

Upland Source Control at the Portland Harbor Superfund Site

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State of Oregon
Department of
Environmental
Quality



This report prepared by:

Oregon Department of Environmental Quality
811 SW 6th Avenue
Portland, OR 97204
1-800-452-4011
www.oregon.gov/deq

Contact:
Jim Anderson
(503) 229-6825

This document is posted on DEQ's web page at
<http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/jointsource.htm>.

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1.0 Introduction

On December 1, 2000, a section of the lower Willamette River within the City of Portland, the Portland Harbor, was added to the Superfund National Priority List (NPL). In February 2001, the Oregon Department of Environmental Quality (DEQ), United States Environmental Protection Agency (EPA), and other governmental parties¹ signed a Memorandum of Understanding (MOU) that provided a framework for cooperation in the investigation and cleanup of the Portland Harbor Superfund Site to optimize federal, state, tribal and trustee expertise and available resources.

Under the 2001 MOU, EPA was designated as the Lead Agency for investigating and cleaning up “in-water” contamination in the Harbor, i.e., contamination in the river water and underlying sediment using federal Superfund authorities. DEQ, using state cleanup authority, was designated as the Lead Agency for identifying and controlling “upland” sources of contamination, i.e., those sources of pollution adjacent to or near the river that may be contaminating river water or sediments. To coordinate in-water cleanup and upland source control work, the MOU directed DEQ and EPA to jointly develop a source control strategy that defines a process for identifying and controlling potential sources of contamination threatening the river.

DEQ and EPA finalized the Portland Harbor Joint Source Control Strategy (JSCS) in December 2005². The overarching goal of the JSCS is to identify, evaluate and control sources of contamination that may affect the Willamette River in coordination with the objectives and schedule for the Portland Harbor remedial investigation and feasibility study (RI/FS). Upland source control is necessary to allow cleanup of the river to proceed without risk of significant recontamination. DEQ is currently implementing the JSCS in the Portland Harbor Superfund Site study area – approximately River Mile (RM) 1.9 to River Mile 11.8³.

The JSCS requires DEQ to prepare a Milestone Report on a quarterly basis that summarizes the status of DEQ’s upland source control work. The report submittal schedule has been changed to bi-yearly. This is the tenth Milestone Report. Milestone Reports are submitted to EPA, and provide the basis for potential meetings with EPA and our government partners to discuss site prioritization and source control progress. These reports also serve as documentation of progress on river-wide source control within Portland Harbor.

¹ The signatory partners to the MOU include the EPA, DEQ, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of Siletz Indians, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Nez Perce Tribe, National Oceanic and Atmospheric Administration, Oregon Department of Fish and Wildlife, and U.S. Department of the Interior.

² The JSCS is available on DEQ’s web site at <http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/jointsource.htm>

³ “River Mile” indicates the distance from the Willamette River’s confluence with the Columbia River (i.e., River Mile 11.8 is 11.8 miles upstream of the confluence).

1.1 Organization of the Milestone Report

The Milestone Report is organized as follows.

- Section 2.0: Identifying Potential Sources of Contamination in Portland Harbor – This section describes DEQ’s work to identify potential sources of contamination to the Willamette River in Portland Harbor, including site discovery and site assessment activities.
- Section 3.0: Evaluating Potential Sources of Contamination to the River – This section describes DEQ’s status and schedule for the evaluation of all confirmed or suspected upland sources of contamination to Portland Harbor, as summarized in Table 1.
- Section 4.0: Taking Measures to Control Sources and Making Source Control Decisions – This section describes the source control measures used at upland sites in Portland Harbor and the process for making source control decisions, including coordination with EPA and our government partners, and public involvement opportunities. Source control measures and decisions are summarized in Table 1.
- Section 5.0: Status of Ongoing and Completed Source Control Activities – This section describes the information presented in Table 1 that summarizes the status of ongoing and completed source control measures. This section also describes the specific status of the 15 High Priority and Preliminary High Priority sites (Tables 2 and 3). This section also presents five specific source control goals designed to help DEQ focus our efforts to achieve the overarching goal of source control.
- Section 6.0: Issues Encountered in Source Control Work – This section describes issues affecting DEQ’s ability to conduct source control work and identifies paths forward towards resolution.
- Section 7.0: Summary – This section summarizes the overall status of source control work in Portland Harbor, highlighting accomplishments, key issues and next steps for moving forward.
- Section 8.0: Obtaining Additional Information on Upland Source Control Work – This section indicates where additional information can be found on the status of source control work at upland sites in Portland Harbor.
- Section 9.0: Information on Table 1: Controlling Confirmed or Suspected Upland Sources of Contamination to Portland Harbor – This section provides helpful information for interpreting Table 1, including definition of key terms and acronyms used.

2.0 Identifying Potential Sources of Contamination in Portland Harbor

DEQ’s strategy for identifying and investigating potential sources of contamination to Portland Harbor prior to the December 2000 Superfund Site listing was described in the March 2006 Milestone Report.

Those site identification and investigation activities were initially focused on a six-mile stretch of the lower Willamette River (now known as the Initial Study Area) extending from the southern tip of Sauvie Island upstream to Swan Island, from approximately River Mile 3.5 to River Mile 9.2. For more information, please see the March 2006 Milestone Report or please contact DEQ's Portland Harbor project manager, Jim Anderson at (503) 229-6825 or anderson.jim@deq.state.or.us

2.1 Recent Site Discovery and Site Assessment activities

As would be expected, DEQ's site discovery/site assessment activities have decreased now that we've reached an intermediate stage of the upland source control effort and the significant sources are being addressed. This is not to say that additional site discovery work won't be necessary, it simply means that we are currently directing our energy toward completing site investigations and source control measures at existing Environmental Cleanup Site Information (ECSI) sites. It also means that we believe we have identified and are addressing the all the major sources of contamination threatening the river.

There are two main efforts that will help shape DEQ's future site discovery activities. One is the information contained in the Lower Willamette Group's (LWG) Draft Risk Assessment and Remedial Investigation documents and the ongoing process to develop the draft Feasibility Study. It's possible that information from these documents could identify specific areas where additional source identification is warranted.

The second effort involves discovering stormwater sites. New stormwater site discovery efforts tend to be targeted and are triggered by recently collected data. The majority of this work is conducted as a collaborative effort between the City and DEQ under the Intergovernmental Agreement (IGA) between DEQ and the City's Bureau of Environmental Services (BES), to identify, investigate, and control contaminant discharges to shared City stormwater conveyance lines.

There are 38 City outfalls in Portland Harbor. As part of the City's 20-year combined-sewer overflows abatement program, to be completed by 2011, all or a portion of the stormwater discharging through fifteen City outfalls are being diverted to the wastewater treatment plant. For basins that will continue to discharge to the river, the City conducted basin evaluations to determine if there was potential for significant sources in the basins. If so, source tracing was conducted to identify sources that need to be controlled through either DEQ or City authorities.

