WPCF Permit Annual Compliance Report

Permit Year 4

WPCF-DOM-UIC-103043

File No. 112110

CITY OF
GRESHAM

December 2016

CITY OF
GRESHAM

1333 N.W. Eastman Parkway | Gresham, OR 97030

December 23, 2016

Matthew Kohlbecker, RG
UIC Senior Hydrogeologist
DEQ Northwest Region
700 NE Multnomah St., Suite 600
Portland OR 97232

RE: WPCF Stormwater Permit #WPCF-DOM-UIC-103043 Permit Year 4 Annual Report

Dear Mr. Kohlbecker:

I am pleased to submit a copy of the Water Pollution Control Facility Annual Report for the City of Gresham Permit No. WPCF-DOM-UIC-103043, File No. 112110, expiration date November 30, 2022.

The report contains a summary of stormwater monitoring findings from the past year, a section that describes the City's implementation of its stormwater management plan, and a summary of UIC system updates for the past and coming year. The goals of the annual report are to: 1) document progress on the implementation of best management practices for pollution prevention, reduction and removal; 2) evaluate program results for continuous improvement; and 3) share this information with municipal decision makers and the public. The final report is available on the City of Gresham's website.

Along with our annual report, we are submitting proposed revisions to our Stormwater Monitoring Plan for DEQ's consideration. The rationale for the proposed reduction from 30 sites to 10 sites per year is to keep our WPCF permit monitoring commitment consistent with NPDES permit obligations.

If you have any questions regarding this report or would like an additional copy, please contact Keri Handaly at (503) 618-2657 or Keri.Handaly@GreshamOregon.gov.

Sincerely,

Torrey Lindbo, Water Sciences Manager
Department of Environmental Services

cc: Steve Fancher, Department of Environmental Services Director

Enclosures: (1) Hard copy (1) CD Rom

Water Pollution Control Facility
Permit #: WPCF-DOM-UICV-103043
File Number: 112110
Permit Year 4 Annual Report (2016)
City of Gresham

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Steve Fancher, P.E.
Director, Department of Environmental Services
City of Gresham

For additional information regarding this report, please contact:

Torrey Lindbo, Water Sciences Manager
Water Resources Division
Department of Environment Services
City of Gresham
1333 NW Eastman Parkway
Gresham, OR 97030
(503) 618-2687
www.greshamoregon.gov

Introduction

The City of Gresham is submitting this report in accordance with the requirements of Water Pollution Control Facility permit # WPCF-DOM-UIC-103043. This report is intended to provide a brief summary of the activities conducted by the City to manage stormwater using Underground Injection Control (UIC) devices in a manner that is protective of groundwater.

Reporting Requirements

Schedule B.4 of the WPCF permit required the first annual report to be submitted in December 2013 and subsequent- reports to be submitted to DEQ by December 31 of each year, to address report requirements a through g. The following table lists those requirements along with the section where the information is contained in this Annual Report.

Table 1. Permit required report components and location within Annual Report

Permit Reporting Requirement	Report Section
a. Include the results of your stormwater monitoring conducted in accordance with your stormwater monitoring plan. This must include a spreadsheet of all data from sampled UICs provided in the analytical laboratory reports;	Section A
b. Discuss any Table 1 action level exceedances and actions taken to address the exceedances;	Section A
c. Describe any actions taken to implement the underground injection control system management plan required in Schedule D, condition 5, any proposed modifications to the management plan, and any additional actions taken to manage your injection systems to ensure groundwater protection;	Section B
d. Describe any actions described in your plan that you were not able to complete and why;	Section B
e. Identify any injection systems that you closed, retrofitted, or installed during the year;	Section C
f. Describe your future (in the next year) plans to install, modify, convert, or close any underground injection system; and	Section C
g. *Provide one hard copy and one electronic copy of the annual report. The report will include a tabular summary of results and description of any significant findings. You must retain copies of analytical laboratory reports as described in Schedule F condition 3.*	Entire report

Adaptive Management

As described in the WPCF permit in Schedule D. 6. Adaptive Management, the City follows an annual adaptive management process to assess and modify, as necessary, program elements to

achieve reductions in stormwater pollutants. This includes consideration of available technologies and practices; review of monitoring data generated by the implementation of the monitoring plan and corresponding analysis of the data; review of goals and tracking measures; and evaluation of City resources available to implement the technologies and practices. Any proposed changes, adaptive management or additions of Best Management Practices (BMPs) are described in the respective report sections.

UIC Management Plan

To comply with Schedule D.5. of the WPCF permit, the City of Gresham submitted a UIC Management Plan (UICMP) on October 2, 2012, which was approved by DEQ. The management plan describes how the City implements a program to address the following elements in order to protect groundwater quality:

a. *Stormwater monitoring, including how you will use stormwater monitoring results to ensure compliance with the action levels in Schedule A, Table 1;*
b. *Injection system decommissioning;*
c. *Employee education and public outreach;*
d. *Injection system operation and maintenance;*
e. *Protecting injection systems from accidental spills or illicit disposal of wastes or contaminants; Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, materials storage or handling areas, or other discharges that may contain pollutants above levels of concern;*
f. *Housekeeping practices to protect groundwater quality;*
g. *Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.*

The implementation status and measurable goals for all stormwater BMPs conducted throughout the City is provided in Section B.

Report Organization

Section A – UIC Monitoring Data
1. Background and Permit Requirements
2. Summary of Monitoring Findings
3. Table 1 Pollutant Data and Action Levels
4. Stormwater Monitoring Data Table

Section B – UIC System Management
1. UIC-Specific BMP Implementation Status
2. NPDES MS4 Stormwater Management Plan Implementation Status

Section C – UIC Inventory Changes
1. List of UIC System Changes (closed, retrofitted, modified, discovered)
2. Plans for UIC System Updates in Coming Year

Section A – UIC Monitoring Data

1. Background and Permit Requirements

In order to comply with Schedule B.2. of the WPCF permit, the City submitted a Stormwater Monitoring Plan to DEQ on October 2, 2012. The City drafted the original plan on November 21, 2011 and began implementing it in 2011-12. The data collected in that initial year was consistent with the plan approved by DEQ, and for data tracking purposes is referred to as Permit Year Zero (PY0).

Each year the City of Gresham monitors 30 random and spatially balanced locations that are stratified by traffic levels – half of the sites are from streets with <1000 vehicle trips per day (TPD), while the other half are from streets with >1000 TPD. Five of the locations monitored each year are a "fixed panel" of sites that are sampled every year (Figure A1 shows the Panel 1 locations). The other 25 locations are a "rotating panel" that changes each year. In PY4 (2015-16), the City sampled the Panel 6 locations shown in Figure A2. Note that the Panel 2 locations were sampled in 2011-12 (PY0), Panel 3 locations were sampled in 2012-13 (PY1), Panel 4 locations were sampled in 2013-2014 (PY2), and Panel 5 locations were sampled in 2014-2015 (PY3).

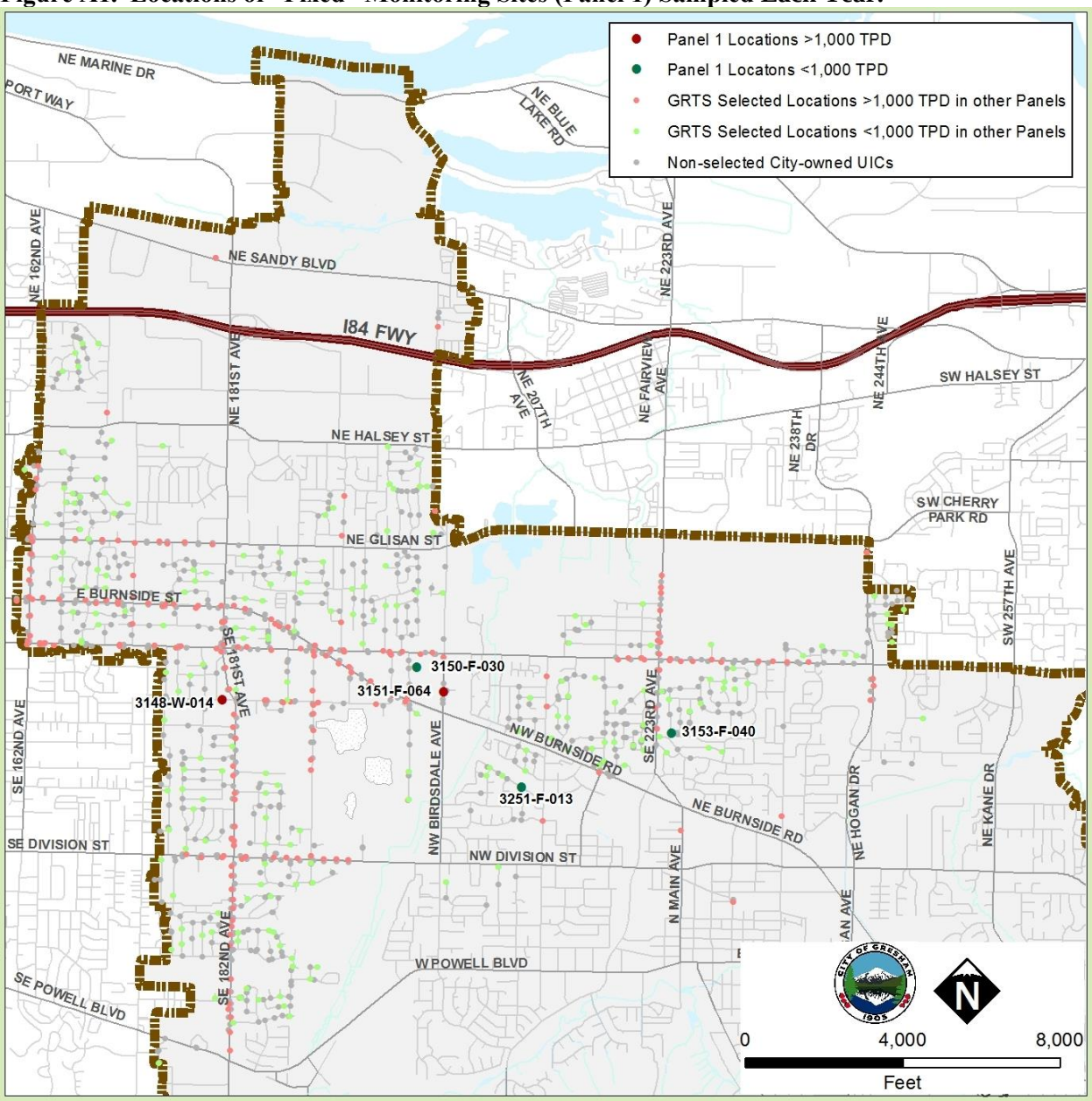
The constituents monitored at each UIC sampling location fall into four categories, based upon the requirement or rationale the City used when including it in the Stormwater Monitoring Plan. Table A1 summarizes the rationale and constituents monitored in Permit Year 4.

Table A1. Constituents Monitored at UIC Locations and Included in Annual Report

1. Those required by the WPCF permit (Schedule A.2 Table 1);	Benzo(a)pyrene, Di(2-ethylhexyl)phthalate, Pentachlorophenol, Total Metals (Antimony, Lead, Zinc, Copper), 2,4-D
2. Those required by the NPDES MS4 permit (the City monitors these constituents at the same UIC monitoring locations);	BOD, TSS, Hardness, *E. coli*, Nitrate, TKN, Ammonia, Total Phosphorus, Ortho-phosphorus, Total Mercury, Dissolved metals (Copper, Lead, Zinc)
3. Those the City screens for periodically in order to evaluate status;	None this year
4. Those constituents included as part of the analyses with required pollutants.	Numerous PAHs, phthalates, and pesticides

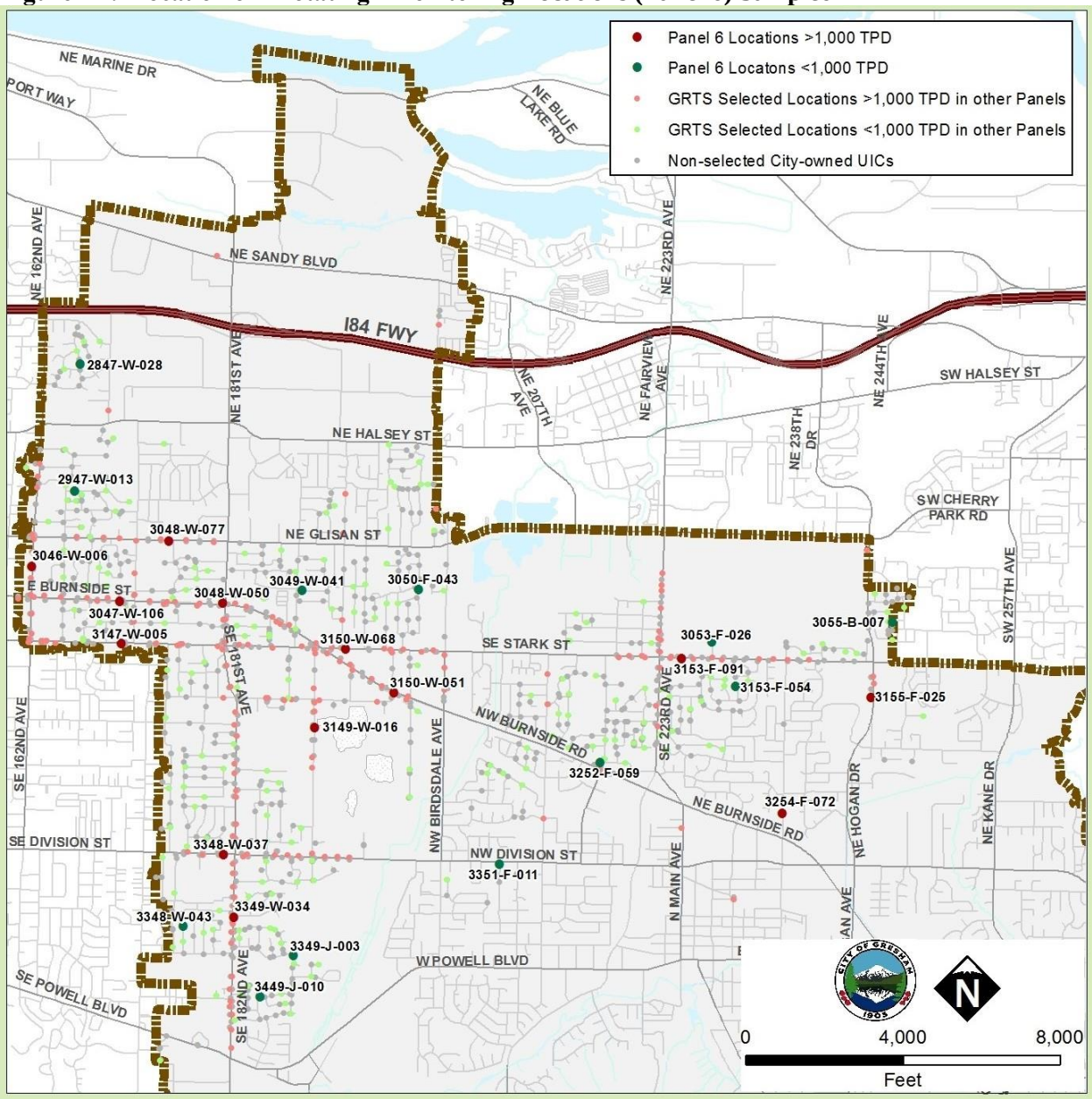
Part 2 of Section A summarizes significant findings, while Part 3 focuses specifically on the 8 pollutants listed in WPCF Permit Schedule A, Table 1 and how the data relates to the action levels listed in that table.

