Appendix C
Year 9 (2015 Permit)
Stormwater Discharge Monitoring Data, Shallow Groundwater UICs

(Laboratory reports and Excel spreadsheet are provided electronically)

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Appendix C

Year 9 (2015 Permit), Stormwater Discharge Monitoring Data, Shallow Groundwater UICs

This report presents the stormwater discharge monitoring data collected in Year 9 (July 1, 2023, to June 30, 2024) of the City of Portland (City) 2015 Water Pollution Control Facilities (WPCF) Permit No. 102830 for Class V Stormwater Underground Injection Control (UIC) Systems. Year 9 (2015 Permit) sampling was performed in accordance with the City's 2015 *Stormwater Discharge Monitoring Plan* (SDMP). This report is divided into the following sections detailing the locations sampled and the results from the laboratory analysis:

1. Introduction
2. Sampling Design
    - Year 9 Monitoring Locations
    - Chemical Analysis
3. Results, Exceedances, and Response Actions
4. Analytical Data Validation

As required in Schedule B.5 of the 2015 Permit, data provided in the analytical laboratory reports are included as Table 2. A field audit report, laboratory reports, and an Excel spreadsheet are also provided electronically on a flash drive.

Introduction

The City has prepared this report to be included as part of the UIC Management Plan annual report in compliance with Schedule B.5 its 2015 WPCF Permit.[1] The Oregon Department of Environmental Quality (DEQ) issued the City's second WPCF Permit Number 102830 in June 2015, which approved the City's required SDMP dated March 24, 2015. The SDMP describes the stormwater monitoring strategy that the City will use throughout its second WPCF Permit term (June 2015 to May 2025) to evaluate stormwater discharges from public rights-of-way to City-owned UICs in areas of shallow groundwater.[2] Monitoring is conducted to demonstrate that the City's UIC Program protects beneficial uses of groundwater, meets WPCF Permit requirements, and satisfies requirements of the federal Safe Drinking Water Act and state UIC and groundwater regulations.

[1] The full name of the permit is the "Water Pollution Facilities Permit for Class V Stormwater Underground Injection Control Systems."

[2] Areas of shallow groundwater refer to locations where UICs have < 5 feet of vertical separation distance between the bottom of the UIC and the seasonal high groundwater level. Seasonal high groundwater is discussed in Snyder's USGS Report 2008-5059, *Estimated Depth to Ground Water and Configuration of the Water Table in the Portland, Oregon, Area* (2008), http://pubs.usgs.gov/sir/2008/5059.

Sampling Design

To comply with the monitoring requirements of the 2015 Permit, the City implements a program to sample stormwater entering the City's UIC system from a subset of UICs located in areas of shallow groundwater and compare stormwater data to permit Action Levels.

There are approximately 120 UICs located in areas of shallow groundwater. Over the length of the 2015 Permit, a sample of 75 UICs will be selected from the list of UICs located in shallow groundwater. The 75 UICs will be broken up into five panels of 15 UICs each. Over the course of the 10-year permit, each panel will be sampled twice to achieve monitoring objectives in the SDMP. With a sample size of 75, approximately 61 percent of the UICs located in shallow groundwater will be sampled at the end of the 10-year period. A finite population correction[3] will reduce the width of confidence intervals associated with this design by almost 50 percent, in comparison to a sample size of 75 UICs selected from a population of 10,000. This design therefore has the equivalent power of a much larger sample from the entire UIC population.

A Generalized Random Tesselation Stratified (GRTS) survey design[4] will be used to select the 75 locations from the list of UICs in areas of shallow groundwater. A GRTS design will result in a random sample that is spatially balanced (i.e., a sample with a spatial distribution that is similar to the spatial distribution of the population).