In 2009, the City undertook a comprehensive evaluation of stormwater and sediment trap data collected from City outfall basins to evaluate additional source tracing needs and help shape future data collection objectives. The evaluation included data collected by the City as well as data collected by the LWG and Port of Portland in support of the in-water Remedial Investigation. The findings from this evaluation generally support the City's and DEQ's belief that all major sources within City outfall basins have been identified. However, the results also indicate that additional investigation may be warranted in a small

number of basins where slightly elevated concentrations of certain contaminants could not be explained by the known sources/land uses in those basins.

Following completion of the Stormwater Evaluation report, the City conducted additional focused source investigation in a number of basins to complete the source identification process. These investigation may result in one or more sites being referred to DEQ for Site Discovery or Cleanup Program consideration. Current status of source identification efforts in the City outfall basins as of May 2011 is provided below. This information is also presented in Figure 1.

May 2011 Status of Source Identification at City Outfalls in Portland Harbor	
No Significant Sources in Basin and Insignificant or Incomplete Pathway	
19 Outfalls	Outfall Designations: M-2, M-3, S-2, S-5, 10A, 11, 13, 14, 19A, 22D, 23, 24, 42, 44A, 47, 48, 49, 50, 52A
Source Identification in Basin is Complete	
15 Outfalls	Outfall Designations: M-1, S-6, 15, 16, 17, 18, 19, 22, 22B, 22C, 46, 43, 44, 45, 53A
Additional Source Identification Needed or May be Needed in Basin	
4 Outfalls	Outfall Designations: 52, 52C, 53, S-1

[Note: Figure 1 has not been updated to reflect the recent update in this table. The only outfalls where status has changed between 2010 and 2011 are outfalls 43 and S-1.]

2.2 Downtown Portland Willamette River Sediment Investigation

DEQ continues our work with the City of Portland and other partners to investigate sediment quality in the Willamette River upstream of the Portland Harbor in downtown Portland. The results of the initial investigation broadened our understanding of the previously existing limited sediment-quality data, and allowed us to gain a better understanding of the nature and extent of hazardous substances in the downtown reach. The first phase of the investigation collected surface sediment and/or cores samples from nearly 80 locations.

The field work for the downtown reach sediment investigation was completed in June 2008. Results from this first phase are compiled in the GSI Water Solutions, Inc 2009 report "Field and Data Report, Downtown Portland Sediment Characterization".

DEQ completed a review of this first phase of the investigation. The results of the review are found in a 2009 DEQ report entitled "Downtown Portland Willamette River Sediment Evaluation- Preliminary Identification of Areas of Interest." A focused second phase of investigation was completed in early 2010. This Phase II sampling was completed to better prioritize areas of interest for follow-up action, lay the foundation for source identification investigations, and in some cases begin to assess contaminant extent. Results from the Phase II work are compiled in GSI's 2010 "Field and Data Report, Downtown Portland Sediment Characterization Phase II". Reports can be viewed at:

<http://www.deq.state.or.us/lq/cu/nwr/willametterriver.htm>

DEQ is evaluating the investigation results for both phases of work to help assess area-wide contaminant levels and identify areas where source identification efforts are warranted.

Within the downtown reach, PGE is conducting an investigation of in-water sediment and upland source control between RM 13.1 -13.5 east. Two upland preliminary assessments and data reports from three upland investigations and the in-water sediment investigation have been completed in 2010. A draft "*Remedial Investigation Report*" covering both in-water and upland data was submitted April 15, 2011. This information will help determine potential remedial and source control actions.

The Zidell Waterfront property is located at the upstream edge of the downtown reach on the west side of the river beneath the Ross Island Bridge. The ZRZ Realty Company (Zidell Company) and other site operators conducted ship dismantling, ship building, welding, and other miscellaneous industrial activities at the site from approximately 1925 to the mid-1960s. The Zidell Company began on-site barge-building operations in 1968 and those activities continue today. Portions of the upland property are impacted by releases of metals, petroleum hydrocarbons, PCBs, asbestos, and other contaminants. The Zidell Company is working under a DEQ consent judgment to cleanup contaminated upland soil and Willamette River sediment adjacent to their property. The Zidell Company initiated upland soil cleanup in summer 2010, and plans to begin sediment remediation summer 2011.

3.0 Evaluating Potential Sources of Contamination to the River

DEQ is investigating or directing source control work at over 60 upland sites in Portland Harbor. Preliminary investigation activities at these sites are designed to determine whether the site is a potential or ongoing source of contamination to the river. These investigations, or "source control evaluations," consider all potential, current and historic contaminant sources and current or reasonably likely future contaminant migration pathways for the contaminants to be transported to the river. Potential pathways include:

- Direct discharges – Pollutants from commercial, industrial, private or municipal outfalls have in the past and continue to be discharged directly to the Portland Harbor Superfund Site. Levels of contaminants in historic discharge streams were much greater than recent and current loads due to better environmental awareness and government controls (e.g., permits. Many current discharges are permitted (general or individual permits) under the Clean Water Act National Pollutant Discharge Elimination System (NPDES). Permitted discharges include industrial wastes, stormwater runoff, and combined-sewer overflows (CSOs)⁴.

⁴ CSO events are untreated discharges of combined stormwater, sanitary sewage from residential, commercial, and industrial sources that overflow from the sewer system into the river during heavy rainfall periods when the amount of stormwater and sewage exceeds the capacity of the collection system.

- Groundwater – Contaminated groundwater may enter the river directly via discharge through sediments, bank seeps, or it may infiltrate into storm drains/pipes, ditches or creeks that discharge to the river. Contaminant migration may occur as non-aqueous phase liquids (NAPLs) or as chemicals dissolved in the groundwater itself.
- Stormwater – Contaminants may be carried to the river by water that runs off a site into storm drains after it rains, delivered to the river by stormwater pipes (including permitted and unpermitted stormwater discharges).
- Overland transport/sheet flow – The uncontrolled flow of water from a site to the river and the transport of other materials from a site may deliver contaminants to the river.
- Bank erosion/leaching – River bank soil, contaminated fill, waste piles, landfills and surface impoundments may release contaminants directly to the river through erosion, via soil erosion to stormwater, or by leaching to groundwater.
- Overwater activities – Contaminants from overwater activities (e.g., sandblasting, painting, unloading, maintenance, repair and operations) at riverside docks, wharves, or piers; discharges from vessels (e.g., gray, bilge, ballast waters); full releases; and spills may affect the river.

These potential contaminant migration pathways are evaluated for each site, and upland contaminant concentrations are screened against conservative screening level values (SLVs) protective of human health and the environment. Sites that are identified as significant current or potential sources of pollution to the river are characterized and prioritized. Based on the resulting priority, either further source control evaluation is completed or source control measures are initiated.

Table 1 provides a summary of confirmed and suspected upland sources of contamination to the river that DEQ is either actively working on or has finished source control work on by issuing a final source control decision. Table 1 also provides the basis for the determination that a site is a source of contamination to the river, the status of and schedule for source control evaluation, and the priority of the site for source control. The table includes the priority of each contaminant migration pathway for each site, as well as the overall priority of the site based on the pathway priorities.

High priority sites are identified in the table based on existing site information, and subsequent Milestone Reports will identify any new high priority sites as new information becomes available. Source control is expected to move forward at high priority sites without delay.