Figure A1. Locations of "Fixed" Monitoring Sites (Panel 1) Sampled Each Year.



The panel of 5 "fixed" monitoring locations consists of 3 low traffic (<1000 TPD) and 2 locations on high traffic (>1000 TPD) streets. The rationale for selecting a lower number of high traffic sites in the fixed panel is that this means 13 of the 25 sites in the "rotating" panel are from high traffic streets, resulting in a higher proportion of high traffic sites being sampled over the permit term.

Figure A2. Location of "Rotating" Monitoring Locations (Panel 6) Sampled in PY4



2. Summary of Monitoring Findings

Stormwater monitoring data revealed higher traffic sites (>1000 vehicle trips per day (TPD)) have higher pollutant concentrations in comparison to residential streets (<1000 TPD) for several pollutants (TSS, total lead, total antimony, and most phthalates and pesticides with detections in more than 10% of samples). The City continues to focus pre-treatment Capital Improvement projects on high traffic streets.

Consistent with monitoring data from past years, there was a strong positive correlation between total suspended solids (TSS) and pollutants that are typically associated with sediment, including all total phase metals (antimony, copper, lead, mercury, and zinc), as well as total phosphorus and TKN. **Figure A3** shows total lead versus TSS as an example of what many of these relationships look like.

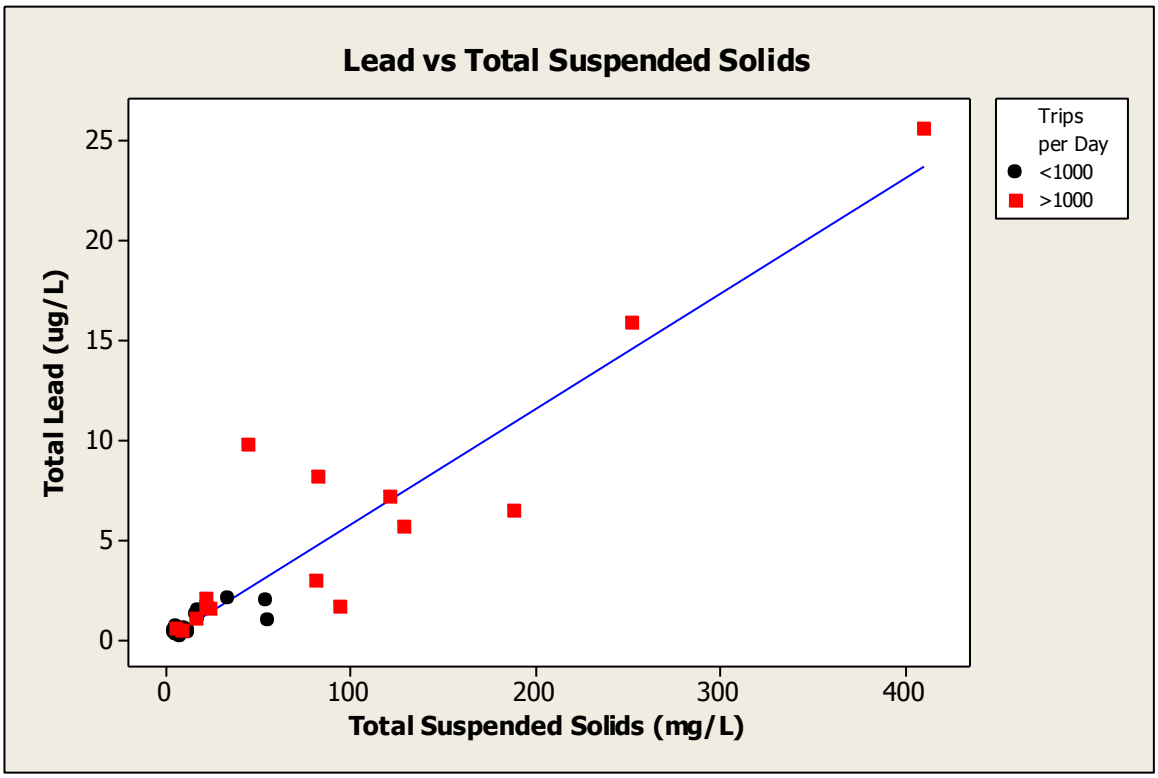


Figure A3. Correlation between TSS and Total Lead

The strong correlation between sediment (TSS) and pollutants means that the City will continue current efforts to remove sediment from streets and catch basins, and then remove sediments that accumulate within UICs. As the groundwater protectiveness demonstrations provided to DEQ by the City demonstrate, pollutants can be effectively prevented from entering groundwater by leaving them bound to sediment and organic matter.

Four of our 25 rotating locations were impractical or infeasible to sample. Per our Monitoring Plan, we replaced these sites with the next site of the same traffic category in our overflow list. UICs 3047-W-106, 3048-W-050, and 3147-W-005 were unsafe to sample due to traffic and visibility concerns, and they were replaced with 3047-W-048, 3248-W-027, and 3150-W-025. UIC 3150-W-051 was in a cascade downstream of UICs that are now decommissioned, and was replaced by 3150-W-056.

3. Pollutant Data and Action Levels

Levels of five of the eight Table 1 pollutants were significantly higher (alpha=0.05 evaluated using nonparametric Kruskal-Wallis test) on high traffic streets versus lower traffic streets (> and < 1000 trips per day). The exceptions were total zinc, total copper, and 2,4-D where values were not significantly different between low and high traffic streets. Most samples were at least an order of magnitude below action levels. Raw data is included in Table A2.

The herbicide 2,4-D had two samples which were above the City's action level (Figure A4). Note that the City's action level of 4 µg/L is lower than the drinking water MCL of 70 µg/L; a value the City requested to protect groundwater, in addition to human health. Both of these samples were taken at residential sites in late spring after a stretch of warm weather when residents were more likely to apply herbicides to their lawns. The City conducted fate and transport modelling to evaluate groundwater protection at these sites. We included the local soil conditions, the measured depth to groundwater, and maximum concentration measured (32.4 µg/L), and the most conservative characteristics for this chemical to calculate the reasonable maximum concentration of 2,4-D immediately above the water table. The value calculated was orders of magnitude below the lowest detection limits available, so these 2,4-D detections were not deemed to be a threat to groundwater.

Figure A4. 2,4-D results for 2015-16 by vehicle trips per day.

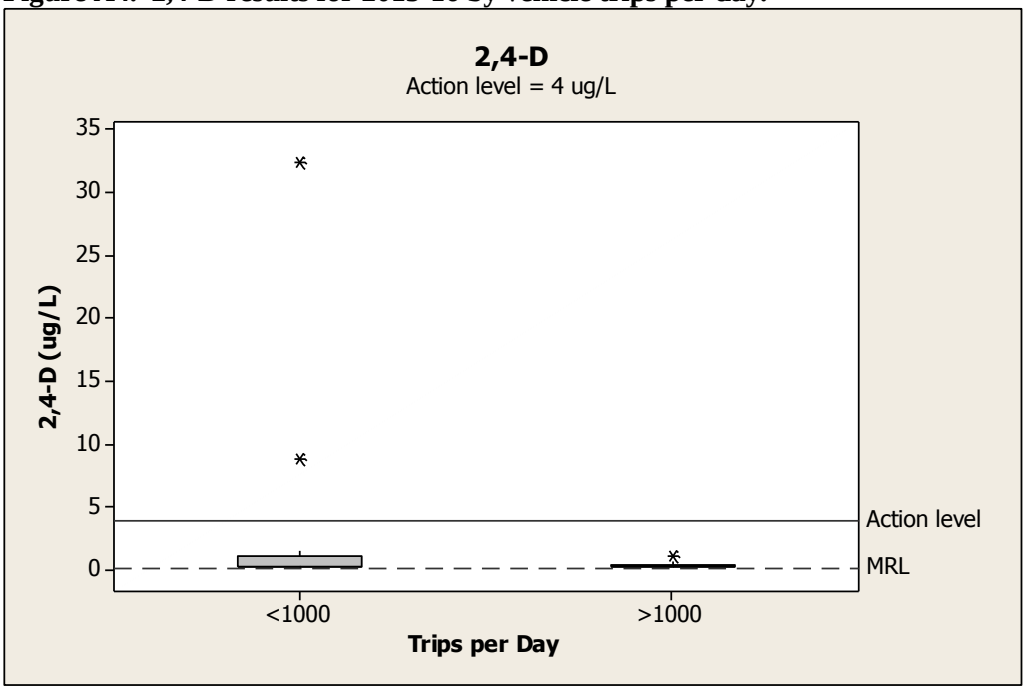


Figure A5. Benzo(a)pyrene results for 2015-16 by vehicle trips per day.

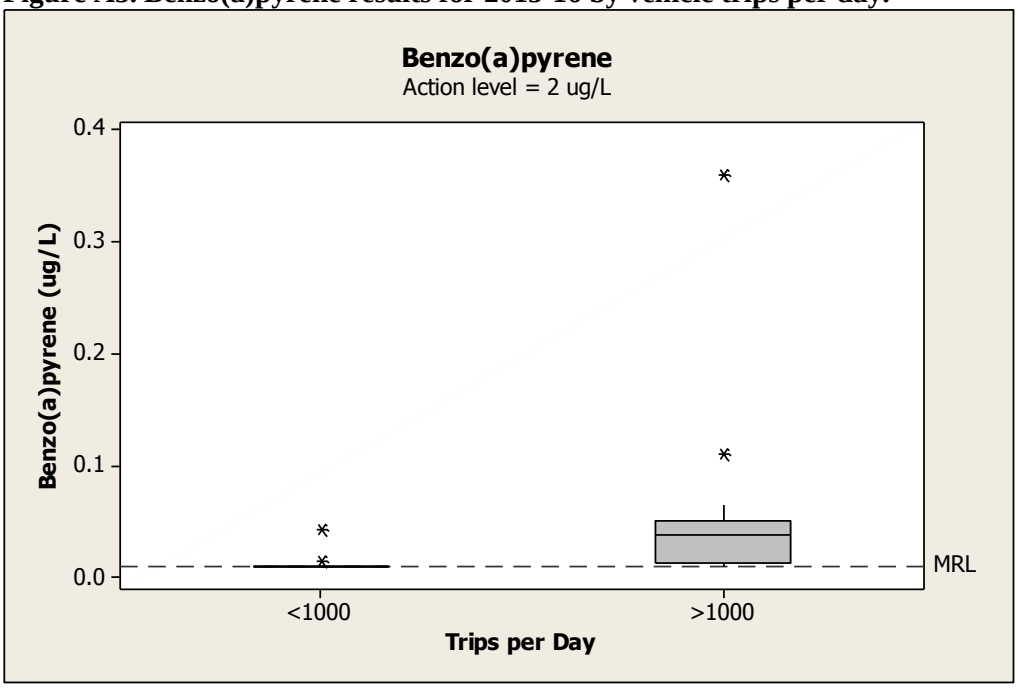


Figure A6. Di (2-ethylhexyl) phthalate results for 2015-16 by vehicle trips per day.

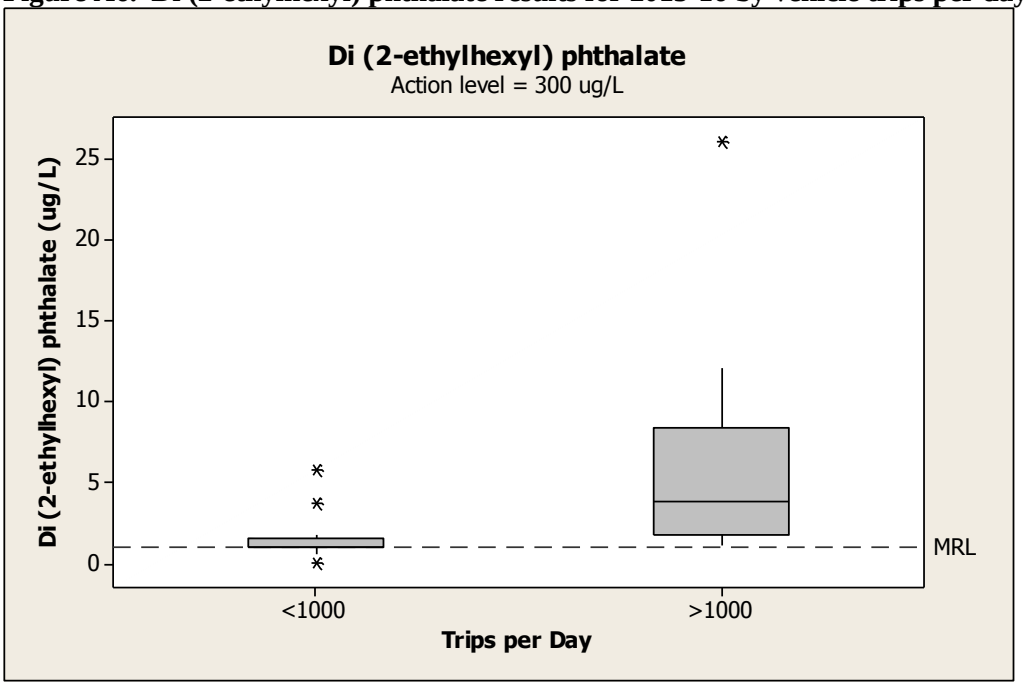


Figure A7. Pentachlorophenol results for 2015-16 by vehicle trips per day.

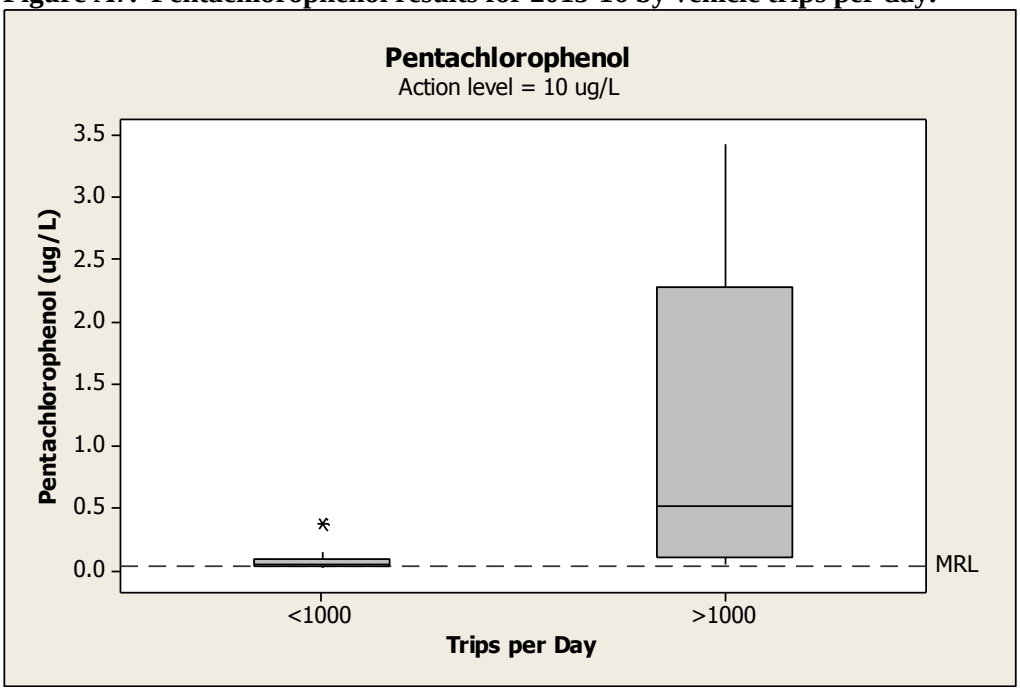


Figure A8. Antimony (Total) results for 2015-16 by vehicle trips per day.

