



GREGORY L. GEIST | DIRECTOR

Water Quality Protection  
Surface Water Management  
Wastewater Collection & Treatment

October 31, 2020

Mr. Pablo Martos, Senior MS4 Permit Writer  
Oregon Dept. of Environmental Quality, NW Region  
700 NE Multnomah Street, Ste. 600  
Portland, OR 97232

**RE: Water Environment Services and the Cities of Happy Valley and Rivergrove  
NPDES MS4 Discharge Permit 2019-20 Annual Report**

Dear Mr. Martos,

Here is the 2019-20 Annual Report for WES and the Cities of Happy Valley and Rivergrove as required by our NPDES Municipal Separate Storm Sewer System Discharge Permit, renewed in March 2012.

We are using electronic signatures for the report, which is the document of record, in order to meet the November 1<sup>st</sup> deadline. We will send you follow-up documentation via USPS with wet signatures after the deadline.

For your convenience, we have also forwarded an electronic copy to each basin coordinator.

We look forward to your comments. Please call if you have any questions or need additional information at (503) 742-4581.

Sincerely,

A handwritten signature in black ink that reads "Ronald Wierenga".

Ronald Wierenga (Oct 29, 2020 15:50 PDT)

Ron Wierenga  
Environmental Services Manager  
Clackamas Water Environment Services

cc: Ms. Kristi Asplund  
Mr. Brian Creutzburg  
Ms. Nancy Gramlich  
Ms. Andrea Matzke



CLACKAMAS

**WATER  
ENVIRONMENT  
SERVICES**



**NPDES MS4 Discharge Permit**

**Annual Report**

**for**

**Clackamas Water Environment Services and the Cities of  
Happy Valley and Rivergrove**

**for**

**July 1, 2019 – June 30, 2020**

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**November 1, 2020**

**Clackamas Water Environment Services  
and the  
Cities of Happy Valley and Rivergrove**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)  
DISCHARGE PERMIT No. 101348**

We, the undersigned, hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater System Annual Report in accordance with NPDES Permit Number 101348. We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our 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 our knowledge and belief, true, accurate and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Greg Geist**

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10/28/20

Date

Gregory L. Geist, Director  
Water Environment Services

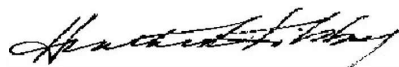
**Jason Tuck**

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Date: 2020.10.28 13:53:48 -07'00'

10/28/20

Date

Jason Tuck, City Manager  
City of Happy Valley



10/28/20

Date

Heather L. Kibbey  
City Manager / City Recorder  
City of Rivergrove

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## SECTION 1 MS4 PERMIT REQUIREMENTS FOR ANNUAL REPORTING

This annual report provides a summary of MS4 Permit program implementation activities by Clackamas Water Environment Services (WES) and the Cities of Rivergrove and Happy Valley from July 1, 2019 to June 30, 2020. WES is a municipal partnership formed under ORS 190 by the Clackamas County Service District No. 1 (CCSD#1), the Surface Water Management Agency of Clackamas County (SWMACC) and the Tri-City Service District. WES administers MS4 activities in SWMACC and CCSD#1, both of which are service districts within the municipal partnership. On July 1, 2017, SWMACC transferred its assets and permit obligations to WES. CCSD#1 joined the municipal partnership on July 1, 2018. WES works closely within its service area with Clackamas County, which administers its own MS4 Stormwater Management Program and submits a separate annual compliance report. There are references throughout this document to Clackamas County’s Department of Transportation and Development (DTD) where program elements are jointly implemented, and reported separately.

Table 1 (below) includes the 2019-20 MS4 Permit annual report submittal requirements found in Permit Schedule (B)(5) and the location in this document with the applicable program implementation information and data.

**Table 1: MS4 Permit Annual Report Submittal Requirement Locations in the Document**

Summary of Schedule B(5) Requirements for 2019-20	Document Section Where Annual Report Requirement is Met:
a. The status of implementing the stormwater management program and each SWMP program element, including progress in meeting the measurable goals identified in the SWMP.	Section 1.1 and Appendix A
b. Status or results, or both, 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.	Section 1.2
c. A summary of the adaptive management process implementation during the reporting year, including any proposed changes to the stormwater management program (e.g., new Best Management Practices) identified through implementation of the adaptive management process.	Section 1.3
d. Any proposed changes to SWMP program elements that are designed to reduce TMDL pollutants to the maximum extent practicable (MEP).	Section 1.4
e. A summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year.	Section 1.5
f. A summary of monitoring program results, including monitoring data that are accumulated throughout the reporting year and any assessments or evaluations conducted.	Section 1.6
g. Any proposed modifications to the monitoring plan that are necessary to ensure that adequate data and information are collected to conduct stormwater program assessments	Section 1.7



- h.** A summary describing the number and nature of enforcement actions, inspections, and public education programs, including results of ongoing field screening and follow-up activities related to illicit discharges. Section 1. 8
- i.** A summary, as it relates to MS4 discharges, describing land use changes, Urban Growth Boundary (UGB) expansion, land annexations, and new development activities that occurred within these areas during the reporting year. The number of new post-construction permits issued and an estimate of the total new and replaced impervious surface area related to development projects that commenced during the reporting year must also be included. Section 1.9
- j.** A summary, as related to MS4 discharges, describing concept planning or other activities conducted in preparation of UGB expansion or land annexation, if anticipated for the following year. Section 1.10

1.1 SCHEDULE B(5)(A) -- THE STATUS OF IMPLEMENTING THE STORMWATER MANAGEMENT PROGRAM AND EACH STORMWATER MANAGEMENT PLAN (SWMP) PROGRAM ELEMENT, INCLUDING PROGRESS IN MEETING THE MEASURABLE GOALS IDENTIFIED IN THE SWMP.

See Appendix A in this annual report for this data and information. This appendix includes the tracking measures and measurable goal status from BMPs in the Stormwater Management Plans.

1.2 SCHEDULE B(5)(B). -- STATUS OR RESULTS, OR BOTH, 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.

MS4 Permit Schedule A(4)(d)(vi) contains a requirement to create a Public Education Effectiveness Evaluation (Evaluation) and to submit it to the DEQ no later than July 1, 2015. CCSD#1, the SWMACC, Clackamas County, and the Cities of Rivergrove and Happy Valley submitted the Evaluation to DEQ on June 30, 2015. The results of this evaluation were used in the adaptive management of the education and outreach program; see the June 30, 2015 Evaluation for more information.

1.3 SCHEDULE B(5)(C) – A SUMMARY OF THE ADAPTIVE MANAGEMENT PROCESS IMPLEMENTATION DURING THE REPORTING YEAR, INCLUDING ANY PROPOSED CHANGES TO THE STORMWATER MANAGEMENT PROGRAM (E.G., NEW BMPS) IDENTIFIED THROUGH IMPLEMENTATION OF THE ADAPTIVE MANAGEMENT PROCESS.

Permit Schedule D(10)(a) defines adaptive management as a structured, iterative process designed to refine and improve stormwater programs over time by evaluating results and adjusting actions on the basis of what has been learned. Our October 2012 "Outline for Adaptive Management Approach" was used to guide our adaptive management process in 2019-20. A review of BMP implementation and an analysis of environmental monitoring data was performed. The draft Shared MS4 Permit SWMP is a recent product of our Adaptive Management Approach. At the present time, Clackamas County, WES, and the Cities of Rivergrove and Happy Valley implement their MS4 permit programs through three separate SWMPs. To improve coordination and overall program effectiveness, a single, combined, Shared MS4 Permit SWMP (Shared SWMP) was created. The Shared SWMP was submitted to DEQ with WES' MS4 Permit renewal application package in February 2017, but as of October 2020, DEQ still had not authorized the implementation of the Shared SWMP.

An extensive Adaptive Management-based process was undertaken as the three SWMPs were integrated into one Shared SWMP. This process included a project kickoff meeting, three separate Workshops, three separate visioning sessions, and over a dozen other meetings to receive input and direction, which was subsequently used to determine the depth and breadth of the program described in the Shared SWMP. Attendees at the Workshops, visioning sessions, and meetings included numerous staff from WES, Clackamas County's DTD and Business and Community Services (BCS), the City of Happy Valley and the City of Rivergrove.

WES completed a Gap Analysis in October 2016 which compared the Coordinated Participants' current SWMPs with requirements in the March 2012 MS4 permit to ensure that the February 2017 Shared SWMP fully complies with the MS4 permit.

A substantial number of modifications were made to various BMPs (Best Management Practices) during the process of integrating the three existing SWMPs into the Shared SWMP. The Shared SWMP has thirty-six (36) BMPs, many of which have new, improved measurable goals and tracking measures. For a summary of these modifications, please see Appendix B of the February 2017 MS4 Permit Renewal Application Package:

<https://dochub.clackamas.us/documents/drupal/2da8983d-d7e4-4241-9184-9ded9357e491>

#### 1.4 SCHEDULE B(5)(D) -- ANY PROPOSED CHANGES TO SWMP PROGRAM ELEMENTS THAT ARE DESIGNED TO REDUCE TMDL POLLUTANTS TO THE MAXIMUM EXTENT PRACTICABLE (MEP).

Please see section 1.3 (above). As the three existing SWMPs were integrated into the draft Shared SWMP, many BMPs were modified, and several of these proposed modifications are expected to reduce levels of TMDL pollutants which are discharged. Examples include:

- Portions of some proposed Construction Site Runoff BMPs are expected to reduce levels of these pollutants in stormwater: total phosphorus (Tualatin River only), settleable volatile solids (Load Allocation for Tualatin River's dissolved oxygen TMDL), mercury, and DDT and dieldrin (Johnson Creek only).
- Portions of some proposed Post-Construction Site Runoff BMPs, BMP PREV-6 ("Storm System Retrofit Program"), and BMPs MAINT-3 & MAINT-4 & MAINT-7 ("Structural Stormwater Facility Operations and Maintenance" BMPs) are expected to reduce levels of these pollutants in stormwater: E. coli, total phosphorus (Tualatin River only), settleable volatile solids (Load Allocation for Tualatin River's dissolved oxygen TMDL), mercury, and DDT and dieldrin (Johnson Creek only).

1.5 SCHEDULE B(5)(E) -- A SUMMARY OF TOTAL STORMWATER PROGRAM EXPENDITURES AND FUNDING SOURCES OVER THE REPORTING FISCAL YEAR, AND THOSE ANTICIPATED IN THE NEXT FISCAL YEAR.

WES and the City of Happy Valley dedicated sufficient resources to implement the Stormwater Management Plan in 2019-20. WES dedicated over 19,992 employee hours or the equivalent of 11.7 full-time employees (FTEs) to the MS4 Permit program, to our Underground Injection Control WPCF Permit program, to our Willamette/Tualatin TMDL non-point source pollution programs, and to our flooding reduction/drainage improvement programs – all of which make up WES’ Surface Water Program. The City of Happy Valley has five and a half FTEs in the Public Works Department who, in part, perform MS4 duties. As WES is the service provider in Rivergrove and as a result the city dedicates a limited amount of staff time to implementing the MS4 SWMP, which is sufficient, however not worth tracking or reporting in this section.

WES’ Operating and Construction Fund resources, including Fund Balances, budgeted in the recent past, during the reporting period and in the current fiscal year are below:

**Table 2: Stormwater Resources and Requirements for WES (formerly SWMACC, CCSD#1 and Tri-City Service District)**

Formerly Tri-City, CCSD#1, and SWMACC	17/18 Actual (footnote #1)	18/19 Actual	19/20 Budget (footnote #3)	19/20 Estimate	20/21 Adopted
<b>Resources</b>	<b>19,057,934</b>	<b>19,688,391</b>	<b>21,428,987</b>	<b>22,007,451</b>	<b>22,420,379</b>
Materials & Services	3,644,877	3,711,515	5,435,236	4,697,972	5,089,029
Capital Outlay	2,206,210	1,945,225	970,300	797,500	2,141,500
Transfers		1,000,000	3,000,000	3,000,000	3,000,000
Contingency			967,000	0	1,383,375
Ending Fund Balance (footnote #2)	13,206,847	13,031,651	11,056,451	13,511,979	10,806,475
<b>Total Requirements</b>	<b>19,057,934</b>	<b>19,688,391</b>	<b>21,428,987</b>	<b>22,007,451</b>	<b>22,420,379</b>

1 The 2017-18 Actual column reflects the combined resources and requirements for CCSD#1 and WES (which at the time included SWMACC only from a surface water perspective).

- 2 Ending Fund Balance for 2017-18 includes \$12,579,280 reflecting the contribution of CCSD#1's end of year reserves and integration into the WES 190 Partnership on July 1, 2018.
- 3 2019-20 Budget includes a Transfer of \$145,300 from Contingency to Capital Construction.

Annual funding for the Stormwater Management Program for WES (CCSD#1 and SWMACC) in 2019-20 came from four sources (unaudited numbers):

Monthly Stormwater Utility Fees	\$ 4,784,249
Maintenance Fees, paid Monthly	\$ 349,472
Systems Development Charges (SDCs)	\$ 160,250
Stormwater and Erosion Control Permit Fees	\$ 517,085

In 2019-20, customers in the North Clackamas unit of WES' CCSD#1 service area, which is now Rate Zone 2, paid a monthly program fee of \$7.30 per Equivalent Service Unit (ESU) and customers in WES' SWMACC service area, which is Rate Zone 3, paid a monthly fee of \$4.45 per ESU. An ESU is a single-family residence or 2,500 square feet of impervious surface for nonresidential customers. Fees were increased to \$7.65 per ESU in Rate Zone 2 and \$4.65 per ESU in Rate Zone 3, respectively, soon after this reporting period ended on June 30, 2020.

New single-family residential customers in Rate Zone 2, since 1998, also paid a monthly maintenance agreement fee of \$3 per ESU which is dedicated for maintenance of local subdivision stormwater conveyance, detention, treatment, and infiltration facilities.

Only a portion of Rate Zone 3 revenues come from the MS4-permitted area. Rate Zone 3 also includes: I) a large, rural unincorporated area in the Tualatin River watershed, and II) an area near the City of Rivergrove which is served by stormwater injection devices (ie. drywells) which are regulated by a Stormwater WPCF permit.

