

Completion Summary for City of Portland Outfall Basin 50

1 Summary

The City of Portland (City) has been addressing source control concerns related to the City conveyance systems for more than four decades, and several City programs have evolved to meet changing regulatory requirements and watershed health objectives. Following the 2000 listing of Portland Harbor on the National Priorities List, the City initiated a new partnership with the Oregon Department of Environmental Quality (DEQ) Cleanup Program to identify specific sources of contaminants to City stormwater conveyance systems in the harbor that were not being adequately controlled. This report summarizes the results of this collaborative effort in Outfall Basin 50.

This Completion Summary includes a weight-of-evidence evaluation to demonstrate that source identification is complete and that there are no current (or anticipated future) major sources of contaminants to the Willamette River via the Basin 50 conveyance system.

Outfall 50 discharges to the east side of the river near River Mile (RM) 6. The drainage basin for this outfall is approximately 38.6 acres in the St. Johns district and includes residential, commercial, and industrial properties, as well as a small portion of the Oregon Department of Transportation (ODOT) Highway 30 Bypass. As is typical for the St. Johns district, the upper part of the basin remains predominantly residential, and the lower part, closer to the river, is a mix of industrial and non-industrial uses (including new residential development) on historically industrial land. Non-residential facilities located in the lower part of the basin include metal fabricators, an electrical wiring supply company, and the City's Water Pollution Control Laboratory (WPCL). A stormwater pollution reduction pond, constructed in 1997, treats stormwater runoff from the basin before it discharges from the outfall and the basin includes several other smaller stormwater treatment facilities that treat runoff from basin rights-of-way.

Evaluation of inriver sediment data collected in 2002 indicated elevated metals concentrations in sediment near the outfall; however, the adjacent upriver site was identified as a likely source of metals. The City conducted source investigations (including collection and analysis of solids and stormwater samples) and confirmed that major current contaminant sources were not present and that additional source tracing was not needed. The City concludes that ongoing programmatic source control measures (SCM) in the basin are sufficient for ensuring discharges from Outfall 50 are protective of the river. Therefore, the City has met the remedial investigation (RI)/SCM objectives for Basin 50.

2 Introduction

This Completion Summary presents a weight-of-evidence evaluation of whether further source investigation is needed in Basin 50, and the rationale for concluding that current and future discharges from the basin are not likely to be significant sources of contaminants to river sediment. The purpose of this report is to demonstrate that, for Basin 50, the City has met the joint RI/SCM objectives of the August 13, 2003, intergovernmental agreement (IGA) between the City and DEQ.

This report is included in Appendix A of the *Municipal Stormwater Source Control Report for Portland Harbor* (Municipal Report), which provides additional background and detail regarding the City's harborwide source control efforts, including regulatory and non-regulatory programs to address current and future sources and to minimize recontamination potential.

3 Outfall and Basin Setting

3.1 Basin Location and Configuration

Basin 50 is located in the historical St. Johns district on the east side of the river and discharges near RM 6. The outfall basin drains approximately 38.6 acres. Figure 1 shows the location of the outfall and drainage basin boundary and provides an overview of the associated stormwater conveyance system.

As shown in Figure 1, the conveyance system includes a stormwater pollution reduction pond at the downstream end of the basin, on the City's WPCL property. The City constructed the pond in 1997, as part of its Combined Sewer Overflow (CSO) Abatement Program, to remove pollutants from basin stormwater runoff through solids capture and natural vegetation filtration. Stormwater passes through a sedimentation manhole (see Figure 1) before being discharged to the pond via a storm line and vegetated spillway. When water in the pond exceeds the pond capacity, treated stormwater is discharged through an outlet grate at the west end of the pond and to Outfall 50. If stormwater inflows exceed the pond design criteria, the excess flow is diverted through a bypass line to Outfall 50 to avert damage or sediment agitation in the pond during high flows.

The conveyance system also includes additional stormwater treatment facilities (as shown in Figure 1) that further reduce suspended solids loading to Outfall 50.

- In 2007, a private contractor constructed water quality swales to treat stormwater runoff from N. Salem Avenue, between N. Edison Street and N. Crawford Street, as part of redevelopment requirements for adjacent new residential property.
- In 2007, a private contractor constructed water quality planters to treat stormwater runoff from N. Charleston Avenue and N. Edison Street, as part of redevelopment requirements for adjacent new residential property.
- The City constructed five water quality swales in 2012, along N. Ivanhoe Street between N. Leavitt Avenue and N. Charleston Avenue. The construction was completed by the City's Bureau of Environmental Services (BES) and Bureau of Transportation as part of pedestrian improvements. These swales treat runoff from the ODOT Highway 30 Bypass. The City has an agreement with ODOT to maintain the swales on their behalf.