The GRTS design also allows for simplifying the implementation of a sample design when some UICs are not suitable for sampling. A GRTS sample draw is an ordered list of sample locations that can be evaluated for sampling sequentially. The first 75 UICs on the list that are suitable for sampling are used as the sample, with sequential blocks of 15 UICs making up each of the five panels. For the purpose of choosing 75 UICs to sample, the entire population of UICs located in shallow groundwater areas was placed into random order using the R package spsurvey.[5]

Year 9 Monitoring Locations

Year 9 (2015 Permit) sampling was developed in accordance with the SDMP. As this is the second permit term, locations were selected to assist in evaluation of UICs located in shallow groundwater (<5 feet of vertical separation distance). Year 9 (2015 Permit) monitoring includes 15 sites that were previously sampled during the fourth year of the 2015 Permit. As detailed in the SDMP, shallow groundwater sites monitored in Years 1 to 5 under the permit are to be repeated in Years 6 to 10. See Table 1 and Figures 1 and 2 for site-specific information.

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[3] When sampling more than approximately 5 percent of a finite population, a finite population correction is applied to the standard error of parameter estimates (e.g., annual trends, means, or population percentiles). This correction can significantly increase the precision of parameter estimates when a large proportion of the population is sampled (http://en.wikipedia.org/wiki/Standard_error#Correction_for_finite_population).

[4] Stevens, D.L., Jr., and A.R. Olsen. 2004. "Spatially-balanced sampling of natural resources." *Journal of the American Statistical Association*. 99: 262–278. In collaboration with the U.S. Environmental Protection Agency, the City utilized the GRTS design to select its UIC stormwater monitoring program locations sampled for 2005 Permit compliance.

[5] Kincaid, T. M., and A.R. Olsen. 2013. *spsurvey: Spatial Survey Design and Analysis*. R package version 2.6 (http://www.epa.gov/nheerl/arm).

Chemical Analysis

As identified in Table 1 of the 2015 Permit, six pollutants (Benzo[a]pyrene, Pentachlorophenol, Di(2-ethylhexyl)phthalate, total lead, total zinc, and total copper) must be sampled and analyzed for each monitoring location. The list of pollutants and sampling and analytical methods can be found in the SDMP. Monitoring results are summarized below.

Results, Exceedances, and Response Actions

The analytical results from the 15 shallow groundwater monitoring locations are attached in Table 2. All laboratory data sheets are included electronically with this report. This data has also been submitted through DEQ's Your DEQ Online system. Review of the data indicated no Permit Table 1 Action Levels were exceeded, and thus no response actions were required. Collected data were also consistent with UIC monitoring that was conducted in the first WPCF Permit term.

Analytical Data Validation

Analytical results were reviewed to ensure that the data quality objectives defined in the Quality Assurance Project Plan were achieved, and they were determined to be acceptable and usable. A data usability report is attached.

Attachments:

- Table 1 - Year 9 (2015 Permit) UIC Monitoring Location Information
- Table 2 - Year 9 (2015 Permit) Monitoring Results
- Figures 1 and 2 - Year 9 (2015 Permit) UIC Monitoring Location Site Maps
- Data Usability Report
- Flash drive containing field audit report, lab data sheets and Microsoft Excel database

