environmental & Water Resources Scientists

**EXPLANATION**

- |             |                             |            |                                 |
|-------------|-----------------------------|------------|---------------------------------|
| <b>R-1</b>  | Residential - Low Density   | <b>A-3</b> | Aquatic - Conservation          |
| <b>R-3</b>  | Residential - High Density  | <b>A-4</b> | Aquatic - Natural               |
| <b>C-2</b>  | Commerical - Tourist        | <b>S-1</b> | Shoreland -Marine Industrial    |
| <b>C-3</b>  | Commerical - General        | <b>S-2</b> | Shoreland - General Development |
| <b>A-1</b>  | Aquatic - Development       | <b>IN</b>  | Misc. - Institutional           |
| <b>A-2</b>  | Aquatic - Two Development   |            |                                 |
| <b>A-2A</b> | Aquatic - Two A Development |            |                                 |



**FIGURE 3**  
**ZONING DESIGNATIONS WITHIN**  
**REGIONAL STUDY AREA**  
**Remedial Investigation/Feasibility Study**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**