City programs that result in these types of stormwater improvements are described in the Municipal Report. Additional information on the Outfall 50 stormwater conveyance system and associated drainage basin is included in the *Programmatic Source Control Remedial Investigation Work Plan for the City of Portland Outfalls Project* (CH2M HILL, 2004) and *Outfall Basin 50 Pollution Reduction Pond Solids Investigation, Technical Memorandum No. OF50-1* (BES, 2008).

3.2 Land Use and Potential Upland Sources

Land use in Basin 50 is a mix of residential, commercial, industrial (within the general employment¹ zoned area in the lower portion of the basin), major transportation (ODOT Highway 30 Bypass), and open space. Land use in the lower part of the basin includes the WPCL facility, which the City constructed in 1997 to house BES staff members and a full-service environmental laboratory. The WPCL site includes open space and showcases a variety of stormwater treatment facilities constructed to manage all site stormwater. Other non-residential land uses in the lower basin include metals fabrication, steel plate storage, and an electrical wiring supply business. The remainder of the basin is residential and commercial properties, vacant land, a railroad corridor, and streets, including a small area of major transportation (the Highway 30 bypass that serves as principal access to and from the St. Johns Bridge). The basin is within the St. Johns Plan district, which provides a framework for strengthening St. Johns' role as the commercial and civic center of the North Portland peninsula.²

Sites that were identified as potential sources of contaminants to the Basin 50 conveyance system include two sites within or partially within the basin that are in the DEQ Cleanup Program, as listed in DEQ's Environmental Cleanup Site Information (ECSI) database. The City investigated, remediated (removed contaminated soil), and redeveloped the WPCL site. Removal actions have been conducted at the former Crawford Street Corporation site and a stormwater source control evaluation (SCE) is underway. ODOT is conducting an SCE of all ODOT drainage areas within Portland Harbor. Table 1 lists these sites and indicates the associated contaminants of interest (COI) and the status of stormwater pathway evaluations.

¹ General employment is a Portland zoning category that allows a range of employment opportunities but emphasizes industrial and industrial-support uses. The zones can allow for the transition to a less industrial overall nature.

² The St. Johns Plan district describes the mixed-use development goals in this area (see <http://www.portlandoregon.gov/bps/index.cfm?&a=53424>).

Table 1. DEQ Cleanup Program Sites Within or Partially Within Basin 50

DEQ Cleanup Program Site	Site COIs	Site Stormwater Pathway Evaluations ⁽¹⁾
Within Basin		
BES Water Pollution Control Laboratory (ECSI # 2452)	PCBs in subsurface soil ⁽²⁾	Source Control Decision/No Further Action Issued
Partially Within Basin		
Crawford Street Corporation (ECSI # 2363) ⁽³⁾	VOCs, PAHs, TPH, PCBs, metals ⁽⁴⁾	Source Control Evaluation in Progress
ODOT – Portland Harbor Source Control Evaluation (ECSI #5437)	Not listed ⁽⁵⁾	Source Control Evaluation In Progress

Notes:

VOCs = volatile organic compounds; PAHs = polycyclic aromatic hydrocarbons; TPH = total petroleum hydrocarbons; PCBs = polychlorinated biphenyls; DEQ = Oregon Department Environmental Quality; COIs = contaminants of interest; BES = Bureau of Environmental Quality; ECSI = Environmental Cleanup Site Information; ODOT = Oregon Department of Transportation; WPCL = Water Pollution Control Laboratory.

- (1) Source: DEQ Milestone Report, Figure 1b, "Status of Stormwater Source Control Evaluations, January 2013" (DEQ, 2013).
- (2) Site COIs are not listed in Appendix Q (Source Control Inventory Tables) of the Portland Harbor RI/FS Draft Feasibility Study (FS) (Anchor et al., 2012) or Table 4.2-2 of the Portland Harbor RI/FS Draft Final Remedial Investigation Report (Integral et al., 2011). DEQ records indicate two PCB releases to subsurface soil at this site were discovered and remediated in 1993 (DEQ, 2010a and 2010b).
- (3) Some stormwater from the southern area of this site discharges to Outfall 50 via overland flow to the WPCL site. This area currently is used by Lampros Steel for structural steel plate storage and staging.
- (4) Source: Appendix Q of the Portland Harbor RI/FS Draft FS (Anchor et al., 2012).
- (5) Site is not listed in Appendix Q of the draft FS or Table 4.2-2 of the Portland Harbor RI/FS Draft Final Remedial Investigation Report (Integral et al., 2011), and site COIs are not listed in ECSI database (DEQ, 2012).