Table 1: Year 9 (2015 Permit) UIC Monitoring Location Information

Location Code	Approximate Address [a]	Traffic Category [b]	Predominant Land Use [c]	DEQ UIC ID	BES UIC ID [d]	Latitude	Longitude	UIC Depth (feet)	Pretreatment System [e]	Separation Distance [f]	Distance to Nearest Well (feet) [g]	Within Two-year Time of Travel from public drinking water well?
SG-065	4745 SE 122ND AVE	> 1000	MFR	10102-9809	AQT804	45.48761749	-122.53787994	20.3	Sed MH	3	848	NO
SG-066	8318 SE 78TH AVE	< 1000	SFR	10102-4830	ADV950	45.46357727	-122.58353424	27.5	Sed MH	-13	1849	NO
SG-068	13250 SE HOLGATE BLVD	> 1000	MFR	10102-712	ANA591	45.48958969	-122.52690887	10	Sed MH	-1	1062	NO
SG-069	12210 SE ELLIS ST	> 1000	SFR	10102-5291	ADT686	45.48255157	-122.53763580	17	Sed MH	4	1268	NO
SG-071	5404 SE 122ND AVE	> 1000	COM	10102-9783	AQT793	45.48406600	-122.53781890	20.5	Sed MH	0	2538	NO
SG-073	4857 SE 122ND AVE	> 1000	SFR	10102-9807	AQT802	45.48686599	-122.53791046	20.3	Sed MH	2	877	NO
SG-078	6457 NE 66TH AVE	< 1000	SFR	10102-9785	AQT756	45.57010269	-122.59515380	26.33	Sed MH	-3	1070	NO
SG-079	12204 SE STEELE ST	> 1000	COM	10102-5931	ADU751	45.48472213	-122.53757476	20.4	Sed MH	0	1405	NO
SG-080	5608 SE 99TH AVE	< 1000	SFR	10102-5407	ACP660	45.48171615	-122.56162261	30	Sed MH	4	2534	NO
SG-081	11080 SE HAROLD ST	> 1000	SFR	10102-5468	ADV191	45.48280334	-122.54930877	22.9	Sed MH	-3	711	NO
SG-084	4100 SE 133RD AVE	<1000	SFR	10102-6326	ADT466	45.49248333	-122.52741667	30	Sed MH	-1	1289	NO
SG-083	10310 SE ELLIS ST	> 1000	SFR	10102-5464	ADV188	45.48180389	-122.55689239	22	Sed MH	0	1322	NO
SG-085	12506 SE REEDWAY ST	< 1000	SFR	10102-5296	ADT691	45.48175430	-122.53427124	25	Sed MH	-4	2151	NO
SG-087	5021 SE 122ND AVE	> 1000	COM	10102-9803	AQT798	45.48545837	-122.53794860	16.9	Sed MH	4	1119	NO
SG-090	13250 SE HOLGATE BLVD	> 1000	MFR	10102-710	ANA589	45.48958969	-122.52696228	9	Sed MH	0	1054	NO

Notes:

[a] Addresses should not be considered precise location information and are subject to change as City staff better describe the physical UIC locations relative to nearby properties. UIC street addresses are assigned relative to nearby properties for general locating purposes. Latitude and longitude should be relied upon for accurate locating of UICs.

[b] Traffic Category (Residential = <1000 trips per day, Collector or greater >1000 trips per day).

[c] COM = commerical; POS = Parks and Open Space; SFR = Single Family Residential; MFR = Multifamily Residential; IND = Industrial

[d] BES UIC number is obtained from the BES Hansen database.

[e] Sed MH = Sedimentation maintenance hole

[f] The estimated separation distance is defined as the approximate depth in feet from the bottom-most perforation in the UIC to the approximate seasonal-high groundwater level. The bottom-most perforation is defined as the bottom of the UIC – 2 feet. Two feet were added to all separation distance calculations to account for the standard depth of the sediment trap ring on standard City UIC design. This information is reported to DEQ by the City as “Depth to groundwater” (UIC Database Report) for inclusion in DEQ’s UIC database. Reported to nearest foot. Separation distances are based on December 2008 USGS depth to groundwater data (Snyder, D.T., 2008, Estimated depth to ground water and configuration of the water table in the Portland, Oregon area: U.S. Geological Survey Scientific Investigations Report 2008-5095, 40p. Available at http://pubs.usgs.cov/sir/2008/5059).

[g] Horizontal distance to nearest groundwater drinking water well (e.g., muncipal, domestic, irrigation).