4.0 Taking Measures to Control Sources and Making Source Control Decisions

DEQ determines the need for source control measures at each upland site, in consultation with EPA, based on the completeness of contaminant migration pathways, exceedances of SLV, and other factors

as appropriate. See p. 3-1 through 3-6 of the JSCS for more information about SLVs, and p. 4-1 through 4-10 of the JSCS for more information about the source control decision process.

4.1 Types of source control measures

Upland source control is an iterative process where early steps may be revisited and conclusions refined by information gathered later in the process. A combination of tools may be used to control a source, including but not limited to the following.

- Technical assistance – Technical assistance, often provided during inspections, provides technical information designed to help individual businesses bring their facilities into compliance with environmental regulations. DEQ's Hazardous Waste Program has and continues to provide technical assistance to facilities within the Portland Harbor Superfund Site area.
- Cleaning-up contaminated upland areas – Cleanup work addresses contaminated soil, groundwater, stormwater and other sources; and focuses on reducing or eliminating contaminant migration to the river. Common source control measures include removing highly contaminated soil areas, stabilizing or capping contaminated bank areas, treating or containing contaminated groundwater, and extracting contaminated sediment from storm sewer systems. Source control measures vary from site to site.
- Source control of active discharges – Tools to control active discharges include best management practices (BMPs), industrial process changes, pollution prevention practices, and technology-based effluent controls. Compliance is achieved voluntarily or through administrative actions, including permits or enforcement.
- Source control of stormwater – Stormwater source control is complex because storm drain systems capture discharges from many different sources (e.g., land use activities, runoff from contaminated sites, and infiltration of contaminated groundwater into the storm drain system). Stormwater regulation also involves state and local agencies implementing MS4 and 1200Z general stormwater permits. Because of this complexity, all of the tools described above are useful for stormwater source control and will be used as appropriate.
- Administrative actions and enforcement – Administrative actions include licenses, permits, deed restrictions, requirements for site development plans, and enforcement actions; which may be necessary when administrative actions are violated. Agencies rarely take enforcement actions without first conducting an inspection and documenting findings, requested changes, warnings and offers of technical assistance. When enforcement actions are warranted, they are usually taken in escalating order, starting with notices of violation, moving to enforcement or compliance orders requiring specific changes by a set date, and ending with monetary penalties, court action or DEQ's takeover of investigation or cleanup work. Formal cleanup actions performed under an order or decree use oversight and enforcement to ensure that appropriate actions are taken in a timely manner.

Table 1 summarizes source control decisions at upland sites, the basis for the determination that upland source control measures are necessary, a summary of the selected source control measure(s), and a schedule for implementing the source control measure(s). Figure 2-a-c displays most sites listed in Table 1.

4.2 DEQ coordination with EPA and partners on source control decisions

As the Lead Agency for identifying and controlling sources of upland contamination threatening the river in Portland Harbor, DEQ coordinates with EPA and our government partners on source control work. This includes documenting, tracking and coordinating source control efforts as described in Sections 2.5 and 7 of the JSCS.

DEQ provides EPA and our partners an opportunity to review and comment on source control decisions prior to being finalized. These decisions typically fall into the following three categories.

- DEQ determined that a site is not a current or future significant source of contaminants to Portland Harbor and that no source control measures are required.
- DEQ selected the source control measures for a site.
- DEQ concluded that source control at a site is complete, or in the case of systems that require operation and maintenance (e.g., hydraulic containment), that the source control action is effective.

DEQ informs EPA and our partners of pending source control decisions and the schedule for review, and provides copies of source control decision documentation to EPA and partners upon request. EPA and partners have 30 days to provide comments to DEQ on source control decisions.

In addition to this regular review and comment process, some upland sites in Portland Harbor may warrant closer coordination between DEQ, EPA, and our partners for source control (e.g., the Gasco site and source control measures for the chlorinated solvent groundwater plume at the Siltronic site). In these instances, DEQ and EPA source control coordinators will develop project-specific coordination strategies.

4.3 Public involvement in source control decisions

DEQ Cleanup Program statutes and rules require that a public notice and comment opportunity be provided prior to DEQ's selection of a final site cleanup remedy and before DEQ determines that the cleanup is complete. For upland Portland Harbor cleanup projects, this means that DEQ issues a public notice and seeks public comments on the recommended final site cleanup strategy. Once public input is considered, DEQ's final decision is typically documented in a Record of Decision (ROD) for the site. For most sites, the upland DEQ ROD includes elements that address both source control for Portland Harbor and cleanup actions specific to areas of upland contamination that are not related to pollution in the Harbor.

Many of the source control measures implemented at upland sites are conducted prior to the selection of the final upland site-wide remedy. While public notice and comment is not required for these “interim” removal actions under DEQ statutes and rules, DEQ typically issues a public notice and seeks public comments when the action is likely to be a substantive piece of the final site remedy, or as the DEQ project manager determines is appropriate.

DEQ does not typically seek public comments for small-scale interim source control measures and time-critical actions. Project managers will, however, issue notices and/or press releases as appropriate to let the public know that the activity is being conducted.

5.0 Status of Ongoing and Completed Source Control Activities

Table 1 summarizes the status of ongoing source control activities; including source control evaluations (SCEs), source control decisions (SCDs), and source control measures (SCMs). Table 1 also provides information on source control activities completed to date, proposed SCM activities, and a target schedule for completion.

Table 1 also summarizes completed SCMs and provides the date that the SCM was completed, the date of EPA review and comment, and any operation and maintenance requirements associated with the SCM.

As of May 2011, the DEQ categorized 95 sites (see Table 1) into the following source control categories:

High Priority Sites- 11

Preliminary High Priority Sites- 4

Medium Priority Sites- 27

Low Priority Sites- 25

Priority “To Be Determined” Sites- 4

Sites with Source Control Decisions- 24

The status of High Priority and Preliminary High Priority sites is presented in Tables 2 and 3. Twelve of the 15 High Priority sites currently have at least interim SCMs in place. Some of the more important actions in-place or anticipated at the High Priority sites include:

-Evrax Oregon Steel Mills- Two separate source control efforts are moving forward at the EOSM site. 1st, stormwater is being addressed through a combination of best management practices and end-of-pipe treatment. Phase I of the end-of-pipe treatment, addressing stormwater flow to the northern facility outfall, was installed in 2007 and underwent pilot testing in 2007/2008. Based on the results of the pilot test, the system was expanded to capture stormwater flow going to the central facility outfall in 2008. The end-of-pipe treatment is composed of a large settling pond with weirs to reduce flow and promote settling of solids. EOSM connected the central/southern stormwater drainage basin to their end-of-pipe treatment 2009. EOSM implemented BMPs in the southeastern portion of their property that drains to the City line. EOSM plans to conduct a loading evaluation to assess contaminant transport to the Willamette

River via stormwater once treatment system design elements are finalized. 2nd, riverbank treatment source control measures are in re-design largely to resolve stakeholder concerns regarding mitigation, habitat conservation and restoration, and to incorporate bioengineering components. EOSM plans to re-submit their 404 Permit application in 2011, re-engage natural resource trustee stakeholders in the new design, and construct the riverbank source control measure in 2012 or 2013.