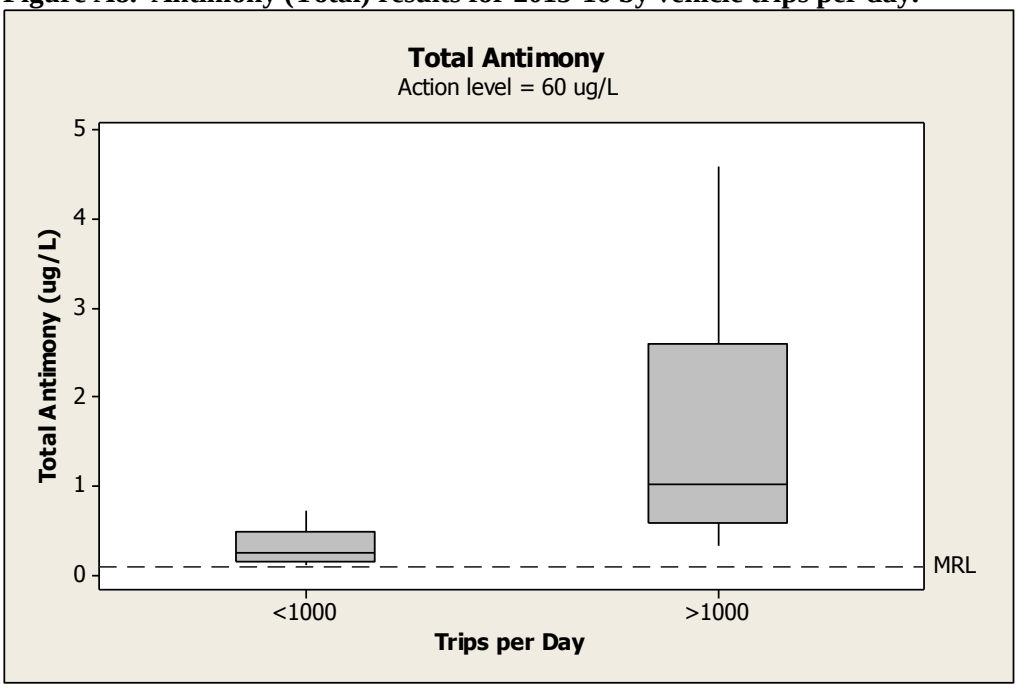


Figure A9. Lead (Total) results for 2015-16 by vehicle trips per day.

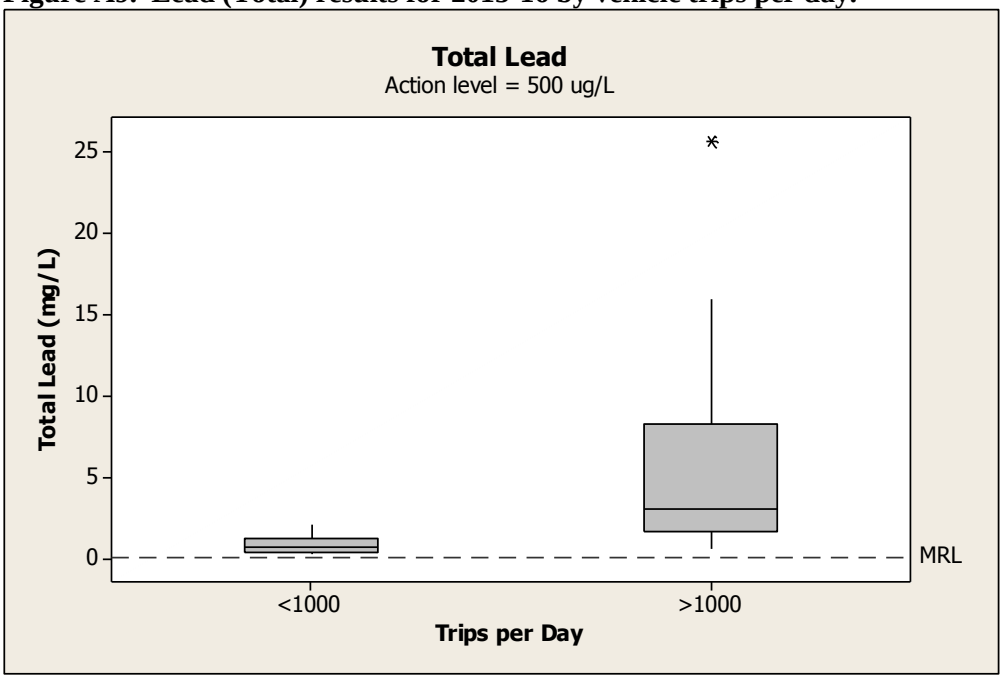


Figure A10. Zinc (Total) results for 2015-16 by vehicle trips per day. [no sig p]

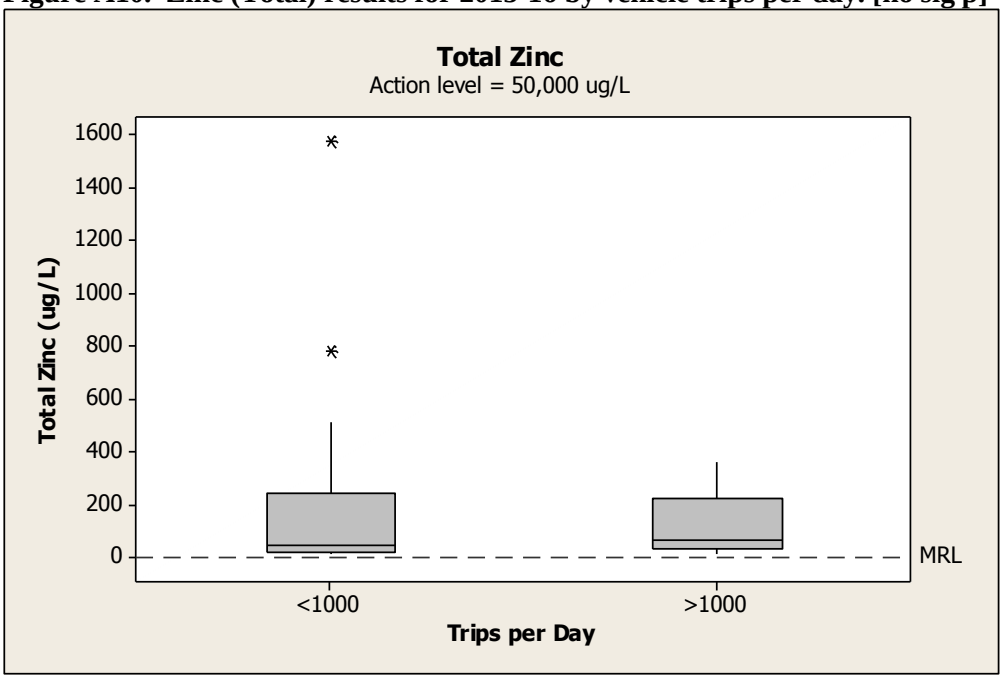


Figure A11. Copper (Total) results for 2015-16 by vehicle trips per day.

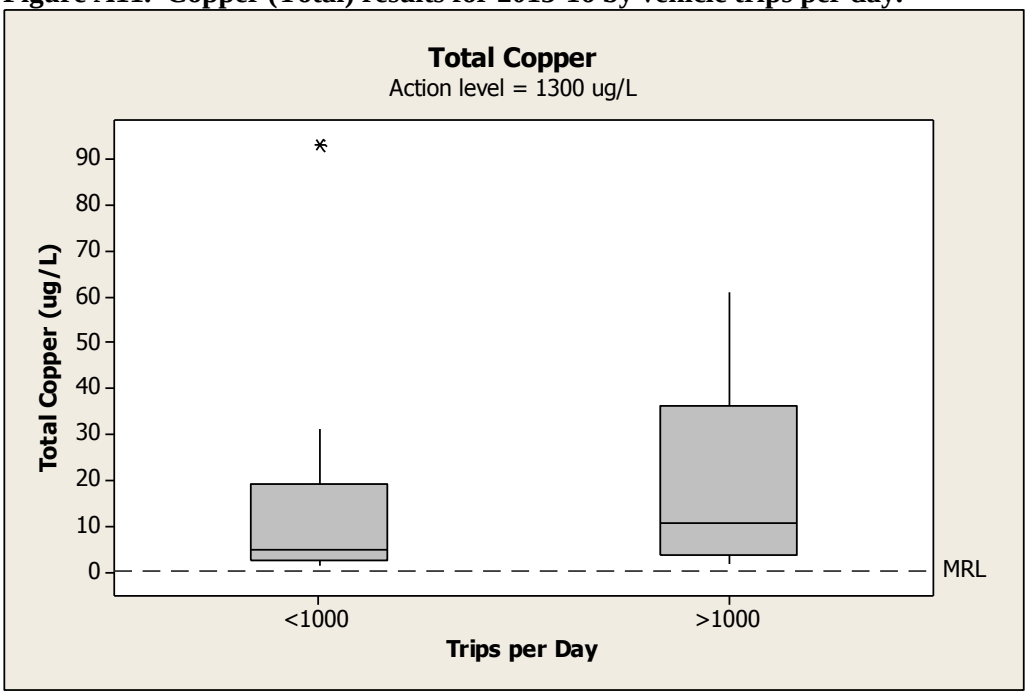


Table A2. Stormwater Monitoring Raw Data--NPDES MS4 and WPCF Permit Required Collection Parameters

Lab ID	System_ID	Trips per Day	Land Use	Functional Class	Date	Time	Rainfall Previous 24 hrs	DO	pH	Temp	Cond	Turbid	E. coli MPN/100 mL	BOD 2 mg/L	TSS 2 mg/L	Ammonia 20 ug/L	Nitrate 100 ug/L	o-Phos 20 ug/L	TKN 200 ug/L	T-Phos 30 ug/L
W15L174-01	3151-F-064	>1000	Commercial	Collector	12/17/2015	10:15	0.92	12.84	6.2	3.9	7.4	19.7	230	**2**	16	137	**100**	**20**	380	43
W15L174-02	3251-F-013	<1000	Residential	Residential	12/17/2015	9:45	0.92	14.30	6.37	3.8	7	8.09	140	3	8	**20**	**100**	22	270	55
W15L174-03	3148-W-014	>1000	Residential	Community	12/17/2015	11:32	1.07	14.24	6.44	3.8	3.1	15.1	98	3	6	38	**100**	**20**	220	**30**
W15L174-04	3150-F-030	<1000	Residential	Residential	12/17/2015	10:33	0.98	13.90	6.28	3.4	4.1	8.04	170	**2**	4	**20**	**100**	31	**200**	**30**
W15L174-05	3153-F-040	<1000	Residential	Residential	12/17/2015	8:52	0.82	14.65	6.11	4.3	43.8	7.1	63	**2**	6	**20**	**100**	**20**	**200**	**30**
W15L174-06	3349-W-034	>1000	Residential	Minor Arterial	12/17/2015	12:09	1.07	13.04	6.37	4.3	8.3	5.08	340	4	94	142	**100**	**20**	640	119
W15L174-07	3254-F-072	>1000	Residential	Collector	12/17/2015	9:16	0.82	14.49	6.12	3.6	7.3	30.2	29	3	24	132	**100**	**20**	450	70
W15L174-08	3047-W-048	>1000	Residential	Community	12/17/2015	12:55	1.16	12.86	6.38	4.7	5.9	14.2	280	**2**	9	61	**100**	**20**	270	**30**
W15L174-09	3150-W-068	>1000	Commercial	Boulevard	12/17/2015	11:05	0.98	12.60	6.28	3.8	4.2	21.2	170	**2**	22	80	**100**	**20**	250	44
W15L174-10	FD												660	3	20	76	**100**	**20**	440	60
W15L174-11	3048-W-077	>1000	Residential	Minor Arterial	12/17/2015	13:25	1.16	12.76	6.52	4.1	5.6	24.3	500	3	22	79	**100**	**20**	400	60
W16C091-01	3252-F-059	<1000	Residential	Residential	3/9/2016	9:58	0.25	10.42	5.4	8.8	46.3	48.4	4400	5	34	35	**100**	**20**	840	100
W16C091-02	2947-W-013	<1000	Residential	Residential	3/9/2016	12:25	0.41	10.60	6.16	8.9	13.4	11.6	41	3	5	18	**100**	**20**	330	43
W16C091-03	3053-F-026	<1000	Commercial	Residential	3/9/2016	14:35	0.41	7.74	7.11	8.9	38.7	60.8	**10**	**2**	16	92	400	63	520	152
W16C091-04	3050-F-043	<1000	Residential	Residential	3/9/2016	13:40	0.41	10.80	6.61	9.5	10.7	23.7	>24000	4	17	40	**100**	**20**	560	59
W16C091-05	3046-W-006	>1000	Residential	Minor Arterial	3/9/2016	11:50	0.32	9.85	6.71	8.9	17.4	41.4	2100	4	45	145	**100**	**20**	730	92
W16C091-06	3153-F-091	>1000	Commercial	Minor Arterial	3/9/2016	14:15	0.41	9.22	7.11	9.1	96	521	400	6	252	142	160	65	1620	886
W16C091-07	3149-W-016	>1000	Industrial	Community	3/9/2016	10:50	0.25	9.76	6.71	8.4	64.9	1726	130	4	410	**20**	150	34	1540	1120
W16C091-08	3155-F-025	>1000	Residential	Primary Arterial	3/9/2016	15:05	0.56	8.60	6.88	9.1	20.9	145	450	10	189	454	110	**20**	1490	247
W16C091-09	3351-F-011	<1000	Commercial	Residential	3/9/2016	10:20	0.25	9.56	5.55	8.8	10	15.6	340	4	54	11	**100**	**20**	480	67
W16C091-10	3349-J-003	<1000	Residential	Residential	3/9/2016	11:25	0.32	9.67	7.16	8.9	6.3	7.54	270	**2**	12	20	**100**	**20**	**200**	**30**
W16C091-11	FD												550	11	108	451	120	**20**	970	161
W16D108-01	3150-W-056	>1000	Residential	Boulevard	4/12/2016	19:10	0.04	7.19	5.41	13.8	66.8	84.7	120	>70	81	4360	960	341	9910	817
W16D108-02	3150-W-025	>1000	Vacant	Minor Arterial	4/12/2016	18:50	0.02	5.86	5.7	14.3	70.7	75	**10**	>70	129	2140	540	353	10900	951
W16D108-03	3248-W-027	>1000	Commercial	Minor Arterial	4/12/2016	19:50	0.04	7.84	6.02	12.7	61.9	136	180	>70	121	3320	650	153	7230	462
W16D108-04	3055-B-007	<1000	Residential	Residential	4/12/2016	22:20	0.13	9.48	6.57	10.7	13.9	4.53	**10**	14	6	411	210	72	1320	120
W16D108-05	3348-W-037	>1000	Commercial	Minor Arterial	4/12/2016	20:15	0.09	8.82	6.62	13.2	46.3	12.6	110	69	82	2520	620	125	6620	403
W16D108-06	3348-W-043	<1000	Residential	Residential	4/12/2016	21:05	0.11	7.8	6.26	12.7	31.4	15.8	86	>70	55	1510	260	281	7290	912
W16D108-07	2847-W-028	<1000	Residential	Residential	4/12/2016	21:35	0.11	7.94	6.54	12	30.3	6.21	20	34	12	625	230	131	3090	259
W16D108-08	3049-W-041	<1000	Residential	Residential	4/12/2016	19:30	0.04	7.94	5.45	13.8	27.5	16.4	**10**	>70	17	876	250	322	4880	672
W16D108-09	3449-J-010	<1000	Residential	Residential	4/12/2016	20:30	0.09	9.03	6.49	11.7	19.8	6.29	**10**	29	6	563	160	58	3560	160
W16D108-10	3153-F-054	<1000	Residential	Residential	4/12/2016	22:40	0.13	9.05	6.3	10.5	20.3	5.91	220	11	10	236	270	82	1330	135
W16D108-11	FD												**10**	15	3	429	220	73	1310	121

Legend

Highlighted columns are the parameters listed in Table 1 of Gresham's WPCF permit.