WES collects System Development Charges from new development and dedicates those revenues to planning, design, and construction of additional stormwater infrastructure capacity needed to accommodate growth. The current SDC rate is \$211 per Equivalent Dwelling Unit which increased to \$215 soon after this reporting period ended on June 20, 2020.

**City of Happy Valley**

MS4 Permit Program Funding Sources:

- **Permit fees for development** of land (plan review and inspection) are based upon the construction value of the project. In 2019-20, the City generated \$727,276.23 in fees from 147 land development permits. The City expects to receive a similar amount of permit fee revenue in 2020-21. Only a portion of these \$727,276.23 were spent on the implementation of the MS4 Permit Program.

- Twelve **Erosion Control Permits** yielded \$16,900 in revenue in 2019-20. The City expects to receive a range from \$15,000 to \$20,000 in Erosion Control Permit revenue in 2020-21. The \$16,900 of Erosion Control Permit revenue is a subset of \$727,276.23.
- \$59,160 from the **Streets Maintenance** portion of the budget for street sweeping. Street sweeping is also conducted to improve road safety and for aesthetic reasons. An undefined portion of the \$59,160 was spent to improve stormwater quality. The City expects to spend a similar amount of money from the Streets Maintenance portion of the budget for street sweeping in 2020-21
- Approximately \$5,004 from the City of Happy Valley's **General Operating Budget** were spent by the City of Happy Valley during 2019-20 to administer the overall MS4 Permit Program (e.g., attendance at monthly Watershed Protection Program meetings, compiling data for this annual report). The City of Happy Valley expects to dedicate a similar amount of money from this portion of this budget during 2020-21 for administration of the overall MS4 Permit Program.

MS4 Permit Program Expenditures:

- **Street Sweeping Program:** The City of Happy Valley spent \$59,160 on their street sweeping program in 2019-20. The City of Happy Valley expects to spend a similar amount of money on street sweeping in 2020-21.
- **Erosion Control Program:** Erosion Control Permit fee revenue is spent by the City of Happy Valley to administer this program. The City spent approximately \$16,900 to administer this program in 2019-20 and the City expects to spend a similar amount in 2020-21.
- **MS4 Permit Program Administration:** Approximately \$5,004 were spent by the City of Happy Valley during 2019-20 to administer the overall MS4 Permit Program (e.g., attendance at monthly Watershed Protection Program meetings, compiling data for this annual report). The City of Happy Valley expects to spend a similar amount of money during 2020-21 for administration of the overall MS4 Permit Program.

1.6 SCHEDULE B(5)(F) -- A SUMMARY OF MONITORING PROGRAM RESULTS, INCLUDING MONITORING DATA THAT ARE ACCUMULATED THROUGHOUT THE REPORTING YEAR AND ANY ASSESSMENTS OR EVALUATIONS CONDUCTED.

See Appendix B for the summary of the monitoring program's results and for information about any assessments or evaluations which were conducted.

**1.7 SCHEDULE B(5)(G) -- ANY PROPOSED MODIFICATIONS TO THE MONITORING PLAN THAT ARE NECESSARY TO ENSURE THAT ADEQUATE DATA AND INFORMATION ARE COLLECTED TO CONDUCT STORMWATER PROGRAM ASSESSMENTS**

No additional modifications are proposed in this annual report. WES on behalf of Clackamas County, and the Cities of Rivergrove and Happy Valley participates in a combined Comprehensive Clackamas County NPDES MS4 Stormwater Monitoring Plan (Monitoring Plan). Other participants of this Monitoring Plan include, but are not limited to, the Cities of Milwaukie and Oregon City. This Monitoring Plan was revised most recently in January 2017 and was implemented on July 1, 2017. Please see the January 2017 Monitoring Plan for more information.

**1.8 SCHEDULE B(5)(H) -- A SUMMARY DESCRIBING THE NUMBER AND NATURE OF ENFORCEMENT ACTIONS, INSPECTIONS, AND PUBLIC EDUCATION PROGRAMS, INCLUDING RESULTS OF ONGOING FIELD SCREENING AND FOLLOW-UP ACTIVITIES RELATED TO ILLICIT DISCHARGES.**

See the sections of the BMP table in Appendix A which apply to BMP #1 (titled “Conduct Dry Weather Inspections” for illicit discharges) and BMP #12 (titled “Facilitate Public Reporting of Illicit Discharges...”) for portions of the response to this requirement. See the following table (below) for the responses to the other portions of this requirement.

**Table 3: Illicit Discharge Events**

Report Date	Inspection Date	Incident Description, including follow-up activity	Enforcement action taken?
7/18/19	7/18/19	OERS Case No. 2019-1775: Caller reported that there was a water main break at SE Sunrise Vista Court. A pipe leaked an unknown amount for 30 minutes. Some of the leaked water made it into the catch basin, and an unknown amount made it into Rainerson Creek. OLWS’ water main is in WES’ storm system service area and OLWS required no cleanup assistance. OLWS was unsure if Kellogg Creek was affected.	No
8/5/19	8/5/19	OERS Case No. 2019-1957: Caller reported a sewage leak going to Kellogg Creek. Caller did not know the cause or amount spilled. WES found sewage flowing down a creek into Kellogg creek at 1:00 pm. Crews cut weeds and brush to find affected manhole. At 5:50pm crews broke through the root and restored flows. WES crews cleaned the area with water using	No

Report Date	Inspection Date	Incident Description, including follow-up activity	Enforcement action taken?
		high pressure cleaner and stabilized the area with lime to reduce odors.	
9/15/19	9/16/19	A manufacturer of precisely made cast parts reported that one of their trucks driving delivery routes with a missing fuel cap released approximately 35 gallons of diesel fuel during a heavy rain day (approximately 0.75"). The company cleaned up their affected private storm structures on their property, but fuel was released onto roadways and entered public storm system. The route this vehicle took is unknown and the number of waterways affected is undetermined.	No
9/19/19	9/19/19	OERS Case No. 2019-2500: A Northwest Natural Gas contractor bored through the service lateral on SE King Rd, causing a sewage spill. Spill was isolated to "clean out" area. WES staff contained the spill. A storm catch basin was affected but no waterways were. WES staff repaired the service lateral and cleaned up the debris.	No
10/21/19	10/21/19	OERS case# 2019-2775: WES Customer Service received a report of a sewer overflow near SE 82 <sup>nd</sup> Avenue in Happy Valley. Grease had blocked a private service lateral. Approximately 200 gallons of untreated sewage was released. WES staff cleaned up initial spill. Contractor cleared the service lateral with high presser cleaning truck and performed the final clean up. No water ways were affected.	No
12/28/19	12/28/19	OERS Case No. 2019-3235: Received a Clackamas County 911-C-COM call at 12:27pm reporting wastewater leaving a WES-owned sewer MH near 16897 SE Davidoff, Damascus. WES staff checked MH which was slightly wet around the MH and estimated that approximately 20 gallons of untreated sewage was released. The probable cause of this release was hauled wastewater from WES' Boring treatment facility being discharged too rapidly into the public sanitary system and overflowing it. Contacted both of the houses next to MH but neither one of them reported it or knew who did. To prevent overflows from occurring, WES has modified liquid hauling practices so that sewage releases no longer happen. WES cleaned up the area.	No



Report Date	Inspection Date	Incident Description, including follow-up activity	Enforcement action taken?
1/22/20	1/22/20	OERS Case No. 2020-0179: WES received report of strong diesel smell with oil leaking to Clackamas River from a fisherman on the river. WES investigated the outfall and up-gradient storm pipe at Riverside Park but found no source of release.	No
2/10/20	2/10/20	OERS Case No. 2020-0372: WES staff responded to car wreck that had released 10 gallons of anti-freeze. Area was cleaned up prior to inspection by NRC Environmental Services.	No
3/4/20	None <sup>1</sup>	OERS Case No. 2020-0608: OERS received report on 3/4/20 that an unknown amount of oil was released to the ground on 1/4/20 from oil leaked from equipment when property owner hired a tree service in January. Owner believes there was a mechanical problem and the company's stump grinder leaked oil in his yard. No action taken since the report suggested that there was no release to storm system and since there was 3-month time lag between occurrence and report.	No
3/12/2020	3/12/2020	OERS Case No. 2020-0674: Received an alleged illicit discharge complaint at an auto repair facility located at 11520 SE 82 <sup>nd</sup> Avenue. Caller reported concerns about a hydraulic lift at the facility when he was employed there Oct/Nov 2019. WES' inspection of the facility and lift revealed no obvious cause of caller's concerns. No source of stormwater pollution from the vehicle lift was found.	No

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<sup>1</sup> There was no inspection performed. This discharge was reported three months after the fact, occurred on private property, and did not discharge to the storm drain.

1.9 SCHEDULE B(5)(I) -- A SUMMARY, AS IT RELATES TO MS4 DISCHARGES, DESCRIBING LAND USE CHANGES, URBAN GROWTH BOUNDARY (UGB) EXPANSION, LAND ANNEXATIONS, AND NEW DEVELOPMENT ACTIVITIES THAT OCCURRED WITHIN THESE AREAS DURING THE REPORTING YEAR. THE NUMBER OF NEW POST-CONSTRUCTION PERMITS ISSUED AND AN ESTIMATE OF THE TOTAL NEW AND REPLACED IMPERVIOUS SURFACE AREA RELATED TO DEVELOPMENT PROJECTS THAT COMMENCED DURING THE REPORTING YEAR MUST ALSO BE INCLUDED.

Land Use Changes:

- Number of zone changes approved in Happy Valley: 3
- Number of new residential building lots approved by partition, subdivision, and planned unit development in Happy Valley: 5
- Number of Approved Zone Changes in Clackamas County<sup>2</sup>: 3
- Number of New Land Partitions: 22
- Number of New Land Subdivisions: 2

UGB Expansion:

- During 2019-20, the UGB was not expanded in or near the Cities of Happy Valley or Rivergrove, or any other portion of WES' MS4-permitted service area.

Land Annexations:

- Acreage annexed into WES' retail service area: 51
- Acreage de-annexed from WES' retail service area: None
- Acreage annexed into the City of Happy Valley: None

New development activities (Number of New Post-Construction Permits Issued, etc.):

- Number of development permits reviewed by Clackamas County<sup>3</sup>: 30
- Number of building division permits in Happy Valley: 399
- Number of engineering division development permits in Happy Valley: 8
- Total number of plans reviewed and approved by WES: 93
- Number of building division site plan reviews in Happy Valley: 393
- Number of engineering division site plan reviews in Happy Valley: 53

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<sup>2</sup> These land use statistics capture the entire unincorporated area of Clackamas County regulated by the MS4 permit, which is primarily comprised of lands in the Oak Lodge Water Services district and in the WES service area.

<sup>3</sup> *ibid*

- Number of new units of multi-family housing approved in Happy Valley: 310
- Square feet of new commercial/office development approved in Happy Valley: 204,243

Estimated total new and replaced impervious surface area related to development projects:

- 31.3 acres

When the lands described here in Section 1.9 were developed, post-construction stormwater management program requirements implemented by the City of Happy Valley, Clackamas County, and/or WES reduced storm sewer system pollution levels to the maximum extent practicable. For more information, see the post-construction program-related sections of this annual report.

1.10 SCHEDULE B(5)(J) -- A SUMMARY, AS RELATED TO MS4 DISCHARGES, DESCRIBING CONCEPT PLANNING OR OTHER ACTIVITIES CONDUCTED IN PREPARATION OF UGB EXPANSION OR LAND ANNEXATION, IF ANTICIPATED FOR THE FOLLOWING YEAR.

City of Happy Valley

As discussed above, no UGB expansion occurred in the City of Happy Valley in 2019-20 and the UGB is not expected to be expanded in 2020-21. The City is still planning to adopt the Pleasant Valley/North Carver Comprehensive Plan that is roughly 2,600 acres, which includes most of the 1,050 acres annexed in 2018-2019, but this process has been delayed due to COVID-19. Most annexations anticipated by the City in the future will be in the Pleasant Valley/North Carver Comprehensive Plan area. When these lands are eventually urbanized, regulations are expected to be applied by the City of Happy Valley and WES (formerly CCSD#1) as properties are developed (to construct stormwater treatment systems, for example) which will reduce pollution levels to the maximum extent practicable.

Clackamas County

No UGB expansion occurred in 2019-2020 nor is it expected to occur in 2020-2021.

