

Lower Duwamish Waterway Air Deposition Scoping Study

Data Gaps Report

Prepared for



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Table of Contents

	<u>Page</u>
1.0 Introduction.....	1
1.1 Study Objectives	1
1.2 Organization of this Report.....	2
2.0 Summary of Emissions in the LDW	4
2.1 Setting and Description of Inventories	4
2.2 Point Source Emissions Inventory	5
2.3 Mobile Source Emissions Inventory.....	8
2.3.1 On-Road Sources	8
2.3.2 Off-Road Sources.....	9
2.4 Non-point Source Emissions.....	10
3.0 Site Description and General Site Model.....	13
3.1 Contaminant Loadings Model.....	13
3.2 Atmospheric Transport and Deposition	14
3.2.1 Long-range Transport	15
3.2.2 Regional Sources	16
3.2.3 Local Sources.....	16
3.3 Surface Runoff.....	17
3.4 Upstream Sources	18
3.5 Other Sources.....	18
4.0 Estimation of Loadings.....	19
4.1 Calculation of Upstream and Lateral Loadings	19
4.2 Summary of Flux Results.....	20
4.3 Calculation of Atmospheric Loadings	24
5.0 Role of Atmospheric Deposition in the LDW	27
5.1 Atmospheric Loadings to the LDW	27
5.2 COPC Specific Loadings	29
5.2.1 Arsenic	29
5.2.2 Mercury.....	30
5.2.3 Polycyclic Aromatic Hydrocarbons	32
5.2.4 Dioxins/Furans.....	35
5.2.5 Polychlorinated Biphenyls.....	36
5.2.6 Phthalates	38
5.2.7 Pesticides.....	39
6.0 Regulatory Framework	41
6.1 Roles and Responsibilities	41
6.2 Regulatory Activities Related to COPCs.....	42
6.2.1 Mercury Regulations.....	43
6.2.2 PAH Regulations	44
6.2.3 PCB Regulations.....	45
6.2.4 Additional Actions for Other COPCs.....	45

7.0	Uncertainties and Data Gaps	48
7.1	Uncertainties in Loading Estimates	48
7.1.1	Loading Calculation Uncertainties	48
7.1.2	Interannual Variability	49
7.2	Data Gaps	50
7.2.1	Indirect Deposition.....	50
7.2.2	Gas Exchange.....	50
7.2.3	Emissions	51
7.2.4	COPC Losses within the Loadings Model.....	51
7.2.5	Reporting Conventions	52
7.2.6	Pesticides.....	52
8.0	Summary and Conclusions	53
8.1	Summary.....	53
8.2	Conclusions.....	54
9.0	Documents Reviewed.....	56

List of Appendices

Appendix A Additional Studies Not Included in the Data Gaps Report

Appendix B Inventory of Point Sources

Attachment A	Point Source Locations
Attachment B	Point Source Inventory Spreadsheet
Attachment C	PSCAA Data Request Methodology
Attachment D	Air Operating Permits and Notices of Construction
Attachment E	Compliance Histories
Attachment F	Engineering Worksheets

List of Tables

Table 1.	Number of Facilities Reporting COPCs in the LDW Airshed.....	6
Table 2.	Summary of Reported COPC Point Source Emissions in the LDW Airshed.....	7
Table 3.	Calendar Year 2011 On-Road Mobile Source Air Emissions of COPCs.....	9
Table 4.	Off-Road COPC Emission Estimates for King County (kg/yr).....	9
Table 5.	Non-point Source Emissions by Sector for COPCs in King County (kg/yr).....	11
Table 6.	Ecology 2005 Non-point Source Emissions by Sector for COPCs in King County (kg/yr).....	12
Table 7.	Contaminant Concentrations and Ranges Associated with Upstream and Lateral Load Sediments	20
Table 8.	Relevant Studies with Atmospheric Flux Data.....	21
Table 9.	Sampling Locations Associated with Relevant Studies.....	23
Table 10.	Median Calculated COPC Fluxes	24
Table 11.	Atmospheric Deposition to LDW Surface Compared to Upstream and Lateral Stormwater Loadings	25

Table 12. Atmospheric Deposition to Impervious Surfaces Compared to Stormwater Lateral Loadings	26
Table 13. Estimated PAH Releases in Washington State	35
Table 14. Priority Ranking for CAP Preparation	47

List of Figures

- Figure 1. Lower Duwamish Waterway Site and Surrounding Watershed
- Figure 2. Delineation of the Zip Code Boundaries within the Lower Duwamish Waterway Airshed
- Figure 3. Primary Loading Pathways for Contamination of the Lower Duwamish Waterway
- Figure 4. Impervious Surface Areas in the LDW Basin
- Figure 5. Distribution of Particulate Matter in the Atmosphere
- Figure 6. Atmospheric Deposition Sampling Locations in Western Washington
- Figure 7. Comparison of Atmospheric Fluxes of Arsenic
- Figure 8. Geographic Contributions of Arsenic Loadings to the LDW Surface
- Figure 9. Comparison of Atmospheric Fluxes of Mercury
- Figure 10. Geographic Contributions of Mercury Loadings to the LDW Surface
- Figure 11. Comparison of Atmospheric Fluxes of Carcinogenic PAH TEQ
- Figure 12. Geographic Contributions of Carcinogenic PAH TEQ Loadings to the LDW Surface
- Figure 13. Comparison of Atmospheric Fluxes of Dioxin/Furan Congener TEQ
- Figure 14. Geographic Contributions of Dioxin/Furan Congener TEQ Loadings to the LDW Surface
- Figure 15. Comparison of Atmospheric Fluxes of PCB Congeners
- Figure 16. Geographic Contributions of PCB Congener Loadings to the LDW Surface
- Figure 17. Comparison of Atmospheric Fluxes of BEHP
- Figure 18. Comparison of Atmospheric Fluxes of BBP
- Figure 19. Uncertainties in the Loading Estimates for Arsenic
- Figure 20. Uncertainties in the Loading Estimates for Carcinogenic PAH TEQ
- Figure 21. Uncertainties in the Loading Estimates for Dioxin/Furan Congener TEQ

List of Acronyms

ADT	average daily trip
AOP	Air Operating Permit
BBP	butyl benzyl phthalate
BCM	bed composition model
BEHP	bis(2-ethylhexyl)phthalate
CAP	chemical action plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	chemical of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSO	combined sewer overflow
CY	calendar year
DDT	dichlorodiphenyltrichloroethane
DEEDS	Diesel Exhaust Emissions in the Duwamish Study
DPM	diesel particulate matter
Ecology	Washington State Department of Ecology
EFSEC	Energy Facility Site Evaluation Council
EPA	U.S. Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FS	Feasibility Study
g/yr	grams per year
GLMERS	Great Lakes Mercury Emission Reduction Strategy
HPAH	high molecular weight polycyclic aromatic hydrocarbon
HPMS	High Performance Monitoring System
IADN	Integrated Atmospheric Deposition Network (Great Lakes region)
ICE	internal combustion engine
KCIA	King County International Airport
kg/yr	kilograms per year
lb	pound
LDW	Lower Duwamish Waterway
LPAH	low molecular weight polycyclic aromatic hydrocarbon
m	meter
MOVES	EPA Motor Vehicle Emission Simulator
MSAT	mobile source air toxics
NEC	not elsewhere classified
NEI	National Emissions Inventory
ng/kg	nanograms per kilogram
NJADN	New Jersey Atmospheric Deposition Network
NOC	Notice of Construction
NOV	Notice of Violation
PAH	polycyclic aromatic hydrocarbon
PBDE	polybrominated diphenyl ether
PBT	persistent bioaccumulative toxic
PCB	polychlorinated biphenyl

PCDD/F	dioxin/furan
pg	picogram
PM	particulate matter
PSCAA	Puget Sound Clean Air Agency
PSTLA	Puget Sound Toxics Loading Analysis
PVC	polyvinylchloride
RCW	Revised Code of Washington
RI	Remedial Investigation
RM	river mile
SPWG	Sediment Phthalates Work Group
STM	sediment transport model
TAC	toxic air contaminant
TEF	toxic equivalency factor
TEQ	toxic equivalent
TRI	EPA Toxics Release Inventory
ug/kg	micrograms per kilogram
WAC	Washington Administrative Code
WACAP	Western Airborne Contaminants Assessment Project
WDOH	Washington Department of Health
WEIRD	Washington Emissions Inventory Repository Database

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1.0 Introduction

The Lower Duwamish Waterway (LDW) site is the 5.5-mile portion of the Duwamish River south of Harbor Island (Figure 1). The LDW was added to the U.S. Environmental Protection Agency (EPA) Superfund National Priorities List in 2001. In 2002, the site was added to Washington's Hazardous Sites List. The Washington State Department of Ecology (Ecology) is currently leading efforts to control the sources of sediment pollution in the LDW.

Source control is broadly defined as the process of finding and stopping or reducing, to the maximum extent practicable, releases of pollution to LDW sediments. The goal is to stop ongoing sources and prevent sediments from becoming recontaminated after cleanup. As part of this process, Ecology must determine what source control actions are necessary for each identified cleanup area before remediation can begin.

Source control studies in the LDW have traditionally focused on both upstream loadings from the Green River and lateral loadings from stormwater and combined sewer overflows (CSOs) in the drainage basin (Figure 1). Atmospheric loadings in the form of wet and dry deposition are another potential source of contaminants, but the contribution atmospheric contaminants to sediment loadings in the LDW has not been fully evaluated.

Air emissions from many types of combustion sources such as motor vehicles, wood burning, and industrial and commercial processes can all contribute to atmospheric deposition. Air emissions can also result from off-gassing or vaporization from many sources such as plastics and creosote-treated pilings and railroad ties. Sources within the drainage basin and atmospheric transport from upwind areas may contribute to the total contaminant load in the LDW.

The main goals of this report are to address the dual questions of whether or not atmospheric deposition to the LDW constitutes a significant source of contaminants, and if so, what actions Ecology can take to reduce its contribution. It may not be possible to provide a conclusive answer to these questions, as atmospheric deposition and its control are complex problems that can vary for each chemical of potential concern (COPC). To aid in this process, a series of step-wise objectives were established to provide answers to smaller pieces of these main questions.

1.1 Study Objectives

The individual objectives for this data gaps report are summarized below:

- Create a conceptual model that characterizes air deposition loadings of COPCs in relation to other sources and pathways such as upstream contributions, direct discharges, stormwater and CSO outfalls, and non-point sources. Target COPCs include¹:
 - Arsenic,

¹ Target COPCs were selected to include the primary human health risk drivers for the LDW sediment cleanup (arsenic, PCBs, carcinogenic polycyclic aromatic hydrocarbons [cPAHs], and dioxins/furans); mercury and organochlorine pesticides, which are present in several sediment "hot spots"; and phthalates, which are believed to represent a chemical class with high potential to recontaminate sediments. BEHP and BBP are the most frequently detected phthalate compounds in the LDW.

- Mercury,
- Polycyclic aromatic hydrocarbons (PAHs),
- Polychlorinated biphenyls (PCBs),
- Dioxin/furan congeners (dioxins),
- Phthalates, focusing on bis(2-ethylhexyl)phthalate (BEHP) and butyl benzyl phthalate (BBP), and
- Pesticides.
- Within the context of the conceptual model, evaluate the following:
 - Relative contributions from long-range transport, regional (Puget Sound-area) transport, and local sources;
 - The importance of direct deposition to waterways versus indirect deposition to land surfaces in the drainage basin;
 - The relative contributions of COPC loadings from stationary sources and mobile sources. When possible, divide the mobile sources into on-road sources (e.g., automobiles and trucks) and off-road sources (e.g., construction equipment, marine sources, etc.);
 - The role of pollution from area sources, such as the contributions from residential wood smoke;
 - Any seasonal trends in atmospheric deposition;
 - Estimated loadings relative to reported emissions.
- To the extent feasible, consider historical trends in air deposition in the LDW.
- Conduct a literature review for relevant studies in other urban areas and waterways. Compare the atmospheric fluxes from these studies to those found in the LDW, and summarize any approaches and findings that may provide insight to the issues in the LDW.
- Summarize the roles and responsibilities of EPA, Ecology, and the Puget Sound Clean Air Agency (PSCAA) for air pollution regulation, including any limitations on addressing air deposition of the COPCs.
- Identify data gaps and how to address them. These may include:
 - Recommendations for addressing stormwater contamination due to air deposition, including feasibility of control at the point of emission versus after deposition;
 - Uncertainties remaining in the assessment of atmospheric deposition in the LDW; and
 - Recommendations for further analyses or studies, along with associated costs, that could reduce these uncertainties.

1.2 Organization of this Report

In 2006, Ecology and other agencies initiated the Puget Sound Toxics Loading Analysis (PSTLA). The objectives of PSTLA were similar to those of the current LDW-specific study,

except they encompassed a much wider region. One of the conclusions of PSTLA was that atmospheric loadings were homogeneous throughout most of Puget Sound, with the exception of industrial areas. The recommendation was that localized loadings estimates would be necessary for these areas. Given the similarities between PSTLA and the current study, the organization of this report is structured in much the same way as the final Phase 1 and Phase 3 summary loading reports (Hart-Crowser et al. 2007; Ecology 2011).

Section 2.0 of this report focuses on a summary of atmospheric emissions in the LDW region from point and non-point sources (including mobile emissions). Section 3.0 describes a model of the loading pathways in the LDW that will form the basis of the conceptual model for each COPC. The loading calculations for these pathways are described in Section 4.0. Section 5.0 presents the atmospheric fluxes for each COPC compared to other studies throughout the nation, and also presents the calculated atmospheric loadings for each COPC compared to other sources within the LDW. Section 6.0 describes the regulatory framework for air emissions within the LDW basin. Section 7.0 includes a list of identified data gaps. A summary and conclusions are presented in Section 8.0. Appendix A provides a brief summary of studies that were reviewed, but are not specifically discussed in the main text of this report.

The emissions inventories presented in Section 2.0 are a summary of a more detailed analysis of state and federal databases. Appendix B provides additional information on the inventory of point sources developed during this study.

2.0 Summary of Emissions in the LDW

Atmospheric emissions from point, non-point, and mobile sources were reviewed as part of this study and used to create inventories specific to the LDW study area. If accurate, these inventories can be compared to loadings estimates to determine how much local emissions contribute to deposition in the LDW. However, it is difficult to create accurate inventories. Reporting requirements can vary depending on the year and the responsible agency. In addition, emissions from the various sources are not always representative of the same geographical area. This section presents a summary of atmospheric emissions that could be impacting the LDW study area. Some of the issues related to the usability of these inventories are also discussed.

2.1 Setting and Description of Inventories

Atmospheric deposition in the LDW comes from a variety of sources. Most of these sources are likely local, but still outside the borders of the LDW drainage basin. To account for atmospheric transport of local emissions to the LDW, the PSCAA concept of an airshed has been adopted for this report (<http://www.pscleanair.org/airq/basics/weather/airshed.aspx>). PSCAA defines an airshed as follows:

An airshed can be compared to a watershed. When we talk of a watershed, we mean a geographic area where rivers, streams and run-off flow into a specific body of water. By comparison, an airshed is a geographic area where air pollutants from sources “upstream” or within the area flow and are present in the air.

Atmospheric transport on a local scale can vary by season, wind direction, and atmospheric pressure, among other factors. This means there is no single easily definable area that represents the airshed for the LDW. For this report, average wind directions in the LDW from calendar year 2011 were used to help delineate the airshed. The predominant wind direction was southerly, occurring nearly 60 percent of the time. Industrialized areas to the south and east of the LDW were included as the airshed.

The smallest geographic area used to sort emissions in the inventories was the zip code. The following ten zip codes were included: 98106, 98108, 98134, 98168, 98118, 98178, 98158, 98188, 98057, and 98055. The total area of this airshed is 37,300 acres. This airshed is shown in Figure 2, along with the representative zip code areas and the outline of the LDW drainage basin for comparison.

Three separate inventories track emissions within this airshed. PSCAA is a regional government agency chartered by Washington state law. Among other duties, they are responsible for adopting and enforcing air quality regulations in King, Kitsap, Pierce, and Snohomish counties. As part of this work, they track industrial facilities and other sources within this region that release air toxics in amounts above their threshold values. Ecology also maintains an emissions inventory referred to as Washington Emissions Inventory Repository Database (WEIRD). WEIRD includes a large business inventory as well as other sources such as motor vehicles, woodstoves, outdoor burning, agricultural, and natural sources. The most recent report completed by WEIRD was in 2005.

The National Emissions Inventory (NEI) is managed by the EPA. An NEI report is prepared every three years. These reports include a detailed estimate of emissions from all sources with inputs provided by state, local, and tribal air agencies. EPA also oversees the Toxics Release Inventory (TRI). The TRI is used to manage a wide range of potentially toxic chemicals. U.S. facilities must report how much of a chemical they have released into the environment on an annual basis. Facilities mandated to report in the TRI are typically larger industries that are part of specific sectors of the economy.

There is overlap between these databases, although the extent of overlap is difficult to quantify. This is particularly true between the TRI and NEI. EPA recommends that users who cannot find specific information in TRI should refer to NEI, as the latter inventory includes releases from mobile sources and facilities that do not report to TRI.

Not all data from these inventories was available by zip code. In some cases, only emissions data for all of King County were reported. King County-wide emissions are included in the summary tables below, but it should be noted that it is difficult to compare county-wide emissions with loadings to the LDW.

2.2 Point Source Emissions Inventory

The LDW Remedial Investigation (RI) included a list of point sources potentially affecting the LDW (Windward 2010). This list represents data requested from PSCAA in 2007. One of the tasks of this current study was to update (and expand, if necessary) this 2007 inventory. Appendix B represents the full report of this updated point source inventory. A summary of that report is provided here.

At the time this report was prepared, 324 facilities were registered with PSCAA within the LDW airshed (Figure 2). These registered sources can be separated into two categories: (1) Sources with approved Notices of Construction (NOC), and (2) sources with Air Operating Permits (AOP), as described below:

Facilities with new stationary air sources, or those that are replacing or substantially altering control equipment installed on an existing source, are required to apply for a NOC [PSCAA Regulation I, Section 6.03 (a)].

After an NOC has been approved, PSCAA determines if an AOP is required based on the major source definition in Washington Administrative Code (WAC) 173-401-200 19(b). AOPs are part of PSCAA's operating permit program consistent with the requirements of Title V of the Federal Clean Air Act Amendments of 1990 and its implementing regulation, 40 CFR Part 70 [PSCAA Article 7, Section 7.01].

There are 319 NOC facilities and seven facilities with AOPs in the LDW airshed. The seven AOP facilities are: Ash Grove Cement, Boeing Plant 2, Franz Northern Division, Kenworth Truck Company, Nucor Steel, Saint-Gobain Containers, and Vigor Shipyards. Two of the AOP facilities are also included on the NOC list, resulting in 324 unique facilities. Exempt sources, as identified in PSCAA Regulation 6.03(c), represent small but potentially widespread emissions and are discussed in Section 3.2.

PSCAA's annual emissions reporting thresholds for toxic air contaminants (TACs), which include this study's COPCs, are 6 tons/year for total TAC, and 2 tons/year for an individual TAC. Point sources with air emissions that exceed these levels during a calendar year [PSCAA Article 7, Section 7.09] are required to submit an annual emissions report.

In addition to PSCAA data, emissions from the NEI and TRI were reviewed to identify other potential sources of emissions in the LDW airshed. As mentioned, there is considerable overlap between these three datasets. However, the NEI and TRI data provide additional information on COPC emissions in the LDW airshed.

TRI has some specific reporting thresholds. The participating facility must be in a certain industrial sector, must employ 10 or more full-time equivalent employees, and manufactures or processes >25,000 lbs of a TRI-listed chemical or otherwise uses >10,000 lbs of a listed chemical in a given year. NEI is more encompassing and includes emissions and model inputs from a variety of agencies.

Table 1 lists the number of reporting facilities by COPC for each emissions tracking program. PAHs were most frequently reported. No facilities reported emissions of total PCBs or pesticides, which was expected for both classes of compounds. PCBs and the organochlorine pesticides have not been produced for decades, while current-use pesticides would not be emitted from an industrial source.

Table 1. Number of Facilities Reporting COPCs in the LDW Airshed

COPC	PSCAA Reporting	EPA TRI Reporting	EPA NEI Reporting
	CY 2010	CY2010	CY2008
Arsenic	--	1	2
Mercury	1	5	4
PAHs	8	7	24
Total PCBs	--	--	--
Dioxin/Furan Congeners	--	1	--
Phthalates	4	--	--
Pesticides	--	--	--

Notes:

-- None reported

CY – calendar year

Table 2 presents total emissions from the point source inventories, and includes PSCAA emissions data from 2008. There are wide discrepancies in reported COPC emissions in the LDW airshed from the three inventories. These discrepancies are largely due to differing reporting or threshold requirements by the three inventory systems.

Table 2. Summary of Reported COPC Point Source Emissions in the LDW Airshed

COPC (1) (kg/yr)	PSCAA	PSCAA	TRI (2)	NEI (3)
	CY 2008	CY 2010	CY 2010	CY 2008
Arsenic	--	--	0.002	0.005
Mercury	20.4	0	71.7	77.6
PAHs	2,830	2,520	132	1,230
Total PCBs	--	--	--	--
Dioxin/Furan Congeners	0	0	0.14	--
Phthalates	378	10.9	--	--
Pesticides	--	--	--	--

Notes:

-- None reported.

(1) Based on the following CAS numbers:

- Mercury: 7439-97-6 (mercury and compounds)
- PAHs: 64741-65-7 (naphtha), 64742-89-8 (petroleum naphtha, paraffins, and naphthenes), 64742-94-5 (heavy aromatic naphtha), and 64742-94-5, 91-20-3 (naphthalene)
- Total PCBs presented as Aroclors.
- Dioxin/furan congeners presented as total congeners.
- Phthalates: 85-68-7 (butyl benzyl phthalate), 84-74-2 (dibutyl phthalate), 117-81-7 (bis[2-ethylhexyl]phthalate)

(2) 2010 EPA Toxics Release Inventory--5.1 (Fugitive Air Emissions) and 5.2 (Point Source Air Emissions)--reported on TRI Form R.

(3) 2008 EPA National Emission Inventory.

The variability in reported emissions of some COPCs between the 2008 and 2010 PSCAA inventories was a result of operational changes or discontinued operations at a few facilities. For example, Boeing Commercial Airplane (Registration No. 21147) no longer reported phthalate emissions in 2010 because they had shut down operations. Other discrepancies were present between the inventories that could not be easily explained.

Only Lafarge (Registration No. 14046) reported emissions of mercury to PSCAA. In 2008, this facility reported emissions of 45 lbs/year. The facility was no longer in operation in 2010, and no emissions were reported to PSCAA. However, 25 lbs/year were reported to TRI. It was not clear why this difference in reporting was present.

There were several issues that hampered the collection and creation of the three emissions inventories. Each of these issues likely resulted in a low bias to the emissions reported in Table 2. These issues were:

- For PSCAA and TRI, the high reporting thresholds meant that many facilities did not report their emissions.
- The fact that these thresholds were the same for all COPCs, regardless of toxicity, meant that the more toxic COPCs may not be reported.
- To some extent, facilities are responsible for assigning their own operations to the correct industrial sector. If a facility is identified in the wrong group, emissions may go unreported.

- The Notice of Violation (NOV) reporting framework is primarily focused on criteria pollutants² and existing regulations, and may therefore miss or incorrectly report issues concerning COPC emissions.
- Many legacy facilities (in operation before the mid-1990s) do not have emissions monitoring or reporting requirements.

2.3 Mobile Source Emissions Inventory

Mobile source contributions to the LDW airshed can be categorized as on-road sources (e.g., automobiles and trucks) and off-road mobile sources (e.g., construction equipment, marine sources, etc.).

2.3.1 On-Road Sources

Emissions from on-road vehicles in the LDW airshed are based on two factors: (1) total daily mileage, and (2) COPC emission factors for these vehicles. Mileage from on-road vehicles in the LDW airshed were estimated based on the average daily trip (ADT) mileage data provided through the Washington State Department of Transportation and the U.S. Department of Transportation Federal Highway Administration High Performance Monitoring System (HPMS).³ Daily averaged ADT miles for calendar year 2011 were estimated at 4,706,377 miles per day for the LDW compared to 44,772,405 daily miles for all of King County. Miles driven in the LDW comprise approximately 10 percent of total King County miles.⁴

COPC emission factors from on-road sources were based on EPA's Motor Vehicle Emission Simulator (MOVES). The MOVES model can be used to estimate national, state, county, and project level inventories of criteria pollutants, greenhouse gas emissions, and mobile source air toxics (MSAT) from on-road vehicles. MSAT are defined by EPA as compounds emitted from on-road vehicles and off-road equipment and are known to cause serious health and environmental effects.⁵

By multiplying the COPC emission factors produced by the MOVES model by the ADT mileage estimates, individual COPC emission estimates from on-road sources were generated for the LDW airshed. These emissions are presented in Table 3. King County emissions are included for comparison. The most significant COPC emitted (by mass) from on-road sources are the PAHs generated during fuel combustion.

² The six criteria pollutants are: carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution, and sulfur dioxide (National Ambient Air Quality Standards, 40 CFR part 50).

³ These ADT mileage estimates may not include mileage on all of the arterials in the LDW basin. Roads classified as "less busy" may include traffic associated with industry and truck distribution centers throughout the area.

⁴ <http://www.wsdot.wa.gov/mapsdata/travel/hpms/annualmileage.htm>

⁵ <http://www.epa.gov/oms/toxics.htm>

Table 3. Calendar Year 2011 On-Road Mobile Source Air Emissions of COPCs

COPC (kg/yr)	LDW Airshed	King County
	CY 2011	CY 2011
Arsenic	4.1	37.2
Mercury	0.059	0.58
PAHs (1)	205	1,950
Total PCBs	--	--
Dioxin/Furan Congeners	9.1E-05	9.1E-04
Phthalates	--	--

Notes:

(1) Total PCB and phthalate emissions are not associated with on-road mobile source emissions.

2.3.2 Off-Road Sources

Off-road mobile sources consist of a diverse range of engine uses such as aircraft operations, locomotives, marine transport, and industrial support equipment. Although many off-road source types are found in the LDW airshed, their use and presence are not well documented, making it difficult to develop an emissions inventory of COPCs for this specific area. Currently, COPC emissions from off-road sources are only available at the county level from EPA (through NEI) and Ecology's 2005 Comprehensive Inventory (Ecology 2011, 2012b). Emissions of phthalates were not reported to EPA for the 2008 NEI. The emissions from off-road sources are shown in Table 4.

Table 4. Off-Road COPC Emission Estimates for King County (kg/yr)

COPC	Aircraft	Marine Vessels	Loco-motives	Non-Road (Diesel)	Non-Road (Gasoline)	Non-Road (Other)	King County Total	King County Total
	CY 2008 NEI							CY 2005 Ecology
Arsenic	--	69.9	0.0091	18.6	12.2	--	101	99.8
Mercury	--	0.22	--	0.014	0.082	--	0.31	0.091
PAHs	2,400	544	126	491	4,770	2,160	8,390	8,370
Total PCBs	--	0.086	--	--	--	--	0.086	0.091
Dioxin/Furan Congeners (1)	--	--	--	--	--	--	--	0.119

Notes:

-- None reported.

(1) Dioxin/furan congeners are reported as toxic equivalents (TEQ)

NEI emissions in Table 4 are broken down by source. Non-road gasoline engines are the largest source of PAH, while marine vessels contribute the most arsenic, mercury, and PCBs. Estimates from NEI are very similar to those of Ecology 2005. Given that NEI is a compilation of local, state, and federal data, it is possible that NEI used Ecology as a source input for their inventory.

Because of limited documentation in the 2008 NEI and 2005 Ecology inventories, it is difficult to extrapolate emissions from King County down to the scale of the LDW airshed. It could be expected that a large portion of the county-wide aircraft and marine vessel emissions from Table 4 come from the LDW airshed, as this area includes Seattle-Tacoma (SeaTac) International Airport, King County International Airport, and a large number of commercial vessels.

Attempts were made to obtain emissions specific to SeaTac Airport from other inventories. Emissions for aircraft were obtained from the 2008 NEI point source category, including SeaTac. However, only criteria pollutants were available. Other emissions from SeaTac included aircraft auxiliary power units and aircraft ground support equipment, both of which are considered point sources. These particular point sources are currently not required to obtain a NOC or AOP through PSCAA.

The LDW itself and the marine portions of the airshed support a large amount of vessel traffic. Much of this traffic is centralized around the Port of Seattle, which is located in the northwest portion of the LDW airshed. The 2011 Puget Sound Maritime Air Emission Inventory was reviewed, but focused on criteria pollutant emissions.⁶ Diesel particulate matter (DPM) emissions were evaluated as part of the 2007 Maritime Air Emission Inventory. Although petroleum hydrocarbons are not a target COPC, a more comprehensive review could use DPM emissions as a surrogate for sources of combustion products such as PAH and dioxin/furan congeners.

2.4 Non-point Source Emissions

Non-point sources are roughly defined by the NEI as sources which individually are too small in magnitude or too numerous to inventory as individual point sources, and which can often be estimated more accurately as a single aggregate source for the target area.⁷ Emissions from non-point sources are often relatively small but collectively can be of concern. It can be difficult to characterize non-point emissions due to the high number of possible sources and the fact that many of these sources are not required to report their emissions.

Because the emissions from many area sources are below reporting thresholds, their COPC emissions are not reported or tracked by PSCAA and TRI. The emissions from these sources are estimated by the EPA every three years in the NEI, but the smallest available area was King County. The most recent NEI data available were from 2008. County-wide emissions were also assembled by Ecology in 2005. Emissions for non-point sources are listed in Tables 5 and 6 for the NEI and Ecology estimates, respectively. Emissions in both of these tables are broken down into various categories. No data were available for COPCs not presented in Tables 5 and 6.

There are large differences between the two tables for mercury and total PCBs. NEI reports 96 kg/yr of mercury emissions, compared to 4.5 kg/yr reported by Ecology. Most of the NEI mercury emissions were reported as cement manufacturing and ferrous metals. Residential trash was responsible for 91 kg/yr of PCBs in the Ecology emissions table (Table 6). This was the only source sector for PCBs in either inventory. Dioxin/furan emissions were reported at 8.0E-04 kg/yr, or 0.8 gram per year in Table 6.

⁶ <http://www.pugetsoundmaritimeairforum.org>

⁷ <http://www.epa.gov/ttn/chief/net/2008inventory.html>

Neither inventory accounted for some of the sources of COPCs that Ecology had identified in *Control of Toxic Chemicals in Puget Sound* (Ecology 2011). These smaller sources included creosote-treated wood, crematories, improper disposal, and roofing materials.

Scaling the King County emissions to the LDW airshed would be a difficult task, and it is likely that there are not enough details in either of the inventories to even make an attempt. As a result there will be discrepancies between the point source (LDW airshed specific) and non-point source (King County) emissions that make a calculation of total emissions from all sources impossible at this time.

Table 5. Non-point Source Emissions by Sector for COPCs in King County (kg/yr)

Sector (King County, CY2008)	Arsenic	Mercury	PAHs	Total PCBs	Phthalates
Commercial Cooking	--	--	1,980	--	--
Gas Stations	--	--	56.3	--	--
Miscellaneous Non-Industrial NEC	0.068	12.4	3.08	--	25.6
Waste Disposal	--	--	49.7	0	
Fires					
Prescribed Fires	--	--	220	--	--
Wildfires	--	--	572	--	--
Fuel Combustion					
Commercial/Institutional - Natural Gas	--	--	0.85	--	--
Industrial Boilers, ICEs – Natural Gas	0.0045	--	0.16	--	--
Industrial Boilers, ICEs – Oil	--	4.66	--	--	--
Residential – Natural Gas	--	--	9.40	--	--
Residential - Oil	6.22	--	13.2	--	--
Residential - Other	0	0	0.24	--	0
Residential - Wood	--	0.92	59,900	--	--
Industrial Processes					
Cement Manufacturing	--	46.4	--	--	--
Ferrous Metals	--	31.3	--	--	--
NEC	0.98	0.24	2.78	--	--
Solvent					
Industrial Surface Coating & Solvent Use	--	--	9.57	--	--
Non-Industrial Surface Coating	--	--	1,180	--	102
Total	7.27	95.9	64,100	0	128

Notes:

-- None reported

NEC – Not elsewhere classified

ICE – Internal combustion engine

Table 6. Ecology 2005 Non-point Source Emissions by Sector for COPCs in King County (kg/yr)

Sector (King County, CY2005)	Arsenic	Mercury	PAHs	Total PCBs	Dioxin/Furan Congeners
Gas stations	--	--	480	--	--
Prescribed burning	--	--	--	--	--
Residential distillate oil	5.44	4.54	0.91	--	--
Residential LPG	--	--	0.27	--	--
Residential natural gas	--	--	8.16	--	--
Residential trash	--	--	2,200	90.7	--
Residential yard waste burning	--	--	48.1	--	--
Structure fires	--	--	--	--	--
Commercial/Consumer Solvents					
Adhesives	--	--	87.95	--	--
Automotive	--	--	1.81	--	--
Coatings	--	--	4.54	--	--
FIFRA	--	--	37,700	--	--
Household	--	--	0.363	--	--
Residential Wood Combustion					
Fireplace	--	--	--	--	1.8E-04
Insert, certified, catalytic	--	--	1,420	--	3.6E-05
Insert, certified, non-catalytic	--	--	2,830	--	9.1E-05
Insert, not certified	--	--	7,880	--	9.1E-05
Pellet stove	--	--	2.72	--	--
Woodstove, certified, catalytic	--	--	1,690	--	4.5E-05
Woodstove, certified, non-catalytic	--	--	3,520	--	9.1E-05
Woodstove, not certified	--	--	19,100	--	2.7E-04
Total	5.44	4.54	76,975	90.7	8.0E-04

Notes:

-- None reported

FIFRA – Federal Insecticide, Fungicide, and Rodenticide Act

Source: Otterson 2012

3.0 Site Description and General Site Model

This section provides a detailed description of the contaminant transport pathways that can contribute to sediment recontamination in the LDW. Studies relevant to each pathway are presented, with particular focus on any data that will be used in the loading calculations and comparisons conducted in Section 4.0.

3.1 Contaminant Loadings Model

Figure 3 presents a simplistic model of potential contaminant transport pathways to the LDW, including upriver sediments from the Green River, lateral loadings from surface runoff, and atmospheric deposition. Even though atmospheric deposition is the focus of this report, it is necessary to include and discuss other contaminant transport pathways to the river. Without some information about these other sources, it would not be possible to determine the relative importance of atmospheric deposition to source control in the LDW.

The model in Figure 3 is in no way complete, as it is beyond the scope of this project to assess the fate and transport of contaminants once they have been deposited in the LDW. In particular, this model only presents the input of COPCs to the LDW, and does not represent a mass balance approach. A more comprehensive model of sources and sinks is available in the LDW Feasibility Study (FS) (AECOM 2012). However, the FS model does not include atmospheric deposition as a potential source.

At the center of the model is the LDW. The waterway spans from river mile (RM) 5.0 northward to Harbor Island (Figure 1). The study area includes about 4.65 miles of the navigation channel and a small portion of the river upstream of the turning basin (AECOM 2012). Over this distance, the river averages about 400 feet wide with many variations in width due to slips and Kellogg Island. The total surface area of water in the LDW that could be exposed to atmospheric deposition is about 441 acres.

The upland area that drains to the LDW study area extends east to the Lake Washington shoreline and encompasses a total of 20,400 acres (Figure 2). This area represents a mixture of residential, industrial, commercial, right-of-way, and open space land uses. Figure 4 shows the percent impervious area for the LDW drainage. Despite the large expanse of impervious surfaces adjacent to the LDW, the entire drainage averages 53.1 percent impervious surface. The percent impervious surface plays a large role in how much stormwater runoff, including wet deposition, drains to the LDW.

Prior to describing the individual pathway boxes in Figure 3 that are responsible for contaminant loadings to the LDW, it is first important to review the terminology that will be used extensively throughout the remainder of this report. First, attempts were made to differentiate the terms “pathway” and “source.” While the meanings are similar, pathway is often used to describe transport in the abstract and source implies some specificity. For example, surface runoff is a pathway, while a particular outfall may be a source of contamination.

There is frequently confusion about the terms loading, flow, and flux. Loading and flow are similar, and refer to movement of a mass or volume of a substance per unit time. Flux is a flow per unit area. For example, the *flow* of water from the Green River into the LDW is measured in

cubic feet per second. By contrast, precipitation is a *flux*, reported as the volume of rain falling on a known surface area per time (cubic inches of rain per square inch of surface per year = inches/year). A flux can be converted to a flow or a loading rate (for individual chemicals) by multiplying the flux by the target surface area.

3.2 Atmospheric Transport and Deposition

Atmospheric contaminants can exist in the vapor phase or be absorbed to atmospheric particulate matter. The partitioning between the phases is dependent on the physical characteristics of the target contaminant and ambient conditions such as temperature. The concentration absorbed to the particulate matter depends on the contaminant.

Figure 5 shows the size range of particulate matter in the atmosphere. The multi-modal distribution exhibits many breaks. One of these breaks, at 2.5 μm , is the accepted division between coarse and fine particles. This break also forms the regulatory distinction between the EPA Clean Air Act criteria pollutants PM_{2.5} and PM₁₀. Coarse particles are those released into the atmosphere by mechanical means such as wind, waves, or grinding operations. They include sea spray, wind-blown dust, pollen, and volcanic ash, as well as anthropogenic sources such as tire and brake pad wear or metals recycling. Other anthropogenic sources such as diesel exhaust (DPM) mainly fall into the category of fine (PM 2.5) particulate matter. In absolute numbers, there are far fewer coarse particles than fine particles in the atmosphere. However, they make up most of the mass of atmospheric particulate matter (Finlayson-Pitts and Pitts 2000).

Though smaller, the fine particles contain far more surface area than the coarse particles. For this reason, they also contain the bulk of absorbed COPCs. Figure 5 shows the dominant loss processes of each range of atmospheric particle size with red arrows. The ultrafine particles and transient nuclei⁸ combine into slightly larger particles and become part of the accumulation range. This range of particles is effectively scavenged by precipitation. The coarse particles can also be washed out by precipitation, but they are large enough that they will settle as dry deposition (labeled as sedimentation).

The other means of atmospheric deposition in Figure 3 is gas exchange (shown as air/water exchange in the figure). Although more complex models exist, the simplest form of gas exchange is the partitioning of a contaminant between the vapor phase and the water column. Because it is driven by partitioning, gas exchange can result in positive or negative loadings. To calculate gas exchange, accurate measurements of the target contaminant in the atmosphere and in the water column are needed, and the Henry's law partitioning coefficient must be known. Henry's law values can vary considerably between COPCs, and even between individual PAH compounds and dioxin/furan and PCB congeners.

The studies reviewed for this report used bulk deposition samplers, which did not measure atmospheric contaminant concentrations. As a result, it was not possible to calculate gas exchange as a pathway to the LDW.

Gas exchange can potentially represent a larger pathway to the water surface than wet or dry deposition. A study on the Delaware River found that total PCB congener fluxes from gas

⁸ Transient, or Aitken, nuclei are the smallest particle size class that can serve as condensation nuclei for droplet growth.

exchange were 3 to 15 times higher than wet and dry deposition combined, although the extent of gas exchange varied greatly over the course of the river (Totten et al. 2006). However, an extensive record of atmospheric deposition to the Great Lakes has found that gas exchange for PCBs and PAH has been negative (contaminants leaving the water) for several years (IADN 2008).⁹ Gas exchange is not relevant for metals.

As shown in Figure 3, atmospheric deposition for a given area can have contributions from various source regions. This contribution can be variable depending on the COPC, weather patterns, and other factors. One of the goals of this report is to estimate the loadings contribution from long-range transport/background concentrations, regional sources common throughout Puget Sound, and sources local to the LDW or urban areas.

3.2.1 Long-range Transport

The COPCs in this report are all present at a global level. The extent of that presence is dictated by a variety of factors including ongoing emission rates, size of the historical reservoir of contamination (i.e., transformers for PCBs), and by physical characteristics like the atmospheric residence time of the target COPC. Concentrations of several of the COPCs such as pesticides and mercury have been measured as part of atmospheric sampling efforts at coastal and high altitude locations in the Pacific Northwest (Killin et al. 2004), demonstrating that trans-Pacific transport is occurring. Concentrations of PAH were also measured at a remote coastal site, but emissions from shipping traffic were thought to be the source, indicating that low level anthropogenic PAH concentrations are present in the atmosphere anywhere there are humans operating combustion engines (Killin et al. 2004; Weiss-Penzias et al. 2006).

Out of concern for the possible contribution of atmospheric transport to accumulation of contaminants in National Parks, the National Park Service partnered with other agencies and universities to conduct the Western Airborne Contaminants Assessment Project (WACAP). From 2002 through 2007, environmental samples were collected from a variety of matrices at eight western national parks, including Olympic National Park and Mount Rainier National Park in Washington (Landers et al. 2008).

The focus of the chemical analysis was on organic contaminants like PCBs, PAHs, and pesticides, as well as trace metals. One of the matrices sampled was the winter snowpack. By carefully measuring the area dug and the depth of snow removed, the measured concentrations were converted to atmospheric depositional fluxes for the target contaminants. These fluxes included any dry and wet deposition that fell during the wet season. For the purpose of this study, the WACAP snow fluxes represent the amount of deposition due to long-range transport, or extremely diffuse background sources.

From a source control perspective, it is important to understand the loadings contribution from long-range transport/background sources. By and large, this global contribution is outside the ability of Ecology, and possibly EPA, to regulate and control.

⁹ This may be due to the lower molecular weight PAHs and PCB congeners, which tend to have a higher volatility. PAHs and PCB congeners exhibit a wide range of volatility, which can impact the depositional or evaporative fluxes.

3.2.2 Regional Sources

As described in Section 1.2, Ecology began an extensive program in 2006 to assess the pathways of toxic loadings to Puget Sound. The studies examined where the toxic chemicals come from, how much is being delivered to Puget Sound, and the delivery pathways that contribute toxic loads to Puget Sound. This project resulted in 15 final scientific reports dealing with many aspects of toxics in Puget Sound. One part of the project involved the identification of data gaps and the collection of additional results to better calculate loadings. One of the major data gaps was the lack of quantitative data relating to atmospheric deposition in Puget Sound. To fill this gap, Ecology contracted the collection of atmospheric deposition samples at a range of locations and land use types throughout Puget Sound. Five of the locations from this study were in rural areas of Puget Sound that could be used in this report as representative of regional transport (Brandenberger 2010).

Regional sources of emissions outside of the defined airshed can contribute to deposition in the LDW in the same manner as long-range transport. Within the context of this report, the regional contribution is a baseline level of deposition that could be expected at any non-urban location throughout Puget Sound. Deposition above the regional input suggests a greater urban population or nearby sources. Like long-range transport, source control actions within the LDW will not help in reducing the contribution of regional deposition. These actions must be conducted by Ecology for the whole of Puget Sound following the recommendations of the PSTLA program.

In addition to the five locations from Brandenberger 2010, additional regional deposition data were obtained from sampling in Enumclaw. The Enumclaw location was added to the King County 2011–2012 deposition sampling in order to have some rural depositional data as a point of comparison to the LDW results (King County 2013a). The majority of the King County sampling was focused on measuring deposition in the LDW (Section 3.2.3).

3.2.3 Local Sources

Local sources of atmospheric deposition to the LDW are assumed to come from the airshed presented in Figure 2. This airshed is not a perfect approximation of local sources, as differing wind direction and temporal changes in emissions can result in atmospheric transport from areas outside the airshed that are still considered local. Although the exact boundaries of the airshed may remain undefined, local sources are still expected to account for most of the COPC loadings to the LDW. Measuring depositional fluxes in the LDW basin is the best way to account for these sources.

King County has conducted several atmospheric deposition monitoring programs that are directly relevant to the LDW, which included the collection of deposition data at stations in or very near to the LDW:

- The *Passive Atmospheric Deposition Sampling in the Lower Duwamish Waterway, Monitoring Report*, October 2005 to April 2007, focused on phthalates, PAHs, and PCB Aroclors (King County 2008).
- The LDW bulk atmospheric deposition study included samples collected from 2011 to 2012. This study built on the lessons learned during the 2005 to 2007 program, and expanded the analyte list to include most of the COPCs being evaluated in this review, including PCB congener and dioxin/furan analysis. The sampling and analysis plan is

available for this study (King County 2011a), and a draft version of the data report and results were made available for this study (King County 2013a).

- The report *PCB/PBDE Loading Estimates for the Greater Lake Washington Watershed* included estimates of loadings to the lake from multiple pathways, including atmospheric deposition. The data in the report were collected in 2011 to 2012 (King County 2013b). This study did include one of the deposition monitoring stations used in the LDW studies.

Depositional flux data from the first two studies listed were included in this report to represent local sources. Data from the Lake Washington study were not incorporated as it only added flux data for PCB congeners, which were already measured in the LDW basin as part of King County 2013a. The difference between fluxes from these local stations and the regional/background locations is discussed in Section 4.0. The loadings from these fluxes represent the most logical target for source control efforts in the LDW.

3.3 Surface Runoff

Surface runoff to the LDW comes from the watershed area depicted in Figure 1. This area is drained by a network of storm drain lines and interconnected combined storm/sanitary sewers managed by the City of Seattle, King County, and a large number of private owners. Altogether, runoff from the basin can enter the LDW through over 200 stormwater outfalls and CSOs.

An extensive amount of sampling has been conducted to better characterize solids in the storm drain lines before they are transported to the LDW. Much of this sampling has been directed towards finding ongoing sources of contamination to the storm drain lines rather than the calculation of loadings to the river. Two studies conducted to represent loadings were the LDW FS (AECOM 2012) and the LDW Stormwater Lateral Loading Study (SAIC and NewFields 2011).

Both of these studies employed different approaches. The Stormwater Lateral Loading Study was conducted during the wet season of 2010–2011. Filtered solids, sediment trap, and whole water samples were collected from four sub-basins draining to the LDW. Loadings from these sub-basins were calculated following Ecology guidance documents. While lateral loading results would serve as a point of comparison for the four individual sub-basins, the results cannot be extrapolated to the entire watershed. A better fit for the model in Figure 3 would be an estimation of surface runoff from the entire LDW watershed.

Loadings for the full watershed were calculated in the LDW FS using a more complex and rigorous methodology. First, the sediment transport model (STM) in the FS was used to estimate total solids loadings from the LDW watershed over a 30-year period. Using such a long time span smoothed out individual year-to-year variations and allows for a better estimate of mean loadings. Next, COPC concentrations associated with these solids loads were calculated from an extensive number of samples spanning several years. The estimated COPC concentrations multiplied by the annual average solids load gives the COPC loadings.

The calculation of surface runoff loadings from the FS are described in more detail in Section 4.0. The resultant surface loads are compared to atmospheric deposition to the LDW to determine the relative importance of the atmosphere as a pathway of recontamination. The

surface loads are also compared to an estimate of atmospheric deposition to the upland watershed to determine the relative importance of indirect versus direct deposition.

3.4 Upstream Sources

COPC concentrations in the incoming sediments of the Green River are lower than those in storm drain solids. But, given that the Green River drainage is several orders of magnitude larger than the LDW watershed, the Green River contaminant loadings comprise a significant percentage of total loadings.

The same STM that was used to determine surface runoff loads was used to calculate sediment loadings from the Green River to the LDW. Sediment loads were represented in the LDW RI by 10-year and 30-year totals. The 30-year totals were used for the current study because they represent a less variable and therefore more stable annual average. The 30-year total loads were converted to annual loads. Average COPC concentrations in the upstream sediments were calculated as part of the FS and were multiplied by the annual sediment mass to obtain COPC loadings (AECOM 2012).

3.5 Other Sources

Sources that are not evaluated in this report include groundwater and direct spills. Groundwater contributions are discussed in the LDW RI (Windward 2010).

Direct spills of contaminants would be particularly relevant for PAHs, as spills are predominantly petroleum products. It is possible to calculate the PAH loadings from spills by multiplying the known PAH profiles of various oil types by the amount spilled. Spill volumes are tracked by EPA for inland waters, and by the Coast Guard for marine waters. It is unclear whether taking this extra step is worth the effort, as it is always difficult to determine how much spilled oil on the river surface would find its way into the sediment before being washed into Elliott Bay.

4.0 Estimation of Loadings

The approach used in this report was to evaluate the available information from previously conducted atmospheric deposition studies conducted around Puget Sound and combine them to provide an initial understanding of the role of atmospheric deposition in the LDW. The model for determining this deposition is outlined in Figure 3, and the previous studies that were used to calculate the loadings to the LDW are identified in the text of Section 3.0.

This section describes which specific results from the studies mentioned in Section 3.0 were used in this report, discusses how these results were combined together in the summary tables and figures, and demonstrates how loadings were calculated from these values. Loadings are discussed in the following section. A brief discussion of the uncertainties present in these calculations is written up as a data gap in Section 6.0.

Given the complex processes involved between atmospheric deposition within the LDW basin and ultimate transport to LDW sediments, the results presented in this section are designed to provide a relative scale and conceptual context for the atmospheric deposition pathway. The data user is cautioned not to attach too much certainty to the numerical results presented.

4.1 Calculation of Upstream and Lateral Loadings

Upstream and lateral loadings were calculated using the output parameters from the LDW FS STM. The 30-year flow of total solids from the Green River was 6,263,550 metric tons, or an annual flow of 2.088×10^8 kg/yr. The solids flow from lateral sources was just 0.6 percent of the upstream loads. Lateral solids loads for the 30-year period were 37,650 metric tons, or an annual flow of 1.225×10^6 kg/yr (AECOM 2012).

COPC loadings for both upstream and lateral pathways were obtained by multiplying the annual solids flow by the respective COPC Input Values from the LDW FS bed composition model (BCM) and making the appropriate unit conversions. These Input Values are presented in Table 7. High and low estimates were included for certain COPCs, such as arsenic, carcinogenic PAHs (cPAHs) as toxic equivalents (TEQ), dioxin/furan congeners as TEQ, and PCB Aroclors. It is important to note that the Input Values are described in the FS as a pragmatic assessment of what might be achieved in the next decade with anticipated source control. High values are a conservative representation of current conditions assuming modest source control. A more complete description of how these values were derived is presented in Table 5-1 of the LDW FS (AECOM 2012). Based on these descriptions, the Input Values seemed most suitable for use in this report.

Table 7. Contaminant Concentrations and Ranges Associated with Upstream and Lateral Load Sediments

COPC	Units	Input Value	Low Estimate	High Estimate
Lateral Loading BCM Input Parameters				
Arsenic	mg/kg	13	9	30
Mercury	mg/kg	0.14	--	--
cPAH TEQ	ug/kg	1,400	500	3,400
Dioxins/Furans (TEQ)	ng/kg	20	10	40
Total PCBs*	ug/kg	300	100	1,000
BEHP	ug/kg	15,475	--	--
BBP	ug/kg	972	--	--
Upstream Loading BCM Input Parameters				
Arsenic	mg/kg	9	7	10
Mercury	mg/kg	0.1	--	--
cPAH (TEQ)	ug/kg	70	40	270
Dioxins/Furans (TEQ)	ng/kg	4	2	8
Total PCBs	ug/kg	35	5	80
BEHP	ug/kg	120	--	--
BBP	ug/kg	11	--	--

Source: AECOM 2012

--Low and high estimates were not calculated for this chemical

*Total PCBs represents total Aroclors

The resultant loadings from this calculation are presented for upstream and lateral loading pathways in Section 4.3.

4.2 Summary of Flux Results

Relevant studies with atmospheric flux data are summarized in Table 8. Most of these studies were discussed in Section 3.0 in conjunction with the site model (Figure 3). Sampling conducted by King County (2008, 2013a) focused on Seattle sites, particularly locations in the LDW. Regional depositional fluxes were summarized in Brandenberger et al 2010. Background data were represented by the snow fluxes collected as part of WACAP (Landers et al. 2008).

Table 8. Relevant Studies with Atmospheric Flux Data

Target Area	Sampling Period	No. of Samples *	Sampler Type	Deposition Type	Arsenic	Mercury	LPAH	HPAH	cPAH	PCB Aroclors	PCB Congeners	Dioxin/Furan	Phthalates	Pesticides	Reference
Seattle - including LDW	Oct 2005 - Nov 2007	16	Passive Funnel	Wet/Dry				X	X †	X			X		King County 2008
Seattle - including LDW	Jul 2011 – Oct 2012	27	Passive Funnel	Wet/Dry	X	X	X	X	X		209	X			King County 2013a
City of Tacoma	Jun 2006 – Sep 2009	22	Passive Funnel	Wet/Dry				X	X †				X		City of Tacoma 2011
Puget Sound	Aug 2008 – Oct 2009	19	Passive Funnel	Wet/Dry	X	X	X	X	X		77				Brandenberger 2010
Western National Parks	Apr 2003, Apr 2004, Apr 2005	3	Winter Snowpack	Wet/Dry		X		X	X		5			X	Landers et al 2008 (WACAP)
Sites throughout New Jersey	Late 1999 – Jan 2003	Every 12 days (24 for precip) for 3-5 years.	High-volumetric sampler for organics, low-volumetric sampler for metals	Wet/Dry	X	X	X	X	X †		77			X	Reinfelder 2004

*Represents the maximum sample size. Sample counts for individual COPCs will vary.

†cPAH data from the selected studies were calculated from median values rather than the individual samples.

LPAH - flux data are available in associated reference, but not discussed in this report.

Results from the city of Tacoma and New Jersey studies were added for comparison to the LDW locations. The New Jersey Atmospheric Deposition Network (NJADN) was selected because it was designed in a similar manner to the two Pacific Northwest studies, with urban, suburban, and rural stations. The New Jersey network included two urban/industrial stations (Jersey City and Camden), a suburban station (New Brunswick), and a forested rural station (Pinelands) (Reinfelder et al. 2004). Two other large deposition studies, the Great Lakes Integrated Atmospheric Deposition Network (IADN) and the Chesapeake Bay Atmospheric Deposition Study, were not included because they were mostly designed to capture background atmospheric deposition data. The stations were typically located in rural or remote areas away from local sources.

Depositional flux differences between the LDW, Tacoma, and New Jersey locations implies sources unique to the LDW, suggesting possible targets for source control. Similar fluxes between these locations may imply that atmospheric loadings in the LDW are due to the urban nature of the Seattle area, rather than industrial activity unique to the LDW.

Table 8 includes summary information about each of the studies, including sampling period, number of samples, and type of sampler used. All of the presented fluxes were a combination of

wet and dry deposition. However, collection methods varied. Samples collected by King County (2008, 2013a), City of Tacoma 2011, and Brandenberger 2010 all employed passive sampling funnels. These funnels were mounted above ground and drained into a glass bottle for the collection of wet deposition. Dry deposition was rinsed into the bottle by either precipitation or clean rinse water prior to sample collection. The WACAP flux data were measured from winter snowpack. Wet deposition (snow) and dry deposition (particulate matter that fell with the snow, or accumulated on the snowpack during dry periods) were both represented from snow profile samples collected in the spring.

Samples from New Jersey were collected using automated high-volumetric samplers for the particulate phase, and moisture-activated precipitation samplers for the wet deposition. To calculate dry deposition fluxes, the COPC concentration in the particulate phase was multiplied by a literature-derived atmospheric particulate deposition velocity. Wet and dry deposition was combined for this report.

PAHs were analyzed as part of every study presented in Table 8. Fluxes were calculated for both total high molecular weight PAH (HPAH) and cPAH TEQ. Dioxins were only analyzed as part of King County 2013a. Fortunately, this study included a range of locations with dioxin fluxes both inside and outside of the LDW watershed. Fluxes for dioxin/furan congeners were converted to TEQ values prior to calculating loadings.

Pesticides were analyzed as part of the WACAP study, but were not included in the regional (Brandenberger 2010) or local Seattle studies. As a result, it was not possible to calculate pesticide deposition to the LDW. PCBs were analyzed as Aroclors in one study, and as congeners in four studies. The number of reported congeners varied by study. Only five congeners were measured as part of WACAP. Due to the limited data, PCB results from WACAP were not used to represent natural background.

Table 9 lists the individual sampling locations associated with each of the studies from Table 8. The spatial distribution of all but the New Jersey locations are presented in Figure 6. Results used for loading calculations in this report were categorized as background, Puget Sound regional, or LDW. Only locations within the watershed were categorized as LDW. The initial sampling locations for two LDW sites, Beacon Hill and Duwamish, had to be moved midway through the first year of sampling, resulting in two sites.

Each location in Table 9 was assigned a land use type. These designations are intended for reference purposes only as they were given by the study authors and may not be consistent between studies. Two of the stations are believed to represent atmospheric deposition on a micro-scale rather than the entire LDW. The KCIA station is representative of idling aircraft and as a result had higher PAH fluxes. The original Kent location had higher fluxes of multiple COPCs due to its proximity to a rail line. Both stations were included in this report to show the full range of atmospheric fluxes that can be present throughout the LDW and surrounding area.