Bold = < than detection value or an Estimated value for bacteria

NA = constituents not sampled due to equipment failure or other extenuating circumstance

NM= not meası **ND=** not detected

Dup = Duplicate Sample

MRL = method reporting limits are included at the top of each data set where they are constant. For parameters were no MRL is included, this means they vary by sample.

FD = Field Duplicate Sample

Blank = Deionized Water Sample

Exceedance of City WPCF Permit action level

Table A2. Stormwater Monitoring Raw Data

Lab ID	System_ID	Trips per Day	Land Use	Functional Class	Date	Time	Rainfall Previous 24 hrs	Hardness mg/L CaCO3	Total Antimony 0.100 ug/L	Total Copper 0.200 ug/L	Total Lead 0.100 ug/L	Total Mercury 0.00200 ug/L	Total Zinc 0.500 ug/L	Diss Copper 0.200 ug/L	Diss Lead 0.100 ug/L	Diss Zinc 0.500 ug/L	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene
W15L174-01	3151-F-064	>1000	Commercial	Collector	12/17/2015	10:15	0.92	7.08	0.744	5.44	1.06	0.00123	27.1	1.540	**0.1**	11.5	**0.020**	**0.020**	**0.020**	0.011
W15L174-02	3251-F-013	<1000	Residential	Residential	12/17/2015	9:45	0.92	3.92	**0.1**	2.51	0.229	0.00317	23.1	1.290	**0.1**	14.4	**0.020**	**0.020**	**0.020**	0.010
W15L174-03	3148-W-014	>1000	Residential	Community	12/17/2015	11:32	1.07	1.93	0.332	2.32	0.623	0.00135	13.2	1.030	**0.1**	7.61	**0.020**	**0.020**	**0.020**	0.010
W15L174-04	3150-F-030	<1000	Residential	Residential	12/17/2015	10:33	0.98	2.69	0.142	2.55	0.493	0.00141	48.8	1.120	**0.1**	39.5	**0.020**	**0.020**	**0.020**	0.010
W15L174-05	3153-F-040	<1000	Residential	Residential	12/17/2015	8:52	0.82	2.65	0.100	1.17	0.317	0.0014	18.1	0.558	**0.1**	12.6	**0.020**	**0.020**	**0.020**	0.010
W15L174-06	3349-W-034	>1000	Residential	Minor Arterial	12/17/2015	12:09	1.07	5.64	1.680	10.6	1.67	0.00484	45	3.930	**0.1**	19.2	**0.020**	**0.020**	**0.022**	0.010
W15L174-07	3254-F-072	>1000	Residential	Collector	12/17/2015	9:16	0.82	5.82	0.637	4.94	1.61	0.00331	44.7	1.020	**0.1**	13.3	**0.020**	**0.020**	**0.020**	0.026
W15L174-08	3047-W-048	>1000	Residential	Community	12/17/2015	12:55	1.16	3.51	0.349	3.43	0.549	0.00138	28.2	1.670	**0.1**	17	**0.020**	**0.020**	**0.020**	0.010
W15L174-09	3150-W-068	>1000	Commercial	Boulevard	12/17/2015	11:05	0.98	4.12	0.348	3.51	2.12	0.00136	28.2	0.850	**0.1**	11.8	**0.020**	**0.020**	**0.020**	0.010
W15L174-10	FD							4.29	0.990	1.62	1.62	0.00451	31.5	1.840	**0.1**	11.3	**0.020**	**0.020**	**0.020**	0.013
W15L174-11	3048-W-077	>1000	Residential	Minor Arterial	12/17/2015	13:25	1.16	4.41	1.020	1.69	1.69	0.00454	33	1.750	**0.1**	10.9	**0.020**	**0.020**	**0.020**	0.012
W16C091-01	3252-F-059	<1000	Residential	Residential	3/9/2016	9:58	0.25	7.88	0.571	6.77	2.08	0.0131	47.1	2.290	0.117	11.8	**0.020**	**0.020**	**0.020**	0.044
W16C091-02	2947-W-013	<1000	Residential	Residential	3/9/2016	12:25	0.41	5.33	0.223	2.27	0.43	0.00289	10.7	1.200	**0.1**	5.77	**0.020**	**0.020**	**0.020**	**0.010**
W16C091-03	3053-F-026	<1000	Commercial	Residential	3/9/2016	14:35	0.41	19.1	0.186	2.7	1.27	0.00515	8.53	1.18	**0.1**	2.02	**0.020**	**0.020**	**0.020**	**0.010**
W16C091-04	3050-F-043	<1000	Residential	Residential	3/9/2016	13:40	0.41	4.42	0.426	3.73	1.48	0.00523	20.7	1.640	**0.1**	8.82	**0.020**	**0.020**	**0.020**	**0.010**
W16C091-05	3046-W-006	>1000	Residential	Minor Arterial	3/9/2016	11:50	0.32	9.7	0.845	8.59	9.82	0.00625	63.3	2.080	0.278	13.2	**0.020**	**0.020**	**0.020**	0.031
W16C091-06	3153-F-091	>1000	Commercial	Minor Arterial	3/9/2016	14:15	0.41	62.9	1.510	22.4	15.9	0.0427	123	3.050	0.12	4.73	**0.020**	0.190	0.180	0.230
W16C091-07	3149-W-016	>1000	Industrial	Community	3/9/2016	10:50	0.25	105	0.576	36.2	25.6	0.0379	119	2.780	**0.1**	1.34	**0.020**	0.022	0.039	0.045
W16C091-08	3155-F-025	>1000	Residential	Primary Arterial	3/9/2016	15:05	0.56	18.3	2.590	22.5	6.52	0.00764	138	3.450	0.11	33	0.130	0.130	0.410	0.050
W16C091-09	3351-F-011	<1000	Commercial	Residential	3/9/2016	10:20	0.25	3.7	0.305	4.83	2.03	0.0044	44.3	1.560	**0.1**	9.55	**0.200**	**0.200**	**0.200**	**0.100**
W16C091-10	3349-J-003	<1000	Residential	Residential	3/9/2016	11:25	0.32	4.54	0.100	1.6	0.509	0.00146	17.4	0.543	**0.1**	10.5	**0.020**	**0.020**	**0.020**	**0.010**
W16C091-11	FD							12.9	2.740	23.3	6.69	0.00761	144	3.370	**0.1**	31.3	0.089	**0.120**	0.360	0.046
W16D108-01	3150-W-056	>1000	Residential	Boulevard	4/12/2016	19:10	0.04	31.5	3.540	61	3.01	0.0127	357	14.600	0.281	116	**0.020**	**0.020**	0.022	0.025
W16D108-02	3150-W-025	>1000	Vacant	Minor Arterial	4/12/2016	18:50	0.02	41.6	1.560	28.3	5.67	0.0123	219	13.400	0.49	102	**0.020**	**0.020**	**0.020**	0.021
W16D108-03	3248-W-027	>1000	Commercial	Minor Arterial	4/12/2016	19:50	0.04	42	3.680	43.3	7.23	0.0106	292	18.100	0.352	151	**0.020**	**0.040**	0.053	0.039
W16D108-04	3055-B-007	<1000	Residential	Residential	4/12/2016	22:20	0.13	7.07	0.202	8.3	0.669	0.00515	512	7.280	**0.1**	429	**0.020**	**0.020**	**0.020**	**0.010**
W16D108-05	3348-W-037	>1000	Commercial	Minor Arterial	4/12/2016	20:15	0.09	29.5	4.590	53.6	8.23	0.0142	224	32.500	0.482	135	**0.020**	**0.040**	0.029	0.035
W16D108-06	3348-W-043	<1000	Residential	Residential	4/12/2016	21:05	0.11	16.9	0.725	19.1	0.995	0.0161	778	17.200	0.381	66.3	**0.020**	0.320	**0.020**	**0.010**
W16D108-07	2847-W-028	<1000	Residential	Residential	4/12/2016	21:35	0.11	17.7	0.488	92.9	0.45	0.00854	1570	81.500	0.182	1530	**0.020**	**0.040**	**0.020**	**0.010**
W16D108-08	3049-W-041	<1000	Residential	Residential	4/12/2016	19:30	0.04	11.6	0.704	19.7	1.11	0.0117	80.5	16.800	0.304	36.4	**0.020**	**0.060**	**0.020**	**0.010**
W16D108-09	3449-J-010	<1000	Residential	Residential	4/12/2016	20:30	0.09	11.8	0.237	6.12	0.269	0.00879	238	5.400	**0.1**	202	**0.020**	**0.020**	**0.020**	**0.010**
W16D108-10	3153-F-054	<1000	Residential	Residential	4/12/2016	22:40	0.13	16.2	0.288	31.2	0.652	0.00918	121	24.200	**0.1**	85.5	**0.020**	**0.020**	**0.020**	**0.010**
W16D108-11	FD							7.23	0.246	9.76	0.749	0.00637	577	7.240	**0.1**	420	**0.020**	**0.020**	**0.020**	**0.010**

Legend

Highlighted columns are the parameters listed in Table 1 of Gresham's WPCF permit.

Bold = < than detection value or an Estimated value for bacteria

NA = constituents not sampled due to equipment failure or other extenuating circumstance

NM= not meas **ND=** not detected

Dup = Duplicate Sample

MRL = method reporting limits are included at the top of each data set where they are constant. For parameters were no MRL is included, this means they vary by sample.

FD = Field Duplicate Sample

Blank = Deionized Water Sample

Exceedance of City WPCF Permit action level

Table A2. Stormwater Monitoring Raw Data

Lab ID	System_ID	Trips per Day	Land Use	Functional Class	Date	Time	Rainfall Previous 24 hrs	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenan-threne	Pyrene	Butyl benzyl phthalate
W15L174-01	3151-F-064	>1000	Commercial	Collector	12/17/2015	10:15	0.92	0.013	0.021	0.054	0.010	0.021	**0.010**	0.061	**0.020**	0.013	**0.040**	0.050	0.130	**1.0**
W15L174-02	3251-F-013	<1000	Residential	Residential	12/17/2015	9:45	0.92	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.02	0.010	**0.040**	0.020	0.013	**1.0**
W15L174-03	3148-W-014	>1000	Residential	Community	12/17/2015	11:32	1.07	0.010	0.010	0.017	0.010	0.010	**0.010**	0.024	**0.020**	0.010	**0.040**	0.027	0.049	**1.0**
W15L174-04	3150-F-030	<1000	Residential	Residential	12/17/2015	10:33	0.98	0.010	0.010	0.010	0.010	0.010	0.010	0.015	**0.020**	0.010	**0.040**	0.020	0.024	**1.0**
W15L174-05	3153-F-040	<1000	Residential	Residential	12/17/2015	8:52	0.82	0.010	0.010	0.011	0.010	0.010	0.010	0.017	**0.020**	0.010	**0.040**	0.020	0.027	**1.0**
W15L174-06	3349-W-034	>1000	Residential	Minor Arterial	12/17/2015	12:09	1.07	0.110	0.180	0.150	0.069	0.150	0.023	0.510	**0.020**	0.084	**0.040**	0.160	0.510	**1.0**
W15L174-07	3254-F-072	>1000	Residential	Collector	12/17/2015	9:16	0.82	0.027	0.039	0.095	0.016	0.045	0.010	0.097	**0.020**	0.022	**0.064**	0.074	0.020	**1.0**
W15L174-08	3047-W-048	>1000	Residential	Community	12/17/2015	12:55	1.16	0.010	0.013	0.033	0.010	0.017	0.010	0.045	**0.034**	0.010	**0.058**	0.240	0.080	**1.0**
W15L174-09	3150-W-068	>1000	Commercial	Boulevard	12/17/2015	11:05	0.98	0.010	0.017	0.035	0.010	0.017	0.010	0.039	**0.020**	0.010	**0.040**	0.035	0.080	**1.0**
W15L174-10	FD							0.015	0.021	0.045	0.010	0.024	0.010	0.066	**0.020**	0.010	**0.049**	0.052	0.120	**1.0**
W15L174-11	3048-W-077	>1000	Residential	Minor Arterial	12/17/2015	13:25	1.16	0.012	0.022	0.049	0.010	0.022	0.010	0.067	**0.020**	0.012	**0.050**	0.052	0.120	**1.0**
W16C091-01	3252-F-059	<1000	Residential	Residential	3/9/2016	9:58	0.25	0.043	0.074	0.093	0.015	0.055	0.010	0.100	**0.020**	0.027	**0.047**	0.051	0.170	**1.0**
W16C091-02	2947-W-013	<1000	Residential	Residential	3/9/2016	12:25	0.41	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	0.017	**0.020**	**0.010**	**0.046**	0.022	0.031	**1.0**
W16C091-03	3053-F-026	<1000	Commercial	Residential	3/9/2016	14:35	0.41	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.020**	**0.010**	**0.040**	**0.020**	**0.010**	**1.0**
W16C091-04	3050-F-043	<1000	Residential	Residential	3/9/2016	13:40	0.41	**0.010**	**0.010**	0.017	**0.010**	**0.010**	**0.010**	0.023	**0.020**	**0.010**	**0.040**	0.029	0.042	**1.0**
W16C091-05	3046-W-006	>1000	Residential	Minor Arterial	3/9/2016	11:50	0.32	0.038	0.062	0.110	0.014	0.052	**0.010**	0.130	**0.020**	0.028	0.053	0.074	0.230	**1.0**
W16C091-06	3153-F-091	>1000	Commercial	Minor Arterial	3/9/2016	14:15	0.41	0.360	0.410	0.520	**0.100**	0.310	0.046	0.680	0.044	0.260	0.051	0.260	1.100	**1.0**
W16C091-07	3149-W-016	>1000	Industrial	Community	3/9/2016	10:50	0.25	0.050	0.087	0.085	0.018	0.067	**0.010**	0.150	0.022	0.038	0.043	0.080	0.230	**1.0**
W16C091-08	3155-F-025	>1000	Residential	Primary Arterial	3/9/2016	15:05	0.56	0.065	0.100	0.220	0.015	0.086	0.014	0.230	0.300	0.050	0.360	0.600	1.200	**1.0**
W16C091-09	3351-F-011	<1000	Commercial	Residential	3/9/2016	10:20	0.25	0.014	0.026	0.041	0.010	**0.017**	**0.010**	0.049	**0.020**	**0.010**	**0.040**	0.037	**0.1**	**1.0**
W16C091-10	3349-J-003	<1000	Residential	Residential	3/9/2016	11:25	0.32	**0.010**	0.018	**0.010**	**0.010**	0.013	**0.010**	0.039	**0.020**	**0.010**	**0.040**	0.021	0.037	**1.0**
W16C091-11	FD							0.058	0.080	**0.200**	0.014	0.090	**0.010**	0.210	0.320	0.044	0.330	0.540	1.100	**1.0**
W16D108-01	3150-W-056	>1000	Residential	Boulevard	4/12/2016	19:10	0.04	0.034	0.062	0.140	0.013	0.063	**0.010**	0.140	0.030	0.030	0.042	0.12	0.250	**1.0**
W16D108-02	3150-W-025	>1000	Vacant	Minor Arterial	4/12/2016	18:50	0.02	0.041	0.072	0.140	0.017	0.060	**0.010**	0.084	**0.020**	0.041	0.040	0.062	0.130	**1.0**
W16D108-03	3248-W-027	>1000	Commercial	Minor Arterial	4/12/2016	19:50	0.04	0.045	0.074	0.200	0.019	0.091	**0.010**	0.210	**0.020**	0.044	0.097	0.180	0.370	**1.0**
W16D108-04	3055-B-007	<1000	Residential	Residential	4/12/2016	22:20	0.13	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.100**	**0.010**	**0.020**	0.010	**0.040**	**0.020**	**0.010**	**1.0**
W16D108-05	3348-W-037	>1000	Commercial	Minor Arterial	4/12/2016	20:15	0.09	0.039	0.066	0.150	0.025	0.078	**1.000**	0.150	**0.020**	0.035	0.059	0.110	0.290	**1.0**
W16D108-06	3348-W-043	<1000	Residential	Residential	4/12/2016	21:05	0.11	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.020**	**0.010**	**0.040**	**0.020**	**0.010**	**1.0**
W16D108-07	2847-W-028	<1000	Residential	Residential	4/12/2016	21:35	0.11	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.020**	**0.010**	**0.040**	**0.020**	**0.010**	**1.0**
W16D108-08	3049-W-041	<1000	Residential	Residential	4/12/2016	19:30	0.04	**0.010**	**0.010**	0.013	**0.010**	**0.010**	**0.010**	0.015	**0.020**	**0.010**	**0.040**	**0.020**	0.019	**1.0**
W16D108-09	3449-J-010	<1000	Residential	Residential	4/12/2016	20:30	0.09	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.020**	**0.010**	**0.040**	**0.020**	**0.010**	**1.0**
W16D108-10	3153-F-054	<1000	Residential	Residential	4/12/2016	22:40	0.13	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.020**	**0.010**	**0.040**	**0.020**	**0.010**	**1.0**
W16D108-11	FD							**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.010**	**0.020**	**0.010**	**0.040**	**0.020**	**0.010**	**1.0**

