Completion Summary for City of Portland Outfall Basin 53A

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 53A.

This Completion Summary includes a weight-of-evidence evaluation to demonstrate that source identification is complete and a summary of source controls (implemented or planned) to control future contaminant discharges to the Willamette River.

Basin 53A is located in the South Rivergate Industrial Park area in north Portland. The conveyance system post-dates much of the harbor's early history of industrial operations. It was constructed in 1970 as a storm-only sewer, and all existing connections to the basin conveyance system have been in place since the early 1980s. Current land use in the basin is primarily industrial, with one facility (a food processing plant) currently vacant.

Inriver sediment data do not indicate that the outfall is a significant pathway for contaminants to the river. However, because the basin includes sites with documented contamination, the City collected samples of stormwater and sediment from the Basin 53A conveyance system for purposes of basin screening and source tracing.

Source tracing focused on polychlorinated biphenyls (PCB) and zinc, which were detected at elevated concentrations in stormwater and storm solids samples from near the downstream end of the basin. Two sources of PCBs and metals have been identified within the basin and the City source investigations indicate that no additional source investigation is needed. Both these upland sites are in the DEQ Cleanup Program, are conducting stormwater source control evaluations, and have implemented source control measures (SCM) under DEQ oversight; one of these was redeveloped recently. Other sites in the basin are being controlled by stormwater permits or No Exposure Certifications. The City's most recent stormwater data from this basin indicate that overall contaminant contributions to the system have decreased during the course of the City's source investigation activities, likely as a result of the SCMs implemented at these sites.

The major sources of contaminants have been identified in this basin and the sites are implementing SCMs under DEQ oversight. Therefore, the City has met the remedial investigation (RI)/SCM objectives for Basin 53A.

2 Introduction

This Completion Summary presents a weight-of-evidence evaluation of whether further source investigation is needed in Basin 53A, 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 the City has met the RI/SCM objectives of the August 13, 2003, intergovernmental agreement (IGA) between the City and DEQ. The City and DEQ have identified all major sources of contaminants to the basin and are using their respective authorities to ensure that source controls are implemented where needed.

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

Outfall 53A discharges to the east side of the Willamette River near River Mile 2.7. The current drainage area for Basin 53A is approximately 73 acres, located within the Rivergate area. The conveyance system was constructed by the Port of Portland in 1970 as a storm-only drainage system, and the basin expanded through the early 1980s as industrial sites in the area developed and connected to the system. The conveyance system drains industrial properties adjacent to N. Ramsey Blvd. and N. Rivergate Blvd. Redevelopment activities at one of these properties (EVRAZ/Oregon Steel) in 2005, resulted in removal of approximately 7 acres of active industrial land from the Basin 53A drainage area. Figure 1 shows the location of Outfall 53A and current drainage basin boundary, and provides an overview of the associated stormwater conveyance system. For additional detail, refer to the *Outfall Basin 53A Source Investigation Report* (BES, 2012).

3.2 Land Use and Potential Upland Sources

Basin 53A is located in the South Rivergate Industrial Park. Before the Industrial Park was developed, this area was used for placement of dredge material from the Willamette and Columbia Rivers. Fill placement began as early as the 1920s (Bureau Veritas, 2009) and continued periodically throughout the 1960s (Port of Portland, 1968). The land in Basin 53A is zoned heavy industrial, as shown in Figure 1, and current land uses are predominantly industrial. Industrial operations in the basin include a steel manufacturing facility, liquid and dry bulk products transfer facility, bulk fertilizer marine terminal, machine shop, and concrete casting facility. Another site (a former food processing plant) is currently vacant, but is expected to be redeveloped for industrial purposes. In addition to the industrial operations, one site in the basin is under commercial use (credit union).

Sites that were identified as potential sources include the three sites in the basin that are in the DEQ Cleanup Program, as listed in DEQ's Environmental Cleanup Site Information (ECSI) database. Table 1 lists these sites and indicates the associated contaminants of interest (COI)

and status of stormwater pathway evaluations. Of these three sites, two currently are conducting stormwater pathway evaluations under DEQ oversight.