No sites in the basin currently hold, or historically held, National Pollutant Discharge Elimination System (NPDES) permits to discharge to the Basin 50 conveyance system. Note that the City and ODOT both have NPDES Municipal Separate Storm Sewer System (MS4) stormwater permits that cover basin drainage areas.

3.3 Outfall Setting

Outfall 50 discharges to an area of potential concern (AOPC 12) identified by the U.S. Environmental Protection Agency (EPA) based on elevated concentrations of metals and other contaminants in river sediment (EPA, 2010). In addition to Outfall 50, one non-City outfall also discharges to AOPC 12.

4 Basin Screening and Source Investigations

The City identified Basin 50 as a Priority 3 for source tracing, based on elevated concentrations of metals in the surface sediment samples collected by the City near Outfall 50 in 2002 (CH2M HILL, 2004). Priority 3 designations were assigned to basins where significant concentrations of contaminants have been detected in sediment near the outfall and the contaminants likely are attributable to known upland sources that currently are being investigated under DEQ or EPA oversight. No current potential sources of metals at the concentrations detected were identified

within Basin 50, but the adjacent upriver site (former Crawford Street Corporation site) was identified as a possible source to inriver sediment near Outfall 50 (CH2M HILL, 2004).

To confirm that discharges from Outfall 50 were not a significant source of metals or other contaminants to the river, the City collected and analyzed solids from the stormwater pollution reduction pond in 2007. A composite solids sample, representing solids discharged from Basin 50 that had accumulated in the pond during the 10-year period of operation, was collected just upstream of the pond's discharge grate. The sample was analyzed for a broad range of constituents, including metals, PCB Aroclors and congeners, pesticides, herbicides, polycyclic aromatic hydrocarbons (PAH), phthalates, and semivolatile organic compounds. For reference, data for solids that had been removed in 2004 from the pond spillway area near the inlet also were evaluated. The metals results for the 2004 and 2007 samples indicated that concentrations of metals discharged to the City stormwater conveyance system were too low to be the source of the elevated concentrations detected in the 2002 river sediment samples. Analytical results for the 2007 pond solids samples also did not indicate the presence of major sources of other contaminants in the basin (BES, 2008).

As part of the City's subsequent stormwater screening evaluation, the City collected stormwater samples in 2007 from the downstream end of the basin (i.e., representing all collective discharges to the system). Based on the evaluation of these data and using a conservative screening approach, no analytes were identified as potentially warranting further source tracing in Basin 50 (BES, 2010).

Table 2 lists investigations and evaluations completed by the City in the Basin 50 conveyance system.

Table 2. City Investigations in the Basin 50 Stormwater Conveyance System

Data Collection Period	Purpose	Documentation
2000	Compile basin background information to identify potential sources.	Preliminary Evaluation of City Outfalls (Eastshore) (BES, 2000)
2002	Evaluate inriver sediment data near City outfalls to prioritize basins for source tracing.	Programmatic Source Control Remedial Investigation Work Plan (CH2M HILL, 2004)
2004 and 2007	Analyze a sample of sediments removed from the spillway of the stormwater pollution reduction pond (2004) and a sediment sample from the area adjacent to the outlet grate (2007). Evaluate these data to determine whether solids discharging from the outfall are a source of elevated metals in river sediment and whether major contaminant sources are present in the basin.	Outfall Basin 50 Pollution Reduction Pond Solids Investigation - Technical Memorandum No. OF50-1 (BES, 2008)
2007	Evaluate stormwater data from City outfalls to identify additional source tracing needs.	Stormwater Evaluation Report, City of Portland Outfall Project (BES, 2010)

The City's investigation and data evaluation did not identify any current major sources of contaminants in Basin 50.

