

# City of Newberg TMDL Implementation Plan



## Annual Report Covering 2018 Activities

**Submitted: March 19, 2019**

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## **ACRONYMS**

**ACWA** - Association of Clean Water Agencies

**ASCE** - American Society of Civil Engineers

**AWWA** - American Water Works Association

**BMP** - Best Management Practice

**CESCL** - Certified Sediment and Erosion Control Lead

**CRRC** - Citizen's Rate Review Committee

**City** - City municipal staff of Newberg, Oregon

**DEQ** - Oregon Department of Environmental Quality

**ESC** - Erosion and Sediment Control

**EWRI** - Environmental and Water Resources Institute

**FOG** - Fats, Oil, and Grease

**GIS** – Geographic Information System

**GFU** - George Fox University

**GYWC** - Greater Yamhill Watershed Council

**IDDE** - Illicit Discharge Detection and Elimination

**MS4** – Municipal Separate Stormwater Sewer System

**NORP** - Northwest Oregon Restoration Partnership

**NPDES** – National Pollutant Discharge Elimination System

**O&M**- Operations and Maintenance

**PW** - Public Works

**TMDL** - Total Maximum Daily Load

**YCSW** - Yamhill County Solid Waste

## Executive Summary

The City of Newberg entered its third 5-year Total Maximum Daily Load (TMDL) cycle in January 2018. An updated 5-year TMDL Matrix working plan was presented to the Oregon Department of Environmental Quality (DEQ), and minor modifications were made before the working plan was approved. The TMDL Matrix can be seen in Appendix A. The matrix consists of the following seven focus areas:

- Public Education
- Public Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention in Municipal Operations
- Temperature

The first six focus areas are generally aligned with typical MS4 NPDES requirements, and the seventh focus area addresses stream temperature. Each area of focus has associated best management practices, strategies, and measurable goals. This annual report documents progress made toward achieving the measurable goals.

The TMDL Matrix which can be found in Appendix A has all of the best management practices, strategies, and measurable goals and each measurable goal has an associated 2018 status. The following status options and definitions can be seen below:

- **“Completed”** is used as a status update when a particular measurable goal has been completed and there are no ongoing activities associated with the measurable goal
- **“Ongoing”** is used as a status update when a particular measurable goal has been completed each year via continuing ongoing activities
- **“Incomplete, But Started”** is used as a status update when progress has been made on a measurable goal, but it has not yet moved into a “completed” or “ongoing” status
- **“Not Started”** is used as a status update when no work for a measurable goal has been started
- **“Delayed”** is used as a status update when a measurable goal hasn’t been completed, and some but very minimal progress has been made on the goal. This may in some instances be related to available staffing or other resources

## 2018 TMDL Matrix Summary

The City has a total of 54 measurable goals identified in the TMDL Matrix. At the end of 2018 the status for those goals is as follows: Complete (1), Ongoing (43), Incomplete, But Started (5), Not Started (5), and Delayed (0). Details about each measurable goal can be found throughout the document.

## Measure No. 1 – Public Education

The Public Education measure has two best management practices which include Stormwater Education and Watershed Education, which are comprised of five (5) strategies and seven (7) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Measure No. 1 – Public Education</b>			
PE-1 Stormwater Education	Website Education	Provide stormwater information on the City's website.	Provide general stormwater information and website links to the annual TMDL Implementation Plan.
	Citizen Group Education	Present stormwater information to interested citizen groups at local venues.	Track number of presentations, presentation messages, and number of participants (if available).
	Water Quality Report	Provide stormwater education in the City's annual Water Quality Report.	Provide website links to the annual Water Quality Report, and track stormwater messages included in the report.
PE-2 Watershed Education	Public Signage	Develop public infrastructure signage program.	Develop public infrastructure signage program to determine sign locations and messaging.
		Provide signage at stream crossings or LIDA infrastructure facilities.	Track number of signs installed and associated messages.
		Mark 50 unmarked catch basins a year with "No Dumping, Drains to Stream" type language.	Track number of catch basins marked per year. Prepare GIS map showing coverage of locations that are permanently marked or marked with after-market plastic labels.
	Student Education	Provide watershed education to students.	Track number of presentations, presentation messages, and number of participants (if available).