Table 9. Sampling Locations Associated with Relevant Studies

Target Area	Location ID	Land Use Type	Reference
Background	Olympic NP	Remote	Landers et al. 2008
Background	Mount Rainier NP	Remote	Landers et al. 2008
PS Regional	Enumclaw	Rural	King County 2013a
PS Regional	Hood Canal, Seabeck	Rural	Brandenberger 2010
PS Regional	Nisqually River Delta	Rural	Brandenberger 2010
PS Regional	Port Orchard, Manchester	Rural	Brandenberger 2010
PS Regional	Sequim Bay	Rural	Brandenberger 2010
PS Regional	Padilla Bay	Rural	Brandenberger 2010
LDW	Beacon Hill (2)	Urban Residential	King County 2008, 2013a
LDW	Beacon Hill (1)	Urban Residential	King County 2008
LDW	Georgetown	Urban Residential	King County 2008
LDW	South Park	Urban Residential	King County 2008, 2013a
LDW	Duwamish (2)	Industrial	King County 2008, 2013a
LDW	Duwamish (1)	Industrial	King County 2008
LDW	King County International Airport	Industrial	King County 2008
PS Urban	Kent	Suburban	King County 2013a
PS Urban	Kent Senior Center	Suburban	King County 2013a
PS Urban	Municipal Building, Tacoma	Commercial	City of Tacoma 2011
PS Urban	Tacoma Dome	Commercial	City of Tacoma 2011
PS Urban	7802 So L, Tacoma	Urban Residential	City of Tacoma 2011
PS Urban	West Point, Seattle	Urban Industrial	Brandenberger 2010
PS Urban	Alexander Ave, Tacoma	Industrial	City of Tacoma 2011
PS Urban	Central Treatment Plant, Tacoma	Industrial	City of Tacoma 2011
PS Urban	Commencement Bay, Tacoma	Urban Industrial	Brandenberger 2010
PS Urban	Tyee Marina, Tacoma	Urban Industrial	Brandenberger 2010
New Jersey	Pinelands	Rural	Reinfelder 2004
New Jersey	New Brunswick	Suburban	Reinfelder 2004
New Jersey	Camden	Urban Industrial	Reinfelder 2004
New Jersey	Jersey City	Urban Industrial	Reinfelder 2004

4.3 Calculation of Atmospheric Loadings

The median flux for the background, Puget Sound regional, and LDW areas were calculated for each COPC from the locations listed in Table 9. These median values are presented in Table 10. Fluxes from the individual sites are presented as bar graphs in Section 5.0. There was no obvious difference between the background and regional values for mercury, so a combined background/regional flux was calculated. PCB Aroclors were only analyzed in one study and few results were detected. The reported flux for Aroclors was the median of detected values. The resultant flux of 0.035 ug/m²/day is believed to represent an overestimate of actual deposition. No background flux was calculated for PCB congeners as only five congeners were analyzed in the WACAP study (Table 8).

Fluxes or loadings for PCBs, dioxin/furan congeners, and PAH are always represented as a total value in this report. This total can be either a TEQ or a sum of fluxes. This approach was used to simplify the results tables and to produce atmospheric deposition fluxes that were consistent with the loading estimates from the LDW FS. However, some information is lost by taking this approach. The volatilities of individual compounds/congeners may differ from the total.

Table 10. Median Calculated COPC Fluxes

COPC	Units	Background	Regional	LDW
Arsenic	ug/m ² /d	--	0.145	0.63
Mercury	ug/m ² /d	0.00688 (2)		0.014
cPAH TEQ	ng/m ² /d	0.781	12.2	75 (3)
HPAH	ug/m ² /d	0.00649	0.0358	0.647
Dioxin/Furan TEQ	pg/m ² /d	--	4.03	5.01
PCB Congeners	ng/m ² /d	--(1)	0.395	7.51
PCB Aroclors	ug/m ² /d	--	--	0.035 (4)
BEHP	ug/m ² /d	--	--	1.94
BBP	ug/m ² /d	--	--	0.495

- (1) Background flux for PCB congeners was not used as it consisted of only five congeners.
- (2) Background and regional fluxes for mercury were averaged due to similar values.
- (3) If the KCIA sample is removed, the median cPAH TEQ drops to 59.3; this is still a factor of 5 greater than the regional flux for cPAH.
- (4) PCB Aroclors were only analyzed in King County 2008. Few results were detected; reported flux represents the median of detected values.

The first step was the calculation of direct atmospheric deposition to the river surface of the LDW. The river area of 441 acres (1.784 x 10⁶ square meters) was multiplied by the median fluxes from Table 10 with appropriate unit conversions.¹⁰ Atmospheric loadings to the LDW are compared to upstream and lateral loadings in Table 11.

¹⁰ Median fluxes were used for these calculations to reduce the impact of outliers; a more detailed analysis including upper and lower bounds to reflect uncertainties in the estimates is beyond the scope of this study.

Table 11. Atmospheric Deposition to LDW Surface Compared to Upstream and Lateral Stormwater Loadings

COPC	Units	Pathway			Atmospheric Deposition as Percent of Total Loads
		Upstream	Lateral Load	Atmospheric Deposition to the LDW	
Arsenic	kg/yr	1880	16.3	0.41	0.02%
Mercury	kg/yr	20.9	0.176	0.00912	0.04%
cPAH TEQ	kg/yr	14.6	1.76	0.0488	0.30%
HPAH	kg/yr	NA	NA	0.421	NA
Dioxin/Furan TEQ	g/yr	0.835	0.0251	0.00326	0.38%
PCB Congeners	kg/yr	NA	NA	0.00489	NA
PCB Aroclors (1)	kg/yr	7.31	0.377	0.0228	0.30%
BEHP	kg/yr	25.1	19.4	1.26	2.75%
BBP	kg/yr	2.3	1.22	0.322	8.38%

(1) Few PCB Aroclor results were detected; reported loadings were calculated from the median detected fluxes.

One of the primary objectives of this report was to determine the relative importance of indirect versus direct deposition. Given the current state of knowledge, it was not possible to determine how much wet and dry deposition to the watershed ends up in the LDW. For this report, the maximum amount of indirect deposition that could reach the LDW was assumed to be any deposition to impervious surfaces of the watershed. Atmospheric loadings to impervious surfaces were calculated by multiplying the total watershed area of 20,400 acres (8.256×10^7 square meters) by the fraction of impervious surface (0.531) by the COPC fluxes from Table 10. Atmospheric loadings to the impervious surfaces of the LDW watershed are compared to lateral loadings in Table 12. Atmospheric deposition was calculated for all impervious surfaces in the LDW; this represents a *high end estimate* as not all deposition to impervious surfaces ultimately is transported to the LDW. For comparison, a *low end estimate* of indirect loadings was calculated by assuming atmospheric deposition to only 10 percent of the impervious surface (or approximately 5 percent of total surface area) of the LDW basin. See Section 5.1 for additional discussion.

Table 12. Atmospheric Deposition to Impervious Surfaces Compared to Stormwater Lateral Loadings

COPC	Indirect Deposition from:		High End Estimate All Impervious Surface (53.1 Percent of Total Surface)		Low End Estimate 5 Percent of Total Surface	
	Units	Lateral Load	Atmospheric Deposition Total	As a Percent of Lateral Loadings	Atmospheric Deposition Total	As a Percent of Lateral Loadings
Arsenic	kg/yr	16.3	10.1	62%	0.949	6%
Mercury	kg/yr	0.176	0.224	127%	0.0211	12%
cPAH TEQ	kg/yr	1.76	1.2	68%	0.113	6%
HPAH	kg/yr	NA	10.4	NA	0.975	NA
Dioxin/Furan TEQ	g/yr	0.0251	0.0802	320%	0.00755	30%
PCB Congeners	kg/yr	NA	0.12	NA	0.0113	NA
PCB Aroclors	kg/yr	0.377	0.56	149%	0.0527	14%
BEHP	kg/yr	19.4	31	160%	2.92	15%
BBP	kg/yr	1.22	7.92	649%	0.746	61%

5.0 Role of Atmospheric Deposition in the LDW

The previous section described how the loadings were calculated for each of the pathways presented in Figure 3. The purpose of this section is to discuss these loadings in the context of the study objectives presented in Section 1.0.

Loadings results are first described in general terms to highlight the extent of atmospheric loadings to the LDW and to attempt to quantify direct versus indirect loadings. The discussion of loading results is then broken down by COPC. There are multiple reasons for discussing the COPCs separately:

- Each COPC is associated with a unique combination of point sources, mobile sources, and non-point sources, which are distributed differently throughout the region.
- The magnitude of the loading pathways that can lead to sediment recontamination is different for each COPC.

The relative contributions of background, regional, and local sources to COPC loadings, the comparison of flux values between the sampled locations, and the comparison of total loadings to known emissions are all part of the COPC-specific discussions.

5.1 Atmospheric Loadings to the LDW

Loadings from the upstream, lateral, and atmospheric deposition pathways are presented in Table 11. All loadings are presented in units of kg/yr, with the exception of dioxin/furan TEQ, which is presented as g/yr. Fluxes and the calculated loadings for cPAH and dioxin/furan congeners have been converted to TEQ values using the toxic equivalency factors (TEFs) from Ecology (2007).

The dominant loadings pathway for each COPC is upstream sediments. The sheer volume of sediment coming from the Green River on an annual basis assures this will be the case. Though the volume of solids coming from lateral loads is smaller, concentrations are often much higher (Table 7). Lateral loads of arsenic and mercury are just one percent of the upstream loads, while lateral loads for cPAH were 12 percent of upstream loads due to elevated concentrations in storm drain solids. The lateral loading pathway was particularly significant for phthalates. Lateral loads of BEHP and BBP were 77 and 53 percent of upstream loads, respectively (Table 11).

Direct atmospheric loadings (to the waterway surface) are small compared to the other pathways. Table 11 presents the estimated contaminant loadings to the river surface plus the atmospheric loadings as a percentage of all pathways. Direct atmospheric loadings make up less than 0.05 percent of total loadings for arsenic and mercury. Direct atmospheric loadings of cPAH TEQ, dioxin/furan TEQ, and PCB Aroclors are between 0.3 and 0.4 percent of total loads.

Atmospheric deposition is a more important pathway for phthalates. About 2.75 percent of estimated BEHP loadings to the LDW are from direct atmospheric deposition, while 8.4 percent of BBP loadings are from direct atmospheric deposition. For both phthalate compounds, 40 to 45 percent of all loadings to the LDW occur from lateral or atmospheric loadings. In contrast, less than 1 percent of arsenic and mercury loadings can be controlled from within the LDW, limiting the effectiveness of source control efforts for these COPCs.

Atmospheric loadings to the impervious surfaces of the LDW watershed were calculated as a surrogate for indirect deposition on the assumption that any deposition to these surfaces could enter the LDW through runoff. There are several important caveats to this concept:

- This idea assumes that pervious surfaces are zero percent efficient and impervious surfaces are 100 percent efficient at converting atmospheric deposition to surface runoff. In reality, a small percent of atmospheric deposition from pervious surfaces may enter the LDW, and some atmospheric deposition to impervious surfaces may get caught in a catch basin and never reach the waterway.
- Approximately one-half of the total watershed area drains to the LDW via a municipal storm drain system. Additional areas discharge stormwater directly to the LDW via private outfalls or overland flow. The remaining watershed area is serviced by combined sewers, and may discharge stormwater to the LDW only during overflow conditions.
- Using a constant surface area assumes that the indirect deposition and subsequent runoff processes are the same for all COPCs. In reality, the different solubilities and partitioning coefficients for each compound will add additional variability to the determination of indirect deposition.

The low and high end estimates of indirect deposition are presented in Table 12. Except for arsenic and cPAH, the high end estimates of indirect deposition (atmospheric loadings to impervious surfaces) are greater than the inputs from lateral loading. Since this cannot be mathematically correct, better estimates of indirect depositional loadings are needed.

Other studies have investigated the relationship between direct and indirect atmospheric deposition. Rowe et al. (2007) evaluated PCB loadings to the Delaware River and postulated that multiple factors can influence the contribution of indirect deposition to a particular waterway:

1. PCBs are deposited to watershed surfaces through deposition, but fluxes can differ dramatically depending on whether the system is aquatic or terrestrial. Wet deposition is likely constant, but land cover can impact the amount of particulate deposition that reaches the ground.
2. These PCBs may revolatilize from the watershed surfaces to the atmosphere. This will be more important for PCBs with lower molecular weights, which generally have higher vapor pressures.
3. Indirect deposition involves the movement of PCBs from the watershed surfaces into the river. However, this is unlikely to be a simple step. Organic matter in the soil can strongly bind PCBs entering the watershed from the atmosphere (Totten et al. 2006). The efficiency of this transfer process will depend on the type of watershed surfaces and would be considerably different for urban paved areas compared to undisturbed forest soil.

Both Rowe et al. 2007 and Totten et al. 2006 calculated the pass-through efficiency (E) of indirect atmospheric deposition of PCBs from the watershed to the Delaware River. The calculated value of E for watersheds somewhat removed from urban areas was approximately 1 to 3 percent, meaning that only a very small fraction of the PCB load from atmospheric deposition would reach the river. In more urban areas, this pass-through efficiency is likely to be higher due to a greater percentage of impervious surfaces.

The transport of copper from watershed sources to river outlets was evaluated in Ecology's *Assessment of Selected Toxic Chemicals in the Puget Sound Basin, 2007-2011* (Ecology and King County 2011). Findings of their evaluation suggested that less than 10 percent of the copper mass estimated to be released in the watershed (from all sources including atmospheric deposition) was discharged at the respective watershed outlets. The authors speculated that the retention of copper in the watersheds was due to infiltration into groundwater; trapping of particles by lawns, grassy road-side ditches, road shoulders and road right-of-ways; retention in the many structures installed in the watershed; and settling of particles in vegetated channels in low-gradient areas (Ecology and King County 2011). Although copper is not a COPC in this report, these results demonstrated that transport of contaminants from the watershed surface into rivers is inefficient.

To correspond with the results of these literature studies, *low end estimate* loadings from indirect deposition were also calculated assuming that atmospheric deposition to 5 percent of the total watershed area ultimately is transported to the LDW. These values are presented in Table 12 as loadings and as a percent of lateral loadings. In this scenario, indirect atmospheric loadings are from 6 to 61 percent of lateral stormwater loadings to the LDW. Even though indirect deposition has not been fully quantified, it is clear that the indirect loadings from both scenarios in Table 12 are greater than the direct loadings to the river surface in Table 11.

Though indirect loadings are greater than direct loadings for all COPCs, producing a better estimate of indirect loadings remains a data gap (Section 6.0).

5.2 COPC Specific Loadings

Fluxes and loadings for each COPC are graphically presented using two figure types. The first is a bar graph showing the median fluxes for each of the locations from Table 9. Each bar is labeled by the Location ID column followed by a one or two letter designation indicating the land use type. The median fluxes from the background, Puget Sound regional, and LDW areas were used to calculate relative inputs from background, regional, and local sources (Section 4.3). These inputs are also presented as pie charts for the relevant COPCs. It should be noted that the pie charts present relative geographic inputs to direct loadings to the LDW surface; the relationship between background, regional, and local source inputs would likely be similar for indirect loadings to impervious surfaces in the LDW basin. Due to the magnitude of uncertainty in the indirect loading estimates, they are not presented in the pie charts.

This section also includes a comparison of direct and indirect loadings to the emissions inventories in Section 2 to provide a sense of relative magnitude. Emissions should be greater than loadings; if they are not, there is a significant data gap in the emissions inventories.

5.2.1 Arsenic

According to Ecology's 2011 Phase 3 toxics assessment document, 70 percent of global arsenic emissions are from anthropogenic sources and 30 percent result from naturally occurring soils and rock (Ecology 2011).

Atmospheric Deposition

Median arsenic fluxes are shown in Figure 7. No flux measurements were available from the background WACAP national parks. With the exception of the Enumclaw location (0.41 ug/m²/day), fluxes at the regional locations are lower than the local LDW fluxes. The Duwamish location has the highest flux of any of the reported locations, though not significantly higher than Jersey City.

Seasonal variations in deposition were noted for the locations sampled as part of King County 2013a (Table 9). Fluxes decreased to a low point in late December to mid-January at most locations, while fluxes were highest in the summer months. This pattern was most evident at the Duwamish and Kent locations.

Total direct atmospheric loadings of arsenic to the LDW surface are estimated at 0.41 kg/yr, or 0.02 percent of total loadings (Table 11). For comparison, Ecology's 2011 Puget Sound assessment document estimated that the air deposition pathway contributes about 2 percent of the arsenic load to Puget Sound, while surface runoff contributes 95 to 98 percent. The difference in relative contribution between Puget Sound and LDW loadings is a result of the ratio of the water surface area to the watershed area. This ratio is higher for Puget Sound than for the LDW, meaning the contribution of atmospheric loadings to Puget Sound should be a greater percent of the total. Total indirect atmospheric loadings of arsenic to the LDW are estimated to be in the range of 0.95 to 10 kg/yr, or 6 to 62 percent of lateral loadings.

Total arsenic loadings are divided into regional and local contributions in Figure 8. Regional sources comprise 23 percent of total loadings, while 77 percent of the direct atmospheric loadings are from local sources.

Emissions

Up to 0.005 kg/yr of arsenic were reported as emissions from the point source inventory for the LDW airshed, while 4.1 kg/yr were reported from mobile on-road sources for the LDW airshed (Tables 2 and 3). Off-road mobile and non-point source emissions were only reported for all of King County, at 100 and ~6 kg/yr, respectively (Tables 4, 5, and 6).

The 4.1 kg/yr reported as emissions in the airshed (from point sources and mobile on-road sources) exceeds the calculated direct loadings to the LDW by a factor of 10. Because the non-point and off-road emissions were not reported specifically for the LDW airshed, it is not possible to determine if total emissions were greater than the estimated maximum loadings to impervious surfaces of 10.1 kg/yr (Table 12). One potential source not directly addressed in the emissions inventory was that of metal recyclers and grinding operations near the LDW. The operations on these facilities may be responsible for the deposition of particulate matter on neighboring properties. If some of the processed metal includes target COPCs like arsenic or mercury, increased atmospheric deposition on a small scale could be significant.

5.2.2 Mercury

Mercury is one of the most widely studied contaminants. It has been identified as a metal of concern. To help address the issue of mercury contamination in Washington, Ecology and the Washington Department of Health (WDOH) released a chemical action plan (CAP) for the control of mercury. The CAP is a comprehensive plan to identify, characterize, and evaluate all

uses and releases of mercury. This CAP describes elements of a statewide campaign to virtually eliminate the use and release of human-caused mercury in the state, including consumer products. This campaign also includes the installation of controls to reduce coal-fired power plant emissions, and technical and engineering assistance to commercial facilities such as cement and lime manufacturers (Ecology and WDOH 2003).

Atmospheric Deposition

Atmospheric fluxes of mercury are presented in Figure 9. The regional and background fluxes for mercury are very similar. In fact, the relative difference between the lowest and highest flux for mercury is the smallest for all of the COPCs in this study. As further evidence for a strong regional signal, mercury was the only COPC that lacked a statistically significant difference between fluxes among the locations sampled by Brandenberger 2010 (Table 9).

Fluxes from the South Park and Duwamish locations were higher than the regional and background fluxes. Fluxes from the other urban areas in Puget Sound (Kent, West Point, and Tacoma) ranged between the regional and LDW fluxes. Seasonal effects were not readily evident for mercury as they were for arsenic.

Fluxes from the New Jersey locations were three to four times higher than Puget Sound. This is likely a function of the widespread mercury emissions from coal-fired power plants and other industrial sources in the Midwest and Eastern United States, which are transported by prevailing west winds toward New Jersey. This assumption is validated by mercury sampling in Casco Bay, Maine (Ryan et al. 2003). While significantly less industrial than New Jersey, Ryan 2003 still reported that mercury deposition in Maine was similar to surrounding states, which indicated that mercury transport into the area is an important pathway. Mercury may be transported from metropolitan areas along the eastern seaboard and from more distant sources, such as the industrialized Ohio River Valley.

Atmospheric deposition of mercury is the primary pathway for mercury to the Great Lakes. As a result, extensive analysis of mercury deposition has been conducted in the Great Lakes region as part of the Great Lakes Mercury Emission Reduction Strategy (GLMERS) (Great Lakes Regional Collaboration 2010). The major source of mercury emissions in the Great Lakes region is coal-fired power plants, which represent 19.9 tons/year, or 57 percent of total regional emissions. There is only one coal-fired power plant in Washington State, located approximately 60 miles south-southwest of the LDW. A smaller dependence on coal for power, plus relatively clean marine air coming in from the west, is likely responsible for the lower depositional fluxes for mercury observed in Puget Sound.

Because of their similarities, background and regional fluxes were grouped together in the comparison of relative inputs to total loadings. Of the 0.00912 kg/yr of mercury deposited directly to the LDW, 49 percent is from regional and background sources, compared to 51 percent from sources local to LDW (Figure 10).

Direct atmospheric deposition to the LDW contributed 0.04 percent of total loadings (Table 11). Atmospheric deposition to the surface waters of Puget Sound contributed nearly 10 percent of loadings to the Puget Sound Basin (Ecology and King County 2011). Total indirect atmospheric loadings of mercury to the LDW are estimated to be in the range of 0.021 to 0.22 kg/yr, or 12 to

127 percent of lateral loadings. Note that, since indirect atmospheric loading is a component of total lateral loading, it cannot contribute more than 100 percent to the total.

Emissions

According to Ecology's 2011 Puget sound assessment document, there are a large number of sources of mercury releases in the Puget Sound basin, including the disposal of consumer products such as fluorescent lights, batteries, household thermometers, and thermostats; dental amalgam excretion and disposal; residual oil combustion; and industrial facilities such as cement plants, petroleum refineries, steel producers, and paper mills.

Some of the largest sources of mercury releases are the disposal of consumer-related products, with thermostat and fluorescent lamp disposals estimated to contribute 42 percent of the total mercury release (Ecology 2011). However, estimates of mercury release from these consumer products are based on numerous assumptions and therefore may have a large degree of uncertainty.

Industrial, commercial, and institutional facilities may contribute as much as 10 percent of the total mercury release in the Puget Sound basin, mostly through stack air emissions (Ecology 2011). Another source of mercury emissions that was identified in the study was the coal-fired TransAlta Centralia Generating Plant, which is located outside the Puget Sound basin and therefore was not included in the emissions inventory. The plant is located approximately 60 miles south-southwest of the LDW. The TransAlta Generating Plant is the largest single source of mercury emissions in Washington State, but an agreement has been made to shut down the coal boilers starting in 2020. It is unclear how much this facility is impacting the LDW.

Point source emissions estimates within the LDW airshed ranged between 20 and 80 kg/yr (Table 2), while non-point emissions for King County are up to 96 kg/yr (Table 5). Total loadings to the LDW from all pathways were estimated at 21.1 kg/yr (Table 11). If the emissions numbers and loading calculations are accurate, there is a net loss of mercury out of the LDW airshed through atmospheric transport.

5.2.3 Polycyclic Aromatic Hydrocarbons

PAHs are a large class of organic compounds characterized by two or more fused aromatic rings (benzene rings). Sixteen PAH compounds were designated by the EPA as priority pollutants. PAHs are often divided into three groups:

- Low molecular weight PAHs (LPAHs) tend to be found at higher levels in uncombusted fossil fuels (petrogenic sources, or PAHs associated with petroleum). LPAHs include naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene.
- High molecular weight PAHs (HPAHs) are primarily formed during incomplete combustion of fossil fuels and other organic materials such as wood (pyrogenic sources, or PAHs associated with the combustion of petroleum, wood, and coal). HPAHs include fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene.
- Carcinogenic PAHs (cPAHs) are a subset of seven HPAHs that are believed to be human carcinogens. Total cPAHs are reported as a TEQ, calculated using TEF values for

individual cPAH compounds as reported in Ecology 2007. The cPAH compounds are benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene. As a general rule of thumb, the cPAH concentration is about 11 percent of the total HPAH concentration.

Even though PAHs are classified as semivolatile compounds, the physical properties of PAHs differ considerably:

- The lightest LPAHs are found almost entirely in the gas phase in the atmosphere, while the heaviest HPAHs are found in the particle phase. The range of vapor pressures for PAHs (which affects volatilization) spans nine orders of magnitude.
- The LPAHs have relatively low solubilities in water and relatively high vapor pressures, meaning they are susceptible to volatilization and more likely to be present in the atmosphere. In contrast, HPAHs are hydrophobic and tend to associate with organic matter in solid phases such as sediment and suspended particulate matter rather than remaining in the vapor phase of the atmosphere.

This section focuses primarily on cPAH TEQ results, with minor emphasis on HPAH. Only cPAH totals were available in the LDW FS, meaning only cPAH could be used to model the pathways presented in Figure 3. LPAHs were not included in the discussion due to the poor analytical recoveries from the passive sampling apparatus and the likelihood that gas exchange plays a bigger role with these lighter compounds (Gigliotti 2005). HPAH and cPAH atmospheric fluxes and loadings in this study were calculated as the total of individual PAH compounds.

Atmospheric Deposition

Depositional fluxes for cPAH are presented in Figure 11. cPAH was the only COPC where fluxes had to be presented on a logarithmic scale. The background flux at Mount Rainier was 0.781 ng/m²/d. Puget Sound regional fluxes ranged from 4.65 ng/m²/d at the Enumclaw location to 12.6 ng/m²/d at Port Orchard. Most of the local LDW fluxes ranged between 20 and 100 ng/m²/d. Fluxes at the first Duwamish location and at King County International Airport (KCIA) were well above this range (Figure 6). Duwamish fluxes were 264 ng/m²/d, while fluxes at KCIA were the highest measured at 2,090 ng/m²/d.

The high fluxes at KCIA are representative of air traffic as an off-road mobile source. The high variability between all the local fluxes in Figure 11 suggests that a significant amount of error may be present in the calculation of loadings, depending on the selected flux value. Some of the possible errors are discussed as uncertainties in Section 7.0.

Total loadings of cPAH to the surface of the LDW are estimated at 0.049 kg/yr. Loadings of HPAH are estimated at 0.421 kg/yr. As mentioned above, cPAH concentrations/fluxes/loadings are consistently about 11 percent those of HPAH. This deposition represented about 0.30 percent of total loadings to the LDW. Total indirect atmospheric loadings of cPAH to the LDW are estimated to be in the range of 0.11 to 1.2 kg/yr, or 6 to 68 percent of lateral loadings.

Figure 12 shows a stark difference in loadings calculated from the background, regional, and local fluxes. This difference between urban and rural loadings for PAH has been observed in nearly every study that evaluates fluxes or concentrations across a range of land use types:

- Fluxes from the rural Pinelands site were a factor of four lower than the suburban and urban industrial locations (Figure 11).
- Extensive atmospheric sampling in the Great Lakes region by the IADN found that depositional fluxes of PAHs were 5 to 10 times higher in Chicago compared to a rural site on Lake Michigan (Blanchard et al. 2008).
- Monitoring conducted in New England found that dry deposition rates at more urban locations (Boston area) are much higher than those found in the Casco Bay area of Maine, suggesting that local emissions (fossil fuel use and wood burning) are a major source of PAHs in dry deposition (Golomb et al. 2002).
- Sampling conducted in a transect leading out of Erie, Pennsylvania, found PAH concentrations were a factor of three higher in Erie compared to the rural locations (Gannon University 2007).
- A global review study of LPAH data found that concentrations were significantly correlated to the surrounding population (Hafner et al. 2005).

Unlike most of the COPCs, PAHs have a short atmospheric residence time, meaning that under the right conditions, they can break down rapidly in the atmosphere. As a result, atmospheric transport does not play as large a role with PAHs as it does for a more globally distributed COPC like mercury.

Multiple studies have also reported a strong seasonal component to PAH emissions and loadings. Fluxes for the locations sampled as part of the King County 2013 LDW study were higher from January through March, particularly at Duwamish and Kent (King County 2013a). Winter concentrations in both the particulate phase and precipitation were up to five times higher than the summer concentrations at the Great Lakes locations (Blanchard et al. 2008). Similar patterns were observed from PAH sampling at both Casco Bay and Erie (Golomb et al. 2002; Gannon University 2007).

There is local and national evidence for declines in PAH concentrations and fluxes over time. Long-term decreasing trends of total ambient PAH concentrations were observed at Chicago, while declines at the more rural Great Lakes locations were slower with time. It was speculated that the bigger decrease in PAH concentrations in the Chicago area was a result of regulatory efforts, including cleaner fuels, improved automobile engines, alternative-fuel vehicles, controls on diesel engines, and industrial pollution control technology applied to heavy industry in the area (Blanchard et al. 2008). Decreases have also been observed in the Puget Sound region. Fluxes measured in Tacoma in 2008/2009 were over an order of magnitude lower than a similar dataset collected between 1989 and 1990 (Brandenberger et al. 2010).

Emissions

The most comprehensive emissions inventory of PAHs was recently developed for the entire State of Washington as part of the PAH CAP (Ecology and WDOH 2012). Although this analysis is based on the entire state, the ratio of releases to air, water, and soil/surface are likely the same for the LDW: 74 percent of PAH releases are to the atmosphere through air emissions; 8 percent are to the water, and 18 percent are to the land (Table 13). These releases total over 555,000 kg/yr. Residential wood burning is the largest source of PAH to the environment.

Creosote-treated wood, which includes railroad ties, marine pilings, and utility poles is a close second.

Table 13. Estimated PAH Releases in Washington State

Source	Air (kg/yr)	Water (kg/yr)	Soil/surface (kg/yr)	Total (kg/yr)
Residential wood burning	148,266	--	--	148,266
Creosote-treated wood	134,924	48,200	86,552	269,676
-Railroad ties	86,522	--	86,522	--
-Marine pilings	6,200	48,200	--	--
-Utility poles	42,172	--	--	--
Vehicle emissions	66,629	--	17,017	83,646
-Gasoline vehicles	63,557	--	--	--
-Diesel vehicles	3,072	--	--	--
-Oil leaks and other sources	--	--	17,017	17,017
Top Three Sources	349,819	48,200	103,539	501,558
All Sources	400,646	48,468	106,314	555,428

Source: PAH CAP (Ecology and WDOH 2012). Only the top three sources are listed in this table.
--not reported

The best estimates of local emissions are from the inventories in Section 2.0. Depending on the inventory, ~130 to 2,800 kg/yr of PAH emissions were estimated for point sources in the LDW airshed, with another 205 kg/yr from mobile on-road sources (Tables 2 and 4). Up to 8,400 and 77,000 kg/yr were estimated as emissions from off-road sources and non-point sources in King County (Tables 4, 5, and 6). The non-point source inventory does not include creosote-treated wood, which may be a significant source.

Total direct atmospheric loadings of cPAH to the river were estimated to be 0.0488 kg/yr (Table 11), and total indirect atmospheric loadings were estimated at 0.11 to 1.2 kg/yr (Table 12). Total cPAH from all pathways was estimated at 16.4 kg/yr (~150 kg/yr HPAH). All loadings were less than the emissions estimates, indicating a substantial amount of emitted PAHs are lost due to atmospheric degradation or transport out of the LDW.

5.2.4 Dioxins/Furans

Dioxins are formed as by-products of industrial production and combustion of certain chlorinated materials. Dioxins are ubiquitous in the environment at low concentrations. There are 210 individual dioxin/furan congeners, of which only 17 are considered toxic.

Atmospheric Deposition

Fluxes of dioxin/furan congeners were only measured as part of the King County LDW study (King County 2013a) (Table 9). The number of samples collected at each location during the 14-month program was relatively low, with only 5 and 10 samples per location. The flux data from each location is presented in Figure 13. All fluxes were calculated as dioxin/furan TEQs. With the exception of the Kent location, fluxes were consistently between 3.98 and 5.87 pg/m²/d.

Because of the observed high fluxes, an additional Kent location was established approximately 0.2 mile southeast at the Kent Senior Center. While additional work is needed to determine what is responsible for the differences between the Kent locations, the results do indicate that large mesoscale differences in dioxin/furan can occur.

Figure 14 shows the relative contributions from regional and local sources to total loadings. Total direct atmospheric dioxin/furan TEQ loads to the LDW surface were estimated at 0.00326 g/yr, with 80 percent from regional sources and 20 percent from local sources. This is the lowest percent contribution from local sources of the COPCs discussed in this report. However, it should be noted that only one data point from the rural Enumclaw location was used to represent regional contributions.

There was insufficient data to determine the presence of temporal or seasonal trends in dioxin fluxes.

Emissions

Based on the Ecology 2011 assessment document, combustion accounts for 97 percent of the dioxin/furan releases into the atmosphere. The largest source categories are as follows:

- Backyard burn barrels are estimated to comprise 78 percent of the total annual release of PCDD/Fs (dioxins/furans).
- Heavy duty diesel vehicles are responsible for 9 percent of the PCDD/F releases.
- Pulp and paper mill emissions are responsible for 5 percent of the PCDD/F releases
- Woodstoves and fireplaces are responsible for 4 percent of the total PCDD/F releases.

Backyard burn barrels are the largest source of dioxins to the Puget Sound, but not very likely to be present in significant numbers in the urban/industrial LDW airshed. Backyard burning is more common in rural areas, perhaps accounting for the large contribution of dioxins from regional sources in Figure 14.

Point source, on-road mobile, and non-point emissions of dioxins from the inventories were reported as total congeners, making comparison to the TEQ-based loadings difficult. Off-road mobile emissions for King County in Table 4 were reported for dioxin/furan TEQ. Reported emissions were 0.119 kg/yr, over 130 times higher than the total loadings of dioxin/furan TEQ to the LDW from all sources.

5.2.5 Polychlorinated Biphenyls

As discussed in many sources, such as Ecology's 2011 Puget Sound assessment document, PCBs were banned over thirty years ago and manufacturing was stopped in 1979. Consequently, PCBs are a legacy contaminant. However, PCBs are chemically very stable compounds, with the potential to last for decades without degradation. They are still found in many historical applications such as transformers, paint, and caulking materials, and therefore can continue to be released into the environment. Some PCB congeners are also by-products of manufacturing and are contained in small amounts in modern products such as pigments.

PCBs were extensively used in the 1950s, 1960s, and 1970s, and were phased out in the late 1970s. Environmental concentrations of PCBs dropped rapidly in the 1980s as they were phased

out, but the rate of decline has either slowed considerably or stopped in many areas (Diamond et al. 2010).

PCBs are a current priority for Ecology in several areas around the state, including the LDW. Ecology has recently increased the relative priority of addressing PCB contamination. Consequently, in October 2012, Ecology issued an amendment to the multiyear schedule, and will begin work on a CAP for PCBs (Ecology 2012a). There is no scheduled date for the release of the draft CAP at this point.

Atmospheric Deposition

Figure 15 shows the PCB fluxes for the locations from Table 9. Fluxes from the background and regional locations are consistently below 0.75 ng/m²/d. Local LDW fluxes range from 4.26 to 18.1 ng/m²/d. As expected, the estimate of loadings to the LDW is dominated by local sources (Figure 16). Of the 0.00489 kg/yr of PCB congener direct deposition loadings, 95 percent is from sources local to the LDW. Fluxes within the LDW are higher than fluxes from urban locations in Kent, West Point, and Tacoma, suggesting that there are PCB sources in the LDW above and beyond those found in typical urban areas.

Deposition rates of PCBs from the Pinelands, New Jersey location were similar to non-LDW urban sites in Puget Sound. The suburban New Brunswick location had fluxes similar to that of the LDW. Fluxes from Camden and Jersey City were 96 and 34 ng/m²/d, respectively. These concentrations are likely representative of the greater historical PCB contamination in industrial New Jersey. The Great Lakes IADN monitoring program found that ambient PCB concentrations in the vapor phase (particle phase concentration measurements were discontinued due to the frequency of non-detects) were several times lower at the rural Great Lakes sites than in Chicago, thus indicating that urban centers around the country represent continuing sources of PCBs (IADN 2008).

No seasonal or time trends were observed within the Puget Sound data. However, the lack of a trend may be due to the limited sample sizes associated with most of the local and regional studies.

Ambient levels of PCBs around the Great Lakes are trending downward over the long-term, but this trend seems to be slowing at some locations. The most rapid declines were observed at locations near Lakes Michigan and Huron. Regression analysis with the same PCB concentrations indicated that seasonal effects were not statistically significant (IADN 2008).

A study in Toronto was conducted to evaluate some of the reasons why the previously decreasing trend in atmospheric PCB concentrations seemed to be slowing (Diamond et al. 2010). A combination of PCB measurements and an assessment of continuing sources found that annual PCB emissions were only 0.01 to 0.3 percent of the total PCB stock. While emissions had been decreasing, the current reservoir of historical sources in the Toronto area is sufficient to indefinitely maintain current ambient PCB concentrations.

Emissions

PCB emissions were not reported for the point source inventory (Table 2) and were not associated with releases from on-road sources (Table 3). Within King County, approximately

0.09 kg/yr was associated with off-road emissions (Table 4) and 90.7 kg/yr was associated with residential trash burning.

PCB Aroclor loadings to the LDW from all pathways is estimated at 7.7 kg/yr. Atmospheric direct deposition loadings to the surface of the LDW were 0.0228 kg/yr for Aroclors, and 0.00489 kg/yr for PCB congeners. Unfortunately, it is difficult to make direct comparisons between the emissions and loadings estimates for PCBs for two reasons: (1) emissions are only available for King County, and (2) the emissions are not specified for Aroclors or congeners.

5.2.6 Phthalates

During a 9-month period in 2006–2007, a Sediment Phthalates Work Group (SPWG) was convened to summarize and evaluate existing information regarding sediment contaminant issues for phthalates (SPWG 2007). The group consisted of representatives from the City of Tacoma, City of Seattle, King County, Ecology, and the EPA. The SPWG's focus was to address the problem of phthalate recontamination at sediment cleanup sites. They described the process of contamination as follows:

- Phthalates are used as plasticizers in polyvinylchloride (PVC) products that are widespread as consumer products in the urban environment (e.g., vinyl flooring and siding, shower curtains, curtains, etc.).
- These ubiquitous plasticized PVC products continually off-gas phthalates into the surrounding atmosphere.
- Phthalates then follow an air-stormwater-sediment pathway, which leads to contamination of the sediments.
- Most importantly, the volume of plasticized PVC products in the environment means that there is a nearly infinite reservoir of phthalates available for volatilization, making phthalates difficult to address in a regulatory program.

Several phthalate compounds were analyzed as part of the atmospheric deposition studies presented in Table 8, but concentration estimates from upstream and lateral load sources were only available in the LDW FS for two of these compounds (AECOM 2012). These two phthalates, BEHP and BBP, were selected for discussion in this report. BEHP is the most common plasticizer for PVC, comprising more than 50 percent of phthalates produced (SPWG 2007).

Atmospheric Deposition

Measurement of phthalate fluxes was only conducted in two studies (City of Tacoma 2011; King County 2008). As a result, there are no background or regional measurements for phthalates. BEHP fluxes are presented in Figure 17. These fluxes were consistent across all the LDW and Tacoma locations (0.78 to 2.55 ug/m²/d), with the exception of Duwamish (1). The flux similarities suggest that volatilization and deposition is consistent for urban areas.

There were observable differences between the LDW and Tacoma locations for BBP fluxes (Figure 18). It is possible that analytical issues such as low recoveries are responsible for the low fluxes and lack of variability observed with the Tacoma locations.

Direct atmospheric loadings of BEHP and BBP relative to the upstream and lateral pathways were 2.75 and 8.38 percent, respectively. These were the highest contributions from atmospheric deposition of all COPCs discussed in this report. While regional fluxes were not available, it can be assumed that the majority of phthalate deposition comes from local sources.

Emissions

The 2011 Ecology assessment document noted that the release of BEHP was estimated to be approximately 17,000 kg/yr in the Puget Sound basin. BEHP release from polymer use (as a plasticizer) accounted for approximately 45 percent of the total annual release. Other non-polymer releases (15 to 20%) included losses from lacquers, paints, sealants, etc. The remaining 35 to 40 percent of BEHP releases were from industrial, commercial, or institutional point sources. There is considerable uncertainty associated with these BEHP emission estimates; for example the polymer releases are based on results extrapolated from studies in Sweden, because there were no studies in the United States.

A range of 10.9 to 378 kg/yr of total phthalates were reported in the point source inventory for the LDW airshed, plus 128 kg/yr for the King County-wide non-point source inventory. Neither inventory provides a breakdown of total phthalate emissions into individual compounds. Total loadings of BEHP and BBP from all pathways was estimated at 49.6 kg/yr (Table 11).

5.2.7 Pesticides

Organochlorine pesticides such as dichlorodiphenyltrichloroethane (DDT), chlordane, and dieldrin are among the most common legacy pesticides targeted for analysis. Each of these pesticides was banned for further use in the United States in the 1970s or 1980s. The behavior of these contaminants in the environment is similar to that of PCBs.

Organophosphate pesticides such as parathion came into use after some of the more deleterious environmental effects of the organochlorine pesticides were observed. These pesticides break down more rapidly, but had higher acute toxicities than the organochlorine pesticides and were subsequently banned.

There are also vast arrays of pesticide compounds currently in use in the United States. The current use of pesticides cover a wide range of physical characteristics, making it much more difficult to draw generalizations about their fate and transport in the environment. The wide range of physical characteristics also complicates chemical analysis and makes it prohibitively expensive to screen samples for the possible presence of current use pesticides. Typically, samples are not analyzed for current use pesticides unless there is reason to believe specific compounds are present.

Pesticides were selected as COPCs for this report, but relatively little data were available.

- Only two of the atmospheric flux studies reviewed for this report included pesticide data. The New Jersey study focused on legacy organochlorine pesticides, while WACAP included results for current use and legacy pesticides. Pesticides fluxes were not measured at any of the regional or local locations.

- Ecology's 2011 assessment document analyzed delivery pathways for two pesticides, DDT and triclopyr [((3,5,6-trichloro-2-pyridinyl)oxy)acetic acid)], but made no estimates of atmospheric deposition.
- Input values from the LDW FS BCM were not available for any pesticides, so it was not possible to calculate upstream or lateral loadings of pesticides. Legacy pesticides were initially analyzed as part of the LDW Lateral Loading Study, but analysis was discontinued after the results from the first round of sampling came back as non-detects.

Because of these reasons, it was not possible to calculate pesticide loadings for any of the pathways in Figure 3. There is relatively little data about the use and emissions of legacy pesticides in Washington State. Usage maps of several current use pesticides are produced and posted online by the U.S. Geological Survey (<http://water.usgs.gov/nawqa/pnsp/usage/maps>).

6.0 Regulatory Framework

This section describes the regulations established at the federal, state, and local levels to manage the source control of the target COPCs in the LDW.

6.1 Roles and Responsibilities

The EPA provides a federal framework for states to establish air quality programs to regulate pollutants, which have an adverse effect on human health. Under the Federal Clean Air Act, all states are required to have operating permit programs for businesses and industries that represent the largest sources of air pollution.

Ecology, PSCAA, the Energy Facility Site Evaluation Council (EFSEC, which grants permits to non-hydro energy generating facilities), and EPA all have the authority to issue air permits in the State of Washington. These permits can contain a facility's operational and procedural requirements, applicable regulations, emission standards, plus the monitoring, recordkeeping, and reporting requirements. These items address and regulate the releases of emissions of both criteria pollutants and air toxics (which include some of the COPCs discussed in this report).

EPA is responsible for the TRI, which is the federal emissions inventory. TRI was established in 1986 as part of the Emergency Planning and Community Right-to-Know Act. TRI is a tool that can be used by the public to research toxic chemical releases in their area. Information from the TRI program is used to identify the source of releases and provided recommendations for public policy decisions on both the national and local level.

EPA also has the authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to enforce against potentially responsible parties and ensure long-term protectiveness in the LDW since the site was added to the National Priorities List in 2001.

Within the LDW, the roles of air pollution control are shared between PSCAA, EPA, and Ecology. PSCAA, representing King, Kitsap, Pierce, and Snohomish Counties, is the primary responsible agency under the Federal Clean Air Act and the Washington Clean Air Act [70.94 RCW]. PSCAA responsibility includes monitoring air pollution and regulating businesses with regard to emissions (Article 1, Section 1.01). In addition to air permits, EPA and PSCAA have the authority to manage emissions from various activities such as area, point, and mobile sources by adopting air quality regulations.

Regulations have been set by PSCAA, which directly and indirectly impact COPCs. They cover: businesses, gas stations, and residential burning (including outdoor fires, woodstoves, and fireplaces). One example of such effort is the PSCAA Regulation I Section 9, Emission Standards, which controls the emission of air contaminants in the LDW airshed. Other examples are the outdoor burn ban [RCW 70.94.743] and the gas dispensing facility rule [Regulation II, Section 2.07], which both reduce potential particulate matter and COPCs in the region.

Outdoor fires are banned in urbanized areas as well as in portions of unincorporated King County. Gasoline dispensing facilities are required to install vapor recovery systems. Also, emission standards, such as Regulation I Section 9, are in place for some stationary and mobile

sources to limit the amount of COPCs produced when burning fuel oil. The following list includes the PSCAA regulations that pertain to air emissions:

- Regulation I Section 6 – New Source Review
- Regulation I Section 7 – Operating Permits
- Regulation I Section 8 – Outdoor Burning
- Regulation I Section 9 – Emission Standards
- Regulation I Section 13 – Solid Fuel Burning Device Standards
- Regulation I Section 15 – Nonroad Engines
- Regulation II Section 2 – Gasoline Marketing Emission Standards
- Regulation II Section 3 – Miscellaneous VOC Emission Standards
- Regulation III Section 3 – Source-Specific Emission Standards

Both the EPA and PSCAA programs include permitting exclusions of small sources, which are considered part of the area source category. The smaller sources are not monitored by either EPA or PSCAA, yet these sources can in total contribute substantial COPC emissions in the LDW airshed.

The State of Washington EFSEC manages an environmental and safety oversight program for major energy facilities and their site operations. They cover the following facilities: siting of large natural gas and oil pipelines, thermal electric power plants that are 350 megawatts or greater and their dedicated transmission lines, new oil refineries or large expansions of existing facilities, and underground natural gas storage fields. Since 1970, EFSEC has been the delegated authority by the EPA to issue permits under the Federal Water Pollution Control Act and the Federal Clean Air Act for facilities under its jurisdiction.

The last regulatory action by EFSEC regarding any of the COPCs was August 25, 2006, with the incorporation into Title 463 WAC of the Federal Clean Air Mercury Rule. However, rulemaking was stopped by the February 2008 State of New Jersey vs. EPA court decision. Only new source regulations for greenhouse gas emissions have been passed in recent years. There are currently no facilities in the LDW airshed that are permitted by the EFSEC.

6.2 Regulatory Activities Related to COPCs

In November 1998, EPA began a nationwide program to address persistent bioaccumulative toxics (PBTs), a group of contaminants that includes the COPCs discussed in this report. PBTs have been defined within WAC 173-333-100 as chemicals that pose a unique threat to human health and the environment in Washington State. Through their Multimedia Strategy for Priority PBTs, EPA finalized plans for mercury and alkyl-lead. Unfortunately the program is no longer active within EPA.

However, Ecology mirrored EPA's efforts and in December 1998 conducted a public symposium to address and discuss various elements of EPA's strategy. The key topics of this symposium were:

- Reduce and, where possible, phase out existing sources of PBTs.
- Clean up PBTs from historical sources.
- Prevent new sources of PBTs.
- Build partnerships to promote efforts to reduce and eliminate PBTs and coordinate with other jurisdictional programs.
- Ensure that regulatory and non-regulatory approaches address cross-media (air, land, and water) effects.
- Identify and prioritize additional PBTs.
- Improve public awareness and understanding of PBT problems and solutions.
- Improve and promote the development of information needed to make informed decisions on measures to reduce PBTs.

To better control PBTs, Washington established regulation WAC 173-333 to develop CAPs to identify, characterize, and evaluate all uses and releases of a specific PBT, a group of PBTs, or metals of concern. The CAPs were created to recommend actions to protect human health and the environment. However, a CAP is a plan, not legislation or a rule. Some of the recommendations in the CAP may lead to new legislation or rules, which would then go through the normal legislative or rulemaking process.

The first CAP was written for mercury in January 2003. In 2007, a multiyear PBT CAP schedule was created based on a system of internal priorities for addressing PBTs. Lead and PAH CAPs were completed in 2009 and 2012, respectively. The schedule was amended in 2012 based on a new priority ranking, so that work on a PCB CAP could begin immediately. The completion date is set for 2014.

All CAPs are a joint venture between WDOH and Ecology. There are currently CAPs for lead, polybrominated diphenyl ethers (PBDEs), mercury, and PAHs. The documents identify, characterize, and evaluate uses and releases of these COPCs.

6.2.1 Mercury Regulations

Mercury was selected as the first priority pollutant in the state PBT initiative. The mercury CAP was developed in 2002 with the goal of eliminating the use and release of human-caused mercury in Washington. In addition, steps to further minimize human exposure to mercury were suggested.

The pollution source targets for mercury were: waste separation plus disposal methods, mining operations, and stationary sources (coal power plants). The mercury CAP detailed key steps for reducing mercury exposure and pollution by focusing on fluorescent light recycling, thermometer recycling, installation of amalgam separators, medical equipment replacement, and community education.

The mercury CAP has influenced the passage of rules that target the identification and accumulation of mercury in the state of Washington. Efforts attributed to the mercury CAP have reduced 17,744 pounds of mercury between 2003 and 2009. By comparison, approximately 2,000 pounds of mercury are still disposed of each year and 2,500 pounds of mercury are

released by air and point sources. Future efforts are proposed to curtail mercury levels from petroleum combustion and mine operations by working with industry.

Some of the most notable federal regulatory actions with regard to mercury air pollution have been the passage of EPA's Clean Air Mercury Rule in November 2011 and the mercury Air Toxic Standards, which targets mercury from power production facilities. The LDW airshed does not have a power production facility in the immediate vicinity, but the Clean Air Mercury Rule will curtail release of mercury from all power production facilities in the state, which in turn may reduce the regional transport of mercury into the LDW airshed.

Although the mercury CAP has helped reduced mercury in Washington, concentrations are still detected in fish from Puget Sound waterways. Ecology acknowledges that additional steps should be taken for mercury. There are currently no plans for another CAP or amendments to the existing document.

6.2.2 PAH Regulations

The PAH CAP is the most recently completed document. The CAP has identified 21 source categories for PAH releases, with the largest air releases from residential wood burning, motor vehicles, and creosote-treated wood. There are current programs in place in Washington to address these major anthropogenic sources of concern. One of the major findings of the PAH CAP was that major new regulatory programs were not needed. Instead, the emphasis should be on education, outreach, and incentives.

It is stated in the PAH CAP that there are current programs in Washington (implemented by Ecology and WDOH) to reduce PAH releases from complex mixtures, such as wood smoke, diesel, and creosote. The following are part of the recommendations for sources of major concern:

- Education and outreach;
- Voluntary incentive programs;
- Prohibit the use of uncertified wood stoves in specified areas;
- Support new federal standards;
- Incentives to lower fuel consumption;
- Anti-idling education programs and write an anti-idling rule;
- Continue the current diesel reduction strategy;
- Support new federal actions;
- Continue creosote piling removal;
- Map railroad tie locations; and
- Monitor uses and environmental fate of PAHs from other products.

Creosote-treated wood, the largest non-combustion source of PAHs, differs from other sources in that it is regulated as a pesticide at the federal and state levels. Some of the major regulations that affect the control of PAHs in the LDW airshed include the following:

Federal

- 40 CFR Parts 59, 80, 85, and 86: Control of Hazardous Air Pollutants from Mobile Sources [Emission Standards for gasoline passenger vehicles]
- 40 CFR Part 60 Subpart AAA: New Residential Wood Heaters
- 7 USC 136 et seq.: Federal Insecticide, Fungicide, and Rodenticide (FIFRA) [Creosote, as a restricted use pesticide, is regulated under FIFRA]

State and Local

- 173-422 WAC: Motor vehicle emission inspection [identifies high polluting vehicles]
- 173-423 WAC: Low Emission Vehicles [emission standards for new cars, beginning with 2009 models]
- 173-425 WAC: Outdoor burning [requires permits and restrictions for non-agricultural and non-silvicultural outdoor burning]
- 173-430 WAC: Agricultural burning [requires permits and control of smoke from agricultural burning]
- 173-433 WAC: Solid fuel burning devices [emission standards for solid fuel burning]
- 173-434 WAC: Solid waste incinerator facilities [emission standards for solid waste incinerators]
- 173-460 WAC: Controls for new sources of toxic air pollutants [emission control requirements for new sources of toxic air pollutants]
- 332-24 WAC: Forest protection [regulates silvicultural burning]

Three additional recommendations proposed by Ecology to reduce PAHs involve:

- Promulgating a statewide anti-idling rule for both passenger cars and commercial equipment;
- Locating creosote-treated wood associated with railroad ties; and
- Investigating PAH releases from roofing.

6.2.3 PCB Regulations

The development of a CAP for PCBs is a current priority for Ecology. Source investigations and clean-up efforts are currently being conducted within the LDW by Ecology, EPA, and others, with the City of Seattle, King County, Port of Seattle, and The Boeing Company named as responsible parties.

Nearly all the current focus is on understanding and controlling lateral and upstream sources of contaminants, rather than air deposition. Additional work is being conducted by Ecology to develop human health criteria for water quality standards. The upcoming PCB CAP will examine the sources of PCBs in Washington and make recommendations to reduce exposures.

6.2.4 Additional Actions for Other COPCs

In the fall of 2006, the City of Tacoma, the City of Seattle, King County, Ecology, and EPA developed a Sediment Phthalates Work Group (SPWG). The work group examined current

information for phthalate sediment concentrations, researched release sources, identified data gaps, and provided draft short-term recommendations. As of September 2007, the SPWG found that phthalates did not trigger a regulatory response. The SWPG provided recommendations to:

1. Manage phthalate reaccumulation at cleanup sites using site-specific operating and management plans.
2. Conduct studies/research to further validate the group's comprehensive problem statement and define other pollutants transported via an air-stormwater-sediment pathway.
3. Coordinate with Puget Sound Partnership and air agencies regarding the air-stormwater-sediment pathway and related contaminants.
4. Jointly evaluate effective solutions for the air-stormwater-sediment pathway with Puget Sound Partnership and air agencies.
5. Educate agency and community stakeholders regarding the comprehensive statement.
6. Develop recommendations regarding plasticized PVC (which could also be potentially extended to other products that are sources of air-sediment pathway contaminants).
7. Coordinate with other phthalate risk initiatives.
8. Implement stormwater source control and treatment options where justified.
9. Consider Sediment Management Standard rule amendment to address phthalates and other pervasive pollutants.

Additional efforts have been made by EPA, including the issuance of a Phthalates Action Plan in March 2012 (USEPA 2012). This plan addressed the regulatory response to phthalates and the proposed actions by the EPA. The major finding of EPA's Phthalates Action Plan is the need for a regulatory response for phthalates, which contradicts the SPWG conclusion that no regulatory action was required.

The Phthalates Action Plan specifically identified eight chemicals: the already discussed BBP and BEHP, plus dibutyl phthalate, diisobutyl phthalate, di-n-pentyl phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate.

The plan proposed a Significant New Use Rule covering most uses of di-n-pentyl phthalate, and conducted Design for the Environment and Green Chemistry Alternative assessment for phthalates. Both the Significant New Use Rule and the Design for the Environment and Green Chemistry assessments provide alternative uses for new phthalates in the United States. EPA's Phthalates Action Plan does not state emission targets or goals but will deter new sources of phthalate emissions. There have been no reported actions or discussions from Ecology based on EPA's recent actions for phthalates.

Ecology and WDOH are continuing to investigate which toxic contaminants are a risk for human health and the environment. However, the average rate for the production of a CAP has been only one every two years since the program started. Rapid changes in the schedule are not expected. Table 14 lists the current priority ranking for CAP completion.

Table 14. Priority Ranking for CAP Preparation

Contaminant or Contaminant Group	Current Ranking (10 is highest)
Lead	10
Perfluorooctane sulfonates (PFOS)	10
Polycyclic aromatic hydrocarbons (PAHs)	10
Polychlorinated biphenyls (PCBs)	9
Polychlorinated dibenzofurans (PCDFs)	9
Polychlorinated dibenzo-p-dioxins (PCDDs)	9
Cadmium	8
Polybrominated dibenzodioxins and furans (PBDDs/PBDFs)	7
Hexabromocyclododecane (HBCD)	6
Hexachlorobenzene (HCB)	6
Hexachlorobutadiene (HCBD)	6
Short-chain chlorinated paraffins (SSCPs)	6
Tetrabromobisphenol A (TBBPA)	6
Tetrachlorobenzene, 1,2,4,5- (1,2,4,5-TCB)	6
Polychlorinated naphthalenes (PCNs)	5
Pentachlorobenzene	4

Several conclusions can be tentatively drawn from this section:

- The latest CAP issued for PAHs recommended that new regulatory programs are not needed for anthropogenic sources.
- Because the current magnitude of PAH emissions is quite high (as shown in Section 2.0), Ecology recommends further public outreach, prohibition on the local level with PSCAA, further investigation into creosote-treated wood, and supporting new federal actions.
- The mercury CAP did not include a schedule or timeline to revisit the goals of reducing mercury emissions in Washington State, so there is currently no mechanism in place to check on the effectiveness of the CAP program for mercury.
- EPA has recently determined a regulatory response is necessary for phthalates; therefore, phthalates should be reexamined for incorporation to the multiyear PBT CAP schedule (Table 14).
- Ranking and prioritizing of arsenic was not included in the PBT CAP schedule.