Table 2: Year 9 (2015 Permit) Monitoring Results

				Analyte	Pentachlorophenol		DEHP		Benzo(a)pyrene		Copper		Lead		Zinc	
				Action Level (ug/L)	10		300		2.0		1,300		500		50,000	
				Method	EPA 515.4		EPA 8270-SIM		EPA 8270-SIM		EPA 200.8		EPA 200.8		EPA 200.8	
Site id	Location Description	Traffic (trips per day)	Node	Date												
SG-065	4745 SE 122nd Ave (>1000)	>1000	AQT804	11/06/2023 13:59	=	0.452	=	6.2	=	0.035	=	30.3	=	14.7	=	182
SG-066	8318 SE 78th Ave (<1000)	<1000	ADV950	12/05/2023 12:27	=	0.147	=	0.81	=	0.032	=	6.44	=	3.73	=	28.5
SG-068	13250 SE Holgate Blvd (>1000)	>1000	ANA591	12/05/2023 10:49	=	0.375	=	0.74	=	0.019	=	5.33	=	1.86	=	31.3
SG-069	12210 SE Ellis St (>1000)	>1000	ADT686	11/06/2023 12:53	=	0.0806	=	2	=	0.15	=	4.79	=	1.72	=	33.6
SG-071	5404 SE 122nd Ave (>1000)	>1000	AQT793	11/06/2023 13:15	=	0.421	=	3.8	=	0.038	=	20.9	=	7.86	=	121
SG-071 DUP	5404 SE 122nd Ave (>1000)	>1000	AQT793	11/06/2023 13:15	=	0.409	=	3.2	=	0.033	=	19.4	=	7.47	=	117
SG-073	4757 SE 122nd Ave (>1000)	>1000	AQT802	11/06/2023 14:10	=	0.659	=	1.3	=	0.015	=	7.1	=	1.79	=	43.9
SG-078	6547 NE 66th Ave (<1000)	<1000	AQT756	12/05/2023 08:17	=	0.144	<	<0.50	=	0.016	=	4.49	=	3.28	=	17.1
SG-079	12204 SE Steele St (>1000)	>1000	ADU751	11/06/2023 13:37	=	0.252	=	2.9	=	0.022	=	14.4	=	6.13	=	82.5
SG-080	5608 SE 99th Ave (<1000)	<1000	ACP660	12/05/2023 11:48	=	0.607	<	<0.50	<	<0.010	=	1.89	=	0.579	=	10.6
SG-081	11080 SE Harold St (>1000)	>1000	ADV191	01/08/2024 10:50	=	0.0891	=	1.6	=	0.025	=	9.2	=	5.3	=	71.7
SG-083	10310 SE Ellis St (>1000)	>1000	ADV188	10/10/2023 10:06	=	0.0581	<	<0.50	<	<0.010	=	5.35	=	1.19	=	28.7
SG-083 DUP	10310 SE Ellis St (>1000)	>1000	ADV188	10/10/2023 10:06	=	0.0666	<	<0.50	<	<0.010	=	5.16	=	1.2	=	29.3
SG-084	4100 E 133rd Ave (<1000)	<1000	ADT466	12/05/2023 10:03	=	0.0516	<	<0.50	<	<0.010	=	1.21	=	0.292	=	5.33
SG-085	12506 SE Reedway St (<1000)	<1000	ADT691	12/05/2023 09:04	=	0.0778	<	<0.50	<	<0.010	=	4.29	=	2.27	=	20.7
SG-087	5021 SE 122nd Ave (>1000)	>1000	AQT798	11/06/2023 14:20	=	0.541	=	2.2	=	0.018	=	8.7	=	2.63	=	51
SG-090	13250 SE Holgate St (>1000)	>1000	ANA589	12/05/2023 10:39	=	0.403	=	1.1	=	0.018	=	5.85	=	2.94	=	34.3

Notes:

All concentrations are in micrograms/per liter (ug/l)

DUP = Field Duplicate

DEHP = Bis(2-ethylhexyl)phthalate

Figure 1

2023-24 Year 9 (2015 Permit) UIC Monitoring Locations

Explanation

- Shallow Groundwater Panel 4 (Event 1)

LiDAR DEM Hillshade

Value

High : 254

Low : 0

N

W E

S

0 0.45 0.9 1.8

Miles

Monitoring Coordination & Analysis
Bureau of Environmental Services
City of Portland, Oregon