Appendix A: Best Management Practice (BMP)

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
1	Component #1: Illicit Discharge Detection and Elimination	Conduct Dry Weather Inspections	1	1	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of outfalls inspected during dry-weather	40	40 dry weather inspections were conducted.
2	Component #1: Illicit Discharge Detection and Elimination	Conduct Dry Weather Inspections	1	1	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number and type of illicit discharges that were encountered and controlled	0	No illicit discharges were found during outfall inspections.
3	Component #1: Illicit Discharge Detection and Elimination	Conduct Dry Weather Inspections	1	1	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Status of updating procedures to address new permit requirements	Attained	On July 31, 2019, WES updated the written summary of the current Priority Locations for conducting dry-weather storm sewer system field screening work. Three new <i>Priority Locations</i> for monitoring were added, bringing the total number of <i>Priority Locations</i> to be monitored to 40.
4	Component #1: Illicit Discharge Detection and Elimination	Conduct Dry Weather Inspections	1	1	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Inspect major or priority outfalls for the presence of illicit discharges at least once per year	Attained	Of the 40 dry weather inspections conducted, 35 were at major outfalls. The remaining five were minor outfalls.
5	Component #1: Illicit Discharge Detection and Elimination	Conduct Dry Weather Inspections	1	1	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Update maps of major outfalls on an annual basis	Attained	This map of outfalls was updated on July 31, 2019.
6	Component #1: Illicit Discharge Detection and Elimination	Conduct Dry Weather Inspections	1	1	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Update dry weather field screening program to address new permit requirements by November 1, 2012	Attained	The dry weather field screening program was updated to address new permit requirements by November 1, 2012.
7	Component #1: Illicit Discharge Detection and Elimination	Implement the Spill Response Program	2	2	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of reported spills to the MS4 system	10	There were 10 illicit discharges reported that staff investigated. Of those 10 illicit discharges reported, 6 were spills and 4 were sanitary sewer overflows. Please, see Section 1.8 of the annual report for additional information.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
8	Component #1: Illicit Discharge Detection and Elimination	Implement the Spill Response Program	2	2	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number and type of response to the reported spills	10	There were 10 illicit discharges reported that staff investigated. Of those 10 illicit discharge reports, 6 were spills and 4 were sanitary sewer overflows. Four of the 6 reported illicit discharges were confirmed non stormwater discharges consisting of: a water main break discharge, diesel fuel spills, and anti-freeze. Two of these reports were unproven allegations that did not result in a discharge to the storm system. Please see Section 1.8 of the annual report for additional information.
9	Component #1: Illicit Discharge Detection and Elimination	Implement the Spill Response Program	2	2	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Implement the spill response program and associated protocols.	Attained	WES has developed and maintains an appropriate spill response program. The spill response standard operating procedure has been reviewed for improvements and WES staff has been trained on its use.
10	Component #1: Illicit Discharge Detection and Elimination	Respond to reports involving illicit discharges	3	3	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of alleged illicit discharges and non-stormwater (i.e., fire suppression flows and dechlorinated flows from swimming pools) discharges which were reported each year	10	There were 10 illicit discharges reported that staff investigated. Of those 10 illicit discharge reports, 6 were spills and 4 were sanitary sewer overflows. Four of the 6 reported illicit discharges were confirmed non stormwater discharges consisting of: a water main break discharge, diesel fuel spills, and anti-freeze. Two of these reports were unproven allegations that did not result in a discharge to the storm system. Please see Section 1.8 for additional information.
11	Component #1: Illicit Discharge Detection and Elimination	Respond to reports involving illicit discharges	3	3	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of illicit discharges that were controlled	10	Of the 10 illicit discharges reported, 8 were confirmed and located in the MS4 permitted area, all were controlled by either WES staff or the responsible party.
12	Component #1: Illicit Discharge Detection and Elimination	Respond to reports involving illicit discharges	3	3	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Respond to reports involving alleged illicit discharges within two weeks.	Attained	All illicit discharges were responded to within two weeks of receiving the report.
13	Component #2: Industrial and Commercial Facilities	Screen Existing and New Industrial Facilities	4	4	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Track the number of existing or new industrial facilities subject to a stormwater industrial NPDES permit during the permit term.	26 1200-Z permits One 1200-A permit	Approximately 26 facilities in our MS4 Permit area have a 1200-Z permit and one additional facility has a 1200-A permit. During the current MS4 Permit term, ten industrial facilities were referred to DEQ per MS4 Permit schedule A(4)(b) for potential 1200-Z permitting.
14	Component #2: Industrial and Commercial Facilities	Screen Existing and New Industrial Facilities	4	4	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Review new industrial development applications once during the permit term to identify additional facilities needing to obtain 1200-Z permits.	Attained	This review of building permit applications for new industrial facilities was completed in March 2017.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
15	Component #2: Industrial and Commercial Facilities	Address Other Industrial Facilities	5	5	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	The number of inspections performed, and where applicable, monitoring data collected	126 Inspections	A total of 126 inspections were conducted. 45 inspections were performed by WES staff from the list of prioritized commercial/industrial facilities. The Pacific NW Pollution Prevention Center (PPRC) conducted an additional 81 non-residential contacts on WES' behalf in WES' service area: I) EcoBiz program at 26 auto repair shops, 3 carwashes and 6 landscaping companies and II) 22 multi-family housing facilities, 10 religious based facilities, and 23 industrial/commercial properties received inspections from the PPRC under contract w/the CRWP in 2019-20.
16	Component #2: Industrial and Commercial Facilities	Address Other Industrial Facilities	5	5	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	The number of letters, enforcement actions, or other contacts made	1 Notice of Non-compliance  13 corrective notices	One property was issued a Notice of Non-Compliance for an illicit discharge. 13 properties were given corrective notices for correcting deferred maintenance of their storm system.
17	Component #2: Industrial and Commercial Facilities	Address Other Industrial Facilities	5	5	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of pretreatment inspections performed (CCSD#1- only)	46 pretreatment inspections	For 2019-20, the Industrial Permits group conducted a total of 46 inspections. Of those, 28 inspections were of existing permitted industrial users. Of the 28 inspections in this period, 2 facilities were inspected twice. The second inspections were conducted for pre-permit renewal purposes. In addition, three non-discharging, unpermitted categorical industrial manufacturing facilities were inspected. 15 inspections were done as part of an NRQ survey or as first-time visits.
18	Component #2: Industrial and Commercial Facilities	Address Other Industrial Facilities	5	5	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Notify and work with industries to improve stormwater management if an inspection is conducted that indicates improvement is needed.	Attained	Refer to enforcement actions response listed above or contact Watershed Protection staff at (503) 742-4567.
19	Component #3 Construction Site Runoff	Conduct Procedures for Site Planning	6	6	WES (formerly, SWMACC and CCSD#1)  Happy Valley	Tracking Measure	Annual number of permitted, active construction projects (i.e., those projects disturbing 800 sq. ft. or more)	618	There were 393 dwellings, 5 apartment buildings, 1 commercial building and 8 site development permits in Happy Valley.  WES managed 211 active construction projects.
20	Component #3 Construction Site Runoff	Conduct Procedures for Site Planning	6	6	WES (formerly, SWMACC and CCSD#1)  Happy Valley	Tracking Measure	Annual number of site plan reviews and approved plans	539	WES reviewed and approved 48 single-family and 45 non-single family site plans in WES' portion of the WES, Happy Valley and Rivergrove area. In addition, there were 393 building division site plan reviews and 53 engineering division site plan reviews in Happy Valley. Happy Valley approved 393 of the total 446 site plans.
21	Component #3 Construction Site Runoff	Conduct Procedures for Site Planning	6	6	WES (formerly, SWMACC and CCSD#1)  Happy Valley	Measurable Goal	Review all applicable erosion and sediment control plans submitted as part of the building permit process	Attained	All applicable erosion and sediment control plans were reviewed, approved and permitted.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
22	Component #3 Construction Site Runoff	Implement Requirements for Structural and Non-Structural Best Management Practices	7	7	WES (formerly, SWMACC and CCSD#1) Happy Valley	Tracking Measure	Annual number of permitted, active construction projects (i.e., those projects disturbing 800 sq. ft. or more)	618	See tracking measure comment in BMP #6.
23	Component #3 Construction Site Runoff	Implement Requirements for Structural and Non-Structural Best Management Practices	7	7	WES (formerly, SWMACC and CCSD#1) Happy Valley	Tracking Measure	Annual number of site plan reviews and approved plans	539	See tracking measure comment in BMP #6.
24	Component #3 Construction Site Runoff	Implement Requirements for Structural and Non-Structural Best Management Practices	7	7	WES (formerly, SWMACC and CCSD#1) Happy Valley	Measurable Goal	WES and Happy Valley require structural and non-structural BMPs for erosion prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more	Attained	All construction sites disturbing 800 sq.ft. of land or more require structural and non-structural BMPs for erosion prevention and sediment control.
25	Component #3 Construction Site Runoff	Conduct Training for Construction Site Operators	8	8	WES (formerly, SWMACC and CCSD#1) Happy Valley	Tracking Measure	Track the number and type of educational and training events the District conducts and/or participates in annually	4	Three employees from Happy Valley received the necessary course training to become re-certified as a Certified Erosion Sediment Control Lead (CESCL) and Erosion & Sediment Control Inspectors. One existing employee within WES division of Environmental Services attended an erosion control class and summit.  WES has made the Erosion Prevention and Sediment Control Planning and Design Manual available on the County website while providing in-the-field training during ERCO inspections. This year, the City of Happy Valley did not sponsor training courses for construction site operators.
26	Component #3 Construction Site Runoff	Conduct Training for Construction Site Operators	8	8	WES (formerly, SWMACC and CCSD#1) Happy Valley	Measurable Goal	Conduct training for new employees as appropriate and whenever there is a significant update to the Erosion Prevention and Sediment Control Planning and Design Manual.	Attained	City of Happy Valley will arrange for new employee training in Erosion Prevention and Sediment Control Planning and Design Manual for a recently hired associate engineer as trainings become available with regard to the COVID shut down. No new WES employees relating to this work were hired. Additional training will be provided as needed and as available.
27	Component #3 Construction Site Runoff	Identify Priorities for Inspecting Sites and Conducting Enforcement Actions	9	9	WES (formerly, SWMACC and CCSD#1) Happy Valley	Tracking Measure	Annual number of permitted sites and percentage of sites inspected	100%	Inspected 100% of 418 permitted sites in Happy Valley and 221 permitted sites in WES' erosion control service area.

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28	Component #3 Construction Site Runoff	Identify Priorities for Inspecting Sites and Conducting Enforcement Actions	9	9	WES (formerly, SWMACC and CCSD#1) Happy Valley	Tracking Measure	Annual number of erosion control inspections conducted	3,976 inspections	WES inspections - 2,265 Happy Valley Building Division Inspections - 1,376 Happy Valley Engineering Division Inspections - 335
29	Component #3 Construction Site Runoff	Identify Priorities for Inspecting Sites and Conducting Enforcement Actions	9	9	WES (formerly, SWMACC and CCSD#1) Happy Valley	Tracking Measure	Annual number of enforcement actions	24 enforcement actions	8 Happy Valley enforcement actions and 16 WES Erosion Control enforcement actions.
30	Component #3 Construction Site Runoff	Identify Priorities for Inspecting Sites and Conducting Enforcement Actions	9	9	WES (formerly, SWMACC and CCSD#1) Happy Valley	Measurable Goal	Inspect construction sites disturbing 800 s.f. of land or more a minimum of three times during construction to verify proper implementation of required BMPs	Attained	100% of the erosion control permits that WES and Happy Valley issued were inspected a minimum of three times.
31	Component #3 Construction Site Runoff	Identify Priorities for Inspecting Sites and Conducting Enforcement Actions	9	9	WES (formerly, SWMACC and CCSD#1) Happy Valley	Measurable Goal	Monitor compliance with the erosion control regulations for sites disturbing 800 sf. of land or more and, when necessary, issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met	Attained	In Happy Valley, two of the eight erosion control cases resulted in fines; upon imposing the fines, provisions of the regulations were met. WES posted one Stop-Work order, and none were subject to re-inspection fees or fines.
32	Component #4 Education and Outreach	Public Education to Reduce Discharges of Pesticides, Herbicides and Fertilizers	10	10	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Track program messages delivered, type of communication piece, and where appropriate, the number of people affected.	Attained	<b>ClackCo Quarterly, Circulation 180,000:</b> Aug. 2019 - Article - Master Gardener Class Encourages Limiting Pesticide/Herbicide use. Nov. 2019 - Clean Storm Drains, Limit Debris Saturated with Polluted Runoff. Feb. 2020 - Guide to Safe (Limited Pesticide and Herbicide Garden Pest Management. Nov. 2019 - Article on Business Earning Sustainability Certification, Properly Disposing of Chemicals, Switching to Organic Products. Nov. 2019 - Hazardous Waste Disposal Drop-offs.  <b>Facebook:</b> April 13 - 50+ ways to celebrate Earth day link to shift to pesticide free natural landscape practices. 1845 reached 61 engagements. April 19 - Proper use of pesticides and herbicides video article. 1185 reached 43 engagements. April 22- 50+ ways to Celebrate Earth Day - Pesticide-free natural landscape practices 985 reached 26 engagements. Dec. 21 - Protecting the Clackamas River. When it rains, The Carli Creek Water Quality facility is hard at work filtering out pollutants from stormwater runoff. 1243 reached 28 engagements. Nov. 29 - Highlighting a green pest control company –



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									<p>using the least toxic treatments possible. 764 reached 12 engagements. Dec 21 - Protecting the Clackamas River. When it rains, The Carli Creek Water Quality facility is hard at work filtering out pollutants from stormwater runoff. 1243 reached 28 engagements.</p> <p>Also: • The <b>Children's Clean Water Festival</b> was cancelled this year, but WES and partners posted at-home lessons online and shared them with teachers to use with 4th and 5th grade classes. Due to the focus on responding rapidly, we don't have statistics on how well used the materials were.</p> <p>• WES funded Lower Columbia Estuary Partnership and Ecology in Classrooms and Outdoors to conduct <b>watershed health education</b> within the North Clackamas School District on how land use impacts watershed conditions: 1,277 students received science lessons and/or participated in an outdoor watershed health service project. Lower Columbia Estuary Partnership also produced 11 virtual online lessons for teachers to use with their classes, after school was cancelled for the pandemic. In addition, WES funded Clackamas Community College's Environmental Learning Center to develop curriculum for virtual field trips, a virtual water industry career exploration program, and a vegetated stormwater facility maintenance program. These sessions will be given during the 2020-21 fiscal year. Finally, WES funded Northwest Center for Alternatives to Pesticides to develop a stormwater facility maintenance training in Spanish; planning occurred 2019-20 with implementation August 2020 and 20 attendees.</p> <p>• <b>Watershed Art Project in Happy Valley Park</b> - WES hired local artist to paint 8 catch basins and MH covers with images to bring attention to stormwater issues, including minimizing pesticide use. Also painted dragonfly wings mural, posted banner in off-leash area, and created scavenger hunt.</p>
33	<b>Component #4 Education and Outreach</b>	<b>Public Education to Reduce Discharges of Pesticides, Herbicides and Fertilizers</b>	10	10	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Continue to maintain relevant public education materials on the County's website	Attained	<p><b>Website articles:</b> What's Happening in Happy Valley Art Project - Reducing Discharges to Prevent Pollution., Think of Me, Your Friend, the Bee! Pesticides, herbicides, and fertilizers can help control pesky weeds and insects, but every pesticide (including organic) has some level of toxicity. 421 Views. Storm Drains, Water Pollution Prevention for Property Managers. 1570 web page views. Backyard Habitat Certification Program. Garden Awareness Chemical Flier. Love your Lawn without pesticides. Moss on Roofs: Pesticide-free control. Weed and Pesticide Information and Tips. Got Weeds? Get help from CRISP Parting with Pesticides Pledge Program for the Clackamas Watershed. 1,155 views for web page.</p>