7.0 Uncertainties and Data Gaps

The intent of this section is to identify what information is needed to provide a more accurate depiction of atmospheric deposition to the LDW. This section describes (1) where improvements could be made to the loadings calculations in the report, (2) when issues with the cited literature prevented further analysis, and (3) what pieces of information were not available for this report but would be useful.

7.1 Uncertainties in Loading Estimates

The calculations presented in Section 4.0 and the results in Section 5.0 imply a false sense of accuracy to the loadings because sources of variability were either not included or not fully discussed. Three of the COPCs, arsenic, cPAH, and dioxin/furan congeners, have been selected as examples for the discussion of uncertainty in the loading calculations. These COPCs were selected because a range of concentrations and fluxes were available from the FS BCM and atmospheric deposition studies, respectively.

One factor that is not covered in this section is that of analytical uncertainty. In some cases, analytical issues can cause a bias in the reported results. For example, issues with the extraction step during the analysis of the King County LDW samples collected during 2011 and 2012 resulted in a low bias for benzo(a)pyrene (King County 2013a). The results were qualified as estimates but were used in this report. Given the high TEF of benzo(a)pyrene in calculating the cPAH TEQ, cPAH fluxes from this study may be underestimated. While such analytical issues are important, the scope of the current study did not include a full QA/QC review of the data used.

7.1.1 Loading Calculation Uncertainties

Upstream and lateral loadings used contaminant concentrations calculated for the BCM in the LDW FS. The input values from Table 7 were used to calculate contaminant loadings. Low and high concentration estimates were also available for several arsenic, cPAH, and dioxin/furan congeners. The (A) portion of Figures 19, 20, and 21 show the full range of loading estimates if the low, input, and high estimates are used to estimate lateral and upstream loadings. The left, center, and right lines on the box plot portion of these figures represents the estimates generated using low, input, and high estimates, respectively.

Low loading estimates were about one-half those of the input values for cPAH and dioxin, and about one-third of the input value for arsenic. The high estimates were anywhere from 0.2 to 4 times higher than the input values.

Atmospheric loading uncertainties to the LDW were calculated in the (B) portion of Figures 19, 20, and 21 by using the 25th percentile, median, and 75th percentile of the local fluxes from Figures 7, 11, and 13 for arsenic, cPAH, and dioxins, respectively.

From low to high, all arsenic fluxes were within a factor of two, ranging from 0.322 to 0.508 kg/yr (Figure 19), cPAH fluxes ranged from 0.0234 to 0.0638 kg/yr (Figure 20), and dioxin/furan fluxes ranged from 0.00293 to 0.00354 g/yr (Figure 21). It is important to note that the sample

size used to calculate these loading ranges varied by COPC. Only three flux estimates were available for arsenic and dioxins, while 10 estimates were available for cPAH.

One extreme outlier was observed for cPAH fluxes, at the KCIA location. This location was believed to be representative of idling aircraft. While it is an overestimate of cPAH flux for the whole LDW, it has been included in Figure 19(B) as a blue dot. If this outlier were used to calculate direct deposition to the LDW, the total loadings would be 1.89 kg/yr.

The range of indirect loadings in the (B) portion of Figures 19, 20, and 21 was calculated as follows:

- The low end of the box represents indirect loadings to 1 percent of the watershed area using the 25th percentile flux.
- The center bar represents indirect loadings to 5 percent of the watershed area using the median flux (as calculated in the discussion section).
- The high end of the box represents indirect loadings to 10 percent of the watershed area using the 75th percentile flux.

Even when using the 75th percentile fluxes, atmospheric deposition from indirect loadings were less than estimates of total lateral loading. The only scenario where direct atmospheric deposition to the river was greater than lateral loadings was if all fluxes were assumed to equal the KCIA maximum for cPAH.

This brief discussion of uncertainty focused on the variability of flux data throughout the LDW. A more detailed evaluation of uncertainty within the flux data would entail an evaluation of variability within the results at each location.

7.1.2 Interannual Variability

The above discussion demonstrated some of the flux and loading variability present in the chemistry data and spatially across the LDW. The amount of variability due to interannual factors such as precipitation could not be addressed in this report.

The lateral and upstream loadings used 30-year averaged flows calculated in the LDW FS STM. These averages removed the year-to-year variability in river volume and stormwater runoff. A more detailed evaluation of the STM may provide an estimate of the extent of these year-to-year differences.

The flux data used to calculate atmospheric loadings came from relatively short studies, on the order of 1 to 2 years (Table 8). These studies were not long enough to determine the variability of fluxes at any one location over time.

Precipitation changes from one year to the next can have impacts on the amount of wet deposition. Networks such as IADN in the Great Lakes, and NJADN in New Jersey, used a sampling approach where precipitation and the vapor/particulate phases were sampled separately using automated equipment (Blanchard et al. 2008; Reinfelder et al. 2004). These methods combined with longer sampling periods meant interannual wet and dry deposition fluxes could be evaluated independently. Unfortunately, the studies conducted in the LDW only measured a combined wet and dry deposition. There is no easy way to separate the contributions between the two.

Other studies, like the National Trends Network and Mercury Deposition Network, both overseen by the U.S. Geological Survey, use wet deposition sampling methods similar to IDAN and NJADN (<http://nadp.sws.uiuc.edu/ntn/>). Both the National Trends Network and Mercury Deposition Network have locations in Washington State. Mercury is the only target analyte these networks have in common with this report. A more detailed analysis of the U.S. Geological Survey, IADN, and NJADN data may provide insight as to whether interannual variability is large enough to warrant continued sampling at locations in the LDW.

7.2 Data Gaps

Several data gaps were identified over the course of writing this report. The data gaps are discussed below.

7.2.1 Indirect Deposition

One of the objectives of this report was to calculate indirect deposition of COPCs to the upland area of the LDW watershed (Section 5.1). Studies have been conducted to determine the indirect deposition of PCBs to rural watersheds, but there were no literature values describing the contribution of indirect deposition to a watershed as industrialized as the LDW.

Two estimates of indirect deposition were used. One used 5 percent of the total LDW watershed area. This estimate was based on a literature review which indicated that 1 to 3 percent of deposition to rural surfaces reaches the Delaware River (Rowe et al. 2007; Totten et al. 2006). The other estimate assumed any deposition to impervious surfaces would reach the LDW. There were large differences between these estimates. For example, indirect deposition made up 12 percent of lateral loads for mercury using the 5 percent scenario, while indirect deposition was 127 percent of lateral loads using the impervious scenario. There is a large difference between these values.

It may be possible to obtain a better estimate of indirect deposition by setting up a study similar to that of Rowe et al. 2007 and Totten et al. 2006. They targeted a watershed with no known sources of PCBs to avoid inputs from building materials, caulks, etc. They collected atmospheric deposition fluxes and surface runoff flows and compared the relative loadings from both. The watersheds they targeted were rural to avoid known sources of PCBs. If there are watersheds (or sub-basins) on the LDW or Green River that contain about 50 percent impervious surface, but no known sources of the target COPC, a similar study could be conducted.

Only indirect deposition to the LDW watershed was calculated for this report. The contribution of indirect deposition to the much larger Green River watershed is also considered a data gap.

7.2.2 Gas Exchange

As mentioned in Section 3.2, gas exchange can be positive or negative. In some cases, gas exchange loadings can exceed inputs from wet and dry deposition. While the lack of gas exchange data is a data gap for this report, the collection of this data may not be worth the time and expense. To calculate gas exchange, concentration data must be available for the vapor phase of the atmosphere and for the receiving water body.

Collection of vapor phase data using automated samplers is expensive and labor intensive. Samples must be collected over the span of several months to obtain an annual average that is free of seasonal and temperature effects. Vapor phase results can be obtained by passive samplers, but there can be significant errors associated with these measurements. There would be additional costs for the collection of water samples from the LDW.

Even with the concentration data, the gas exchange can only be calculated if the partitioning coefficients between air and water are known for the target COPC. These are available in the literature, but are often associated with significant variability which is propagated through the gas exchange calculation.

7.2.3 Emissions

Reported results in the emissions inventories were inconsistent for several reasons.

- Point sources and mobile on-road sources were available for the LDW airshed, while non-point sources and mobile off-road sources were reported only for King County.
- Within any source category (point or non-point sources), the emissions estimates varied considerably depending on the reporting agency.
- Reporting thresholds for many of the inventories meant that a large portion of emissions were likely not even reported.
- Sources that were identified in other documents were not included in the inventories. For example, Ecology 2011 identified creosote as a major source of PAH in Puget Sound, but logs, pilings, and railroad ties treated with creosote are not part of the non-point inventories in Tables 5 or 6.
- Reporting conventions meant that emissions could not be compared to loadings (see Section 7.2.5).

As part of this report, atmospheric loadings to the LDW were compared to the emissions inventory results from Section 2.0. Given the sources of error described above, it is unclear how valid this comparison really is.

7.2.4 COPC Losses within the Loadings Model

The model that formed the center of the loading calculations for this report (Figure 3) only focused on loading inputs to the river. However, it is equally important to assess outputs in order to obtain a mass balance of emissions and loadings.

Atmospheric Loss of COPCs

Comparing emission rates from the airshed to atmospheric loadings in the LDW watershed makes the tacit assumption that everything that is released to the atmosphere in the airshed is deposited in the watershed. This is not the case. Photolysis of organic contaminants in the atmosphere can be a rapid process and account for significant losses of emitted COPCs. In addition, emissions within the airshed can be deposited in non-LDW areas of the airshed, or be transported to different areas.

Though beyond the scope of this report, a more complete model would apply degradation rates and offsite transport to emissions from the airshed. It would be more accurate to compare this revised emissions number to atmospheric loadings in the LDW.

Fate of Atmospheric Deposition in the LDW

It is stated in the LDW FS that 10 percent of clay-sized particles and 76 percent of silt-sized particles are expected to settle in the LDW (AECOM 2012). Figure 5 shows the breakdown of atmospheric particulates. The break between silt and clay is around 4 μm . If most of the COPCs are bound to the fine particulates, it is likely that most of the atmospheric deposition to the LDW will wash into Elliott Bay. This same loss process may not hold true with indirect deposition, as small particles from atmospheric deposition may aggregate into larger particles.

A more complete model, such as the LDW FS STM, would take into account the loss of small particles from the LDW.

7.2.5 Reporting Conventions

Reporting conventions for several COPC groups like PAH, PCBs, dioxins, and phthalates were inconsistent. Most sediment PCB concentrations that formed the basis of the LDW FS were reported as Aroclors, while most fluxes were reported as congeners. It was unknown whether congeners or Aroclors were reported in some of the emissions inventories.

PAHs are often reported as HPAH or cPAH. It is easy to alternate between the two calculations if the individual compound data are available, but this was not always the case. When identified, emissions of PAH were often for lighter molecular weight compounds.

Dioxin/furan emissions were reported as either a TEQ, or as a congener total. Reporting was dependent on the inventory. All loadings were reported as TEQ.

Phthalates were reported as total phthalates in the emissions inventories, while individual compounds were reported as fluxes/loadings.

It is suggested that reporting conventions for future work follow those proposed as part of the 2013 Sediment Management Standards rule revisions for contaminated sediment sites: PCB congeners (total and TEQ), dioxin/furan TEQ, and cPAH TEQ.

7.2.6 Pesticides

No flux results were available for pesticides to determine atmospheric loadings, and no estimates of pesticides loads were modeled in the LDW FS BCM to determine upstream and lateral contributions. An additional loadings study in the LDW would need to be conducted to obtain these fluxes. Assuming the target pesticides were measured in LDW sediments, the LDW FS BCM would need to be revisited to provide input values.

8.0 Summary and Conclusions

This review of atmospheric deposition in the LDW and surrounding watershed focused on a list of COPCs including arsenic, mercury, PAHs, PCBs, dioxins, phthalates, and pesticides. Data were available and presented for all COPCs except pesticides. Although it is not expected that pesticide emissions or deposition are a significant factor in the LDW, it is at Ecology's discretion to confirm this assumption in the future.

The primary goals of this study were to assess atmospheric deposition to the LDW based on previously completed local and nationwide studies, and identify data gaps that need to be filled in order to improve the understanding of these processes.

Within these goals were a series of specific objectives. This section presents a summary of the report for each of the individual objectives.

8.1 Summary

A conceptual model was created (Figure 3) that includes all major loading pathways to the LDW. All pathways were modeled as inputs only. Outflow of COPCs from the LDW and loss processes to the atmosphere remain a data gap. Lateral and upstream flows were represented by thoroughly reviewed models and results from the LDW FS. Atmospheric deposition loadings were calculated from various flux studies conducted in Washington State.

Depending on the sampled location, the flux results were divided into background, regional, and local fluxes. Loadings were calculated from these fluxes. Background and/or regional sources made up 50 percent or more of total loadings to the LDW for dioxins and mercury. This high regional contribution suggests that source control effort to reduce local emissions will not have a major impact on reducing total loadings for these two COPCs. By contrast, local sources of PCBs and PAHs (and presumably phthalates) dominated, making up over 80 percent of total loadings.

Direct atmospheric loadings to the surface of the LDW were compared to upstream and lateral loads. Atmospheric deposition to the LDW accounted for 2.8 to 8.4 percent of BEHP and BBP loadings, respectively. For all other COPCs, direct atmospheric deposition was responsible for less than 0.4 percent of total loadings.

Atmospheric deposition to the river is only a portion of total atmospheric deposition. Indirect deposition, or atmospheric loadings to the watershed surface that can later enter the LDW, were also evaluated. Literature studies suggested that only 1 to 3 percent of indirect atmospheric loadings are ultimately transported to the target waterway. However, these studies were conducted in rural areas lacking the industry and amount of impervious surfaces present in the LDW. Indirect loadings in this study were calculated using two different assumptions. The first was conservative and assumed that 5 percent of indirect loadings are transported to the LDW. The second was a worst-case scenario, in which all deposition to impervious surfaces is assumed to be transported to the river. These two estimates resulted in a wide range of possible loadings. Regardless of the assumption, all estimates of indirect loadings were greater than direct loadings. Obtaining a better estimate of indirect deposition remains an important data gap.

Various emissions inventories were summarized in Section 2.0. Differences in reporting methodologies amongst the agencies responsible for the inventories made comparisons between sources and between emissions and loadings difficult. Point and mobile on-road sources were reported for the 10 zip codes within the LDW airshed (Figure 2). By contrast, non-point and mobile off-road sources were reported for all of King County. For each COPC, emissions were greater than loadings. This comparison is not particularly informative; given the large area over which emissions were totaled compared to the small area of the LDW, emissions would be expected to be greater than loadings.

Several other issues with the emissions inventories were discussed in Section 7.0, Data Gaps and Uncertainties. Emissions aside, there was some empirical evidence within the flux data of differences between sources. The sampling location at KCIA was meant to target mobile off-road emissions (flight traffic). This location had PAH fluxes an order of magnitude higher than the next highest location (which presumably was more representative of mobile on-road emissions).

Seasonal trends were observed for arsenic and cPAH. Arsenic fluxes decreased in the winter and were higher in the summer. cPAH fluxes were at their maximum in the winter in several of the studies reviewed for this report. Elevated winter cPAHs are presumably due to wood burning. Evaluation of temporal trends was difficult given the limited sampling time scale for the flux studies conducted within Washington. Declines in PAH flux were noted at locations in Tacoma between the current results and a similar study conducted over 20 years ago (Brandenberger 2010). Studies in other parts of the country have observed declines for PAHs and PCBs, though the PCB decline has leveled out in recent years.

The regulatory framework relating for atmospheric COPCs was summarized in Section 6.0. The CAPs produced by Ecology and WDOH have the most relevance to the target COPCs. CAPs have already been produced for mercury and PAHs. A PCB CAP is a current Ecology priority.

8.2 Conclusions

Based on the results of this air deposition scoping study, the following conclusions were made:

- Atmospheric emissions are a major contaminant source for many of the COPCs. For example, the PAH CAP states that over 70 percent of PAH releases are air emissions. The primary pathway for phthalates to enter the environment is through volatilization from plastics.
- Because the area of the LDW is small compared to the surrounding watershed, the contribution of atmospheric deposition to the river surface is minimal compared to upstream and lateral sources.
- However, the atmospheric contribution due to indirect deposition could be significant, with estimates in this report ranging from just 6 percent of lateral loads to over 100 percent, depending on the assumptions used.
- More work is needed to determine the full extent of indirect deposition, but clearly the atmosphere can be a major pathway for contamination to the LDW.

- Local sources represent a significant portion of contaminant loadings to the LDW from atmospheric deposition for arsenic (77 percent local), cPAHs (84 percent local), and PCBs (95 percent local). Local source control efforts for these chemicals may help to reduce lateral loadings to the LDW.
- Regional sources represent a significant portion of contaminant loadings to the LDW from atmospheric deposition for dioxins/furans (80 percent regional) and mercury (49 percent regional/background). Local source control efforts will have more limited effects in reducing lateral loadings for these chemicals.

Ongoing work by Ecology to prepare CAPs will help to further identify and provide recommendations for reducing loadings from all sources.

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Figures

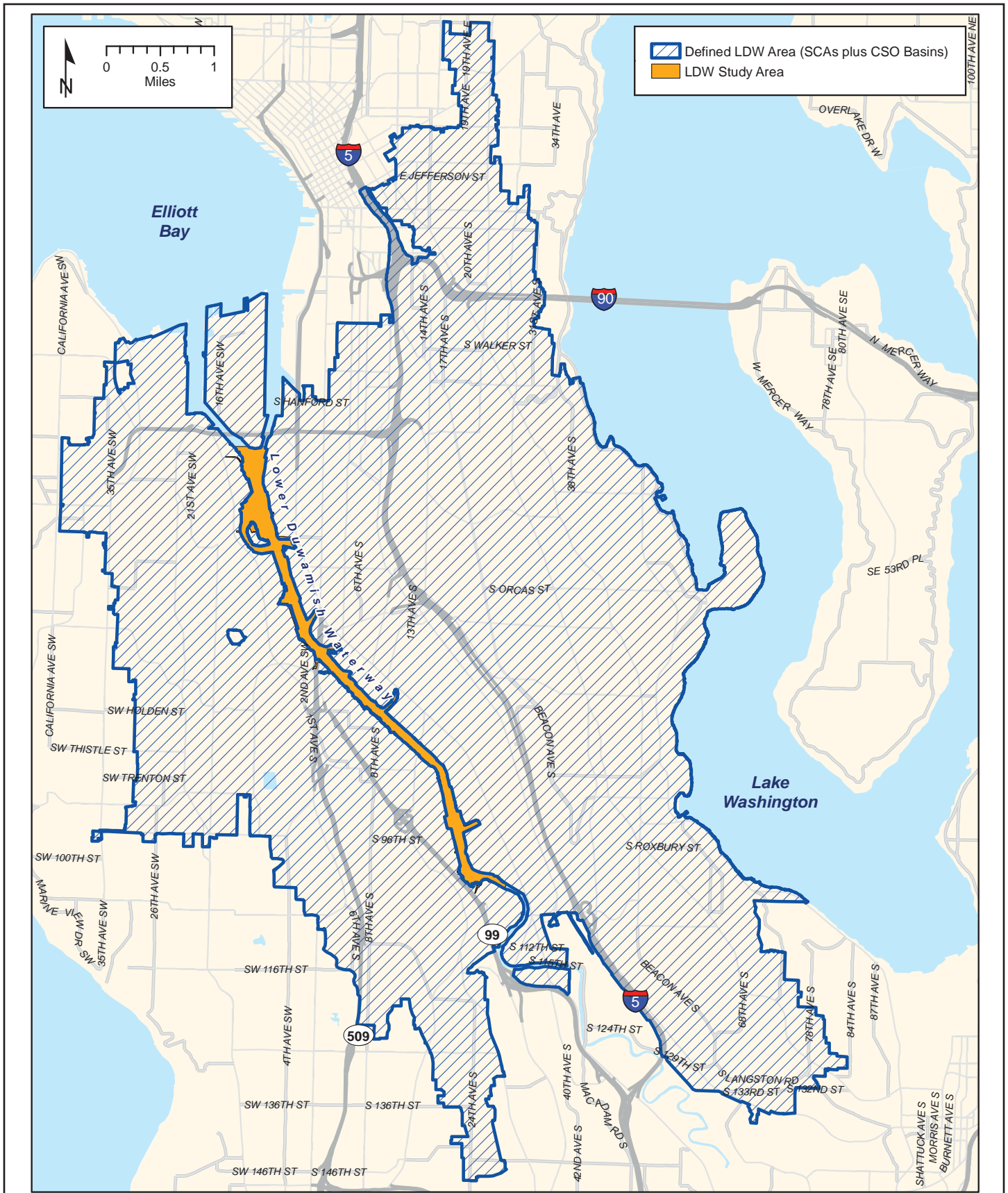


Figure 1. Lower Duwamish Waterway Site and Surrounding Watershed



Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet

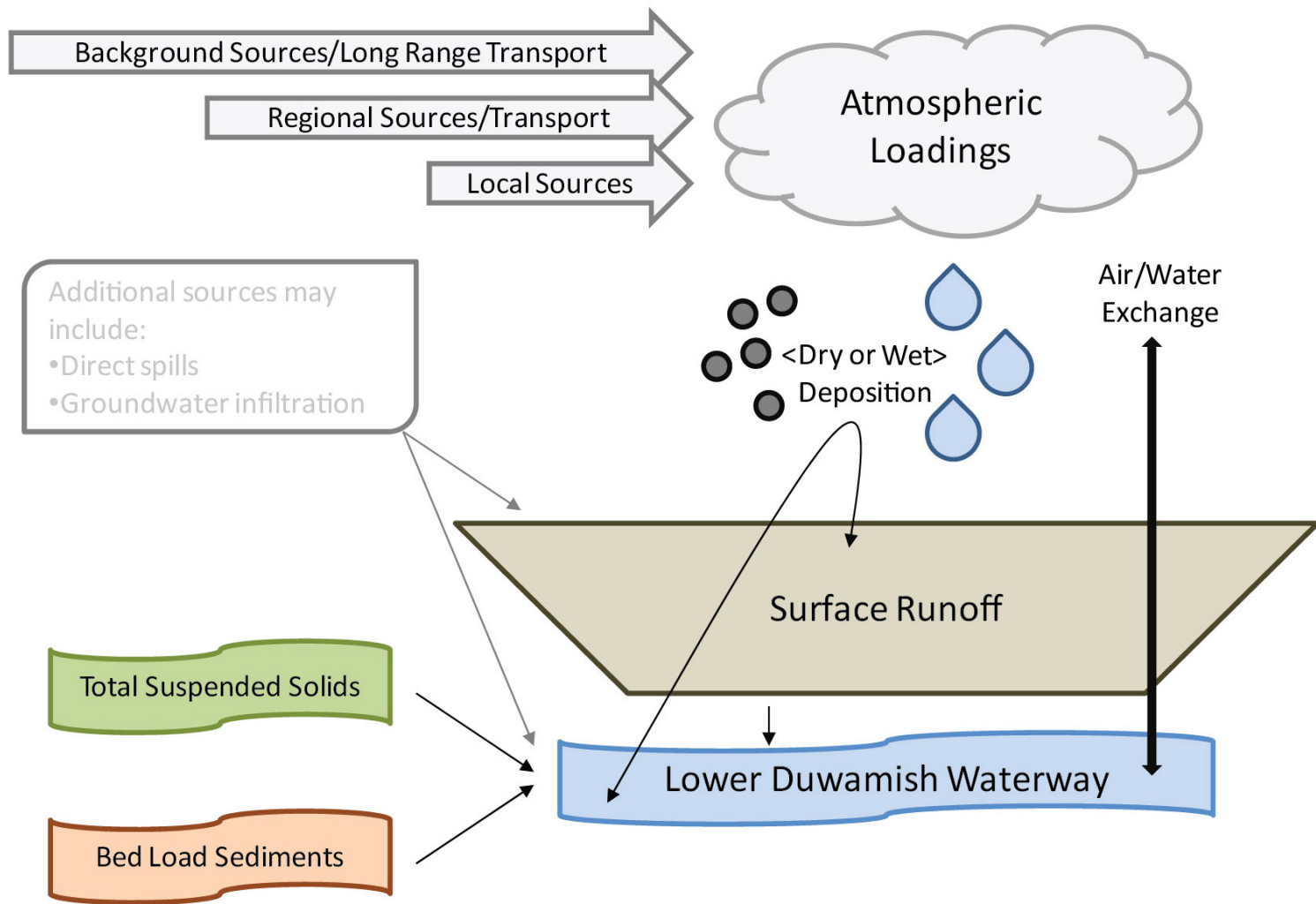


Figure 3. Primary Loading Pathways for Contamination of the Lower Duwamish Waterway

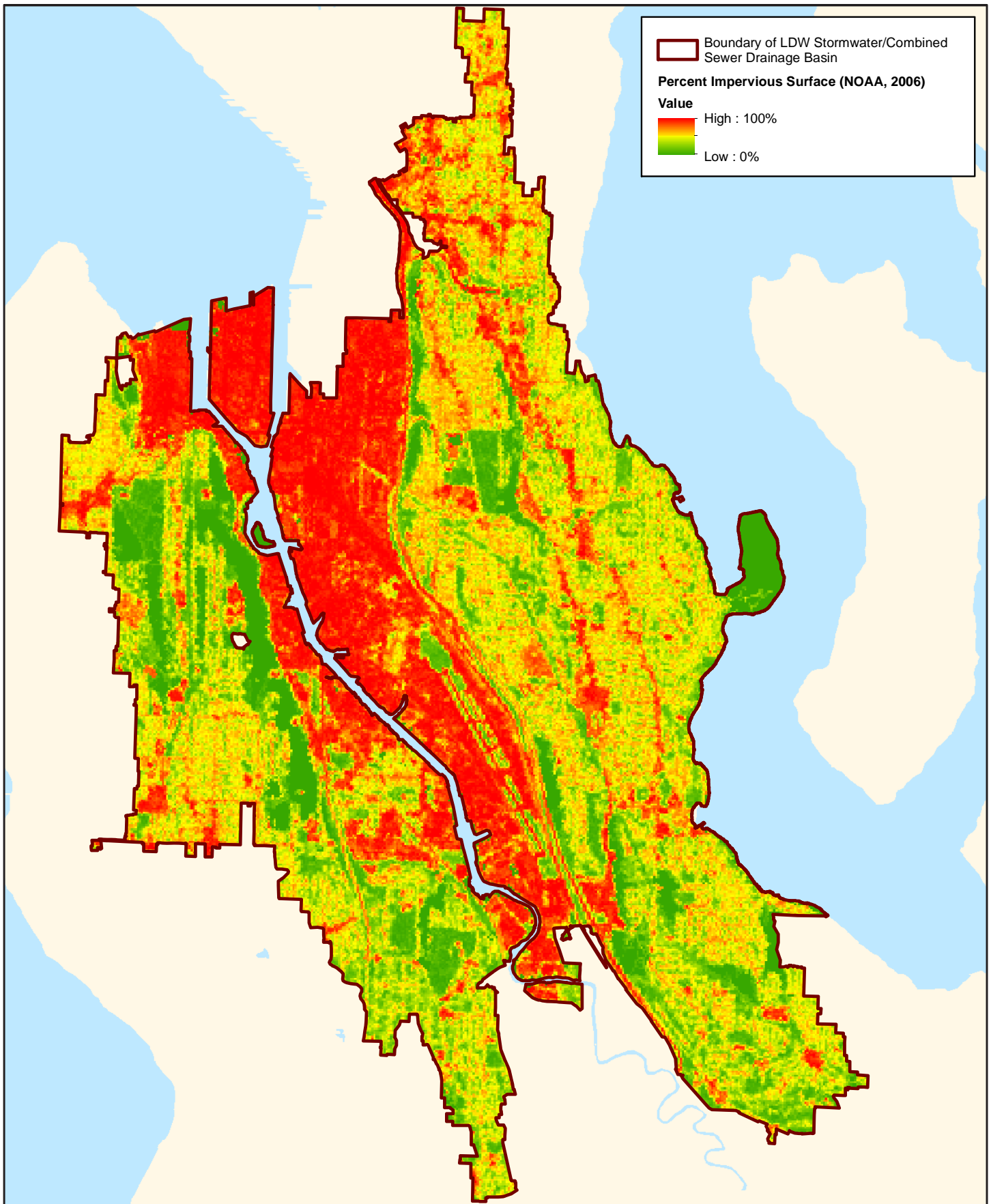


Figure 4. Impervious Surface Areas in the LDW Basin

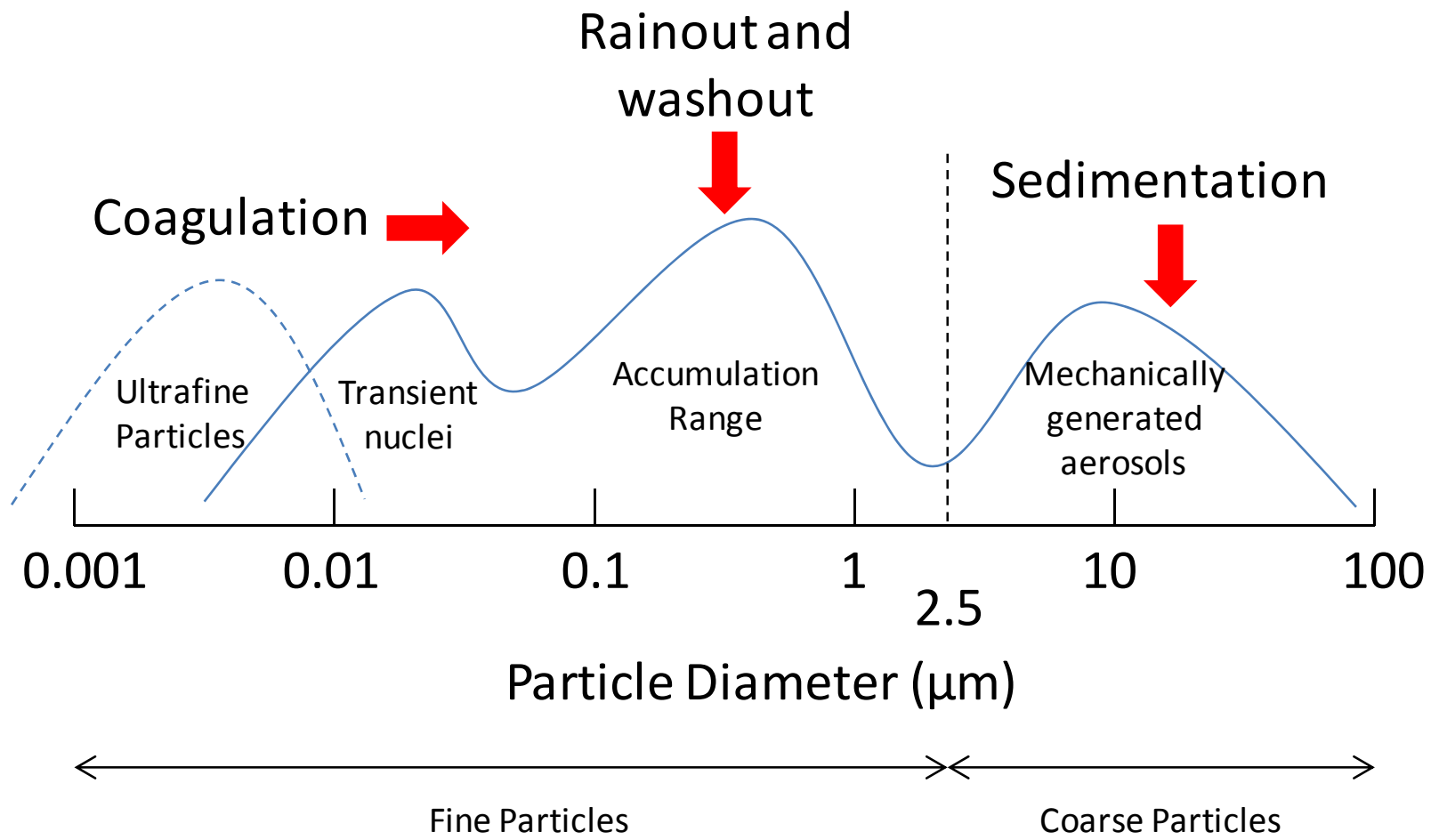


Figure 5. Distribution of Particulate Matter in the Atmosphere

Source: Finlayson-Pitts and Pitts 2000

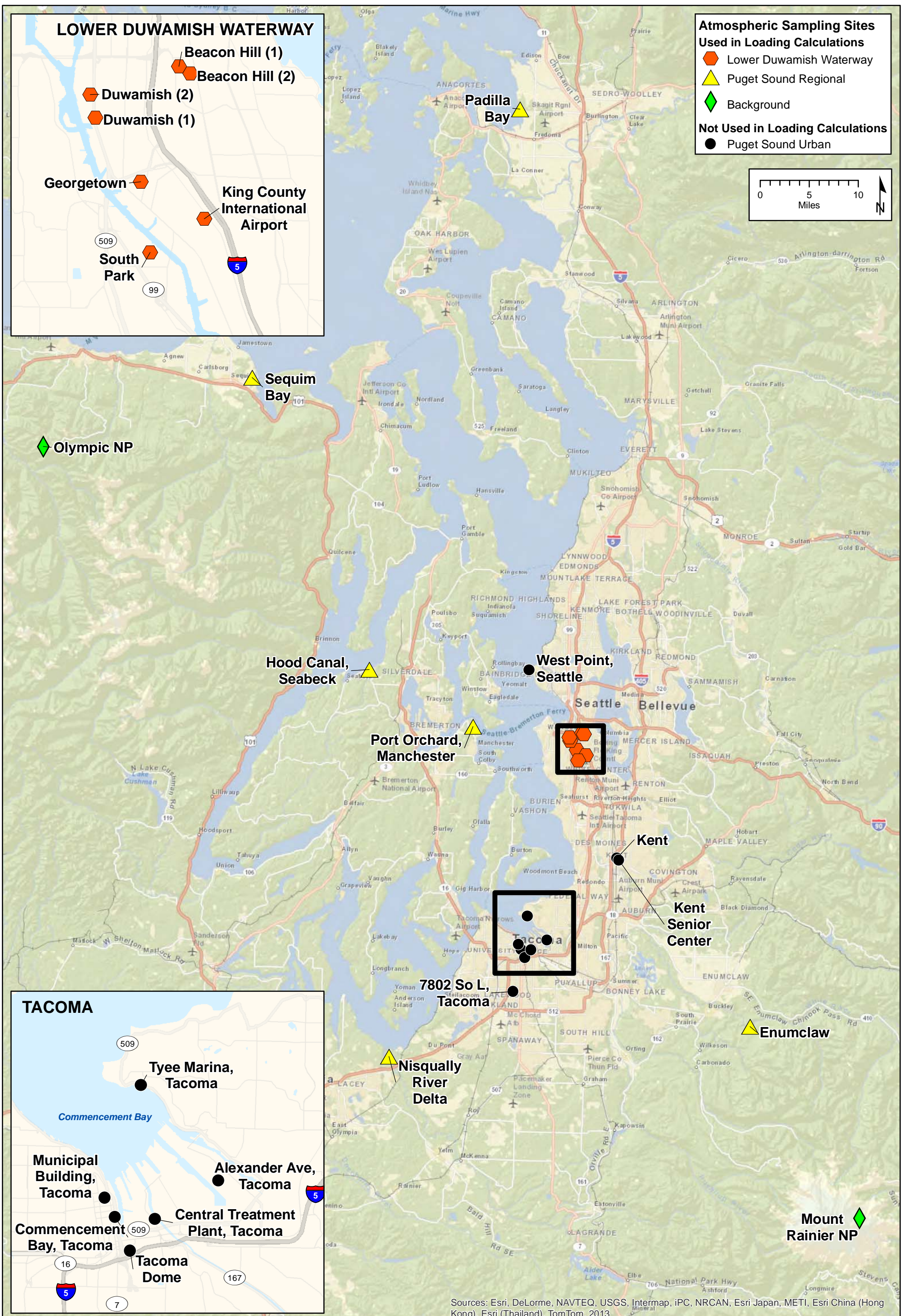


Figure 6. Atmospheric Deposition Sampling Locations in Western Washington

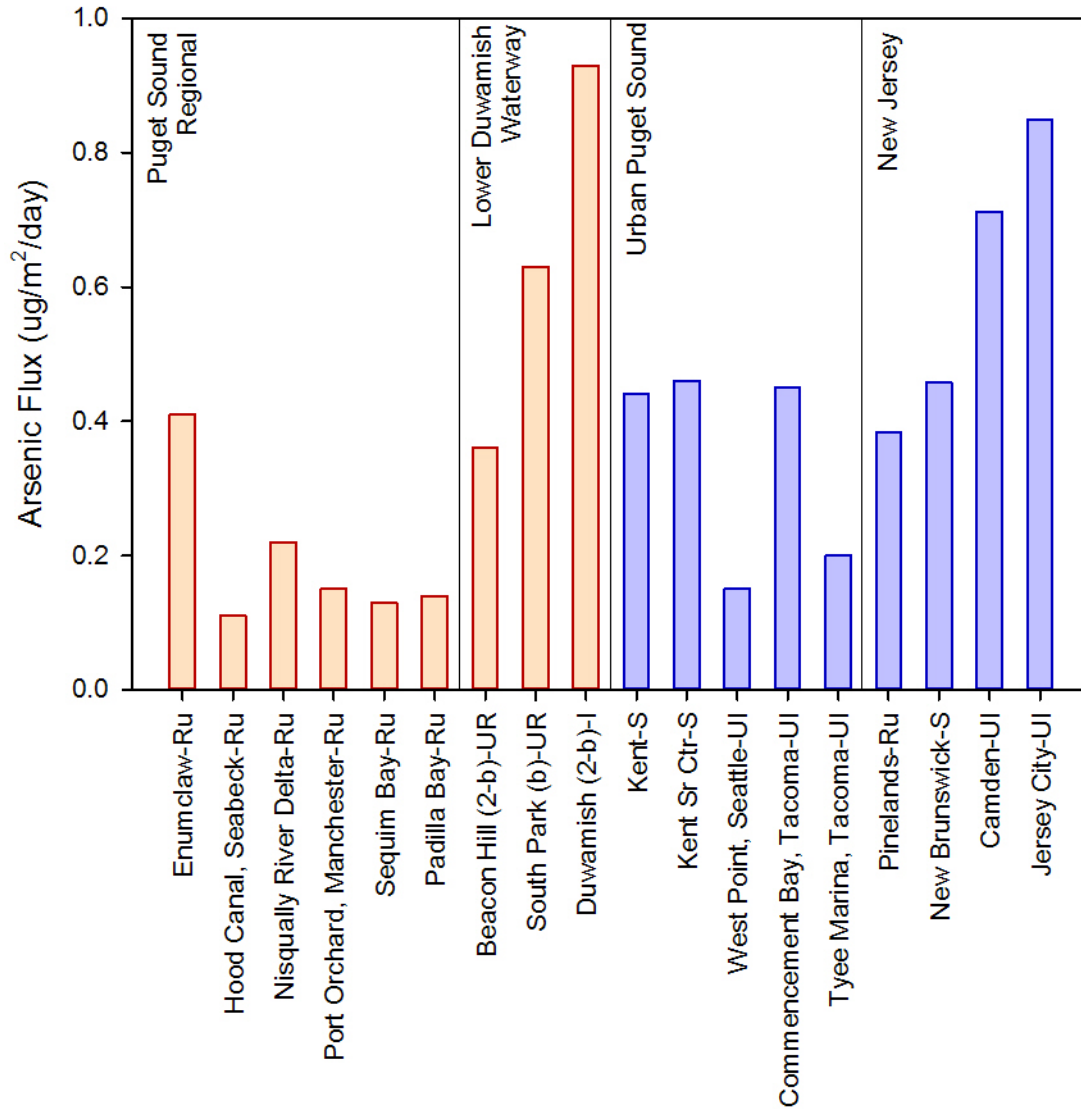


Figure 7. Comparison of Atmospheric Fluxes of Arsenic



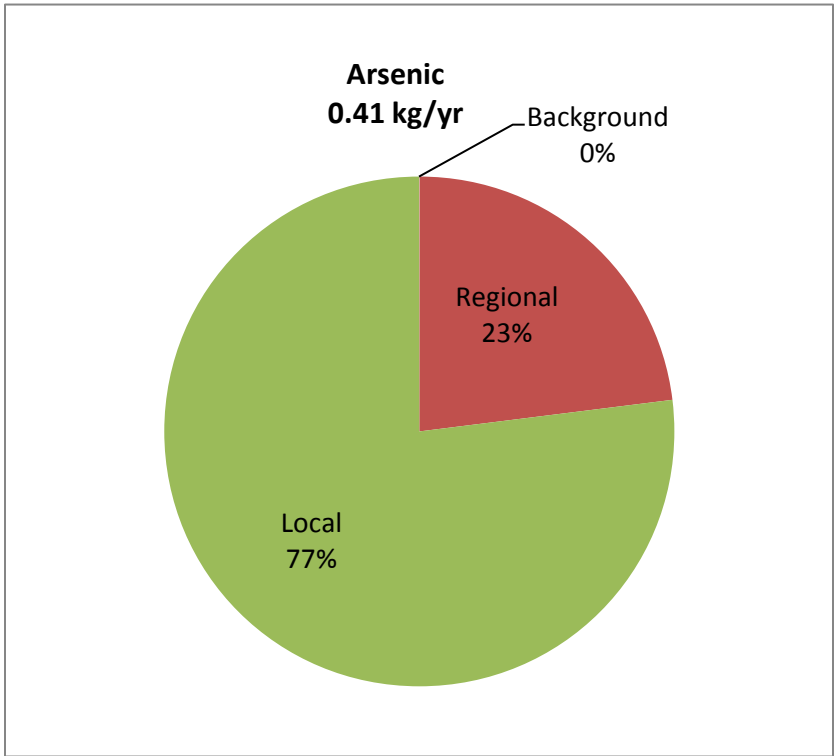


Figure 8. Geographic Contributions of Arsenic Loadings to the LDW Surface

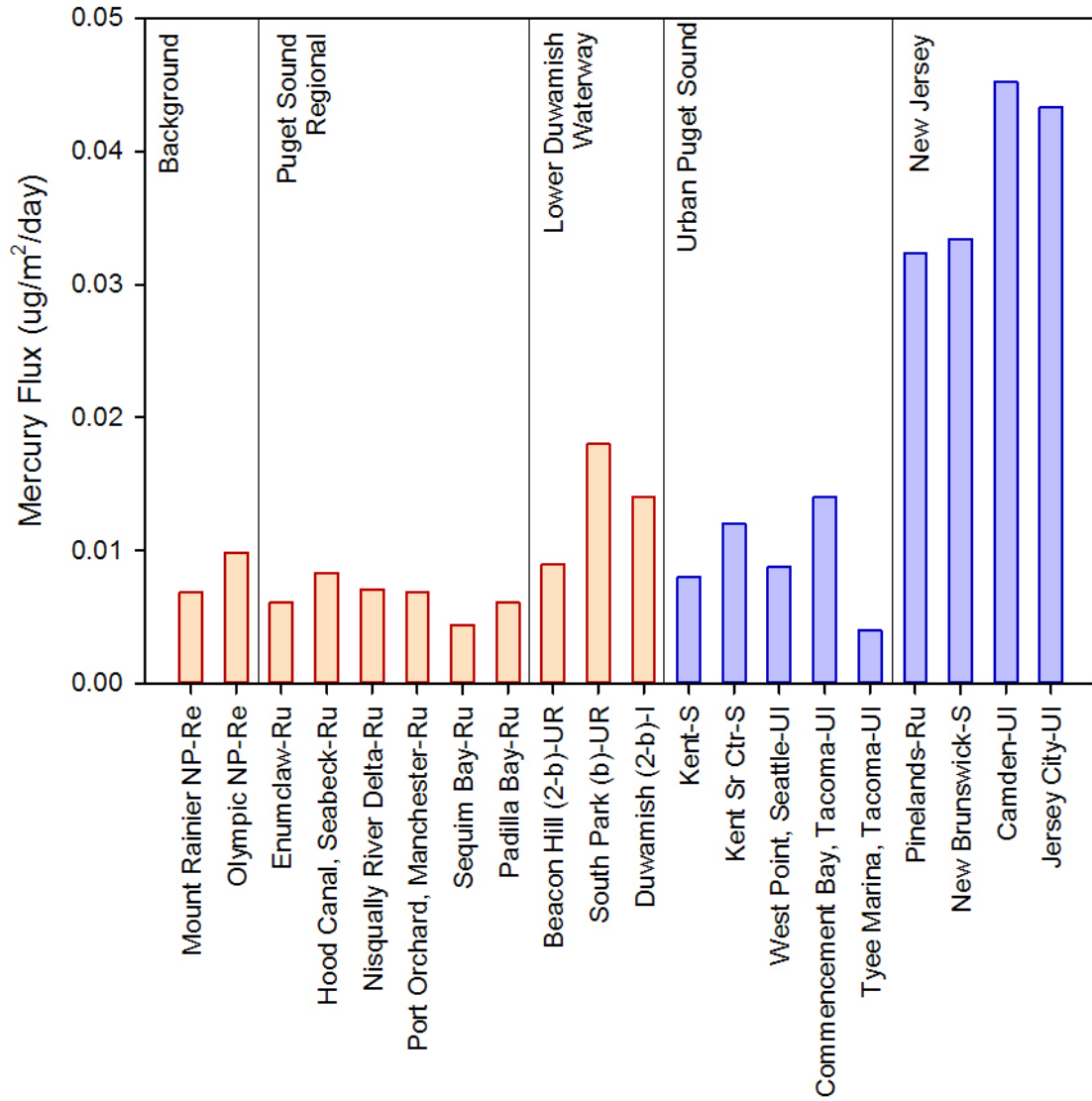


Figure 9. Comparison of Atmospheric Fluxes of Mercury



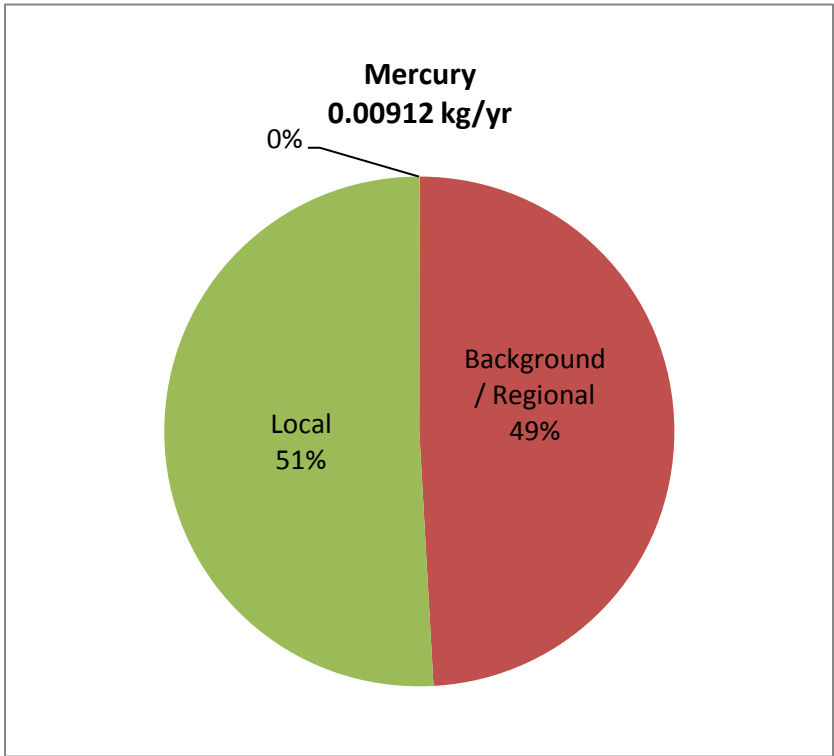


Figure 10. Geographic Contributions of Mercury Loadings to the LDW Surface

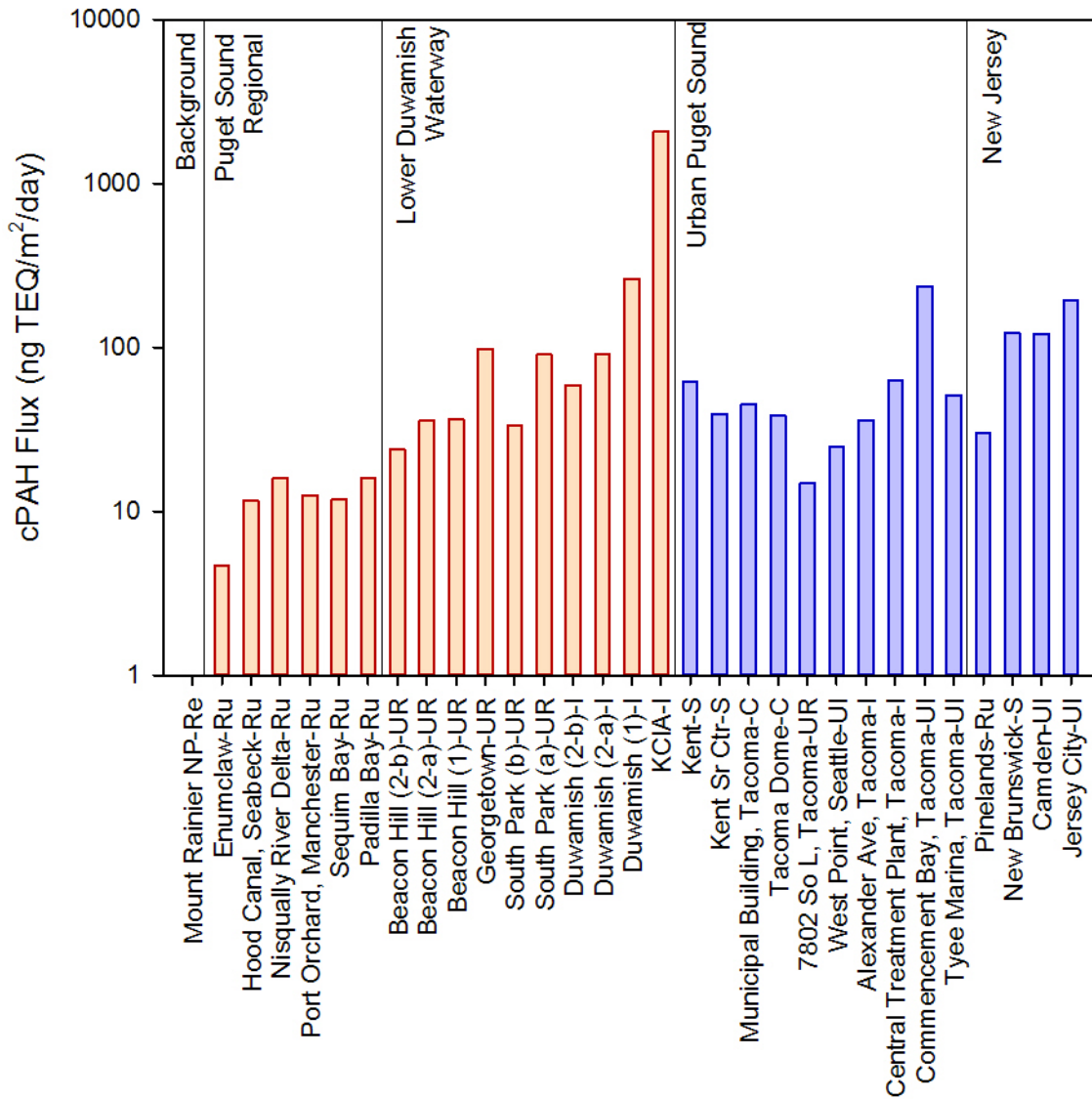


Figure 11. Comparison of Atmospheric Fluxes of Carcinogenic PAH TEQ (note logarithmic scale)



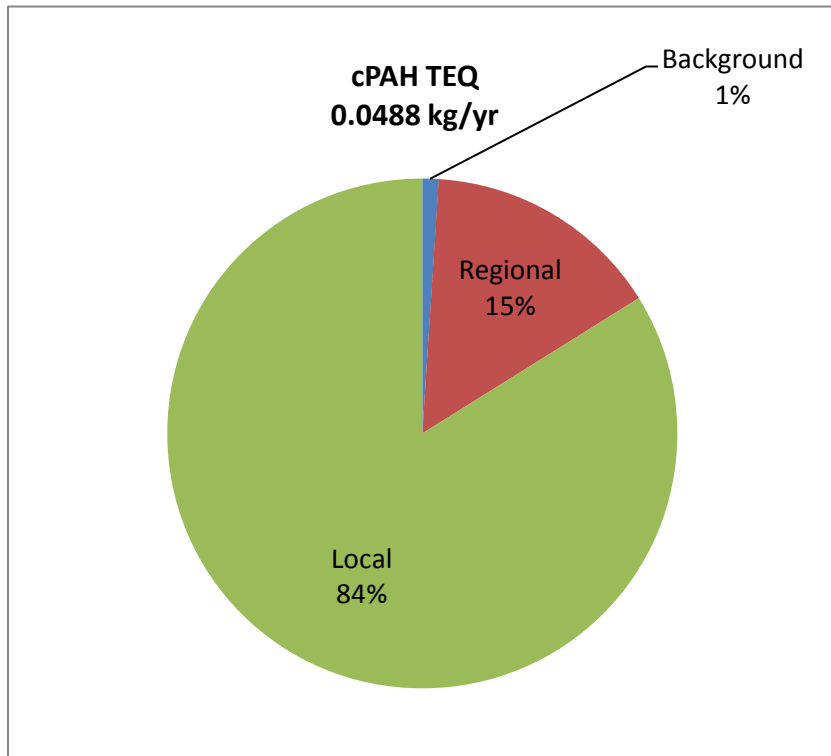


Figure 12. Geographic Contributions of Carcinogenic PAH TEQ Loadings to the LDW Surface