Source: ESRI Data & Maps CD
Created in ArcGIS 10.2 using ArcMap

CITY OF PORTLAND, OREGON 1851

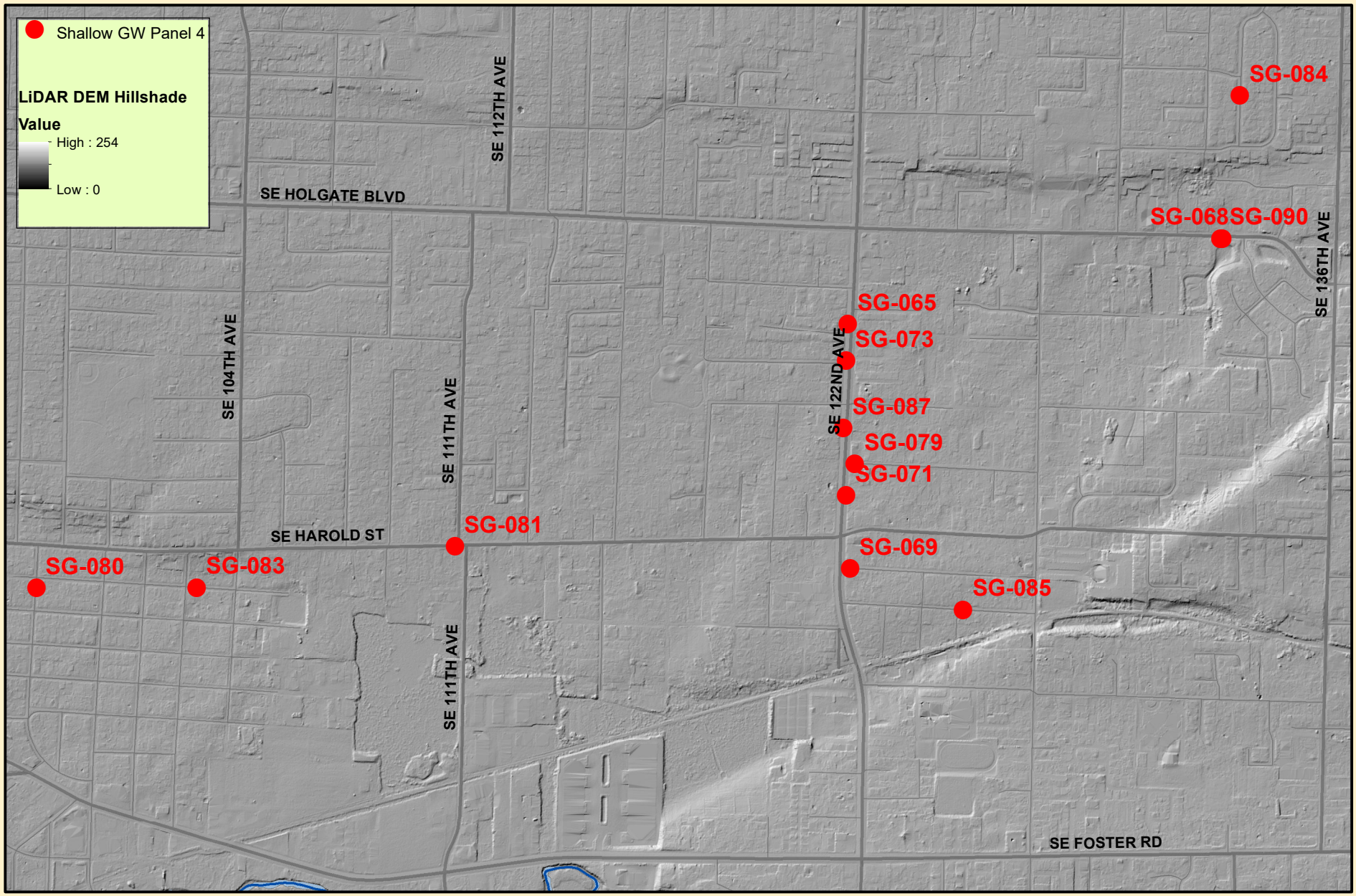

Figure 2
2023-24 Year 9 (2015 Permit) UIC SE Monitoring Locations

Monitoring Coordination & Analysis
Bureau of Environmental Services
City of Portland, Oregon