-Schnitzer Steel- Schnitzer Steel proposed a stormwater management plan in fall 2008. The plan provides comprehensive management of stormwater including both re-use as on-site process water and end-of-pipe treatment. Phase 1A of the plan called for abandoning a number of stormwater outfalls, collecting stormwater from most of the site, routing the stormwater thru screen filters to a storage tank, and then either re-using the water or discharging the water under an NPDES permit. The storage-tank discharges to the river will be monitored and compared to JSCS SLVs. Additional treatment will be added if necessary. Phase 1A was completed late 2009. Phase 1B consists of paving the Phase 1A construction area. Phase 2 will capture stormwater from several additional on-site drainage basins and route the stormwater to the new filtration and storage system. Phase 2 stormwater improvements are expected to be constructed in 2011. Stormwater basins not captured by the on-site end-of-pipe treatment will be evaluated by the SCE process.

-Arco/BP- A new permanent seawall sheetpile wall was installed in summer 2007. The sheetpile wall will enhance existing hydraulic control of contaminated groundwater. A riverbank soil and near-shore sediment removal and capping was completed in fall 2008. Approximately 16,000 cubic yards (cy) of petroleum-contaminated soil/sediment were removed and shipped offsite for disposal. The project was completed in summer 2009 by removing the in-river temporary sheetpile wall, final site grading, and planting.

-Gasco- NW Natural's Gasco site (which includes NW Natural's manufactured gas plant contamination on the Siltronic site) is a High Priority site for upland source control. The distribution and magnitude of upland contamination at the Gasco site is extensive and very significant. Based on an October 2007 Focused Feasibility Study (FFS), DEQ selected a SCM combination consisting of a vertical barrier wall and groundwater pump-and-treat system in the Gasco former tar pond area and pump-and-treat elsewhere along the shoreline. After conducting a number of studies to support SCM design, NW Natural concluded source control could be achieved with extraction wells only, and the vertical barrier wall was not needed. DEQ directed NW Natural to either include the vertical barrier wall in their SCM design or defer SCMs in the tar pond area to the upland FS. One of DEQ's main concerns was that the extraction wells..., without the vertical barrier wall..., would mobilize dense non-aqueous phase liquids (DNAPL) exacerbating existing conditions. NWN disputed this direction in summer 2010. The dispute was resolved in late 2010 with DEQ allowing NW Natural to continue designing the SCM using extraction wells only with the design objective being minimizing potential DNAPL migration, and accelerating the upland risk assessment in order to initiate the FS as soon as possible. NW Natural submitted their revised SCM design report in 5/11. DEQ and NW Natural hope to initiate the SCM in early 2012.

-Siltronic- An amended FFS was submitted December 2007 recommending an enhanced in-situ bioremediation (EIB) SCM for the Siltronic chlorinated-solvent groundwater plume. DEQ selected EIB to be applied in the release area. Siltronic completed application of EIB treatment

media in the source area in summer 2008, and is expanding use of EIB further upgradient of the release area. To date, EIB has effectively reduced concentrations of trichloroethene (TCE) in the release area. Ongoing groundwater monitoring is being used to evaluate the effectiveness of EIB in reducing daughter product concentrations.

-Arkema- Arkema is working on three separate upland source control efforts at their site. 1st, Arkema submitted an FFS for groundwater/NAPL in summer 2008. DEQ selected a slurry wall/groundwater extraction system as the SCM in 2009, and the SCM is in design. We anticipate SCM construction to begin in 2012. 2nd, Arkema submitted a stormwater FFS in summer 2008, DEQ selected a stormwater SCM in 2010 and Arkema entered a DEQ Water Quality Mutual Agreement and Order in July 2010 to design, construct and monitor a new stormwater system. The stormwater SCM will consist of berming the perimeter of the site to prevent off-site overland flow, temporarily capping higher-level contaminated soil, decommissioning the existing collection and conveyance system including 3 of the 4 existing outfalls, installing a new collection/conveyance system which will route stormwater to a settling-detention pond to reduce the suspended load, and discharging stormwater from the pond through a sand filter system to the river. Stormwater SCM construction is expected to begin in 2012. 3rd, Arkema evaluated their riverbank and the threat that portion of the site poses to the river. Riverbank source control is anticipated to be incorporated into the EPA-lead in-water Early Action at Arkema. Arkema will evaluate riverbank SCM options in 2011.

-Rhone-Poulenc- The responsible party at Rhone Poulenc, SLLI, is working on three major upland source control/evaluation efforts at their site. 1st, SLLI submitted a comprehensive SCE report in early 2008, DEQ reviewed the report, SLLI revised the report after collecting significant additional hydrogeologic information to inform the conceptual site model, and submit the revised report..., along with the comprehensive RI report..., in November 2010. DEQ is currently completing our review of those reports. 2nd, SLLI pilot tested several SCMs to treat and/or control their most significant groundwater plume threatening the river. SLLI completed an extensive, long-term groundwater pumping test to support the design of their North Front Avenue SCM which targets contaminated groundwater moving in the highly conductive fractured basalt zone. The pumping test includes a number of extraction wells that could largely comprise the SCM. The pumping test concluded in August 2010. SLLI is re-evaluating the effectiveness of this SCM based on pumping test results. 3rd, SLLI removed accumulated sediment from Outfall 22B stormwater lines and grouted the lines to at least partially prevent contaminated groundwater from invading the lines. In the second half of 2009, SLLI cleaned out the lines and installed impermeable liners in the stormwater lines to further prevent groundwater invasion. In addition to these three ongoing source control efforts, SLLI: 1) spent two field seasons removing drums and debris from the Doane Lake area, 2) completed an on-site Facility Structures Interim Remedial Action Measure (IRAM); 3) completed the Groundwater Extraction and Treatment System (GETS IRAM) in 2005 designed to capture alluvial zone groundwater in the Herbicide Area; and 4) completed the West Doane Lake (WDL IRAM) in late 2010 to stabilize and cap West Doane Lake sediments.

-Exxon/Mobil- Exxon/Mobil recently completed construction of an additional groundwater SCM at their facility. The SCM was designed to address a hydraulic gap in their existing vertical barrier wall. The hydraulic gap existed because of facility structures (e.g., pipes) obstructing construction of a vertical barrier wall in this portion of the facility.

-MarCom South- The responsible parties at MarCom South conducted a comprehensive SCE and upland remedial investigation/risk assessment. After conducting a series of upland interim actions, they concluded that residual risk at site does not pose a significant threat to the river (source control issue) nor does it pose unacceptable risk to human or upland ecological receptors. EPA is currently reviewing a draft SCD for MarCom South. DEQ agreed to allow the MarCom South responsible parties to separate the riverbank and beach areas of both MarCom South & MarCom North from the MarCom South upland SCE and RI. The responsible parties will conduct SCE in the riverbank and beach areas of the two properties with the intent of establishing an initial nature and extent database for the expected in-water remedial action that will occur after the Portland Harbor ROD.

DEQ developed five specific goals for our source control efforts. These goals will track DEQ source control efforts to achieve the overarching goal of source control: to identify, evaluate and control sources of contamination that may affect the Willamette River in coordination with the objectives and schedule for the Portland Harbor RI/FS.