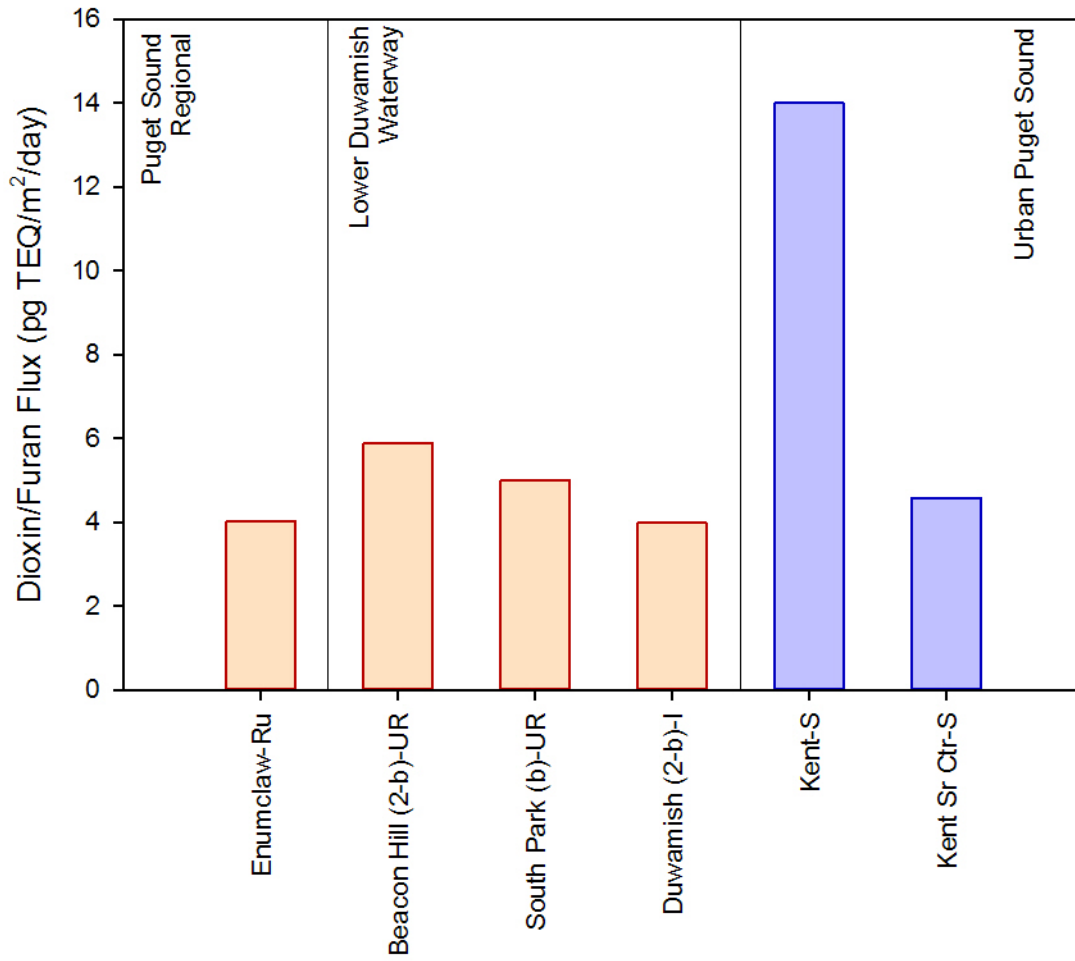
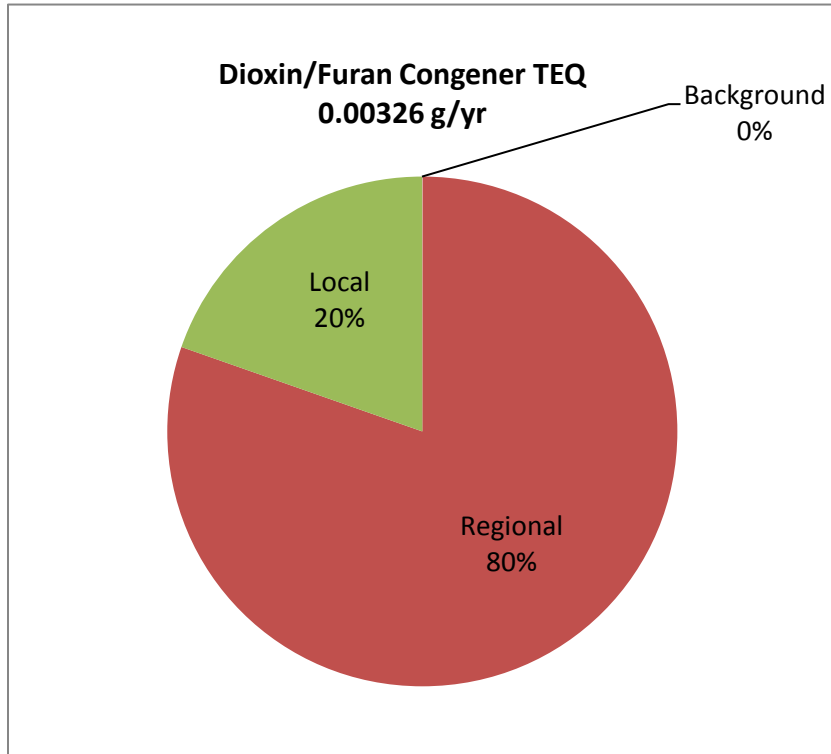


Figure 13. Comparison of Atmospheric Fluxes of Dioxin/Furan Congener TEQ





**Figure 14. Geographic Contributions
of Dioxin/Furan Congener TEQ Loadings
to the LDW Surface**

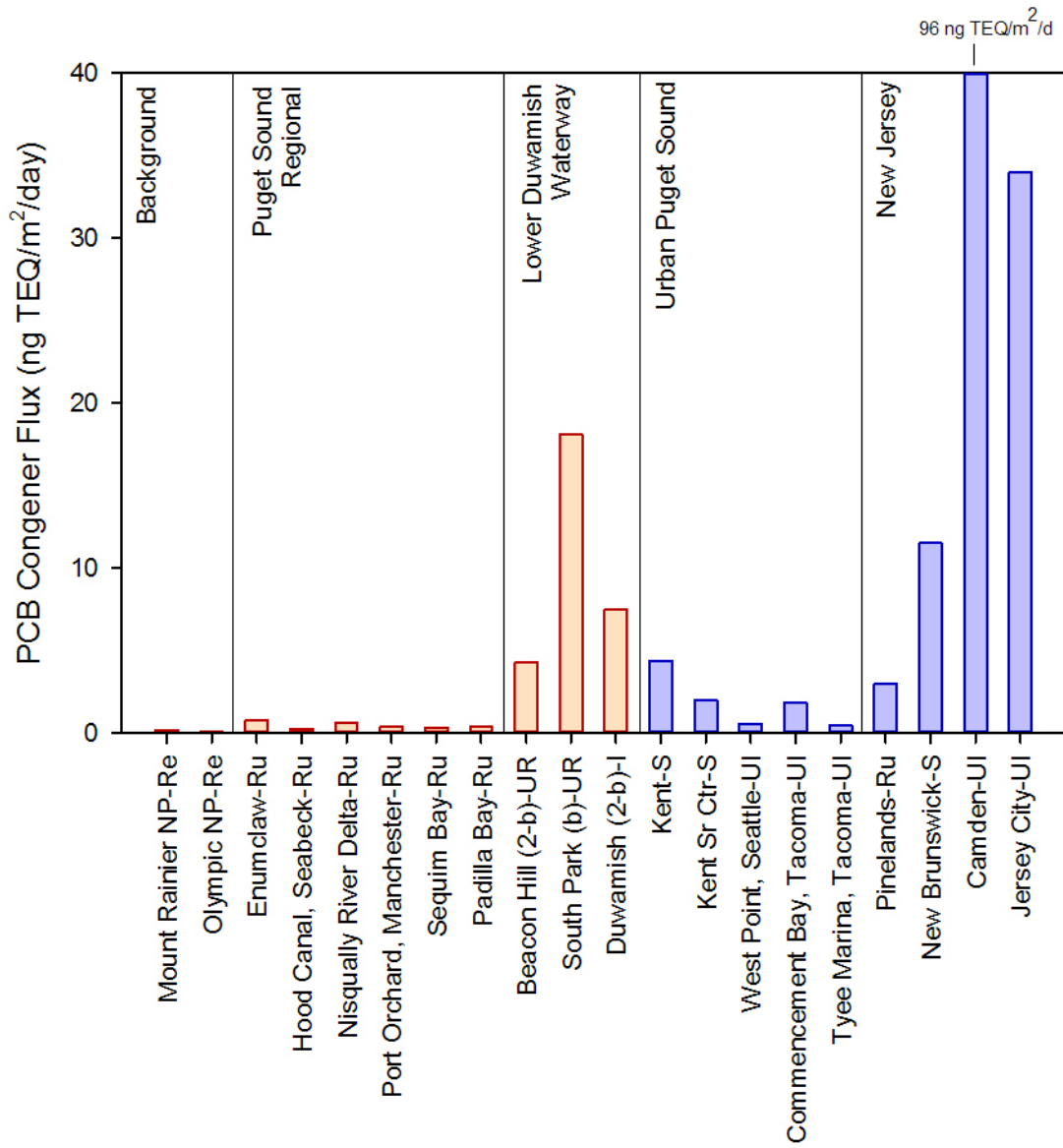


Figure 15. Comparison of Atmospheric Fluxes of PCB Congeners



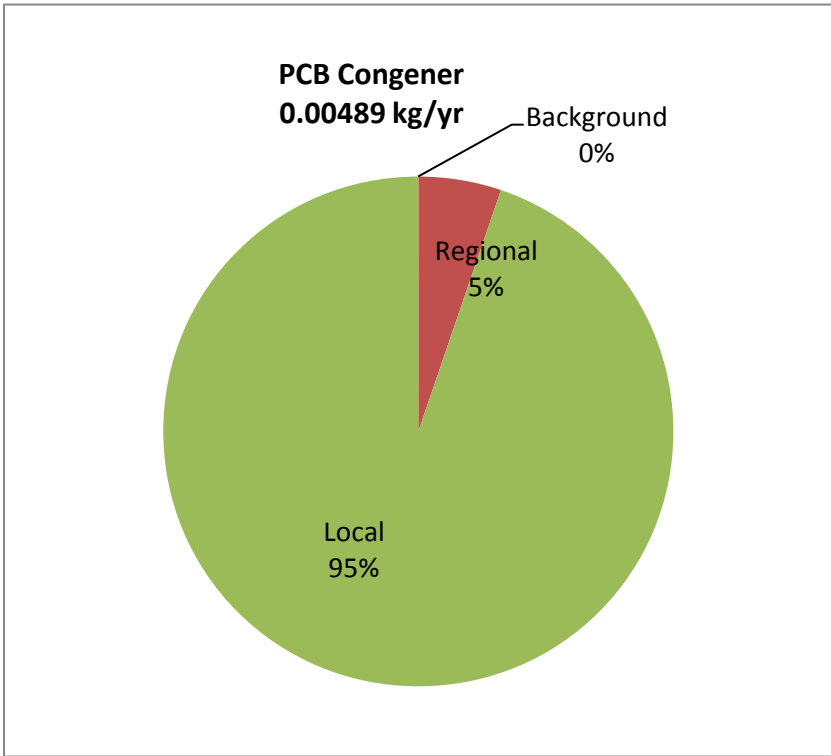


Figure 16. Geographic Contributions of PCB Congener Loadings to the LDW Surface

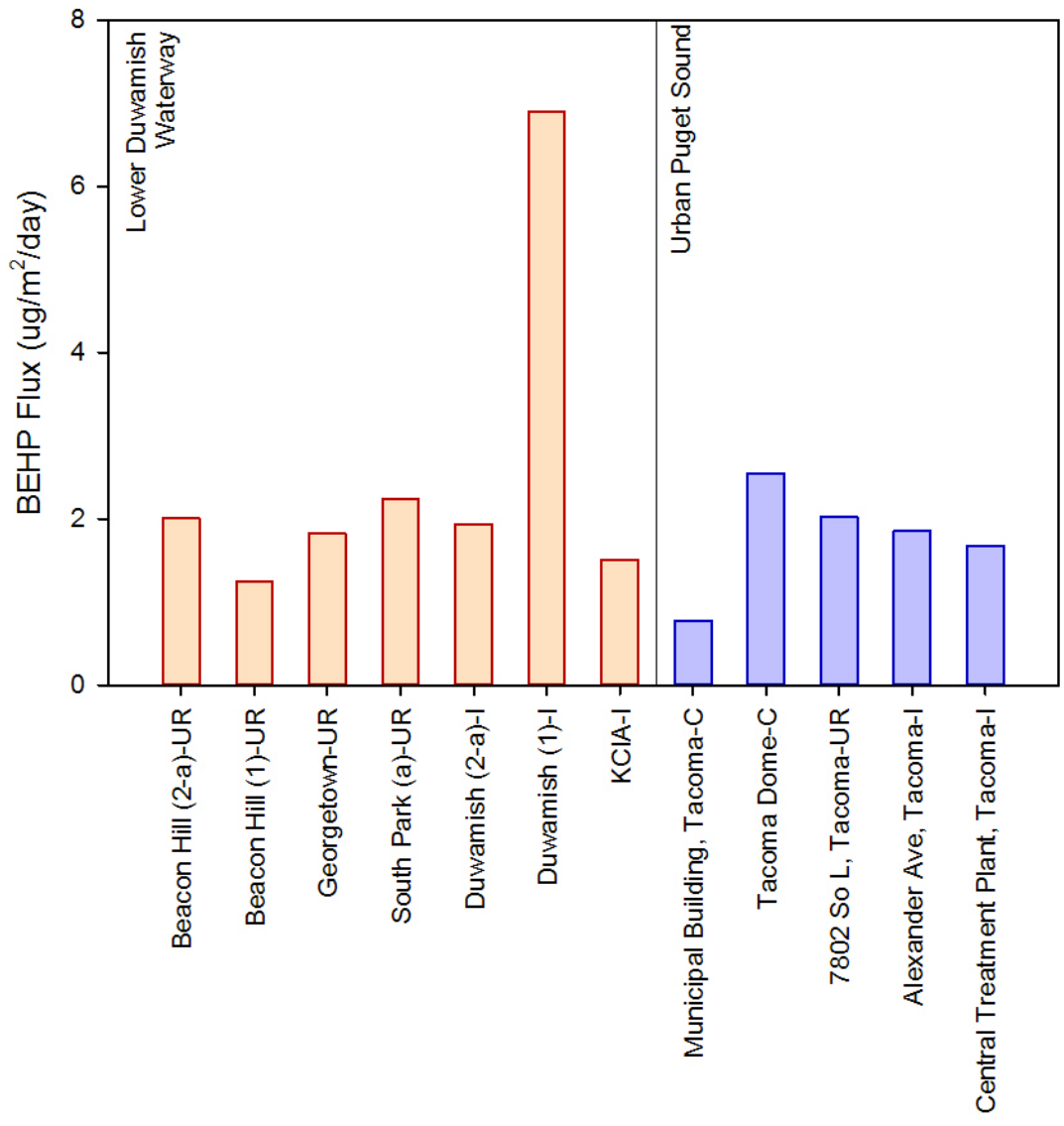


Figure 17. Comparison of Atmospheric Fluxes of BEHP



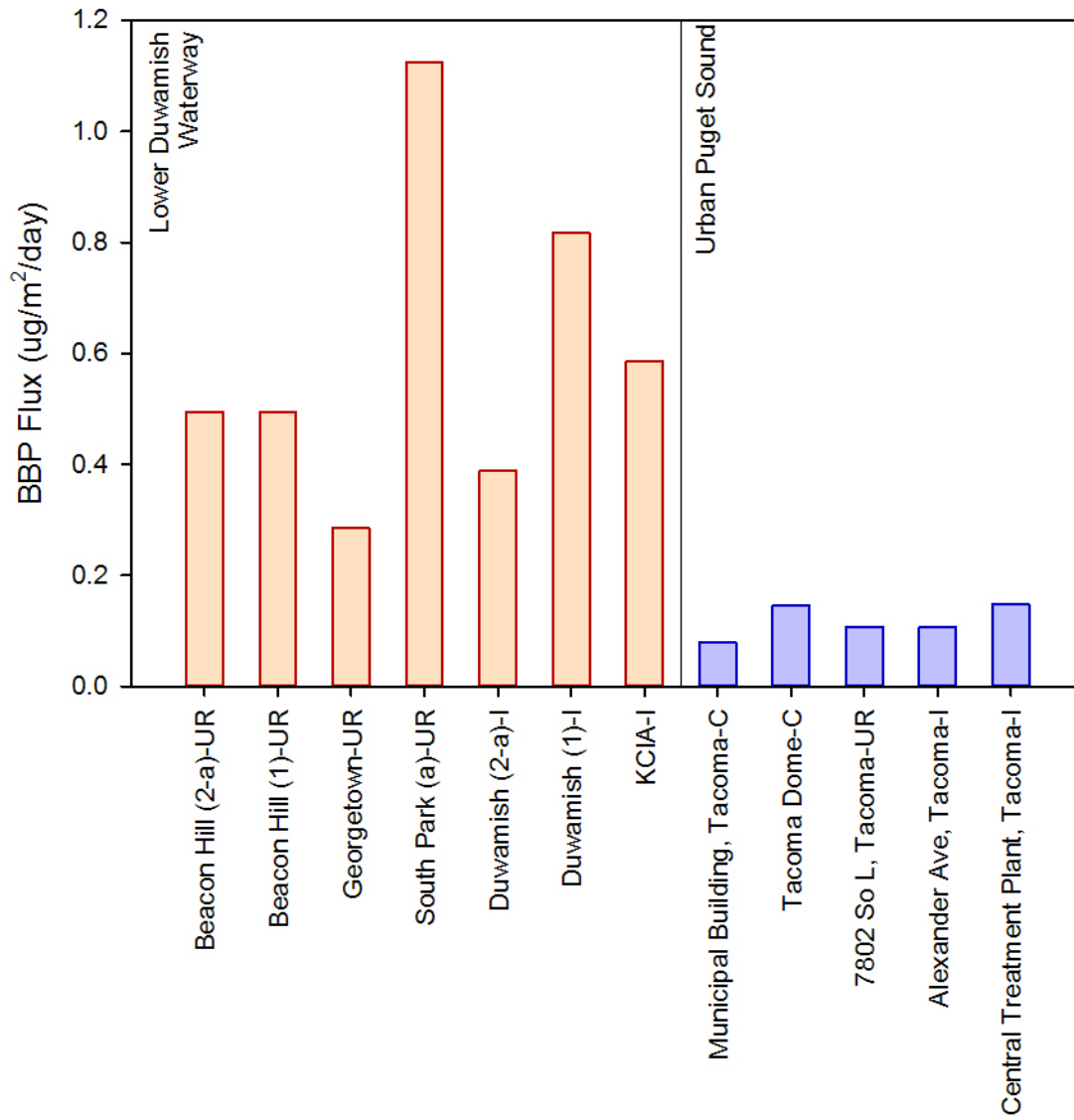


Figure 18. Comparison of Atmospheric Fluxes of BBP



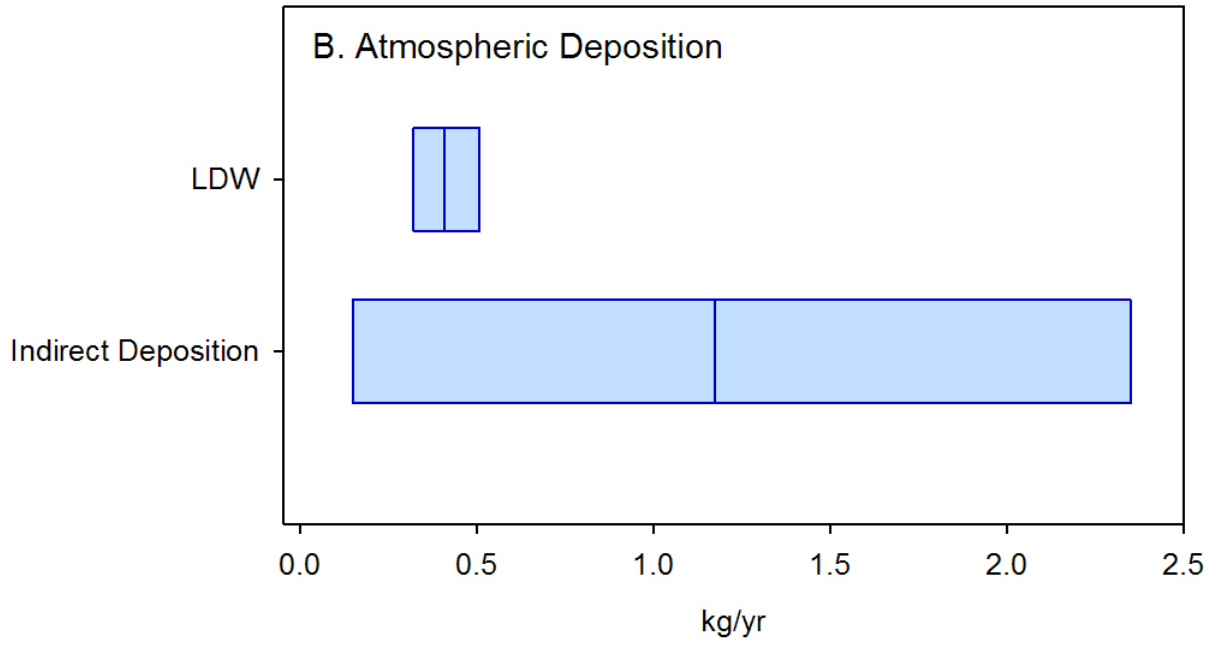
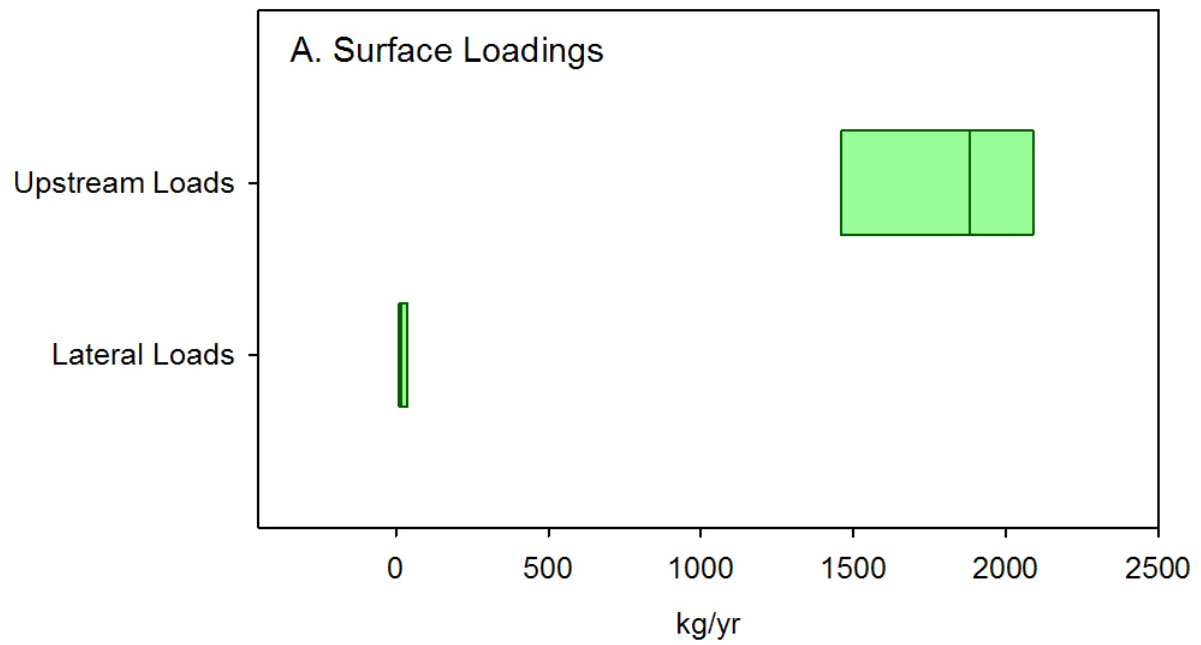
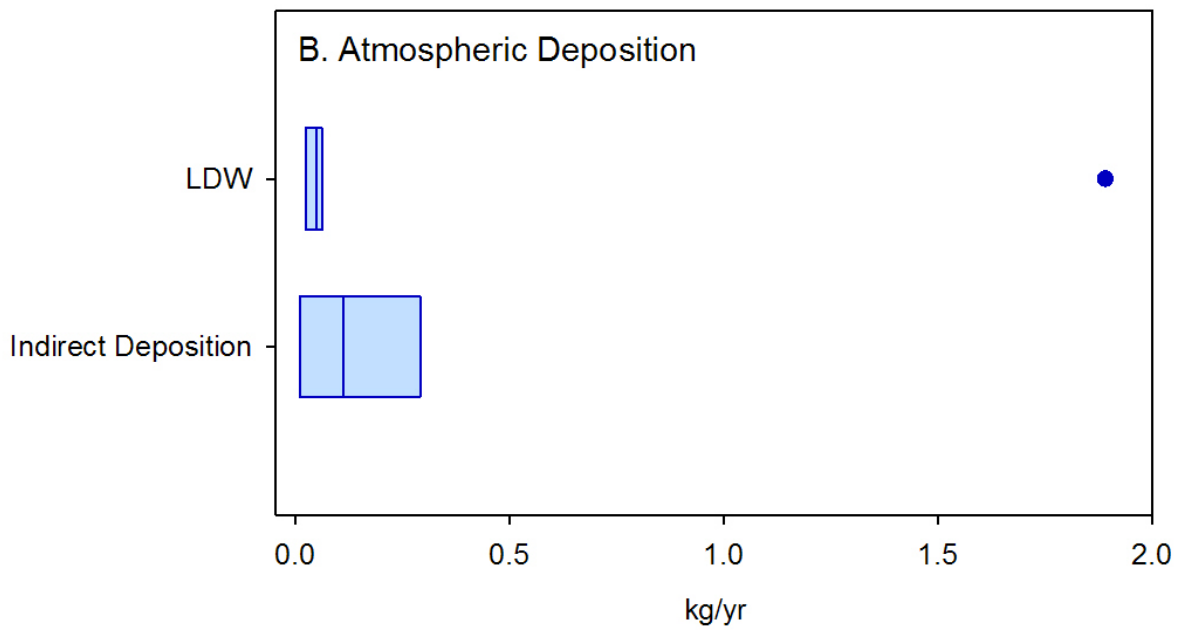
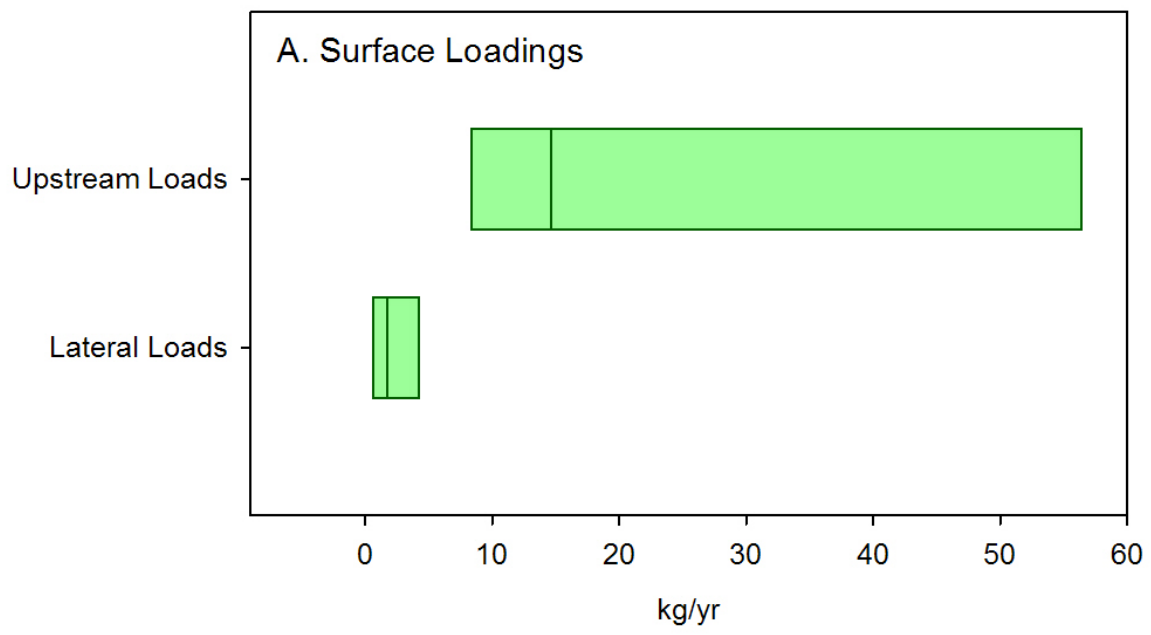


Figure 19. Uncertainties in the Loading Estimates for Arsenic





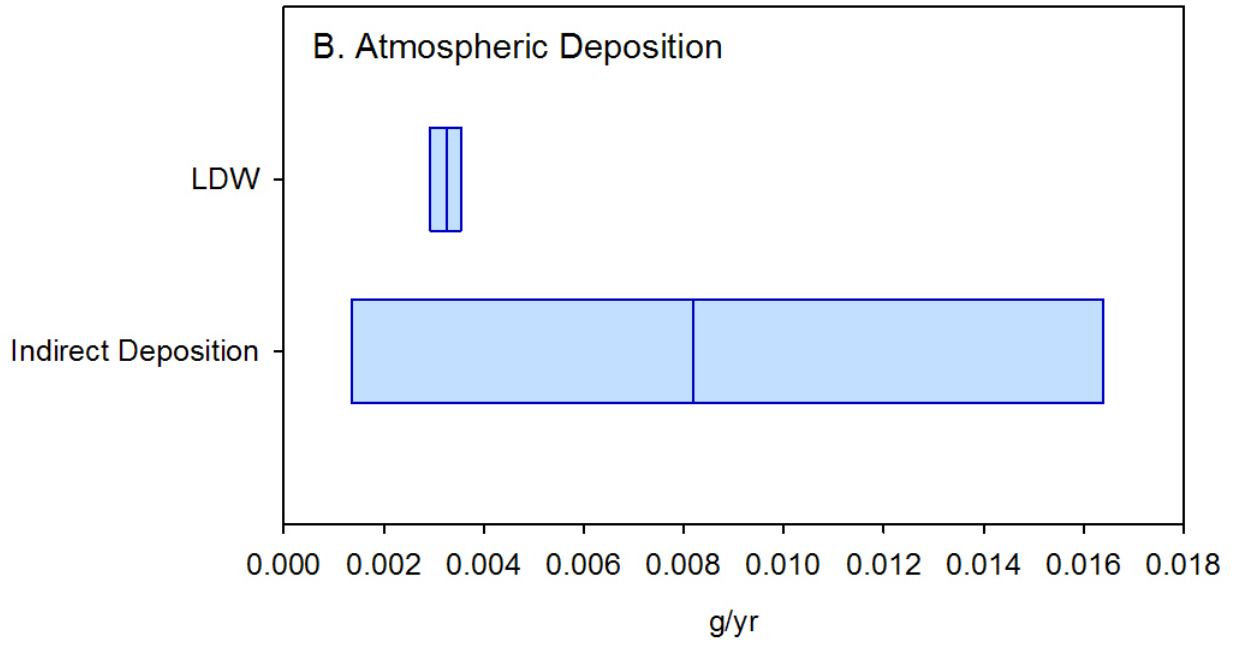
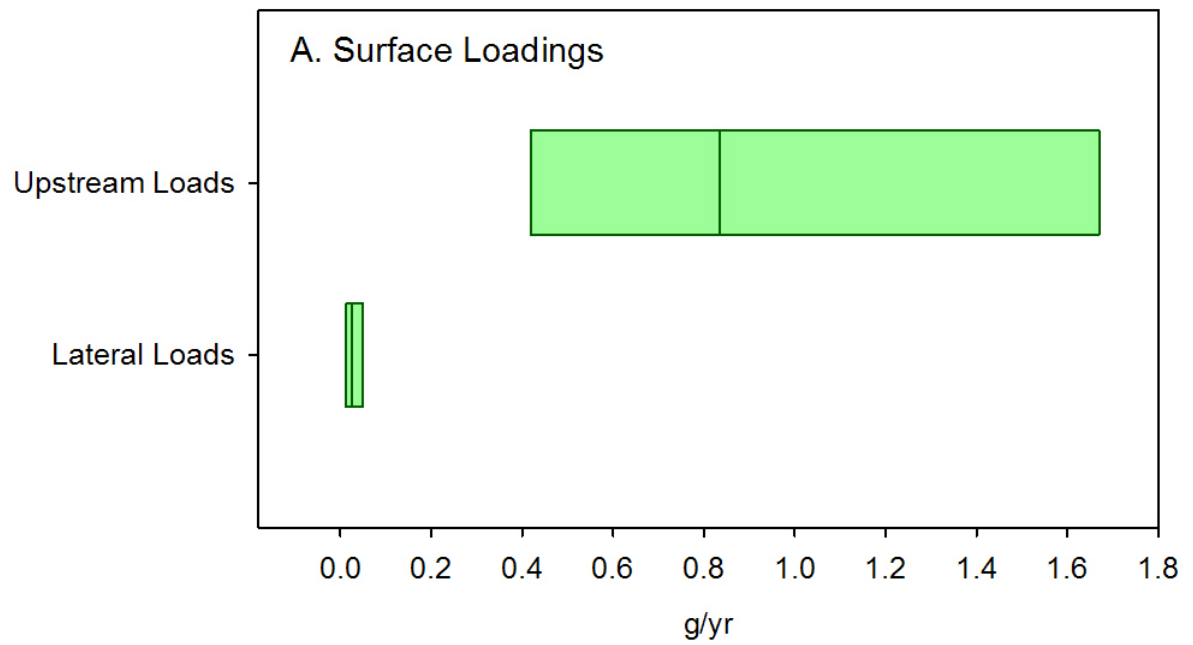


Figure 21. Uncertainties in the Loading Estimates for Dioxin/Furan Congener TEQ



Appendix A

Additional Studies Not Included in the Data Gaps Report

Additional studies were reviewed but not explicitly included in the Air Deposition Scoping Study Data Gaps Report, either because they were not complete or because they had limited relevance to the current study. These studies and the reasons for not including are presented below.

Additional Pacific Northwest Studies not included in the Data Gaps Report

Diesel Exhaust Exposure in the Duwamish Study

The Diesel Exhaust Exposure in the Duwamish Study (DEEDS) is a community-academic partnership between the Department of Environmental and Occupational Health Sciences in the School of Public Health at the University of Washington and Puget Sound Sage (Schulte et al. 2013). The study sought to characterize the gradient of diesel exhaust in the south Seattle neighborhoods of South Park and Georgetown. Researchers measured levels of diesel exhaust markers in a high-density air sampling campaign, built statistical models to identify spatial features predictive of diesel exhaust, and created maps of the gradient of diesel pollution across neighborhoods.

Two 2-week sampling campaigns were conducted in the study neighborhoods during summer 2012 and winter 2012-2013. The time periods were selected to capture seasonal variation in diesel pollution, other air pollution sources, and weather. Data were collected for four pollutants as markers of traffic-related air pollution: 1-nitropyrene (a PAH that is a byproduct of combustion from diesel engines); black carbon, oxides of nitrogen (NO_x), and particulate matter less than 2.5 um in diameter (PM_{2.5}). Measurements were collected at 20 active sampling sites in South Park and Georgetown, and four comparison sites in other neighborhoods. In addition, passive sampling for NO_x and NO₂ was conducted at 99 sites.

Results generally indicated a wide degree of variation in pollution levels across the study area. Average concentrations were higher in December than in August, although August measurements showed a greater degree of variability. Prediction models were developed for all pollutants except PM_{2.5}. Pollution levels were generally higher in South Park and Georgetown than the comparison sites in other residential neighborhoods, and levels were highest in areas of heavy traffic and industrial activity.

Tacoma and Seattle Area Air Toxics Evaluation

An evaluation of air toxics data for the Tacoma and Seattle metropolitan areas was conducted, resulting in a reported entitled *Tacoma and Seattle Area Air Toxics Evaluation* (PSCAA and University of Washington 2010).

This document reported on an air toxics monitoring project conducted in the Seattle and Tacoma areas from November 2008 through October 2009. The study monitored air toxics at six fixed sites, two in Seattle and four in Tacoma, in addition to mobile monitoring. The two Seattle monitoring sites were at Beacon Hill and Duwamish. The Beacon Hill site is located in a typical Seattle residential neighborhood, and is considered representative of Seattle. The Duwamish site is representative of an area that is impacted by mobile sources (transportation sources such as diesel trucks, trains, and delivery vehicles) and industrial sources in the LDW.

This program was focused on measuring ambient levels of air toxics, including over 100 different pollutants. However, there was limited overlap of measured pollutants in this program with the list of COPCs for this review being studied for deposition impacts; this program was also focused on determining cancer risk and there were eight pollutants that were found to exceed cancer risk screening levels: benzene, 1,3-butadiene, carbon tetrachloride, formaldehyde, naphthalene, acetaldehyde, chloroform, and acrolein.

However, this study also analyzed for levoglucosan, an anhydrous sugar derived from the pyrolysis of major wood polymer cellulose. Levoglucosan is one of the most abundant organic compounds associated with particles in wood smoke, and therefore serves as a chemical marker to estimate wood smoke levels in ambient particulate samples. Levoglucosan was only measured in Seattle at the Duwamish site. Measurements of this marker are of interest because residential wood burning was estimated to account for approximately 37 percent of the total PAHs released in the Puget Sound area, with an expected seasonal trend as emissions from this source category should be concentrated during the winter heating season. This study found that average levoglucosan levels during the heating season were several times higher than during the non-heating season, thus confirming the expectations that emissions of PAHs will have a strong seasonal component.

In addition, this study showed that average concentrations of six air toxics measured at the Beacon Hill site have decreased (by varying rates) over the 2000–2009 time period, which correlates with expectations that levels of some COCs have decreased over time. Only one pollutant, carbon tetrachloride, increased over this time period at Beacon Hill, which is not likely related to any trends of the COCs in the area.

U.S. Geological Survey – Precipitation Records

Data on variations in the quantity and chemical makeup of precipitation provide important information for research on hydrology, air quality, water quality, forest productivity, materials effects, ecosystem studies, watershed studies, and human health. A national database can provide a baseline with which to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and the subsequent effects on terrestrial and aquatic ecosystems.

As the lead federal agency for monitoring wet atmospheric deposition (chemical constituents deposited from the atmosphere by rain, sleet, and snow) in the United States, the U.S. Geological Survey, in cooperation with more than 100 federal, state, and local organizations, provides long-term atmospheric deposition data from a national network of more than 200 sites. All data from this network are part of the National Trends Network and are available on the internet.

The precipitation data in the National Trends Network are available from stations in Washington at this web site: <http://wa.water.usgs.gov/projects/preciprecords/data.htm>. There are two stations in this network, at Olympic National Park and Mount Rainier National Park, which provided some regional measurements that are included in the analysis for some of the COPCs in this study.

In addition, the U.S. Geological Survey conducted a survey from 1995 to 1998 of the surface-water quality of three rivers and one creek in the Puget Sound basin, including the Green-Duwamish River (U.S. Geological Survey 2003). However, the study focused on standard water chemistry parameters (pH, dissolved solids, dissolved oxygen, nitrogen and phosphorus compounds) and certain VOCs and pesticides. None of the VOCs were on the COPC list for this study, and most of the pesticide detections were in other river systems.

Puget Sound Partnership

This organization is focused on developing a coordinated ecosystem monitoring system, and they established a total of eight technical workgroups: stormwater, toxics, salmon, freshwater, marine waters, nearshore, birds and mammals, and forage fish. This group has been one of the cooperating agencies in the preparation of Ecology's Puget Sound Toxics Assessment (2006–2011), but they appear to be focused on the downstream effects of air toxics on the Puget Sound ecosystem, rather than directly on the emissions and deposition of COCs.

Deposition Monitoring at Boeing Plant 2

Some cursory atmospheric deposition monitoring was performed at Boeing Plant 2 in the 2010/2011 time frame. A brief summary of the program indicated that the only metals detected were copper and zinc, neither of which are on the COPC list for the current study. Monitoring was also conducted for PCBs, but these were not detected. Because the sampling and analysis plan was not available, the validity of the data could not be ascertained. A more comprehensive deposition monitoring program at Plant 2 is planned.

Additional Regional Studies not included in the Data Gaps Report

Houston Metal Recycling Study

In Houston, metal recyclers have recently been identified as area sources of toxic air emissions (Houston Chronicle 2013; Blanco et al. 2012). Short-term measurements in the area by the Houston Bureau of Pollution Control and Prevention in 2012 have confirmed ambient levels of metals in the atmosphere near some Houston metal recyclers. These metals are suspected of being emitted from metal cutting operations using torches, which can vaporize metal during these operations. The largest concern from a risk perspective was the presence of hexavalent chromium in the atmosphere, a known carcinogen.

The Bureau of Pollution Control and Prevention is planning to validate these initial findings, and to work with these companies in order to reduce exposure. Methods of reducing these emissions include reducing torch cutting or installing control systems.

Because there are metal scrapyards and shredders in the LDW, the possibility of hexavalent chromium and other metal emissions from these facilities exists. Emissions of metals are not well characterized from these facilities, because they will depend on the type of metals being recycled and subject to torch cutting, the amount of torch cutting conducted at a facility, the presence of emission controls, etc. Given this concern, an evaluation of scrapyards and similar facilities should be conducted in the LDW to resolve this data gap.

Lake Tahoe Atmospheric Deposition Study

This study, conducted by California Air Resources Board (2006), grew out of environmental concerns for Lake Tahoe, because of the decrease in the extraordinary clarity of the lake since the 1960s. The primary goal of this study was to quantify the contribution of atmospheric deposition to the nitrogen, phosphorus, and particulate matter (PM) loading of Lake Tahoe. The specific chemicals of concern for this study were several nitrogen compounds (NH_3 , NH_4^+ , HNO_3 , NO_3), phosphorus compounds (P, PO_4^{3-}), and PM in three size ranges. Unfortunately, there is no overlap between the COPC list for that study and the Pacific Northwest deposition studies.

San Francisco Bay Studies

San Francisco Bay Atmospheric Deposition Pilot Study Part 1: Mercury (San Francisco Estuary Institute 2001a)

Dry and wet deposition samples were collected at three stations in the San Francisco Bay area for a 7-month period (late April through late November 2000). This study measured both wet and dry samples, but there were a few issues concerning the data:

- Dry deposition fluxes were estimated to be approximately four times the wet deposition fluxes, but dry deposition fluxes were calculated by measuring ambient mercury levels and then using a deposition velocity to determine deposition flux. The dry deposition velocity for mercury in turn is strongly dependent on particle size, meteorological conditions, characteristics of the deposition surface, and whether mercury is in the particle or vapor phase. Thus the use of a deposition velocity in the calculation of dry deposition adds a substantial level of uncertainty to the results.
- The sampling program was only operated for 7 months and therefore missed much of the winter rainy season characteristic of the Bay area during the December to late April time period. Thus, the mercury sampling period may not have been representative of the mercury deposition period.

The pilot study concluded that this information should be considered as a first-level screening and should not be construed as an accurate comparison from all sources and pathways.

San Francisco Bay Atmospheric Deposition Pilot Study Part 2: Trace Metals (San Francisco Estuary Institute 2001b)

This pilot study analyzed for four metals: copper, nickel, cadmium, and chromium. Because these metals are not included in the COPC list for the current study, no further evaluation was conducted.

San Francisco Bay Atmospheric Deposition Pilot Study Part 3: Dry Deposition of PAHs and PCBs (San Francisco Estuary Institute 2005)

Dry deposition sampling was conducted at one station in the Bay area for approximately 6 months, June through November 2000. The concern about this study is that the sampling period (6 months) and sampling network (one station) were inadequate to characterize deposition in the Bay area. In addition, the uncertainties associated with calculation of air deposition fluxes from dry deposition samples (as discussed above) is also a concern.

Estimated Atmospheric Deposition Fluxes of Dioxins in the San Francisco Estuary (San Francisco Estuary Institute 2012)

A monitoring program collected ambient air concentrations of PCDD/Fs from late 2001 to mid-2006 at several stations in the Bay area. The PCDD/F fluxes were calculated using the same procedures used above in the Pilot Study Part 3 for dry deposition of PAHs and PCBs. These results may be difficult to compare with Pacific Northwest field deposition data collected by Ecology (2010) and King County (2011–2012), which used wet deposition monitoring techniques.

Appendix B

Inventory of Point Sources

Table of Contents

	<u>Page</u>
1.0 Introduction.....	1
2.0 Identification of Point Sources.....	2
3.0 Point Source Monitoring and Reporting Requirements	4
4.0 Point Source Compliance History	5
5.0 Estimates of Emissions from Point Sources.....	7
6.0 Data Gaps and Issues.....	15
7.0 References.....	17

Figures

Figure B1. 2011 Wind Patterns and Potential Air Emissions Sources in the Lower Duwamish Waterway Airshed

Tables

Table 1. Point Source Inventory	3
Table 2. NOVs/Warnings Potentially Involving Air Emissions	5
Table 3. PSCAA Emissions Reporting Thresholds	7
Table 4. Number of Facilities in the LDW Airshed Reporting Criteria Pollutant Emissions in 2008 to PSCAA and in the NEI	8
Table 5. Facilities in the LDW Airshed Reporting Criteria Pollutant Emissions to PSCAA (lbs/year)	8
Table 6. Reported Criteria Pollutant Emissions for the LDW Airshed	9
Table 7. Number of Facilities Reporting COCs in the LDW Airshed	10
Table 8. Facilities Reporting COCs to PSCAA in the LDW Airshed for CY2010 (lbs/year)..	10
Table 9. Reported COC Emissions in the LDW Airshed	11
Table 10. NAICS Categories with Potential COC Emissions	13
Table 11. Non-Reporting Facilities with Potential COC Emissions based on NAICS Code	13
Table 12. COC Emissions for Non-Reporting Facilities	14

Appendices

Attachment A	Point Source Locations
Attachment B	Point Source Inventory Spreadsheet
Attachment C	PSCAA Data Request Methodology
Attachment D	Air Operating Permits and Notices of Construction
Attachment E	Compliance Histories
Attachment F	Engineering Worksheets

List of Acronyms

AOP	Air Operating Permit
CFR	Code of Federal Regulations
CY	calendar year
CO	carbon monoxide
COC	chemical of concern
COPC	chemical of potential concern
Ecology	Washington State Department of Ecology
LDW	Lower Duwamish Waterway
NAICS	North American Industry Classification System
NEI	National Emissions Inventory
NOC	Notice of Construction
NOV	Notice of Violation
NOx	nitrogen oxides
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PM-2.5	particulate matter less than 2.5 micrometers in size
PM-10	particulate matter less than 10 micrometers in size
PSCAA	Puget Sound Clean Air Agency
RI	Remedial Investigation
SOx	sulfur oxides
TAC	toxic air contaminant
TRI	U.S. EPA Toxics Release Inventory
U.S. EPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WAC	Washington Administrative Code

1.0 Introduction

The Lower Duwamish Waterway (LDW) Remedial Investigation (RI) report included a list of point sources potentially affecting the LDW. This list was provided as Table G-13, *Facilities near the LDW registered with the Puget Sound Clean Air Agency (PSCAA) for air emissions*. Table G-13 listed 220 facilities in the LDW area, based on data requested from PSCAA in 2007.

The Table G-13 list lacked several important features. Most notably, there was no information about which parameters each facility monitors or its compliance history. This appendix provides an updated discussion of the known sources of contamination that could potentially affect sediment quality in the LDW through atmospheric deposition. Starting with the list in LDW RI Table G-13, Leidos has:

- Updated the list of facilities by identifying new facilities or facilities that are no longer operating in the LDW area,
- Documented the parameters each facility is required to monitor,
- Identified parameters that are also chemicals of potential concern (COPCs) for LDW sediments,
- Documented reporting thresholds or limits that require a report to PSCAA,
- Summarized the compliance history of each facility over the last two years, and
- Provided electronic copies of reference documents in Adobe+.pdf format.

2.0 Identification of Point Sources

The LDW RI report identified the following zip codes near the LDW basin as the region of interest: 98106, 98108, 98134, and 98168. Leidos reviewed other factors, such as wind patterns, to capture additional sources that could contribute to atmospheric deposition in the LDW basin. Because air emissions can readily be transported through the atmosphere, wind flow patterns are important to understand when defining an airshed for a localized area such as the LDW.

Wind data were examined based on the 2011 wind rose for the Duwamish Valley (PSCAA 2012), which is representative of the general wind flow patterns in the area (Figure B1). Wind roses depict frequency distributions of wind speed and direction at a monitoring site. Wind data are shown by convention as the direction from which the wind is blowing; for example, in Figure B1, winds from the south occurred approximately 24.6 percent of the time during 2011.

The predominant wind directions in the area are southerly (occurring approximately 60 percent of the time), which would carry emissions from the south to the LDW. Since areas to the south and east of the LDW are industrialized, sources in this area were included in the LDW airshed, including the following zip codes: 98118, 98178, 98158, 98188, 98057, and 98055 (Figure 2 in the main text of this report). The addition of these zip codes added 115 sources to the list of emission sources potentially impacting the LDW, and these were included in the Point Source Inventory.

As of September 2012¹, a total of 324 facilities were registered with PSCAA within the LDW airshed (Figure B1). The locations of these facilities are shown in Attachment A, and they are included in the Point Source Inventory spreadsheet (Attachment B). The registered sources in the LDW airshed that are identified in the Point Source Inventory are under the regulatory jurisdiction of PSCAA (Article 1, Section 1.01). These registered sources can be separated into two categories: (1) Approved Notices of Construction (NOCs), and (2) Air Operating Permits (AOPs), as described below:

1. NOCs — Facilities with new stationary air sources, or that are replacing or substantially altering control equipment installed on an existing source, are required to apply for a NOC [PSCAA Regulation I, Section 6.03 (a)].
2. AOPs — After a NOC has been approved, PSCAA determines if an AOP is required based on the major source definition in WAC 173-401-200 19(b). AOPs are part of PSCAA's operating permit program consistent with the requirements of Title V of the federal Clean Air Act Amendments of 1990 and its implementing regulation 40 CFR Part 70 [PSCAA Article 7, Section 7.01]. There are seven AOPs in the LDW airshed: Ash Grove Cement, Boeing Plant 2, Franz Northern Division, Kenworth Truck Company, Nucor Steel, Saint-Gobain Containers, and Vigor Shipyards (Figure B1).

Exempt sources, as identified in PSCAA Regulation 6.03(c), are not included in the Point Source Inventory. These represent small but potentially widespread sources and are addressed as area-wide sources in the Data Gaps Report.

¹ Data for the facilities in zip code 98057 were received in February 2013.

There are 319 NOC facilities and seven facilities with AOPs in the LDW airshed; these are listed in the first two worksheets of the Point Source Inventory. Two of the AOP facilities are also included on the NOC list, resulting in a total of 324 unique facilities identified as potential air sources. These facilities are shown on Figure B1 and in Attachment A (Figures A1 through A4).

Permits and applications were obtained from PSCAA to identify available monitoring and reporting requirements and emissions information for the 324 facilities, as discussed in more detail in the following sections.

Additional large regional emissions sources outside of the LDW airshed were identified; these are listed in the third worksheet of the Point Source Inventory. Two regional sources of particulate emissions of greater than 100 tons per year are located within 50 miles of the LDW: Graymount Western US Inc. (20 miles south of the LDW) and Port Townsend Paper (40 miles northwest). The only coal-fired power plant in Washington State is approximately 70 miles southwest of the LDW.

Table 1 provides a description of the worksheets in the Point Source Inventory and their contents. The Point Source Inventory spreadsheet is provided in Attachment B.

Table 1. Point Source Inventory

Worksheet	Description
Approved NOCs	Lists the following information for all NOC facilities: PSCAA facility registration number, company name, NAICS code, facility description, address, NOC permit number, NOC equipment description, equipment installation date, reporting requirements, requirement number, parameters monitored and monitoring method, recordkeeping procedures, inspection history, violation history, and COPCs.
AOP Sources	Lists the following information for all AOP facilities: PSCAA facility registration number, company name, NAICS code, facility description, address, source description, requirement number, parameters monitored and monitoring method, recordkeeping procedures, inspection history, violation history, and COPCs.
Regional Sources	Lists the following information for the two large regional sources within 50 miles of the LDW: facility registration number, company name, NAICS code, facility description, address, source description, requirement number, parameters monitored and monitoring method, recordkeeping and reporting procedures, date of last inspection, violations during last two available years, and COPCs.

3.0 Point Source Monitoring and Reporting Requirements

For each facility in the Point Source Inventory, the NOC or AOP was obtained through a public records request from PSCAA in August 2012. If a facility is subject to monitoring and/or reporting requirements, the requirements are documented in the Point Source Inventory spreadsheet in the “Approved NOCs” or “AOC Sources” worksheets, as appropriate. Of the 324 facilities in the LDW airshed, a total of 205 NOCs and AOPs were obtained from PSCAA for review. Attachment C identifies the methodology of the data request from PSCAA. An electronic copy of each facility’s NOC or AOP is located in Attachment D. The majority of the NOCs were for Gas Dispensing Facilities (NAICS – 447190/ 447110, Gasoline Stations with Convenience Stores/Other Gasoline Stations), and some NOCs were not readily available because they are stored at PSCAA’s off-site storage location. After a review of the available NOCs for Gas Dispensing Facilities, Leidos determined that the monitoring and reporting requirements for each of these facilities were virtually identical. Therefore, the monitoring and/or reporting requirements for all Gas Dispensing Facilities with missing NOCs were updated based on PSCAA Article 2, Section 2.07, *Gasoline Dispensing Facilities*, in the Point Source Inventory.

Emissions reporting requirements for carbon monoxide (CO), volatile organic compounds (VOCs), nitrogen oxides (NO_x), particulate matter emissions (PM-10/PM-2.5), sulfur oxides (SO_x), and toxic air contaminants (TACs) are discussed in Section 5.0. TACs represent a broad group of 400 industrial compounds defined in WAC 173-460-150. The COCs for the LDW are included under the TAC group of compounds.

NOC and AOP facilities are typically assigned monitoring and reporting requirements based on their source categories. Additionally, some facilities are not part of specific source categories and have source-specific monitoring and reporting requirements. A review of all the NOC requirements indicated that the majority of the facilities’ NOCs do not contain monitoring and reporting requirements from PSCAA; this is documented in the Point Source Inventory.

4.0 Point Source Compliance History

The compliance history for emissions sources was established by obtaining the list of inspections completed within the last three years (2010–2012) and the Notices of Violation (NOVs) or Warnings issued in the last two years. Facilities with an AOP are inspected annually by PSCAA to assess their compliance with applicable permit conditions. PSCAA does not have a specific inspection frequency of NOC facilities; however, for the purpose of investigating conditions specific to the control, recovery, or release of air contaminants into the atmosphere, PSCAA periodically conducts inspections of registered equipment [PSCAA Regulation I, Article 3, Section 3.05 (a)]. PSCAA has inspected 259 facilities in the LDW airshed in the last three years.

The inspection histories, including the date of the most recent inspection, are documented in the Point Source Inventory. A facility is inspected for registered equipment, operation and maintenance logs (if applicable), visible emissions, recordkeeping and monitoring requirements (if applicable), or any noticeable release of air contaminants.

PSCAA issued 63 NOVs/Warnings in the last two years for AOP and NOC facilities in the LDW airshed (see Attachment E). From review of these NOVs, only 20 potentially involved releases of air contaminants in the LDW area (Table 2).

Only two facilities were identified as releasing specific COCs based on their NOV evaluation reports (see Attachment F): Independent Metals and North Star Casteel Products. The exact quantity of emissions released from the other facilities could not be determined from the available data included in their NOV evaluation reports, which only mention the presence of COCs and if further actions were needed.

It should be noted that NOVs are typically focused on criteria pollutants, specific permit conditions, or violations to existing applicable regulations. Therefore, even if the NOV evaluation report does not specifically identify releases of COCs, it does not mean that such releases did not occur.

Table 2. NOVs/Warnings Potentially Involving Air Emissions

Facility Name	PSCAA Registration No.	NOV Summary
Art Brass Plating Inc	20086	Failure to maintain equipment; excess temperature
Costco Wholesale	20998G	Failure to conduct stack testing; low temperature on afterburner
Emerald Recycling Inc	28407	Failure to produce operation and maintenance manual for scrubber; cracks in acid/base scrubber
Encore Oils	18429	Failure to maintain scrubber liquid measuring system
Flamespray Northwest	17127	Repeated warnings and settlement
Independent Metals	29333	Failure to obtain NOC, exceeded source test limits (PCBs, chromium VI), debris on streets
Industrial Container Services - WA, LLC	11683	Visible emissions (black smoke) and odor complaints

Facility Name	PSCAA Registration No.	NOV Summary
J A Jack & Sons Inc	11124	Visible emissions (black smoke) and odor complaints
Jorgensen Forge Corp	13460	NOVs and inspection info; exceeded emission limits
Maaco Auto Paint, Run & Gun Inc	17445	Failure to pay fees; complaint regarding paint fumes
Morel Industries	29213	Summit summary of odor study; keep weekly operation and maintenance logs current; bag house issue during inspection
Morning Star Auto Body	29365	Spray coating being performed outside
National Products	29232	NOVs for odor and visible emissions complaints
North Star Casteel Products Inc	12334	Fugitive smoke emissions and complaints [chromium VI]
Northwest Seafood Processors	29405	Failure to submit NOC, blue and dark white smoke and odor detected
On-Site Autobody Inc	28890	Painting without a permit and non-enclosed spray area
Pioneer Industries	17691	Failure to operate and maintain equipment in good working order
Saint-Gobain Containers, Inc (Verallia)	11656	Exceeded PM emissions, CEM limits, and failure to report emissions
Thomas Auto Rebuild	17464	Failure to pay fees; odor complaint
West Seattle Quality Collision	21325	Failure to control indoor spray coating operations

5.0 Estimates of Emissions from Point Sources

Table 3 presents PSCAA's annual emissions reporting thresholds; point sources with air emissions that equal or exceed the levels listed in Table 3 during a calendar year [PSCAA Article 7, Section 7.09] are required to submit an annual emissions report. Each facility is responsible for monitoring their emissions, and the facility is to notify PSCAA once these levels are exceeded.

Table 3. PSCAA Emissions Reporting Thresholds

Pollutant	Reporting Threshold (tons/year)
VOC	25
NO _x	25
CO	25
PM ₁₀	25
PM _{2.5} ¹	25
SO _x	25
Total TACs (facility-wide)	6
Single TAC	2

1. PM-2.5 emissions were not reported in CY2008 or CY2010.

Leidos reviewed the most recently available emissions inventory information from PSCAA. In addition to the PSCAA emissions data, the U.S. Environmental Protection Agency (U.S. EPA) National Emissions Inventory (NEI) and the Toxics Release Inventory (TRI) data were reviewed to identify other potential sources of emissions in the LDW airshed. Although there is considerable overlap between the PSCAA, NEI, and TRI data, the NEI and TRI data provide additional valuable information on COC emissions in the LDW airshed.