Table 1. DEQ Cleanup Program Sites in Basin 53A

DEQ Cleanup Program Site (1)	Site COIs (2)	Site Pathway Evaluations	
		Stormwater Pathway (3)	Preferential Groundwater Pathway(4)
Consolidated Metco - Rivergate Facility (ECSI #3295)	PAHs, TPH, PCBs, VOCs, metals, phthalates	Source Control Evaluation In Progress	Source Control Evaluation Completed - Source Control Determination Pending
Oregon Steel Mills - Rivergate (ECSI #141)	PCBs, metals	Source Control Evaluation In Progress	Source Control Evaluation in Progress
JR Simplot Company (ECSI #3343)	TPH (5)	Need for Source Control Evaluation to be Determined/Low Priority	Need for Source Control Evaluation to be Determined/Low Priority (6)

Notes:

PAHs = polycyclic aromatic hydrocarbons; TPH = total petroleum hydrocarbons; VOCs = volatile organic compounds; COIs = contaminants of interest; ECSI = Environmental Cleanup Site Information; PCBs = polychlorinated biphenyls; DEQ = Oregon Department of Environmental Quality

(1) In addition to the sites listed, the ECSI database also lists the South Rivergate Industrial Park (ECSI #2980) as within the basin boundary. This is a general study area designation that includes many non-DEQ Cleanup Program properties (including outside of Basin 53A), and, therefore, is not listed as a distinct Cleanup Program site in this table.

(2) Unless otherwise noted, site COIs are those identified in Appendix Q (Source Control Inventory Tables) of the Portland Harbor RI/FS Draft Feasibility Study (FS) (Anchor et al., 2012).

(3) Source: DEQ Milestone Report, Figure 1b, "Status of Stormwater Source Control Evaluations, January 2013" (DEQ, 2013).

(4) Unless otherwise noted, source is DEQ Milestone Report, Figure 3, "Groundwater Source Control Evaluation Status, January 2013") (DEQ, 2013). It is not known whether the groundwater source control evaluations considered the preferential pathway to the City stormwater conveyance system.

(5) COIs are not listed for this site in Appendix Q of the Draft FS (Anchor et al., 2012) or Table 4.2-2 of the Draft Final RI report ((Integral Consulting et al., 2011). COIs listed here for this site are based on information in DEQ's ECSI database (DEQ, 2002).

(6) Based on site stormwater source control evaluation status as indicated in Figure 1b in DEQ Milestone Report (DEQ, 2013). It is not known whether this status reflects consideration of the preferential pathway to the City stormwater conveyance system.

Industrial sites covered, or historically covered, by National Pollutant Discharge Elimination System (NPDES) stormwater regulations also were considered as potential contaminant sources to the City conveyance system. Five industrial sites currently hold, or historically held, NPDES permits to discharge to the Basin 53A conveyance system; these sites are listed in Table 2. Sites with current NPDES permits are shown in Figure 1. Note that the City operates under an NPDES Municipal Separate Storm Sewer System (MS4) stormwater permit that also covers basin drainage areas.

Table 2. Current[(1)] and Historical NPDES Permit Coverage in Basin 53A

Address	Company	Permit Type	Time Period
10001 N Rivergate	Steinfelds Products Co.	Cooling Water (100J)	1990 – 2001
		Stormwater (1200-F)	1992 – 1996
		Stormwater (1200-Z)	1997 – 2002
	Tree House Products	Stormwater (1200-Z)	2002 – 2005
	Bay Valley Foods, LLC	Stormwater (1200-Z)	2005 – 2008
13940 N Rivergate	Consolidated Metco Inc.	Stormwater (1200-H)	1992 – 1996
		Stormwater (1200-Z)	1997 – 2008
	Archer Daniels Midland Co.	Stormwater (1200-Z)	2013 – Present
14003 N Rivergate	Unocal Chemicals Division	Cooling Water (100J)	1996 – 2001
	Unocal Chemicals Division /PRODICA LLC/Agrium US Inc. [(2)]	Stormwater (1200-Z)	1997 – 2000
	JR Simplot Company	Stormwater (1200-Z)	2000 - Present
14025 N Rivergate	H.B. Fuller	Stormwater (1200-H)	1992 – 1995
14400 N Rivergate	Oregon Steel Mills, Inc.	Stormwater (1200-H)	1992 – 1996
	Oregon Steel Mills, Inc.	Stormwater (1200-Z)	1997 – 2002
	EVRAZ Oregon Steel Mills	Stormwater (1200-Z)	2002 – 2008
	EVRAZ, Inc., NA	Stormwater (1200-Z)	2008 – Present

Notes:

NPDES = National Pollutant Discharge Elimination System

(1) Current permits are indicated in bold.

(2) Name changed from Unocal Chemicals Division to PRODICA LLC (both were subsidiaries of Union Oil Co.) then to Agrium and finally JR Simplot.