The goals described below are aggressive goals that were based on an anticipated ROD date of 2010. While much progress has been made to reach these goals, some remain outstanding. Some of the reasons these goals have not been achieved include the complexity of the work, work load for both DEQ and upland responsible parties, and obstacles in implementing the work. While all the goals have not been met, DEQ believes these sites remain on-track to achieve source control at the High Priority sites by the time of the Portland Harbor ROD. The Portland Harbor ROD is now optimistically anticipated to be completed 2013. Dates for the goals below have been adjusted to better reflect the current status and the new anticipated ROD date.

Goals and Status for High Priority Sites

Goal 1- Source Control Evaluations (SCE) completed at all High Priority sites by 12/11.

Goal 1 Status as of 5/11

-2 of 15 SCEs completed

-12 of 13 (15 minus 2 completed SCEs) SCEs to be completed in 2011

Goal 2- SCMs selected at all High Priority sites by 7/12.

Goal 2 Status as of 5/11

-Interim or final SCMs have been selected and have been implemented at 11 of 15 sites.

These sites include: 1) EOSM (stormwater), 2) Schnitzer Steel (stormwater), 3) Kinder Morgan Linnton (groundwater), 4) Exxon/Mobil (groundwater), 5) Arco/BP (groundwater and riverbank/beach), 6) Siltronic (groundwater), 7) Rhone Poulenc (groundwater and stormwater), 8) Arkema (groundwater), 9) Willbridge (groundwater), 10) Gunderson (groundwater), and 11) City Stormwater (line cleanouts).

-Selection and/or design of SCMs at other High Priority sites is anticipated over the next 6-12 months. For instance, 1) DEQ selected a significant SCM at the Gasco site in March 2008. NW Natural completed a series of field efforts designed to support the detailed design of this SCM, a vertical barrier wall/groundwater extraction well system. NW

Natural proposed a revised SCM in their 11/09 Interim Design Report, and DEQ and NW Natural recently resolved a formal dispute over the next steps in source control. NW Natural is completing design of their groundwater NAPL SCM, and that SCM should be constructed in 2012...., 2) EOSM has further characterized the nature and extent of riverbank contamination, produced initial designs, and has been in negotiation with the Corps and natural resource trustees for the construction of riverbank treatment SCM at their facility. Construction of that river bank SCM is expected to begin in 2011 or 2012...., 3) late-2009 construction of an end-of-pipe stormwater filtration, storage and reuse at the Schnitzer Steel site. Schnitzer Steel is currently expanding the area of their facility that drains into the stormwater re-use/treatment system..., 4) DEQ recently selected a vertical barrier wall/groundwater extraction wells system as a groundwater/NAPL SCM for the Arkema site. The SCM is currently in final design and construction is scheduled to begin in 2012. DEQ also recently selected a stormwater SCM for the Arkema site. The stormwater SCM is currently in design and construction is expected to begin in 2012.

Goal 3- SCMs constructed and effectively operating at all High Priority sites by 12/12.

Goal 3 Status as of 5/11

-5 of 16 sites have effective groundwater SCMs operating. These 5 sites include: 1) Exxon/Mobil, 2) Gunderson, 3) Willbridge, 4) Arco/BP, and 5) Siltronic.

Goals and Status for Medium and Low Priority Sites

Goal 4- SCE completed at all Medium and Low Priority sites by 1/12

Goal 4 Status as of 5/11

-Six of the 27 Medium Priority sites currently have completed SCEs..., 16 of the 27 sites have interim source control measures in-place..., and 14 of the 21 sites (27 minus 6 completed SCEs) are on schedule to be completed in 2011.
-Two of the 25 Low Priority sites currently have completed SCEs..., 15 of the 25 have interim source control measures in-place..., and 17 of the 23 sites (25 minus 2 completed SCEs) are on schedule to be completed in 2011.

Goals and Status for Priority “To Be Determined (TBD)” Sites

Goal 5- Completed prioritization at all TBD sites by 12/11.

Goal 5 Status as of 5/11

-2 of the 4 sites are EPA-lead sites (Vanwaters-&-Rogers & US Moorings).
-Koppers and ODOT Outfalls are the two last TBD sites.

6.0 Issues Encountered in Source Control Work

This section summarizes issues affecting DEQ's completion of source control work. This section also presents the steps DEQ is taking to resolve the issues and complete source control work.

Issue 1: Moving projects through the source control process

Certain DEQ Portland Harbor cleanup projects are not proceeding through the source control process at an acceptable pace. There has been a number of reasons for the lack of adequate progress at these sites, including: complexity of the site, limited DEQ staff resources, uncertainty regarding liability/responsibility for the needed environmental work, reluctance of the responsible party to move forward, and economic strains on many of the responsible parties. Source control activities at these sites needed to be accelerated in order to identify, evaluate and control upland contaminant sources before the Portland Harbor ROD. We are focusing our attention on these sites and working with the upland responsible parties to move these projects forward. Two of these sites include:

- **Burgard Industrial Park**

Problem: At one time, Schnitzer Investment Corporation (SIC) owned the roughly 200-acre Burgard Industrial Park (BIP) that partially surrounds the International Terminal's Slip at RM 4. A number of tenants leased properties in BIP. Over the past several years, SIC sold much of the BIP, including approximately 81 acres to Schnitzer Steel in May 2005. Schnitzer Steel operates their scrap metal recycling yard and marine terminal on property sold in 2005. DEQ now understands SIC currently owns approximately 21.5 acres of the BIP. SIC entered into a DEQ Voluntary Agreement in 2000 to perform a remedial investigation and source control measures for BIP. Since signing the agreement, DEQ and SIC have focused on the Schnitzer Steel portion of the BIP area. As reported in the 9/10 Milestone Report, DEQ requested SIC conduct SCE in BIP outside the Schnitzer Steel site. SIC initially declined our request stating that since SIC didn't have access rights to the property they sold, and SIC would not be able to perform SCE for the portions which have been sold.

Path to resolving and progress made since the September 2010 Milestone Report: SIC has now agreed to conduct stormwater source control evaluations at BIP, has submitted several work plans for stormwater SCE. Based on the recent progress made at this site, DEQ will drop the BIP site from this section of the next Milestone Report.

- **GS Roofing**

Problem: Recent SCE work at the GS Roofing site has focused on the stormwater pathway. However, other SCE pathway investigations are being performed or refined in 2011. Of primary concern for additional investigation are the groundwater to surface water pathway and the effect of a former waste-receiving area buried on the southern portion of the site near the mouth of Saltzman Creek. Dry-weather flow from the site was observed by DEQ flowing from an outfall to Saltzman Creek in October 2010. Of lesser concern are erodible soils.

Path to Resolving: DEQ discussed outstanding SCE tasks and RI completion data needs with GS Roofing representatives. GS Roofing recently submitted a work plan to address data gaps, and DEQ is reviewing that work plan. Additional data collection is work is planned for 2011.