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34	Component #4 Education and Outreach	Public Education to Reduce Discharges of Pesticides, Herbicides and Fertilizers	10	10	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Prepare a minimum of one relevant article per year for inclusion with Clackamas County customer billing statements	Attained	WES published two sanitary sewer focused articles related to this pollutant for its paperless billing audience. To focus on this pollutant and expand its audience, WES used social media and ClackCo to promote the reduction of pesticide, herbicide and fertilizer use, which resulted in a larger ratepayer audience. Articles included Stewardship of the Environment and Yard and Garden Products Wash Into Our Rivers and Streams.
35	Component #4 Education and Outreach	Public Education to Reduce Discharges of Pesticides, Herbicides and Fertilizers	10	10	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Pursue additional relevant USGS studies if the opportunity presents itself.	None	No additional USGS studies were funded during the 2019-2020 MS4 permit year. Note that CCSD#1, the SWMACC, and the Cities of Rivergrove and Happy Valley contributed funds towards a USGS-led pesticide monitoring study, which assessed pesticide concentrations in creek water, creek bed sediments, and discharges from MS4 outfalls, during the current 2012-2017 MS4 permit term. This monitoring study satisfies the pesticide monitoring requirement in table B-1 of the MS4 permit. The USGS wrote an article about this study which was published in the Journal of Environmental Monitoring Assessment, a scientific journal, in May 2016.
36	Component #4 Education and Outreach	Proper Disposal Practices to Reduce Discharges of Pesticides, Herbicides and Fertilizers	11	11	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of calls received and referred to Metro annually.	0	WES did not receive customer inquiries about the proper way to dispose of these dangerous and/or hazardous materials. Hence, WES did not refer any customers to Metro.
37	Component #4 Education and Outreach	Proper Disposal Practices to Reduce Discharges of Pesticides, Herbicides and Fertilizers	11	11	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Refer all pesticide/herbicide disposal related calls to Metro.	Not applicable	No customers were referred to Metro because did not WES receive inquiries on disposing of these dangerous and/or hazardous materials.
38	Component #4 Education and Outreach	Facilitate Public Reporting of Illicit Discharges and Spills and Other Types of Improper Disposal of Materials	12	12	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Describe news articles reported per year when appropriate	Attained	<b>NextDoor</b> June 2020 - Protecting the Clackamas River - How spills can enter the river. Simple steps to prevent pollution and spills and report spills - 20,699 Impressions. Nov. 2019 - Article on Business Earning Sustainability Certification, Properly disposing of Chemicals, Switching to Organic Products. Nov. 2019 - Hazardous Waste Disposal Drop-offs. County Website article: "Protecting the Clackamas River" with information to Prepare, Contain, Cover, Report Spills. 124 views. <b>Outreach</b> As a partner in the Regional Coalition for Clean Rivers and Streams, distributed brochures on proper disposal of chemicals by mobile carpet cleaning businesses to 151 businesses.
39	Component #4 Education and Outreach	Facilitate Public Reporting of Illicit Discharges and Spills and Other Types of Improper Disposal of Materials	12	12	WES (formerly, SWMACC and CCSD#1)  Public &	Tracking Measure	Describe type of public complaints received. Resulting follow up actions per year will be kept in a database.	Attained	WES investigates all illicit discharge complaints received as well as those that WES staff encounter. Section 1.8 in this annual report provides additional information.

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					Government Affairs				
40	Component #4 Education and Outreach	Facilitate Public Reporting of Illicit Discharges and Spills and Other Types of Improper Disposal of Materials	12	12	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Include a relevant article in The Citizen News (for the County) once a permit term (where permit term is from March 2012 through March 1, 2017)	Attained	ClackCo Quarterly (formerly Citizen News) - 180,000 circulation: Nov. 2019 - Hazardous Waste Disposal Drop-offs. County Website article: "Protecting the Clackamas River" with information to Prepare, Contain, Cover, Report Spills. 124 views
41	Component #4 Education and Outreach	Facilitate Public Reporting of Illicit Discharges and Spills and Other Types of Improper Disposal of Materials	12	12	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Continue to include area for public complaints on the County's website and track number of complaints for reporting	Attained	WES replaced the online form with a link ( <a href="https://www.clackamas.us/wes/reportaproblem.html">https://www.clackamas.us/wes/reportaproblem.html</a> ) directing the community to a webpage offering options to reporting a discharge or disposal. One can email or call in information during the day or afterhours. Customer service enters the information into WES' maintenance tracking software, Lucy, so the appropriate staff can respond and investigate the alleged illicit discharge or improper disposal.
42	Component #4 Education and Outreach	Participate in a Public Education Effectiveness Evaluation	13	13	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Report on activities annually.	Attained	WES submitted its Evaluation to DEQ in 2015.
43	Component #4 Education and Outreach	Participate in a Public Education Effectiveness Evaluation	13	13	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Provide/compile information regarding a public education effectiveness evaluation over the permit term.	Attained	WES submitted its Evaluation to DEQ in 2015.
44	Component #4 Education and Outreach	Training for Employees	14	14	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Track the number of employees receiving training in stormwater management annually.	66	Sixty-six employees received stormwater management training in 16 different workshops relevant to stormwater management.
45	Component #4 Education and Outreach	Training for Employees	14	14	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Attend relevant stormwater management related training based on need and availability	Attained	Many of the 66 employees who received training attended one or more of the following: the Aquatic Macroinvertebrates in Habitat Assessment, Stream Health Workshop, PNCWA Annual Conference, Pacific NW Pretreatment Workshop, ACWA Annual Conference, Johnson Creek Science Symposium, Northwest Climate Conference, WEFTEC, Fundamentals of Erosion & Sediment Control Workshop, Wetland Restoration, Sustainable Stormwater Symposium, CESCL: Lead Training, Boardman Wetland Nature Park Workshop, Inspection & Maintenance Training, Erosion Control and Stormwater Management Summit, and Utility Management Conference

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46	Component #4 Education and Outreach	Training for Employees	14	14	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Check in with the Fire Department regarding stormwater issues during the permit's 5-year term.	Attained	The Clackamas Fire District Facility was inspected by WES staff most recently on 5/16/2019. It was ascertained that the CCFD#1 still has appropriate procedures for operating the stormwater/sanitary sewer valve on their Training Center property on SE 130th Ave. in Clackamas (97015). CCFD#1 had certified an update of the facility's AOP for use of this valve on 4/23/2019.  A previous check in meeting with Clackamas Fire District No. 1 had occurred on December 3, 2014. During this meeting, WES staff had also verified that CCFD#1 staff have been using the valve correctly.
47	Component # 5 Public Involvement and Participation	Provide for Public Participation with SWMP and Benchmark Submittals	15	15	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Provide for public participation with the SWMP and pollutant load reduction benchmarks prior to the permit renewal application deadline	Attained	The public comment period for documents related to the MS4 permit renewal application submittal ran from January 20, 2017 to February 21, 2017. WES submitted these documents to DEQ on February 24, 2017.
48	Component # 5 Public Involvement and Participation	Provide for Public Participation with SWMP and Benchmark Submittals	15	15	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Provide for public participation with the monitoring plan due to the Department by September 1, 2012	Attained	This public participation opportunity was provided in 2012.
49	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	The number and type of flow control, water quality treatment or infiltration facilities installed in accordance with the requirements	31	A total of 31 facilities were installed – all in accordance with requirements. Twenty-three stormwater facilities included flow control, water quality and infiltration components. Eight stormwater facilities included flow control and water quality components.
50	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Narrative to describe the status of the private facility database	Attained	The upgrades to the GIS and maintenance management system software and databases is undergoing testing. These systems are used for the private facility database for commercial/industrial inspections.
51	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Narrative to describe results of tracking compliance with private facility maintenance agreements	Attained	136 Commercial Maintenance Agreements (CMA) in the MS4 area  53 CMA properties submitted reports in calendar year 2019 where 352 structures were cleaned  See BMP 28 in this table for information about WES' SCAP.

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52	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Continue to implement and enforce controls for stormwater quality treatment from new and re-development	Attained	WES continues to implement and enforce controls for stormwater quality treatment from new and re-development.
53	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Track the location, type, and drainage area of new water quality facilities using GIS	Attained	WES staff tracks areas that drain to water quality and flow control facilities by mapping project areas from as-builts. Staff is actively improving the existing GIS data and mapping new projects.
54	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Continue with work to compile a database of private facilities	Attained	During this annual reporting period, WES improved and maintained the database of private facilities.
55	Component # 6 Post-Construction Site Runoff	Planning Procedures for New Development and Significant Redevelopment	16	16	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Annually, check in on compliance with terms of private facility maintenance agreements	Attained	<p>Since reporting from commercial properties is due by December 31st of each year, the following information is for calendar year 2019 rather than permit year 2019-20. WES sent one mailing and had two cleaning campaigns in 2019 to not only the properties within the MS4 area that had Commercial Maintenance Agreements, but rather to all commercial/industrial stormwater accounts that had storm systems. The letter was to remind them of the annual inspection and reporting requirements. WES continues to conduct site inspections as a means to encourage compliance with maintenance agreement requirements.</p> <p>Total cleaning of all private commercial/industrial facilities through Stormdrain Cleaning Assistance Program (SCAP) [See BMP 28] and other methods: 311 CMA and non-CMA businesses reported the cleaning of 1490 structures (many more than the number that were inspected), and over 95,000 gallons of material removed.</p>
56	Component # 6 Post-Construction Site Runoff	Update Procedures for New Development and Significant Redevelopment	17	17	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Track status of adopting proposed changes to the stormwater standards for new and re-development.	Attained	<p>The revised Stormwater Standards took effect on July 1, 2013.</p> <p>In July 2018 WES started a project to update WES's stormwater standards which includes the MS4 requirement to capture and treat 80 percent of annual average runoff volume, which roughly equates to 1" of rainfall on a development site. The project is anticipated to be completed in January 2021, and the process will include internal staff involvement from applicable divisions of WES, Clackamas County engineering &amp; planning, City of Happy Valley and regional stakeholders.</p>

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
57	Component # 6 Post-Construction Site Runoff	Update Procedures for New Development and Significant Redevelopment	17	17	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	CCSD#1: Complete updates to standards to meet new permit requirements by June 30, 2013	Attained	The revised Stormwater Standards took effect on July 1, 2013.  In July 2018 WES started a project to update WES' stormwater standards which includes the MS4 requirement to capture and treat 80% of the annual average runoff volume, which roughly equates to 1" of rainfall on a development site. The new standards will prioritize Low Impact Development Approach (LIDA) to mitigate stormwater runoff. The project is anticipated to be completed in January 2021, and the process will include internal staff involvement from applicable divisions of WES, Clackamas County engineering & planning, City of Happy Valley and regional stakeholders.
58	Component # 6 Post-Construction Site Runoff	Update Procedures for New Development and Significant Redevelopment	17	17	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	CCSD#1: Complete guidance manual for developers to facilitate the implementation of the new standards by June 30, 2013	Attained	The 2013 stormwater guidance standards, whose milestone was attained, are now under review.  In July 2018 Water Environments Services started a project to update WES' stormwater standards. The new standards will prioritize Low Impact Development Approach (LIDA) to mitigate stormwater runoff. The project is anticipated to be completed January 2021, and the process will include internal staff involvement from applicable divisions of WES, Clackamas County engineering & planning, City of Happy Valley and regional stakeholders.
59	Component # 6 Post-Construction Site Runoff	Update Procedures for New Development and Significant Redevelopment	17	17	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	SWMACC: Policy development and implementation by November 1, 2014.	Attained	The 2013 stormwater guidance standards, whose milestone was attained, are now under review. In July 2018 Water Environments Services started a project to update WES's stormwater standards which includes the MS4 requirement to capture and treat 80% of the annual average runoff volume, which roughly equates to 1" of rainfall on a development site. The new standards will prioritize Low Impact Development Approach (LIDA) to mitigate stormwater runoff. The project is anticipated to be completed in January 2021, and the process will include internal staff involvement from applicable divisions of WES, Clackamas County engineering & planning, City of Happy Valley and regional stakeholders.
60	Component # 6 Post-Construction Site Runoff	Sizing Tool Development to Address Hydro-modification	18	N/A	WES (formerly, CCSD#1)	Tracking Measure	Net impervious area treated by LID	25.3 acres	WES approved eight development permits which treated stormwater runoff by LID BMPs with the net impervious area of 25.3 acres.
61	Component # 6 Post-Construction Site Runoff	Sizing Tool Development to Address Hydro-modification	18	N/A	WES (formerly, CCSD#1)	Tracking Measure	Number of applications submitted using sizing tool	8	Eight development projects utilized the BMP Sizing Tool to control stormwater runoff.

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62	Component # 6 Post-Construction Site Runoff	Sizing Tool Development to Address Hydro-modification	18	N/A	WES (formerly, CCSD#1)	Tracking Measure	Customer feedback and community relations about the simplified tool (for development engineers) that sizes LID BMPs ( in order to address the duration of elevated flow levels in addition to addressing flow volumes and peaks; and in order to address the long-term impacts of increased runoff from development).	Attained	As part of the ongoing update to the SW standards, WES will conduct a robust public outreach and comment period on proposed changes alongside WES Staff, meeting with major WES stakeholders such as regional watershed councils, and community planning organizations.
63	Component # 6 Post-Construction Site Runoff	Sizing Tool Development to Address Hydro-modification	18	N/A	WES (formerly, CCSD#1)	Measurable Goal	The primary goal is to develop, by June 30, 2013, a tool to assist development engineers with the design/sizing of stormwater management facilities in order to reduce target pollutants and stream degradation impacts (i.e., hydromodification) associated with the development of impervious surfaces.	Attained	WES developed the tool by June 30, 2013.  In July 2018 Water Environments Services started a project to update WES's stormwater standards which includes the MS4 requirement to capture and treat 80% of the annual average runoff volume, which roughly equates to 1" of rainfall on a development site. The new standards will prioritize Low Impact Development Approach (LIDA) to mitigate stormwater runoff. The project is anticipated to take about 12-months to complete, and the process will include internal staff involvement from applicable divisions of WES, Clackamas County engineering & planning, City of Happy Valley and regional stakeholders.
64	Component # 7 Pollution Prevention for Municipal Operations BMPs	Street Sweeping	19	18	Happy Valley DTD	Tracking Measure	Number of miles that were swept in Happy Valley	1,430 miles  For Clackamas County roads, please, see DTD 2019-20 MS4 Annual Report.	818 Happy Valley miles and 612 miles in the remaining WES MS4 service area.  For miles swept by Clackamas County DTD sweepers, please see DTD's 2019-20 MS4 annual report.
65	Component # 7 Pollution Prevention for Municipal Operations BMPs	Street Sweeping	19	18	Happy Valley DTD	Tracking Measure	Mass or volume of material removed during sweeping in Happy Valley	663 cubic yards  For Clackamas County roads, please, see DTD 2019-20 MS4 Annual Report.	Happy Valley removed 523.5 cubic yards. On behalf of WES, Happy Valley removed 139.5 cubic yards of street sweeping debris from the remaining MS4 service area.  For the mass or volume of debris that Clackamas County DTD removed, see DTD's 2019-20 MS4 annual report.
66	Component # 7 Pollution Prevention for Municipal Operations BMPs	Street Sweeping	19	18	Happy Valley DTD	Measurable Goal	City of Happy Valley sweeps approximately 100 lane miles of curbed streets per year on average	Attained  For Clackamas County roads, please, see DTD 2019-20 MS4 Annual Report.	City of Happy Valley exceeded its goal of 100 miles.