5 Completion of Source Identification

The lines of evidence evaluated to confirm that source tracing is complete include (1) results of source investigation activities conducted in the basin and (2) upland investigation and land use in the basin. Findings from this evaluation are summarized below:

- *Source Investigation Results:* The Basin 50 conveyance system includes a stormwater treatment pond at the downstream end of the basin. An investigation of sediments collected from the pond did not indicate the presence of major sources of metals or other contaminants in the basin (BES, 2008). In addition, the City's evaluation of stormwater samples representing the entire drainage basin verified that further source tracing in Basin 50 was not needed (BES, 2010).
- *Upland Investigation and Land Use:* Figure 2 displays the spatial extent of DEQ Cleanup Program site investigations and other programmatic controls in the current basin (see key to figures provided at beginning of this Appendix). As shown in Figure 2, almost all non-residential sites in the portion of the basin zoned general employment:
 - Are conducting an SCE or were issued a source control decision under the DEQ Cleanup Program;
 - Are covered under NPDES industrial stormwater regulations; and/or
 - Are monitored for stormwater exposures through periodic inspections under the City's Industrial Stormwater Program.

Two additional sites in the upper part of the basin (a limousine service and a dry-cleaning business) also have been inspected under the Industrial Stormwater Program to confirm that industrial exposures are not present. Land use at sites not covered by DEQ Cleanup or Water Quality Programs consists of residential properties, commercial businesses, an electrical wiring supply operation, and vacant land. Current and future industrial activities exposed to stormwater will be addressed by the DEQ Water Quality NPDES Program, and non-industrial activities are not a known or suspected source of contaminants to the City stormwater conveyance system.

Based on these lines of evidence, the City concludes that Basin 50 source investigation is complete and no additional source tracing is warranted.

6 Basin Source Controls

Source control in Basin 50 includes SCMs implemented or planned under DEQ Cleanup Program agreements, specific controls implemented within the City's shared stormwater conveyance system (e.g., the stormwater pollution reduction pond), and ongoing City and DEQ programs that are described in detail in the Municipal Report. Source controls implemented within Basin 50 are displayed in Figures 1 and 2 and summarized in this section.

One type of programmatic source control is the elimination of stormwater exposures to industrial activities. Table 3 lists the one site within the basin that currently holds an NPDES No Exposure Certification.

Table 3. Site with No Exposure Certification in Basin 50

Address	Company	Time Period
8613 N. Crawford Street	Peninsula Iron Works	2009 - Present

As shown in Figure 2, several properties within the basin have implemented stormwater controls as part of site redevelopment. These controls, such as swales and flow-through planter boxes, manage stormwater onsite and reduce stormwater runoff volume and sediment loading to Outfall 50.

Table 4 summarizes additional site-specific, programmatic, and conveyance system source controls for Basin 50.

Table 4. Basin 50 Source Controls

Site/Area	Source Controls	Implementation Timeframe
Source Control Measures (SCM) at DEQ Cleanup Program Sites		
BES Water Pollution Control Laboratory (ECSI # 2452)	Approximately 1,500 cubic yards of black sand and other potentially contaminated fill were excavated and disposed of offsite (GSI, 2006).	1994
	All site stormwater is subject to stormwater treatment. The City constructed stormwater treatment systems (i.e., vegetated infiltration swales for parking lot and roof runoff and the Basin 50 stormwater pollution reduction pond) as part of the site redevelopment.	1997
Crawford Street Corporation (ECSI # 2363)	A sand filter was installed in the northern area of the site to treat stormwater that is discharged to two catch basins affiliated with Columbia Forge & Machine Works operations.	Unknown
	Approximately 381 tons of black sand were removed from the southwest corner of the site along the beach and riverbank and disposed of offsite (Bridgewater, 2002).	2001
	Additional stormwater SCMs to be determined.	To be determined
ODOT - Portland Harbor Source Control Evaluation (ECSI #5437)	As part of a pedestrian improvement project, the City constructed five water quality swales to infiltrate ODOT runoff from N. Ivanhoe Street and to reduce solids loading to Outfall 50. Swales are maintained by the City under an agreement with ODOT.	2012
	Additional stormwater SCMs to be determined.	To be determined
City Conveyance System		
Entire Basin	The City constructed a stormwater pollution reduction pond at the downstream end of the basin (on the WPCL property) to remove pollutants from stormwater runoff through solids capture and natural vegetation filtration before discharging to Outfall 50. The only portion of the basin that is downstream of the pond is drainage from a stormwater quality swale at the WPCL.	1997