Progress made since September 2010 Milestone Report: GS Roofing completed its stormwater system characterization. Several changes and BMPs have been implemented based on the findings of SCE work and NPDES compliance inspections and sampling. The stormwater SCE report is pending.

A mutual site-access agreement is being developed with Kinder Morgan Energy partners to evaluate potential offsite, contaminated-groundwater migration from the up-gradient Kinder Morgan site. DEQ will sample groundwater from the three GS Roofing wells in June 2011, with splits given to Kinder Morgan while the access-agreement is being finalized. Based on recent progress made at this site, DEQ will drop the GS Roofing site from this section of the next Milestone Report.

Issue 2: Completing source control at the Gasco site

NW Natural's Gasco site (which includes NW Natural's manufactured gas plant contamination on the adjoining Siltronic property) is a High Priority site for upland source control. The distribution and magnitude of upland contamination at the Gasco site is extensive and very significant. As described in Section 5 of this report, NW Natural disputed DEQ direction regarding groundwater and DNAPL source control at the site. The dispute was resolved in late 2010 with DEQ allowing NW Natural to continue designing the SCM using extraction wells only, but accelerating the upland risk assessment in order to initiate the FS as soon as possible. NW Natural submitted their revised SCM design report in 5/11. DEQ and NW Natural hope to initiate the SCM in early 2012. DEQ will drop this issue from the next Milestone Report.

Issue 3: Completing source control at the Arkema site

As stated in Section 5, Arkema is working on three separate upland source control efforts at their site. 1st, Arkema submitted an FFS for groundwater/NAPL in summer 2008. DEQ selected a slurry wall/groundwater extraction system as the SCM in 2009, and the SCM is in design. We anticipate SCM construction to begin in 2012. 2nd, Arkema submitted a stormwater FFS in summer 2008, DEQ selected a stormwater SCM and Arkema entered a DEQ Water Quality Mutual Agreement and Order in July 2010 to design, construct and monitor a new stormwater system. The stormwater SCM will be an interim system operating until a site-wide remedy is complete. The new stormwater system will consist of berming the perimeter of the site to prevent off-site overland flow, temporarily capping higher-level contaminated soil, decommissioning the existing collection and conveyance system including 3 of the 4 existing outfalls, installing a new collection/conveyance system which will route stormwater to a detention pond to reduce the suspended load, and discharging stormwater from the pond through a filter system to the river. Stormwater SCM construction is expected to be completed in 2012. 3rd, Arkema evaluated their riverbank and the threat that portion of the site poses to the river. Riverbank source control is anticipated to be incorporated into the EPA-lead in-water Early Action at Arkema. Arkema will evaluate riverbank SCM options in 2011-12.

Issue 4: DEQ staff resource limitations

Limited staff resources agency budgets continue to affect DEQ's ability to conduct and complete source control work in Portland Harbor. Current and projected future state budget estimates continue to challenge DEQ. DEQ continually looks at staff work load and develops priorities to address the most important work. DEQ will continue Portland Harbor source control efforts focusing on the most significant and potentially significant upland sources.

Issue 5: Stormwater evaluation and control

Stormwater pathway evaluations are a relatively new and evolving effort for DEQ's Cleanup Program. In January 2009, DEQ issued its "Guidance for Evaluating the Stormwater Pathway at Upland Sites". The

guidance was updated in October 2010 on DEQ's Portland Harbor website at:

<http://www.deq.state.or.us/lq/cu/stmwtrguidance.htm>

The updates to the guidance are intended to accomplish two objectives:

1. Make minor revisions to the text to clarify decision-making criteria.
2. Add a tool for evaluating stormwater data. This tool is described below.

Using the sizeable stormwater dataset generated by Portland Harbor investigations, DEQ developed a tool to assist with data interpretation. The tool can be used to help distinguish "typical" concentrations of contaminants in industrial stormwater from "elevated" concentrations that may indicate an uncontrolled source of contamination at a site. This distinction is important because it helps to determine the type of response warranted at the site. In general, stormwater discharges related to "normal" industrial operations are managed with stormwater Best Management Practices (BMPs) and, where appropriate, are regulated under Water Quality permits. If an uncontrolled contaminant source is suspected, it may be appropriate to invoke Cleanup Program regulations to conduct additional investigation and source control measures.

7.0 Summary

DEQ is making significant progress in controlling sources of contamination to the lower Willamette River in Portland Harbor, and is coordinating resources of its Cleanup, Hazardous and Solid Waste, Water Quality and Spills Programs to achieve upland source control objectives by the expected time of the Portland Harbor Record of Decision or shortly after. To date, DEQ has identified 95 upland sites that may be potential sources of contaminants in Portland Harbor, and most of these sites have been prioritized for additional investigation or source control. Additionally, DEQ evaluated a number of sites in our site discovery process throughout the Portland Harbor project and concluded these sites do not threaten the river.

As of May 2011, the DEQ categorized 95 sites (see Table 1) into the following source control categories:

High Priority Sites-12

Preliminary High Priority Sites- 3

Medium Priority Sites- 27

Low Priority Sites- 25

Priority To Be Determined Sites- 4

Sites with Source Control Decisions- 24

DEQ will submit a Milestone Report to EPA twice a year, with the next Milestone Report scheduled for December 2011, and update Tables 1, 2, and 3 with the current status of source control work at all upland sites. For more information about the Milestone Report or DEQ's source control work generally, please contact Jim Anderson, DEQ Portland Harbor Project Manager, at (503) 229-6825, or anderson.jim@deq.state.or.us.

8.0 Obtaining Additional Information on Upland Source Control Work

For more information on DEQ's source control work at any of the sites listed in Table 1, see DEQ's Portland Harbor web page (<http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/index.htm>) and click on "Upland Sites map" in the right hand corner. This link provides a map showing all Portland Harbor upland sites and summary reports of the status of source control work. Just open the map and click on the site you are interested in to connect to DEQ's Environmental Cleanup Site Information (ESCI) database, which houses current information on work at each site.

Alternatively, contact the DEQ project manager (PM) that is leading work on the site you are interested in. Contact information for each DEQ PM is listed on the last page of this report.

For more information on the status work on the Portland Harbor Superfund Site, see EPA's Portland Harbor web page (<http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor>).

9.0 Information about Table 1: Controlling Confirmed or Suspected Upland Sources of Contamination to Portland Harbor

The purpose of Table 1, entitled Controlling Confirmed or Suspected Upland Sources of Contamination to Portland Harbor, is to track and share information on the status of DEQ's efforts to evaluate and control sources of pollution to the Willamette River in Portland Harbor. The table provides information on each upland site that DEQ is working on in the Harbor, including the status of evaluations to determine whether source control is needed, the progress of source control measures, and the status of source control decisions and EPA review. Below is some helpful information for interpreting the table, including definitions for key terms and acronyms.

Site Information and Project Status

The first columns of Table 1 provide basic background information on each site, including:

- the name of the site,
- the site's reference number for DEQ's Environmental Cleanup Site Information (ESCI) database,
- the location of the site (river mile and address),
- the DEQ project manager that is leading source control work,
- the type of agreement DEQ is using to direct cleanup activities at the site (i.e., Intergovernmental Agreement, Portland Harbor Agreement, Unilateral Order, etc.), and
- the status of work occurring at the site (i.e., Preliminary Assessment, Remedial Investigation, completed Source Control Decision, Remedial Design/Remedial Action, etc.).