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67	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	Happy Valley DTD	Tracking Measure	Mass or volume of material removed by the City of Happy Valley "Adopt-a-Road" program	Not Applicable	Happy Valley no longer has an Adopt-a-Road program as part of its operations and maintenance of public streets. Instead, the City captures litter from its streets through its street sweeping program.  The Shared SWMP, which was submitted to DEQ for approval in 2017, removed this BMP and reflects Happy Valley's sweeping activities, but Happy Valley has been unable to implement this SWMP because it has not been approved by DEQ, as of October 2020.
68	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	Happy Valley	Tracking Measure	Number of illegal solid waste dumps that are removed in the City of Happy Valley	Unknown	Happy Valley partners with Metro's RID Patrol program to remove the illegal dump sites in the City. Metro tracks the amount of material removed in Happy Valley. Please contact Metro at (503) 797-1700 or (503) 234-3000 for more information.
69	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	Happy Valley DTD	Tracking Measure	Mass or volume of material that is removed by the elimination of illegal solid waste dumping sites in the City of Happy Valley	Unknown	Happy Valley partners with Metro's RID Patrol program to remove the illegal dump sites in the City. Metro tracks the amount of material removed in Happy Valley. Please contact Metro at (503) 797-1700 or (503) 234-3000 for more information.
70	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	Happy Valley DTD	Tracking Measure	Amount of sand applied and then removed by Happy Valley as a result of a snow/ice event and time of removal after the event	None	Happy Valley did not apply sand in 2019-20.
71	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	Happy Valley DTD	Measurable Goal	Remove illegal solid waste dumps as they are discovered	Attained	Metro partners with Happy Valley to remove the illegal dump sites in the City. Metro tracks the amount of material removed in Happy Valley.
72	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	Happy Valley DTD	Measurable Goal	Collect sand applied for ice/snow events within 10 days of the end of the event	Not Applicable	Happy Valley did not apply sand in 2019-20.
73	Component # 7 Pollution Prevention for Municipal Operations BMPs	Operations & Maintenance for Public Streets	20	19	DTD	Measurable Goal	DTD: See DTD's MS4 NPDES SWMP	See DTD's 2019-20 MS4 Annual Report	See DTD's 2019-20 MS4 Annual Report for the work DTD performed on County-maintained roads.



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74	Component # 7 Pollution Prevention for Municipal Operations BMPs	Proper Road Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	21	20	Happy Valley	Tracking Measure	Happy Valley - The quantity of herbicide products used per zip code. This is the same data that will be reported to Oregon's Department of Agriculture per the Pesticide Use Reporting System.	0	Happy Valley used no herbicides.
75	Component # 7 Pollution Prevention for Municipal Operations BMPs	Proper Road Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	21	20	DTD	Tracking Measure	DTD roads: See tracking measures in the DTD MS4 NPDES SWMP	See DTD's 2019-20 MS4 Annual Report	See DTD's 2019-20 MS4 Annual Report for the County's pesticide, herbicide and fertilizer use in County-maintained roads.
76	Component # 7 Pollution Prevention for Municipal Operations BMPs	Proper Road Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	21	20	Happy Valley	Measurable Goal	Happy Valley Roads: Continue to implement the integrated pest management portion of the ODOT Routine Road Maintenance Manual	Attained	City of Happy Valley continues to implement the IPM portion of the ODOT Routine Road Maintenance Manual. For DTD's practice, see DTD's 2019-20 MS4 Annual Report.
77	Component # 7 Pollution Prevention for Municipal Operations BMPs	Landscape Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	22	21	WES (formerly, SWMACC and CCSD#1)  Happy Valley  DTD	Tracking Measure	The number of meetings conducted	Attained	No meetings were held in 2019-2020 because the meetings which were required to be held during the permit term have already been held. Note: The meetings with the local government agencies districts who are not MS4 co-permittees were completed in the previous reporting period (2018-2019).
78	Component # 7 Pollution Prevention for Municipal Operations BMPs	Landscape Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	22	21	WES (formerly, SWMACC and CCSD#1)  Happy Valley  DTD	Tracking Measure	The results and follow-up activities conducted as a result of the meetings	1	Happy Valley held one meeting for reducing the use of chemicals. WES did not conduct follow-up activities as a result of the meetings which were held in previous years during this permit term.
79	Component # 7 Pollution Prevention for Municipal Operations BMPs	Landscape Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	22	21	WES (formerly, SWMACC and CCSD#1)  Happy Valley  DTD	Measurable Goal	Check back in with all County & City of Happy Valley buildings and facilities that were visited (during the last permit cycle) at least once during this permit cycle	Attained	This check-in process occurred during meetings which were held during this time period: June 2016 to February 2017. WES sent a follow-up letter to each public agency after the meetings were held.

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80	Component # 7 Pollution Prevention for Municipal Operations BMPs	Landscape Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers	22	21	WES (formerly, SWMACC and CCSD#1) Happy Valley	Measurable Goal	Develop and implement an Integrated Pest Management plan by December 31, 2012	Attained	This IPM plan – which is co-owned by WES and the City of Happy Valley – was developed and implemented prior to December 31, 2012 and it continued to be implemented in 2019-2020.
81	Component # 7 Pollution Prevention for Municipal Operations BMPs	Control Infiltration and Cross Connections to the District's Stormwater System	23	22	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of cross-connections/ sanitary discharges identified	0	No cross connections were discovered this reporting period.
82	Component # 7 Pollution Prevention for Municipal Operations BMPs	Control Infiltration and Cross Connections to the District's Stormwater System	23	22	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	The number and type of inspections performed, abatement actions and enforcement actions taken	1,789 water quality facilities and structures inspected for infiltration and cross connections	Through preventative maintenance activities within the MS4, staff visually inspects some structures for condition assessment to include evidence of cross connections. WES staff looks for evidence of cross connection during daily inspection and cleaning activities. Staff also conducts routine video surveillance using closed-circuit television inspections of the sanitary system in an effort to find and eliminate any cross connection.  No abatement actions or enforcement actions were taken in 2019-2020.
83	Component # 7 Pollution Prevention for Municipal Operations BMPs	Control Infiltration and Cross Connections to the District's Stormwater System	23	22	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Eliminate any identified sanitary discharges to the storm system.	Attained	Seven sanitary sewer overflows entered the MS4, permit area but none of these discharges were conveyed through infiltration or cross-connections. In these instances, all debris was removed and all MS4 assets were cleaned.
84	Component # 7 Pollution Prevention for Municipal Operations BMPs	Flood Management Projects and Water Quality	24	N/A	WES (formerly, CCSD#1)	Tracking Measure	Number of retrofits constructed that address water quality treatment	No projects have been completed in these categories; WES working on plans for future years	WES has begun work on the 3-Creeks project. The project will address flood management and improve water quality. The design of this project will be complete during FY 21/22 and construction is anticipated in FY 23/24.  WES is completing a Storm System Master Plan that will identify priority retrofit projects for future years.
85	Component # 7 Pollution Prevention for Municipal Operations BMPs	Flood Management Projects and Water Quality	24	N/A	WES (formerly, CCSD#1)	Tracking Measure	Number of flood management projects implemented or constructed and the percentage of those projects that include water quality Components	No projects have been completed in these categories; WES working on plans for future years	WES has begun work on the 3-Creeks project. The project will address flood management and improve water quality. The design of this project will be complete during FY 21/22 and construction is anticipated in FY 23/24.  WES is completing a Storm System Master Plan that will identify priority retrofit projects for future years.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
86	Component # 7 Pollution Prevention for Municipal Operations BMPs	Flood Management Projects and Water Quality	24	N/A	WES (formerly, CCSD#1)	Measurable Goal	Ensure all planned stormwater CIPs include consideration of water quality.	No projects have been completed in these categories; WES working on plans for future years	WES is completing a Storm System Master Plan that will identify priority retrofit projects for future years.
87	Component # 7 Pollution Prevention for Municipal Operations BMPs	Detention Pond Retrofit Program	25	N/A	WES (formerly, CCSD#1)	Tracking Measure	Track pilot testing activities	No projects have been completed in these categories; WES working on plans for future years	Opti equipment, which was planned, constructed and test piloted before 2018-19, is fully operational in three detention ponds. Performance data shows an increase in detention time and a decrease in wet weather discharge rates from the ponds.
88	Component # 7 Pollution Prevention for Municipal Operations BMPs	Detention Pond Retrofit Program	25	N/A	WES (formerly, CCSD#1)	Tracking Measure	Number, type, and location of retrofits	No projects have been completed in these categories; WES working on plans for future years	WES is completing a Storm System Master Plan that will identify priority retrofit projects for future years.
89	Component # 7 Pollution Prevention for Municipal Operations BMPs	Detention Pond Retrofit Program	25	N/A	WES (formerly, CCSD#1)	Measurable Goal	The primary goal of the retrofit program is to retrofit existing ponds to improve their function to better meet watershed health goals. The goal will be to conduct 2 to 5 retrofits per year.	No projects have been completed in these categories; WES working on plans for future years	WES is finalizing a formalized CIP. The new CIP includes a program for detention pond retrofits.
90	Component #8 Structural Stormwater Facility Operations and Maintenance	Maintenance of Conveyance System Components and Structural Controls	26	23	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Miles of ditches and storm lines maintained	1.15 Miles	WES inspected and/or cleaned 5,782 linear feet (1.09 miles) of storm pipe. Happy Valley maintained 300 linear feet (0.06 miles) of ditches. For ditch cleaning that DTD has performed, please, see DTD's MS4 Annual Report.
91	Component #8 Structural Stormwater Facility Operations and Maintenance	Maintenance of Conveyance System Components and Structural Controls	26	23	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number and type of components inspected and/or cleaned	1,789 water quality facilities and structures	WES inspected and/or completed vegetation management on 206 ponds, inspected and/or cleaned 5,782 linear feet of pipe, inspected and/or cleaned 155 structures including flow control and water quality structures, and cleaned 1408 catch basins. Happy Valley cleaned 20 inlets.
92	Component #8 Structural Stormwater Facility Operations and Maintenance	Maintenance of Conveyance System Components and Structural Controls	26	23	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Mass or volume of material removed during cleaning	289 cubic yards	Happy Valley removed approximately twenty cubic yards of material from catch basins. WES removed approximately 269 cubic yards from catch basins, flow control and water quality structures.
93	Component # 7 Pollution Prevention for Municipal Operations BMPs	Maintenance of Conveyance System Components and Structural Controls	26	23	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	WES: Clean storm lines and ditches on an as-needed basis. Identify inspection frequency.	Attained	WES inspects its conveyance system components and structural controls using a preventative maintenance schedule.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
94	Component #8 Structural Stormwater Facility Operations and Maintenance	Maintenance of Conveyance System Components and Structural Controls	26	23	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	WES: Maintain structural water quality facilities on a 3-year cycle.	Attained	Some water quality structures are scheduled for inspection annually and cleaning is scheduled as needed on a three-year cycle.
95	Component #8 Structural Stormwater Facility Operations and Maintenance	Maintenance of Conveyance System Components and Structural Controls	26	23	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	WES: Conduct conveyance system assessment by January 31, 2013.	Attained	WES conducted the initial conveyance system assessment prior to January 31, 2013. As part of its operations, WES continues to improve its asset management best practices. WES has made improvements to GIS and the computerized maintenance management system (CMMS). Maintenance crews have field tablets with access to current mapping and the CMMS to improve the tracking of activities pertaining to the conveyance system assets.
96	Component #8 Structural Stormwater Facility Operations and Maintenance	Conduct Catch Basin Cleaning and Maintenance	27	24	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Track the percent of District owned or District operated/maintained catch basins cleaned per year	16.2%	1,408 catch basins were cleaned.
97	Component #8 Structural Stormwater Facility Operations and Maintenance	Conduct Catch Basin Cleaning and Maintenance	27	24	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Track the volume of debris removed during cleaning activities	262 cubic yards	WES cleaned 1408 catch basins. A standard catch basin sump that is 60% full has 0.172 cubic yards of debris contained and then removed during cleaning, totaling approximately 242 cubic yards of debris. Happy Valley removed approximately 20 cubic yards of material from catch basins.
98	Component #8 Structural Stormwater Facility Operations and Maintenance	Conduct Catch Basin Cleaning and Maintenance	27	24	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Clean 15% of District owned or District operated/maintained public catch basins each year.	16.2%	WES cleaned 16.2% of all District operated catch basins (or 1408 of 8684).
99	Component #8 Structural Stormwater Facility Operations and Maintenance	Conduct Catch Basin Cleaning and Maintenance	27	24	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Schedule repair or replacement of catch basins based on inspection results	Attained	Repairs were completed as discovered by inspections.
100	Component #8 Structural Stormwater Facility Operations and Maintenance	Storm Drain Cleaning Assistance Program	28	25	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of agreement holders compared with the number of annual reports received and the number devices being serviced by the vendor	136 Active Commercial Maintenance Agreements (CMA) in the MS4 area 53 CMA properties submitted reports 352 structures cleaned (156 by the vendor)	Stormdrain Cleaning Assistance Program and other commercial private storm drain cleaning tracking has been changed to calendar year reporting rather than permit year. The information cited is the 2019 calendar year.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
101	Component #8 Structural Stormwater Facility Operations and Maintenance	Storm Drain Cleaning Assistance Program	28	25	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Total number of businesses serviced by the vendor with total number of devices maintained and volume of debris removed	By Vendor: 168 businesses, 826 devices and 53,000 gallons.  By Vendor and Others: 311 businesses, 1490 structures and over 95,000 gallons	SCAP and other commercial private storm drain cleaning tracking has been changed to calendar year reporting rather than permit year. The information cited is the 2019 calendar year.
102	Component #8 Structural Stormwater Facility Operations and Maintenance	Storm Drain Cleaning Assistance Program	28	25	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Continue to provide assistance to commercial and industrial facilities to support their water quality facility maintenance.	Attained	WES partners with the cities of Milwaukie, Gresham, Fairview, Oregon City, Wood Village and Oak Lodge Water Services District on a Storm Drain Cleaning Assistance Program (SCAP) for private stormwater facilities. The program consisted of a spring and a fall mailing. To seek better compliance, WES staff continued a series of prioritized onsite inspections that included assessments and guidance on avoiding possible onsite practices that could serve as sources of pollution to the MS4. Where deficiencies were identified by WES staff, corrections were required of the properties.
103	Component #8 Structural Stormwater Facility Operations and Maintenance	Private Water Quality Facility Maintenance Program	29	26	WES (formerly, SWMACC and CCSD#1)	Tracking Measure	Number of structures inspected and cleaned	1,769 water quality facilities and structures	BMP #29 is only for those storm sewer systems constructed since approx. 1996 which are located in single-family residential areas; homeowners in these areas pay an additional \$3 fee to WES per month which funds the operation and maintenance of these storm sewer systems.  WES inspected and/or completed vegetation management on 206 ponds, inspected and/or cleaned 5,782 linear feet of pipe, inspected and/or cleaned 155 structures including flow control and water quality structures, and cleaned 1408 inlets. This information includes assets owned and/or operated by WES.
104	Component #8 Structural Stormwater Facility Operations and Maintenance	Private Water Quality Facility Maintenance Program	29	26	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Inspect 70% of our maintenance agreement sub-divisions annually	22.3%	Not Attained. WES completed inspections in 75 of the 336 maintenance agreement subdivisions. There was a decrease in inspections this past reporting period due to limited resources available for inspections due to the COVID pandemic.
105	Component #8 Structural Stormwater Facility Operations and Maintenance	Private Water Quality Facility Maintenance Program	29	26	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Cleaning and repair schedules will be developed based on inspection outcomes	Attained	Any repairs or cleanings were subsequently scheduled and/or completed based on the inspection results.
106	Component #8 Structural Stormwater Facility Operations and Maintenance	Private Water Quality Facility Maintenance Program	29	26	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	All non-maintenance agreement cleaning and repairs will be request or service driven	Attained	Any non-maintenance agreement cleanings and/or repairs were initiated by requests for service.