Site/Area	Source Controls	Implementation Timeframe
West end of N. Salem Avenue	The City installed a sedimentation manhole just upstream of the stormwater pollution reduction pond to reduce suspended solids loading to the pond.	2005
N. Salem Avenue	As part of a residential redevelopment, a private contractor constructed water quality swales in the right-of-way along N. Salem Avenue to infiltrate stormwater from the adjacent street and reduce solids loading to Outfall 50.	2007
N. Charleston Avenue and N. Edison Street	As part of a residential redevelopment, a private contractor constructed stormwater planter boxes in the right-of-way along N. Charleston Avenue and N. Edison Street to infiltrate stormwater from the adjacent street and reduce solids loading to Outfall 50.	2007
Other (Programmatic Source Controls)⁽¹⁾		
Peninsula Iron Works and several residential properties	Stormwater Management Manual Requirements	Ongoing
Peninsula Iron Works	City Discharge Authorization⁽²⁾	Ongoing
See listing in Table 4	NPDES No Exposure Certifications	Ongoing

Notes:

DEQ = Oregon Department of Environmental Quality; ECSI = Environmental Cleanup Site Information; ODOT = Oregon Department of Environmental Quality; WPCL = Water Pollution Control Laboratory; NPDES = National Pollutant Discharge Elimination System

- (1) Programmatic source controls are described in detail in the Municipal Report.
- (2) In compliance with City Code, the site prepared an Accidental Spill Prevention Plan to document measures being implemented at the site to minimize pollutant discharges to the storm system.

The City and ODOT both have NPDES MS4 stormwater permits that cover basin drainage areas. Ongoing municipal programs (e.g., periodic inspection of and technical assistance to non-NPDES sites, illicit discharge monitoring, street sweeping, etc.) likely provide additional source control benefits in the basin and will help to address minor sources for which specific control measures have not been required. City programs that control current and future contaminant discharges to the conveyance system are described in the Municipal Report.

7 Conclusion

Based on the information summarized above, there are no major sources of contaminants in Basin 50. Therefore, future discharges from Outfall 50 are unlikely to represent a significant source of contaminants to the river. The City concludes that it has met the RI/SCM objectives of the IGA and requests a source control decision from DEQ for Basin 50.

8 References

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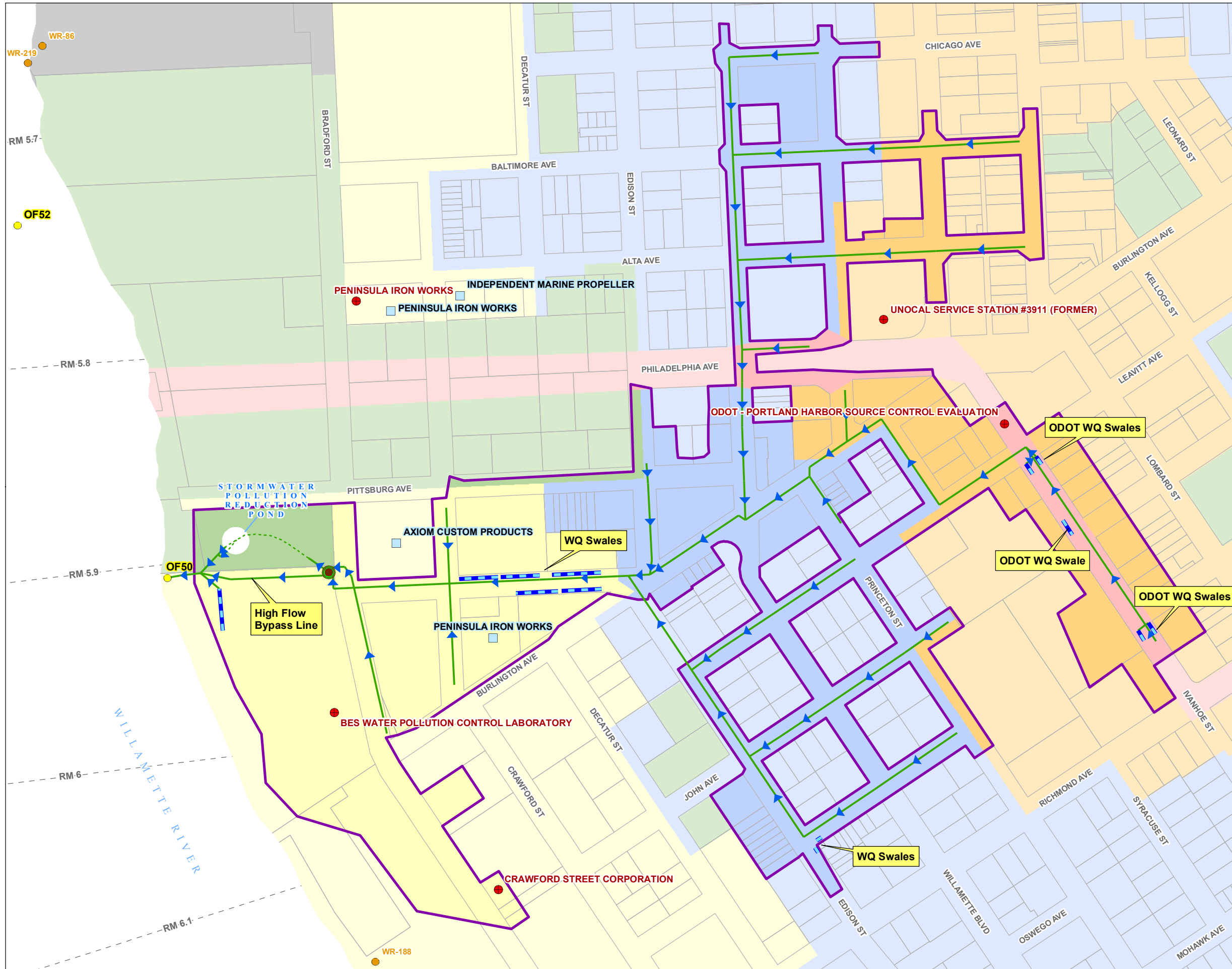
Integral et al. 2011. Portland Harbor RI/FS, Draft Final Remedial Investigation Report.
Prepared for the LWG. Prepared by Integral Consulting Inc., Windward Environmental
LLC, Kennedy/Jenks Consultants, and Anchor QEA, LLC. August 29, 2011.