Table 4 lists the number of facilities that reported their criteria pollutant emissions to PSCAA or to the NEI in 2008. Twenty-seven facilities exceeded the reporting thresholds in Table 3 and were required to report their calendar year (CY) 2010 emissions to PSCAA. A facility is only required to report emissions for the pollutant exceeding the reporting threshold. Table 5 lists these 27 facilities and their reported CY 2010 criteria pollutant emissions. Table 6 presents the total reported emissions for 2008 and 2010 for the stationary emissions sources within the LDW airshed.

Table 4. Number of Facilities in the LDW Airshed Reporting Criteria Pollutant Emissions in 2008 to PSCAA and in the NEI

Pollutant	PSCAA Facilities Reporting ¹	EPA NEI Facilities Reporting
VOC	26	29
NO ₂	13	28
CO	13	27
PM ₁₀	13	27
SO ₂	8	27

1. The same facilities reported to PSCAA in 2008 and 2010.

Table 5. Facilities in the LDW Airshed Reporting Criteria Pollutant Emissions to PSCAA (lbs/year)

Facility	PSCAA Registration No.	VOC	NO ₂	CO	PM-10	SO ₂
Aero-Lac Inc	10436	76,220	NR	NR	NR	NR
AllpakTrojan Inc	12081	7,327	NR	NR	NR	NR
Ash Grove Cement Co, E Marginal	11338, 11339	5,742	1,210,531	1,171,356	49,322	99,635
Boeing Commercial Airplane NBF Plant 2	21147	345,331	46,999	0	0	NR
Boeing Commercial Airplane Renton	13125	434,652	57,519	NR	NR	NR
BP West Coast Products, Seattle Terminal	16004	73,687	NR	NR	NR	
Capital Industries Inc	10385	45,164	NR	NR	NR	NR
CertainTeed Gypsum Manufacturing Inc	11195	5,667	32,901	24,633	59,337	NR
Delta Marine Industries Inc	28365	29,696	NR	NR	NR	NR
Distant Lands dba Java Trading	21109	0	0	0	NR	NR
Equilon Enterprises, LLC dba Shell Oil Products US	16003	57,929	NR	NR	NR	NR
Franz Seattle Division - 6th Ave.	11285	112,929	NR	NR	NR	NR
Industrial Container Services - WA, LLC	11683	0	NR	NR	0	NR
Jorgensen Forge Corp	13460	NR	0	0	NR	NR
Kenworth Truck Co. - Renton	17796	31,529	2,309	1,940	31	14
Kinder Morgan Liquids Terminal, LLC	16002	95,910	1,969	1,654	150	12

Facility	PSCAA Registration No.	VOC	NO ₂	CO	PM-10	SO ₂
King Co. DNRP Wastewater Treatment	28503	14,469	4,121	1,904	2,481	280
Lafarge North America Inc	14046	0	0	0	0	0
Magnetic & Penetrant Services/MAPSCO	11575	8,650	NR	NR	NR	NR
North Pacific Industrial Coatings LLC	21111	0	NR	NR	NR	NR
Nucor Steel Seattle Inc	10281	0	307,067	987,894	0	141,826
Phillips 66 Company	21413	31,127	NR	NR	NR	NR
Puget Sound Coatings Machinists DSR	11860	46,181	NR	NR	16,052	NR
Puget Sound Energy (Swarr Station)	21258	0	NR	0	0	NR
Saint-Gobain Containers, Inc (Verallia)	11656	68,449	751,565	68,608	131,293	133,215
Scougal Rubber Corp	12166	0	NR	NR	NR	NR
Vigor Shipyards, Inc	12539	166,807	533	144	64	3
	Total	1,657,466	2,415,514	2,258,133	258,730	374,985

Table 6. Reported Criteria Pollutant Emissions for the LDW Airshed

Pollutant	2010 PSCAA (lbs/year)	2008 PSCAA (lbs/year)	2008 NEI (lbs/year)
VOC	1,657,466	1,417,160	1,445,200
NO ₂	2,415,514	6,671,706	11,996,005
CO	2,254,133	3,615,324	12,414,480
PM ₁₀	258,730	518,554	792,500
SO ₂	374,985	1,000,023	1,438,840

As with the criteria pollutants, TACs are also reported in different emissions databases (PSCAA, TRI, and NEI). A summary of how U.S. EPA's TRI and NEI reporting programs differ from the PSCAA program is summarized below:

1. A facility reports to the TRI program if it:
 - Is in a specific industrial sector (e.g., manufacturing, mining, electric power generation), which is based on the facility's North American Industry Classification System (NAICS) code;
 - Employs 10 or more full-time equivalent employees; and

- Manufactures or processes >25,000 lbs of a TRI-listed chemical or otherwise uses >10,000 lbs of a listed chemical in a given year.
2. The NEI includes emissions estimates and model inputs provided by state, local, and tribal air agencies, and which are supplemented by data developed by the U.S. EPA.

The reported TACs data from each inventory were reviewed to identify the COCs released by facilities in the LDW airshed. Table 7 lists the number of facilities by COC for each emissions tracking program. Table 8 identifies the facilities and their reported CY 2010 COC emissions, and Table 9 presents the total reported COC emissions from these facilities. Based on the review of NOC permits and compliance histories for the emissions sources within the LDW airshed, chromium (chromium III and chromium VI) was added to the list of COCs due to its potential human health impacts (U.S. EPA 2012).

Table 7. Number of Facilities Reporting COCs in the LDW Airshed

OC	PSCAA Reporting	EPA TRI Reporting	EPA NEI Reporting
Arsenic	--	1	2
Dioxins/Furans	--	1	--
Lead	2	20	--
Mercury	1	5	4
PAHs	8	7	24
PCBs	--	--	--
Phthalates	4	--	--
Pesticides	--	--	--
Chromium	2	8	--

Note: PSCAA and TRI numbers are for CY 2010 and the NEI numbers are for CY 2008.

Table 8. Facilities Reporting COCs to PSCAA in the LDW Airshed for CY2010 (lbs/year)

Facility	PSCAA Registration No.	Chromium	Lead	Mercury	PAHs	Phthalates
AllpakTrojan Inc	12081	NR	NR	NR	79	NR
Boeing Commercial Airplane NBF Plant 2	21147	NR	NR	NR	1,851	6
Boeing Commercial Airplane Renton	13125	NR	NR	NR	126	0
Capital Industries Inc	10385	0	0	NR	0	NR
Delta Marine Industries Inc	28365	NR	NR	NR	548	NR
Kenworth Truck Co - Renton	17796	NR	NR	NR	2,927	12
King Co. DNRP Wastewater Treatment	28503	NR	NR	NR	NR	6

Facility	PSCAA Registration No.	Chromium	Lead	Mercury	PAHs	Phthalates
Lafarge North America Inc.	14046	NR	NR	0	NR	NR
Phillips 66 Company	21413	NR	NR	NR	3	NR
Puget Sound Coatings Machinists DSR	11860	NR	1	NR	NR	NR
Total		0	1	0	5,534	24

NR – The facility did not report emissions for the respective pollutant for CY2010.

Zero emissions – The facility reported zero emissions for the respective pollutant for CY2010.

Table 9. Reported COC Emissions in the LDW Airshed

COC ¹	2010 PSCAA ¹ (lbs/year)	2008 PSCAA (lbs/year)	2010 TRI ² (lbs/year)	2008 NEI ³ (lbs/year)
Arsenic	NR ⁴	NR	0.005	0.01
Dioxin/Furan	0.00	0.00	0.30 ⁵	NR
Lead	1.00	819	678	NR
Mercury	0.00	45	158	171
PAHs	5,557	6,248	292	2,720
PCBs	NR	NR	NR	NR
Phthalate	24.00	834	NR	NR
Pesticides	NR	NR	NR	NR
Total Chromium	0.00	19.00	318	3.15

Notes:

- Based on the following CAS numbers:
 - PAHs: 64741-65-7 (naphtha), 64742-89-8 (petroleum naphtha, paraffins, and naphthenes), 64742-94-5 (heavy aromatic naphtha), and 64742-94-5, 91-20-3 (naphthalene)
 - Chromium: 7440-47-3 (chromium and compounds), 7758-97-6 (lead chromate)
 - Lead: 7439-92-1 (lead and compounds)
 - Phthalate: 85-68-7 (butyl benzyl phthalate), 84-74-2 (dibutyl phthalate), 117-81-7 (bis[2-ethylhexyl]phthalate)
 - Mercury: 7439-97-6 (mercury and compounds)
- 2010 U.S. EPA Toxics Release Inventory — 5.1 (Fugitive Air Emissions) and 5.2 (Point Source Air Emissions) — reported on TRI Form R.
- 2008 U.S. EPA National Emission Inventory.
- NR — Emissions were not reported.
- Represents 2010 dioxin/furan emissions from Lafarge.

Emissions of pesticides were not identified specifically in either the PSCAA or EPA data for any of the point source inventories.

Table 9 shows wide discrepancies in reported COC emissions in the LDW airshed from the three inventories. These discrepancies are largely due to differing reporting or threshold requirements by the three inventory systems, as discussed above. In addition, these emissions numbers are

only the reported emissions and do not include smaller contributions from sources that are not required to report COC emissions.

The variability in reported emissions of some COCs between the 2008 and 2010 PSCAA inventories results from operational changes, or even discontinued operations, in a few facilities that emit a particular COC. For example, Puget Sound Coatings Machinist (Registration No. 11860) reported significantly lower lead emissions to PSCAA in 2010, although this facility had contributed 94% of the total emissions in 2008; the facility had discontinued operations that produced lead emissions before the 2010 inventory. Another facility, Boeing Commercial Airplane (Registration No. 21147), no longer reported phthalate emissions in 2010 because they had shut down operations.

Only one facility reported emissions of mercury. Lafarge (Registration No. 14046) reported mercury emissions of 45 lbs/year in 2008 and did not report any mercury emissions in 2010. However, a review of the 2010 PSCAA and TRI data for this facility shows different emission totals (0 lbs/year – PSCAA and 25 lbs/year – TRI) for the same reporting year. This facility did not report emissions for any pollutants to PSCAA in 2010 because the facility was no longer in operation. It is not clear why there was 2010 TRI reporting for this facility.

Due to differences in the reporting requirements of the EPA TRI and NEI Programs and PSCAA, as stated above, the reported COC emissions may not correspond to each other for the same reporting year. These inconsistencies may need to be reconciled for emissions sources in the LDW airshed.

The NAICS categories for facilities in the LDW airshed that are likely to emit COCs were determined based on a review of EPA NEI and TRI reports, PSCAA compliance histories, the LDW RI report (Windward 2010), various Data Gaps Reports and SCAPs prepared for the Washington State Department of Ecology (Ecology),² and *Control of Toxic Chemicals in Puget Sound* (Ecology 2011). From these references, 16 NAICS categories (see Table 10) and 19 facilities (see Table 11) were identified for their potential to emit COCs. To identify emissions of COCs that were not reported, the Point Source Inventory was examined for facilities that have a potential to generate COCs based on their NAICS category. These facilities did not report their TAC emissions to the U.S. EPA or PSCAA. It should be noted that there are limitations to the use of NAICS categories for identifying sources of COCs because they are used voluntarily by facilities to report their emissions and may be used incorrectly when reporting emissions or identifying their major industrial operations.

When a facility applies for a NOC, an engineering worksheet is created for the proposed equipment. Engineering worksheets are prepared by PSCAA staff and include calculations about the potential for COC emissions of the new source. The engineering worksheets were obtained for the 19 facilities listed in Table 11 (see Attachment E) to review the potential for COC emissions, since these facilities are currently not reporting to PSCAA. COC emissions could not be determined for all of these facilities because the installation date on their engineering worksheet predated the analysis of some of the COCs, and therefore did not contain such information.

² Documents available on Ecology's website at:
http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duamish/lower_duamish_hp.html

Table 10. NAICS Categories with Potential COC Emissions

NAICS Code	NAICS Description
48811	Airport Operations
324121	Asphalt Paving Mixture and Block Manufacturing
327121	All Other Rubber Product Manufacturing
327213	Glass Container Manufacturing
327310	Cement Manufacturing
327420	Gypsum Product Manufacturing
331111	Gypsum Product Manufacturing
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring
336120	All Other Miscellaneous Electrical Equipment and Component Manufacturing
336411	Aircraft Manufacturing
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing
336611	Ship Building and Repairing
423930	Recyclable Material Merchant Wholesalers
424710	Petroleum Bulk Stations and Terminals
488210	General Freight Trucking, Local
562211	Research and Development
611310	Materials Recovery Facilities
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance

Table 11. Non-Reporting Facilities with Potential COC Emissions based on NAICS Code

Facility Name	Registration No.
Ace Galvanizing Inc.	11695
Aim Aviation Inc	17692
Alaska Airlines Inc, Seattle Hanger	15147
Art Brass Plating Inc.	20086
Delta Airlines, Inc.	15149
Ecolights Northwest, LLC	28959
Flamespray Northwest	17127
Icon Materials Inc. #2604	21300
Kenworth Truck Co - Renton	17796

Facility Name	Registration No.
Lehigh Northwest Cement Co	16135
Magnetic & Penetrant Services/MAPSCO	11575
National Products	29232
Olympic Foundry Inc.	11747
Pacific American Commercial Co	10917
Pacific Iron and Metal Co	20765
Puget Sound Energy (Swarr Station)	21258
Repair Technology Inc.	10029
Seattle Iron & Metals Corp	17104
Weyerhaeuser Aviation	21241

Table 12 identifies the facilities that quantified potential emissions of COCs and do not currently report to PSCAA or EPA. The other facilities either did not contain TAC information or the emissions of COCs were not quantified.

Table 12. COC Emissions for Non-Reporting Facilities

Registration No.	Facility Name	COCs Emissions (lb/year)
28959	Ecolights Northwest, LLC	0.033 lb/year – mercury
17127	Flamespray Northwest	0.00060 lb/year – chromium VI
10029	Repair Technology Inc.	Less than 1 lb/year – chromium VI

6.0 Data Gaps and Issues

The total amount of COCs can be estimated from the available reported emissions data for sources within the LDW airshed. The available sources of emissions data include reported emissions to PSCAA and the U.S. EPA, and the available engineering worksheets prepared as part of the permitting process, which in certain instances contain estimates of potential COC emissions for new operations. However, there are significant uncertainties in the COC emissions estimates in the LDW airshed, for several reasons:

- Emissions are only reported after a threshold has been exceeded. These thresholds vary depending on the reporting system. Within PSCAA, the reporting thresholds are 2 tons/year per TAC and 6 tons/year for all TACs combined. The relatively high emissions thresholds for these COCs means that some sources do not report their COC emissions, and therefore the emissions for some COCs are likely to be underreported.
- In addition, these thresholds are not adjusted for toxicity of the TAC, which could result in underreporting of emissions of certain highly toxic COCs in the region. For example, other agencies (e.g., California Air Resources Board under the Toxics “Hot Spots” Program) have set up lower emissions reporting thresholds for highly toxic compounds such as carcinogenic PAHs and hexavalent chromium.
- Although a preliminary review of available worksheets seems to indicate that non-reported COC emissions in the LDW airshed may be relatively low, this review was not comprehensive because engineering worksheets were not available for all sources. Additional analyses of non-reporting sources needs to be conducted. Moreover, in the case of “older” permitted sources, the engineering worksheets did not evaluate emissions of COCs.
- In some cases, there are orders of magnitude discrepancies in emissions from the three reporting systems, as discussed above. There were some instances where a facility is reporting to one program but not another in the same reporting year. This issue makes it difficult to reconcile one program’s emissions totals with another, and may invalidate the use of one reporting program. Therefore, in order to quantify the COC emissions in the LDW area, the inconsistencies in the reported data among these programs should be resolved, if possible. Other sources to quantify COC emissions, such as engineering worksheets, are available for some facilities. However, the engineering worksheets only present the emissions potential and do not accurately quantify actual emissions. Moreover, engineering worksheets are not available for all NOC applications in the LDW airshed.
- The NAICS is the standard used by federal statistical agencies to classify business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. economy. It is self-reported, so if a facility identifies itself in the wrong group, some of the emissions may be missed or incorrectly determined. Consequently, there are limitations for the use of NAICS to identify potential sources of COC emissions, and this information is only useful in conjunction with other sources of information (e.g., review of a facility’s operation or permits).

- The NOV reporting framework is primarily focused on criteria pollutants and existing regulations, and may therefore miss or incorrectly report issues concerning COC emissions, since those are not the focus of current air quality regulations in the region. This issue will be addressed in more detail in the next phase of this scoping study.
- Some sources in the LDW airshed may conduct periodic source tests that include measuring some of their COC emissions. It would be useful to compare the emissions from these source tests against the reported COC emissions, to provide a verification mechanism.

7.0 References

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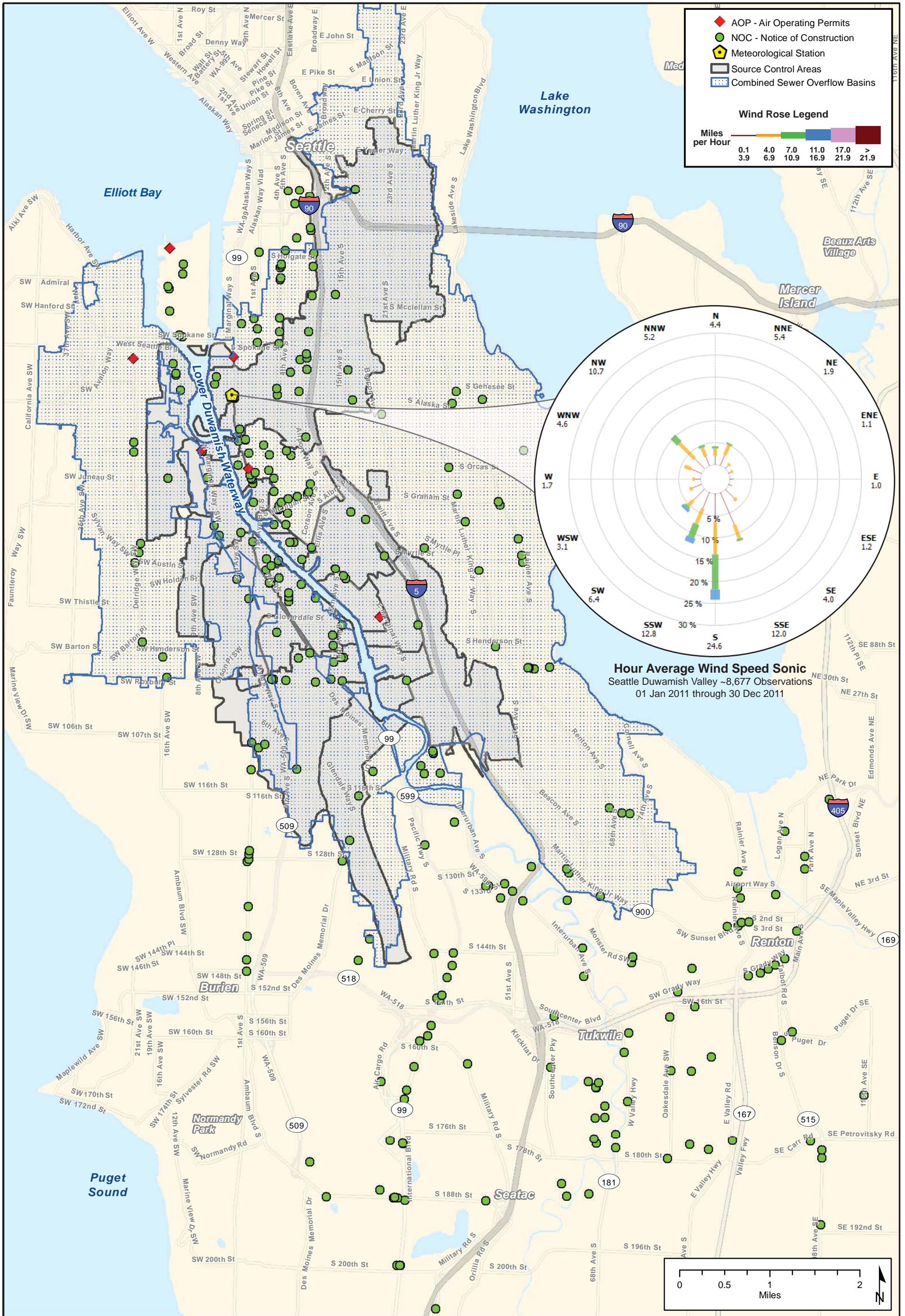


Figure B1. 2011 Wind Patterns and Potential Air Emissions Sources in the Lower Duwamish Waterway Airshed

Attachment A

Point Source Locations

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
10029	Repair Technology Inc	400 S 96th St	Seattle	98108	Map A2	B6
10071	Allied Body Works Inc	625 S 96th St	Seattle	98108	Map A2	B6
10139	Ceradyne, Inc - VIOX	6701 6th Ave S	Seattle	98108	Map A2	B4
10281	Nucor Steel Seattle Inc	2424 SW Andover St	Seattle	98106	Map A2	A3
10385	Capital Industries Inc	5801 3rd Ave S	Seattle	98108	Map A2	B4
10397	System Seven Repair	10831 Pacific Hwy S	Tukwila	98168	Map A2	D7
10436	Aero-Lac Inc	420 S 96th St Space #11	Seattle	98108	Map A2	B6
10438	Container Care International Inc	1 S Idaho	Seattle	98134	Map A2	B3
10477	Sound Ford Inc	750 Rainier Ave S	Renton	98055	Map A2	C1
10500	Seattle Port Marine Maint Shop	25 S Horton	Seattle	98134	Map A2	B2
10511	Graphic Packaging International Inc.	601 Monster Rd SW	Renton	98055	Map A3	E2
10541	US Postal Service, 4th Ave Garage	2460 4th Ave S	Seattle	98134	Map A2	B2
10613	Fonte Coffee Roaster	5412 6th Ave S	Seattle	98108	Map A2	B4
10687	Seacast Inc	207 S Bennett St	Seattle	98108	Map A2	B4
10789	Farwest Paint Mfg Co Inc	4522 S 133rd St	Tukwila	98168	Map A3	D2
10817	Graphic Systems Inc	4493 S 134th Pl	Tukwila	98168	Map A3	D2
10829	L&R Services	4712 S 134th Pl	Tukwila	98168	Map A3	D2
10872	Cunningham Manufacturing Co	318 S Webster St	Seattle	98108	Map A2	B5
10913	Glacier Northwest Inc, E Marginal	5975 E Marginal Way S	Seattle	98134	Map A2	B4
10917	Pacific American Commercial Co	7400 2nd Ave S	Seattle	98108	Map A2	B5
11019	Caffe' D'Arte, Uno Espresso Inc	719 S Myrtle St	Seattle	98108	Map A2	B5
11124	J A Jack & Sons Inc	5427 Ohio Ave S	Seattle	98134	Map A2	B4
11195	CertainTeed Gypsum Manufacturing Inc	5931 E Marginal Way S	Seattle	98134	Map A2	B4
11339	Ash Grove Cement Co, E Marginal	3801 E Marginal Way S	Seattle	98134	Map A2	B3
11378	Machinists Inc	751 S Michigan St	Seattle	98108	Map A2	C4
11575	Magnetic & Penetrant Services/MAPSCO	8135 1st Ave S	Seattle	98108	Map A2	B5
11656	Saint-Gobain Containers, Inc (Verallia)	5801 E Marginal Way S	Seattle	98134	Map A2	B4
11659	Northwest Castings	3411 1st Ave S	Seattle	98134	Map A2	B2
11683	Industrial Container Services - WA, LLC	7152 1st Ave S	Seattle	98108	Map A2	B5
11695	Ace Galvanizing Inc	429 S 96th St	Seattle	98108	Map A2	B6
11731	O B Williams Co	1939 1st Ave S	Seattle	98134	Map A2	B2
11747	Olympic Foundry Inc	5200 Airport Way S	Seattle	98108	Map A2	C3
11860	Puget Sound Coatings Machinists DSR	9220 8th Ave S	Seattle	98108	Map A2	C6
11872	Glacier Northwest Inc, W Marginal	5900 W Marginal Way SW	Seattle	98106	Map A2	B4
11910	Columbia Funeral Home	4567 Rainier Ave S	Seattle	98118	Map A2	D3

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
11931	WESTEC Industries	8101 7th Ave S	Seattle	98108	Map A2	B5
12006	Recreational Equipment Inc Construction Dept	813 Thomas Ave SW	Renton	98055	Map A4	A3
12036	Segale Properties	5811 Segale Park Dr #C	Tukwila	98188	Map A3	E5
12038	BMP Inc	1922 Airport Way S	Seattle	98134	Map A2	C2
12066	Bratch's Autobody & Repair	645 S Massachusetts	Seattle	98134	Map A2	C1
12076	Auto Trim Design	17000 W Valley Hwy	Tukwila	98188	Map A3	E4
12081	ALLPAKTROJAN Inc	800 SW 27th St	Renton	98055	Map A4	A4
12133	American Collision & Refinish	14223 1st Ave S	Seattle	98168	Map A3	A2
12155	Alpine Auto Sales & Service	6722 Fox Ave S	Seattle	98108	Map A2	B4
12166	Scougal Rubber Corp	6239 Corson Ave S	Seattle	98108	Map A2	C4
12177	Meltec Inc Div of Young Corp	3444 13th Ave SW	Seattle	98134	Map A2	A2
12196	Baker Commodities Inc	5795 S 130th Pl	Tukwila	98178	Map A3	E2
12214	Seidelhuber Iron & Bronze Wks	8009 7th Ave S	Seattle	98108	Map A2	B5
12334	North Star Casteel Products Inc	820 S Bradford St	Seattle	98108	Map A2	C3
12539	Vigor Shipyards, Inc	1801 16th Ave SW	Seattle	98134	Map A2	A1
12608	United Iron Works Inc	7421 5th Ave S	Seattle	98108	Map A2	B5
13119	Boeing Developmental Center	9725 E Marginal Way S	Tukwila	98108	Map A2	D6
13125	Boeing Commercial Airplane Renton	737 Logan Ave N Bldg 10 - 20	Renton	98055	Map A4	B1
13182	Chemithon Corp	5430 W Marginal Way SW	Seattle	98106	Map A2	A4
13460	Jorgensen Forge Corp	8531 E Marginal Wy S	Tukwila	98108	Map A2	C5
13688	Seattle Industrial Motor & Machine Co (Simmco)	10831 E Marginal Wy S	Tukwila	98168	Map A2	D7
14004	Red Dot Corp	495 Andover Park E	Tukwila	98188	Map A3	E4
14046	Lafarge North America Inc	5400 W Marginal Way SW	Seattle	98106	Map A2	A4
14102	Stoneway Rock & Recycling, Black River, G Merlino	510 Monster Rd	Renton	98055	Map A3	E2
14997	Renton Concrete Recyclers	500 Monster Rd SW	Renton	98055	Map A3	E2
15019	Longview Fibre Paper and Packaging Inc	5901 E Marginal Wy S	Seattle	98134	Map A2	B4
15120	Young Corp	3231 Utah Ave S	Seattle	98134	Map A2	B2
15147	Alaska Airlines Inc, Seattle Hanger	18560 Alaska Service Rd	Seattle	98158	Map A3	B5
15149	Siemens Energy	16745 Air Cargo Rd	Seatac	98158	Map A3	C4
16002	Kinder Morgan Liquids Terminal, LLC	2720 13th Ave SW	Seattle	98134	Map A2	C2
16003	Equilon Enterprises, LLC dba Shell Oil Products US	2555 13th Ave SW	Seattle	98134	Map A2	A2

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
16004	BP West Coast Products, Seattle Terminal	1652 SW Lander St	Seattle	98134	Map A2	A2
16135	Lehigh Northwest Cement Co	3423 Klickitat Ave SW	Seattle	98134	Map A2	A2
16302	S F McKinnon Co Inc	6520 5th Ave S	Seattle	98108	Map A2	B4
17007	Phelps Tire Co	3922 7th Ave S	Seattle	98134	Map A2	C3
17104	Seattle Iron & Metals Corp	601 S Myrtle St	Seattle	98108	Map A2	B5
17127	Flamespray Northwest	250 S Chicago St	Seattle	98108	Map A2	B5
17168	Alki Auto Body Inc	5958 Corson Ave S	Seattle	98108	Map A2	C4
17303	T & H Autobody	10832 Myers Wy S	Seattle	98168	Map A2	B7
17397	Clean Scapes, Inc	7401 8th Ave S	Seattle	98108	Map A2	C5
17434	Southtowne Auto Rebuild	14864 Tukwila - International Blvd S	Tukwila	98168	Map A3	C3
17445	Maaco Auto Paint, Run & Gun Inc	13646 1st Ave S	Burien	98168	Map A3	A2
17460	Kirmac Collision Services of Renton	4000 E Valley Rd	Renton	98055	Map A4	B4
17462	Prescision Collision Auto Body	330 Main Ave S	Renton	98055	Map A4	B2
17464	Thomas Auto Rebuild	36 Logan Ave S	Renton	98055	Map A4	B2
17691	Pioneer Industries	7000 Highland Park Way SW	Seattle	98106	Map A2	B5
17713	Gary Merlino Construction Co, Inc	510 Monster Rd SW	Renton	98055	Map A3	E2
17765	Allpak Container Inc	1100 SW 27th St	Renton	98055	Map A4	A4
17767	Boeing Commercial Airplane SDC	2201 S 142nd St	Seatac	98168	Map A3	B2
17794	Allied Waste	54 S Dawson St	Seattle	98134	Map A2	B4
17825	Olympic Medical, A Division of Natus	5900 1st Ave S	Seattle	98108	Map A2	B4
17846	Boeing Commercial Airplane Longacres	Oakdale Ave SW & Sw 16th St	Renton	98055	Map A4	A3
17854	Burhans Sharpe Co	1541 S 92nd Pl Suite A	Seattle	98108	Map A2	C6
18074	Messenger Signs Inc	37 S Hudson	Seattle	98134	Map A2	B3
18101	Industrial Automation Inc	1421 S 93rd St	Seattle	98108	Map A2	C6
18139	Airgas-Nor Pac, Inc	7700 14th Ave S	Seattle	98108	Map A2	C5
18140	NW Building Tech Inc	215 S Austin	Seattle	98108	Map A2	B5
18144	Pro Cleaners	21905 Marine View Dr S	Des Moines	98188	Map A3	A7
18166	Olympic Pipe Line Co, BP Pipelines Co	2444-52 13th Ave SW	Seattle	98134	Map A2	A2
18232	Starbucks Coffee Co, Seattle Pilot Plant	2401 Utah Ave S	Seattle	98134	Map A2	B2
18279	Caffe Luca Colombina Corp	885 Industry Dr	Tukwila	98188	Map A3	E4
18283	Automated Equipment Co	10847 E Marginal Wy S	Seattle	98168	Map A2	D7
18299	Seattle Best Cleaner	9305 Rainier Ave S #C	Seattle	98118	Map A2	E6
18300	Jonny's Auto Body	12471 Tukwila International Blvd	Tukwila	98168	Map A3	C1

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
18347	A O Smith Water Products Co	820 SW 41st St	Renton	98055	Map A4	A4
18361	Seattle, City of, Fleet Services, Vehicle Maint	805 S Charles St	Seattle	98134	Map A2	C1
18403	Ron's Auto Rebuild	13360 Sunset Blvd SW/Martin Luther King Jr Wy S	Seattle	98178	Map A3	E2
18427	DC5 Apprenticeship & Training Trust	6770 E Marginal Wy S Bldg E	Seattle	98108	Map A2	B4
18428	Non Ferrous Metals	230 S Chicago St	Seattle	98108	Map A2	B5
18429	Encore Oils	4034 W Marginal Wy SW	Seattle	98106	Map A2	A3
18611	Jeld-Wen Inc dba Jeld-Wen	1061 Industry Dr	Tukwila	98188	Map A3	E4
20086	Art Brass Plating Inc	5516 3rd Ave S	Seattle	98108	Map A2	B4
20417	Cascade Machinery & Electric Inc	4600 E Marginal Wy S	Seattle	98134	Map A2	B3
20765	Pacific Iron and Metal Co	2230 4th Av S	Seattle	98134	Map A2	B2
21007	Cadman Inc Lehigh NW Cement	5225 E Marginal Wy S	Seattle	98134	Map A2	B4
21133	Graphic Display	6545 5th Ave S	Seattle	98108	Map A2	B4
21147	Boeing Commercial Airplane NBF Plant 2	7700 E Marginal Wy S	Seattle	98108	Map A2	C5
21163	George Heiser Body Inc	11210 Tukwila Int'l Blvd	Tukwila	98168	Map A2	D7
21182	Auto Palette, LLC	MOBILE	Seattle	98178		
21227	Glacier Northwest Inc Tacoma Narrows	5900 W Marginal Way	Seattle	98134	Map A2	B4
21241	Weyerhaeuser Aviation	1500 S 184th St (Starling Dr- gate at end)	SeaTac	98158	Map A3	B4
21256	Fatigue Technology, Inc	401 Andover Park E	Tukwila	98188	Map A3	E4
21257	3D Systems Inc	620 S Industrial Way	Seattle	98108	Map A2	B3
21258	Puget Sound Energy (Swarr Station)	2100 Benson Dr S	Renton	98055	Map A4	B3
21262	Seattle Parks & Recreation	4201 West Marginal Way SW	Seattle	98106	Map A2	A3
21300	Icon Materials Inc #2604	1115 S 96th St	Seattle	98108	Map A2	C6
21309	Rainier Best Cleaners	6301 Rainier Ave S #5	Seattle	98118	Map A2	E4
21322	US VA Puget Sound Health Care System	1660 S Columbian Wy, Bldg 18, Ofc 134	Seattle	98108	Map A2	C3
21325	West Seattle Quality Collision	9255 16th Ave SW	Seattle	98106	Map A2	A6
21342	Highrise Cabinets Inc	2755 Airport Way S	Seattle	98134	Map A2	C2
21407	King Co International Airport	7277 Perimeter Rd S	Seattle	98108	Map A2	D5
21408	Seattle-Tacoma International Airport	17801 Pacific Hwy S Room A6012M	Seattle	98158	Map A3	C4
21413	Phillips 66 Company	2423 Lind Ave SW	Renton	98055	Map A4	A3
22303	Renton Cleaning Center	364 Renton Ctr Wy SW	Renton	98055	Map A4	B2
22304	Renton Village Cleaners	601 S Grady Way #S	Renton	98055	Map A4	B3

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
22406	Rainier Beach Cleaners	9434 Rainier Ave S	Seattle	98118	Map A2	E6
22407	Seward Park Cleaners & Tailors	5017 S Dawson St	Seattle	98118	Map A2	E4
22449	Spic N' Span Cleaners #1	652 S Dearborn St	Seattle	98134	Map A2	C1
22474	Lee's One Hour Martinizing	14450 34th Ave S	Tukwila	98168	Map A3	C2
22480	Betty Brite Cleaners	15209 Military Rd S	Seatac	98188	Map A3	C3
22537	Plaza Cleaners	14410 SE Petrovitsky #115	Renton	98055	Map A4	E4
24752	Rainier Rubber Co	15660 Nelson Pl S	Seattle	98188	Map A3	E3
24957	Jonathan Paul's Inc	60 S Lucille	Seattle	98134	Map A2	B4
24980	Honeywell SASC	4150 Lind Ave SW	Renton	98055	Map A4	A4
24988	Middle Fork Roasters	420 S 96th St, #6	Seattle	98108	Map A2	B6
24996	New Finishes Inc	4235 W Marginal Way SW	Seattle	98106	Map A2	A3
28365	Delta Marine Industries Inc	1608 S 96th St	Seattle	98108	Map A2	C6
28402	King Co DOT Metro Transit Div	11911/12100/12200 E Marginal Wy S	Seattle	98168	Map A3	C1
28407	Emerald Recycling Inc	1500 Airport Wy S	Seattle	98134	Map A2	C1
28419	Buffalo Industries, Inc	99 S Spokane St	Seattle	98134	Map A2	B2
28470	Seattle City Light	3613 4th Ave S	Seattle	98134	Map A2	B3
28482	Rasmussen Wire Rope & Rigging Co Inc	8727 5th Ave S	Seattle	98108	Map A2	B6
28502	King Co DOT/Metro Transit, Airport Way	1555 Airport Wy S	Seattle	98134	Map A2	C1
28526	Stoneway Concrete	915 Houser Way N	Renton	98055	Map A4	C1
28569	South Seattle Community College	6000 16th Ave SW	Seattle	98106	Map A2	A4
28789	Crown Cork & Seal Co Inc	18340 Segale Park Dr B	Tukwila	98188	Map A3	E5
28911	Husky Trucks LLC	11222 East Marginal Way S	Tukwila	98168	Map A2	D7
28944	ConocoPhillips Company	12805 1st Ave S	Burien	98168	Map A3	A1
28948	N & B Auto	6907 Rainier Ave S.	Seattle	98118	Map A2	E5
28959	Ecolights Northwest, LLC	1915 S Corgiat Dr	Seattle	98108	Map A2	C4
28993	Premier Autobody Specialist	6411 S 143rd St	Tukwila	98168	Map A3	E2
28997	All About Auto Collision	513 Park Ave N	Renton	98055	Map A4	B1
29050	Trade-Marx Signs	818 S Dakota	Seattle	98108	Map A2	C3
29067	Seattle Dept of Parks & Recreation	4500 42nd Ave S	Seattle	98118	Map A2	E3
29076	Diamond Painting	1601 S 92nd Place, Bldg B	Seattle	98108	Map A2	C6
29111	Washington Memorial Cemetery	16445 International Blvd	SeaTac	98188	Map A3	C3
29134	Seattle Bulk Rail Station, Inc	3233 16th Ave SW	Seattle	98134	Map A2	A2
29137	MAACO Collision Repair and Auto Painting	355 Treck Drive	Tukwila	98188	Map A3	E4
29145	Machinists Inc	8201 7th Ave S	Seattle	98108	Map A2	B5

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
29178	Washington One Hour Cleaner	9252 Rainier Ave S	Seattle	98118	Map A2	E6
29213	Morel Industries	637 S Lucile St	Seattle	98108	Map A2	B4
29216	Pacific Auto Body	1048 6th Ave S	Seattle	98134	Map A2	C1
29232	National Products	1025 S Elmgrove St	Seattle	98108	Map A2	C5
29236	Caffe Umbria, Inc	8620 16th Ave S	Seattle	98108	Map A2	C5
29238	Cascade Engine Center	18435 Olympic Ave S	Tukwila	98188	Map A3	E5
29241	Interior Environments Custom Solutions Inc	3450 4th Ave S	Seattle	98134	Map A2	B2
29244	Former Exxon Station 76969	14807 1st Ave S	Burien	98168	Map A3	A2
29250	2K Metal Works, LLC	6555 5th Ave S	Seattle	98108	Map A2	B4
29259	Elliott Paint Co, Inc	11210 Des Moines Drive S.	Seattle	98168	Map A2	C7
29262	Collision Care Center, Inc	5969 4th Ave. S	Seattle	98108	Map A2	B4
29273	Kansai Motorsport	3810 Airport Way S	Seattle	98108	Map A2	C3
29291	Caffe Migliore	420 S 96th, Ste 420-7	Seattle	98108	Map A2	B6
29292	Sound Transit Central Link Operations and Maintenance Facility	3407 Airport Way South	Seattle	98134	Map A2	C2
29297	RMC, Inc	10766 Myers Way S	Seattle	98168	Map A2	B7
29308	Preet's Auto Body	12441 Des Moines Memorial Dr. S.	Seattle	98168	Map A3	B1
29310	Asemco, Inc	500 Andover Pk E	Tukwila	98188	Map A3	E4
29314	Dream Dry Cleaners	12805 1st Ave	Burien	98168	Map A3	A1
29319	Metro Auto Rebuild	2218 Airport Way S	Seattle	98134	Map A2	C2
29320	Westone Auto Collision	9001 Renton Ave S	Seattle	98118	Map A2	E6
29333	Independent Metals	7814 8th Ave South	Seattle	98108	Map A2	C5
29349	Pedersens Rentals	4500 4th Avenue South	Seattle	98134	Map A2	B3
29380	Continental-Olympic-United Fuel Facility Environmental Committee	17801 International Blvd	SeaTac	98188	Map A3	C4
29397	The Gear Works	500 S Portland St	Seattle	98108	Map A2	B5
29404	FiberDyne LLC	17616 West Valley Highway	Tukwila	98188	Map A3	E4
29405	Northwest Seafood Processors	206 SW Michigan St	Seattle	98106	Map A2	B4
29408	General Biodiesel Seattle, LLC	6333 1st Ave S	Seattle	98108	Map A2	B4
29411	Materials Processing	7755 E Marginal Way S	Tukwila	98108	Map A2	C5
29418	New Image Creative	1210 Andover Park E	Tukwila	98188	Map A3	E4
29435	Arcadis	7200 E Marginal Wy S	Seattle	98108	Map A2	C5
29436	CDSRVS	53 S Dawson	Seattle	98134	Map A2	B4
29458	Gerber Collision & Glass	365 Rainier Ave N	Renton	98055	Map A4	B2

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
29462	B&G Machine Inc	11 S Nevada St	Seattle	98134	Map A2	B3
29503	Regency Cleaners LLC	950 Andover Park E #19	Tukwila	98188	Map A3	E4
10125G	Jackson Food Stores #632	17941 108th Ave SE	Renton	98055	Map A4	C5
10179G	ARCO #05902	710 S Grady Wy	Renton	98055	Map A4	B3
10216G	USA Gasoline #68406	765 Rainier Ave S	Renton	98055	Map A2	C1
10220G	Gray Line Of Seattle Maint Facility	4500 W Marginal Wy SW	Seattle	98106	Map A2	A3
10232G	Charlie's Jumbo Deli	14805 Interurban Ave S	Tukwila	98168	Map A3	E3
10246G	Chevron, Boeing Field	10805 E Marginal Way S	Tukwila	98168	Map A2	D7
10259G	Shultz Distributing Inc	6760 W Marginal Wy SW	Seattle	98106	Map A2	B4
10289G	Chevron, Boulevard Park	805 S 112th St	Seattle	98168	Map A2	C7
10298G	Eternity Parks, Inc.	7801 Detroit Ave SW	Seattle	98106	Map A2	B5
10316G	Cottage Grove Shell	5445 Delridge Wy SW	Seattle	98106	Map A2	A4
10320G	South Center Gas Station LLC	16200 W Valley Hwy	Tukwila	98188	Map A3	E3
10339G	Costco Wholesale #06	400 Costco Dr Ste 100	Tukwila	98188	Map A3	E4
10342G	Petrocard Systems	9014 14th Ave S	Seattle	98108	Map A2	C6
10345G	Friendly Fuels	14620 Pacific Hwy S	Tukwila	98168	Map A3	C2
10362G	H & H Choi Inc Rainier Valero	7301 Rainier Ave S	Seattle	98118	Map A2	E5
10363G	Brown Bear Car Wash #1040	800 S Grady Wy	Renton	98055	Map A4	B2
10371G	ARCO AM/PM, Delridge	7301 Delridge Way SW	Seattle	98106	Map A2	A5
10377G	Renton Shell	300 Rainier Ave S	Renton	98055	Map A4	B2
10381G	Genessee Mini Mart	3611 Genessee	Seattle	98118	Map A2	D3
10508G	7-Eleven #32658	1200 SW 43rd St	Renton	98055	Map A4	A5
10513G	SeaTac Shell	20619 Military Rd	Seatac	98188	Map A3	C6
10520G	Shuttle Express	800 SW 16th St	Renton	98055	Map A4	A3
10540G	A-1 Fuel Systems Inc	243 Perimeter Rd West	Renton	98055	Map A2	C4
10549G	Dollar Rent A Car	15858 Pacific Hwy S	Tukwila	98188	Map A3	C3
10552G	Avis Rent-A-Car System Inc	18811 16th Ave S	SeaTac	98188	Map A3	B5
10555G	Top Hat Mini Mart	10723 1st Ave S	Seattle	98168	Map A2	B7
10563G	Oasis 76	11249 1st Ave S	Seattle	98168	Map A2	B7
10572G	Grady Way Shell & Deli	1120 SW Grady Way	Renton	98055	Map A4	A3
10576G	Seattle Parks & Rec Dept, South Dist	1600 S Dakota St	Seattle	98108	Map A2	C3
10578G	Riveretz's Auto Care	6185 4th Ave S	Seattle	98108	Map A2	B4
10604G	Safeway Fuel Station #1563	200 S 3rd St	Renton	98055	Map A4	B2
10634G	Petrocard Systems	1617 SW Lander St	Seattle	98134	Map A2	A2
10642G	USA #62515	12725 1st Ave S	Burien	98168	Map A3	A1

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
10649G	ARCO # 06530	251 Rainier Ave	Renton	98055	Map A4	B2
10781G	Tukwila 76 #2611064	13310 Interurban Ave	Tukwila	98168	Map A3	D2
12008G	SeaTac Wally Park	17808 International Blvd	Seatac	98188	Map A3	C4
12297G	Ryder Truck Rental Inc	17850 W Valley Hwy	Tukwila	98188	Map A3	E4
13029G	7-Eleven #23931	11657 Des Moines Wy S	Seattle	98168	Map A2	C7
13042G	Burien 76	12660 1st Ave S	Seattle	98168	Map A3	A1
13044G	7-Eleven #23525	12848 Martin Luther King Wy S	Seattle	98178	Map A3	E1
13073G	ARCO #05515	15252 Pacific Hwy S	Tukwila	98188	Map A3	C3
13077G	WA State Patrol 171014, WSDOT TEF Admin	15666 Pacific Hwy S	Seattle	98188	Map A3	C3
13108G	Thrifty Car Rental	18836 International Hwy S	Seatac	98188	Map A3	C5
13118G	Hertz	19707 Pacific Hwy S	Seattle	98188	Map A3	C6
13119G	Chevron #94411	19923 International Blvd	Seatac	98188	Map A3	C6
13120G	76 #2611255	19924 International Blvd	Seatac	98188	Map A3	C6
13132G	King County Metro Transit Power Dist Headquarters	2255 4th Ave S	Seattle	98134	Map A2	B2
13133G	FoodMart 1-284	12807 Des Moines Memorial Dr S	Seattle	98168	Map A3	B1
13157G	Seattle Police Dept, South Precinct	3001 S Myrtle St	Seattle	98108	Map A2	D5
13193G	United Parcel Service	4455 7th Ave S	Seattle	98108	Map A2	C3
13201G	Texaco, Mc Food Store	4800 Beacon Ave S	Seattle	98108	Map A2	C3
13209G	Delridge Food Mart	5235 Delridge Wy	Seattle	98106	Map A2	A4
13257G	Clay Lacy Aviation	8285 Perimeter Rd S	Seattle	98108	Map A2	D5
13270G	Gary Merlino Construction Co	9125 10th Ave S	Seattle	98108	Map A2	C6
13293G	Penske Truck Leasing Co LP	12840 48th Ave S	Tukwila	98168	Map A3	D1
17100G	Sky Way Gas #2	11900 Renton Ave S	Seattle	98178	Map A3	E1
18123G	76 #03153	14807 1st Ave S	Burien	98168	Map A3	A2
18137G	Shell #102	511 Dearborn Ave S	Seattle	98134	Map A2	B1
18147G	Chevron #90636	5940 E Marginal Wy S	Seattle	98134	Map A2	B4
18241G	Chevron 4087	6600 Martin Luther King Jr Way S	Seattle	98118	Map A2	D4
18253G	76 #2603166 SeaTac	16850 International Blvd	Seatac	98188	Map A3	C4
18306G	Georgetown Shell	6200 Corson Ave S	Seattle	98108	Map A2	C4
18323G	Shell #121526	7219 Rainier Ave S	Seattle	98118	Map A2	E5
18325G	Petrocard Systems	13435 Interurban Ave S	Tukwila	98168	Map A3	D2
18357G	Airport Enterprise Corporation	17010 International Blvd	SeaTac	98188	Map A3	C4

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
18372G	Jim's Market & Gas Exxon	7500 Martin Luther King Jr Way S	Seattle	98118	Map A2	E5
18433G	Chevron Sunset	150 SW Sunset Blvd	Renton	98055	Map A4	A2
18468G	Sangha & Lehal, Inc	2841 S 188th St	Seatac	98188	Map A3	C5
18479G	Marginal Way ARCO	7200 E Marginal Wy S	Seattle	98108	Map A2	C5
18631G	Rock Enterprises	7132 Delridge Wy SW	Seattle	98106	Map A2	A5
18637G	Pacific 76	14415 Pacific Hwy S	Tukwila	98168	Map A3	C2
18671G	Desimone's Chevron #210106	15060 Pacific Hwy S	Seattle	98188	Map A3	C3
18687G	Unocal	6230 Rainier Ave S	Seattle	98108	Map A2	E4
18689G	76 #2603161	11655 Renton Ave S	Seattle	98178	Map A3	E1
18691G	Skyway Shell and Automotive PMS Enterprise Inc	11809 Renton Ave S	Seattle	98178	Map A3	E1
18697G	Chevron #91557 Southcenter	220 Strander Blvd	Tukwila	98188	Map A3	D3
18698G	ARCO #83098	5800 Southcenter Blvd	Tukwila	98188	Map A3	D3
18718G	Guru, Inc	6056 Martin Luther King Jr Wy S	Seattle	98118	Map A2	D4
18749G	White Center Mini Mart	1505 SW Roxbury St	Seattle	98106	Map A2	A6
18757G	MLK Shell	12911 Martin Luther King Jr Wy S	Seattle	98178	Map A3	E1
18765G	Jackson Food Stores #631	13138 Interurban Ave S	Tukwila	98168	Map A3	D2
18768G	Airport 76	4603 S 188th St	Seatac	98188	Map A3	D5
18792G	Texaco, Willies	16402 Military Rd S	Seattle	98188	Map A3	C3
18956G	7-Eleven #14441	11505 SE 168th St	Renton	98055	Map A4	C4
19151G	76 Circle K #2705508	2022 S Puget Dr	Renton	98055	Map A4	B3
19240G	Renton Friendly Foodmart 76	19044 108th Ave SE	Renton	98055	Map A4	C5
19261G	Chevron #99114	301 S Grady Wy	Renton	98055	Map A4	B3
19285G	Brown Bear Car Wash #1008	77 Rainier Ave S	Renton	98055	Map A4	B2
19601G	76, Michigan Street Gas and Wash	551 S Michigan St	Seattle	98108	Map A2	B4
19823G	Sunny's Deli Mart Texaco	10545 SE Carr Rd	Renton	98055	Map A4	B4
21146G	Cigarette Depot	9001 Delridge Way SW	Seattle	98106	Map A2	A6
21147G	Seattle Police Dept, SW Precinct	2300 SW Webster St	Seattle	98106	Map A2	A5
25050G	Renton Eagle Mart Inc	401 Park Ave N	Renton	98055	Map A4	B1
25066G	Alamo/National Car Rental	2006 South 146th Street	SeaTac	98168	Map A3	B2
25072G	ARCO #04090	2200 4th Ave S	Seattle	98134	Map A2	B2
25121G	Petrocard Systems	3215 4th Ave S	Seattle	98134	Map A2	B2

Key to Point Sources Shown on Figures A1 to A4

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	Map	Grid Location
25127G	Shultz Distributing	465 S Holgate St	Seattle	98134	Map A2	B2
25133G	Lander Street Shell	2461 4th Ave S	Seattle	98134	Map A2	B2
25282G	ARCO #05246	5620 Martin Luther King Jr Wy S	Seattle	98118	Map A2	D4
25355G	Southpark 76	8819 14th Ave S	Seattle	98108	Map A2	C6
25701G	Benaroya Shell	600 S Michigan St	Seattle	98108	Map A2	B4
25781G	Sam's Club Fueling Station #4835	901 S Grady Way	Renton	98055	Map A4	B2
25785G	Safeway #1965 Fuel Facility	9262 Rainier Ave S	Seattle	98118	Map A2	E6
25799G	Shell at SeaTac	2806 S 188th	SeaTac	98188	Map A3	C5
28018G	Safeway Fuel Station 1468	4300 NE 4th St	Renton	98055	Map A4	D2
28031G	South Park Fuel & Food	9525 14th Ave S	Des Moines	98108	Map A2	C6
28064G	Costco Wholesale	4401 4th Ave So	Seattle	98134	Map A2	B3
28082G	Remote Consolidated Rental Car Facility	3150 S 160th St	SeaTac	98188	Map A3	C3
28083G	Fred Meyer #31	17801 108th Ave SE	Renton	98055	Map A4	C4
28097G	Delta Airlines, Inc.	18601 28th Ave S	SeaTac	98158	Map A3	C5
28109G	Burien Eagle Mart Shell	14605 1st Ave S	Burien	98168	Map A3	A2