Legend

Highlighted columns are the parameters listed in Table 1 of Gresham's WPCF permit.

Bold = < than detection value or an Estimated value for bacteria

NA = constituents not sampled due to equipment failure or other extenuating circumstance

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Dup = Duplicate Sample

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FD = Field Duplicate Sample

Blank = Deionized Water Sample

Exceedance of City WPCF Permit action level

Table A2. Stormwater Monitoring Raw Data

Lab ID	System_ID	Trips per Day	Land Use	Functional Class	Date	Time	Rainfall Previous 24 hrs	Di-n-butyl phthalate	Diethyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate	Di(2-ethylhexyl) phthalate	2,4,5-T 0.040 ug/L	2,4,5-TP (Silvex) 0.040 ug/L	2,4-D 0.20 ug/L	2,4-DB 0.040 ug/L	Acifluorfen 0.040 ug/L	Bentazon 0.040 ug/L	Clopyralid	Dicamba 0.040 ug/L
W15L174-01	3151-F-064	>1000	Commercial	Collector	12/17/2015	10:15	0.92	**1.0**	**1.0**	**1.0**	**0.6**	3.8	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-02	3251-F-013	<1000	Residential	Residential	12/17/2015	9:45	0.92	**1.0**	**1.0**	**1.0**	1.0	1.0	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-03	3148-W-014	>1000	Residential	Community	12/17/2015	11:32	1.07	**1.0**	**1.0**	**1.0**	**1.0**	1.6	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-04	3150-F-030	<1000	Residential	Residential	12/17/2015	10:33	0.98	**1.0**	**1.0**	**1.0**	1.0	1.4	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-05	3153-F-040	<1000	Residential	Residential	12/17/2015	8:52	0.82	**1.0**	**1.0**	**1.0**	1.0	0.1	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-06	3349-W-034	>1000	Residential	Minor Arterial	12/17/2015	12:09	1.07	**1.0**	**1.0**	**1.0**	**1.0**	1.2	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-07	3254-F-072	>1000	Residential	Collector	12/17/2015	9:16	0.82	**1.0**	**1.0**	**1.0**	1.0	1.1	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-08	3047-W-048	>1000	Residential	Community	12/17/2015	12:55	1.16	**1.0**	**1.0**	**1.0**	1.0	1.8	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-09	3150-W-068	>1000	Commercial	Boulevard	12/17/2015	11:05	0.98	**1.0**	**1.0**	**1.0**	**1.0**	3.8	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-10	FD							**1.0**	**1.0**	**1.0**	0.9	5.1	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W15L174-11	3048-W-077	>1000	Residential	Minor Arterial	12/17/2015	13:25	1.16	**1.0**	**1.0**	**1.0**	0.6	5.5	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.200	<0.200
W16C091-01	3252-F-059	<1000	Residential	Residential	3/9/2016	9:58	0.25	**1.0**	**1.0**	**1.0**	**1.0**	5.8	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-02	2947-W-013	<1000	Residential	Residential	3/9/2016	12:25	0.41	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-03	3053-F-026	<1000	Commercial	Residential	3/9/2016	14:35	0.41	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	<0.100	<0.100	1.44	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-04	3050-F-043	<1000	Residential	Residential	3/9/2016	13:40	0.41	**1.0**	**1.0**	**1.0**	**1.0**	1.5	<0.100	<0.100	0.224	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-05	3046-W-006	>1000	Residential	Minor Arterial	3/9/2016	11:50	0.32	**1.0**	**1.0**	**1.0**	**1.0**	8.9	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-06	3153-F-091	>1000	Commercial	Minor Arterial	3/9/2016	14:15	0.41	**1.0**	**1.0**	**1.0**	**1.5**	8.3	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-07	3149-W-016	>1000	Industrial	Community	3/9/2016	10:50	0.25	**1.0**	**1.0**	**1.0**	**0.6**	3.3	<0.100	<0.100	0.419	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-08	3155-F-025	>1000	Residential	Primary Arterial	3/9/2016	15:05	0.56	**1.0**	0.5	**1.0**	**1.0**	12.0	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-09	3351-F-011	<1000	Commercial	Residential	3/9/2016	10:20	0.25	**1.0**	**1.0**	**1.0**	**1.0**	3.7	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-10	3349-J-003	<1000	Residential	Residential	3/9/2016	11:25	0.32	**1.0**	**1.0**	**1.0**	**1.0**	1.0	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16C091-11	FD							**1.0**	0.5	**1.0**	0.8	12.0	<0.100	<0.100	<0.200	<0.400	<0.200	<0.200	<0.400	<0.200
W16D108-01	3150-W-056	>1000	Residential	Boulevard	4/12/2016	19:10	0.04	**1.0**	**0.5**	**0.6**	3.4	4.9	<0.200	<1.20	<0.200	<0.400	<0.200	<0.200	<0.800	0.121
W16D108-02	3150-W-025	>1000	Vacant	Minor Arterial	4/12/2016	18:50	0.02	**1.0**	**1.0**	**1.0**	**1.0**	3.3	<0.200	<1.20	1.07	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-03	3248-W-027	>1000	Commercial	Minor Arterial	4/12/2016	19:50	0.04	0.6	**0.6**	0.75	**1.1**	8.4	<0.200	<1.20	0.671	<0.400	<0.200	<0.200	<0.800	0.109
W16D108-04	3055-B-007	<1000	Residential	Residential	4/12/2016	22:20	0.13	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	<0.200	<1.20	<0.200	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-05	3348-W-037	>1000	Commercial	Minor Arterial	4/12/2016	20:15	0.09	0.7	0.7	**1.2**	1.5	26.0	<0.200	<1.20	0.422	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-06	3348-W-043	<1000	Residential	Residential	4/12/2016	21:05	0.11	**1.0**	**1.0**	**1.0**	**0.6**	1.8	<0.200	<1.20	32.4	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-07	2847-W-028	<1000	Residential	Residential	4/12/2016	21:35	0.11	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	<0.200	<1.20	1.14	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-08	3049-W-041	<1000	Residential	Residential	4/12/2016	19:30	0.04	**1.0**	**1.0**	**1.0**	**1.0**	0.7	<0.200	<1.20	8.8	<0.400	<0.200	<0.200	<0.800	0.79
W16D108-09	3449-J-010	<1000	Residential	Residential	4/12/2016	20:30	0.09	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	<0.200	<1.20	0.547	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-10	3153-F-054	<1000	Residential	Residential	4/12/2016	22:40	0.13	**1.0**	**1.0**	**1.0**	**1.0**	0.6	<0.200	<1.20	0.235	<0.400	<0.200	<0.200	<0.800	<0.200
W16D108-11	FD							**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	<0.200	<1.20	<0.200	<0.400	<0.200	<0.200	<0.800	<0.200

Legend

Highlighted columns are the parameters listed in Table 1 of Gresham's WPCF permit.

Bold = < than detection value or an Estimated value for bacteria

NA = constituents not sampled due to equipment failure or other extenuating circumstance

NM= not meası **ND=** not detected

Dup = Duplicate Sample

MRL = method reporting limits are included at the top of each data set where they are constant. For parameters were no MRL is included, this means they vary by sample.

FD = Field Duplicate Sample

Blank = Deionized Water Sample

Exceedance of City WPCF Permit action level

Table A2. Stormwater Monitoring Raw Data

Lab ID	System_ID	Trips per Day	Land Use	Functional Class	Date	Time	Rainfall Previous 24 hrs	Dichlorprop 0.040 ug/L	Dinoseb 0.040 ug/L	Pentachlorophenol 0.040 ug/L	Picloram 0.040 ug/L
W15L174-01	3151-F-064	>1000	Commercial	Collector	12/17/2015	10:15	0.92	<.0400	<0.100	0.073	<0.400
W15L174-02	3251-F-013	<1000	Residential	Residential	12/17/2015	9:45	0.92	<.0400	<0.100	<0.040	<0.400
W15L174-03	3148-W-014	>1000	Residential	Community	12/17/2015	11:32	1.07	<.0400	<0.100	0.087	<0.400
W15L174-04	3150-F-030	<1000	Residential	Residential	12/17/2015	10:33	0.98	<.0400	<0.100	0.365	<0.400
W15L174-05	3153-F-040	<1000	Residential	Residential	12/17/2015	8:52	0.82	<.0400	<0.100	<0.040	<0.400
W15L174-06	3349-W-034	>1000	Residential	Minor Arterial	12/17/2015	12:09	1.07	<.0400	<0.100	3.42	<0.400
W15L174-07	3254-F-072	>1000	Residential	Collector	12/17/2015	9:16	0.82	<.0400	<0.100	2.36	<0.400
W15L174-08	3047-W-048	>1000	Residential	Community	12/17/2015	12:55	1.16	<.0400	<0.100	<0.040	<0.400
W15L174-09	3150-W-068	>1000	Commercial	Boulevard	12/17/2015	11:05	0.98	<.0400	<0.100	0.098	<0.400
W15L174-10	FD							<.0400	<0.100	2.19	<0.400
W15L174-11	3048-W-077	>1000	Residential	Minor Arterial	12/17/2015	13:25	1.16	<.0400	<0.100	2.27	<0.400
W16C091-01	3252-F-059	<1000	Residential	Residential	3/9/2016	9:58	0.25	<0.400	<0.400	0.095	<0.200
W16C091-02	2947-W-013	<1000	Residential	Residential	3/9/2016	12:25	0.41	<0.400	<0.400	<0.0400	<0.200
W16C091-03	3053-F-026	<1000	Commercial	Residential	3/9/2016	14:35	0.41	<0.400	<0.400	<0.0400	<0.200
W16C091-04	3050-F-043	<1000	Residential	Residential	3/9/2016	13:40	0.41	<0.400	<0.400	<0.0400	<0.200
W16C091-05	3046-W-006	>1000	Residential	Minor Arterial	3/9/2016	11:50	0.32	<0.400	<0.400	0.513	<0.200
W16C091-06	3153-F-091	>1000	Commercial	Minor Arterial	3/9/2016	14:15	0.41	<0.400	<0.400	3.38	<0.200
W16C091-07	3149-W-016	>1000	Industrial	Community	3/9/2016	10:50	0.25	<0.400	<0.400	0.18	<0.200
W16C091-08	3155-F-025	>1000	Residential	Primary Arterial	3/9/2016	15:05	0.56	<0.400	<0.400	0.101	<0.200
W16C091-09	3351-F-011	<1000	Commercial	Residential	3/9/2016	10:20	0.25	<0.400	<0.400	0.086	<0.200
W16C091-10	3349-J-003	<1000	Residential	Residential	3/9/2016	11:25	0.32	<0.400	<0.400	<0.0400	<0.200
W16C091-11	FD							<0.400	<0.400	0.133	<0.200
W16D108-01	3150-W-056	>1000	Residential	Boulevard	4/12/2016	19:10	0.04	<0.800	<0.800	0.777	<0.800
W16D108-02	3150-W-025	>1000	Vacant	Minor Arterial	4/12/2016	18:50	0.02	<0.800	<0.800	1.36	<0.800
W16D108-03	3248-W-027	>1000	Commercial	Minor Arterial	4/12/2016	19:50	0.04	<0.800	<0.800	0.386	<0.800
W16D108-04	3055-B-007	<1000	Residential	Residential	4/12/2016	22:20	0.13	<0.800	<0.800	0.027	<0.800
W16D108-05	3348-W-037	>1000	Commercial	Minor Arterial	4/12/2016	20:15	0.09	<0.800	<0.800	0.841	<0.800
W16D108-06	3348-W-043	<1000	Residential	Residential	4/12/2016	21:05	0.11	<0.800	<0.800	0.03	<0.800
W16D108-07	2847-W-028	<1000	Residential	Residential	4/12/2016	21:35	0.11	<0.800	<0.800	0.021	<0.800
W16D108-08	3049-W-041	<1000	Residential	Residential	4/12/2016	19:30	0.04	<0.800	<0.800	0.147	<0.800
W16D108-09	3449-J-010	<1000	Residential	Residential	4/12/2016	20:30	0.09	<0.800	<0.800	0.021	<0.800
W16D108-10	3153-F-054	<1000	Residential	Residential	4/12/2016	22:40	0.13	<0.800	<0.800	0.021	<0.800
W16D108-11	FD							<0.800	<0.800	0.027	<0.800

Legend

Highlighted columns are the parameters listed in Table 1 of Gresham's WPCF permit.

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NM= not meası **ND=** not detected

Dup = Duplicate Sample

MRL = method reporting limits are included at the top of each data set where they are constant. For parameters were no MRL is included, this means they vary by sample.