## 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described below.

### PE-1 Stormwater Education (Ongoing)

The Stormwater Education best management practice consists of three strategies; Website Education, Citizen Group Education, and the Water Quality Report.

#### *Website Education (Ongoing)*

The City has 16 web pages related to stormwater covering information on erosion and sedimentation control, riparian vegetation, water quality, illicit discharge, public works standards, and the Total Maximum Daily Load (TMDL) program.

The City posted on social media via the City of Newberg and Public Works Department Facebook pages 44 times about stormwater activities including the Trees for Streams program, illicit discharge, compost, waste management hazardous materials collections, rate review committee, and volunteer events.

The annual TMDL report is uploaded each year to the City's website after receiving and incorporating comments from DEQ.

#### *Citizen Group Education (Ongoing)*

In March 2018, City staff met with the Friendsview Hess Creek Canyon Committee (retirement community group) to evaluate vegetative coverage and the stream channel at their property on Fulton Street. Representatives from the Yamhill Soil and Water Conservation District and George Fox University were also onsite for the meeting and site walk. It was determined that some incising of the creek and erosion along the banks was occurring. It was acknowledged that residents were doing a good job of removing invasive plants and now needed to turn their focus toward replanting. Follow-up site preparation occurred as part of the George Fox Serve Day in September 2018, and a follow-up planting event occurred in early-February 2019 in coordination with the Greater Yamhill Watershed Council.

Leadership Newberg attended a presentation at the Newberg Wastewater Treatment Plant in March 2018 to learn about City programs such as volunteer opportunities, the Trees for Streams program, the watershed grant, the fats, oils, and grease (FOG) program, and City created compost. Participants were also given a tour of the waste water treatment plant and its composting facilities.

In June 2018, the City held the annual Public Works Day event in the park across from the Chehalem Cultural Center. The Engineering Department provided stormwater education as part of the event by using a casting of the City's stormwater manhole lid to stamp T-shirts for attendees. In total, 200 t-shirts were stamped and the message "Dump No Waste, Drains to Stream" can now be spotted walking around town. We received really positive feedback about this activity and plan to do it again in the future. See Figures 1 and 2 for images from the event.





*Figure 1: Stamping T-shirts with City's Stormwater Manhole Graphic*



*Figure 2: Stamped T-shirts Drying Before Pick-up*

#### *Water Quality Report (Ongoing)*

The Environmental Protection Agency (EPA) and the State of Oregon require the City of Newberg to distribute a Water Quality Report each year to all residences. The majority of information in the report is required by the EPA and the report is mailed to residents by June 30<sup>th</sup> each year. The 2017 Water Quality Report was mailed out in June 2018 and can be found on the City's website here:

<https://www.newbergoregon.gov/operations/page/water-quality-report>

The report included the following TMDL related messages:

- Citizen Rate Review Committee (PI-1 Stormwater Utility Fee)
- City's Watershed Grant (PI-2 Public Participation in Stormwater Management)
- Illicit Discharge (Measure No. 3 – Illicit Discharge Detection and Elimination)
- Watershed Volunteer opportunities (PE-1 Citizen Group Education)
- Hazardous Waste Collection resources (ID-3 Hazardous Waste Collection)

#### *PE-2 Watershed Education (Ongoing/Not Completed)*

The Watershed Education best management practice consists of two strategies; Public Signage and Student Education.

#### *Public Signage (Ongoing/Not Completed)*

The Public Signage strategy consists of three measureable goals.

##### *Develop a Public Infrastructure Signage Program (Not Started)*

This work has not yet been started, the expected implementation timeline is December 2020.

##### *Provide Signage at Stream Crossings or LIDA Infrastructure Facilities (Not Started)*

This work has not yet been started, the expected implementation timeline is December 2022.

##### *Marking 50 Unmarked Catch Basins a Year with "No Dumping, Drains to Stream" Language (Ongoing)*

The City installed 50 bi-lingual "No Dumping, Drains to Creek" catch basin markers in November 2018. Catch basins near the Terra Estates neighborhood in the northwest corner of the City were marked. The approximate boundary for the catch basins marked includes N Terrance Drive, Jones Street, Taylor Drive, and E Foothills Drive.