Sites are listed in Table 1 based on their position alongside the Willamette River, or the “River Mile” associated with their location. The River Mile indicates distance of the site from the Willamette River’s confluence with the Columbia River. Sites associated with a lower river mile occur downstream of sites with a higher river mile.

Sites listed in Table 1 are those in Portland Harbor at which DEQ is actively overseeing upland investigation or source control actions, or for which source control decisions have been made. DEQ updates the site information in ECSI when a Strategy Recommendation is made, but a site is not added to Table 1 until active oversight of the project is provided by DEQ.

Source Control Evaluation

The Source Control Evaluation (SCE) columns in Table 1 provide information on the status of DEQ’s work to evaluate the need for source control measures, including the status of SCE for each potential pathway, the schedule for completing SCE, the basis for determining whether source control measures are needed, and the status of EPA review.

Potential pathways

Six standard pathways represent the major potential pathways that contaminants could follow to reach the river from an upland site. These pathways include:

- overland transport/sheet flow – the uncontrolled flow of water and other material to the river from a site
- bank erosion – erosion of material within the sloping bank areas of the site to the river
- groundwater – groundwater plumes or discharges to the river via seeps or through preferential pathways
- stormwater – stormwater discharges to the river that originate from a pipe or stormwater system, including unpermitted stormwater discharges and discharges under a DEQ general stormwater permit
- overwater activities – the storage or use of hazardous substances over the water (i.e., storage tanks on docks, permanent work activities conducted over water), that if released would be a potential current or future source of contamination to the river; pipelines and other conveyance systems are not considered in this category, releases from these types of systems are reported to the Oregon Emergency Response System (OERS) system for clean up
- other – may include permitted wastewater discharges, individually permitted stormwater discharges, air deposition or other pathways

Each of these standard pathways appears for each site in Table 1 to track SCE work on a pathway-specific basis.

Basis for determining the need for source control

DEQ evaluates each of the pathways listed above to determine the need for source control measures. DEQ makes this determination based on: (1) whether contaminants are present and whether the pathway is capable of carrying them to the river (if it is, the pathway is called “complete”); and if a complete pathway exists, (2) whether it is carrying contaminants to the river at concentrations that exceed the Screening Level Values (SLVs) provided in the Joint Source Control Strategy (JSCS)⁵.

Three general examples are provided below.

- Example 1: Initial investigations of a site that is adjacent to the river indicate that bank soils have the potential to erode and carrying contaminants into the river. DEQ oversees a SCE to determine whether contaminants are in fact present in the bank soils and whether the eroded bank soils are carrying or could carry those contaminants into the river. The SCE concludes that contaminants are present in the bank soils and the soils are carrying contaminants into the river; the pathway is deemed “complete.” The SCE then determines whether the bank soils are carrying or could carry contaminants to the river at concentrations that exceed the SLVs in the JSCS. If they are or could carry contaminants to the river at concentrations exceeding SLVs, DEQ determines that source control measures may be needed and assigns a priority of high or medium to the pathway based on the degree of SLV exceedance (see “Priority levels for each pathway and site” below for more information on the priority levels). If it is a high priority, then the RP should move forward aggressively evaluating, designing, and implementing SCMs. If it is medium priority, then the RP should use the weight-of-evidence approach to determine if further SCE is needed or if SCMs are needed.
- Example 2: Initial investigations of a site adjacent to the river indicate that groundwater has the potential to migrate toward the river and carry contaminants. DEQ oversees a SCE to determine whether contaminants are present in the groundwater and whether the groundwater is carrying or could carry those contaminants into the river. The SCE concludes that groundwater is or could carry contaminants into the river, but only at concentrations significantly below the SLVs listed in the JSCS. DEQ determines that the pathway is “complete,” but no source control actions are needed because SLVs are not exceeded.
- Example 3: Initial investigations of a site near (but not adjacent to) the river indicate that stormwater has the potential to migrate toward the river and carry contaminants. DEQ oversees a SCE to determine whether stormwater is in fact migrating to the river and whether it is or could carry contaminants to the river. The SCE concludes that stormwater is actually not reaching the river

⁵ See p. 3-1 through 3-6 of the JSCS for more information about SLVs.

and could not reach the river because it is diverted to a stormwater treatment system. DEQ determines that the pathway is “not complete” and no source control actions are needed.

Definition of “Insignificant pathway; no actions recommended”

The term “insignificant pathway; no actions recommended,” is used in Table 1 when (1) the pathway is complete, and (2) contaminant concentrations are near or below SLVs at a point of compliance (e.g., river bank monitoring wells) and are not anticipated to increase.

Use of “N/A” for the pathways

“N/A” is used in Table 1 to indicate that the particular pathway does not exist at the site. For example, for an upland site that is set back from the river (i.e., not adjacent to the river’s edge) N/A would indicate that the overland transport/sheet flow, overwater activities, and bank erosion pathways do not exist at the site. For a site that is adjacent to the river, but where a concrete seawall lines the river bank, N/A would indicate that the pathway bank erosion does not exist at the site.

Priority levels for each pathway and site

Each pathway evaluated at each site is given a priority level for source control upon completion of the SCE, or when adequate information exists to determine the pathway’s priority. Pathways are prioritized based on their ability to carry contaminants from upland areas to the river at concentrations that exceed SLVs. Each site is then given a priority level based on the highest priority of the pathways. For example, if a site has two low priority pathways and one high priority pathway, the site is determined to be a high priority for source control. Definitions for high, medium and low priority determinations follow.

- High – High priority pathways and sites are those where a complete contaminant migration pathway exists and the upland source is significantly impacting the river or poses a significant and imminent threat to the river based on initial evaluation of key source control prioritization factors (listed on p. 4-3 of the JSCS). A primary consideration is that one or more media (soil, groundwater or stormwater) significantly exceed applicable SLVs at the point of discharge to the river (e.g., water at the end of a discharge pipe or soil or material at the riverbank) or the most reliable and cost-effective data point (e.g., groundwater measured at the shoreline), or where a bioaccumulative chemical is detected at concentrations significantly above the SLV. In addition, if an upland source is violating DEQ narrative water quality criteria for the Willamette River, the site may be considered a high priority. High priority sites are expected to move forward with aggressive source control measures without delay or be subject to enforcement action.
- Medium – Medium priority pathways and sites are those where a complete contaminant migration pathway exists and the upland source is impacting the river or poses a significant and/or imminent threat to the river based on an initial evaluation of key source control prioritization factors (listed on p. 4-3 of the JSCS). A primary consideration is that one or more media exceed applicable SLVs, but not significantly, at the point of discharge to the river, or where a bioaccumulative chemical is detected at concentrations above the SLV. Although exceedance of SLVs does not necessarily indicate that a site poses a significant and/or imminent threat or needs to immediately implement source control measures, it does indicate that the site may pose a threat to human health or the

environment and that additional evaluation may be needed to determine if source control measures are required to prevent, minimize or mitigate the migration of hazardous substances to the river. If the site exceeds one or more SLVs, the need for further characterization or for implementation of source control measures will be based on a site-specific weight-of-evidence determination. Medium priority sites are expected to perform a weight-of-evidence evaluation to determine if source control measures are required (see p. 4-5 of the JSCS for more information on the weight-of-evidence evaluation).