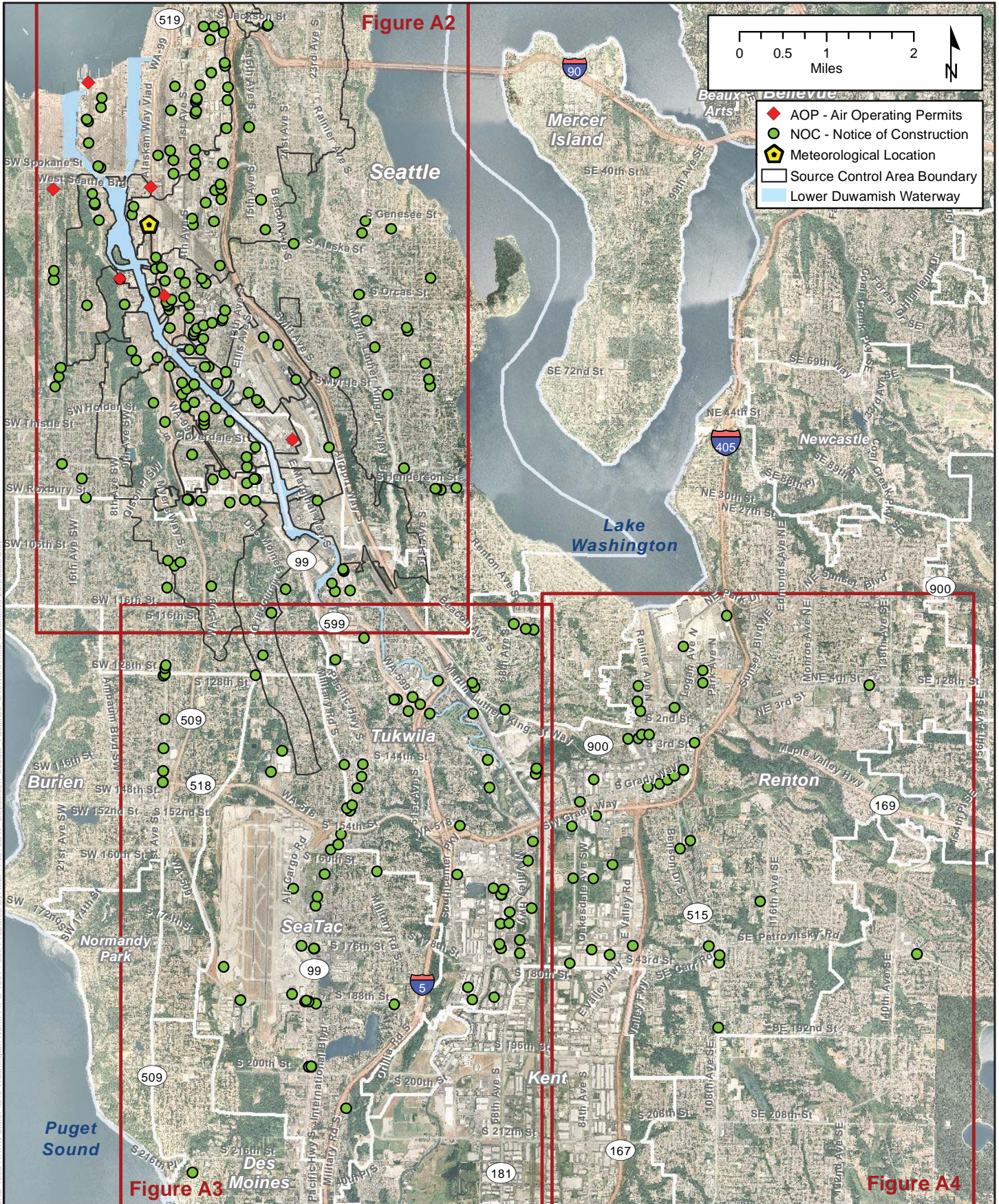


Figure A1. Distribution of Air Sources in the LDW Airshed

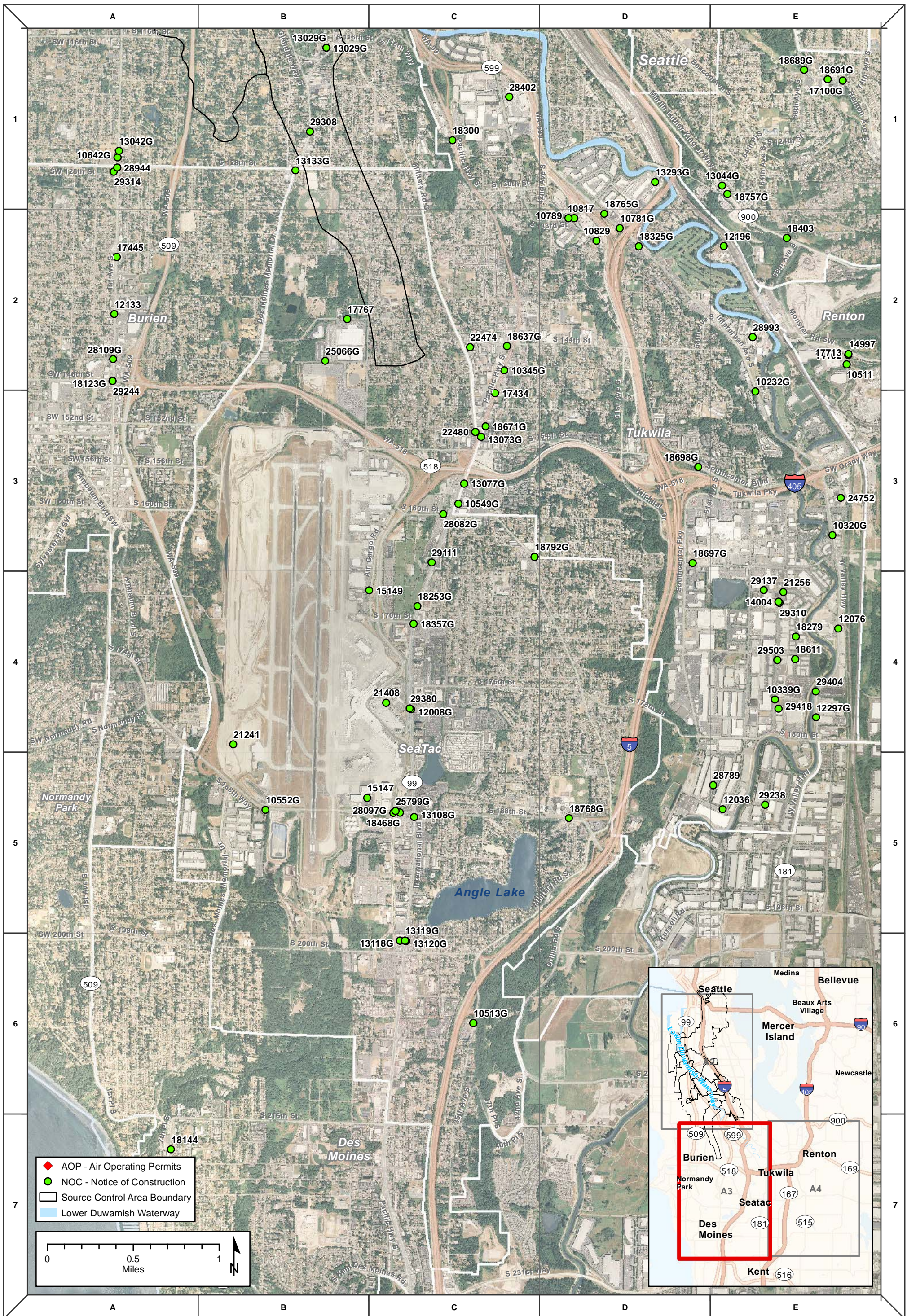


Figure A3. Distribution of Air Sources in the LDW Airshed

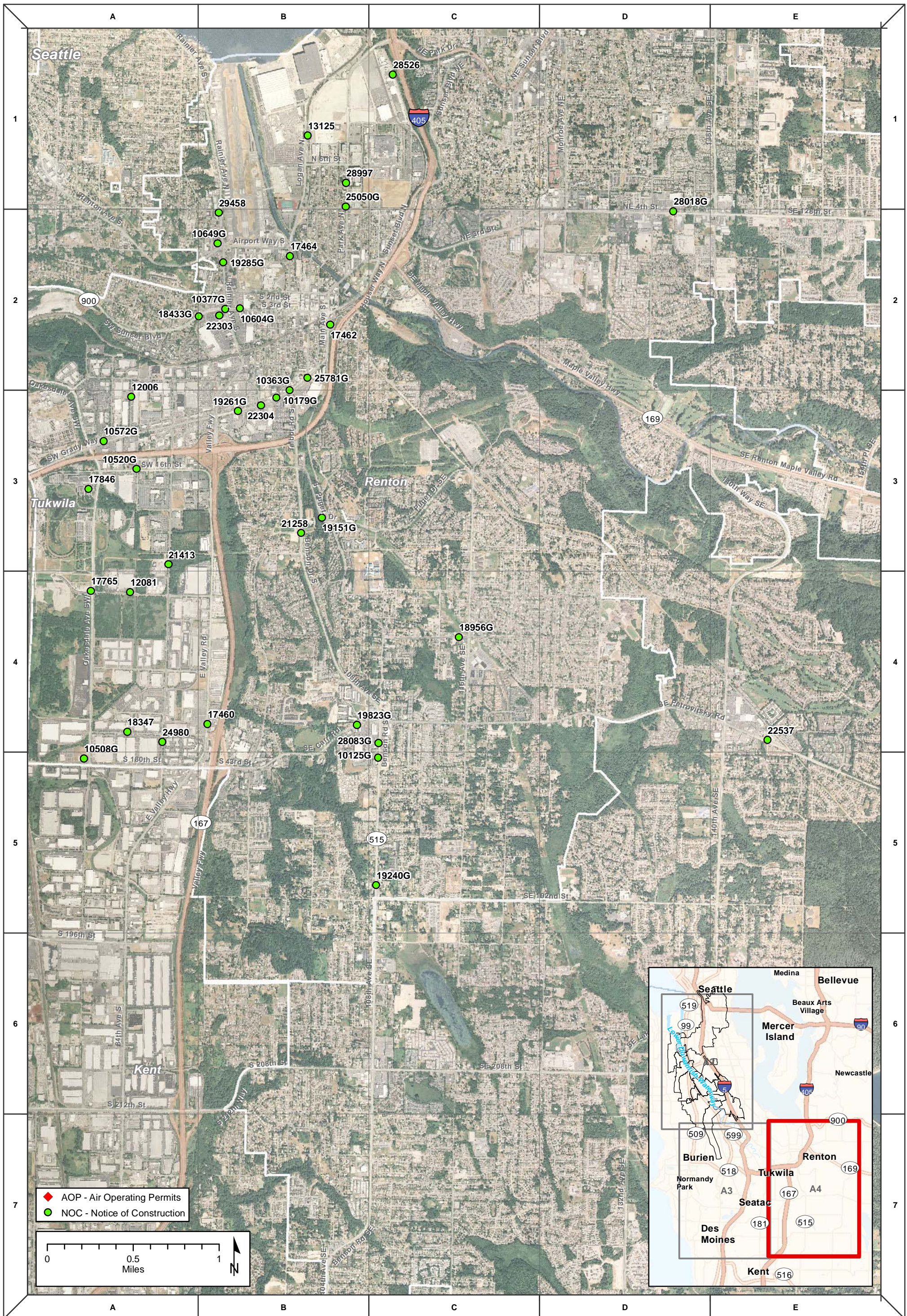


Figure A4. Distribution of Air Sources in the LDW Airshed

Attachment B

Point Source Inventory Spreadsheet

(Included on CD)

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
29250	2K Metal Works, LLC	6555 5th Ave S	Seattle	98108		NA	9910	One Hypertherm Powermax 1250 CNC plasma cutting torch controlled by a Torit pulse-jet baghouse rated at 1,600 cfm.	2008	Yes	5
21257	3D Systems Inc	620 S Industrial Way	Seattle	98108	541710	Research and Development	8872	Two Bleeker Bros Spray Booths Employing Dry Filters (Paint Arrestors). Booth #1 is rated at 21,000 CFM and Booth #2 is rated at 6,400 CFM.	01-Oct-03	Yes	NA
19151G	76 Circle K #2705508	2022 S Puget Dr	Renton	98055	447110	Gasoline Stations with Convenience Stores	9151		25-Sep-80	No	No
18123G	76 #03153	14807 1st Ave S	Burien	98168	447110	Gasoline Stations with Convenience Stores	9394		19-Dec-80	No	No
18689G	76 #2603161	11655 Renton Ave S	Seattle	98178	447110	Gasoline Stations with Convenience Stores	9459		03-Oct-80	No	No
18253G	76 #2603166 SeaTac	16850 International Blvd	Seatac	98188	447110	Gasoline Stations with Convenience Stores	662	Stage 2 CARB-approved ORVR-compatible vapor recovery system employing twelve (12) [Healy 900] nozzles on six (6) high hang Gilbarco Encore vacuum assist style dispensers. Equipment, maintenance and installation as per CARB Executive Order G-70-191-AA.		No	No
13120G	76 #2611255	19924 International Blvd	Seatac	98188	447110	Gasoline Stations with Convenience Stores	9997		01-Nov-83	No	No
19601G	76, Michigan Street Gas and Wash	551 S Michigan St	Seattle	98108	447110	Gasoline Stations with Convenience Stores	741	Stage 2 ORVR-compatible CARB-approved system employing eight (8) [model: VST-EVR-NB] EVR nozzles on four (4) high hang Wayne Vista vapor balance style dispensers. In addition to the nozzle, the hanging hardware consists of the curb hose [model: VDV-EVR o		No	No
18956G	7-Eleven #14441	11505 SE 168th St	Renton	98055	447110	Gasoline Stations with Convenience Stores	9658		09-Mar-81	No	No
13044G	7-Eleven #23525	12848 Martin Luther King Wy S	Seattle	98178	447110	Gasoline Stations with Convenience Stores	663	Stage 2 ORVR-compatible CARB-approved system employing four (4) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo 11VF, 5005, 5007 or 5015] nozzles on two (2) High Hang Gilbarco Encore vapor balance style dispensers. Equipment, main		No	No
13029G	7-Eleven #23931	11657 Des Moines Wy S	Seattle	98168	447110	Gasoline Stations with Convenience Stores	11195	Stage 2 Vapor Recovery using 12 OPW11VAI-0327 Nozzles on a Gilbarco Vacuum Assist Style Dispenser with High Hang.		No	No
10508G	7-Eleven #32658	1200 SW 43rd St	Renton	98055	447110	Gasoline Stations with Convenience Stores	11797	Stage 1 & 2 vapor recovery using Two Point System on four 10,000 gallon underground gasoline storage tanks, and 16 OPW11VAI-(22, 27, 42 or 47) Nozzles with external solenoid vapor valves on a Gilbarco Vacuum Assist Style Dispenser with High Hang; equipment	06-Apr-99	No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
29250	2K Metal Works, LLC	Visible emissions - quarterly visual inspections	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
21257	3D Systems Inc	None	NA	No	No inspection in the last 3 years.	No		
19151G	76 Circle K #2705508	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
18123G	76 #03153	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
18689G	76 #2603161	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
18253G	76 #2603166 SeaTac	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
13120G	76 #2611255	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	Failure to submit annual tests for Stage 1/2 system [2/3/2011]		
19601G	76, Michigan Street Gas and Wash	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	12/30/2010	Failure to submit annual tests for Stage 1/2 system [12/21/2010]		
18956G	7-Eleven #14441	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
13044G	7-Eleven #23525	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	Failure to submit annual test for Stage 1/2 system [9/15/2011]		
13029G	7-Eleven #23931	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
10508G	7-Eleven #32658	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
18347	A O Smith Water Products Co	820 SW 41st St	Renton	98055	333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	6785	One Pangborn Walk-in Abrasive Blast Booth rated at 2,000 cfm with a Wheelabrator-Frye Baghouse rated at 2,000 cfm, one Pangborn Abrasive Blasting Booth rated at 1,700 cfm with two Pangborn Rotoclones rated at 1,700 cfm, one 10,000 lb Wheelabrator Shotblast with a Zorn 1260 Baghouse rated at 3,400 cfm; one Devilbiss Spray Coating Booth rated at 8,550 cfm, one Porcelain Spraying Booth rated at 28,000 cfm, one 15 lb/min HCFC15 Foam Line, one Brown Engineering Furnace rated at 3.5 MMBtu/hr, and one Devilbiss Proclean Primer Booth rated at 29,000 cfm.	29-May-97	Yes	5
10540G	A-1 Fuel Systems Inc	243 Perimeter Rd West	Renton	98055	447190	Other Gasoline Stations	11926	Stage 1 vapor recovery using Two Point System on one 12,000 gallon above ground gasoline storage tank equipped with a CARB approved Pressure Vacuum Valve; equipment and installation as per CARB Executive Order G-70-97-A (Stage 1) and G-70-162 (above ground tanks).	16-Jun-99	No	No
11695	Ace Galvanizing Inc	429 S 96th St	Seattle	98108-4995	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	5146	Modify existing large existing Dip Kettle enclosure and add enclosure to existing small Dip Kettle and replace existing baghouse with a 20,000 cfm Pulse-Jet Baghouse.	30-Dec-93	Yes	NA
10436	Aero-Lac Inc	420 S 96th St Space #11	Seattle	98108	321918	Other Millwork (including Flooring)	8286	Flatline Spray Coating Operation inside existing Spray Coating Booths.	04-Jan-01	Yes	NA
17692	Aim Aviation Inc	705 SW 7th St	Renton	98057	336411; 336413	Aircraft Manufacturing: Other Aircraft Parts and Auxiliary Equipment Manufacturing	9796	Two spray booths, each rated at 8,500 cfm with dry exhaust filters.	22-Jun-09	Yes	4, 6, 7, 8
18139	Airgas-Nor Pac, Inc	7700 14th Ave S	Seattle	98108	325120	Industrial Gas Manufacturing	5956	One Viking GC-111 Shotblaster with a Baghouse rated at 2,500 cfm.	30-Sep-91	No	NA
18768G	Airport 76	4603 S 188th St	Seatac	98188	447110	Gasoline Stations with Convenience Stores	125	Stage 2 vapor recovery employing eight (8) (Catlow ICVN, Emco Wheaton A4505, Husky V34 6250, OPW 12VW or Richard Astrovac) Nozzles with vapor valve and Efficiency Compliance Device (ECD) on four (4) Gilbarco Encore Vacuum Assist Style High Hang Dispensers		No	No
18357G	Airport Enterprise Corporation	17010 International Blvd	SeaTac	98188	447190	Other Gasoline Stations	411	Stage 2 vapor recovery employing eight (8) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo 11VF, 5005, 5007 or 5015] Nozzles with vapor valve on four (4) High Hang Gilbarco Encore 500 Vapor Balance Style Dispensers. Equipment, mai		No	No
25066G	Alamo/National Car Rental	2006 South 146th Street	SeaTac	98168	447190	Other Gasoline Stations	190	Dispensing gasoline to vehicles equipped with ORVR Collection Systems only: Stage 1 vapor recovery equipped with Enhanced Vapor Recovery (EVR) System on one 10,000 gallon underground gasoline storage tank, and 2 Nozzles (Conventional) on a Gasboy Dispens		No	No
15147	Alaska Airlines Inc, Seattle Hanger	18560 Alaska Service Rd	Seattle	98158	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	8651	One Polaris EWC Spray booth rated at 12,000 CFM (employing Method 319 certified filters) used to spray coat various aerospace parts.	01-Mar-02	Yes	NA
17168	Alki Auto Body Inc	5958 Corson Ave S	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	5851	One Prestige Nova Verta Super 2000 Paint Spray Booth at 10,000 cfm and one Prep Area at 10,000 cfm.	26-Apr-95	No	NA
28997	All About Auto Collision	513 Park Ave N	Renton	98055	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9407	One AFC, Inc Standard Deluxe Cross flow spray booth employing dry filter and rated at 14,000 CFM.	2006	Yes	4-9
26244	Alliance Packaging	1000 SW 43rd St	Renton	98057	Not available	Not available	822N	One EMC Model 85E-55 wastewater evaporator for compressor condensate only.	10-Aug-11	No	

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18347	A O Smith Water Products Co	There shall be no visible emissions from the baghouse.	NA	Yes	4/27/2010	No		
10540G	A-1 Fuel Systems Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No	Installation address/Owner on NOC is Sound Flight Inc.	
11695	Ace Galvanizing Inc	None	NA	Yes	3/22/2010	No	Only clean, prepared scrap shall be used to charge the induction furnace	
10436	Aero-Lac Inc	None	NA	Yes	3/9/2011	No		
17692	Aim Aviation Inc	pressure drop across the exhaust filters of each spray booths, spray booths shall be inspected at least once daily for differential pressure and filter conditions	Records related to permit conditions are to be kept for 2 years.	Yes	4/20/2010	Yes, used the wrong spray coating Condition #4 [4/20/2010]		
18139	Airgas-Nor Pac, Inc	None	NA	Yes	6/10/2010	No	NOC installation address was for BOC Gases.	
18768G	Airport 76	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	5/27/2010	No		
18357G	Airport Enterprise Corporation	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
25066G	Alamo/National Car Rental	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
15147	Alaska Airlines Inc, Seattle Hanger	None	NA	Yes	8/5/2010	Failure to submit annual test from Stage I/II system (7/10/2012)		
17168	Alki Auto Body Inc	None	NA	No	No inspection in the last 3 years.	No		
28997	All About Auto Collision	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit. Use only LVLPHVLP spray equipment approved by SCAQMD. BMPs shall be used in the spray coating operations.	Records related to permit conditions are to be kept for 2 years.	Yes	3/30/2010	No O&M logs (3/30/2010)	NOC Applicant/installation address was Legitimate Restorations; previous tenant was A & J Renton Autobody.	
26244	Alliance Packaging			Yes	2/25/2010	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10071	Allied Body Works Inc	625 S 96th St	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	3599	One Viking DTSB56 Deluxe Truck Spray Booth at 25,600 cfm and an air make-up system.	01-Mar-91	Yes	NA
17794	Allied Waste	54 S Dawson St	Seattle	98134	484110	General Freight Trucking, Local	4195	One Rudd EP-16-7HV Spray Booth at 38,920 cfm.	31-Dec-89	No	NA
17765	Allpak Container Inc	1100 SW 27th St	Renton	98055	32311	Printing	3830	One Archer Model 32 Cyclone, 132i body dia by 262i body height, at 21,000 cfm (32,000 cfm max) to control paper trim. Relocate to new plant, reference NC2821.	20-May-91	No	NA
12081	ALLPAKTROJAN Inc	800 SW 27th St	Renton	98055			295N	One KBA Model 142 8-color, sheet-fed offset printing press.		No	NA
12155	Alpine Auto Sales & Service	6722 Fox Ave S	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	8443	One DeVilbiss Model No. DSF9426A-34 Dry Filter System Spray Coating Booth rated at 12,220 cfm.	2001	Yes	NA
12133	American Collision & Refinish	14223 1st Ave S	Seattle	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	8395	One Standard Tool & Equipment Dry Filter System Spray Coating Booth rated at 14,400 cfm.	12-Jul-01	Yes	NA
21201	American Memorial Association	100 Blaine Ave NE	Renton	98057	Not available	Not available	8753	All Model 1701 Crematory with Afterburner rated at 100 lb/hr.	06-May-03	No	3
29435	Arcadis	7200 E Marginal Wy S	Seattle	98108			10328	Soil vapor extraction (SVE) system, using one (1) Root 36 URAI Positive Displacement Rotary lobe vacuum pump connected to one (1) Falco 100 Catalytic Oxidizer, rated for 120 cfm.	2011	Yes	6
10649G	ARCO # 06530	251 Rainier Ave	Renton	98055	447110	Gasoline Stations with Convenience Stores	181	Stage 1 & 2 vapor recovery employing Enhanced Vapor Recovery (EVR) Stage 1 System on four 10,000 gallon underground gasoline storage tanks equipped with 16 [Emco Wheaton A4005, A4007 or A4015, Husky V(5) or OPW 11VF-47] Nozzles with vapor valve on eight High Hang Tokheim Premier C Vacuum Assist Style Dispenser. Equipment and installation as per CARB Executive Orders VR-101-C (Stage 1) and G-70-52-AM (Stage 2).	2003	No	No
25072G	ARCO #04090	2200 4th Ave S	Seattle	98134	447110	Gasoline Stations with Convenience Stores	587	Stage 1 vapor recovery employing CARB-approved OPW Enhanced Vapor Recovery System on two (2) new underground gasoline storage tanks (1 x 12,000 gallons [premium]; 1 x 20,000 gallons [unleaded]). Stage 2 vapor recovery employing six (6) [Emco Wheaton A400		No	No
25282G	ARCO #05246	5620 Martin Luther King Jr Wy S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	90	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on three 10,000 gallon underground gasoline storage tanks equipped with Pressure/Vacuum Valves, and 8 [Emc		No	No
13073G	ARCO #05515	15252 Pacific Hwy S	Tukwila	98188	447110	Gasoline Stations with Convenience Stores	262	Stage 1 & 2 vapor recovery employing CARB-approved Enhanced Vapor Recovery Stage 1 System on three (3) 12,000 gallon underground gasoline storage tanks; and twelve (12) [Emco Wheaton A4005, A4007 or A4015, Husky V(5) or OPW 11VF-47] Nozzles on a twelve Hi		No	No
10179G	ARCO #05902	710 S Grady Wy	Renton	98055	447110	Gasoline Stations with Convenience Stores	209	Replacing the existing Stage 1 vapor recovery using CARB-approved Enhanced Vapor Recovery (EVR) Stage 1 System on four 10,000 gallon underground gasoline storage tanks. Equipment and installation as per CARB Executive Orders VR-102-D (Stage 1). No chang		No	No
18698G	ARCO #83098	5800 Southcenter Blvd	Tukwila	98188	447110	Gasoline Stations with Convenience Stores	211	Replacing the existing Stage 1 vapor recovery using CARB-approved Enhanced Vapor Recovery (EVR) Stage 1 System on four 10,000 gallon underground gasoline storage tanks. Equipment and installation as per CARB Executive Orders VR-102-D (Stage 1). No chang		No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10071	Allied Body Works Inc	None	NA	No	No inspection in the last 3 years.	No		
17794	Allied Waste	None	NA	Yes	12/9/2010	No		
17765	Allpak Container Inc	None	NA	No	No inspection in the last 3 years.	No		
12081	ALLPAKTROJAN Inc	None	NA	No	No inspection in the last 3 years.	No		
12155	Alpine Auto Sales & Service	None	NA	No	No inspection in the last 3 years.	No		
12133	American Collision & Refinish	None	NA	Yes	4/20/2012	Failure to pay fees and conduct inspections [4/20/2010]		
21201	American Memorial Association	Install a smoke detection system which will perform an automatic primary burner shutdown whenever visible emissions greater than 20% opacity persist for a period of two minutes		Yes	12/16/2010	No		
29435	Arcadis	Arcadis shall monitor the concentrations of Benzene and total petroleum hydrocarbon entering and leaving the Catalytic Oxidizer.	Arcadis shall keep records of the monitoring and make them available to the PSCAA when asked	Yes	4/6/2012	No	Applicant is Arcadis but the installation is for Marginal Way ARCO.	
10649G	ARCO # 06530	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
25072G	ARCO #04090	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
25282G	ARCO #05246	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
13073G	ARCO #05515	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	Failure to pay fees; conduct vapor tests [7/6/2012]		
10179G	ARCO #05902	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	No	No inspection in the last 3 years.	No		
18698G	ARCO #83098	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10371G	ARCO AM/PM, Delridge	7301 Delridge Way SW	Seattle	98106	447110	Gasoline Stations with Convenience Stores	11745	Stage 1 & 2 vapor recovery using Two Point System on one 10,000 gallon and one 20,000 gallon underground gasoline storage tanks, and 12 OPW11VAI-(22, 27, 42 or 47) Nozzles with external solenoid vapor valves on a Gilbarco Vacuum Assist Style Dispenser wit	04-Mar-99	No	No
20086	Art Brass Plating Inc	5516 3rd Ave S	Seattle	98108	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	6367	One Binks PAEC-8-7-T Spray Booth rated at 7,400 cfm.	26-Jan-96	Yes	NA
29310	Asemco, Inc	500 Andover Pk E	Tukwila	98188		#NA	10069	One Standard Tools and Equipment spray booth, model # BECF-1000 w/dry filter rated at 7,800 CFM used for applying protective coatings to electronic circuit boards.	2009	Yes	NA
21182	Auto Palette, LLC	MOBILE	Seattle	98178	811121	Automotive Body, Paint, and Interior Repair and Maintenance	8713	One Mobile Spray Coating Unit with an Erectable Nonventilated Overspray Enclosure as an alternate Means of Compliance, as allowed by Regulation I, Section 3.23, to comply with Regulation I Section 9.16 (c), Spray Coating of Motor Vehicles.	2002	Yes	6(a)
12076	Auto Trim Design	17000 W Valley Hwy	Tukwila	98188	811121	Automotive Body, Paint, and Interior Repair and Maintenance	8220	One AFC Dry Filter System Spray Coating Booth rated at 8,000 cfm and one Dry Filter System Prep Area rated at 4,000 cfm.	07-Jul-00	Yes	NA
18283	Automated Equipment Co	10847 E Marginal Wy S	Seattle	98168	444190	Other Building Material Dealers	6560	One VECO 141228RF Spray Booth rated at 16,800 cfm.	30-Aug-96	Yes	NA
10552G	Avis Rent-A-Car System Inc	18811 16th Ave S	SeaTac	98188	447190	Other Gasoline Stations	39	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on one 12,000 gallon underground gasoline storage tanks, and 8 [Emco Wheaton 4005, 4007, or 4015, EZ-Flo IIVF. EZ-Flo 5005, Husky V or OPW IIVF-47] Nozzles with vapor valve on four Gasboy 9852AXTWI-DZ Vapor Balance Style Dispenser with Side Mount; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-52-AM (Stage 2).	2002	No	No
29462	B&G Machine Inc	11 S Nevada St	Seattle	98134	Not available	Not available	10401	One Spray-Tech dry filter spray coating booth, rated at 14,000 cfm, used to spray coat diesel engines.	2011	Yes	NA
12196	Baker Commodities Inc	5795 S 130th Pl	Tukwila	98178	Not available	Not available	1627		15-Sep-77	No	NA
17192	Banker's Auto Rebuild & Towing	405 S 7th St	Renton	98057	811121	Automotive Body, Paint, and Interior Repair and Maintenance	4166	Upgrade of spray booth air filtration system to comply with Section 9.16 of Regulation I; the existing exhaust stack is contingently approved subject to Condition #4.	12-Dec-91	No	2
25701G	Benaroya Shell	600 S Michigan St	Seattle	98108	447110	Gasoline Stations with Convenience Stores	9087			No	No
22480	Betty Brite Cleaners	15209 Military Rd S	Seatac	98188	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	5849	One 22 lbs/batch Bove Comet P200 Dry Cleaning Machine.	03-Feb-95	No	NA
12038	BMP Inc	1922 Airport Way S	Seattle	98134	238320	Painting and Wall Covering Contractors	8127	One TB222612 Spray Systems Inc Dry Filter System Spray Coating Booth rated at 25,600 cfm and one Paint Mix Room rated at 1,125 cfm.	2000	Yes	NA
17846	Boeing Commercial Airplane Longacres	Oaksdale Ave SW & Sw 16th St	Renton	98055	336411	Aircraft Manufacturing	4526	Two Bryan RW1260 Hot Water Boilers at 12,600 MBH each in Building 25-02.	14-Jun-94	No	NA
21147	Boeing Commercial Airplane NBF Plant 2	7700 E Marginal Wy S	Seattle	98108	336411	Aircraft Manufacturing	1231		04-Aug-75	Yes	9
13125	Boeing Commercial Airplane Renton	737 Logan Ave N Bldg 10 - 20	Renton	98055	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	2130	Four Spencer Central Vacuum Systems with Sprencer 36" Tubular Baghouse at 475 cfm each (757 Major Wing Jigs).	31-Jan-81	No	NA
17767	Boeing Commercial Airplane SDC	2201 S 142nd St	Seatac	98168	493110	General Warehousing and Storage	3895	Three York Shipley 564SPW 200N2 Gas/#2 oil-fired Hot Water Boilers at 6.7 MMBh each.	04-May-93	No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10371G	ARCO AM/PM, Delridge	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
20086	Art Brass Plating Inc	None	NA	Yes	5/25/2010	Failure to maintain equipment; excess temperature (3/30/2012)		
29310	Asemco, Inc	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	1/14/2010	No		
21182	Auto Palette, LLC	Fugitive dust - Any complaints must be investigated	Any records of all complaints must be maintained onsite.	No	No inspection in the last 3 years.	No	Max 36 oz. of VOC coatings to be applied per day. Address on NOC is 10401 66th Ave S, Seattle, 98178	
12076	Auto Trim Design	None	NA	No	No inspection in the last 3 years.	No		
18283	Automated Equipment Co	None	NA	No	No inspection in the last 3 years.	No	NOC installation address was 10849 E Marginal Way S.	
10552G	Avis Rent-A-Car System Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
29462	B&G Machine Inc	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No	Shall not spray coatings that contain manganese, nickel, cadmium, chromium or lead	
12196	Baker Commodities Inc	None	NA	Yes	1/28/2011	No		
17192	Banker's Auto Rebuild & Towing	Must develop and implement an operation and maintenance plan to assure continuous compliance		No	No inspection in the last 3 years.	No		
25701G	Benaroya Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
22480	Betty Brite Cleaners	None	NA	No	No inspection in the last 3 years.	No		
12038	BMP Inc	None	NA	No	No inspection in the last 3 years.	No		
17846	Boeing Commercial Airplane Longacres	None	NA	Yes	2/12/2010	No		
21147	Boeing Commercial Airplane NBF Plant 2	Chromate, record the amount of chromate containing coatings used daily.	Records of inspections shall be maintained for 2 years	No	No inspection in the last 3 years.	No		PAHs, phthalates
13125	Boeing Commercial Airplane Renton	None	NA	No	No inspection in the last 3 years.	No		Lead, phthalates, chromium, PAHs
17767	Boeing Commercial Airplane SDC	None	NA	Yes	1/13/2010	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
13119	Boeing Developmental Center	9725 E Marginal Way S	Tukwila	98108	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	3009	Two Lightning Labs each with two KEI #1320 air cleaner (fan/filter) units. Each fan/filter unit uses two 24" x 24" x 12" carbon filters, two 24" x 24" x 2" (#501) reusable aluminum filters, and two 99.97% HEPA filters (#530).	03-Mar-88	No	NA
28557	Boeing Electronics Center	616 SW 41st St Bldg 7-107	Renton	98057	334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	10407	One natural gas heated Chemical Reactor, 5,500 Btu/hr, to produce Aluminum Nitrate Powder, 32.5 lb/batch, with NOx emissions controlled by a venturi scrubber, 206 acfm.	2012	Yes	9
16004	BP West Coast Products, Seattle Terminal	1652 SW Lander St	Seattle	98134	424710	Petroleum Bulk Stations and Terminals	1564	Three (3) Internal Floating Roofs in Three (3) Gasoline Storage Tanks Numbered #8, 9, and 10.	01-Jun-76	No	NA
12066	Bratch's Autobody & Repair	645 S Massachusetts	Seattle	98134	811121	Automotive Body, Paint, and Interior Repair and Maintenance	8205	One Blowtherm Concept II Cure Dry Filter System Spray Coating Booth rated at 12,000 cfm.	2000	Yes	NA
19285G	Brown Bear Car Wash #1008	77 Rainier Ave S	Renton	98055	447110	Gasoline Stations with Convenience Stores	9285		13-Mar-81	No	No
10363G	Brown Bear Car Wash #1040	800 S Grady Wy	Renton	98055	447110	Gasoline Stations with Convenience Stores	11729	Stage 1 & 2 vapor recovery using Two Point System on one 20,000 gallon and one 15,000 gallon underground gasoline storage tanks, and 12 OPW11VAI Nozzles on a Gilbarco Vacuum Assist Style Dispenser; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-150-AD (Stage 2).	04-Sep-98	No	No
18224	Bryant Motors Inc	1300 Bronson Wy N	Renton	98057	44111	New Car Dealers	6325	One Spray Booth with filter pads.	11-Feb-96	No	2
28419	Buffalo Industries, Inc	99 S Spokane St	Seattle	98134-2295	812332	Industrial Launderers	2755	One Cleaver Brooks CB-200-400-150 gas/#2 oil-fired boiler at 16,750 MBH input.	1986	No	NA
17854	Burhans Sharpe Co	1541 S 92nd Pl Suite A	Seattle	98108	333120	Construction Machinery Manufacturing	4600	One Bleeker Bros. F-6-8-7 Spray Booth with filter pads at 6,370 cfm.	30-Aug-92	Yes	NA
13042G	Burien 76	12660 1st Ave S	Seattle	98168	447110	Gasoline Stations with Convenience Stores	7247	Soil Vapor Extraction System including a Regenerative Blower with emissions controlled by a two Air Carbon Activated Drums to treat effluent vapor.	16-Feb-01	No	No
28109G	Burien Eagle Mart Shell	14605 1st Ave S	Burien	98168	447110	Gasoline Stations with Convenience Stores	762	Stage 2 ORVR-compatible CARB-approved system employing four (4) [model: VST-EVR-NB] EVR nozzles on two (2) high hang Gilbarco Encore dispensers with vapor balance controls. In addition to the nozzle, the hanging hardware consists of the curb hose [model:VDV-EVR or Maxxim Premier Plus], the breakaway [model: VSTA-EVR-SBK] and the whip hose [model: VSTA-EVR or Maxxim Premier Plus]. Equipment, maintenance and installation per CARB Executive Order G-70-52-AM.	2010	No	NA
21007	Cadman Inc Lehigh NW Cement	5225 E Marginal Wy S	Seattle	98134	327320	Ready-Mix Concrete Manufacturing	2813	1. Nikko SF3750 Concrete Mixer, NATCO CM500 Scotch Marine Boiler & Spokane Machinery Concrete Batch Equipment Controlled by Free Flow BV 500 and Columbus Bin DCS-14/250 Baghouses (4 Total). 2. Bulk Cement Terminal with 4 Silos, Barge Unloading, Truck Loading Controlled by Wheelabrator 10-18/24/48 Baghouses (3 total). 3. Aggregate Receiving & Distribution Equipment.	07-Aug-87	No	NA
11019	Caffe' D'Arte, Uno Espresso Inc	719 S Myrtle St	Seattle	98108	311920	Coffee and Tea Manufacturing	832	Diedrich Model IR 2.5 coffee roaster.		Yes	NA
18279	Caffe Luca Colombina Corp	885 Industry Dr	Tukwila	98188	311920	Coffee and Tea Manufacturing	6546	One 25 lbs/batch small air quench Diedrich Coffee Roaster at 48,000 Btu/hr and 290 acfm including an Afterburner at 366,000 Btu/hr and 580 acfm.	25-Feb-96	Yes	5

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
13119	Boeing Developmental Center	None	NA	No	No inspection in the last 3 years.	No		
28557	Boeing Electronics Center	Boeing shall check for visible emissions, pressure drop, liquid flow rate, and pH at least once each week the reactor is operated.	Results of each inspection shall be recorded and records maintained on site for at least two years.	Yes	2/22/2012	No		
16004	BP West Coast Products, Seattle Terminal	None	NA	Yes	9/22/2010	No	Applicant was Atlantic Richfield Co.	PAHs, mercury
12066	Bratch's Autobody & Repair	None	NA	No	No inspection in the last 3 years.	No		
19285G	Brown Bear Car Wash #1008	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	12/30/2010	No		
10363G	Brown Bear Car Wash #1040	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	12/17/2010	No	Installation/Applicant was Santa Properties & Development.	
18224	Bryant Motors Inc	Must develop and implement an operation and maintenance plan to assure continuous compliance and manometer to measure the pressure drop across the exhaust filters		No	No inspection in the last 3 years.	No	Zip code on NOC is 98055.	
28419	Buffalo Industries, Inc	None	NA	Yes	1/25/2010	No		
17854	Burhans Sharpe Co	None	NA	No	No inspection in the last 3 years.	No		
13042G	Burien 76	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
28109G	Burien Eagle Mart Shell	None	NA	Yes	2/10/2012	Failure to pay fees [2/10/2012]		
21007	Cadman Inc Lehigh NW Cement	None	NA	Yes	2/9/2010	No		
11019	Caffe' D'Arte, Uno Espresso Inc	None	NA	Yes	3/31/2011	No		
18279	Caffe Luca Colombina Corp	The afterburner shall be operated at no less than 1,200 degrees F prior to and all during the drop cycle.	The temperature gauge shall be available for readout by PSAPCA at any time	Yes	2/10/2010	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
29291	Caffe Migliore	420 S 96th, Ste 420-7	Seattle	98108	311920	Coffee and Tea Manufacturing	10030	One Diedrich IR-12 63,000 Btu/hr propane fired coffee roaster controlled by a Diedrich IR-12 DCO 400,000 Btu/hr catalytic oxidizer (290 acfm).	2009	Yes	4
29236	Caffe Umbria, Inc	8620 16th Ave S	Seattle	98108	311920	Coffee and Tea Manufacturing	9881	One 60 kg/batch coffee roaster model STAIMPIANTI "Combi 60" with dual natural gas afterburners, each rated at 955,000 Btu/hr and 1089 cfm.	2008	Yes	12.a
10385	Capital Industries Inc	5801 3rd Ave S	Seattle	98108	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	6075	Synthetic Minor Emission Cap.	1995	Yes	1 and 2
29238	Cascade Engine Center	18435 Olympic Ave S	Tukwila	98188	Not available	Not available	9884	One Bleeker Brothers spray booth model # PF-12-10-28, rated at 12,000 CFM used to decoratively paint off-road, diesel engines.	2008	Yes	NA
20417	Cascade Machinery & Electric Inc	4600 E Marginal Wy S	Seattle	98134	423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	1545	One Bayco Model 180 Burnout Oven.	30-Jan-74	Yes	NA
29436	CDSRVS	53 S Dawson	Seattle	98134	Not available	Not available	10355	One Colmet TCC-161634-PSB Dry Filter Spray Booth rated at 25,600 CFM used for spray painting of refuse containers (refurbishment).	2011	Yes	NA
10139	Ceradyne, Inc - VIOX	6701 6th Ave S	Seattle	98108-3438	339999	All Other Miscellaneous Manufacturing	926	Acid Cleaning tank	02-Jul-73	Yes	NA
11195	CertainTeed Gypsum Manufacturing Inc	5931 E Marginal Wy S	Seattle	98134-2414	327420	Gypsum Product Manufacturing	750			Yes	NA
10232G	Charlie's Jumbo Deli	14805 Interurban Ave S	Tukwila	98168	447110	Gasoline Stations with Convenience Stores	11354	Stage 1 & 2 vapor recovery using Two-Point System on two 10,000 gallon underground gasoline storage tanks and 4 Husky V34 Nozzles on a Wayne Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AA (Stage 2).	1995	No	No
13182	Chemithon Corp	5430 W Marginal Way SW	Seattle	98106-1598	325611	Soap and Other Detergent Manufacturing	343	Spray drying tower, Venturi Scrubber [description from letters: NOC application not available]	1970	No	NA
18147G	Chevron #90636	5940 E Marginal Wy S	Seattle	98134	447110	Gasoline Stations with Convenience Stores	605	Stage 1 CARB-approved OPW Enhanced Vapor Recovery System on three (3) existing underground gasoline storage tanks (1 x 10,000 gallons [unleaded]; 1 x 10,000 gallons [plus]; 1 x 10,000 gallons [premium]). Equipment, maintenance and installation as per CAR		No	No
18697G	Chevron #91557 Southcenter	220 Strander Blvd	Tukwila	98188	447110	Gasoline Stations with Convenience Stores	9173		04-Mar-81	No	No
13119G	Chevron #94411	19923 International Blvd	Seatac	98188	447110	Gasoline Stations with Convenience Stores	11056	Stage 1 & 2 vapor recovery using Coaxial System on three 15,000 gallon underground gasoline storage tanks, and 36 Husky 620000 Vacuum Assist Nozzles. (Cancels and supersedes NC No. 10627.) (2Pt & OPW11VAI-69 Nozzles installed - OK per DJK/LCV)	30-Apr-94	No	No
19261G	Chevron #99114	301 S Grady Wy	Renton	98055	447110	Gasoline Stations with Convenience Stores	9261		04-Mar-81	No	No
18241G	Chevron 4087	6600 Martin Luther King Jr Way S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	9016		31-Mar-81	No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
29291	Caffe Migliore	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	3/31/2011	No		
29236	Caffe Umbria, Inc	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the temperature of the control equipment.	A log of monthly coffee production shall be kept for the previous 12 month period.	Yes	2/23/2011	No	Odors or smoke complaints must be addressed as soon as possible	
10385	Capital Industries Inc	Less than 9.9 tons of a single HAP and less than 24 tons annually. Annual limits are 8.7 tons of ketone, 7.2 tons of xylene, and 5.2 tons of toluene. Monthly usage records of products containing HAPs will be kept onsite.	All records shall be made available to PSAPCA upon request. Annual emissions to be reported to PSAPCA if any of the limits are exceeded.	Yes	5/28/2010	No		PAHs, lead and chromium
29238	Cascade Engine Center	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for two years.	No	No inspection in the last 3 years.	No	Must keep MSDSs of coatings to prove that there are no OSHA Carcinogens and less than 1% of any other heavy metal	
20417	Cascade Machinery & Electric Inc	None	NA	Yes	12/10/2010	Failure to maintain equipment; excess temperature (3/30/2012)		
29436	CDSRVS	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No	Shall not spray coatings that contain cadmium, chromium or lead	
10139	Ceradyne, Inc - VIOX	None	NA	No	No inspection in the last 3 years.	No	Address in NOC is 6701 Maynard South and the owner was listed as Nuclear Pacific	Lead
11195	CertainTeed Gypsum Manufacturing Inc	None	NA	Yes	3/31/2011	No		Lead, mercury
10232G	Charlie's Jumbo Deli	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
13182	Chemithon Corp	None	NA	No	No inspection in the last 3 years.	No		
18147G	Chevron #90636	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
18697G	Chevron #91557 Southcenter	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
13119G	Chevron #94411	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
19261G	Chevron #99114	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	12/30/2010	No		
18241G	Chevron 4087	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	Failure to pay fees [9/12/2011 and 4/4/2012]		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
18433G	Chevron Sunset	150 SW Sunset Blvd	Renton	98055	447110	Gasoline Stations with Convenience Stores	9698		04-Aug-82	No	No
10246G	Chevron, Boeing Field	10805 E Marginal Way S	Tukwila	98168	447190	Other Gasoline Stations	11450	Stage 1 & 2 vapor recovery using Two Point System on two 15,000 gallon and one 10,000 gallon underground gasoline storage tanks, and 36 OPW11VAI Nozzles on a Dresser Wayne Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CAR	01-Aug-96	No	No
10289G	Chevron, Boulevard Park	805 S 112th St	Seattle	98168	447110	Gasoline Stations with Convenience Stores	11572	Stage 1 & 2 vapor recovery using Two Point System on two 10,000 gallon and one 15,000 gallon underground gasoline storage tanks, and 12 Husky Nozzles on a Wayne Vacuum Assist Style Dispenser; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AB (Stage 2).	09-May-97	No	No
21146G	Cigarette Depot	9001 Delridge Way SW	Seattle	98106	447110	Gasoline Stations with Convenience Stores	35	Stage 1 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on one 20,000 gallon underground gasoline storage tanks equipped with Pressure/Vacuum Valves; equipment and in		No	No
13257G	Clay Lacy Aviation	8285 Perimeter Rd S	Seattle	98108	447190	Other Gasoline Stations	11682	Stage 1 vapor recovery using Two-Point System with a CARB approved Pressure Vacuum Valve (on tank vent riser) on one 15,000 gallon underground AvGas storage tank; equipment and installation as per Executive Order No. G-70-97-A.	01-Jun-96	No	No
17397	Clean Scapes, Inc	7401 8th Ave S	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	4372	Prep Area Exhaust System (12' X 8' X 4') at 10,000 cfm connected to a Filter Bank.	19-Aug-92	No	NA
29262	Collision Care Center, Inc	5969 4th Ave. S	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9943	One Global Finishing Solutions spray booth, w/dry filters rated at 12,000 CFM used for automotive spray painting.	2009	Yes	NA
11910	Columbia Funeral Home	4567 Rainier Ave S	Seattle	98118	812210	Funeral homes combined with crematories	7798	One IEE Co. Model IE43-PPII natural gas-fired Cremator rated at 100 lbs/hour.	20-Jul-99	Yes	4
28944	ConocoPhillips Company	12805 1st Ave S	Burien	98168	541330	Engineering Services	10225	Soil & groundwater remediation using a Dual Phase Extraction & Air Stripper System with all air emissions from the Soil Vapor Wells and Air Stripper routed through a Catalytic Oxidizer or Two-stage Carbon Adsorber before exhausting to the atmosphere.	2010	Yes	4 and 5
10438	Container Care International Inc	1 S Idaho	Seattle	98134	238320	Painting and Wall Covering Contractors	6195	Spray Coating Operations located at the south end of the warehouse, under a canopy, and outside area for applying primers and paints to large shipping containers.	1995	Yes	NA
29380	Continental-Olympic-United Fuel Facility Environmental Committee	17801 International Blvd	SeaTac	98188	447190	Other Gasoline Stations	10206	Soil & groundwater remediation of Jet A aviation fuel using a Dual-Phase Extraction (DPE) system with all air emissions routed through a two-stage vapor activated carbon adsorption system, 250 acfm, before discharge.	2010	Yes	6
28064G	Costco Wholesale	4401 4th Ave So	Seattle	98134	447190	Other Gasoline Stations	311	Stage I & 2 vapor recovery employing CARE-approved Enhanced Vapor Recovery Stage I System on three (3) 30,000 gallon underground gasoline storage tanks; and sixteen (16) Healy 800 Nozzles with vapor valve on eight (8) High Hang Gilbarco Encore 300-Series Vacuum Assist Style Dispensers. Equipment maintained and installed as per CARB Executive Orders VR-101-D (Phil-Tite System Stage I) and G-70-191 (Healy/Franklin Stage 2).	2005	No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18433G	Chevron Sunset	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10246G	Chevron, Boeing Field	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/22/2011	No		
10289G	Chevron, Boulevard Park	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
21146G	Cigarette Depot	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
13257G	Clay Lacy Aviation	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
17397	Clean Scapes, Inc	None	NA	No	No inspection in the last 3 years.	No	Applicant was Phil's Finishing Touch.	
29262	Collision Care Center, Inc	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	4/20/2012	No	Shall not spray coatings that contain cadmium, chromium or lead	
11910	Columbia Funeral Home	There shall be no visible emissions from the cremation system	NA	Yes	12/14/2010	No		Mercury
28944	ConocoPhillips Company	Monitor the concentration of TPH in the vapor entering and leaving the oxidizer by collecting samples and performing laboratory analysis, the temperature of the vapor at the inlet and outlet of the catalytic bed, and the DE of the oxidizer.	Shall make all monitoring records available to personnel of the PSCAA on request. The records shall include the laboratory analysis of the monitored concentration of TPH (g), DE, flow rates, temperatures, and the calibration records of the meters Conoco used to measure the temperatures and flow rates.	Yes	7/10/2010	No		PAHs
10438	Container Care International Inc	None	NA	Yes	3/9/2011	No		
29380	Continental-Olympic-United Fuel Facility Environmental Committee	TPH at inlet and outlet to be determined through monthly samples.	Records to be kept for 2 years.	No	No inspection in the last 3 years.	No		
28064G	Costco Wholesale	None	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	Failure to conduct stack testing; low temperature on afterburner	Address and NOC # matches with the file (#311N) but the facility registration number does not (#21353).	

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10339G	Costco Wholesale #06	400 Costco Dr Ste 100	Tukwila	98188	447110	Gasoline Stations with Convenience Stores	9678	Stage 2 vapor recovery employing sixteen (16) [Catlow ICVN, Emco Wheaton A4505, Husky V34 6250, OPW 12VW or Richards Astrovac] Nozzles with vapor valves on eight (8) High Hang Gilbarco Encore 500 Vacuum Assist Style Dispensers connected to the Arid Permea		No	No
10316G	Cottage Grove Shell	5445 Delridge Wy SW	Seattle	98106	447110	Gasoline Stations with Convenience Stores	11634	Stage 1 & 2 vapor recovery using Two Point System on two 15,000 gallon underground gasoline storage tanks, and 8 OPW11VAI Nozzles on a Gilbarco Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-150-AD (Stage 2).	20-Nov-97	No	No
28789	Crown Cork & Seal Co Inc	18340 Segale Park Dr B	Tukwila	98188	332431	Metal Can Manufacturing	8804	Steel can end line (603).	2003	No	2-3
10872	Cunningham Manufacturing Co	318 S Webster St	Seattle	98108	333995	Fluid Power Cylinder and Actuator Manufacturing	5251	One Bleeker Bros BF-6-7 Paint Spray Booth at 3,750 cfm.	22-Dec-93	Yes	NA
18427	DC5 Apprenticeship & Training Trust	6770 E Marginal Wy S Bldg E	Seattle	98108	611513	Apprenticeship Training	7090	One Spray Systems T-1000 Dry Filter Spray Coating Booth rated at 16,000 cfm.	30-Oct-97	Yes	NA
13209G	Delridge Food Mart	5235 Delridge Wy	Seattle	98106	447110	Gasoline Stations with Convenience Stores	585	Stage 2 vapor recovery employing four (4) [Healy 900] Nozzles on two (2) High Hang Wayne Vista Vacuum Assist Style Dispensers. Equipment, maintenance and installation as per CARB Executive Order G-70-191-AA. (Stage II).		No	No
15149	Delta Airlines, Inc.	16745 Air Cargo Rd	Seatac	98158	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	7977	One Dry Filter System Spray Coating Room rated at 35,250 cfm and one Clemco ACDEM 2232 Abrasive Blast Booth with a Dust Collector rated at 250 cfm.	06-Sep-00	Yes	8
28097G	Delta Airlines, Inc.	18601 28th Ave S	SeaTac	98158	447190	Other Gasoline Stations	7978	Stage 1 vapor recovery using Two Point System on two 10,000 gallon above ground gasoline storage tanks equipped with a CARB approved Pressure Vacuum Valve; equipment and installation as per CARB Executive Order G-70-97-A (Stage 1) and G-70-162 (above grou	16-May-00	No	NA
28365	Delta Marine Industries Inc	1608 S 96th St	Seattle	98108-5198	336612	Boat Building	6012	Synthetic Minor Emission Cap.	1995	Yes	NA
18671G	Desimone's Chevron #210106	15060 Pacific Hwy S	Seattle	98188	447110	Gasoline Stations with Convenience Stores	11074	Stage 2 Vapor Recovery using 12 Catlow VM-1 Nozzles on an AMOCO V-1 Vacuum Assist Dispenser with Side Mount.		No	No
29076	Diamond Painting	1601 S 92nd Place, Bldg B	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9557	AFC Model TSDD6036 truck side/downdraft spray booth with dry filters and air make-up system.	2007	Yes	3-7
21109	Distant Lands dba Java Trading	801 Houser Way N	Renton	98057	Not available	Not available	9874	One 450 lb/batch ACO Thermal water quench roaster with a 2.5 MMBtu/hr Probat afterburner.	2008	Yes	4, 8, 10

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PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10339G	Costco Wholesale #06	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	7/20/2010	No	NOC not available; equipment description cut off in source file received from PSCAA.	
10316G	Cottage Grove Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	No	No inspection in the last 3 years.	No		
28789	Crown Cork & Seal Co Inc	No end seal compounds used at the facility shall contain >3.7 lb VOC/gal or >0.54 lb. HAP/gal of solids. No process cleaning solvents used at the facility shall contain HAP, except that up to 500 lb./yr. of HAP may be used for cleaning ink from the can lines.	Keep a MSDS for each product used and shall retained for a period of no less than 5 years and shall be available for review by Agency personnel.	Yes	7/2/2010	No		
10872	Cunningham Manufacturing Co	None	NA	No	No inspection in the last 3 years.	No		
18427	DC5 Apprenticeship & Training Trust	None	NA	Yes	6/18/2010	No	Installation address in NOC is for Painters Advanced Training Institute.	
13209G	Delridge Food Mart	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
15149	Delta Airlines, Inc.	There shall be no visible emissions from the abrasive blast booth	A record of the cleaning and inspection operations shall be maintained in accordance with the O&M Plan.	No	No inspection in the last 3 years.	No		
28097G	Delta Airlines, Inc.	None	NA	No	No inspection in the last 3 years.	No		
28365	Delta Marine Industries Inc	None	Maintain a monthly record of all products used at the facility that contribute to styrene and other HAP emissions. All records of HAP emissions shall be available to PSAPCA personnel upon request. Annually report to PSAPCA with its annual emission statement all periods that exceed the above limits.	Yes	5/19/2010	No	Limit the emissions of styrene or other HAPs to 9.9 tons each and total HAPs emissions to 24.9 tons during any 12 consecutive months	
18671G	Desimone's Chevron #210106	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
29076	Diamond Painting	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit. Use only HVLP spray equipment that achieves transfer efficiency greater than or equal to 65%. BMPs shall be used in the spray coating operations.	Record inspections, routine maintenance, and corrective actions required. Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
21109	Distant Lands dba Java Trading	Thermocouple shall be installed, the afterburners shall be operated at no less than 1,250 °F, no visible emissions.	Records related to permit conditions are to be kept for 2 years.	Yes	10/6/2011	Yes, Could not provide sufficient records [10/6/2011]		

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10549G	Dollar Rent A Car	15858 Pacific Hwy S	Tukwila	98188	447190	Other Gasoline Stations	11961	Stage 1 vapor recovery using Coaxial System on one 12,000 gallon underground gasoline storage tank equipped with CARB approved Pressure Vacuum Valve on the vent riser of the tank; equipment and installation as per CARB Executive Order G-70-97-A.	22-Oct-91	No	No
29314	Dream Dry Cleaners	12805 1st Ave	Burien	98168	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	10076	dry cleaning machine		Yes	NA
28959	Ecolights Northwest, LLC	1915 S Corgiat Dr	Seattle	98108	423930	Recyclable Material Merchant Wholesalers	9351	One Dytex Model 3600 fluorescent bulb processor equipped with a prefilter and HEPA filter and two carbon beds (8 ft3, 336 lbs total) rated at 200 cfm; One U-tube fluorescent bulb crusher vented to a separate room cleaning vacuum filtration system equipped with a prefilter and HEPA filter and four carbon beds (6.7 ft3, 280 lbs total); One HID bulb disassembly station equipped with an Omnitec Force II air cleaning system including a prefilter, HEPA filter and three carbon beds (1.5 ft3, 63 lbs total) rated at 200 cfm; AND Two Omnitec Force I mobile room air cleaning systems equipped with a prefilter and HEPA filter and two carbon beds (0.7 ft3, 28 lbs total) rated at 200 cfm.	2006	Yes	3-4
29259	Elliott Paint Co, Inc	11210 Des Moines Drive S.	Seattle	98168	325510	Paint and Coating Manufacturing	9937	One Global Finishing Systems spray booth, model IFP # 886.100 rated at 6,400 CFM for spray coating wood furniture and miscellaneous parts.	2009	Yes	3
28407	Emerald Recycling Inc	1500 Airport Wy S	Seattle	98134	562920	Materials Recovery Facilities	4294	One AAF Model AF-2000 Carbon Adsorber at 4,000 cfm to control a system approved under NC3738.	02-Mar-92	No	NA
18429	Encore Oils	4034 W Marginal Wy SW	Seattle	98106	311613	Rendering and Meat Byproduct Processing	7092	Rendering Recycling Facility with a SCP Packed Bed Scrubber rated at 25,000 scfm.	07-Dec-98	Yes	NA
16003	Equilon Enterprises, LLC dba Shell Oil Products US	2555 13th Ave SW	Seattle	98134	424710	Petroleum Bulk Stations and Terminals	3103	One John Zink AA1218-10-6 Vapor Recovery Unit.	01-May-89	No	NA
10298G	Eternity Parks, Inc.	7801 Detroit Ave SW	Seattle	98106	447190	Other Gasoline Stations	11605	Stage 1 & 2 vapor recovery using Two Point System on two 20,000 gallon (one split 8,000/12,000) underground gasoline storage tanks, and 6 OPW11VAI Nozzles on a Gilbarco Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-150-AD (Stage 2).	01-Oct-97	No	No
10789	Farwest Paint Mfg Co Inc	4522 S 133rd St	Tukwila	98168	325510	Paint and Coating Manufacturing	2978		28-Feb-88	Yes	NA
21256	Fatigue Technology, Inc	401 Andover Park E	Tukwila	98188	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	8869	Samsco Model 400 Wastewater Evaporator with integral mist eliminator.	2003	Yes	5
29404	FiberDyne LLC	17616 West Valley Highway	Tukwila	98188	Not available	Not available	10255	spray booth		Yes	3
17127	Flamespray Northwest	250 S Chicago St	Seattle	98108	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	6648	One Abrasive Blasting Operation and one Metal Spraying Operation controlled by a Filtrex Baghouse rated at 6,000 cfm.	31-Dec-96	Yes	7