The City is in the process of implementing Cartegraph OMS, a new software operations management system. The City's Maintenance division began implementing the software program in late-2018, which is being used to manage infrastructure maintenance, resource tracking, request management, data collection and analysis. Each public works maintenance staff member has an OMS tablet that can be used to intersect with the City's GIS information to access different assets and keep track of maintenance activities. The analysis tools within the software allow for better evaluation of the

effectiveness of maintenance activities and ensure that assets throughout the City are being adequately inspected and maintained. As staff members become more adept within the system, it's anticipated that annual TMDL reporting should become more simplified on several fronts. The catch basins marked in 2018 have been noted in the Cartegraph OMS system.

#### *Student Education (Ongoing)*

In 2018 the City sponsored two Mad Science presentations. The first presentation occurred in April and was given to 250 student's kindergarten through second grade at Antonia Crater Elementary. The second presentation occurred in May and was given to 110 students in the first and second grades at Joan Austin Elementary.

In March 2018, City staff gave two (2) separate presentations to Environmental Science students at George Fox University in coordination with the Greater Yamhill Watershed Council. Topics discussed included the City's TMDL Plan, Water Management & Conservation Plan, Stream Corridor Overlay zone in the Municipal Code, Public Works Design and Construction Standards, Stormwater Master Plan, 1200-C Permits, and Stormwater Maintenance.

In July 2018, City staff gave a presentation as part of the "STEAM: Creators at Lunch" series in coordination with the Newberg Library and the National School Lunch Program. Staff gave a presentation about the City's three watersheds (Chehalem Creek, Hess Creek, and Springbrook) and how watersheds in general can be affected by erosion, pollutants, and dense urban housing. In total, approximately 35 children and 20 adults participated in the "crumpled paper as a watershed" activity and everyone took home their watershed art project with information about what watershed they live in within the City.

In December 2018, the Newberg SAIL (Support, Advocacy for Independence in Life) Program visited the City of Newberg. Eighteen students and six supporting staff members received a tour of the Maintenance Yard and learned about our City's watershed and water conservation efforts. The group then supported the Engineering Division by helping to construct Water Conservation Kits using what they learned about water conservation.

#### *2018 Adaptive Management*

The City of Newberg is not proposing to modify any measurable goals through adaptive management.

#### *Looking Ahead - 2019 Activities*

Under Measure No. 1, there are no measurable goals with completion dates in 2019. However, five of the seven measureable goals have a status of "ongoing" which means progress is made toward the goal each year via recurring activities.



## Measure No. 2 – Public Involvement

The Public Involvement measure has four best management practices which include reviewing the Stormwater Utility Fee, Public Participation in Stormwater Management, Public Participation in Reporting Stormwater Issues, and Public Participation in Educational Focus. These four best management practices are comprised of four (4) strategies and five (5) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Measure No. 2 – Public Involvement</b>			
PI-1 Stormwater Utility Fee	Participate in Citizen Rate Review Committee (CRRC) Meetings	Present stormwater funding needs to CRRC.	Document meeting attendance, adopted rates, and effective dates of rate changes.
PI-2 Public Participation in Stormwater Management	Provide Grant Funding for Water Quality Improvement or Watershed Awareness Projects	Provide a minimum of \$2,000 in a grant program to fund non-profit projects that fulfill goals of the TMDL plan.	Track number of funded projects, amount disbursed per project, stream affected, and either the number of stream miles affected or the number of participants.
PI-3 Public Participation in Reporting Stormwater Issues	Public Participation in Stormwater, Illicit Discharge, and Erosion Control Issues	Provide methods for citizens to report concerns during and after business hours. Notify public of available reporting methods.	Document methods and frequency of public notifications.
		Respond to public concerns.	Document number of stormwater, erosion control, and illicit discharge complaints reported by citizens and note resolutions.
PI-4 Public Participation in Determining Stormwater Educational Focus	Determine Focus of Stormwater Educational Messages to the Public	Conduct a public survey to revise and refine educational messages related to stormwater and the TMDL Implementation Plan.	Provide copy or link to survey and report results of the survey.