Source: ESRI Data & Maps CD
Created in ArcGIS 10.2 using ArcMap

CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES
UIC PROGRAM STORMWATER MONITORING
DATA USABILITY REPORT

YEAR 19 MONITORING
OCTOBER 2023 – JANUARY 2024

1.0 INTRODUCTION

Analytical results for stormwater samples collected during Permit Year 19 (PY 19) were reviewed to evaluate data usability and adherence to project data quality objectives (DQOs). All data were evaluated using the project *Quality Assurance Project Plan* (QAPP) and *U.S. EPA Contract Laboratory Program National Functional Guidelines* (NFGs) *for Data Review* (BES 2015, EPA 2017a, 2017b) for guidance in evaluating the following:

- Field practices, field quality control (QC) samples, daily activity logs, and sample collection logs;
- Sample COC and receipt documentation, preparation and analytical holding times, and reporting and detection limits for chemicals of interest; and
- Laboratory data quality, in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC) as described in Section 2.5 of the QAPP.

2.0 SAMPLING SUMMARY

The City Bureau of Environmental Services (BES) Field Operations section performed sample collection and field parameter measurements for all compliance monitoring. Samples were collected from 15 locations during one "event" from October 10, 2023 through January 8, 2024. Sample locations are presented in Table 1 attached to this summary.

Samples were collected in general accordance with the *Sampling and Analyses Plan* (SAP) and QAPP, contained in the final UIC *Stormwater Discharge Monitoring Plan* (SDMP). The SDMP includes all stormwater monitoring conducted at City UICs for UIC permit compliance.

3.0 ANALYTICAL SUMMARY

WPCL performed analyses for all compliance samples collected for PY 19. Laboratory procedures were performed in general accordance with the QAPP except as noted below. The permit-required and PPS analytes measured during PY19 are listed below.

Analyte	Method	MRL (µg/L)	MADL (µg/L)	Lab
Pentachlorophenol	EPA 515.4	0.04	10	WPCL
Di(2-ethylhexyl)phthalate	EPA 8270-SIM	1.0	60	WPCL

Analyte	Method	MRL (µg/L)	MADL (µg/L)	Lab
Benzo(a)pyrene	EPA 8270-SIM	0.01	2.0	WPCL
Total Copper	EPA 200.8	0.2	1,300	WPCL
Total Lead	EPA 200.8	0.1	500	WPCL
Total Zinc	EPA 200.8	0.5	5,000	WPCL

MRL = method reporting limit
MADL = maximum allowable discharge limit

4.0 QAPP COMPLIANCE AND DATA USABILITY

BES Monitoring Coordination & Analysis (MCA) conducted an independent data usability assessment to ensure the data are usable. Findings are summarized below.

4.1 Field Practices

Field Data Sheets

Field data sheets (FDSs) are included in this report as Attachment 1. FDSs are used to record general and sample-specific information regarding site conditions, time of sample collection, visual stormwater observations, sample collection difficulties, deviations from the SDMP, and any information relating to potential pollutant sources. These logs were reviewed by both the Field Operations team leader and by MCA for completeness and consistency. No significant issues were identified during review of field documents.

Field measurements including temperature, conductivity, and pH are recorded on WPCL COCs so that field data can be entered into the LIMS by the WPCL sample custodian. COCs are included with the analytical laboratory reports.

Field and Lab QC Samples

One equipment blank per year and one field decontamination blank per event were collected and analyzed for the same parameters as stormwater samples. Field duplicate samples are collected at a frequency of one duplicate for every 10 locations sampled. Results of field and laboratory QC samples are discussed in respective sections below.