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10549G	Dollar Rent A Car	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
29314	Dream Dry Cleaners	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
28959	Ecolights Northwest, LLC	Measure and record the mercury vapor concentration in the control equipment exhaust daily; exhaust concentration is limited to 0.02 mg/m3. Measure and record the mercury vapor concentration near the doors but within the processing room three time per day of operation ; exhaust concentration limited to 0.04 mg/m3.	Measure and record the mercury vapor concentration in the control equipment exhaust daily; exhaust concentration is limited to 0.02 mg/m3. Measure and record the mercury vapor concentration near the doors but within the processing room three time per day of operation; exhaust concentration limited to 0.04 mg/m3.	Yes	7/18/2010	No		Mercury
29259	Elliott Paint Co, Inc	Avg VHAP content of finishing materials must be 0.8 lb. VHAP /1 lb. Coating as applied.	Manufacturers information must be maintained onsite. Avg calculated using Equation 1 of 40 CFR 60.804	Yes	2/19/2010	Facility paid civil penalty; no compliance information since 9/2010 (2/19/2010)		
28407	Emerald Recycling Inc	None	NA	Yes	9/2/2010	Failure to produce O&M manual for scrubber; cracks Acid/Base scrubber (8/5/2011)		
18429	Encore Oils	None	NA	Yes	11/6/2012	Failure to follow Order of Approval conditions 4, 5 and 6 (9/27/12); failure to follow Order of Approval conditions 4 and 6 (11/6/12)	Installation address in NOC was for Pacific Rendering Co, 4020 W Marginal Way SW. Formerly Pacific Rendering.	
16003	Equilon Enterprises, LLC dba Shell Oil Products US	None	NA	Yes	4/8/2010	Failure to submit semiannual report 2011; Unable to locate NOV 3-006264 in file (7/12/2011)		PAHs
10298G	Eternity Parks, Inc.	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	No	No inspection in the last 3 years.	No	NOC address was Seaport Petroleum, 7800 Detroit Ave SW.	
10789	Farwest Paint Mfg Co Inc	None	NA	Yes	8/20/2010	No		Chromium
21256	Fatigue Technology, Inc	Thermostat setting of the evaporator shall not exceed 220 F°	NA	Yes	5/24/2010	No	Wastewater with a strong odor shall not be evaporated. If odor complaints are received use of the evaporator shall be discontinued	
29404	FiberDyne LLC	Shall not spray coatings that contain manganese, nickel, cadmium, chromium or lead .	Manufacturers information must be maintained onsite.	Yes	11/15/2011	Failure to pay fees [11/15/2011]		
17127	Flamespray Northwest	There shall be no visible emissions from the Filtrex baghouse	NA	Yes	8/4/2010	Repeated warnings and settlement (8/4/2010, 12/14/2010, 1/1/2010)		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10613	Fonte Coffee Roaster	5412 6th Ave S	Seattle	98108-2223	311920	Coffee and Tea Manufacturing	4795	One 220 lbs/hr Probat G25 Coffee Roaster with chaff cyclone controlled by an afterburner at 400 cfm. {Coffee Roaster replaced per MMcAfee insp of 6/25/2001 - See NOC 8576}	04-Jan-93	Yes	NA
13133G	FoodMart 1-284	12807 Des Moines Memorial Dr S	Seattle	98168	447110	Gasoline Stations with Convenience Stores	394	Stage 2 vapor recovery employing eight (8) Healy 400 Nozzles with vapor valve on two (2) High Hang Dresser Wayne Vista Vacuum Assist Style Dispensers. Equipment, maintenance and installation as per CARB Executive Order G-70-186 (Healy 400 ORVR).		No	No
29244	Former Exxon Station 76969	14807 1st Ave S	Burien	98168	447190	Other Gasoline Stations	9861	Soil & groundwater remediation using an air sparging enhanced soil vapor extraction system (SVE) and routing all air emissions through a catalytic oxidizer that has a 95% control efficiency before venting through a stack to the atmosphere. The soil vapor extraction blower will extract vapor from nine wells and air sparge compressor will introduce compressed air into six sparge wells.	2008	Yes	5 and 6
28083G	Fred Meyer #31	17801 108th Ave SE	Renton	98055	447110	Gasoline Stations with Convenience Stores	579	Stage 1 vapor recovery employing CARB-approved Phil-tite Enhanced Vapor Recovery System on two (2) existing underground gasoline storage tanks (1 x 20,000 gallons [unleaded], 1 x 8,000 gallons [premium]). Stage 2 vapor recovery employing ten (10) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo IIVF, 5005, 5007 or 5015] Nozzles on five (5) High Hang Wayne Ovation Vapor Balance Style Dispensers. Equipment, maintenance and installation as per CARB Executive Order VR-101-K (Stage 1), and per CARB Executive Order G-70-52-AM. (Stage II).	2008	No	NA
10345G	Friendly Fuels	14620 Pacific Hwy S	Tukwila	98168	447110	Gasoline Stations with Convenience Stores	11695	Stage 1 & 2 vapor recovery using Two Point System on one 20,000 gallon and one 10,000 gallon underground gasoline storage tanks, and 24 OPW11VAI Nozzles on a Dresser Wayne Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AC (Stage 2).	21-Apr-98	No	No
29336	G&K Services, Inc	1001 SW 34th Street	Renton	98057	532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	10119	One industrial washer (Washer No. 7), 900 lb/batch (clean/dry weight) and one natural gas heated dryer (Dryer No. 4), 800 lb/batch (clean/dry weight). AND Synthetic Minor to limit facility-wide emissions of VOC, total HAP, and any single HAP.	2010	Yes	3, 6, 9
13270G	Gary Merlino Construction Co	9125 10th Ave S	Seattle	98108	447190	Other Gasoline Stations	11958	Stage 1 & 2 vapor recovery using Two Point System on one 6,000 gallon above ground gasoline storage tank, and one OPW11VAI-(63, 68, 83 or 88) Nozzle with Vapor Valve and Efficiency Compliance Device (ECD) on a Gasboy Vacuum Assist Style Dispenser with Hig	16-Sep-99	No	No
17713	Gary Merlino Construction Co, Inc	510 Monster Rd SW	Renton	98055	Not available	Not available	475	Concrete batch plant (Saurco Model RF-1500, 7,500 CFM baghouse). Relocation to north end of Sea Tac runway.		Yes	NA
29408	General Biodiesel Seattle, LLC	6333 1st Ave S	Seattle	98108	311225; 324110	Fats and Oils Refining and Blending; 324110 Petroleum Refineries	10263	Biodiesel production equipment.	2011	Yes	3
10381G	Genessee Mini Mart	3611 Genessee	Seattle	98118	447110	Gasoline Stations with Convenience Stores	11760	Stage 1 & 2 vapor recovery using Two Point System on one 20,000 gallon (split 14,000/6,000) underground gasoline storage tank, and 2 Emco Wheaton A4500-(051, 052, 053 or 054) Nozzles with external solenoid vapor valves on a Gilbarco Vacuum Assist Style Dispenser; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and B-70-150-AD (Stage 2).	1998	No	No
21163	George Heiser Body Inc	11210 Tukwila Int'l Blvd	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	8679	3 Golden West Spray booths with Dry Filters and rated at 25,600 CFM each.	01-Oct-02	Yes	NA

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10613	Fonte Coffee Roaster	None	NA	Yes	8/9/2011	No		
13133G	FoodMart 1-284	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/22/2011	Failure to submit annual tests [9/22/2011]		
29244	Former Exxon Station 76969	Monthly temperature of vapor and removal efficiency of CATOX. The concentration of Total Petroleum Hydrocarbon and Benzene is monitored to identify whether or not the concentrations are over or under the limits set to determine if the CATOX is necessary.	Monthly records are to be kept and PSCAA is to be informed 30 days prior to the removal of the CATOX.	Yes	9/8/2011	No	Total petroleum hydrocarbons are to be monitored and if concentration are lower than 50 ppm for three consecutive days the CATOX control device can be removed. (Stack max flow rate is 325 scfm).	
28083G	Fred Meyer #31	None	NA	No	No inspection in the last 3 years.	No		
10345G	Friendly Fuels	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	Failure to submit annual tests; Update equipment [9/8/2011]		
29336	G&K Services, Inc	Process more than 200,000 pounds of shop towels during any 12 consecutive month period. Limit facility-wide emissions to: 9.9 tons of any HAP, 24.5 tons of all HAP, 99 tons of VOC.	Records related to permit conditions are to be kept for 5 years.	Yes	5/24/2012	No		
13270G	Gary Merlino Construction Co	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
17713	Gary Merlino Construction Co, Inc	None	NA	Yes	8/5/2010	Failure to pay fees; odor complaint (11/16/2011)	Source file NOC 475N description states "Rock crusher relocation", with an approval date of 05/25/07.	
29408	General Biodiesel Seattle, LLC	There are no emissions monitoring requirements for this site. However, boiler must have 98% recovery efficiency, to be verified via source test.	NA	Yes	4/5/2012	No	Maximum amount of biodiesel permitted is 10,000,000 gallons a year.	
10381G	Genessee Mini Mart	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	Failure to submit annual test		
21163	George Heiser Body Inc	None	Records shall be kept for 2 years	Yes	2/18/2011	No	Coatings shall not contain greater than 0.1% chromium, cadmium, lead, formaldehyde or benzene as stated on MSDS	

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18306G	Georgetown Shell	6200 Corson Ave S	Seattle	98108	447110	Gasoline Stations with Convenience Stores	454	Stage 2 vapor recovery employing ten (10) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo 11VF, 5005, 5007 or 5015] Nozzles with vapor valve on five (5) High Hang Gilbarco Encore 500-S Vapor Balance Style Dispensers. Equipment, ma		No	No
29458	Gerber Collision & Glass	365 Rainier Ave N	Renton	98055	811121	Automotive Body, Paint, and Interior Repair and Maintenance	10388	One BITA Dry Filter Spray Booth rated at 12,000 cfm and one Global Finishing Solutions Ultra Prep Dry Filter Prep Area rated at 12,000 CFM, used for automotive spray painting.	2011	Yes	NA
10913	Glacier Northwest Inc, E Marginal	5975 E Marginal Wy S	Seattle	98134	327320	Ready-Mix Concrete Manufacturing	2766		31-Dec-86	Yes	NA
11872	Glacier Northwest Inc, W Marginal	5900 W Marginal Wy SW	Seattle	98106	423320	Brick, Stone, and Related Construction Material Merchant Wholesalers	3518	One Dockside DS-G400E 400MTPH Ship-unloader with four transfer vessels for cement and a Cyclonaire Filter at 5505 cfm.	01-May-90	No	NA
10572G	Grady Way Shell & Deli	1120 SW Grady Way	Renton	98055	447110	Gasoline Stations with Convenience Stores	12006	Stage 1 & 2 vapor recovery using Two Point System on one 20,000 gallon and one 10,000 gallon underground gasoline storage tanks, and 8 OPW11VAI-(64, 69, 84 or 89) Nozzles with vapor valve and Efficiency Compliance Device (ECD) on a Wayne Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AC (Stage 2).	15-Jul-02	No	No
21133	Graphic Display	6545 5th Ave S	Seattle	98108	339950	Sign Manufacturing	8597	One Spray System Inc Model T-1000 Dry Filter System Spray Coating Booth rated at 12,600 cfm.	2001	Yes	9
10511	Graphic Packaging International Inc.	601 Monster Rd SW	Renton	98055-2966	323113	Commercial Screen Printing	498	One Planeta Varimat 7-color, 64", Sheet-fed Lithographic Printing Press rated at 134 sheets per minute.	2007	Yes	NA
10817	Graphic Systems Inc	4493 S 134th Pl	Tukwila	98168	323113	Commercial Screen Printing	5155	One Devilbiss DFL876-100 Spray Booth with 12 filter pads and exhaust stack and fan at 5,600 cfm.	1993	Yes	NA
10220G	Gray Line Of Seattle Maint Facility	4500 W Marginal Wy SW	Seattle	98106-1511	447190	Other Gasoline Stations	11501	Stage 1 & 2 vapor recovery using Two Point System on one 5,000 gallon underground gasoline storage tank, and 1 Emco-Wheaton Nozzle on a Vapor Balance Style Dispenser with Side Mount; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-52-AM (Stage 2).	1996	No	No
18718G	Guru, Inc	6056 Martin Luther King Jr Wy S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	524	Stage 2 vapor recovery employing eight (8) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo 11VF, 5005, 5007 or 5015] Nozzles on four (4) High Hang Gilbarco Encore Vapor Balance Style Dispensers. Equipment, maintenance and installa		No	No
10362G	H & H Choi Inc Rainier Valero	7301 Rainier Ave S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	11728	Stage 1 & 2 vapor recovery using Two Point System on one 15,000 gallon and one 10,000 gallon underground gasoline storage tanks, and 24 Emco Wheaton Nozzles on a Wayne Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AC (Stage 2).	01-Apr-98	No	No
13118G	Hertz	19707 Pacific Hwy S	Seattle	98188	447190	Other Gasoline Stations	354	Stage 1 & 2 vapor recovery employing CARB-approved Enhanced Vapor Recovery Stage 1 System on one (1) 40,000 gallon underground gasoline storage tank; and four (4) [Emco Wheaton A4005, A4007 or A4015, Husky V(5) or OPW 11VF-47] Nozzles with vapor valve on		No	No
21342	Highrise Cabinets Inc	2755 Airport Way S	Seattle	98134	337110	Wood Kitchen Cabinet and Countertop Manufacturing	258	One Murphy Rodgers Baghouse employing 48 bags with a cloth area of 256 square feet (10:1 Air to Cloth Ratio) and rated at 2,600 CFM.	31-Dec-96	Yes	5
24980	Honeywell SASC	4150 Lind Ave SW	Renton	98055	33441; 334412; 811219	Semiconductor and Other Electronic Component Manufacturing; Bare Printed Circuit Board Manufacturing; Other Electronic and Precision Equipment Repair and Maintenance	10198	Branson B950R Ultrasonic Vapor Degreaser, 26-gallon capacity, with freeboard refrigeration.		No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18306G	Georgetown Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
29458	Gerber Collision & Glass	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No	Shall not spray coatings that contain cadmium, chromium or lead	
10913	Glacier Northwest Inc, E Marginal	None	NA	No	No inspection in the last 3 years.	No		
11872	Glacier Northwest Inc, W Marginal	None	NA	Yes	2/19/2010	No NOC approval [2/19/2010 and 6/27/2012]	Installation address in NOC is Ash Grove Cement, 5900 W Marginal Way SW	
10572G	Grady Way Shell & Deli	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
21133	Graphic Display	Chromate, record the amount of chromate containing coatings used daily.	Records of inspections shall be maintained for 2 years	No	No inspection in the last 3 years.	No		
10511	Graphic Packaging International Inc.	None	All records shall be maintained for two years.	No	No inspection in the last 3 years.	No	NOC was for Bluegrass Container Company, same address.	
10817	Graphic Systems Inc	None	NA	No	No inspection in the last 3 years.	No	Address in NOC file for Graphic Systems Inc. is in Tacoma but according to PSCAA the equipment is at the Tukwila address.	
10220G	Gray Line Of Seattle Maint Facility	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	No	No inspection in the last 3 years.	No		
18718G	Guru, Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10362G	H & H Choi Inc Rainier Valero	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	No	No inspection in the last 3 years.	No		
13118G	Hertz	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
21342	Highrise Cabinets Inc	Particulate emissions - Annual inspections of particulate deposits on exhaust ports.	Records related to permit conditions are to be kept for two years.	Yes	11/21/2011	No		
24980	Honeywell SASC	None	NA	No	No inspection in the last 3 years.	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
28911	Husky Trucks LLC	11222 East Marginal Way S	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9230	One Tri-Matic Equipment Co Model TMFI-30415 Cross Draft Spray Booth equipped with Paint Arrestor (Dry Filters) and rated at 26,000 CFM.	2005	Yes	4
21300	Icon Materials Inc #2604	1115 S 96th St	Seattle	98108	324121	Asphalt Paving Mixture and Block Manufacturing	8159	Continuous/Batch Asphalt Plant consisting of: one new 300 ton/hr Gencor Rotary Drum Continuous Mixer Model 8920 Mini Drum (6'x20') with a Recycle Asphalt Package venting to a new Gentec Model 640 Baghouse rated at 70,000 cfm @ 160F; two new vertical 25,000-gallon (11'x35') Gencor Hot Asphalt Oil Tanks (300F), one new 150-ton and one new 120-ton Gencor Asphalt Storage Silos vented to the Rotary Drum; an existing 4 ton Stansteel Model RM 80 120 ton/hr BatchPlant (129 MMBtu/hr Natural Gas Model Gencor FP 129 Burner) and an existing horizontal MC-250 Tank.	01-Jul-01	Yes	8, 10, and 11
29333	Independent Metals	7814 8th Ave South	Seattle	98108	3329	Other Fabricated Metal Product Manufacturing	10116	Scrap metal processing with a Magnatech Engineering Model 60x60 Hammermill rated at 15 ton/hr controlled by a Magnatech Engineering Model 156x120 pulse-jet baghouse rated at 15000 cfm.	2011	Yes	3
18101	Industrial Automation Inc	1421 S 93rd St	Seattle	98108-5107	333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	5838	One Spray Booth (approx. 11,000 cfm) used for spray coating maintenance equipment, miscellaneous tooling, and support equipment generally supplied to aerospace industry.	30-Dec-93	Yes	NA
11683	Industrial Container Services - WA, LLC	7152 1st Ave S	Seattle	98108	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1954	Pangborn Shotblaster (for lids and rings) controlled by 4000 cfm Whellabrator Baghouse.	03-Jul-79	Yes	NA
29241	Interior Environments Custom Solutions Inc	3450 4th Ave S	Seattle	98134	Not available	Not available	9887	Four Bleeker Brothers model # F-16-8 spray booths rated at 12,800 CFM each, used for spray coating of cabinets and millwork. One DMC sander, model # Unisand 2000, rated 4,500 CFM, and one Butrerring sander, model # Optimat Sko 213, rated at 3,500 CFM; both used to sand wood products. One Pneumatic model# 13.5-448-12 reverse pulse jet baghouse rated at 40,320 CFM; used to control fine particulates of wood generated from sanding operations.	2009	Yes	3
11124	J A Jack & Sons Inc	5427 Ohio Ave S	Seattle	98134	212312	Crushed and Broken Limestone Mining and Quarrying	174			Yes	NA
18765G	Jackson Food Stores #631	13138 Interurban Ave S	Tukwila	98168	447110	Gasoline Stations with Convenience Stores	404	Stage 2 vapor recovery employing eight (8) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo 11VF, 5005, 5007 or 5015] Nozzles with vapor valve on four (4) High Hang Gilbarco Encore 500 Vapor Balance Style Dispensers. Equipment, mai		No	No
10125G	Jackson Food Stores #632	17941 108th Ave SE	Renton	98055	447110	Gasoline Stations with Convenience Stores	11361	Stage 2 vapor recovery using 24 OPW 11VAI Nozzles on a Vapor Vac Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Order G-70-150-AB and CARB Approval Letter #94-8. (Replaces Vapor Balance.)	26-Jan-96	No	No
18611	Jeld-Wen Inc dba Jeld-Wen	1061 Industry Dr	Tukwila	98188	325510	Paint and Coating Manufacturing	7546	Paint Mixing Operation with a Torit Model No. 84 Baghouse rated at 1,231 cfm. (Baghouse replaced with a Torit Downflo SFD-4 Internally Vented Baghouse per ltr dtd 5/27/99)	1998	Yes	NA
18372G	Jim's Market & Gas Exxon	7500 Martin Luther King Jr Way S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	9690			No	No
24957	Jonathan Paul's Inc	60 S Lucille	Seattle	98134	337122	Nonupholstered Wood Household Furniture Manufacturing	8957	One Spray Systems Model I-887 Spray Booth equipped with Paint Arrestors (Dry Filters) and rated at 6,400 cfm.	09-May-04	No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
28911	Husky Trucks LLC	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit	Records related to permit conditions are to be kept for 2 years.	Yes	2/18/2011	No		
21300	Icon Materials Inc #2604	Visible emissions/ Opacity measured by WDOE Method 9	Measure weakly, record corrective actions, and save for two years	Yes	6/18/2010	No	Source test used to determine that outlet emissions are less than 0.02 gr/dscf	
29333	Independent Metals	Visible emissions to be monitored with visual inspections. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	11/30/2010	Failure to obtain NOC, exceeded source test limits (PCB, CR VI), debris on streets (6/2/2011)	Each load of scrap shall be inspected for Hazardous materials containing PCB, lead, and CFC prior to processing	PCBs, chromium, cadmium, and lead
18101	Industrial Automation Inc	None	NA	No	No inspection in the last 3 years.	No		
11683	Industrial Container Services - WA, LLC	None	NA	Yes	3/22/2010	No	Only clean, prepared scrap shall be used to charge the induction furnace	Dioxins/furans, phthalates
29241	Interior Environments Custom Solutions Inc	The average VHAP content of paint applied is monitored using information from the MSDSs of the applied coatings. The permit also requires monitoring of the functionality and physical state of the control equipment.	Manufacturers information must be maintained onsite. VHAP Avg calculated using Equation 1 of 40 CFR 60.804. All records are to be kept for two years.	Yes	7/9/2010	No	The permit states that there shall be no visible emissions from permitted equipment.	
11124	J A Jack & Sons Inc	None	NA	Yes	3/31/2011	No		
18765G	Jackson Food Stores #631	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	5/27/2010	No		
10125G	Jackson Food Stores #632	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared	Yes	2/16/2010	No		
18611	Jeld-Wen Inc dba Jeld-Wen	None	NA	No	No inspection in the last 3 years.	No	NAICS from Ecology's FSDB	
18372G	Jim's Market & Gas Exxon	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
24957	Jonathan Paul's Inc	None	NA	No	No inspection in the last 3 years.	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
18300	Jonny's Auto Body	12471 Tukwila International Blvd	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	6626	One Eagle Model No. 24-14-9S Cross Draft Spray Booth rated at 10,000 cfm.	1996	Yes	NA
13460	Jorgensen Forge Corp	8531 E Marginal Wy S	Tukwila	98108	332111	Iron and Steel Forging	1800	A New 40 Ton AOD Vessel and New 542,000 cfm Baghouse System Including Hoods	01-Mar-79	No	NA
29273	Kansai Motorsport	3810 Airport Way S	Seattle	98108	811121	Automotive Body, Paint, and Interior Repair and Maintenance	10001	One Global Finishing Solutions spray booth, w/dry filters rated at 12,000 CFM used for automotive spray painting.	2009	Yes	NA
24984	Kenworth R & D Center	485 Houser Way N	Renton	98057	541380	Testing Laboratories	9006	One Global Finishing Systems Spray Booth, 12 feet wide x 10 feet high x 6 feet deep, equipped with "Paint Pockets" dry filtration system and rated at 15,000 CFM.	2004	Yes	3, 4, 5, 8
16002	Kinder Morgan Liquids Terminal, LLC	2720 13th Ave SW	Seattle	98134	493110	General Warehousing and Storage	1885	A Four Million BTU Per Hour Distillate Oil Fired Industrial Thermal Liquid Heater.	01-Aug-79	No	NA
28402	King Co DOT Metro Transit Div	11911/12100/12200 E Marginal Wy S	Seattle	98168	488490	Other Support Activities for Road Transportation	65	One Bleeker Brothers Model TDD-26 Spray Booth with Dry Filters and rated at 30,000 CFM (replaces existing booth NOC No. 6207).	2002	No	NA
28502	King Co DOT/Metro Transit, Airport Way	1555 Airport Wy S	Seattle	98134	488490	Other Support Activities for Road Transportation	2588	Two Bus Interior Vacuum Cleaner Systems Model 2-48E-8, each with two Standard Series E Cyclones Model 48E, at 10,000 cfm per cyclone.	31-Oct-84	No	NA
21407	King Co International Airport	7277 Perimeter Rd S	Seattle	98108	481112	Scheduled Freight Air Transportation	2693		20-Feb-86	No	NA
28503	King Co. DNRP Wastewater Treatment	1200 Monster Rd SW	Renton	98057	221320	Sewage Treatment Facilities	10100	Three (3) Varec-Biogas, 244E series Digester Gas Flares rated for up to 600 cfm each.	2010	Yes	3, 4, 5, 6
13132G	King County Metro Transit Power Dist Headquarters	2255 4th Ave S	Seattle	98134	447190	Other Gasoline Stations	319	Stage 1 & 2 vapor recovery employing CARB-approved Enhanced Vapor Recovery Stage 1 System on one (1) 3,000 gallon underground gasoline storage tanks; and one (1) [Emco Wheaton A405, A4007 or A4015, Husky V(5) or OPW 11VF-47] Nozzle with vapor valve on one		No	No
17460	Kirmac Collision Services of Renton	4000 E Valley Rd	Renton	98055	811121	Automotive Body, Paint, and Interior Repair and Maintenance	4163	Modify existing exhaust stack by adding 6' above the roofline.	14-Nov-91	No	NA
10829	L&R Services	4712 S 134th Pl	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	5191	One Air Filtration Co. Custom Aire Truck Paint Spray Booth at 14,000 cfm with exhaust system.	11-Jan-94	Yes	NA
14046	Lafarge North America Inc	5400 W Marginal Way SW	Seattle	98106-1599	327320	Ready-Mix Concrete Manufacturing	1163	Precipitator dust handling system controlled by a Mikropul baghouse (4200 cfm).	25-Sep-74	No	NA
25133G	Lander Street Shell	2461 4th Ave S	Seattle	98134	447110	Gasoline Stations with Convenience Stores	405	Stage 2 vapor recovery employing eight (8) [Emco Wheaton A4005, A4007 or A4015, Husky V(5), OPW 11VF-47, or EZ-Flo 11VF, 5005, 5007 or 5015] Nozzles with vapor valve on four (4) High Hang Gilbarco Encore 500 Vapor Balance Style Dispensers. Equipment, mai		No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18300	Jonny's Auto Body	None	NA	Yes	4/13/2012	Failure to pay fees; need to comply in the future with part HHHHHH of 40 CFR Part 63		
13460	Jorgensen Forge Corp	None	NA	Yes	2/16/2010	NOVs and Inspection info; emission info; exceeded emission limits [1/31/2012]		Chromium, manganese, and mercury
29273	Kansai Motorsport	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	10/19/2011	Failure to pay fees; O&M logs [6/1/09 through 2/9/12]	Shall not spray coatings that contain cadmium, chromium or lead	
24984	Kenworth R & D Center	Shall maintain a manometer to measure the pressure drop across exhaust filters for the spray coating booth. Spray booth shall be inspected at least once per day.	Record values observed during all inspections required in 4a and 4b, as well as the date of the inspection and the name of the inspector, and a description of any problems observed and corrective actions taken. Records related to permit conditions are to be kept for 2 years.	Yes	2/14/2012	Yes, failure to pay dues [2/14/2012]		
16002	Kinder Morgan Liquids Terminal, LLC	None	NA	Yes	4/8/2010	Failure to submit semiannual report 2011; Unable to locate NOV 3-006264 in file (7/12/2011)		
28402	King Co DOT Metro Transit Div	None	NA	Yes	3/4/2010	No		
28502	King Co DOT/Metro Transit, Airport Way	None	NA	Yes	9/8/2011	No	NOC address was 1333 Airport Way S.	
21407	King Co International Airport	None	NA	No	No inspection in the last 3 years.	No		
28503	King Co. DNRP Wastewater Treatment	Develop an Operation and Maintenance Plan, emission of NOX shall not exceed 0.06 lbs./million BTU of heat input and emissions of CO shall not exceed 0.3 lbs./million BTU heat input. Each waste gas burner shall have the waste gas flow rate to the burner monitored and recorded. Shall test emissions from all thermal oxidizers every fifth year after initial test.	The monitoring records shall be retained for two years and be available to PSCAA.	Yes	7/28/2011	Yes, Not operating at Temperature in condition #3 [4/1/2010 to 6/2010]		
13132G	King County Metro Transit Power Dist Headquarters	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	7/20/2010	No		
17460	Kirmac Collision Services of Renton	None	NA	No	No inspection in the last 3 years.	No		
10829	L&R Services	None	NA	No	No inspection in the last 3 years.	No		
14046	Lafarge North America Inc	None	NA	Yes	2/16/2010	NOVs and Inspection info; emission info; exceeded emission limits [1/31/2012]		
25133G	Lander Street Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
22474	Lee's One Hour Martinizing	14450 34th Ave S	Tukwila	98168	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	5727	One 35 lbs/batch Realstar Dry Cleaning Machine.	12-Nov-94	No	NA
16135	Lehigh Northwest Cement Co	3423 Klickitat Ave SW	Seattle	98134	327310	Cement Manufacturing	1858	A 1,300 CFM Dalumatic Baghouse Dust Control System on a Cement Truck Loadout Facility.	03-Nov-78	No	NA
15019	Longview Fibre Paper and Packaging Inc	5901 E Marginal Wy S	Seattle	98134	322211	Corrugated and Solid Fiber Box Manufacturing	824	Shredder - Pneumatic Handling system with cyclone.	31-Oct-72	No	NA
24961	Lumicor	1400 Monster Rd SW	Renton	98057	541490	Other Specialized Design Services	8967	25.2 MMBtu/hr Boiler to provide steam for manufacture of translucent laminated plastic paneling.	2004	Yes	4, 5, 6
17445	Maaco Auto Paint, Run & Gun Inc	13646 1st Ave S	Burien	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	6700	One Body Shop Prep Area rated at 10,000 cfm.	24-Oct-96	Yes	NA
29137	MAACO Collision Repair and Auto Painting	355 Treck Drive	Tukwila	98188	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9707	Garmat Tier 1 spray booth rated at 10,000 CFM with dry filters, for spray coating automobiles.	2008	Yes	3-5
11378	Machinists Inc	751 S Michigan St	Seattle	98108	332710	Machine Shops	8259	One Dry Filter Metal Spraying Booth rated at 5,000 cfm with a Dust Hog SBD 16-4 Cartridge Style Dust Collector rated at 4,800 cfm, and one Abrasive Blast Cabinet with a Cyclone Separator/Baghouse rated at 2,000 cfm.	2001	Yes	3 and 4
29145	Machinists Inc	8201 7th Ave S	Seattle	98108	Not available	Not available	9720	One Paasche Spray Booth, Model # FAB, rated at 7,430 CFM controlled by 3-stage MACT 319 certified filtration system used to coat machinery and tools for application in the aerospace industry.	2008	Yes	4, 7-9
11575	Magnetic & Penetrant Services/MAPSCO	8135 1st Ave S	Seattle	98108	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	4060	One 7x7x7 Rainier Oven at 1340 cfm (170F), one 12x8x6.5 Rainier Oven at 5680 cfm (170F), two Binks PFA6-7-T-LH Spray Booths at 5600 cfm each, one Binks 10x5x8 Spray Booth at 8400 cfm, and one 66x30x56 Baron- Blakeslee Vapor Degreaser with chiller.	25-Nov-92	No	NA
18479G	Marginal Way ARCO	7200 E Marginal Wy S	Seattle	98108	447110	Gasoline Stations with Convenience Stores	52	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on two 20,000 gallon (one split 10,000/10,000 gallon) underground gasoline storage tanks, and 14 [Emco Wh		No	No
29411	Materials Processing	7755 E Marginal Way S	Tukwila	98108	Not available	Not available	10271	Install a single Universal 130 x 150 Horizontal Impact Crusher (rated up to 400 TPH) and associated equipment.	2011	Yes	7 and 8
12177	Meltec Inc Div of Young Corp	3444 13th Ave SW	Seattle	98134	331513	Steel Foundries (except Investment)	5313	One Steelman 8710 GSP Core Baking Oven at 500 cfm (400F).	1994	No	NA
18074	Messenger Signs Inc	37 S Hudson	Seattle	98134	321918	Other Millwork (including Flooring)	5762	One Spray Booth at 8,500 and one Mikro Pul 49510 Baghouse at 6,924 cfm.	30-Dec-94	Yes	NA
29319	Metro Auto Rebuild	2218 Airport Way S	Seattle	98134	811121	Automotive Body, Paint, and Interior Repair and Maintenance	10085	One Blowtherm (GFS) Ultra 2000 spray booth, model # 2650 w/dry filters rated at 12,000 CFM with prep area used for automotive spray painting.	2009	Yes	NA
24988	Middle Fork Roasters	420 S 96th St, #6	Seattle	98108-4925	311920	Coffee and Tea Manufacturing	9779	One Primo PRI-50 air quench coffee roaster with a capacity of 70 lb/batch green beans and heat input of 0.144 MMBtu/hr, and CSSSI DSAB-900-MV thermal oxidizer, with a maximum heat input of 1.8 MMBtu/hr, a flow rate of 1500 cfm, and a maximum chamber tempe		No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
22474	Lee's One Hour Martinizing	None	NA	No	No inspection in the last 3 years.	No		
16135	Lehigh Northwest Cement Co	None	NA	Yes	1/4/2011	No		
15019	Longview Fibre Paper and Packaging Inc	None	NA	No	No inspection in the last 3 years.	No		
24961	Lumicor	43.673 million cubic feet of Natural Gas for any 12 consecutive months, NOX in excess of 20 ppm, CO in excess of 50 ppm		Yes	6/1/2012	No	Zip code on NOC is 98055.	
17445	Maaco Auto Paint, Run & Gun Inc	None	NA	Yes	11/15/2011	Failure to pay fees; complaint regarding paint fumes (11/15/2011)		
29137	MAACO Collision Repair and Auto Painting	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit. Use only HVLP or Devilbiss high efficiency gravity feed guns (GFG-670), or other spray equipment approved by SCAQMD. BMPs shall be used in the spray coating operations.	Record the differential pressure across the filters in the spray coating booth at least once per day of operation. Records related to permit conditions are to be kept for 2 years.	Yes	11/16/2011	Failure to pay fees; O&M logs (4/10/2010 through 4/13/12)		
11378	Machinists Inc	There shall be no visible emissions and the emissions from baghouse shall not exceed 0.01 gr/dscf.	Records related to permit conditions are to be kept for two years.	Yes	2/24/2010	No		
29145	Machinists Inc	Shall limit the use of coatings containing chromium compounds to less than 40 gallons during any consecutive 12 month period. Use only HVLP spray equipment that achieves transfer efficiency greater than or equal to 65%.	Record the number of gallons of coating used each month that contain chromium compounds. Record inspections, routine maintenance, and corrective actions required. Records related to permit conditions are to be kept for 2 years.	Yes	6/28/2012	No		Chromium
11575	Magnetic & Penetrant Services/MAPSCO	None	NA	Yes	5/26/2010	No	MEK approx. 4 tpy and Nitric Acid approx. 1 tpy	
18479G	Marginal Way ARCO	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/7/2010	No		
29411	Materials Processing	Visual emissions - source tests after facility opens and when the facility is at maximum capacity.	Records to be kept for 2 years.	Yes	4/20/2011	No		
12177	Meltec Inc Div of Young Corp	None	NA	Yes	1/28/2011	No		
18074	Messenger Signs Inc	None	NA	No	No inspection in the last 3 years.	No	Installation on NOC was J.H. Carr & Sons.	
29319	Metro Auto Rebuild	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	12/22/2010	No	Shall not spray coatings that contain cadmium, chromium or lead	
24988	Middle Fork Roasters	None	NA	No	No inspection in the last 3 years.	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
18757G	MLK Shell	12911 Martin Luther King Jr Wy S	Seattle	98178	447110	Gasoline Stations with Convenience Stores	837	Replacement of four (4) 6-pack dispensers with four (4) Gilbarco Encore unihose dispensers employing eight (8) EMCO Wheaton A4005 EVR or VST-EVR-NB nozzles. Equipment, maintenance and installation per CARB Executive Order G-70-52-AM (vapor balance stage)		No	No
29213	Morel Industries	637 S Lucile St	Seattle	98108	331525	Copper Foundries (except Die Casting)	9833	Aluminum, brass, bronze, and gray iron foundry with one Thermtronix GS3000 aluminum reverberatory furnace rated at 3000 lb, one Inductotherm Power-Trak 175 induction furnace with two 250 lb crucibles, one Pillar AB5105-4016 induction furnace with a 1000 lb box (for bronze) and two 250 lb crucibles for Fe, Al, and brass/bronze. Green sand process controlled by a Scientific Model MP-10 baghouse rated at 5100 cfm. No bake mold process controlled by a Torit 25PJD8 baghouse rated at 1,500 cfm.	2008	No	3, 6, and 8
28948	N & B Auto	6907 Rainier Ave S.	Seattle	98118	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9315	One Col-Met Model ESD 26SB spray booth with dry filters, vertical stack and rated at 12,600 CFM.	2005	Yes	4
29232	National Products	1025 S Elmgrove St	Seattle	98108	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	9873	Burn-off oven.	2008	Yes	7
24996	New Finishes Inc	4235 W Marginal Way SW	Seattle	98106	337124	Metal Household Furniture Manufacturing	9032	One Spray System Model I-14-107 Spray Booth with Paint Arrestors (Dry Filters) and rated at 14,000 CFM.	01-May-04	No	NA
29418	New Image Creative	1210 Andover Park E	Tukwila	98188	Not available	Not available	10287	One custom spray booth, w/dry filters rated at 30,800 CFM used for spray painting signs.	2011	Yes	NA
18428	Non Ferrous Metals	230 S Chicago St	Seattle	98108-4366	331492	Alloying purchased nonferrous metals (except aluminum, copper)	7091	Non Ferrous Metals Recycling Facility including an ACS PF-15-A-800 Lead Alloy Sweat Furnace rated at 5 tons/day, 1.2 MMBtu/hr and 2,800 cfm; one ACS PF-15-A-800 Smelting Pot at 5 tons/day, 0.8 MMBtu/hr and 800 cfm; two ACS PF-43DEEP-1600 Pots rated at 12.5 tons/day, 1.6 .MMBtu/hr and 1,100 cfm; two Thermtronix GS-500 Babbitt Pots rated at 1,700 lbs/hr, 0.75 .MMBtu/hr and 600 cfm; three Thermtronix RS-1200-100 Zinc Pots rated at 1,000 lbs/hr, 1.0 MMBtu/hr and 800 cfm; all controlled by an Airotech Inc Model634 Cartridge Dust Collector rated at 10,600 acfm and 265 degrees F.	26-Aug-98	Yes	6 and 7
21111	North Pacific Industrial Coatings LLC	2900 Lind Ave SW #B	Renton	98057-4086	238320	Painting and Wall Covering Contractors	10162	One Spray Systems spray booth, model # I-201010, rated at 20,000 CFM w/ dry filters, for spray coating miscellaneous metal products.	2010	Yes	3, 4, 8, 11
12334	North Star Casteel Products Inc	820 S Bradford St	Seattle	98108	332322	Sheet Metal Work Manufacturing	1343	Inductotherm VIP Mark II - 1,000 lb Induction Furnaces; Cycloblast - Abrasive Blast Cabinet; Rainier Corebaking Oven	30-Nov-74	No	NA
11659	Northwest Castings	3411 1st Ave S	Seattle	98134	Not available	Not available	2729	One 350 KW VIP Induction Therm Electric Induction Furnace.	28-Feb-86	Yes	NA
29405	Northwest Seafood Processors	206 SW Michigan St	Seattle	98106	311712	Fresh and frozen seafood processing	10260	One GF-2419 Fish Fryer, rated at 4,000 pounds per hour, with a 2.33 MMBtu/hr gas burner, controlled by a Smog-Hog Double-Pass Electrostatic Precipitator, 2,000 cfm, with potassium permanganate filters.	2011	Yes	5 and 9
18140	NW Building Tech Inc	215 S Austin	Seattle	98108	321999	All Other Miscellaneous Wood Product Manufacturing	5959	One Goldenwest 30 PSB Spray Booth rated at 13,500 cfm.	01-Oct-95	No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18757G	MLK Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	5/27/2010	Failure to submit annual tests and update equipment [9/15/2011]		
29213	Morel Industries	Subject to 40 CFR Part 60, Subparts ZZZZZ and A. No visible emissions or fallout from dust collectors.	Record inspections, routine maintenance, and corrective actions required. Records related to permit conditions are to be kept for 2 years.	Yes	6/6/2011	Summit summary of odor study; keep weekly O&M logs current; baghouse issue during inspection in [6/6/2011]	Aluminum, brass, bronze, and gray iron	
28948	N & B Auto	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
29232	National Products	There shall be no visible emissions from the burn off oven. If the oven is operated at night, the temperature must be constantly recorded.	This permit does not list any record keeping procedures.	Yes	2/25/2010	NOVs for odor and Visible Emissions complaints (9/1/10 through 2/2011 and 9/2011 through 11/2011)	Address in NOC worksheet is 1205 S Orr St.	
24996	New Finishes Inc	None	NA	No	No inspection in the last 3 years.	No		
29418	New Image Creative	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
18428	Non Ferrous Metals	There shall be no visible emissions and PM10 emissions shall not exceed 0.01 gr/dscf.	PM10 emissions shall be determined by a source test	Yes	2/26/2010	No		Lead
21111	North Pacific Industrial Coatings LLC	Achieve a weighted average for all finishing materials of no more than 1.9 pounds of organic hazardous air pollutant (OHAP), per gallon of coating solids as applied. Shall not use any thinner, additive, or cleaning material that contains organic HAP in excess of 0.1% by weight for OSHA-defined carcinogens or 1.0% percent by weight for other HAP.	Record the results of each inspection in a written log and kept for at least two years.	Yes	4/25/2011	No	Zip code on NOC is 98055-4086.	
12334	North Star Casteel Products Inc	None	NA	No	No inspection in the last 3 years.	No	Address in NOC is 3901 9th Ave So.	Chromium
11659	Northwest Castings	None	NA	Yes	3/22/2010	No	Only clean, prepared scrap shall be used to charge the induction furnace	
29405	Northwest Seafood Processors	Opacity not to exceed 5% for more than 3 minutes, filters to be inspected weekly	Records to be kept for 2 years.	Yes	11/16/2010	Failure to submit NOC, blue and dark white smoke and odor detected [11/16/2010]		
18140	NW Building Tech Inc	None	NA	Yes	6/10/2010	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
11731	O B Williams Co	1939 1st Ave S	Seattle	98134-1405	321918	Other Millwork (including Flooring)	2889	One H&R Mechanical Cyclone, 48" body diam by 30" body height, at 3000 cfm with Peerless Mod 14 Storage Bin.	30-Sep-86	Yes	NA
10563G	Oasis 76	11249 1st Ave S	Seattle	98168	447110	Gasoline Stations with Convenience Stores	11978	Stage 1 & 2 vapor recovery using Two Point System on one 12,000 gallon and one 8,000 gallon underground gasoline storage tanks, and 8 OPW11VAI-(64, 69, 84 or 89) Nozzles with vapor valve and Efficiency Compliance Device (ECD) on a Wayne Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AC (Stage 2).	1999	No	No
11747	Olympic Foundry Inc	5200 Airport Wy S	Seattle	98108	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	7531	One Eagle EIB-20-10-8 Dry Filter System Spray Coating Booth rated at 25,900 cfm.	30-Sep-98	Yes	NA
17825	Olympic Medical, A Division of Natus	5900 1st Ave S	Seattle	98108	339112	Surgical and Medical Instrument Manufacturing	4360	One Bleeker Bros. Model A-PL-28 Standard Auto Pant-Leg Style Filter Paint Spray Booth at 12,500 cfm (65F).	27-Apr-92	No	NA
12042	Olympic Pipe Line Co BP Pipelines Co	2319 Lind Ave SW	Renton	98057	486910	Pipeline Transportation of Refined Petroleum Products	9877	Renewal of existing Soil & groundwater remediation project (Order of Approval 9070) to achieve satisfactory clean-up levels in groundwater.	2008	Yes	4 and 6
18166	Olympic Pipe Line Co, BP Pipelines Co	2444-52 13th Ave SW	Seattle	98134	48691	Pipeline Transportation of Refined Petroleum Products	6108	One 31,095 gallon Floating Roof Storage Tank.	19-Sep-95	No	NA
18637G	Pacific 76	14415 Pacific Hwy S	Tukwila	98168	447110	Gasoline Stations with Convenience Stores	620	EVR Stage 1 vapor recovery system on three (3) existing underground storage tanks (12,000 gal ea). Equipment, maintenance and installation as per CARB Executive Order VR-102-I (OPW).		No	No
10917	Pacific American Commercial Co	7400 2nd Ave S	Seattle	98108	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	5389	One Paint Spray Booth at 15,000 cfm with filter pads and vertical exhaust.	09-Mar-94	Yes	NA
29216	Pacific Auto Body	1048 6th Ave S	Seattle	98134	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9838	One Accudraft spray booth rated at 14,000 CFM w/ dry filters, including one prep area, Model # K40 used for automotive spray painting.	2008	Yes	4-11
18651	Pacific Auto Machine	333 Sunset Blvd N	Renton	98057	Not available	Not available	7641	One Dry Filter System Devilbiss JH Series Spray Coating Booth rated at 10,975 cfm.	1998	Yes	3, 4, and 5
20765	Pacific Iron and Metal Co	2230 4th Av S	Seattle	98134	423930	Recyclable Material Merchant Wholesalers	1796	United W-3000 Wire Reclaiming Furnace with 30" Diameter Stack, Elevation 32'.	1978	No	NA
29349	Pedersens Rentals	4500 4th Avenue South	Seattle	98134	Not available	Not available	10141	One AFC spray booth, model # EIBF88 rated at 8,000 CFM for spray coating wood furniture.	2010	Yes	NA
13293G	Penske Truck Leasing Co LP	12840 48th Ave S	Tukwila	98168-3302	447190	Other Gasoline Stations	632	Stage 1 CARB-approved OPW Enhanced Vapor Recovery System on one new underground gasoline storage split-tank (6,000 gallons [unleaded] and 24,000 gallons [diesel]). Equipment, maintenance and installation as per CARB Executive Order VR-102-I.		No	No
10342G	Petrocard Systems	9014 14th Ave S	Seattle	98108	447110	Gasoline Stations with Convenience Stores	11687	Stage 1 & 2 vapor recovery using Two Point System on one 15,000 gallon (split 10,000/5,000) underground gasoline storage tank, and 5 OPW11VAI Nozzles on a Gasboy Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-163-AA (Stage 2).	15-Dec-97	No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
11731	O B Williams Co	None	NA	Yes	3/22/2010	No	Only clean, prepared scrap shall be used to charge the induction furnace	
10563G	Oasis 76	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/7/2010	Failure to submit annual tests [4/7/2010]	Installation Address/Owner on NOC is Oasis Texaco.	
11747	Olympic Foundry Inc	None	NA	No	No inspection in the last 3 years.	No		
17825	Olympic Medical, A Division of Natus	None	NA	No	No inspection in the last 3 years.	No		
12042	Olympic Pipe Line Co BP Pipelines Co	The concentration of TVH in the vapor entering the stack shall not exceed 50 ppmv. The flow rate entering the stack shall not exceed 120 scfm. If one monitoring indicates that the concentration of TVH in the vapor entering the stack exceeds 50 ppmv, OPC shall re-install the Adsorber.	OPC shall make all monitoring records available to personnel of PSCAA. The records shall include the flow rates and lab analysis of the samples.	Yes	10/5/2011	No		
18166	Olympic Pipe Line Co, BP Pipelines Co	None	NA	Yes	8/24/2010	No		
18637G	Pacific 76	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/7/2010	Failure to pay fees [2/17/2012]		
10917	Pacific American Commercial Co	None	NA	Yes	3/31/2011	No		
29216	Pacific Auto Body	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit. Use only HVLP spray equipment that achieves transfer efficiency greater than or equal to 65%. BMPs shall be used in the spray coating operations. No visible emissions from spray coating operations.	The spray coating booth shall be inspected at least once per day of operation and the findings of the inspection shall be recorded in the facility O&M plan log. Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
18651	Pacific Auto Machine	Measure the pressure drop across the exhaust filters of the spray booth.	Once during each shift that the spray booth is used, Pacific Auto Machine shall determine and record if the pressure drop is in the acceptable range.	No	No inspection in the last 3 years.	No	Zip code on NOC is 98055.	
20765	Pacific Iron and Metal Co	None	NA	Yes	2/9/2010	No		
29349	Pedersens Rentals	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
13293G	Penske Truck Leasing Co LP	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
10342G	Petrocard Systems	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10634G	Petrocard Systems	1617 SW Lander St	Seattle	98134	447110	Gasoline Stations with Convenience Stores	12159	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent over-tightening or loosening of product and vapor adapters on one 12,000 (split 8,000 and 4,000) gallon above ground gasoline storage tank, and six OPW11VAI-(63, 68, 83 or 88) Nozzles with Vapor Valve and Efficiency Compliance Device (ECD) on a Tokbeim Vacuum Assist Style Dispenser with Side Mount; equipment and installation as per CARB Executive Orders G-70-97-A (Stage I), G-70-162 (above ground tanks) and G-70-163-AA (Stage 2).	27-Feb-02	No	No
18325G	Petrocard Systems	13435 Interurban Ave S	Tukwila	98168	447110	Gasoline Stations with Convenience Stores	66	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on one 12,000 and one 15,000 (Split 8,000/7,000) gallon underground gasoline storage tanks equipped with P		No	No
25121G	Petrocard Systems	3215 4th Ave S	Seattle	98134	447190	Other Gasoline Stations	7909	Soil Vapor Extraction System including a Blower with emissions controlled by a Catalytic/Thermal Oxidizer.	30-Dec-99	No	No
17007	Phelps Tire Co	3922 7th Ave S	Seattle	98134	326212	Tire Retreading	5781	One Tire Buffing Operation consisting of two Bandag Tire Buffers, each equipped with a water spray (at buffing point) to knock down dust and reduce heat buildup. Both Tire Buffers are connected through a common duct to a B&J Cyclone connected to a dumpster. One Blinks 101 Baffle Spray Booth for applying adhesive and rubber cement to tires as part of the tire retreading operations.	1995	No	NA
21413	Phillips 66 Company	2423 Lind Ave SW	Renton	98055	4247	Petroleum and Petroleum Products Merchant Wholesalers	1769		01-Sep-78	No	NA
17691	Pioneer Industries	7000 Highland Park Way SW	Seattle	98106	332322	Sheet Metal Work Manufacturing	874	One Poly Products Model ET-III-W wastewater evaporator used exclusively for wastewater generated on-site that meets all discharge limits for disposal into the local municipal sewer system.		Yes	NA
22537	Plaza Cleaners	14410 SE Petrovitsky #115	Renton	98055	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	6750	One 35 lbs/batch Vic Dry Cleaning Machine (Unvented Dry-to-Dry with Refrigeration).	16-Nov-96	No	NA
29308	Preet's Auto Body	12441 Des Moines Memorial Dr. S.	Seattle	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	10066	One Global Finishing Solutions Concept Space Saver, model # SVS2007 spray booth w/dry filters rated at 12,000 CFM used for automotive spray painting.	2009	Yes	NA
28993	Premier Autobody Specialist	6411 S 143rd St	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9405	One Spray Booth employing Paint Arrestor (Dry Filters)	2007	Yes	4-8
17462	Precision Collision Auto Body	330 Main Ave S	Renton	98055	811121	Automotive Body, Paint, and Interior Repair and Maintenance	4391	Two Air Filtration EB-1526 Exhaust Benches at 6,400 cfm each for Metal Shop Ventilation.	1992	No	NA
18144	Pro Cleaners	21905 Marine View Dr S	Des Moines	98188	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	6005	One 35 lbs/batch Forenta D335 Dry Cleaning Machine.	15-May-95	No	NA
11860	Puget Sound Coatings Machinists DSR	9220 8th Ave S	Seattle	98108	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	2338	Two Grace King Air Filters, 10' by 20', 2" paper filters - two dep, two 25,000 cfm exhaust fans; and one De Voe Hastings gas-fired air heater at 1,000,000 BTU per hour.	1982	No	NA
21258	Puget Sound Energy (Swarr Station)	2100 Benson Dr S	Renton	98055	22112; 221210	Electric Power Transmission, Control, and Distribution; Natural Gas Distribution	8877	Regulatory Order for Synthetic Minor Emission Cap.	2004	Yes	This is a sythetic minor permit.
22406	Rainier Beach Cleaners	9434 Rainier Ave S	Seattle	98118	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	6871	One Blue Tiger M35R Dry Cleaning Machine (Unvented Dry-to-Dry with Refrigeration).	01-Nov-94	No	NA
21309	Rainier Best Cleaners	6301 Rainier Ave S #5	Seattle	98118	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	231	Unvented dry cleaning machine, Model 914/L40 Plus Fibrimatic, that uses perc as a cleaning solvent.		Yes	8, 10, and 11

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10634G	Petrocard Systems	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
18325G	Petrocard Systems	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
25121G	Petrocard Systems	Monthly monitoring of the uncontrolled TPH emissions shall be performed to assure emissions remain below 50 ppm.	NA	Yes	8/5/2010	No		
17007	Phelps Tire Co	None	NA	Yes	2/3/2011	No		
21413	Phillips 66 Company	None	NA	No	No inspection in the last 3 years.	No		PAHs
17691	Pioneer Industries	None	NA	Yes	8/5/2010	Failure to pay fees; odor complaint (11/16/2011)		
22537	Plaza Cleaners	None	NA	No	No inspection in the last 3 years.	No		
29308	Preet's Auto Body	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	4/20/2012	No	Shall not spray coatings that contain cadmium, chromium or lead	
28993	Premier Autobody Specialist	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential pressure across the filters, and (b) visual checks of filter condition and fit. Use only HVLP spray equipment that achieves transfer efficiency greater than or equal to 65%. BMPs shall be used in the spray coating operations.	Record the differential pressure across the filters in the spray coating booth at least once per day. Records related to permit conditions are to be kept for 2 years.	Yes	3/16/2011	Failure to pay fees; O&M logs (3/16/2011)		
17462	Precision Collision Auto Body	None	NA	No	No inspection in the last 3 years.	No	Installation on NOC was Taylor' Autobody. Typo in company name (Prescision instead of Precision) is as received in the spreadsheet from PSCAA - no documents were available for this facility.	
18144	Pro Cleaners	None	NA	Yes	3/21/2012	Failure to pay fees (3/21/2012)		
11860	Puget Sound Coatings Machinists DSR	None	NA	Yes	2/19/2010	No NOC approval [2/19/2010 and 6/27/2012]	Address in NOC is 9280 8th Ave S.	Lead
21258	Puget Sound Energy (Swarr Station)	Monitor NOX and CO emissions monthly.	Calculate the monthly emissions of NOX and CO from the station and report to PSCAA in writing any time 40 tons is exceeded.	Yes	12/17/2010	No		
22406	Rainier Beach Cleaners	None	NA	No	No inspection in the last 3 years.	No		
21309	Rainier Best Cleaners	Visible emissions/ Opacity measured by WDOE Method 9	Measure weakly, record corrective actions, and save for two years	Yes	6/18/2010	No	Source test used to determine that outlet emissions are less than 0.02 gr/dscf	