- Low – Low priority pathways and sites are those where upland data indicate, based on an initial evaluation of key source control prioritization factors (listed on p. 4-3 JSCS), that the site likely poses a low threat to the river (e.g., concentrations are near or below SLVs) or where DEQ, in consultation with EPA, may issue an upland “No Further Action” (NFA) determination or lower the State’s priority of the site for further upland investigation or remedial action under DEQ’s cleanup authority. Source control measures will not be required at low priority sites unless determined necessary by the results of the Portland Harbor RI/FS or ROD.
- p High – DEQ’s preliminary determination is that this is likely a high priority pathway or site based on available information. A final determination of pathway or site priority will be made upon completion of the SCE.
- p Med – DEQ’s preliminary determination is that this is likely a medium priority pathway or site based on available information. A final determination of pathway or site priority will be made upon completion of the SCE.
- p Low – DEQ’s preliminary determination is that this is likely a low priority pathway or site based on available information. A final determination of pathway or site priority will be made upon completion of the SCE.

Source Control Decisions and Status of Source Control Measures

The Source Control Decisions (SCDs) and Status of Source Control Measures (SCMs) columns in Table 1 provide information on actions taken or needed to control sources of contamination to the river, including the selected SCMs for each pathway, status of SCM implementation, status of EPA review, and ongoing operation and maintenance requirements.

For many sites listed in Table 1, boxes for information on SCDs and SCMs will be blank because source control work at those sites is still in the evaluation (SCE) phase. Other sites may be in the process of implementing SCMs, and still others may have completed all source control work. For those sites that have completed upland source control and SCMs have been determined to be effective, shading indicates that work is finished at this point in time. Upon completion of the Portland Harbor in-water RI/FS, however, DEQ will reevaluate all source control work to ensure that it adequately controlled contaminants to the final cleanup levels developed for the Harbor.

9.1 Acronyms and Abbreviations

Agr	Agreement
AOC	Administrative Order on Consent
AS/SVE	Air sparge/soil vapor extraction – a Source Control Measure used to remove volatile contaminants from groundwater; often combined with treatment measures
AST	Above-ground Storage Tank
AWQC	Ambient Water Quality Criteria
BES	Bureau of Environmental Services
BIP	Burgard Industrial Park
BMPs	Best Management Practices
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COI	Contaminant of Interest – chemicals present in Portland Harbor at levels that could threaten human health and the environment
CSOs	Combined-Sewer Overflows
cy	Cubic Yard
DEQ	Oregon Department of Environmental Quality
ECSI	DEQ’s Environmental Cleanup Site Information database
EIB	Enhanced In-situ Bioremediation
EPA	Environmental Protection Agency
FS	Feasibility Study – a phase of the cleanup process; evaluating cleanup alternatives after the Remedial Investigation has been completed
FFS	Focused Feasibility Study
GW or gw	Groundwater
ICP	Independent Cleanup Pathway
IGA	Inter-Governmental Agreement
IRAM	Interim Remedial Action Measure
HVOCs	Halogenated Volatile Organic Compounds
IRAM	Interim Remedial Action Measure
JSCS	Joint Source Control Strategy – issued by DEQ and EPA in December 2005 ⁶
LNAPL	Low density Non-Aqueous Phase Liquid
LWG	Lower Willamette Group
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

⁶ The JSCS is available on DEQ’s web site at (<http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/index.htm>); click “Joint Source Control Strategy” on the left side bar.

MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable – used in Table 1 to indicate that the particular pathway does not exist at the site
NAPL	Non-Aqueous Phase Liquid
N&E	Nature and extent of the contamination at the site
NFA	No Further Action – a DEQ notice to a Responsible Party declaring that no further cleanup action is needed at the site
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
OF	Outfall
p&t	Pump & Treat system – a Source Control Measure used to remove or contain and treat contaminated groundwater
PA	Preliminary Assessment – an early assessment stage of the cleanup process
PCB	Polychlorinated Biphenyls
PH	Portland Harbor
PH Agr	Portland Harbor Agreement – a formal agreement to conduct the remedial investigation and source control work
PH Ltr Agr	Portland Harbor Letter Agreement – an initial agreement to conduct limited investigation and cleanup activities and cover DEQ’s oversight costs
PM	DEQ Project Manager leading cleanup work at the site
PPA	Prospective Purchaser Agreement – a tool for negotiating and agreeing upon potential liability for prospective purchasers of sites
PRP	Potentially Responsible Party
ROD	Record of Decision
RD/RA	Remedial Design/Remedial Action – a phase of the cleanup process that occurs after the Record of Decision; designing and implementing the cleanup action
RI	Remedial Investigation – a phase of the cleanup process; investigating the nature and extent of contamination and understanding the potential risks posed by the contaminants to human health and the environment
RI/FS	Remedial Investigation/Feasibility Study
RM	River Mile
RP	Responsible Party
SC	Source Control
SCD	Source Control Decision
SCE	Source Control Evaluation
SCM	Source Control Measure
SIC	Schnitzer Investment Corp
SLV	Screening Level Value – a contaminant-specific level established in the JSCS (see JSCS Table 3.1) that is used to screen upland pathways and sites to identify potential threats to human health and the environment.

SOW	Scope of Work
SVE	Soil Vapor Extraction – a Source Control Measure used to remove volatile contaminants from subsurface soils; often combined with soil vapor treatment
TBD	To Be Determined
TCE	Trichloroethene
TCA	Trichloroethane
UIC	Underground Injection Control system
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds
WO	Waiting on
XPA	Expanded Preliminary Assessment – an early assessment stage of the cleanup process

9.2 Contact Information for DEQ Project Managers

Jim Anderson	(503) 229-6825	anderson.jim@deq.state.or.us
Dana Bayuk	(503) 229-5543	bayuk.dana@deq.state.or.us
Tom Gainer	(503) 229-5326	gainer.tom@deq.state.or.us
Dave Lacey	(503) 229-5354	lacey.david@deq.state.or.us
Scott Manzano	(503) 229-6748	manzano.scott@deq.state.or.us
Matt McClincy	(503) 229-5538	mcclincy.matt@deq.state.or.us
Jim Orr	(503) 229-5039	orr.jim@deq.state.or.us
Mark Pugh	(503) 229-5587	pugh.mark@deq.state.or.us
Shawn Rapp	(503) 229-5614	rapp.shawn@deq.state.or.us
Mike Romero	(503) 229-5563	romero.mike@deq.state.or.us
Bob Schwarz	(541) 298-7255/30	schwarz.bob@deq.state.or.us
Jennifer Sutter	(503) 229-6148	sutter.jennifer@deq.state.or.us
Karen Tarnow	(503) 229-5988	tarnow.karen@deq.state.or.us
Ken Thiessen	(503) 229-6015	thiessen.ken@deq.state.or.us