No issues were encountered that required resampling.

4.2 Data Usability Assessment

General

Discrete samples were collected at 15 sample locations, in addition to two field duplicates, one field decontamination blanks, and one equipment blank. Samples were delivered to WPCL on the same business day that they were collected. Laboratory sample receipt forms indicate that all sample containers arrived intact, and all container labels matched the COC documentation.

Some data were flagged as estimated using various flags to illustrate specific laboratory QC failures. Following review of laboratory reports, case narratives, and field QC data by IMS, some of these flags were carried through as appropriate, and replaced with qualifiers presented below. Additional qualifiers were added, where necessary. Qualified data are still considered valid and

usable (though should be used with caution), except for results that may have been qualified with an "R" (rejected). Qualifiers used for PY 19 Event reporting are listed below:

J Estimated concentration
U Not detected above MDL

Note that laboratory PARCC review for this report is generally limited to permit-required analytes and analyses necessary for reporting. For example, laboratory QC is reviewed for all samples analyzed by EPA Method 8270-SIM; however, RPDs for field duplicates are only calculated for UIC permit-required analytes. Additional review may be conducted where laboratory QC issues indicate more pervasive issues that may impact data quality for analytes not required for permit compliance monitoring.

Method Detection Limits

All method reporting limit (MRL) and detection limit (MDL) targets for permit-required analytes were met as specified in the QAPP (BES 2015).

MRLs were increased for selected analytes on individual samples where dilution was required in order to quantify analytes detected that were outside initial instrument calibration. Several samples required dilutions due to matrix interference for individual analytes. MRLs and MDLs did not exceed MADLs for any "non-detect" sample analytical results.

4.2.1 Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of preparation or analysis, were met for each project sample collected for PY19 permit compliance.

4.2.2 Blanks

In accordance with EPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10x) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5x) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples.

4.2.3 System Monitoring Compounds

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA methods 8270-SIM and 515.4 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. All surrogate recoveries were within the acceptance limits specified in the QAPP.

4.2.4 Laboratory Control Samples

For Laboratory Control Samples (LCSs), samples of deionized water are analyzed following the addition of a known amount of analyte in order to confirm the ability of the analytical instrument to

accurately quantify target compounds. LCSs were analyzed at the appropriate QAPP-specified frequency. Additionally, all LCS recoveries were within the acceptance limits for accuracy specified in the QAPP.

4.2.5 Matrix Spike/Matrix Spike Duplicates

For Matrix Spikes (MS)/Matrix Spike Duplicates (MSD), stormwater samples are analyzed following the addition of a known amount of analyte in order to evaluate any matrix effects that interfere with the ability of the analytical instrument to accurately quantify target compounds. Typically, results are not qualified based on MS/MSD results alone unless recoveries are well outside control limits. MS/MSDs were analyzed at the appropriate QAPP-specified frequency. Additionally, all MS recoveries and MS/MSD relative percent differences (RPDs) were within the acceptance limits for accuracy specified in the QAPP except as noted below:

Analysis	Batch	Samples Affected	Comments
8270-SIM	B23J281	none	Eight MS/MSD results were slightly low, RPDs were acceptable, results generally within NFG criteria, no other QC issues for those analytes, no action taken.
8270-SIM	B23K109	none	Two MS/MSD results were slightly low, one for bis(2-ethylhexyl) phthalate very low (-6%), RPDs were acceptable, no other QC issues for those analytes, no action taken.
8270-SIM	B24A126	none	Two MSD results were slightly high, RPDs were acceptable, results generally within NFG criteria, MSD surrogate recovery slightly high, no action taken.

No action was taken where MS/MSD results were above acceptance limits and all associated sample results were non-detect, or where spike amounts were too low relative to sample concentrations.

4.2.6 Duplicates

Field and laboratory duplicate samples were analyzed at the appropriate frequency and all recoveries were within the ranges specified in the QAPP.