Row No.	Surface Water Management Plan Component	Best Management Practice (BMP)	Former CCSD#1 BMP #	Former SWMACC BMP #	Jurisdiction	Type	Tracking Measures and Measurable Goals (as listed in the 2012 SWMP)	2019 - 20 Tracking Measure or Measurable Goal Response	2019 - 20 Response Comment
107	Component #8 Structural Stormwater Facility Operations and Maintenance	Private Water Quality Facility Maintenance Program	29	26	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	Emergency driven cleaning and maintenance will be addressed within 24 hours of the call being received	Attained	All emergency requests were responded to once the requests were received.
108	Component #8 Structural Stormwater Facility Operations and Maintenance	Private Water Quality Facility Maintenance Program	29	26	WES (formerly, SWMACC and CCSD#1)	Measurable Goal	All non-emergency requests for service will be addressed within 72 hours of the call received	Attained	On average, most non-emergency request were responded to or completed within the 72 hour time frame.

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Appendix B

**MS4 Pollutant Monitoring Results**



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**Table A-1. WES (CCSD #1) Instream Water Quality Monitoring Results (2019-2020)**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate-Nitrite (mg/L)	WQ Std <sup>3</sup> (mg/L)	E.coli (MPN per 100ml)	WQ Std (MPN per 100ml)	Total Phosphorus (mg/L) <sup>2</sup>	WQ Std (mg/L)	Copper, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Lead, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Zinc, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Dissolved Solids (mg/L)	Ammonia (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	pH <sup>2</sup>	Conductivity (uS/cm)
#14 Kellogg Creek at SE Rusk Rd.	3/11/20	N	Routine	9.9	18	10.2	6.5	2.00	10	24	406	<0.04	0.14	0.5	6.76	9.86	0.05	1.76	45.08	12	89.44	88.71	153	5	156	<0.05	0.07	0.7	0.63	12	72	6.7	193.6
				<b>Median</b>	12.0	8.4		2.30		422		0.06					0.02			7			193	8	153	0.025	0.09	0.7	0.53	8	78	7.0	196.9
				<b>Maximum</b>	15.3	10.2		2.50		>2420		0.15					0.07			12			208	12	164	0.08	0.10	1.0	1.03	12	80	7.2	248.0
				<b>Minimum</b>	9.1	6.4		0.82		24		<0.04	0.2				0.02			5			153	3	145	<0.05	0.07	0.3	0.12	7	70	6.6	181.4
				<b>Water Quality Exceedance (number of samples)</b>	0	1		0		4		2		0	0		0	0		0	0		0	0									
#14 Kellogg Creek at SE Rusk Rd.	1/7/20	Y	Routine	10.6	18	9.2	6.5	1.90	10	67	406	0.1	0.14	1.1	6.12	8.83	0.11	1.54	39.60	17	80.94	80.28	143	10	120	<0.05	0.06	1.5	0.41	21	64	7.0	168.0
#14 Kellogg Creek at SE Rusk Rd.	5/12/20	Y	Routine	13.6	18	7.6	6.5	1.90	10	727	406	0.05	0.14	1.2	6.80	9.60	0.05	1.70	43.71	11	87.33	86.62	181	1	145	<0.05	0.09	1.5	0.30	13	70	6.9	175.2
#14 Kellogg Creek at SE Rusk Rd.	6/17/20	Y	Routine	15.1	18	7.6	6.5	1.30	10	435	406	0.16	0.14	1.2	6.12	8.83	0.11	1.54	39.60	11	80.94	80.28	161	10	120	<0.05	0.10	1.5	0.42	14	64	6.9	159.0
				<b>Median</b>	13.6	7.6		1.90		435		0.10					0.11			11			161	10	120	0.025	0.09	1.5	0.41	14	64	6.9	168.0
				<b>Maximum</b>	15.1	9.2		1.90		727		0.16					0.11			17			181	10	145	<0.05	0.10	1.5	0.42	21	70	7.0	175.2
				<b>Minimum</b>	10.6	7.6		1.30		67		0.05	0.2				0.05			11			143	1	120	<0.05	0.06	1.5	0.30	13	64	6.9	159.0
				<b>Water Quality Exceedance (number of samples)</b>	0	0		0		2		1		0	0		0	0		0	0		0	0									

**Mt Scott Creek**

				Water Quality Standard Comparison																	Additional Parameters of Concern							Supporting Parameters					
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate-Nitrite (mg/L)	WQ Std <sup>3</sup> (mg/L)	E.coli (MPN per 100ml)	WQ Std (MPN per 100ml)	Total Phosphorus (mg/L) <sup>2</sup>	WQ Std (mg/L)	Copper, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Lead, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Zinc, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Dissolved Solids (mg/L)	Ammonia (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	pH <sup>2</sup>	Conductivity (uS/cm)
#15 Mt. Scott Creek in NCCP	7/9/19	N	Routine	18.0	18	7.6	6.5	0.32	10	326	406	0.04	0.14	0.8	8.18	12.17	0.05	2.24	57.57	5	108.05	107.17	193	4	124	<0.05	0.08	1.3	0.32	9	90	7.6	211.0
#15 Mt. Scott Creek in NCCP	8/22/19	N	Routine	18.0	18	7.3	6.5	0.14	10	1550	406	0.09	0.14	0.9	7.87	11.66	0.04	2.13	54.78	4	103.97	103.12	171	2	135	<0.05	0.07	1.3	0.35	7	86	7.1	220.0
#15 Mt. Scott Creek in NCCP	9/25/19	N	Routine	16.2	18	8.1	6.5	0.34	10	461	406	0.08	0.14	1.4	5.95	8.57	0.07	1.49	38.24	7	78.79	78.15	127	2	104	0.09	0.06	1.6	0.32	9	82	7.5	170.0
#15 Mt. Scott Creek in NCCP	10/15/19	N	Routine	11.1	18	9.9	6.5	0.23	10	160	406	0.1	0.14	0.7	7.95	11.79	0.05	2.16	55.48	5	104.99	104.14	176	3	156	<0.05	0.05	0.9	0.27	7	67	7.5	199.8
#15 Mt. Scott Creek in NCCP	11/14/19	N	Routine	10.6	18	8.9	6.5	0.18	10	82	406	<0.04	0.14	1.1	7.48	11.02	0.06	2.00	51.30	6	98.82	98.02	147	6	141	<0.05	0.04	1.3	0.15	9	81	7.1	248.0
#15 Mt. Scott Creek in NCCP	12/4/19	N	Routine	6.2	18	11.0	6.5	0.42	10	84	406	0.06	0.14	0.8	8.42	12.55	0.07	2.33	59.67	7	111.09	110.19	176	5	151	<0.05	0.03	1.1	0.24	12	93	7.3	204.0
#15 Mt. Scott Creek in NCCP	2/13/20	N	Routine	6.9	18	7.6	6.5	0.77	10	28	406	<0.04	0.14	0.8	7.08	10.38	0.04	1.86	47.84	10	93.63	92.87	172	6	127	<0.05	0.03	1.3	0.96	15	76	6.8	182.0
#15 Mt. Scott Creek in NCCP	3/11/20	N	Routine	8.2	18	11.4	6.5	0.45	10	60	406	<0.04	0.14	0.8	7.00	10.25	0.04	1.84	47.15	13	92.58	91.83	136	1	127	<0.05	<0.025	1.3	0.66	20	75	6.9	184.2
				<b>Median</b>	10.9	8.5		0.33		122		0.05					0.05			7			172	4	131	0.025	0.045	1.3	0.32	9	84	7.2	201.9
				<b>Maximum</b>	18.0	11.4		0.77		1550		0.10		1.8			0.07			13			193	6	156	0.09	0.08	1.6	0.96	20	93	7.6	248.0
				<b>Minimum</b>	6.2	7.3		0.14		28		<0.04	0.7				0.04			4			127	1	104	<0.05	<0.025	0.9	0.15	7	62	6.8	170.0
				<b>Water Quality Exceedance (number of samples)</b>	2	0		0		2		0		0	0		0	0		4	0	0	0	0									
#15 Mt. Scott Creek in NCCP	1/7/20	Y	Routine	9.7	18	10.4	6.5	0.41	10	78	406	<0.04	0.14	1.7	4.95	6.99	0.14	1.17	30.14	14	65.66	65.13	108	9	94	<0.05	<0.025	2.2	0.45	21	60	7.0	131.6
#15 Mt. Scott Creek in NCCP	5/12/20	Y	Routine	15.0	18	6.6	6.5	0.89	10	>2420	406	0.09	0.14	2.9	5.95	8.57	0.19	1.49	38.24	16	78.79	78.15	150	4	117	0.4	0.07	3.9	0.69	27	62	7.0	148.4
#15 Mt. Scott Creek in NCCP	6/17/20	Y	Routine	14.9	18	9.0	6.5	0.59	10	727	406	0.06	0.14	1.8	4.53	6.33	0.21	1.04	26.81	9	60.06	59.57	111	7	82	<0.05	0.04	2.5	0.98	15	45	7.4	113.5
				<b>Median</b>	14.9	9.0		0.59		727		0.06		1.8			0.19			14			111	7	94	0.025	0.04	2.5	0.69	21	50	7.0	131.6
				<b>Maximum</b>	15.0	10.4		0.81		>2420		0.09		2.9			0.21			16			150	9	117	0.40	0.07	3.9	0.98	27	62	7.4	148.4
				<b>Minimum</b>	9.7	6.6		0.49		78		<0.04	0.7				0.14			9			108	4	82	<0.05	<0.025	2.2	0.45	15	45	7.0	113.5
				<b>Water Quality Exceedance (number of samples)</b>	0	0		0		2		0		0	0		0	0		9	0	0	0	0									

**Rock Creek**

				Water Quality Standard Comparison																	Additional Parameters of Concern							Supporting Parameters					
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate-Nitrite (mg/L)	WQ Std <sup>3</sup> (mg/L)	E.coli (MPN per 100ml)	WQ Std (MPN per 100ml)	Total Phosphorus (mg/L) <sup>2</sup>	WQ Std (mg/L)	Copper, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Lead, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Zinc, Dissolved (ug/L) <sup>3</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Dissolved Solids (mg/L)	Ammonia (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	pH <sup>2</sup>	Conductivity (uS/cm)
#16 Rock Creek near Mouth	7/9/19	N	Routine	15.6	18	9.7	6.5	0.41	10	32	406	<0.04	0.14	0.6	6.44	9.34	0.01	1.65	42.33	1	85.21	84.52	162	9	102	<0.05	0.07	0.9	0.20	2	68	7.6	170.6
#16 Rock Creek near Mouth	8/22/19	N	Routine	15.6	18	9.9	6.5	0.39	10	308	406	0.09	0.14	0.8	6.68	9.73	0.02	1.73	44.39	2	88.38	87.67	147	3	118	<0.05	0.08	1.1	0.24	3	71	7.3	178.6
#16 Rock Creek near Mouth	9/25/19	N	Routine	14.3	18	9.8	6.5	0.49	10	61	406	0.08	0.14	0.7	6.20	8.96	0.01	1.57	40.28	1	82.01	81.35	130	4	116	0.088	0.07	0.8	0.19	NM	65	7.6	187.2
#16 Rock Creek near Mouth	10/15/19	N	Routine	9.2	18	10.5	6.5	0.46	10	126	406	0.08	0.14	0.3	6.92	10.12	<0.01	1.81	46.46	<1	91.54	90.79	152	2	133	<0.05	0.09	0.5	0.17	1	74	7.7	181.6
#16 Rock Creek near Mouth	11/14/19	N	Routine	9.8	18	11.9	6.5	0.55	10	7	406	<0.04	0.14	0.4	6.68</																		