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Blank = Deionized Water Sample

Exceedance of City WPCF Permit action level

Section B – UIC System Management

The City of Gresham implements a City-wide Stormwater Management Plan (SWMP), which addresses areas that drain to both MS4 and UICs. The UIC System Management Plan submitted to DEQ contains two BMPs that were modified slightly from the BMP descriptions found in the SWMP, therefore this section contains the SWMP Implementation Status Report submitted to DEQ with our NPDES MS4 Annual Report (Table B3), as well as UIC-specific implementation status for the two BMPs that are UIC specific (Table B1). **Note that the Business Inspection program activities occurred in both the MS4 and the UIC areas of the city.**

1. UIC-Specific BMP Implementation Status

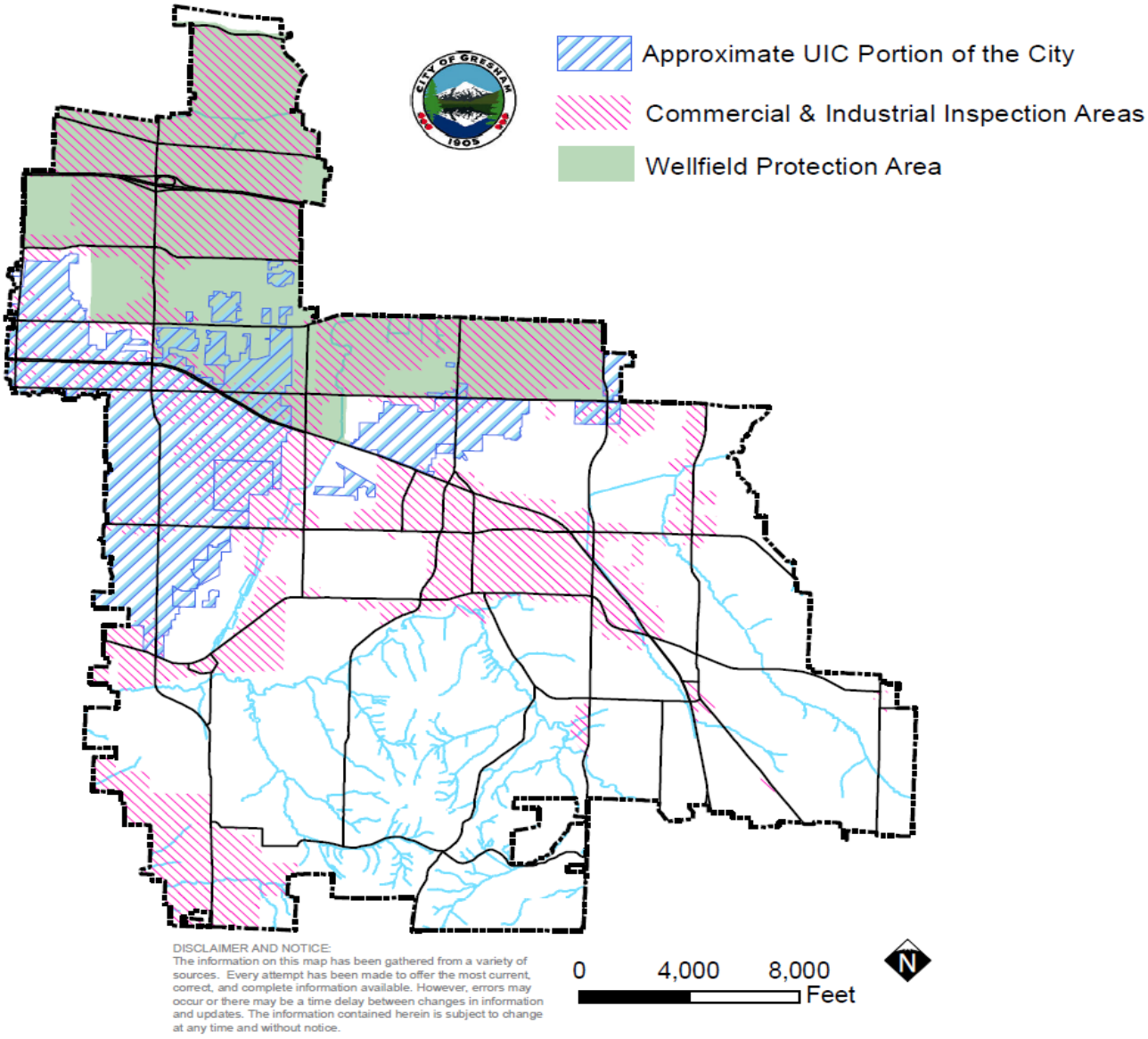
The implementation status for the two UIC-specific BMPs which were modified slightly from those contained in the City's SWMP are reported in Table B1.

Table B1: Implementation Status for UIC-specific BMPs

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status (2015-2016)	Summary and Date of Any Proposed Adaptive Management Modifications
RC 1 (Stormwater System Maintenance Plan)						
G. Underground Injection Control (UIC's) Maint. & Cleaning	Ongoing	Maintain and clean UICs as needed to maintain functionality	Report all maintenance and cleaning activities	Keep records of annual maintenance locations and cleaning activities.	12 UICs were inspected and 9 were cleaned by City crews in PY4. 19.65 yards of debris removed.	None
	If needed	Conduct study to determine optimal cleaning frequency for UICs	Evaluate data and develop guidance for proactive maintenance of UICs	Report findings of study and adaptively manage cleaning frequency	The City is still determining whether the study is needed.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status (2015-2016)	Summary and Date of Any Proposed Adaptive Management Modifications
IND 1&2 (Industrial Inspection & Monitoring)						
A. Business Inspection Program	Ongoing	Develop and conduct an inspection program for businesses that own/operate private UICs and/or have potential to affect City-owned UICs	Evaluate existing databases to determine inspection priorities and begin inspections	Report status of ongoing program development	The City developed a business inspection program that covers businesses within the wellfield protection area (portions of which drain to groundwater) and also focuses on the automotive sector which has a high potential to pollute stormwater. These businesses are located within the commercial districts and drain to both the MS4 and UIC areas. **See Figure B1.** The city also tracks the compliance status of businesses with DEQ 1200Z or COLS permits (all of which drain to the MS4) and oversees significant industrial users for the wastewater pretreatment program (all of which drain to the MS4). **See Table B2: Stormwater Management Plan Summary.**	None

Figure B1: City of Gresham UIC Area Crossover with Business Inspection Program Areas



2. NPDES MS4 Stormwater Management Plan Implementation Status

The implementation status for BMPs that apply City-wide are reported in Table B2 (this is duplicated from Section 3 of the NPDES Annual Report submitted to DEQ in November 2015).

While the City has UIC specific BMPs, many of the BMPs established in NPDES permit SWMP are implemented City-wide and serve to protect City UICs. **Table B1** summarizes the BMPs detailed in the NPDES report that also serve areas of the City where stormwater is managed using UICs.

Table B2. SWMP BMPs that address WPCF Permit-Required Management Plan Elements

Permit-Required Element	UICMP/SWMP BMP Number
Employee education and public outreach;	EDU 1 (Stormwater Education Program) See B2: Table 3.8 A. Ensure Staff/Stakeholder Training B. Educate Residents C. Educate Businesses
Injection system operation and maintenance;	**RC 1 (Stormwater System Maintenance Plan)* (included above)** RC 2 (Planning Procedures) RC 3 (Maintain Public Streets) RC 4A (Water Quality Retrofits) RC 5 (Monitor Pollutant Sources from Closed or Operating Municipal Waste Facilities) RC 6 (Reduce Pollutants from Pesticides, Herbicides and Fertilizers)
Protecting injection systems from accidental spills or illicit disposal of wastes or contaminants;	ILL 1A&B (Non-Stormwater Discharge Controls) ILL 4A (Spill Response) See B2: Table 3.6 ILL 5 (Facilitate Public Reporting) See B2: Table 3.7 ILL 6 (Facilitate Proper Management Disposal of Used Oil & Tires) ILL 7 (Limit Sanitary Sewer Discharges) CON 1&2 (Construction Site Planning & Controls) CON 3 (Construction Site Inspection & Enforcement)
Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, materials storage or handling areas, or other discharges that may contain pollutants above levels of concern;	IND 1&2 (Industrial Inspection & Monitoring) See B2 Table 3.9 **A. Business Inspection Program** (included above)**
Housekeeping practices to protect groundwater quality;	ILL 4 (Spill Response Program) B. Spill Prevention (Hazardous Waste Mgmt – City) C. Maintain Public Vehicles
Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.	ILL 4A (Spill Response)

*BMP RC1(G) is related specifically to Underground Injection Control (UIC's) Maintenance & Cleaning

**BMP IND1&2(A) is related to the City's Business Inspection Program, which inspects businesses in the City's wellfield protection area, in the City's pretreatment program for wastewater, and is also currently focusing on the automotive sector in both the MS4 and UIC areas of the City.

City of Gresham NPDES Annual Stormwater Compliance Report

Table B2: Stormwater Management Plan Summary for the MS4 and UIC areas of the city