3.3 Outfall Setting

Several private outfalls (as well as industrial dock/berth structures) are located upstream and downstream of Outfall 53A. The private outfalls and Outfall 53A discharge within a river reach identified by the U.S. Environmental Protection Agency (EPA) as an area of potential concern (AOPC 1) for PCBs, certain metals, and other contaminants (EPA, 2010).

4 Basin Screening and Source Investigations

The reach of river where Outfall 53A is located was incorporated into the Portland Harbor Superfund Site expanded study area in 2006. The City subsequently initiated investigations to identify and evaluate potential contaminants and sources in the basin.

In June 2005, the City investigated inline solids in a lateral connection from the EVRAZ site because site information indicated that PCBs were present in surface and subsurface soils (BES, 2005; Exponent, 2003). In July 2005, the City investigated dry-weather flow[1] in the basin to identify potential sources of mercury detected in a dry-weather flow sample collected in the basin by the City's Illicit Discharge Elimination Program in September 2002 (BES, 2005).

The City subsequently deployed sediment traps in the three branches of the Basin 53A conveyance system and at a downstream sampling location (representing all collective discharges to the system), and collected inline solid samples at targeted locations, to evaluate potential sources of metals and PCBs in the basin. These source investigation activities are described in detail in the *Outfall Basin 53A Source Investigation Report* (BES, 2012). The City also collected stormwater samples from the downstream sampling location as part of its Portland Harbor stormwater screening effort (BES, 2010). The stormwater samples were analyzed for a broad suite of analytes to identify stormwater contaminants potentially warranting further source tracing in the basin. Additional stormwater samples subsequently were collected for purposes of evaluating SCM effectiveness in the basin (BES, 2012). The results of these investigations, together with available information from the upland sites in the basin, were evaluated to identify the major sources of contaminants to Outfall 53A and determine the need for additional source controls.

Based on evaluation of the stormwater screening data, contaminants identified as potentially needing source tracing included PCBs and zinc (BES, 2010). Results of the source tracing investigations (i.e., sediment trap and inline solids sampling and review of upland site data) indicated stormwater discharges from two sites in the DEQ Cleanup Program (EVRAZ and ConMetco) likely represented the major sources to the basin. The City also identified other potential sources and pathways for the basin, including other sites in the basin, vehicle drag-out from industrial sites, air deposition, and the fill material underlying the basin. However, there was no evidence to indicate that any of these other potential sources are major contributors of contaminants to the conveyance system (BES, 2012).

Table 3 lists investigations completed by the City in the Basin 53A conveyance system.

[1] "Dry-weather flow" is defined as non-stormwater flows from various sources including, but not limited to diverted stream flow, groundwater infiltration, and approved or permitted discharges (e.g., remediated groundwater, structure dewatering, and non-contact cooling water).

Table 3. Investigations in the Basin 53A Stormwater Conveyance System

Data Collection Period	Party	Purpose	Documentation
2005	City	Evaluate inline solids and dry-weather flow to identify potential sources of PCBs and mercury.	Dry-Weather Flow and Inline Solids Sampling, City Outfall Basin 53A Stormwater Conveyance System (BES, 2005)
2005	City	Evaluate existing data on groundwater plumes and identify the potential for City conveyance systems (including Basin 53A) to act as preferential pathways.	Relationships Between Upland Shallow Groundwater Plumes and the City Stormwater and Combined Conveyance System with the Portland Harbor (GSI, 2006)
2008	City	Evaluate stormwater data from City outfalls to identify additional source tracing needs.	Stormwater Evaluation Report, City of Portland Outfall Project (BES, 2010)
2008 – 2010	City	Evaluate inline solids and stormwater data (together with upland site data) to identify possible current sources of basin-specific contaminants that may be discharging to the Willamette River via Outfall 53A and determine whether additional source identification is needed.	Outfall Basin 53A Source Investigation Report (BES, 2012)

Notes:

PCBs = polychlorinated biphenyls

5 Completion of Source Identification

The lines of evidence evaluated to confirm that source tracing is complete and all major sources have been identified include (1) inriver sediment concentrations, (2) results of source investigation activities conducted in the basin (and upland site information), and (3) stormwater data for the outfall. Findings from this evaluation are summarized below.