**Table A-1. WES (CCSD #1) Instream Water Quality Monitoring Results (2019-2020)**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/Storm)	Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate-Nitrite (mg/L)	WQ Std <sup>3</sup> (mg/L)	E.coli (MPN per 100ml)	WQ Std (MPN per 100ml)	Total Phosphorus (mg/L) <sup>5</sup>	WQ Std (mg/L)	Copper, Dissolved (ug/L) <sup>6</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Lead, Dissolved (ug/L) <sup>6</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Zinc, Dissolved (ug/L) <sup>6</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	pH <sup>7</sup>	Conductivity (uS/cm)
#27 Rowe Middle School SE Lake Rd.	7/9/19	N	Routine	17.1	18	9.1	6.5	1.40	10	517	406	<-0.04	0.14	0.6	8.03	11.91	0.03	2.19	56.17	3	106.01	105.15	222	14	133	0.05	0.08	0.9	0.33	7	88	7.7	212.0
#27 Rowe Middle School SE Lake Rd.	8/22/19	N	Routine	16.8	18	9.8	6.5	1.24	10	1300	406	0.12	0.14	0.6	8.03	11.91	0.02	2.19	56.17	3	106.01	105.15	195	4	156	<-0.05	0.09	0.9	0.33	7	88	7.7	211.0
#27 Rowe Middle School SE Lake Rd.	9/25/19	N	Routine	15.3	18	9.4	6.5	1.01	10	411	406	0.12	0.14	0.9	6.60	9.60	0.05	1.70	43.71	5	87.33	86.62	143	7	130	0.09	0.09	1.3	0.43	10	70	7.7	176.1
#27 Rowe Middle School SE Lake Rd.	10/15/19	N	Routine	10.9	18	10.5	6.5	1.22	10	236	406	0.11	0.14	0.4	7.79	11.53	0.03	2.11	54.08	4	102.94	102.11	185	3	167	<-0.05	0.08	0.6	0.25	5	85	7.6	203.0
#27 Rowe Middle School SE Lake Rd.	11/14/19	N	Routine	11.0	18	10.8	6.5	1.20	10	8	406	0.04	0.14	0.7	7.56	11.15	0.04	2.03	52.00	7	99.85	99.04	210	5	156	<-0.05	0.07	0.8	0.10	9	82	7.3	243.0
#27 Rowe Middle School SE Lake Rd.	12/4/19	N	Routine	7.3	18	11.5	6.5	1.60	10	75	406	<-0.04	0.14	0.5	7.95	11.79	0.03	2.46	35.48	6	104.99	104.14	191	2	159	<-0.05	0.05	0.6	0.12	8	87	7.6	206.0
#27 Rowe Middle School SE Lake Rd.	2/13/20	N	Routine	7.3	18	8.2	6.5	1.40	10	45	406	0.1	0.14	0.7	7.24	10.63	0.05	1.92	49.22	10	95.71	94.94	192	13	140	<-0.05	0.05	1.3	0.94	15	78	6.9	191.9
#27 Rowe Middle School SE Lake Rd.	3/11/20	N	Routine	8.6	18	12.0	6.5	1.10	10	47	406	<-0.04	0.14	0.8	7.24	10.63	0.04	1.92	49.22	8	95.71	94.94	151	5	138	<-0.05	0.04	1.1	0.57	13	78	7.1	190.6
			<b>Median</b> <sup>4</sup>	11.0		10.2		1.23		156		0.07		0.6			0.04			6			192	5	148	0.025	0.08	0.9	0.33	8	84	7.5	204.5
			<b>Maximum</b> <sup>4</sup>	17.1		12.0		1.60		1300		0.12		0.9			0.05			10			222	14	167	0.09	0.09	1.3	0.94	15	88	7.7	243.0
			<b>Minimum</b> <sup>4</sup>	7.3		6.2		1.01		8		<-0.04		0.4			0.02			3			143	2	130	<-0.05	0.04	0.6	0.10	5	70	6.9	176.1
			<b>Water Quality Exceedance (number of samples)</b>	0		1		0		3		0		0	0		0		0	3			143	2	130	<-0.05	0.04	0.6	0.10	5	70	6.9	176.1
#27 Rowe Middle School SE Lake Rd.	1/7/20	Y	Routine	9.9	18	10.6	6.5	1.10	10	93	406	<-0.04	0.14	1.6	5.46	7.78	0.13	1.33	34.17	11	72.28	71.70	114	7	103	0.05	<-0.025	2.0	0.49	18	56	7.1	140.2
#27 Rowe Middle School SE Lake Rd.	5/12/20	Y	Routine	14.8	18	8.6	6.5	1.10	10	2420	406	0.12	0.14	2.3	6.36	9.22	0.10	1.62	41.65	12	84.14	83.46	157	6	136	0.28	0.09	3.3	0.46	20	67	7.3	161.7
#27 Rowe Middle School SE Lake Rd.	6/17/20	Y	Routine	15.4	18	9.9	6.5	0.70	10	26	406	0.10	0.14	1.7	5.12	7.26	0.13	1.23	31.48	8	67.68	67.33	121	11	89	<-0.05	0.06	2.3	0.59	15	52	7.5	127.0
			<b>Median</b> <sup>4</sup>	14.8		9.9		1.10		93		0.10		1.7			0.13			11			121	7	103	0.05	0.06	2.3	0.49	18	56	7.3	140.2
			<b>Maximum</b> <sup>4</sup>	15.4		10.6		1.10		2420		0.12		2.3			0.13			12			157	11	136	0.28	0.09	3.3	0.59	20	67	7.5	161.7
			<b>Minimum</b> <sup>4</sup>	9.9		8.6		0.70		26		<-0.04		1.6			0.10			8			114	6	89	<-0.05	<-0.025	2.0	0.46	15	52	7.1	127.0
			<b>Water Quality Exceedance (number of samples)</b>	0		0		0		1		0		0	0		0		0	8			114	6	89	<-0.05	<-0.025	2.0	0.46	15	52	7.1	127.0

**Notes**

General: Red font indicates that the dissolved values are higher than the total. Potential QA/QC need.

NM = Not Measured

- 1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration.
- 2) No DO TMDL for the Willamette River; 6.5 mg/L selected as target minimum DO concentration for cool water habitat.
- 3) Table 20 - Protection of human health for water and fish ingestion.
- 4) Non-detects were replaced with one half the detection limit for statistical calculations. *E. coli* values greater than the EPA's *Ambient Water Quality for Bacteria* (1986) single sample maximum value were replaced with the single sample maximum value for statistical calculations.
- 5) WQ Standard of 0.14 mg/L selected based on the load allocation referenced in the Tualatin TMDL for most sources downstream of Dairy Creek.
- 6) Acute and chronic water quality standards for metals based on hardness only. The current copper WQ standards now reflect use of the biotic ligand model (BLM), but was not evaluated for this report.
- 7) Ideal pH range is between 6.5 and 8.5.

Table A-2. WES (CCSD #1) Stormwater Monitoring Results (2019-2020)

Mt Scott Creek (Lower) - Stormwater Outfall Monitoring - Mixed Use

		Water Quality Standard Comparison											Additional Parameters of Concern										Supporting Parameters						
WES ID and Location	Date	Visit Type (Routine/Storm)	Temp (C)	WQ	DO (mg/L)	WQ	Nitrate-Nitrite (mg/L)	WQ	<i>E. coli</i> (MPN per 100ml)	WQ	Copper, Total (ug/L)	WQ	Lead, Total (ug/L)	WQ	Zinc, Total (ug/L)	WQ	Total Solids (mg/L)	Total Suspended Solids <sup>5</sup> (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Dissolved (ug/L)	Lead, Dissolved (ug/L)	Zinc, Dissolved (ug/L)	Hardness (mg/L)	pH <sup>5</sup>	Conductivity (uS/cm)	
				Std <sup>1</sup> (C)		Std <sup>2</sup> (mg/L)		Std <sup>3</sup> (mg/L)		Std <sup>4</sup> (MPN per 100ml)		Std <sup>5</sup> (ug/L)		Std <sup>6</sup> (ug/L)		Std <sup>7</sup> (ug/L)													Std <sup>8</sup> (ug/L)
#101 SE Pheasant Ct. Outfall	10/16/19	Storm	14.7	18	9.7	6.5	0.39	10	517	406	16.1	20	2.22	15	139	120	73	30	38	0.20	0.26	NM	10.4	0.18	97	15	6.5	80.6	
#101 SE Pheasant Ct. Outfall	12/19/19	Storm	7.3	18	12.4	6.5	0.12	10	816	406	6.9	20	3.77	15	235	120	70	48	18	<0.05	0.18	0.03	2.1	0.09	154	8	6.1	22.4	
#101 SE Pheasant Ct. Outfall	4/22/20	Storm	12.7	18	7.2	6.5	0.86	10	299	406	19.0	20	0.95	15	486	120	169	16	133	0.46	0.29	0.1	12.5	0.19	382	40	6.8	103.8	
<b>Median</b> <sup>4</sup>			12.7		9.7		0.4		517		16.1		2.22		235		73	30	38	0.20	0.26	0.07	10.4	0.18	154	15	6.5	80.6	
<b>Maximum</b> <sup>4</sup>			14.7		12.4		0.9		816		19.0		3.77		486		169	48	133	0.46	0.29	0.1	12.5	0.19	382	40	6.8	103.8	
<b>Minimum</b> <sup>4</sup>			7.3		7.2		0.12		299		6.9		0.95		139		70	16	18	<0.05	0.18	0.03	2.1	0.09	97	8	6.1	22.4	
<b>WQ Exceedance (number of samples)</b>			0		0		0		2		0		0		3														

Kellogg Creek (Upstream) - Stormwater Outfall Monitoring - Residential

		Water Quality Standard Comparison											Additional Parameters of Concern										Supporting Parameters						
WES ID and Location	Date	Visit Type (Routine/Storm)	Temp (C)	WQ	DO (mg/L)	WQ	Nitrate-Nitrite (mg/L)	WQ	<i>E. coli</i> (MPN per 100ml)	WQ	Copper, Total (ug/L)	WQ	Lead, Total (ug/L)	WQ	Zinc, Total (ug/L)	WQ	Total Solids (mg/L)	Total Suspended Solids <sup>5</sup> (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Dissolved (ug/L)	Lead, Dissolved (ug/L)	Zinc, Dissolved (ug/L)	Hardness (mg/L)	pH <sup>5</sup>	Conductivity (uS/cm)	
				Std <sup>1</sup> (C)		Std <sup>2</sup> (mg/L)		Std <sup>3</sup> (mg/L)		Std <sup>4</sup> (MPN per 100ml)		Std <sup>5</sup> (ug/L)		Std <sup>6</sup> (ug/L)		Std <sup>7</sup> (ug/L)													Std <sup>8</sup> (ug/L)
#102 SE Webster Rd. Outfall	10/16/19	Storm	14.8	18	9.4	6.5	0.46	10	1410	406	25.6	20	1.73	15	498	120	102	23	67	0.36	0.32	NM	18.5	0.42	414	27	6.4	76.3	
#102 SE Webster Rd. Outfall	12/19/19	Storm	7.5	18	12.2	6.5	0.16	10	2420	406	7.4	20	2.30	15	152	120	75	55	20	<0.05	0.19	0.03	1.9	0.14	80	8	6.5	19.4	
#102 SE Webster Rd. Outfall	4/22/20	Storm	12.4	18	7.9	6.5	0.76	10	1550	406	64.8	20	0.76	15	351	120	168	10	125	0.88	0.12	0.11	48.8	0.13	282	29	6.9	97	
<b>Median</b> <sup>4</sup>			12.4		9.4		0.46		1550		25.6		1.73		351		102	23	67	0.36	0.19	0.07	18.5	0.14	282	27	6.5	76.3	
<b>Maximum</b> <sup>4</sup>			14.8		12.2		0.76		2420		64.8		2.30		498		168	55	125	0.88	0.32	0.11	48.8	0.42	414	29	6.9	97.0	
<b>Minimum</b> <sup>4</sup>			7.5		7.9		0.16		1410		7.4		0.76		152		75	10	20	<0.05	0.12	0.03	1.91	0.13	79.9	8	6.4	19.4	
<b>WQ Exceedance (number of samples)</b>			0		0		0		3		2		0		3														

Sieben Creek - Stormwater Outfall Monitoring - Commercial

		Water Quality Standard Comparison											Additional Parameters of Concern										Supporting Parameters						
WES ID and Location	Date	Visit Type (Routine/Storm)	Temp (C)	WQ	DO (mg/L)	WQ	Nitrate-Nitrite (mg/L)	WQ	<i>E. coli</i> (MPN per 100ml)	WQ	Copper, Total (ug/L)	WQ	Lead, Total (ug/L)	WQ	Zinc, Total (ug/L)	WQ	Total Solids (mg/L)	Total Suspended Solids <sup>5</sup> (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Dissolved (ug/L)	Lead, Dissolved (ug/L)	Zinc, Dissolved (ug/L)	Hardness (mg/L)	pH <sup>5</sup>	Conductivity (uS/cm)	
				Std <sup>1</sup> (C)		Std <sup>2</sup> (mg/L)		Std <sup>3</sup> (mg/L)		Std <sup>4</sup> (MPN per 100ml)		Std <sup>5</sup> (ug/L)		Std <sup>6</sup> (ug/L)		Std <sup>7</sup> (ug/L)													Std <sup>8</sup> (ug/L)
#103 SE Oregon Trail Dr. Outfall	10/16/19	Storm	14.6	18	8.7	6.5	0.16	10	61	406	13.2	20	1.94	15	173	120	121	42	63	0.34	0.23	NM	7.3	0.17	124	30	6.8	275	
#103 SE Oregon Trail Dr. Outfall	12/19/19	Storm	9.3	18	9.4	6.5	0.31	10	56	406	8.5	20	2.24	15	89	120	181	131	51	0.12	0.19	<0.025	2.3	0.07	44	23	6.2	71.3	
#103 SE Oregon Trail Dr. Outfall	4/22/20	Storm	12.3	18	6.6	6.5	0.31	10	115	406	11.8	20	1.47	15	212	120	165	9	136	0.79	<0.04	<0.025	6.0	0.55	161	52	6.7	147.7	
<b>Median</b> <sup>4</sup>			12.3		8.7		0.3		61		11.8		1.94		173		165	42	63	0.34	0.19	0.0125	6.0	0.17	124	30	6.7	147.7	
<b>Maximum</b> <sup>4</sup>			14.6		9.4		0.3		115		13.2		2.24		212		181	131	136	0.79	0.23	<0.025	7.3	0.55	161	52	6.8	275.0	
<b>Minimum</b> <sup>4</sup>			9.3		6.6		0.16		56		8.5		1.47		89		121	9	51	0.12	<0.04	<0.025	2.27	0.07	44	23	6.2	71.3	
<b>WQ Exceedance (number of samples)</b>			0		0		0		0		0		0		2														