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
RC 1 Stormwater System Maintenance Plan						
A. Pipe Cleaning	Ongoing	Maintain stormwater system pipes to ensure proper function and limit impacts to water resources.	Clean and inspect 15-20 miles of pipe per year.	Number of pipe miles cleaned. Volume of debris collected.	15.5 miles. 3.8 cubic yards (cy) removed. ~350 staff hours.	A request was submitted to DEQ in fall 2012 to reduce the miles of pipe cleaned to 5, in favor of conducting other higher priority maintenance activities. Staff met with former DEQ staff to discuss the proposal. DEQ requested additional data from the City. In 2014, DEQ hired a new permit coordinator. DEQ was unable to put the request out for public comment prior to the permit's expiration. Oregon Adminstrative Statute prohibits alterning a permit that has been administratively extended, therefore, the City's request is on hold until the permit is reissued. There is no current projected timeline for permit reissuance.
B. Catch Basin Cleaning	Ongoing	Maintain stormwater system catch basins to ensure proper function and limit impacts to water resources.	Clean or inspect 100% of publicly-owned catch basins that drain to surface water annually.	Number of catch basins cleaned. Volume of debris collected.	6,132 residential cbs cleaned. 139 cy of debris removed. Notices are issued regarding parking, but 100% cleaning is never achievable given resource efficiencies and overall maintenance objectives for other activities. 1,498 arterial cbs cleaned. 50 yards of debris removed. The city has begun using software in the field to track debris in basins on the arterials to see if a different cleaning rate would be more cost and/or water quality effective. 3,159 hours of grey infrastructure cleaning activities.	None
C. Maintain Public Water Quality Facilities	Ongoing	Maintain publicly-owned water quality facilities to ensure proper function and limit impacts to water resources.	Maintain an average 20-25 facilities per year over the permit term. (Annual totals may vary).	Number and type of facilities inspected. Number and type cleaned. Type of maintenance conducted. Volume of debris removed.	Removed 92 cy of debris from two publicly-owned regional water quality facilities. Conducted 174 rain garden inspections and 24 ponds/swales. Routine maintenance is litter removal, minor sediment removal, mowing, pruning, removal of invasive weeds and volunteer trees, and debris blockage of inlets and outlets. 110 cy of debris removed. 3,469 hours of green infrastructure cleaning activities.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
D. System Repair and Maintenance	Ongoing	Maintain and repair pipes, ditches, culverts, inlets, off-road systems, etc. in order to ensure proper function and limit impacts to water resources.	Maintain and repair the stormwater infrastructure as needed.	Number of hours dedicated to R&M activities.	~6,580 staff hours were allocated to the repair and maintenance of pipes, catch basines, manholes, laterals, outfalls, conducting utility locates, significant rain event infrastructure inspections and emergency response, shop and equipment maintenance, gis mapping corrections of infrastructure, and public facility inspections.	None
E. Manhole/Detention Line Cleaning	Ongoing	Maintain manhole and detention line structures to ensure proper function and limit impacts to water resources.	Inspect 75% of manhole structures annually, as appropriate; clean detention lines only as needed based on inspections.	Track number of structures cleaned/repaired. Report volume of debris removed.	Inspected 248/248 sedimentation manholes removing 48 cy of debris from 21 structures. Inspected 200/200 flow control manholes removing 8.5 cy of debris from 17 structures. Inspected 227/227 detention pipes removing 6 cy of debris from 102 structures. Represents about 370 staff hours.	None
F. Ensure Proper Debris Disposal	On going	City staff decant water to the wastewater system, dry debris & test debris to ensure that it meets disposal requirements.	Ensure that the city utilizes environmentally sound disposal practices and services.	Keep records of annual disposal services utilized. Keep annual debris testing data.	The City contracts with Water Truck Services, a DEQ permitted entity, to recycle as much of the debris (separated into dirt v. rock and is reused).	None
G. Underground Injection Controls (UIC's) Maint. & Cleaning	As required by UIC Permit	Ensure that the city complies with the required elements of the WPCF permit in order to limit stormwater impacts to groundwater.	Under the City's UIC WPFC permit, report all maintenance and cleaning activities as required.	Keep records of annual maintenance locations and cleaning activities. Reporting not part of the MS4 Annual Report requirements.	NA	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
RC 2 Planning Procedures						
A. Water Quality Manual for New and Re-Development	Ongoing	Ensure that the water quality best management practices as described in the city's *Water Quality Manual/Green Development Practices Manual* are implemented by the development community to reduce impacts to local streams from stormwater pollutants.	Implement the *Manual* and bi-annually determine whether updates to the document are necessary. Conduct training to users of the *Manual* if it is updated significantly.	Track #, location, acreage & land use of new and redevelopment projects. Track # and type of private water quality facilities installed to comply with new development stds. Delineate and GIS map the drainage areas of the private facilities installed to comply w/new dev. standards. Track training activities.	See Table 3.1. Staff work with GIS staff to continually ensure a robust and high quality data set of stormwater system assets. As facilities are built, their type and area treated are recorded to aid the City in CIP and retrofit planning and design decisions as needed. This mapping also aids the City's pollutant reduction modeling that is required during the permit renewal submittal. During PY 21, staff hired an engineering graduate student to collect data on potential retrofit locations and develop a standardized scoring criteria with categories for staff to score and rank future planned retrofits. Staff continued to work on the Stormwater Manual update. The Manual update is expected to be completed in PY 22.	None
B. Promote Low Impact Development (LID) Practices	Ongoing	Utilize city *Water Quality/Green Development Practices Manuals* to incorporate low impact development practices into new and redevelopment projects where applicable.	Implement practices or programs that promote the use of low impact development techniques.	Track location, drainage area & type of LID practices that are implemented.	See Tables 3.1 and 3.2.	None
C. Private Water Quality Facility Maint. Program	PY 16 and Ongoing	Continue implementing tracking procedures for the installation of privately-owned water quality facilities and policies that ensure that private owners understand their maintenance responsibilities.	Collect and record maintenance agreements for privately-owned facilities that legal code allows. Develop a program to ensure facilities are being adequately maintained.	Track #, type, year installed, & watershed location for all private water quality facilities. Report progress on program dev. related to private facility maintenance annually in PY 16 and ongoing.	There are approximately 207 private stormwater facility locations, some with multiple owners and some with multiple facility types (About 260 vegetated and 65 proprietary underground devices). City's code is utilized to ensure that private owners have legal responsibility for maintaining their facilities. During PY 20, staff obtained approval from City Council to take over the maintenance responsibility for 41 multiple owner residential private stormwater facilities, which represents a significance maintenance work load impact in the next three to five years. During PY 21, staff completed 31 inspections of 31 multi-owner underground vaults and replaced 58 proprietary stormwater cartridges at 13 private locations: staff completed 20 inspections of multi-owner vegetated facilities and completed maintenance work at 4 of them. Staff collected documentation from 32 commercial vault owners that maintenance was conducted. Staff continues to work with the City Attorney's office to transfer maintenance responsibility from the owners to the City and notify batches of owners to gain legal access to the private properties in the future. During PY 22-24, all facilities are expected managed to meet good to excellent condition standards.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
D. Master Plan Update	Ongoing	Develop and update, as appropriate, Stormwater Master Plans for the city.	Include water quality goals in the city's master plans. Complete the Natural Resource Master Plan by PY 11-12.	Report on updates to Master Plans. Master plan project implementation w/water quality benefits are reported in BMP RC4: Water Quality Retrofits.	A flood reduction plan for Burlingame Creek is being developed during PY 21 and is expected to be completed within the next 2 years. The City is also planning to undertake a systemwide stormwater master plan effort over the next five to six years.	None
E. Urban Canopy Initiatives	Ongoing	Protect and enhance the urban canopy as part of the city's overall stormwater management strategy.	Create and implement an Urban Forestry Management Plan. Utilize Code Enforcement to ensure that urban canopy objectives are supported. Collect fines from tree removal violations that may be used for tree replacement efforts.	1) Report on progress of creating Urban Forestry Mgmt. Plan (UFMP) & annually report on status of Plan's implementation; 2) Report number of code compliance investigations & outcomes related to tree protection objectives; 3) Report outcomes that result from the collection of tree removal fines; 4) Report code changes, as applicable. See MON 2: Legal Authority and Code Review; 5) Report type/number of outreach activities conducted & estimated persons reached. See EDU 1: Stormwater Education Program.	The elements implemented under the UFMP included: *Tree code amendments to update rules for tree protection, removal and replacement. *Draft of a technical tree manual as companion to new tree code to assist property owners with code guidance. *Collaboration with community stakeholder groups that resulted in the Rockwood Tree Inventory. *Evaluation of Significant Trees *Implementation of various plan elements such as promotion of habitat along trails, enhanced tree list with tree committee, improved the arboreteum landscape plan to enhance survivability. There were seven tree code violations and all were resolved with replacement corrections.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
RC 3 Maintain Public Streets						
A. Street Sweeping	Ongoing	Continue street sweeping activities to prevent litter and debris from entering the public stormwater system.	Provide 8-10 sweeps of the city per year.	Track & report the number of sweeps per year, total miles swept and total debris collected.	Just over 5,800 street miles were swept during 10 sweeps in residential areas and 12 sweeps of arterials. Over 1,300 cy removed. 753 hours of additional sweeps were conducted by staff removing an additional 500 cy of debris.	None
B. Deicing	Ongoing	Continue to implement standard operating procedures to limit impacts to the environment from sand, gravel, and deicing product application.	Implement deicing practices in a manner that limits impacts to water quality.	Track & report an estimate of sand/gravel & deicing product applied to Gresham roads. Track miles of road to which sand/gravel or deicing products are applied.	Applied about 6,300 gallongs of Magnesium Chloride to 478 lane miles (streets vary from 2-4 lanes). Applied 75 yards of sanding rock and utilitized 115 staff hours to sweep the rock off the street.	None
C. Standard Operating Procedures for Road Maint. Activities	PY 16 and Ongoing	Continue utilizing ODOT's maintenance standard operating procedures, as well as the City's manual titled Standard Operating Procedures for Wetland, Waterway and Habitat Protection in order to guide city staff and contractors in resource protection efforts when working near jurisdictional resources.	Implement a road maintenance program that will limit impacts to water quality. Biennially train appropriate staff. Monitor program implementation and adaptively manage based on feedback and results.	Track & report implementation of training activities. Report changes to SOP's annually, if updated.	Continue to implement road maintenance SOPs for the protection of waterways.	None
RC 4 Retrofit & Restore System for Water Quality						
A. Water Quality Retrofits	Ongoing	The Watershed Engineering group will continue to implement the Stormwater Capital Improvement Projects that include water quality enhancement and pollution reduction elements.	Implement a CIP program that will help mimic the natural hydrologic cycle, treat stormwater, and promote stream protection and enhancement.	Track number, type, watershed location & total drainage area of CIPs constructed for water quality.	Table 3.1 includes CIPs implemented by departments other than the Watershed Division that include water quality treatment. Table 3.2 includes projects undertaken as a result of the Watershed and Natural Resource CIP list.	None
B. Enhance Riparian Areas	Ongoing	Continue conducting riparian restoration activities to remove invasive species, restore and enhance buffers and encourage multi-story native plant communities, channel stabilization and support of critical habitat.	Continue to seek partnerships/grants to implement riparian enhancement projects that will limit the introduction of stormwater pollutants into streams.	Track and describe riparian enhancement activities by location. Estimate number of volunteers/partners involved, where applicable. Estimate of acreage enhanced and total plans installed or invasives removed.	See Table 3.3.	None
RC 5 Monitor Pollutant Sources from Closed or Operating Municipal Waste Facilities						
Pollutant Source Evaluation	Ongoing	The City has reviewed historic records and current operating businesses to determine that, as of the 2010 permit application approval, no pollutant source exists from an operating or closed treatment, storage, or disposal facility for municipal waste. The City conducted an assessment of a closed facility during PY 12 and determined that no threat to stormwater existed from the facility. This report is available upon request.	Ensure that new municipal waste facilities within the City's permitted area are appropriately permitted and designed to limit the potential for pollutants to enter stormwater.	Review business permits annually. (Conducted under the IND 1 & 2 BMP A. Business Inspection Program). Report any new facilities and assessment results.	There are currently no operating treatment, storage or disposal facilities for municipal waste within the city. However, Gresham Sanitary Services who is a solid waste hauler, holds a UIC permit #13410 and is not connected to the City's stormwater system. They also have a DEQ Transfer Permit #1392 for reloading waste. The reloading area is entirely sealed and wastewater is discharged to the sanitary sewer via a licensed contractor. Annual inspections by DEQ or Metro and storm water management compliance is part of the inspection protocol.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
RC 6 Reduce Pollutants from Pesticides, Herbicides and Fertilizers						
Integrated Pest Mgmt. Program	Ongoing	Limit the introduction of pesticides and fertilizers from city operations by implementing an integrated pest management plan.	Review and implement the IPM Plan biennially and, at a minimum, update at least once per permit cycle. Conduct training. Annually review the list of city approved pesticides.	Track frequency of staff trainings & number of staff trained. Report updates of the plan. Track quantities and types of pesticide, herbicides and fertilizer applications.	See Table 3-4 of Pesticide/Fertilizer Application Records. Staff applicators follow Oregon education certification requirements to retain their licensure, as applicable. See also EDU 1--Staff/Stakeholder Trainings	None
ILL. 1 Non-Stormwater Discharge Controls						
A. Control Releases from Fire Training Activities	Ongoing	Limit pollutants to stormwater from fire training activities by implementing standard operating procedures.	Ensure Fire Training is overseen by staff familiar with the SOP for stormwater protection.	Document fire training protocols for stormwater protection and train staff.	SOP is on file and Fire Training staff are familiar with protocol.	None
B. Water Line Flushing	Ongoing	Minimize impacts to the stormwater system from water line flushing activities by implementing standard operating procedures.	Ensure Water Line Flushing is overseen by staff familiar with the SOP for stormwater protection.	Train employees on standard operating procedure to minimize impacts to local streams. Annually report gallons flushed.	6.7 M gallons flushed using SOP. Flushing SOP is reviewed at staff meetings prior to work and for the benefit of new staff.	None
ILL. 2 & 3 Illicit Discharges Elimination Program						
A. Field Screening and Investigation	Ongoing	Conduct dry weather screening at high priority outfalls, at a minimum of once per calendar year. When appropriate conduct follow up investigation to identify the source (responsible party). If a responsible party is identified work to eliminate the illicit discharge.	Conduct annual dry weather screening at high priority outfalls. Document the procedures the city will follow when an illicit discharge investigation identifies a responsible party.	Track number & location of outfalls inspected. Track number & location of illicit discharges and/or connections identified. Include documentation in 2011 Annual Report. Describe follow-up actions for identified illicit discharges and/or connections in Monitoring Plan.	We inspected thirty sites. Ten sites had no flow. Several sites had turbidity above our action level of 15 NTU. Follow up investigation upstream did not reveal any source for the sediment. The most likely explanation is that the sample collection bailer stirred up sediment while collecting the water because the flow was very low. One site had pH below our action level of 6.5, but the follow up investigation upstream did not reveal any probable cause. One site had an ammonia value that exceeded our action level of 0.5 mg/L. We investigated the upstream portion of the pipeshed and found increasing ammonia levels. We located a cross-connection with the wastewater system on Wilkes Road near 181st Ave which was immediately repaired. Resampling after the correction showed levels well below action levels. See Table 3.5. The City's illicit discharge enforcement response procedures are described in Section 7 of the Stormwater Monitoring Plan on the City's website at: www.greshamoregon.gov/watershed	None
B. CCTV New Development Stormwater Pipes	Ongoing	Conduct closed-circuit television (CCTV) inspections of new stormwater pipe installations during development projects to eliminate cross-connections.	CCTV at least 80% of all new pipes installed in the city.	Track number of stormwater pipe miles inspected as a percentage of the total stormwater pipes installed.	100% of new development inspected. About 3.8 miles CCTV'd for development finals, routine or investigative inspections. Represents ~750 staff hours.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
ILL. 4 Spill Response Program						
A. Spill Response	Ongoing	Respond to reports of spills or illegal dumping using the city's spill response protocol for hazardous and non-hazardous substances.	Implement the city's spill response protocol and conduct periodic review of the document to ensure efficacy.	Track number, type & location of spills that occur & the approx. quantity of material spilled. Track the response activities. Does not include traffic accidents, unless additional assistance is requested from the Watershed Operations staff.	See Table 3-6.	None
B. Spill Prevention (Hazardous Waste Mgmt. - City)	Ongoing	Continue to carefully manage hazardous materials to prevent spills on City-owned property from city practices.	1) Ensure safe handling, storage and disposal of hazardous fluids in order to prevent spills and limit pollutant sources to stormwater by training staff appropriately. 2) Provide periodic review of City contractor's safety and environmental violations and disposal permits, where applicable, to help ensure environmental compliance of contractors handling the City's waste products.	Report quantities of hazardous materials disposed annually. Report number of spill incidents and outcomes annually. Request & review contractor's permits, where applicable, at least annually and biennially review appropriate regulatory agency databases for safety and environmental violations.	Quantities of hazardous materials disposed: Used oil filters: (1) 30 gal drum Used oil: 230 gal Used Antifreeze: 50 gal Used Tires: 355 Used batteries are returned to the vendor for recycling All other recyclable commodities are recycled. Vendors utilized: Thermo Fluids, Tire Disposal & Recycling, Battery Systems, and Automotive Xpress Delivery.	None
C. Maintain Public Vehicles	Ongoing	Continue to maintain city vehicles and equipment to limit the contribution of stormwater pollutants from leaks and runoff, etc.	1) Maintain City-owned vehicles & equipment and ensure proper handling & disposal of fluids to reduce the likelihood of leaks or spills being released into the MS4 system or the environment. Meet DEQ Permit 1700 A deminimis discharge or seek a permit and/or waiver.	Report annual disposal quantities of all fluids and vendors utilized. Report status of deminimis discharges or Vehicle Wash Water permit implementation and/or waiver.	Quantities included in the BMP: Spill Prevention (Hazardous Waste Mgmt. - City) above. DEQ is currently not issuing Vehicle Wash Water permits. The Fire Department washes less than 8 vehicles per week per fire station and does not use heated water, does not wash the engine, transmission or undercarriages, but does use a phosphate-free soap on the vehicle exterior.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
ILL. 5 Facilitate Public Reporting						
Facilitate Public Reporting & Respond to Citizen Concerns	Ongoing	Continue to provide an outlet for public concerns regarding stormwater pollutant issues such as illegal dumping, erosion, plugged drains, invasive plants, etc.	Include information about how to report concerns of illegal discharges in various city publications.	Track number of calls/letter received, the issue of the call, and the response to the call.	See Table 3-7.	None
ILL. 6 Facilitate Proper Management Disposal of Used Oil & Toxics						
Facilitate the Proper Mgmt. & Disposal of Used Oil & Toxics	Ongoing	The City uses a variety of approaches to encourage proper solid waste, recycling, and hazardous waste management practices including: GREAT Business Education Program, Special Collection Events for the Public, and Curbside Recycling of Oil.	Continue to offer disposal, recycling, and/or collection programs that facilitate the proper management of solid and hazardous waste in the business and residential sectors.	Track quantities of used oil and toxics collected. Estimate the number of persons and/or households reached.	City contracted haulers estimated 11,424 gallons of curbside oil collected. Hazardous Waste Event collected: 1,600 cfl bulbs. lamps and tubes, 40 cy of stretchy plastics, 1,000 lbs of styrafoam, and 7,621 mixed electronics like microwaves, TVs, printers, etc., and 2 large moving vans of reusable household rigid plastic lawn furnture, toys, etc. were donated to charity for reuse. Approximately 1,100 cars/households attended.	None
ILL. 7 Limit Sanitary Sewer Discharges						
Limit Sanitary Sewer Discharges	Ongoing	The City's Wastewater Treatment Plant operates under its own NPDES discharge permit. Its programs include a pretreatment inspection program and implementation of Capital Improvement Projects that overall assist the City in meeting the NPDES MS4 Stormwater Discharge Permit objectives.	Continue to implement operations and maintenance programs for the wastewater pipe system that limits the introduction of sanitary sewer waste into the stormwater system.	Track sanitary discharge to the stormwater system, including estimated volume and location. Track follow-up responses to the identification of any sanitary discharges to the stormwater system. Track implementation of the CIP to connect currently unsewered properties to the sanitary sewer system.	During FY 15-16, the City switched to a new utility billing system and is in the process of updating and digitalizing accounts, making future account analysis more powerful. Based on this system update, our records show 24,014 total accounts (active and inactive). County Sanitarian records show 3 tanks were decommissioned within Gresham. Operations cleaned 62 miles of pipe and inspected 33 miles with the CCTV camera. Conducted 7 mainline repairs, 39 lateral repairs, 15 manhole repairs and investigated and alleviated 53 blockages. The Wastewater CIP continued the replacement of the 1950s mainline pipe. Project work included replacement of 1,354 linear feet (lf) of 15" pipe, 251 lf of 12" pipe, and 3,369 lf of 8" sewer pipe. City Attorney's office continues to work on the civil penalty legal issues related to two properties refusing to hook up to the city sewer.	None
IND. 1 & 2 Industrial Inspection & Monitoring						
A. Business Inspection Program	Ongoing	The City's Stormwater Business Inspection Program consists of a variety of approaches including: business license review and technical assistance; prioritized business inspections; review of business classification codes to determine those that may need 1200Z or 1200-COLS permits to submit to DEQ and collaboration with DEQ to ensure 1200Z permit data is adequately reviewed; cross training with the Wastewater Pretreatment and Fats Oils and Grease Inspectors to look for potential stormwater concerns, and a business education program that is implemented by the Solid Waste & Recycling Division staff.	Continue to implement business license review, business inspections and business education efforts to help prevent and reduce the introduction of pollutants into stormwater from business practices.	1) Track number & location of stormwater related issues identified during the business license review and follow-up. 2a) Report status of ongoing program development.	(1) 285 new businesses licenses came into the city. Review for environmental compliance concerns was provided to 12 food/bar/grocery related establishments, 15 automotive and 2 medical related businesses.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
A. Business Inspection Program				2a) Report status of ongoing program development.	2a) Stormwater business inspections are conducted in partnership with the Water and Wastewater Division inspections. The program will continue to look for stormwater concerns by conducting 1200Z/COLS/Wellfield/Pretreatment inspections and will rotate across the total number of automotive businesses every other year. As resources allow or observational concerns come up for a particular sector, additional businesses with potential to contribue to stormwater pollutants will be added.	None
A. Business Inspection Program				2b) Notify DEQ of businesses that may need a 1200-Z or 1200-COLS permit and report actions promised by businesses with which the City is working.	(2b) Staff reviewed the business license applications and did not identitfy any businesses neeing a DEQ 1200-Z or COLS permit. Table 3-9 contains a list of currently permitted industries with their inspection history, as applicable.	None
A. Business Inspection Program				2c) Track business inspections, including businesses location, outcome and follow-up. Estimate the number and type of businesses to be inspected for the next year. 2d) Report stormwater concerns identified by the wastewater pretreatment program and resolution. 3) Track GREAT business program environmental audits and certification annually. (Reported in Public Education--Table 3-8).	(2c) Sixteen auto related businesses inspected. Two are requiring follow up code violation warnings and may result in enforcement during PY 22. Others are in compliance and made voluntary corrections related to storage and washing. Staff inspected 71 businesses within the wellfield area, six of which required corrections and voluntarily complied. Ten Pretreatment Inspections were conducted. No stormwater violations were found. Projections for PY 22, include 35-45 Wellfield/1200Z/Pretreatment Inspections and 10-12 automotive businesses. (2d) Staff inspected 8 permitted industrial sites and DEQ staff inspected one (1200Z/COLS and Wastewater Pretreatment). Compliance for violations at McDonald and Wetle will continue into the future. (3) See Table 3-8.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
B. Industrial Monitoring Program	Ongoing	Coordinate with DEQ to ensure adequate notification of potential 1200Z and 1200-COLS permits and review of data submitted by permit holders.	Continue annual inventory of 1200-Z and 1200 COLS businesses within the city's boundaries and review monitoring results submitted to DEQ on an annual basis, if DEQ has not already done so. Report exceedances to DEQ, if applicable.	Track NPDES 1200Z/1200COLS permits issues in Gresham. Track number of violations reported.	During PY 21, staff reviewed the DEQ database of permitted facilities and checked for DEQ enforcement actions. There are currently 14 permitted facilities within Gresham's jurisdiction. No DEQ enforcements have been taken on any of these permitted industries and no additional assistance was requested by DEQ. Gresham staff inspected 10/14 industries to ensure wellfield protection area code implementation. Some corrective measures were requested. One industry enforcement is ongoing to gain full correction measures. These are listed in Table 3-9.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
CON. 1 & 2 Construction Site Planning & Controls						
Erosion Prevention & Sediment Control Manual	Ongoing	Continue to update the City's *EPSC Manual* when necessary to reflect current available and accepted technologies and City code and implement the Manual in order to limit impacts to local streams from stormwater.	Implement the EPSC Manual in order to limit stormwater pollutants from construction and development. Review and evaluate the manual biennially to assess changes needed, if any. At a minimum, at least once per permit cycle.	Track updates to the Manual.	The EPSC Standard Operating Details and Manual are being issued and implemented.	None
CON. 3 Construction Site Inspection & Enforcement						
Construction Site Inspection & Enforcement	Ongoing	Continue to implement an EPSC inspection program to ensure adherence to EPSC Manual requirements and 1200-C permit requirements, where applicable.	1) Implement the EPSC inspection program to enforce the EPSC Manual. 2)Ensure proper staff training. 3) Examine tracking parameters such as types of violations, number of active sites and total associated acreage.	Track the number of sites inspected annually. Track training sessions conducted for staff. Report parameters assessed and program adaptive managment that result, if applicable.	A total of 254 sites were inspected: 242 with residential or commercial building permits and 12 sites with grading permits. Ther were 15 disapproved inspections affecting 12 sites. Correction notices were related to installing/maintaining perimeter control or permanent vegetation, protecting stockpiles, and sweeping streets.	None
Stormwater Education Program	Ongoing	Provide notice to construction site operators concerning where education and training to meet EPSC requirements can be obtained.	Ensure developers and construction permit holders are adequately informed of the city's EPSC Manual BMPs and requirements to limit impacts to streams from stormwater.	Report training and communication efforts to the construction community.	See Appendix D: Wet Weather Notification Letter Notice to Contractors.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
EDU. 1 Stormwater Education Program						
A. Ensure Staff/Stakeholder Training	Ongoing	Continue to train new or existing employees as appropriate on all documents that regulate stormwater pollutant control activities such as: IPM Plan, Water Quality Manual, EPSC Manual, and Spill Response Protocol, etc.	Continue to train new personnel and existing personnel, as appropriate on stormwater regulatory documents and conduct trainings for stakeholders, when applicable.	Track the number of personnel & contractors who receive training by topic.	A variety of staff across operations & maintenance, inspections, and policy positions attended trainings in the following areas: * Invasive Species Identification (1) * NASSCO-National Association for Sewer Service Companies (2) * Oregon State Pesticide Licensure Renewal (2) *APWA Short School (6) *Standard Operating Procedures for new employees *Equipment Use and Safety for new employees	None
B. Educate Residents	Ongoing	Continue to create and deliver programs and/or messages to educate the public regarding non-point sources of pollutants of concern.	Continue to educate the public regarding their personal contributions to stormwater pollutant sources and impacts to water bodies, as well as the steps or actions they can take to reduce pollutants.	Track programs/messages delivered, type of communication piece and, where appropriate/known, the number of people affected and measured behavior changes. Annually report the Public Education program priorities and plans for the following year.	See Table 3-8. For PY 22, staff will continue to support the implementation of the Backyard Habitat Conservation Program, an ACWA/Regional Coalition coordinated effort for media advertising, Watershed Council outreach, individualized customer response, neighborhood illegal discharge response, a new public education garden at Main City Park, and Nadaka Park education programs.	None
C. Educate Businesses	Ongoing	Continue to create and deliver programs and/or messages to educate businesses regarding non-point sources of pollutants of concern.	Continue to educate the public regarding their personal contributions to stormwater pollutant sources and impacts to water bodies, as well as the steps or actions they can take to reduce pollutants.	Track programs/messages delivered, type of communication piece and, where appropriate/known, the number of people affected and measured behavior changes. Annually report the Public Education program priorities and plans for the following year.	See Table 3-8. For PY 22, staff will continue to support the implementation of the GREAT Business Program, the EcoBiz Program, the SCAP program, the EPSC contractor outreach and also completed a notice to area carpet cleaning companies regarding proper disposal and staff training expectations, as well as notices to private catch basin owners regarding the need to submit cleaning documentation to the City.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
Program Management & Monitoring						
MON 1 Annual Report Writing	Ongoing	Coordinate across the city to review program commitments, gather data, and where appropriate, assist with program evaluation and additional goal setting or BMP enhancements.	Submit the Annual Report to DEQ on behalf of Gresham and Co-Permittee, as required by the permit.	Each year provide a report that includes the following components: * a description of the public comment notice method; *status of the SWMP implementation and SWMP program elements, progress in meeting the measurable goals; *status and/or results of any public education program effectiveness evaluation conducted during the reporting year and a summary of how the results were or will be used for adaptive management.; *a summary of the adaptive management. process during the report year, including any proposed changes to the SWMP identified through implementation of the adaptive mgmt. process; *proposed changes to SWMP elements designed to reduce TMDL pollutants to the MEP; *a summary of total stormwater program expenditures and funding sources over the reporting fiscal year and those anticipated in the next fiscal year;	This year's Annual Report included a public comment period from October 14-27, 2016. Notices ran in the Oregonian and on Oregonlive.com. The City placed a notice on its website and also issued a press release to all media. A notice was also published in the City's e-newsletter which is emailed to ~800 households. A notice was emailed to the local active Watershed Councils and the City's Natural Resource & Sustainability Committee. The status of the SWMP implementation and progress meeting measurable goals is described throughout this report. The Adaptive Management Process is described in Section 1 and a summary of the adaptive management process and resulting proposed changes may be found in the Summary and Date of Proposed Adaptive Management Column for the respective BMPs effected. A summary of total expenditures is included as Table 3-10.	None
				*a summary of monitoring program results, including monitoring data that are accumulated throughout the reporting year and/or assessments or evaluations; *any proposed modifications to the monitoring plan that are necessary to ensure that adequate data and information are collected to conduct stormwater program assessments;	A summary of the Environmental Monitoring Plan implementation for Gresham and Fairview is included as Section 2 of this report with a separate Appendix A, B & C of supporting raw data collected during PY 21.	None
				*a summary describing the number & nature of enforcement actions; inspections & public education programs, including the results of ongoing field screening and follow-up activities related to illicit discharges; *an overview, as related to MS4 discharges, of concept planning, land use changes and new development activities that occurred within the UGB expansion areas during the previous year, and those forecast for the following year, including the number of new post-construction permits issued, and the estimate of total new or replaced impervious surface area related to new development and redevelopment projects commenced during the report year; *Annual Report 2014 must also include: TMDL Pollutant Load Reduction Evaluation; Wasteload Allocation Attainment Assessment; 303 (d) Evaluation; Hydromodification Assessment; Retrofit Plan.	A summary of the Illicit Discharge Detection & Elimination Program (Dry Weather Screening and Spill Response) may be found in Tables 3-5 and 3-6. Locations for IDDE sampling are shown in Monitoring Program Appendix B Figure 2-1. A summary of concept planning, land use changes and new development activities for UGB expansion areas may be found in Appendix B. A summary of development permits issued within the City of Gresham is included in Table 3-1.	None