- *Inriver Sediment Concentrations*: Review of the magnitude and spatial distribution of contaminant concentrations in inriver sediment from upstream, adjacent to, and downstream of Outfall 53A indicates that the outfall is not a significant pathway for conveying contaminants to the Willamette River (BES, 2012). Concentrations adjacent to the outfall were either similar to or lower than upstream concentrations. This finding is consistent with patterns depicted on maps included in the Lower Willamette Group's remedial investigation report (Integral et al., 2011) that show results of a spatial analysis of concentrations of identified indicator chemicals within the Portland Harbor study area; these maps do not show elevated concentrations distributed in a manner that would indicate Outfall 53A is a significant pathway of any of the identified constituents of concern within AOPC 1.
- *Source Tracing Results:* Sources of all contaminants selected for source tracing have been identified. PCBs and zinc have been detected at the two active DEQ Cleanup Program sites in the basin at concentrations considerably higher than those detected in the Basin 53A conveyance system. These sites likely represented the major potential sources of PCBs and zinc to the system. BES Industrial Stormwater Program records indicate that

the JR Simplot site had occasional NPDES benchmark exceedances for zinc in the past, but that, through implementation of best management practices as part of the site's general stormwater permit, the site has demonstrated sufficient reductions to receive a monitoring waiver in 2010. Source tracing activities and a review of the historical and current uses of the other properties in the basin do not indicate that there are currently other major sources within the basin (BES, 2012).

- *Outfall 53A Stormwater Data:* Post-SCM monitoring data collected by the DEQ Cleanup Program sites to date (Bureau Veritas, 2012; AECOM, 2011, 2012) and results of follow-up stormwater sampling conducted by the City in 2010 (BES, 2012) indicate the SCMs are controlling upland site discharges of contaminants to the Basin 53A conveyance system. A comparison of the 2008 and 2010 stormwater data collected to represent the basin showed that contaminant concentrations were up to an order-of-magnitude lower in 2010; Table 4 presents a comparison of the 2008 and 2010 stormwater analytical results for metals and PCBs. PCBs and metal concentrations in the City's 2010 stormwater samples are within the lower range of Portland Harbor stormwater concentrations (DEQ, 2010).

Table 4. Comparison of 2008 and 2010 Stormwater Data for Basin 53A – Metals and PCBs Concentrations

Analyte (1)	2008 Geometric mean (2)	2010 (3)
Total PCBs (µg/L)	0.0370	0.000278 NJ
Arsenic (mg/L)	4.46	0.69
Cadmium (mg/L)	0.36	0.14
Chromium (mg/L)	42	12
Copper (mg/L)	23.1	7.97
Lead (mg/L)	16.2	4.24
Mercury (mg/L)	0.030	0.007
Nickel (mg/L)	5.82	2.13
Silver (mg/L)	0.13(4)	<0.01
Zinc (mg/L)	459	337

Notes:

mg/L = milligrams per liter; µg/L = micrograms per liter; NJ = tentatively identified and estimated, only one congener detected, which is unlikely to occur; PCBs = polychlorinated biphenyls

(1) Total metal and total PCB congener concentrations are reported.

(2) Stormwater Evaluation Report (BES, 2010).

(3) See Table 6 in Outfall Basin 53A Phase 1 and Source Investigation Report (BES, 2012).

(4) Three samples were non-detect and one detect at 0.17 mg/L.

Based on these lines of evidence, the City concludes that Basin 53A source tracing is complete and all major sources have been identified.

6 Basin Source Controls

The City and DEQ collaborated under their respective authorities to identify control mechanisms for all major sources identified in the basin. Source control for major and minor sources in Basin 53A includes ongoing City and DEQ programs that are described in the Municipal Report and SCMs completed (or planned) at contaminated sites under DEQ Cleanup Program agreements. Source controls implemented in Basin 53A are displayed in Figure 2 and summarized in this section.

One type of programmatic source control is elimination of stormwater exposures to industrial activities. Table 5 lists sites that hold, or historically held, an NPDES No Exposure Certifications.

Table 5. Sites with No Exposure Certification (NEC) in Basin 53A(1)

Address	Company	NEC Time Period
9625 N Ramsey	**Macro Manufacturing Company**	2000 – Present
14025 N Rivergate	H.B. Fuller	1995 – 1999
	High-Temp, Inc.	**2001 – Present**

Notes:

(1) Current NECs are indicated in bold.

Additional site-specific and programmatic source controls for Basin 53A are summarized in Table 6.