Sieben Creek - Stormwater Outfall Monitoring - Multi-Family Residential

		Water Quality Standard Comparison											Additional Parameters of Concern										Supporting Parameters						
WES ID and Location	Date	Visit Type (Routine/Storm)	Temp (C)	WQ	DO (mg/L)	WQ	Nitrate-Nitrite (mg/L)	WQ	<i>E. coli</i> (MPN per 100ml)	WQ	Copper, Total (ug/L)	WQ	Lead, Total (ug/L)	WQ	Zinc, Total (ug/L)	WQ	Total Solids (mg/L)	Total Suspended Solids <sup>5</sup> (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Dissolved (ug/L)	Lead, Dissolved (ug/L)	Zinc, Dissolved (ug/L)	Hardness (mg/L)	pH <sup>5</sup>	Conductivity (uS/cm)	
				Std <sup>1</sup> (C)		Std <sup>2</sup> (mg/L)		Std <sup>3</sup> (mg/L)		Std <sup>4</sup> (MPN per 100ml)		Std <sup>5</sup> (ug/L)		Std <sup>6</sup> (ug/L)		Std <sup>7</sup> (ug/L)													Std <sup>8</sup> (ug/L)
#105 Sunnyside Village @ Pond	10/16/19	Storm	14.0	18	8.9	6.5	0.66	10	32	406	8.4	20	0.31	15	19	120	142	13	108	0.18	0.14	NM	5.1	0.02	10	52	6.9	153.6	
#105 Sunnyside Village @ Pond	12/19/19	Storm	10.0	18	9.4	6.5	0.33	10	53	406	6.6	20	0.79	15	26	120	84	36	40	0.05	0.10	<0.025	2.2	0.04	10	22	6.4	73.8	
#105 Sunnyside Village @ Pond	4/22/20	Storm	12.6	18	8	6.5	0.59	10	63	406	39.8	20	0.30	15	62	120	128	7	98	0.59	<0.04	0.04	35.4	0.05	60	45	6.6	102.6	
<b>Median</b> <sup>4</sup>			12.6		8.9		0.59		53		8.4		0.31		26		128	13	98	0.18	0.10	0.026	5.1	0.04	10	45	6.6	102.6	
<b>Maximum</b> <sup>4</sup>			14.0		9.4		0.66		63		39.8		0.79		62		142	36	108	0.59	0.14	0.04	35.4	0.05	60	52	6.9	153.6	
<b>Minimum</b> <sup>4</sup>			10.0		8.0		0.33		32		6.6		0.30		19		84	7	40	0.05	<0.04	<0.025	2.2	0.02	10	22	6.4	73.8	
<b>WQ Exceedance (number of samples)</b>			0		0		0		0		1		0		0														

Notes

General: Red font indicates that the dissolved values are higher than the total. Potential QA/QC need.

NM = Not Measured

- 1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration.
- 2) No DO TMDL for the Willamette River; 6.5 mg/L selected as target minimum DO concentration for cool water habitat.
- 3) Table 20 - Protection of human health for water and fish ingestion.
- 4) Non-detects were replaced with one half the detection limit for statistical calculations. *E. coli* values greater than the EPA's *Ambient Water Quality for Bacteria* (1986) single sample maximum value were replaced with the single sample maximum value for statistical calculations.
- 5) Water quality criteria values based on the stormwater discharge benchmarks in the current 1200-Z permit. The benchmark for TSS is 100 mg/L. The benchmark for pH is 5.5 to 9.0.

**Table A-3. WES (SWMACC) Instream Water Quality Monitoring Results (2019-2020)**

**Pecan Creek**

WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Water Quality Standard Comparison														Additional Parameters of Concern						Supporting Parameters										
				Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate-Nitrite (mg/L)	WQ Std <sup>3</sup> (mg/L)	E.coli (MPN per 100ml)	WQ Std (MPN per 100ml)	Total Phosphorus (mg/L) <sup>5</sup>	WQ Std (mg/L)	Copper, Dissolved (ug/L) <sup>6</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Lead, Dissolved (ug/L) <sup>6</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Zinc, Dissolved (ug/L) <sup>6</sup>	WQ Std (Chronic) (ug/L)	WQ Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	pH <sup>7</sup>	Conductivity (uS/cm)	
#11 Pecan Creek at SW Mossy Brae Rd.	7/9/19	N	Routine	15.2	18	9.9	6.5	1.10	10	>2420	406	<0.04	0.14	0.6	4.70	6.60	<0.01	1.10	28.13	<1	62.31	61.81	152	6	72	0.05	0.06	0.8	0.18	1	47	6.9	138.0	
#11 Pecan Creek at SW Mossy Brae Rd.	8/22/19	N	Routine	15.0	18	9.0	6.5	0.96	10	>2420	406	0.09	0.14	0.8	5.21	7.39	0.01	1.25	32.15	1	68.99	68.43	135	6	104	<0.05	0.08	1.0	0.34	2	53	6.7	146.5	
#11 Pecan Creek at SW Mossy Brae Rd.	9/25/19	N	Routine	13.9	18	8.1	6.5	0.70	10	1120	406	0.07	0.14	0.8	4.18	5.80	0.02	0.94	24.17	1	55.50	55.05	105	5	90	0.089	0.07	1.0	0.20	1	41	6.9	172.7	
#11 Pecan Creek at SW Mossy Brae Rd.	10/15/19	N	Routine	7.4	18	11.2	6.5	1.19	10	687	406	0.06	0.14	0.5	4.87	6.86	0.01	1.15	29.47	1	64.55	64.03	122	7	112	0.07	0.05	0.6	0.23	2	49	6.8	201.0	
#11 Pecan Creek at SW Mossy Brae Rd.	11/14/19	N	Routine	7.6	18	11.3	6.5	0.78	10	112	406	<0.04	0.14	0.5	4.61	6.47	<0.02	1.07	27.47	<2	61.19	60.69	136	4	104	<0.05	0.05	0.6	0.06	<2	46	6.9	169.8	
#11 Pecan Creek at SW Mossy Brae Rd.	12/4/19	N	Routine	4.2	18	12.4	6.5	1.10	10	365	406	<0.04	0.14	0.4	4.27	5.93	<0.02	0.97	24.82	<2	56.65	56.19	119	12	91	<0.05	0.03	0.7	0.04	10	42	6.6	122.9	
#11 Pecan Creek at SW Mossy Brae Rd.	2/13/20	N	Routine	5.9	18	10.1	6.5	1.10	10	50	406	<0.04	0.14	0.7	4.01	5.53	0.05	0.89	22.86	5	53.20	52.77	127	5	86	<0.05	0.03	0.9	0.87	5	39	6.7	129.3	
#11 Pecan Creek at SW Mossy Brae Rd.	3/11/20	N	Routine	6.6	18	11.8	6.5	0.95	10	142	406	<0.04	0.14	0.6	3.56	4.86	0.04	0.76	19.61	3	47.36	46.98	84	2	85	<0.05	0.03	0.8	0.63	4	34	6.7	108.6	
				Median <sup>4</sup>		10.7		1.03		526		0.02		0.6			0.01			1			125	6	91	0.025	0.05	0.8	0.22	2	44	6.8	142.3	
				Maximum <sup>4</sup>		15.2		1.19		>2420		0.1		0.8			0.05			5			152	12	112	0.089	0.08	1.0	0.87	10	53	6.9	201.0	
				Minimum <sup>4</sup>		4.2		0.70		50		<0.04		0.4			<0.01			<1			84	2	72	<0.05	0.03	0.6	0.04	1	34	6.6	108.6	
				Water Quality Exceedance (number of samples)		0		0		4		0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
#11 Pecan Creek at SW Mossy Brae Rd.	1/7/20	Y	Routine	9.3	18	10.8	6.5	1.20	10	114	406	0.07	0.14	1.2	3.29	4.46	0.14	0.69	17.68	2	43.79	43.44	95	8	80	<0.05	<0.025	1.7	0.35	5	31	6.4	103.8	
#11 Pecan Creek at SW Mossy Brae Rd.	5/12/20	Y	Routine	12.0	18	9.9	6.5	0.67	10	1050	406	<0.04	0.14	1.9	3.92	5.40	0.05	0.87	22.20	2	52.04	51.62	112	4	93	0.058	0.05	2.4	0.28	4	38	6.6	119.7	
#11 Pecan Creek at SW Mossy Brae Rd.	6/17/20	Y	Routine	13.0	18	10.0	6.5	0.93	10	816	406	0.08	0.14	1.4	4.09	5.67	0.09	0.92	23.51	3	54.35	53.91	120	10	89	<0.05	0.05	2.2	0.56	7	40	7.3	122.0	
				Median <sup>4</sup>		12.0		10.0		816		0.1		1.4			0.09			2.3			112	8	89	0.025	0.05	2.2	0.35	5	38	6.6	119.7	
				Maximum <sup>4</sup>		13.0		10.8		1050		0.08		1.9			0.14			3			120	10	93	0.058	0.05	2.4	0.56	7	40	7.3	122.0	
				Minimum <sup>4</sup>		9.3		9.9		114		<0.04		1.2			0.05			2			95	4	80	<0.05	<0.025	1.7	0.28	4	31	6.4	103.8	
				Water Quality Exceedance (number of samples)		0		0		2		0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Notes**
- General: Red font indicates that the dissolved values are higher than the total. Potential QA/QC need.
- 1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration.
  - 2) No instream monitoring locations specifically referenced in the Tualatin River TMDL - 6.5 mg/L selected as target minimum DO concentration for cool water habitat.
  - 3) Table 20 - Protection of human health for water and fish ingestion.
  - 4) Non-detects were replaced with one half the detection limit for statistical calculations. E. coli values greater than the EPA's Ambient Water Quality for Bacteria (1986) single sample maximum value were replaced with the single sample maximum value for statistical calculations.
  - 5) WQ Standard of 0.14 mg/L selected based on the load allocation referenced in the Tualatin TMDL for all sources downstream of Dairy Creek.
  - 6) Acute and chronic water quality standards for metals based on hardness only. The current copper WQ standards now reflect use of the biotic ligand model (BLM), but was not evaluated for this report.
  - 7) Ideal pH range is between 6.5 and 8.5.

## Table A-4. WES (SWMACC) Stormwater Monitoring Results (2019-2020)

Direct to Tualatin River - Stormwater Outfall Monitoring - Residential

WES ID and Location	Date	Visit Type (Routine/ Storm)	Water Quality Standard Comparison													Additional Parameters of Concern							Supporting Parameters						
			Temp (C)	WQ Std <sup>1</sup> (C)	DO (mg/L)	WQ Std <sup>2</sup> (mg/L)	Nitrate- Nitrite (mg/L)	WQ Std <sup>3</sup> (mg/L)	<i>E.coli</i> (MPN per 100ml)	WQ Std (MPN per 100ml)	Copper, Total (ug/L)	WQ Criteria (ug/L) <sup>5</sup>	Lead, Total (ug/L)	WQ Criteria (ug/L) <sup>5</sup>	Zinc, Total (ug/L)	WQ Criteria (ug/L) <sup>5</sup>	Total Solids (mg/L)	Total Suspended Solids <sup>5</sup> (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho- phosphate (mg/L)	Copper, Dissolved (ug/L)	Lead, Dissolved (ug/L)	Zinc, Dissolved (ug/L)	Hardness (mg/L)	pH <sup>5</sup>	Conductivity (uS/cm)	
#203 River Grove Boat Ramp	10/16/19	Storm	14.9	18	9	6.5	0.528	10	1730	406	11.1	20	0.77	15	38	120	88	27	60	<0.05	0.26	NM	7.5	0.07	23	20	6.7	54.3	
#203 River Grove Boat Ramp	12/19/19	Storm	7.4	18	11.6	6.5	0.29	10	>2420	406	5.4	20	1.38	15	68	120	69	27	39	<0.05	0.11	<0.025	2.0	0.06	40	19	6.6	85.6	
#203 River Grove Boat Ramp	4/22/20	Storm	13.5	18	6.0	6.5	0.91	10	276	406	31.4	20	0.38	15	74	120	223	9	176	0.24	0.13	0.1	22.8	0.02	59	93	6.7	183.3	
<b>Median</b> <sup>4</sup>			13.5		9.0		0.53		1730		11.1		0.77		68		88	27	60	0.025	0.13	0.056	7.5	0.06	40	20	6.7	85.6	
<b>Maximum</b> <sup>4</sup>			14.9		11.6		0.91		>2420		31.4		1.38		74		223	27	176	0.24	0.26	0.1	22.8	0.07	59	93	6.7	183.3	
<b>Minimum</b> <sup>4</sup>			7.4		6		0.29		276		5.4		0.38		38		69	9	39	<0.05	0.11	<0.025	2.0	0.02	23	19	6.6	54.3	
<b>WQ Exceedance (number of samples)</b>			0		1		0		2		1		0		0														

**Notes**

General: Red font indicates that the dissolved values are higher than the total. Potential QA/QC need.

NM = Not Measured

- 1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration.
- 2) 6.5 mg/L selected as the standard for the direct discharge to Tualatin River.
- 3) Table 20 - Protection of human health for water and fish ingestion.
- 4) Non-detects were replaced with one half the detection limit for statistical calculations. *E. coli* values greater than the EPA's *Ambient Water Quality for Bacteria* (1986) single sample maximum value were replaced with the single sample maximum value for statistical calculations.
- 5) Water quality criteria values based on the stormwater discharge benchmarks in the current 1200-Z permit. The benchmark for TSS is 100 mg/L. The benchmark for pH is 5.5 to 9.0.