List of Figures

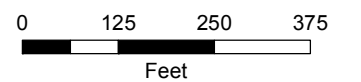
Figure 1: Basin 50 Overview and Conveyance System Source Controls

Figure 2: Basin 50 Upland Site Source Controls

FIGURE 1
Basin 50
Overview and Conveyance
System Source Controls



- Basin 50
- DEQ ECSI Site
- NPDES No Exposure Certification
- Conveyance System**
- Storm Line
- ~ Water Quality (WQ) Swale
- Sediment Removal Structure
- City Outfall
- Non-City Outfall
- Land Use/Zoning**
- Heavy Industrial
- General Employment
- Commercial
- Residential
- Parks and Open Space
- Major Transportation
- All Other Data**
- River Mile (RM)
- Tax Lot
- ↔ Discharges to City Outfall
- ↔ Portland Harbor Hydroboundary



MAP NOTES:
 Date: December 31, 2013
 Data Sources: BES, METRO

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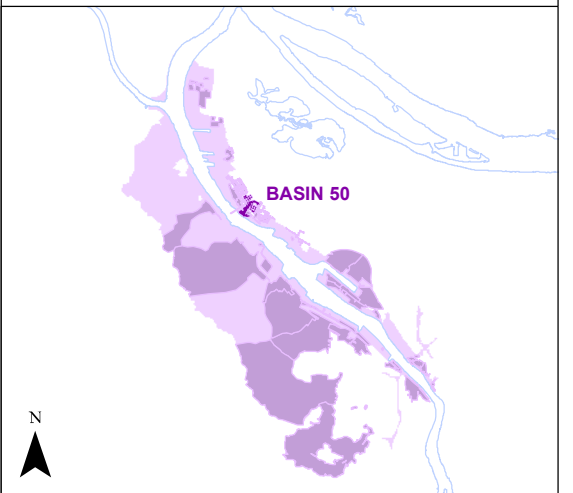
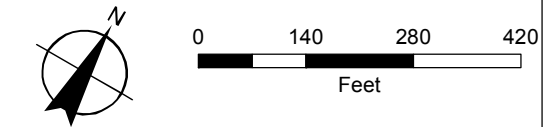


FIGURE 2
Basin 50
Upland Site Source Controls



- Basin 50
- Tax Lot
- DEQ Stormwater SCE**
- SCE implemented or pending
- All Other Features**
- NPDES No Exposure Certification
- >50% of Site Area Redeveloped Under City SWMM
- City Discharge Authorization
- Stormwater Treatment Facility
- Site Inspection - BES Industrial Stormwater Program
- Discharges to City Outfall
- Portland Harbor Hydroboundary

NOTES:
 The DEQ Milestone Report (DEQ, 2013) does not indicate that this portion of ODOT's right-of-way is in the DEQ Cleanup Program. However, based on discussions with DEQ, ODOT's SCE is anticipated to include this portion of Ivanhoe St.



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 Date: December 31, 2013
 Data Sources: BES, METRO, Aerial Photo Taken 2012

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