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
24752	Rainier Rubber Co	15660 Nelson Pl S	Seattle	98188	Not available	Not available	6272	One Bleeker Bros. Dry Filter Spray Coating Booth rated at 3,000 cfm.	26-Feb-96	No	NA
28482	Rasmussen Wire Rope & Rigging Co Inc	8727 5th Ave S	Seattle	98108	332618	Other Fabricated Wire Product Manufacturing	5926	One Aluminum Radial Arm Saw with a Cloth Filter Bag exhausted at 1,300 cfm.	02-Jan-83	No	NA
12006	Recreational Equipment Inc Construction Dept	813 Thomas Ave SW	Renton	98055	337122	Nonupholstered Wood Household Furniture Manufacturing	8063	One Dry Filter Spray Coating Booth rated at 23,505 cfm and two Dust Collectors rated at 7,500 cfm each to control particulate emissions from Woodworking Operations.	01-Dec-99	Yes	3
14004	Red Dot Corp	495 Andover Park E	Tukwila	98188	336391	Motor Vehicle Air-Conditioning Manuf	3350	Two Baron-Blakeslee Model 1620 Degreasers using trichlorethylene, one Baron Blakeslee Model HRS-120 Heavy-Duty Solvent Recovery Still, and two 13'Lx12'Wx7'H Binks conveyORIZED spray booths (East booth at 12,000 cfm, West booth at 7,500 cfm).	24-Aug-90	No	NA
29503	Regency Cleaners LLC	950 Andover Park E #19	Tukwila	98188	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	890	Two dry cleaning machines. 60 lbs/load Union, Model 76002000 & 40 lbs/load Fibermatic, Model No. Axial40.	2012	No	NA
28082G	Remote Consolidated Rental Car Facility	3150 S 160th St	SeaTac	98188	447190	Other Gasoline Stations	9890	Two Stage 1 CARB approved OPW Enhanced Vapor Recovery Systems, each system controlling three 20,000 gallon underground gasoline storage tanks, for a total of six tanks; 96 nozzles distributed between 4 islands, and 48 Unihose High Hang Gasboy 9852 dispensers with Tokheim parts.	2009	Yes	6-8
22303	Renton Cleaning Center	364 Renton Ctr Wy SW	Renton	98055	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	7668	One Columbia TL-4D Dry Cleaning Machine (Unvented Dry-to-Dry with Refrigeration).	30-Apr-99	No	NA
14997	Renton Concrete Recyclers	500 Monster Rd SW	Renton	98055	327390	Other Concrete Product Manufacturing	9916	One 36" x 38" Traylor Rock crusher rated at 450 tons per hour	2010	Yes	7
25050G	Renton Eagle Mart Inc	401 Park Ave N	Renton	98055	447110	Gasoline Stations with Convenience Stores	106	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on four 10,000 gallon underground gasoline storage tanks equipped with Pressure/Vacuum Valves, and 8 [Cat]		No	No
19240G	Renton Friendly Foodmart 76	19044 108th Ave SE	Renton	98055	447110	Gasoline Stations with Convenience Stores	9240		06-Mar-81	No	No
10377G	Renton Shell	300 Rainier Ave S	Renton	98055	447110	Gasoline Stations with Convenience Stores	532	stage 1 & 2 vapor recovery (cancelled per 2/25/08 ltr)		No	No
22304	Renton Village Cleaners	601 S Grady Way #S	Renton	98055	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	5830	One 45 lbs/batch Forenta Dry Cleaning Machine.	31-Dec-94	No	NA
10029	Repair Technology Inc	400 S 96th St	Seattle	98108	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	6817	Four existing Hard Chromium Plating Tanks with emissions controlled by one Composite Mesh-Pad System rated at 13,500 cfm.	01-May-98	Yes	4
10578G	Riveretz's Auto Care	6185 4th Ave S	Seattle	98108	447190	Other Gasoline Stations	12017	Stage 1 vapor recovery using Coaxial System on one 8,000 gallon and two 6,000 gallon underground gasoline storage tanks with CARB-approved vapor adapters that prevent over-tightening or loosening, and Pressure Vacuum Valves on the storage tank riser; equipment and installation as per CARB Executive Order G-70-97-A.	20-Dec-98	No	No
29297	RMC, Inc	10766 Myers Way S	Seattle	98168	Not available	Not available	10041	One custom-made, model #1 abrasive blasting booth rated at 4,032 cubic feet using staurolite abrasive blast media that is controlled by a Torit, pulse-jet baghouse rated at 4,500 cfm.	2009	Yes	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
24752	Rainier Rubber Co	None	NA	No	No inspection in the last 3 years.	No		
28482	Rasmussen Wire Rope & Rigging Co Inc	None	NA	Yes	No inspection in the last 3 years.	No		
12006	Recreational Equipment Inc Construction Dept	No visible emissions from woodworking operations.	Records of weekly inspections to be kept for 5 years.	Yes	2/23/2010	No		
14004	Red Dot Corp	None	NA	Yes	2/16/2010	NOVs and Inspection info; emission info; exceeded emission limits [1/31/2012]	NAICS from Ecology's FSDB	
29503	Regency Cleaners LLC	There are no requirements listed on the permit to monitor emissions.	NA	No	No inspection in the last 3 years.	No	The permit for this facility does not have any conditions. The NOC has no signature lines or signatures.	
28082G	Remote Consolidated Rental Car Facility	Comply with the requirements of 40 CFR 63 Subpart CCCC. The gasoline throughput of the Facility shall not exceed 5.2 million gallons in any 12 consecutive month period.	The facility shall track monthly gasoline throughput and calculate the 12 consecutive month throughput within 30 days after the end of each month. The facility shall notify the Agency in writing within 60 days after the end of any 12 consecutive month period which the gasoline throughput exceeded 5 million gallons.	Yes	8/13/2012	Failure to follow Order of Approval condition 6 parts a, b c, and d (8/13/12)		
22303	Renton Cleaning Center	None	NA	No	No inspection in the last 3 years.	No		
14997	Renton Concrete Recyclers	Daily inspections of fugitive dust or fallout	NA	Yes	7/14/2010	No		
25050G	Renton Eagle Mart Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
19240G	Renton Friendly Foodmart 76	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	12/30/2010	Failure to submit annual test [4/7/2010]		
10377G	Renton Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	Failure to pay fees		
22304	Renton Village Cleaners	None	NA	No	No inspection in the last 3 years.	No		
10029	Repair Technology Inc	Chromium - EPA Method 306	An O&M Plan which records the daily pressure drop, inspection and maintenance performed, and any malfunctions	Yes	6/18/2010	No		Chromium
10578G	Riveretz's Auto Care	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No	Installation address on NOC was Georgetown Gasco.	
29297	RMC, Inc	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Manufacturers information must be maintained onsite.	Yes	3/25/2010	No	RMC, Inc. shall not use blast media containing chromium, manganese, lead or nickel	

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
18631G	Rock Enterprises	7132 Delridge Wy SW	Seattle	98106	447110	Gasoline Stations with Convenience Stores	11509	Stage 1 & 2 vapor recovery using Two Point System on two 12,000 gallon and one 10,000 gallon underground gasoline storage tanks, and 27 OPW11VAI Nozzles on a Gilbarco Advantage Vacuum Assist Style Dispenser with High Hang; equipment and installation as pe		No	No
18403	Ron's Auto Rebuild	13360 Sunset Blvd SW/Martin Luther King Jr Wy S	Seattle	98178	811121	Automotive Body, Paint, and Interior Repair and Maintenance	7002	One Spray Coating Room rated at 3,200 cfm.	19-Mar-99	Yes	NA
12297G	Ryder Truck Rental Inc	17850 W Valley Hwy	Tukwila	98188	447190	Other Gasoline Stations	11041	Stage 1 & 2 vapor recovery using Coaxial System on one 12,000 gallon gasoline storage tank, and 3 Emco-Wheaton A4005 Nozzles on a Vapor Balance Style Dispenser with High Hang.	28-Feb-94	No	No
16302	S F McKinnon Co Inc	6520 5th Ave S	Seattle	98108	321918	Other Millwork (including Flooring)	770			No	NA
25785G	Safeway #1965 Fuel Facility	9262 Rainier Ave S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	177	Stage 1 & 2 vapor recovery using CARB-approved Enhances Vapor Recovery (EVR) Stage 1 System on two 20,000 gallon (one Split 10,000/10,000 gallon) underground gasoline storage tanks and 10 Healy 800 Nozzles with vapor valve on five High Hang Dresser Wayne		No	No
10604G	Safeway Fuel Station #1563	200 S 3rd St	Renton	98055	447110	Gasoline Stations with Convenience Stores	12060	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on two 20,000 gallon (one split 10,000/10,000) underground gasoline storage tanks, and 8 OPW11VAI-69 Nozzles with Vapor Valve and Efficiency Compliance Device (ECD) on a Dresser/Wayne Unihose MPD Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AD (Stage 2).	11-Feb-01	No	No
28018G	Safeway Fuel Station 1468	4300 NE 4th St	Renton	98055	447110	Gasoline Stations with Convenience Stores	332	Stage 1 & 2 vapor recovery employing CARB-approved Enhanced Vapor Recovery Stage 1 system on two 20,000 gallon (one split 10,000 gallons gasoline/10,000 gallons Diesel) underground gasoline storage tanks; and eight Healy 800 or 900 Nozzles with vapor val		No	No
25781G	Sam's Club Fueling Station #4835	901 S Grady Way	Renton	98055	447110	Gasoline Stations with Convenience Stores	152	Stage 1 & 2 vapor recovery using CARB-approved EVR stage 1 system on three 20,000 gallon underground gasoline storage tanks, and 12 [Emco Wheaton 4005, 4007, or 4015, EZ-Flo 11VF, EZ-Flo 5005, 5007 and 5015, Husky V(5) or OPW 11VF-47] Nozzles with vapor v		No	No
18468G	Sangha & Lehal, Inc	2841 S 188th St	Seatac	98188	447110	Gasoline Stations with Convenience Stores	10381	Soil & groundwater remediation using an Air Sparge (AS) - Soil Vapor Extraction (SVE) system with up to 250 cfm of vapor extracted routed through a two-stage Calgon carbon adsorber prior to discharge into air.	2012	Yes	4
12166	Scougal Rubber Corp	6239 Corson Ave S	Seattle	98108	326299	All Other Rubber Product Manufacturing	160N	One Air Filtration Co, Inc Spray Booth equipped with Dry Paint Arrestor filters and rated at 20,000 CFM. This Spray Booth replaces an existing booth that was installed in 1992.		No	NA
10687	Seacast Inc	207 S Bennett St	Seattle	98108	331512	Steel Investment Foundries	5076	One bench style Spray Booth at 6,370 cfm with filter and exhaust systems; two natural gas fired Preheat Furnaces (one at 946,700 Btu/hr, one at 1.0 MMBtu/hr) each with an Afterburner at 337 scfm each (520F, 378,700 Btu/hr); four Induction Melt Furnaces (300 lb, 150 lb, 50 lb, and 17 lb); the 300 lb and 150 lb furnace and one Abrasive Cutoff Machine are controlled by a Torit Baghouse at 2,500 cfm; one 160 lb/hr Resistance Melt Furnace; one Wheelabrator Shotblast Machine with a Cartridge Filter; and one Goff sandblast Cabinet at 900 cfm connected to an internal Dust Collector with Cyclone.	30-Dec-86	Yes	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18631G	Rock Enterprises	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/7/2010	No		
18403	Ron's Auto Rebuild	None	NA	Yes	3/10/2011	No		
12297G	Ryder Truck Rental Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
16302	S F McKinnon Co Inc	None	NA	No	No inspection in the last 3 years.	No		
25785G	Safeway #1965 Fuel Facility	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10604G	Safeway Fuel Station #1563	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
28018G	Safeway Fuel Station 1468	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
25781G	Sam's Club Fueling Station #4835	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
18468G	Sangha & Lehal, Inc	Antea Group shall monitor the concentration ofTPH and Benzene in the vapor entering and exiting the first drum in the Adsorber system. Antea Group shall record monthly the concentration ofTPH and Benzene in the vapor entering the first drum and the last drum of the Adsorber.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/7/2010	No		
12166	Scougal Rubber Corp	None	NA	Yes	1/28/2011	No	NOC should have been 160N, not 160 as provided in the PSCAA spreadsheet. Revised spreadsheet accordingly.	
10687	Seacast Inc	None	NA	Yes	8/20/2010	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10513G	SeaTac Shell	20619 Military Rd	Seatac	98188	447110	Gasoline Stations with Convenience Stores	11812	Stage 1 & 2 vapor recovery using Two Point System on two 20,000 gallon (one split 14,000 gasoline/6,000 diesel) underground gasoline storage tanks, and 12 OPW11VAI-(22, 27, 42 or 47) Nozzles with external solenoid vapor valves on a Gilbarco Vacuum Assist Style Dispenser with High Hang; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-150-AD (Stage 2).	15-Dec-98	No	No
12008G	SeaTac Wally Park	17808 International Blvd	Seatac	98188	447190	Other Gasoline Stations	10987	Stage 1 & 2 vapor recovery using Coaxial System on one 4,000 gallon underground gasoline storage tank with one Emco Wheaton 4005 Nozzle on a Balance Style Dispenser with High Hang.	02-Jun-94	No	No
18299	Seattle Best Cleaner	9305 Rainier Ave S #C	Seattle	98118	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	6625	One Hoffman 2010 Dry Cleaning Machine (Unvented Dry-to-Dry with Refrigeration).	01-Oct-96	Yes	NA
29134	Seattle Bulk Rail Station, Inc	3233 16th Ave SW	Seattle	98134	Not available	Not available	9700	Grain export terminal rated at 1800 ton/day for transloading grains from railcar to trucking containers.	2009	Yes	NA
28470	Seattle City Light	3613 4th Ave S	Seattle	98134	335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	5915	One Model S128WV Protectaire Paint Spray Booth exhausted at 14,000 cfm converted from water wash to dry filter filtration system located in the Paint Shop; and tentatively, one Model XNO-5208-1 Devilbiss Paint Spray Booth exhausted at 16,325 cfm converted from water wash to dry filter filtration system located in the Transformer Room.	14-Jun-96	No	NA
13688	Seattle Industrial Motor & Machine Co (Simmco)	10831 E Marginal Wy S	Tukwila	98168-1931	335312	Motor and Generator Manufacturing	354	Despatch Nod. RC-8 Oven and AIR 4-10 Fume Incinerator.	08-Dec-71	No	NA
17104	Seattle Iron & Metals Corp	601 S Myrtle St	Seattle	98108	423930	Recyclable Material Merchant Wholesalers	7758	A Metal Recycling Facility including one 720 ton/day TSI Model 98/104 Texas Shredder Automobile Shredder vented to a Z-Box Cyclone rated at 55,000 cfm and controlled by a Baghouse rated at 12,000 cfm and a Wire Insulation Burner rated at 1 MMBtu/Hr, 185 s		No	NA
10576G	Seattle Parks & Rec Dept, South Dist	1600 S Dakota St	Seattle	98108	447190	Other Gasoline Stations	12015	Stage 1 vapor recovery using Coaxial System on one 2,000 gallon underground gasoline storage tank with CARB approved vapor adapters that prevent over-tightening or loosening equipped with CARB approved Pressure Vacuum Valves on the tank vent risers; equipment and installation as per CARB Executive Order G-70-97-A.	01-Jan-89	No	No
21262	Seattle Parks & Recreation	4201 West Marginal Way SW	Seattle	98106	924120	Administration of Conservation Programs	8885	One JBI-IDB-2010-8 Spray Booth Employing Dry Filters (Paint Arrestors).and rated at 21,000 cfm.	2003	Yes	5
13157G	Seattle Police Dept, South Precinct	3001 S Myrtle St	Seattle	98108	447190	Other Gasoline Stations	11391	Stage 1 & 2 vapor recovery using Two-Point System on two 10,000 gallon underground gasoline storage tanks, and 2 Emco-Wheaton A4015-002 Nozzles on a Vapor Balance Style Dispenser with Side Mount; equipment and installation as per CARB Executive Orders G-7	01-Apr-96	No	No
21147G	Seattle Police Dept, SW Precinct	2300 SW Webster St	Seattle	98106	477190	Warehouse Clubs and Supercenters	43	Stage 1 & 2 vapor recovery using Two Point System with CARB-approved devices that prevent loosening or over-tightening of product and vapor adapters on one 20,000 gallon underground gasoline storage tanks equipped with Pressure/Vacuum Valves, and 2 [OPW		No	No
10500	Seattle Port Marine Maint Shop	25 S Horton	Seattle	98134	488310	Port and Harbor Operations	8331	One JBI Model AT-30-SB Dry Filter System Spray Coating Booth rated at 19,600 cfm.	30-Jun-99	Yes	NA
18361	Seattle, City of, Fleet Services, Vehicle Maint	805 S Charles St	Seattle	98134	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9788	One enclosed 42,000 cfm automotive spray booth controlled by dry filters, located outdoors, and two enclosed 17,900 cfm automotive spray booths controlled by dry filters located indoors.	2008	Yes	5
21408	Seattle-Tacoma International Airport	17801 Pacific Hwy S Room A6012M	Seattle	98158	Not available	Not available	202		31-Dec-71	No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10513G	SeaTac Shell	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	3/24/2010	No	Installation address in NOC is SEATAC TEXACO, 200th & Military Rd.	
12008G	SeaTac Wally Park	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
18299	Seattle Best Cleaner	None	NA	No	No inspection in the last 3 years.	No		
29134	Seattle Bulk Rail Station, Inc	SBR shall limit the facility throughput to no more than 135,000 ton/yr of grain.	NA	No	No inspection in the last 3 years.	No		
28470	Seattle City Light	None	NA	Yes	7/11/2012	No		
13688	Seattle Industrial Motor & Machine Co (Simmco)	None	NA	Yes	2/16/2010	NOVs and Inspection info; emission info; exceeded emission limits [1/31/2012]	Owner on NOC was Westinghouse.	
17104	Seattle Iron & Metals Corp	None	NA	Yes	8/5/2010	No		Chromium, nickel
10576G	Seattle Parks & Rec Dept, South Dist	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No	Date on NOC is 01/27/00.	
21262	Seattle Parks & Recreation	Particulate emissions - Annual inspections of particulate deposits on exhaust ports.	Records related to permit conditions are to be kept for two years.	No	No inspection in the last 3 years.	No		
13157G	Seattle Police Dept, South Precinct	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
21147G	Seattle Police Dept, SW Precinct	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10500	Seattle Port Marine Maint Shop	None	All records shall be maintained for two years.	No	No inspection in the last 3 years.	No		
18361	Seattle, City of, Fleet Services, Vehicle Maint	Particulate emissions - Annual inspections of particulate deposits on exhaust ports.	Records related to permit conditions are to be kept for two years.	Yes	3/22/2011	No		
21408	Seattle-Tacoma International Airport	None	NA	No	No inspection in the last 3 years.	No		

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PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
12036	Segale Properties	5811 Segale Park Dr #C	Tukwila	98188	Not available	Not available	113	One Torit Model 25P JD8 Pulse Jet Baghouse with 249 sq ft of cloth and rated at 2500 CFM (Cloth-to-air ratio is 10:1)	2002	Yes	3
12214	Seidelhuber Iron & Bronze Wks	8009 7th Ave S	Seattle	98108	332312	Fabricated Structural Metal Manufacturing	9929	One Spray Systems spray booth, model # I-201010, rated at 20,000 CFM w/ dry filters, for spray coating miscellaneous metal products.	2008	Yes	3 and 10
22407	Seward Park Cleaners & Tailors	5017 S Dawson St	Seattle	98118	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	5950	One 35 lbs/batch Vic 1235 F/S Dry Cleaning Machine.	08-May-95	No	NA
16119	Sheets Unlimited/Graphic Sheets	301 SW 27th St	Renton	98057-3381	322211	Corrugated and Solid Fiber Box Manufacturing	8586	One Cleaver Brooks CB-LE 200-500-200ST natural gas/distillate oil fired Boiler rated at 20.4 MMBtu/hr.	2001	Yes	3, 4, 5, 6, and 8
18137G	Shell #102	511 Dearborn Ave S	Seattle	98134	447110	Gasoline Stations with Convenience Stores	9602		23-Mar-81	No	No
18323G	Shell #121526	7219 Rainier Ave S	Seattle	98118	447110	Gasoline Stations with Convenience Stores	9725		05-Jun-81	No	No
25799G	Shell at SeaTac	2806 S 188th	SeaTac	98188	447110	Gasoline Stations with Convenience Stores	239	Stage 1 & 2 vapor recovery employing CARB-approved Enhanced Vapor Recovery Stage 1 System on two 20,000 gallon (one Split 12,000 gallon gasoline and 8,000 gallon Diesel) underground gasoline storage tanks, and 8 Healy 800 Nozzles on 4 High Hang Gilbarco E		No	No
25127G	Shultz Distributing	465 S Holgate St	Seattle	98134	447190	Other Gasoline Stations	10008			No	No
10259G	Shultz Distributing Inc	6760 W Marginal Wy SW	Seattle	98106	447190	Other Gasoline Stations	11488	Stage 1 and 2 vapor recovery using Two Point System on one 10,000 gallon underground gasoline storage tank, and 2 OPW11VAI Nozzles on a Gasboy dispenser with OPW VaporEZ Vacuum Assist System; equipment and installation as per CARB Executive Orders No. G-70-97-A (Stage 1) and G-70-163 (Stage 2).	01-Jan-97	No	No
10520G	Shuttle Express	800 SW 16th St	Renton	98055	447190	Other Gasoline Stations	11840	Stage 1 & 2 vapor recovery using Two Point System on two 10,000 gallon above ground gasoline storage tanks, and 4 Emco-Wheaton A4015-002 Nozzles on a Gasboy Vapor Balance Style Dispenser with Side Mount; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-70-52-AM (Stage 2).	03-Mar-99	No	No
17100G	Sky Way Gas #2	11900 Renton Ave S	Seattle	98178	447110	Gasoline Stations with Convenience Stores	824	Replacement of four (4) 6-pack dispensers with four (4) Gilbarco Advantage unihose dispensers employing eight (8) EMCO Wheaton A4005 EVR or VST-EVR-NB nozzles. Equipment, maintenance and installation per CARB Executive Order G-70-52-AM (vapor balance sta		No	No
18691G	Skyway Shell and Automotive PMS Enterprise Inc	11809 Renton Ave S	Seattle	98178	447110	Gasoline Stations with Convenience Stores	712	Stage 2 CARB-approved ORVR-compatible vapor recovery system employing eight (8) [Healy 900] nozzles on four (4) high hang Gilbarco Encore vacuum assist style dispensers. Equipment, maintenance and installation as per CARB Executive Order G-70-191-AA.		No	No
10477	Sound Ford Inc	750 Rainier Ave S	Renton	98055	811121	Automotive Body, Paint, and Interior	4538	Two Model ECD-15 Spray King Spray Booths with exhaust chambers at 11,440 cfm each.	1992	Yes	NA
29292	Sound Transit Central Link Operations and Maintenance Facility	3407 Airport Way South	Seattle	98134	485112	Commuter Rail Systems	10026	One Global Finishing Solutions spray booth, model # DDT-105-WPDT-S w/dry filters rated at 94,500 CFM used for maintenance of light rail trains.	2009	Yes	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
12036	Segale Properties	No visible emissions from woodworking operations.	Records of weekly inspections to be kept for 5 years.	Yes	2/23/2010	No		
12214	Seidelhuber Iron & Bronze Wks	Organic HAP - Keep a weighted average of all finishing materials. No visible emissions from the spray coating operations.	Records related to permit conditions are to be kept for two years.	Yes	11/17/2010	No		
22407	Seward Park Cleaners & Tailors	None	NA	No	No inspection in the last 3 years.	No		
16119	Sheets Unlimited/Graphic Sheets	NOX, CO, PM10, Sulfur, and meet 40 CFR Part 60, Subpart Dc	NA	Yes	9/7/2011	No	Zip code on NOC is 98055.	
18137G	Shell #102	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	Failure to pay fees [4/22/2010 and 10/18/2011]		
18323G	Shell #121526	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
25799G	Shell at SeaTac	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
25127G	Shultz Distributing	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10259G	Shultz Distributing Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	No	No inspection in the last 3 years.	No		
10520G	Shuttle Express	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	3/24/2010	No		
17100G	Sky Way Gas #2	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	Failure to pay fees [1/24/2012, 9/7/2010, 9/9/2010]	NOC # is the same as that for Longview Fibre (Reg #15019). NOC for Skyway facility not available; equipment description incomplete in data file received from PSCAA.	
18691G	Skyway Shell and Automotive PMS Enterprise Inc	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10477	Sound Ford Inc	None	NA	No	No inspection in the last 3 years.	No		
29292	Sound Transit Central Link Operations and Maintenance Facility	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	3/23/2011	No	Shall not spray coatings that contain manganese, nickel, cadmium, chromium or lead	

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10320G	South Center Gas Station LLC	16200 W Valley Hwy	Tukwila	98188	447110	Gasoline Stations with Convenience Stores	11636	Stage 1 & 2 vapor recovery using Two Point System on one 12,000 gallon and one 15,000 gallon underground gasoline storage tanks, and 12 Emco-Wheaton A4505 Nozzles on a Gilbarco Vacuum Assist Style Dispenser with High Hang; equipment and installation as CARB Executive Orders G-70-97-A (Stage 1) and G-70-153-AB (Stage 2).	1997	No	No
28031G	South Park Fuel & Food	9525 14th Ave S	Des Moines	98108	447110	Gasoline Stations with Convenience Stores	458	Stage 1 vapor recovery employing CARB-approved EBW Phase I Vapor Recovery System on two (2) below ground gasoline storage tank [1 x 10,000 and 1 x 15,000 gallon]. Equipment, maintenance and installation as per CARB Executive Order VR-103-B (Vapor Recover		No	No
28569	South Seattle Community College	6000 16th Ave SW	Seattle	98106	611519	Other Technical and Trade Schools	10088	Modification to Order of Approval (OA) No. 9513 to approve equipment installed after Order was issued. One AFC Finishing Systems spray booth, model # QDD2418 w/dry filters rated at 19,000 CFM used to coat cars and car parts.	2009	Yes	8
25355G	Southpark 76	8819 14th Ave S	Seattle	98108	447110	Gasoline Stations with Convenience Stores	11430	Stage 1 & 2 vapor recovery using Two Point System on two 10,000 gallon and one 8,000 gallon underground gasoline storage tanks, and 18 OPW 11VAI Nozzles on a Vacuum Assist Style Dispenser; equipment and installation as per CARB Executive Orders G-70-97-A		No	No
17434	Southtowne Auto Rebuild	14864 Tukwila - International Blvd S	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	5156	Installation of room exhauster with filters at 1,120 cfm for existing Spray Booth.	1993	Yes	NA
22449	Spic N' Span Cleaners #1	652 S Dearborn St	Seattle	98134	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	5269	One 80 lbs/batch Columbia 1231 Dry Cleaning Machine.	07-Jan-94	No	NA
18232	Starbucks Coffee Co, Seattle Pilot Plant	2401 Utah Ave S	Seattle	98134	311920	Coffee and Tea Manufacturing	6364	One Scolari 22 lbs/batch small air quench Coffee Roaster rated at 0.126 MMBtu/hr including a Cyclone, with a 90,000 Btu/hr Scolari Afterburner rated at 250 scfm.	20-Mar-96	Yes	5
28526	Stoneway Concrete	915 Houser Way N	Renton	98055	327320	Ready-Mix Concrete Manufacturing	8610	200 cy/hr Concrete Batching Plant including: (4) compartment Cement/Flyash Silo ((1) 55 ton, (1) 30 ton & (2) 92 ton) controlled by (3) C&W CP-305-839 BH's @ 1600 cfm with 5.3 A/C ratio and (1) C&W CP-450-678 BH @ 2500 cfm with 5.5 A/C ratio; and (1) Wet Drum Mixer (including 10 MMBtu/hr Kemco Rm Natural Gas hot water heater) controlled by (1) C&W CP-1220-1678 BH @ 6700 cfm with 5.5 A/C ratio; and Conveyor Systems.	2002	Yes	4-7
14102	Stoneway Rock & Recycling, Black River, G Merlino	510 Monster Rd	Renton	98055			4430	One CEC Minyu Jaw Crusher at 175 tons/hr with Screen Plant and Water Spray.	30-Nov-91	No	NA
19823G	Sunny's Deli Mart Texaco	10545 SE Carr Rd	Renton	98055	447110	Gasoline Stations with Convenience Stores	9924		06-Jul-81	No	No
10397	System Seven Repair	10831 Pacific Hwy S	Tukwila	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	5133	One Air Filtration TRA 6036 Spray Booth at 23,000 cfm.	30-Jan-94	Yes	NA
17303	T & H Autobody	10832 Myers Wy S	Seattle	98168	811121	Automotive Body, Paint, and Interior Repair and Maintenance	4077	One Air Filtration DFS2412 Custom Aire Downflow Auto Spray Booth (24'x14'x10) at 14,000 cfm.	20-Mar-92	No	NA
13201G	Texaco, Mc Food Store	4800 Beacon Ave S	Seattle	98108	447110	Gasoline Stations with Convenience Stores	11457	Stage 1 & 2 vapor recovery using Two Point System on two 12,000 gallon and one 8,000 gallon underground gasoline storage tanks, and 4 OPW11VAI Nozzles on a Gilbarco Vacuum Assist Style Dispenser (Schlumberger) with High Hang; equipment and installation as		No	No

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10320G	South Center Gas Station LLC	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	5/27/2010	No		
28031G	South Park Fuel & Food	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
28569	South Seattle Community College	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential perssure across the filters, and (b) visual checks of filter condition and fit.	Shall record the results of daily and annual inspections of the spray booth and prep area, including a record of the pressure drop reading measured across the exhaust filters, condition of the filters, and any corrective actions taken, to demonstrate compliance with Conditions 4 and 6.	Yes	5/12/2011	No		
25355G	Southpark 76	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	Failure to submit annual tests [12/21/2010]		
17434	Southtowne Auto Rebuild	None	NA	Yes	1/11/2012	No		
22449	Spic N' Span Cleaners #1	None	NA	No	No inspection in the last 3 years.	No		
18232	Starbucks Coffee Co, Seattle Pilot Plant	The afterburner shall be operated at no less than 1,200 degrees F prior to and all during the drop cycle.	The temperature gauge shall be available for readout by PSAPCA at any time	Yes	2/10/2010	No		
28526	Stoneway Concrete	No visible emissions or fallout from baghouse operations; baghouse operations shall be inspected at least once per week when operating.	Records related to permit conditions are to be kept for 2 years.	Yes	8/5/2010	No		
14102	Stoneway Rock & Recycling, Black River, G Merlino	None	NA	Yes	2/16/2010	NOVs and Inspection info; emission info; exceeded emission limits [1/31/2012]	NOC address was in Issaquah, but per email from PSCAA, the equipment is at the Monster Road address.	
19823G	Sunny's Deli Mart Texaco	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/7/2010	Need equipment list update [4/7/2010]		
10397	System Seven Repair	None	NA	No	No inspection in the last 3 years.	No		
17303	T & H Autobody	None	NA	Yes	3/16/2011	Failure to pay fees (3/16/2011)	Applicant was Gary's Auto Rebuild.	
13201G	Texaco, Mc Food Store	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
18792G	Texaco, Willies	16402 Military Rd S	Seattle	98188	447110	Gasoline Stations with Convenience Stores	396	Stage 2 vapor recovery employing eight (8) Healy 800 Nozzles with vapor valve on four (4) High Hang Gilbarco Encore 500 Vacuum Assist Style Dispensers. Equipment, maintenance and installation as per CARB Executive Order G-70-191-AA (Vacuum Assist Stage 2)		No	No
29397	The Gear Works	500 S Portland St	Seattle	98108	333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	10237	One Devilbiss spray booth, model # XCF-406 with dry filters rated at 10,300 CFM for spray coating gear boxes.	2011	Yes	3
17464	Thomas Auto Rebuild	36 Logan Ave S	Renton	98055	811121	Automotive Body, Paint, and Interior Repair and Maintenance	6609	One Viking Model No. SB-26-14-9 Spray Booth rated at 14,200 cfm.	10-Mar-00	Yes	NA
13108G	Thrifty Car Rental	18836 International Hwy S	Seatac	98188	447190	Other Gasoline Stations	11807	Stage 1 & 2 vapor recovery using Two Point System on one 12,000 gallon underground gasoline storage tank equipped with a CARB approved Pressure Vacuum Valve(s), and 2 Husky V5 Nozzle on a Vapor Balance Style Dispenser with High Hang; equipment and install	15-Jan-99	No	No
10555G	Top Hat Mini Mart	10723 1st Ave S	Seattle	98168	447110	Gasoline Stations with Convenience Stores	11969	Stage 1 vapor recovery using Coaxial System on two 8,000 gallon underground gasoline storage tanks equipped with CARB approved Pressure Vacuum Valves on the tank vent risers; equipment and installation as per CARB Executive Order G-70-97-A.	30-Dec-88	No	No
29050	Trade-Marx Signs	818 S Dakota	Seattle	98108	339950	Sign Manufacturing	9507	One Colmet Model ECC-26SB Crossdraft Spray Booth equipped with Arrestor (Dry Filters) and rated at 12,600 CFM.	2006	Yes	4-7
10781G	Tukwila 76 #2611064	13310 Interurban Ave	Tukwila	98168	447110	Gasoline Stations with Convenience Stores	127	Stage 2 vapor recovery using 4 [Catlow ICVN, Emco Wheaton A4505, Husky V34 6250, OPW 12VW or Richard Astrovac] Nozzles with Vapor Valve and Efficiency Compliance Device (ECD) on Two Gilbarco Encore Dispensers with High Hang; equipment and installation as		No	No
12608	United Iron Works Inc	7421 5th Ave S	Seattle	98108	332312	Fabricated Structural Metal Manufacturing	7122	One Dry Filter System Spray Coating Room rated at 23,505 cfm.	1997	No	NA
13193G	United Parcel Service	4455 7th Ave S	Seattle	98108	447190	Other Gasoline Stations	11970	Stage 1 & 2 vapor recovery using Two Point System on one 12,000 gallon underground gasoline storage tank equipped with CARB approved Pressure Vacuum Valve on the tank risers, and 1 OPW-111V49 Nozzle on a Gasboy Vapor Balance Style Dispenser with Side Moun		No	No
18687G	Unocal	6230 Rainier Ave S	Seattle	98108	447110	Gasoline Stations with Convenience Stores	9011		31-Mar-81	No	No
10541	US Postal Service, 4th Ave Garage	2460 4th Ave S	Seattle	98134	491110	Postal Service	4805	One JBI DDT-60-DT-S Spray Paint Booth at 48,000 cfm (74F), and one natural gas Air Heater at 3,100,400 Btu/hr. Stage 1 & 2 vapor recovery using Emco Wheaton EWA88 Coaxial System on one 10,000 gallon underground storage tank, and one Emco Wheaton A4001	31-Jan-92	Yes	NA
21322	US VA Puget Sound Health Care System	1660 S Columbian Wy, Bldg 18, Ofc 134	Seattle	98108	622110	General Medical and Surgical Hospitals	2346	Three York Shipley Model 588 SPHC-500-N/2 Steam Boiler, 500 BHP, 17,250 lb Steam per hr, fired with natural gas, with #2 oil standby.	06-Jan-83	Yes	8, 10, and 11

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
18792G	Texaco, Willies	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
29397	The Gear Works	Shall not spray coatings that contain manganese, nickel, cadmium, chromium or lead	Manufacturers information must be maintained onsite. Records to be kept for 2 years.	Yes	11/15/2011	Failure to pay fees [11/15/2011]		
17464	Thomas Auto Rebuild	None	NA	Yes	8/5/2010	Failure to pay fees; odor complaint (11/16/2011)		
13108G	Thrifty Car Rental	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
10555G	Top Hat Mini Mart	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	5/4/2011	Failure to pay fees [4/16/2010]	NOC date is 09/30/88.	
29050	Trade-Marx Signs	The spray coating booth shall be inspected at least once per day of operation, including the following: (a) Check of differential perssure across the filters, and (b) visual checks of filter condition and fit. BMPs shall be used in the spray coating operations.	Record inspections, routine maintenance, and corrective actions required. Records related to permit conditions are to be kept for 2 years.	No	No inspection in the last 3 years.	No		
10781G	Tukwila 76 #2611064	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	Failure to submit annual test [6/8/2012]		
12608	United Iron Works Inc	None	NA	No	No inspection in the last 3 years.	No		
13193G	United Parcel Service	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
18687G	Unocal	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
10541	US Postal Service, 4th Ave Garage	None	NA	Yes	8/9/2011	No		
21322	US VA Puget Sound Health Care System	Visible emissions/ Opacity measured by WDOE Method 9	Measure weakly, record corrective actions, and save for two years	Yes	6/18/2010	No	Source test used to determine that outlet emissions are less than 0.02 gr/dscf; NOC address is 4435 Beacon Ave S. - same property?	

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Address	City	Zip Code	NAICS Code	Facility Description (Based on 2012 NAICS Code)	NOC Permit No.	NOC Equipment Description	Equipment Install Date	Reporting Required? Y or N	Requirement No.
10642G	USA #62515	12725 1st Ave S	Burien	98168	447110	Gasoline Stations with Convenience Stores	860N	Replacement of existing dispensers with four (4) Gilbarco Encore unihose dispensers employing eight (8) Healy 900 nozzles. Equipment, maintenance and installation per CARB Executive Order G-70-191-AA (Healy Stage 2).	2012	No	No
10216G	USA Gasoline #68406	765 Rainier Ave S	Renton	98055	447110	Gasoline Stations with Convenience Stores	11155	Stage 1 & 2 vapor recovery using Two-Point System on three 10,000 gallon underground gasoline storage tanks, one 10,000 gallon underground diesel storage tank, and 24 OPW 11VAI Nozzles on a Gilbarco Vac Assist Dispenser with High Hang.	30-Dec-94	No	No
12539	Vigor Shipyards, Inc	1801 16th Ave SW	Seattle	98134	336611	Ship Building and Repairing	2452	One C.A.B. Systems abrasive blast room, 50' L.x 50' W x 37' H, controlled by two Farr & Tenkay Model 84L baghouses at 43,750 cfm and 46,750 cfm and one paint room with three AAF Type V spray booths. 6' L x 2' W x 15' H, with Roll-O-Matic Paint Filter, at 35,000 cfm.	21-Dec-83	No	NA
13077G	WA State Patrol 171014, WSDOT TEF Admin	15666 Pacific Hwy S	Seattle	98188	447190	Other Gasoline Stations	10882	Stage 1 & 2 vapor recovery using Coaxial System on one 12,000 gallon underground storage tank, and 2 OPW211V Nozzles on a Balance Style Dispenser with Side Mount.		No	No
29111	Washington Memorial Cemetery	16445 International Blvd	SeaTac	98188	812210	Funeral homes combined with crematories	9646	One Matthews SUPER POWER-PAK III Cremator, rated at 200 lbs per hour using 4.5 MMBTUH of Natural Gas.	2007	Yes	3-5
29178	Washington One Hour Cleaner	9252 Rainier Ave S	Seattle	98118	812320	Dry-cleaning and Laundry Services (except Coin-Operated)	544	Unvented Dry Cleaning Machine, Model Union - L 353, using perc as cleaning fluid.	2008	No	NA
21325	West Seattle Quality Collision	9255 16th Ave SW	Seattle	98106	811121	Automotive Body, Paint, and Interior Repair and Maintenance	9088	One Ameri-Cure, Inc Patriot Series I Spray Booth equipped with Paint Arrestor (Dry Filters) and rated at 13,000 CFM.	2004	Yes	5
11931	WESTEC Industries	8101 7th Ave S	Seattle	98108	332312	Fabricated Structural Metal Manufacturing	7835	One Dry Filtered Spray Room equipped with a Graco EFC-207 Exhaust System rated at 14,000 cfm.	2000	Yes	NA
29320	Westone Auto Collision	9001 Renton Ave S	Seattle	98118	811121	Automotive Body, Paint, and Interior Repair and Maintenance	10086	One AFC Finishing System spray booth, model # ECFARA2308 w/dry filters rated at 12,600 CFM with prep area used for automotive spray painting.	2010	Yes	NA
21241	Weyerhaeuser Aviation	1500 S 184th St (Starling Dr- gate at end)	SeaTac	98158	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	8840	One DeVilbiss Spray Booth Model JF 468 with dry filters complying with 40 CFR 63.745(g)(2)(ii) of the Aerospace NESHAP HEPA filters capable of 99.97% control and rated at 2,897 CFM.	31-May-04	Yes	NA
18749G	White Center Mini Mart	1505 SW Roxbury St	Seattle	98106	447110	Gasoline Stations with Convenience Stores	9786		17-Mar-81	No	No
15120	Young Corp	3231 Utah Ave S	Seattle	98134	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	629	Spray systems dry filter booth, rated at 20,000 cfm.	2009	No	NA

Attachment B: Point Source Inventory - Approved Notices of Construction

PSCAA Facility Registration No.	Company Name	Parameters Monitored and Monitoring Method	Recordkeeping Procedures	Inspected? Y or N	Last Inspection	Violations During Last Two Years	Notes	Potential COCs
10642G	USA #62515	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	4/16/2010	No		
10216G	USA Gasoline #68406	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	Unable to locate NOV; in compliance as of 8/5/10 [3/23/2012]		
12539	Vigor Shipyards, Inc	None	NA	No	No inspection in the last 3 years.	No		
13077G	WA State Patrol 171014, WSDOT TEF Admin	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	9/8/2011	No		
29111	Washington Memorial Cemetery	A properly installed and operated opacity monitoring and alarm system linked to the combustion control system. Afterburner 1-minute average temperature shall be measured and logged automatically.	Maintain logs which includes crematory operations and Afterburner Temperature Logs, Alarm Condition and Corrective Action Log, Calibration and Testing Log, and Facility Compliant Log. Records related to permit conditions are to be kept for 2 years.	Yes	12/16/2010	No		
29178	Washington One Hour Cleaner	None	NA	Yes	No inspection in the last 3 years.	No		
21325	West Seattle Quality Collision	Particulate emissions - Annual inspections of particulate deposits on exhaust ports.	Records related to permit conditions are to be kept for two years.	Yes	11/21/2011	No	NOC was for Performance Automotice Refinish.	
11931	WESTEC Industries	None	NA	Yes	5/3/2011	Failure to pay fees; no O&M logs for two years [5/3/2011]		
29320	Westone Auto Collision	There are no requirements listed on the permit to monitor emissions. The permit does require monitoring of the functionality and physical state of the control equipment.	Records related to permit conditions are to be kept for 2 years.	Yes	5/11/2012	No	Shall not spray coatings that contain cadmium, chromium or lead	
21241	Weyerhaeuser Aviation	None	Records related to permit conditions are to be kept for two years.	Yes	7/28/2010	No		Chromium, phthalates
18749G	White Center Mini Mart	All Stage 1 vapor recovery systems shall be operated and maintained in accordance with the applicable CARB Executive order in effect on the date of installation. Stage 2 owners shall conduct compliance test annually.	Owners and operators must keep a copy of all records required by Reg. II Section 2.07, on-site at the facility and available for inspection for at least 2 years after the date the record was prepared.	Yes	8/5/2010	No		
15120	Young Corp	None	NA	No	No inspection in the last 3 years.	No		

Attachment B: Point Source Inventory - Air Operating Permits

PSCAA Facility Registration No.	Company Name	Facility Description (Based on 2012 NAICS Code)	Source Description	Requirement No.	Parameters Monitored and Monitoring Method	Recordkeeping and Reporting Procedures	Date of Last Inspection
11338	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing			All records related to permit conditions. PSCAA inspects Ash Grove annually	II.D - All records must be retained for 5 years.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Rotary Cement Kiln, Main Stack and Coal Mills (EU-1)	EU 1.9	SO2, CO, and NOx emissions - CEMS, PSCAA inspects Ash Grove annually	II.B.2 - Hourly monitoring data of at least 95% of the hours that the kiln is operated. Report each time that there the CEMS data shows a violation.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Rotary Cement Kiln, Main Stack and Coal Mills (EU-1)	EU 1.9	SO2, CO, and NOx emissions - Mass emission rate monitoring	II.B.3 - Annual emissions are to be calculated from the CEMS data.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Rotary Cement Kiln, Main Stack and Coal Mills (EU-1)	EU 1.26	Dioxin/Furan - Temperature CMS	II.B.13 - Record inlet temps.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Rotary Cement Kiln, Main Stack and Coal Mills (EU-1)	EU 1.30	Dioxin/Furan - Source test every 30 months or if any change takes place which could affect compliance with D/F emission factors. The kiln temperature limits are established from the D/F source tests.	II.B.12 - Source test to be performed with and without use of waste oil. Also test for metals. II.C.8 Subpart LLL - Source test to be submitted to PSCAA.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Rotary Cement Kiln, Main Stack and Coal Mills		PM emissions - PM Monitoring Main Bag house	II.B.9 - Annual source test. Emission factor of 0.0414 g PM10 emissions per Mg clinker production provided in permit. Emission factor to be updated annual with source test info.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Rotary Cement Kiln, Main Stack and Coal Mills	EU. 1.36 through 38	Waste Oil Fuels - Used Oil Monitoring	II.B.5 - Daily records of waste oil usage to be submitted monthly.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Finish Mills	E.U 4.1	Particulate Emissions - Finish Mill Bag house Monitoring (II.B.4)	II.B.4 - Monitor pressure drop, take corrective action within 24 hours when out of range. Log pressure drop readings.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Cement Dome & Steel Scale Tanks	EU 5.1	PM10 Emissions - General Opacity Monitoring (II.A.1) and Cement Storage Dome Monitoring (II.B.7)	II.B.7 - Monitor pressure drop, take corrective action as specified in O & M plan when out of range. Log pressure drop readings.	3/21/2012
11339	Ash Grove Cement Company, Inc.	Hydraulic Cement Manufacturing	Bulk Bag Loading Station	EU 6.1 and 2	Fallout or visible emissions - Bulk Bag Loading Station Monitoring	II.B.11 - Inspect dust collector once a week and record findings.	3/21/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Facility-Wide		All records related to permit conditions.	II.A.2(c) - All records must be retained for 5 years with the most recent 2 years onsite.	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Facility-Wide	II.A.1(a)	Opacity monitoring (less than 20% opacity or 0.05 gr/dscf particulate matter) - Quarterly inspections of the site to observe visible emissions. If visible emissions are observed the plant can take corrective action or determine opacity using the reference method to ensure emissions are within permitted limits.	V.Q.4 Method 9A Reports	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Fuel burning equipment and combustion sources (examples include indirect-fired drying ovens, space heaters and water heaters.	II.A.1(a)	Opacity monitoring (less than 20% opacity or 0.05 gr/dscf particulate matter) - Quarterly inspections of the site to observe visible emissions. If visible emissions are observed the plant can take corrective action or determine opacity using the reference method to ensure emissions are within permitted limits.	V.Q.4 Method 9A Reports	3/22/2012

Attachment B: Point Source Inventory - Air Operating Permits

PSCAA Facility Registration No.	Company Name	Violations During Last Two Available Years	Notes	Potential COCs
11338	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No	Raw Mill - ON -- 0.000431 ng/dscm Raw Mill - OFF -- 0.002370 ng/dscm	Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No	TAC limits: As <= 5ppm; Cd <= 2 ppm; Cr <= 10 ppm; Pb <= 100 ppm; PCB <= 50 ppm Max amount of used oil is 8,640 gal per day	Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
11339	Ash Grove Cement Company, Inc.	No		Chromium, lead, mercury, phthalates, dioxins/furans, PCBs
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene

Attachment B: Point Source Inventory - Air Operating Permits

PSCAA Facility Registration No.	Company Name	Facility Description (Based on 2012 NAICS Code)	Source Description	Requirement No.	Parameters Monitored and Monitoring Method	Recordkeeping and Reporting Procedures	Date of Last Inspection
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Fuel burning equipment and combustion sources (equipment produces hot air, hot water, steam, or other heated fluids by external combustion of fuel)	II.A.1(a)	Opacity monitoring (0.10 gr/dscf particulate matter) - Quarterly inspections of the site to observe visible emissions. If visible emissions are observed the plant can take corrective action or determine opacity using the reference method to ensure emissions are within permitted limits.		3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Facility-Wide	II.A.2(b)	VOC - Boeing shall maintain a list of VOC containing coatings and update it annually.	The list of VOC containing coatings shall be made available to PSCAA upon request.	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Spray Booths	EU 2.7	Monitoring shall be conducted	II.A.2(d)(iii) - Visual inspections	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Spray Booths	EU 2.7	Monitoring of pressure drop shall be conducted	II.A.2(i)	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Solvent Cleaning	EU 2.45 & 48	Organic HPA - Plant 2 - Keep records of organic HAP content and record usage of non-compliant solvents	II.A.2(g) - Monthly records of solvent usage.	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Exempt Waterborne Coatings and low HAP/VOC Coatings	EU 2.50	HAP/VOC - purchase records: Plant 2 shall maintain HAP and VOC content and purchase records.	II.A.1(c) - Observed in a facility inspection.	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Primer and Topcoat		HAP and VOC - Monthly volume averages of VOC/HAP emitted per unit.	II.A.2(h) - Monthly volume records for higher VOC and HAP contents and purchase records low VOC and HAP contents.	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Control Equipment	EU 2.78	Efficiency - Pressure drop must be recorded once per shift.	II.A.2(i) Pressure drop for dry filters and flow rates for water wash	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	3-380 Building	EU 2.109	VOC - Record and report VOC content and quantities of cleaning solutions and paints used	II.A.2(l) - Plant 2 shall document annual VOC emissions using VOC contents of cleaning solutions	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	External Commercial	EU 2.117 and 118	Organic HAP and VOC - Keep records of monthly volume-weighted avg. mass	II.A.2(k) - Monthly volume weight averages of organic HAP and VOC to be compared to limits	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Fuel Burning Equipment	EU 4.4	Fuel content - see notes	II.A.2(e) - Fuel must meet PSCAA Reg I, Sec 9.08(a).	3/22/2012
21147	Boeing Commercial Airplane Group	Aircraft Manufacturing	Fuel Burning Equipment	EU 4.8	NOx and SOx emissions - Tracked monthly via boiler usage	II.A.2(n) - Emissions calculated monthly using usage data	3/22/2012
11285	Franz Seattle Division	Manufacture of breads	Manufacture of breads	I.A.3-I.A.7	PM, SO2, HCl emission limits; Maintain an O&M Plan	Opacity Monitoring, Fugitive Dust, Facility-Wide Inspections	6/18/2012
17796	Kenworth Truck Company	Heavy Truck Manufacturing	Heavy Truck Manufacturing	I.A.3	Particulate Mater Emission Limits for Fuel burning equipment, refuse burning equipment, and equipment used in manufacturing process	Opacity Monitoring, Dust Collectors, Facility-Wide Inspections	2/2/2012
17796	Kenworth Truck Company	Heavy Truck Manufacturing	Heavy Truck Manufacturing	I.A.8	Shall not emit air contaminants in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property	Compliant Response and Facility-Wide Inspections	2/2/2012
17796	Kenworth Truck Company	Heavy Truck Manufacturing	Heavy Truck Manufacturing	I.A.17	Facility-wide emissions of HAPS to no greater than 9.8 tons of any single HAP and no greater than 24.5 tons of all HAP during any 12 consecutive months.	Calculation of monthly total of each HAP and total HAP emissions	2/2/2012

Attachment B: Point Source Inventory - Air Operating Permits

PSCAA Facility Registration No.	Company Name	Violations During Last Two Available Years	Notes	Potential COCs
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No	Ash 0.1%, Sulfur, used oil 1.0%, Sulfur, fuel oil 2.00%, Lead 100 ppm, Arsenic 5 ppm, Cadmium 2 ppm, Chromium 10 ppm, Total halogens 1,000 ppm, PCBs 2 ppm, Flash point 100 °F	Chromium, arsenic, PCBs, phthalates, naphthalene
21147	Boeing Commercial Airplane Group	No		Chromium, arsenic, PCBs, phthalates, naphthalene
11285	Franz Seattle Division	The last violation was in 2009		cannot determine
17796	Kenworth Truck Company	The last violation was during October 9, 2003		PAHs, Phthalates
17796	Kenworth Truck Company	The last violation was during October 9, 2003		PAHs, Phthalates
17796	Kenworth Truck Company	The last violation was during October 9, 2003		PAHs, Phthalates

Attachment B: Point Source Inventory - Air Operating Permits

PSCAA Facility Registration No.	Company Name	Facility Description (Based on 2012 NAICS Code)	Source Description	Requirement No.	Parameters Monitored and Monitoring Method	Recordkeeping and Reporting Procedures	Date of Last Inspection
10281	Nucor Steel Seattle Inc.	Iron and Steel Mills	Facility-Wide	II.A.1(a)	Opacity/ particulate mater - Limit 0.05 gr/dscf and 0.1 gr/dsct for all general process. Nucor shall conduct quarterly inspections and if there are visible emissions Nucor shall take corrective action or test the opacity level.		10/18/2011
10281	Nucor Steel Seattle Inc.	Iron and Steel Mills	Electric Arc Furnace	EU 1.8	PM10 Emissions	II.A.2(e) - Annual source testing	10/18/2011
10281	Nucor Steel Seattle Inc.	Iron and Steel Mills	Electric Arc Furnace	EU 1.9	NOx and CO Emissions - Source testing	II.A.2(f) - Annual source testing	10/18/2011
10281	Nucor Steel Seattle Inc.	Iron and Steel Mills	Melt shop Combustion Sources and Reheat Furnace	EU 2.1 and 3.1	Particulate Emissions - Opacity Monitoring	II.A.1(a) - Quarterly inspections of visible emissions if any are found Nucor must take corrective action within 24 hours	10/18/2011
11656	Saint-Gobain Containers Inc.	Glass Container Manufacturing	Glass melting Furnaces	EU 1.7	Particulate Emissions - Particulate testing	II.A.2(b) - One source test per year	5/24/2012
11656	Saint-Gobain Containers Inc.	Glass Container Manufacturing	Glass melting Furnaces	EU 1.8	SO2 Emissions - Glass Melting Furnace Testing SO2	II.A.2(d) - One source test every other year	5/24/2012
11656	Saint-Gobain Containers Inc.	Glass Container Manufacturing	Glass melting Furnaces	I.A.7	Deposition of Particulates - There shall not be any particulate matter from Saint-Gobain to be deposited beyond the property in a sufficient quantity	Must keep records of any complaints and subsequent investigations. (There have been no complaints.)	5/24/2012
12539	Vigor Shipyards	Ship Building and Repair	Ship Building and Repair				6/14/2011

Attachment B: Point Source Inventory - Air Operating Permits

PSCAA Facility Registration No.	Company Name	Violations During Last Two Available Years	Notes	Potential COCs
10281	Nucor Steel Seattle Inc.	No		Arsenic, chromium, mercury
10281	Nucor Steel Seattle Inc.	No		Arsenic, chromium, mercury
10281	Nucor Steel Seattle Inc.	No		Arsenic, chromium, mercury
10281	Nucor Steel Seattle Inc.	No		Arsenic, chromium, mercury
11656	Saint-Gobain Containers Inc.	Exceeded PM emissions [1/5/2010], CEM limits [6/1/2011], and Failure to report emissions [11/6/2011]		Chromium, lead
11656	Saint-Gobain Containers Inc.	Exceeded PM emissions [1/5/2010], CEM limits [6/1/2011], and Failure to report emissions [11/6/2011]		Chromium, lead
11656	Saint-Gobain Containers Inc.	Exceeded PM emissions [1/5/2010], CEM limits [6/1/2011], and Failure to report emissions [11/6/2011]		Chromium, lead
12539	Vigor Shipyards	The last violation was during 1999		Chromium, arsenic, PCBs

Attachment B: Point Source Inventory - Regional Air Sources - Puget Sound Area

PSCAA Facility Registration No.	Company Name	NAICS Code	Facility Description (Based on 2012 NAICS Code)	Address	City	Zip Code	Source Description	Requirement No.	Parameters Monitored and Monitoring Method	Recordkeeping and Reporting Procedures	Date of Last Inspection	Violations During Last Two Available Years	Notes	Potential COCs
11820	Graymont Western US Inc.	32741	Lime Plant and Precipitated Calcium Carbonate Plant	1220 Alexander Avenue	Tacoma	98421	Calcium Carbonate Plant	II.A.1 -2	Opacity monitoring, PM emissions, fuel sulfur, calcining (lime) kiln PM testing and complaint response	A deviation report is required for any excursions and records should be kept for the requested monitoring data.	Inspections are performed annually but the date of the latest inspection was not available.	No		
Ecology AOP	Port Townsend Paper Corporation			100 Mill Road	Port Townsend	98368	Paper Mill	E.11	CEM - Emissions (NOX, CO, PM, and VOC) monitoring	Excess emissions report, source tests, fuel supply - records shall be kept for two years.	Cannot be determined from AOP	Cannot be determined from AOP	Cannot be determined from AOP	Cannot be determined from AOP

Attachment C

Point Source Inventory Data Collection Methodology

The following methodology was used to collect information used to generate the LDW Point Source Inventory presented in Appendix B, Attachment B.

- Obtained list of active sources and active NOCs in King County (July 2012)
- Sorted List for LDW airshed sources, which are composed of the following zip codes: 98106, 98108, 98134, 98168, 98118, 98178, 98158, 98188, 98057, and 98055
- Separated AOP facilities out of the original list from PSCAA
- Obtained AOP files from: <http://www.pscleanair.org/announce/permits/titlev.aspx>
- Separated facilities' Registration Numbers ending in "G", which are Gasoline Dispensing Facilities
- Requested electronic NOC# approvals from PSCAA
- Requested NOC approvals for Gasoline Dispensing Facilities, Registration Numbers ending with "G"
- NAICs added/corrected from NOC approvals and Ecology database
- Obtained Inspection Histories for King county (filtered for LDW airshed)
- Obtained compliance histories for the LDW airshed
 - Sorted NOV's for emission releases or violations of monitoring and reporting requirements
- Developed a list of potential sources of COC based on NAICs
 - Requested Engineering Evaluations based on the NAIC list
- Identified additional "large" sources from <http://apps.ecy.wa.gov/industrial/final.asp>
 - Permits were obtained for these sources.

Additional Notes:

- NOC# represents Notice of Construction applications not approvals from PSCAA.
 - Newer NOCs were chosen for facilities with multiple NOCs
 - Some NOC approvals were not available or no longer in operation. This finding was made during the public records request.
- During the sixth step, request of NOC# approvals, some facility information (address, NOC approval, equipment description, NAICs) was updated.
- One-third of NOC approvals for gas dispensing facilities were obtained. Due to the availability of these sources, PSCAA Article 2, Section 2.07, default reporting and monitoring requirements were used for the remaining facilities.

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Attachment D

Air Operating Permits and Notices of Construction

(Included on CD)

Attachment E

Compliance Histories

(Included on CD)

Attachment F

Engineering Worksheets

(Included on CD)