4.3 Data Usability Summary

Appropriate sample collection and analytical methods were used for all samples and analyses, ensuring good comparability with other data. Analytical accuracy and precision were determined to be generally acceptable, with noted exceptions.

All other data reported should be considered valid as reported, representative of the samples collected, and acceptable for further use.

5.0 REFERENCES

City of Portland Bureau of Environmental Services (BES). 2015. *Quality Assurance Project Plan* - Stormwater Underground Injection Control System Monitoring. Prepared for Oregon Department of Environmental Quality (ODEQ). August 2006, revised March 2015.

City of Portland Bureau of Environmental Services (BES). 2015. *Final Stormwater Discharge Monitoring Plan* – consists of *Sampling and Analysis Plan* and *Quality Assurance Project Plan*. Prepared for Oregon Department of Environmental Quality (ODEQ). August 2006, revised March 2015.

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EPA 2002. Guidance on Environmental Data Verification and Data Validation. EPA-240-R-02-004 (EPA QA/G-8). Office of Environmental Information. November 2002.

EPA 2017a. USEPA National Functional Guidelines for Superfund Inorganic Methods Data Review. EPA-540-R-2017-001 (OLEM 9335.0-135). Office of Superfund Remediation and Technology Innovation (OSTRI). January 2017.

EPA 2017b. USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review. EPA-540-R-2017-002 (OLEM 9335.0-136). Office of Superfund Remediation and Technology Innovation (OSTRI). January 2017.

6.0 GENERAL

This summary report was prepared by the MCA sections of BES. For any questions concerning this report, contact Aaron Wieting at 503-823-5437.

Date of Final Report: July 16, 2024

Prepared by: Aaron B. Wieting, R.G., BES MCA

Reviewed by: Joel Bowker, R.G., BES UIC Program

TABLE 1: UIC Permit Year 19 Monitoring Locations

Location Code	Location Address	Traffic	Node
SG-018	5803 SE 122nd Ave	>1000	ADT682
SG-028	13515 SE Holgate Blvd	>1000	AMR622
SG-030	10402 SE Ellis St	<1000	ADV190
SG-034	12319 SE Ramona St	>1000	ADT696
SG-047	4022 NE 142nd Ave	<1000	AQT762
SG-048	4241 SE 136th Ave	>1000	ADT475
SG-049	5211 SE 122nd Ave	>1000	AQT796
SG-053	4919 SE 122nd Ave	>1000	AQT800
SG-054	5440 SE 111th Ave	>1000	AQT767
SG-055	11741 SE Foster Rd	>1000	AQT811
SG-057	5500 SE 122nd Ave	>1000	AQT785
SG-059	4656 NE 118th Ave	<1000	ADQ418
SG-060	4144 SE 132nd Ave	<1000	ADT426
SG-061	12246 SE Ellis St	<1000	ADT687
SG-063	13820 SE Gladstone St	<1000	ADT473

TABLE 2: UIC Permit Year 19 Field Duplicate Precision

UIC Permit Monitoring Year 19 Event 1 October 10, 2023 - January 8, 2024 Field Duplicate Precision								
Constituent	**Units**	**Precision**	**SG-071**			**SG-083**		
		DQO	**Primary**	**DUP**	**RPD**	**Primary**	**DUP**	**RPD**
Benzo(a)pyrene	µg/L	30	0.038	0.033	**14.1**	< 0.01	< 0.01	**0.0**
Bis(2-ethylhexyl) phthalate	µg/L	30	3.8	3.2	**17.1**	< 0.5	< 0.5	**0.0**
Copper	µg/L	20	20.9	19.4	**7.4**	5.35	5.16	**3.6**
Lead	µg/L	20	7.86	7.47	**5.1**	1.19	1.2	**0.8**
Pentachlorophenol	µg/L	30	0.421	0.409	**2.9**	0.0581	0.0666	**13.6**
Zinc	µg/L	20	121	117	**3.4**	28.7	29.3	**2.1**

Notes:

RPD = Relative Percent Difference