BMP Name	Compliance Date	BMP Description	Measurable Goals	Reporting Elements	Status 2015-2016	Summary and Date of Any Proposed Adaptive Management Modifications
MON 2 Legal Authority and Code Review	Ongoing	Review existing code to ensure that the city maintains adequate legal authority and other requirements as stated in the NPDES MS4 permit.	Maintain adequate legal authority, as required by the permit.	Maintain adequate legal authority through ordinance(s), interagency agreements or other means to implement and enforce the provisions of the NPDES MS4 Permit #101315. Track enhancements or improvements to existing City code.	See Appendix A.	None
MON 3 Program Evaluation/Monitoring	PY 17 or as otherwise dated in the permit.	Review the 303(d) list to determine whether there is a reasonable likelihood of stormwater from the MS4 to cause or contribute to water quality degradation of receiving waters. Utilize the city's GIS mapping staff to enhance program evaluation efforts.	Conduct a 303 (d) pollutant evaluation, as required by the permit.	Submit a report summarizing the results of the 303(d) list review and evaluation and any proposed SWMP modification or updates necessary to reduce applicable 303(d) pollutants to the MEP: Submit a Waste Load Attainment Assessment; Submit a TMDL Pollutant Load Reduction Evaluation; Track significant mapping efforts that help evaluate, enhance or support the SWMP BMPs.	Significant mapping projects conducted during PY 21 include: *Provide maps for operations and maintenance activities. *Created a digital inspection form for mapping private catch basins. *Created walk/bus maps for stormwater interns cb mapping project. *Ongoing maintenance of stormwater asset data and drainage treatment areas *Map of Backyard Habitat/Rain Garden/Downspout programs for analysis. *Address exports for illicit discharge issues, business program notices, community education events and workshops *Maps for public/private pond/swale/rg maintenance. *Maintenance mailers to private stormwater system owners.	None
MON 4 Public Involvement	Ongoing	Conduct public involvement activities as required by the permit, such as annual reports, retrofit strategy, and Permit Renewal Submittal elements.	Conduct public involvement activities and report outcomes.	Report the number of people reached during public involvement activities.	The Annual Report is also released for public comment which is described in MON 1: Annual Report Writing. Below is a summary of potential reach utilizing the typical methods for making public announcements. Gresham's population is about 105,000 (2010 U.S. Census). The Oregonian daily readership in the Portland-Metro area is about 200,000, and Oregonlive.com recieves 9M unique visitors annually. The City's Website Home Page receives ~13,000 visits per month. The City's Watershed Division web page, where public comment documents are housed electronically, receives ~1,300 views annually. City Newsletter mailed quarterly to 48,000 households.	None
MON 5 Permit Renewal Submittal	PY 17-18 or as appropriate to meet permit deadlines.	At least 180 days prior to permit expiration, prepare and submit the Permit Renewal Submittal package to DEQ.	Submit the Permit Renewal Package to DEQ.	Submittal includes as required by permit but is not limited to: Proposed modifications, including additions and removals of MBPs and measurable goals; Information allowing the Dept. to make an independent assessment that the SWMP proposed meets the requirements of the permit to the MEP; Updated pollutant loads for TMDL pollutants and BOD5, COD, nitrate, total phosphorus, dissolved phosphorus, cadmium, copper, lead & zinc; Establishment of TMDL Pollutant Reduction Benchmarks, if not achieving the WLA; A proposed monitoring program; A description of service area expansions; A fiscal evaluation summarizing expenditures for the current and next permit cycle; Updated MS4 maps.	The City of Gresham submitted its permit renewal package to DEQ on December 15, 2015. This included an updated Stormwater Management Plan and Monitoring Plan that went out for public comment on Nov 30 thru Dec 13, 2015. No comments were received. The City's permit expired on December 29, 2015 and was administratively extended by DEQ in a letter dated February 25, 2016. The City, therefore, is following the SWMP dated April 2011 and adaptively managed in April 2013. The City's permit allows for the Monitoring Plan to be adaptively managed by reporting changes in the annual report to DEQ. As such, the City's current Monitoring Plan was last updated in August 2014. All documents are located at GreshamOregon.gov Watershed Documents.	None

Section C – UIC Inventory Changes

1. List of UIC System Changes (closed, retrofitted, modified, discovered)

The City's UIC Phase I UIC Evaluation report found five total UICs requiring corrective action in order to be protective of local water wells. The need for corrective action was based on the City's groundwater protectiveness demonstration, which determined that UICs not having 10' of vertical separation must be at least 335' from a well. During the past 2 years, the City completed upgrades to all of the noncompliant UICs identified during our system-wide assessment. The UICs had the following unique ID numbers and were corrected in the permit year noted:

- 3150-F-011 (PY 3)
- 3150-F-014 (PY 3)
- 3150-F-034 (PY 4)
- 3050-F-010 (PY 4)
- 3050-F-014 (PY 4)

These 5 noncompliant UICs were in two project areas (noncompliant UICs are in bold under each project below):

- 2 of the UICs were part of the Burnside & Eleven Mile project
- 3 of the UICs were part of the Stark Street & 202nd Ave project

In addition to the noncompliant UICs identified, adjacent UICs were incorporated into these projects.

Burnside & Eleven Mile:

Two UICs were decommissioned:

- **3150-F-014**
- 3150-F-013

One UIC that was converted to a sedimentation manhole:

- **3150-F-011**

Stark Street & 202nd Ave:

One new UIC was installed and was given a unique ID:

- 3050-W-089

Two UICs were decommissioned:

- 3047-W-029
- **3050-F-010**

Three were converted to sedimentation manholes:

- **3050-F-014**
- **3150-F-034**
- 3152-F-029

Other UIC Changes:

One UIC was converted to a sedimentation manhole at **162nd Ave and NE Glisan St**

- 2946-W-011

Three UICs were newly found and raised for maintenance access and added to the GIS inventory:

- 3154-F-080
- 3154-F-081
- 3152-F-104

One newly constructed UIC was added in order to correct a minor flooding issue:

- 3046-W-022

One existing UIC in the GIS inventory was renumbered to reflect a more accurate GPS location:

- 3150-F-043 became 3151-F-060

2. Plans for UIC System Updates in Coming Year

Two future projects have been identified for the coming permit year that will address minor flooding (failing UICs) by installing some new UICs and add pretreatment by converting existing UICs to sedimentation manholes.

These locations are:

- SE 182nd (between SE Marie St & SW 5th Dr)
- SE Morrison Court