Table 6. Basin 53A Source Controls

Site/Area	Source Controls	Timeframe/Status
Source Control Measures (SCM) at DEQ Cleanup Program Sites (1)		
Consolidated Metco – Rivergate Facility (ECSI #3295)	Cleanout of the onsite stormwater lines, and lining of a portion of the onsite conveyance system.	2009
	Site redevelopment by Archer-Daniels Midland included replacement of portions of the site stormwater conveyance system, demolition of former foundry facilities and installation of a stormwater treatment system.	2013
JR Simplot Company (ECSI #3343)	Not needed(2)	NA
Oregon Steel Mills – Rivergate (ECSI #141)	Removal of approximately 7 acres of active industrial land from the Basin 53A drainage area as part of site redevelopment.	2005
	Routing of all stormwater runoff that drains to Basin 53A (except roof runoff from the pipe mill) through a sand filter or bioswale, line cleaning, and implementation of measures reducing potential for erosion/tracking of contaminated surface soil (e.g., soil removal and targeted paving of some areas).	2006 - 2007
Other (Programmatic Source Controls)(3)		
High-Temp, Inc., Archer-Daniels Midland, EVRAZ Oregon Steel Mills	**Stormwater Management Manual Requirements**	Ongoing
See listing in Table 2	**NPDES 1200-Z Stormwater Permit Requirements**	Ongoing
See listing in Table 4	**No Exposure Certifications**	Ongoing

Notes:

DEQ = Oregon Department of Environmental Quality; NPDES = National Pollutant Discharge Elimination System; NA = not applicable

(1) For upland sites, descriptions of SCMs are based on information in DEQ Milestone Report (DEQ, 2013), DEQ source control decisions, and/or reports on file with DEQ.

(2) DEQ has determined that a source control evaluation is not needed or is a low priority at this site (DEQ, 2013).

(3) Programmatic source controls are described in the Municipal Report.

Other 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

The City completed source tracing in Basin 53A and identified the major sources of contaminants to the City conveyance system. Because necessary SCMs at the identified sources have been implemented or are being determined under appropriate DEQ and City regulatory authorities, future discharges from Outfall 53A 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 53A.

8 References

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Port of Portland. 1968. Port of Portland Summary of Fill History, Rivergate Area, Portland, OR. May 27, 1968.

List of Figures

FIGURE 1

Basin 53A Overview

MACRO MANUFACTURING COMPANY
CONGLOBAL INDUSTRIES INC
NORTHWEST CASCADE
CONSOLIDATED METCO - RIVERGATE FACILITY
ARCHER DANIELS MIDLAND CO
SOUTH RIVERGATE INDUSTRIAL PARK
RIVERGATE BLVD
TIME OIL RD
HIGH-TEMP INC
EVRAZ INC NA
RIVERGATE INDUSTRIAL PARK TRACT O PROPERTY
OREGON STEEL MILLS - RIVERGATE
ASH GROVE CEMENT - RIVERGATE PLANT
J R SIMPLOT COMPANY
JR SIMPLOT COMPANY
RAMSEY BLVD
GEORGIA-PACIFIC NW SERV CTR
WR-367
WR-17
WR-18
OF53A
WR-19
WR-221
WR-220
RM 2.4
RM 2.5
RM 2.6
RM 2.7
RM 2.8
RM 2.9
RM 3
RM 3.1
RM 3.2
WILLAMETTE RIVER

Basin 53A
DEQ ECSI Site
NPDES Stormwater Permit
NPDES No Exposure Certification

Conveyance System
Storm Line
Culvert
Ditch
Site Connection
City Outfall
Non-City Outfall

Land Use/Zoning
Heavy Industrial
Parks and Open Space

All Other Data
River Mile (RM)
Tax Lot
Discharges to City Outfall
Portland Harbor Hydroboundary

N
0 170 340 510
Feet

MAP NOTES:
Date: December 31, 2012
Data Sources: BES, METRO

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
1120 SW Fifth Avenue, Room 1000
Portland Oregon, 97204-1912

BASIN 53A
N

FIGURE 2

Basin 53A
Upland Site Source Controls

Basin 53A
Tax Lot

DEQ Stormwater SCEs

SCE implemented or pending
SCE not needed or low priority

All Other Features

NPDES Stormwater Discharge Permit
NPDES No Exposure Certification
>50% of Site Area Redeveloped Under City SWMM
Stormwater Treatment Facility
Site Inspection - BES Industrial Stormwater Program
Discharges to City Outfall
Portland Harbor Hydroboundary

N

0 170 340 510
Feet

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

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
1120 SW Fifth Avenue, Room 1000
Portland Oregon, 97204-1912