## 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described below.

### PI-1 Stormwater Utility Fee (Ongoing)

The Citizen's Rate Review Committee (CRRC) was started in 1992 and consists of volunteers from the public who meet every two years to review utility rates proposed by staff. After a discussion with the committee, the rates are presented by staff to the City Council for approval. New stormwater related rates were adopted on April 1, 2018 and can be seen below in Table 1.

Table 1: Stormwater Utility Fee adopted April 1, 2018

Municipal Services Statement Fees – Stormwater Service Charges	
Service Charge (\$/month)	\$10.30
Storm System Development Fee*	
Single Family – Equivalent Dwelling Unit (EDU)	\$358.64 flat fee
Other than Single Family	(Impervious Area/2877) x \$358.64

\*Revenues are used to maintain the City’s Stormwater System. This fee is collected for each new development that connects to or otherwise uses the City’s stormwater system and is determined by the square feet of impervious area. Impervious surface is the hard surface area which either prevents or retards entry of water into the soil mantle and/or causes water to run off the surface in greater quantities or at an increased rate of flow from that present under natural conditions. Impervious surface areas include, but are not limited to, rooftops, concrete or asphalt paving, walkways, patios, driveways, parking lots or storage areas and trafficked gravel or other surfaces which impede the natural infiltration or runoff of surface water. An equivalent dwelling unit (EDU) is equal to 2,877 square feet of impervious area.

#### PI-2 Public Participation in Stormwater Management (Ongoing)

In 2018, the City of Newberg provide \$630 dollars from the Watershed Grant Program to the Newberg School District for stormwater education modules at Antonia Crater Elementary and Joan Austin Elementary. At Antonia Crater Elementary, 250 students in grades kindergarten through second enjoyed the “Where’s the Water, Watson?” show, and at Joan Austin Elementary 110 students in first and second grades also enjoyed the “Where’s the Water, Watson?” show.

The City is in the process of revising the grant forms and selection criteria and will be making an effort in 2019 to do more public outreach about the Watershed Grant Program.

#### PI-3 Public Participation in Reporting Stormwater Issues (Ongoing)

The Public Participation in Reporting Stormwater Issues best management practice consists of two measureable goals.

##### Provide Methods for Citizens to Report Stormwater Concerns (Ongoing)

In 2018, the City used its website to provide a phone number for the public to call about stormwater issues/concerns.

##### Respond to Public Concerns (Ongoing)

The City categorizes concerns into four main categories which include illicit discharge, erosion control, flooding, and illegal dumping. Totals for each type of concern received in 2018 can be found in Table 2 and are inclusive of concerns received by both the

maintenance division and code enforcement. More information concerning incident resolution for illicit discharge concerns can be found in Appendix B.

*Table 2: 2018 Stormwater Concerns Received from the Public*

Types of Concerns	Number of Concerns Received					Total
	2018	2019	2020	2021	2022	
Illicit Discharge	1	-	-	-	-	1
Erosion Control	1	-	-	-	-	1
Flooding	7	-	-	-	-	7
Illegal Dumping	0	-	-	-	-	0

#### PI-4 Public Participation in Determining Stormwater Educational Focus (Incomplete, But Started)

This best management practice is scheduled for completion in June/July 2019. A draft set of survey questions has been prepared based on research done about different stormwater surveys completed by other public agencies. The survey question have not yet been reviewed by management staff which will need to occur prior to issuing the survey to the public.

#### 2018 Adaptive Management

The City of Newberg is not proposing to modify any measurable goals through adaptive management.

#### Looking Ahead - 2019 Activities

Under Measure No. 2, there is one measurable goal with a completion date in 2019. The City is scheduled to conduct a public survey to revise and refine educational messages related to stormwater and the TMDL Implementation Plan in June/July.

The remaining five of the six total measureable goals have a status of “ongoing” which means progress is made toward the goal each year via recurring activities.

### Measure No. 3 – Illicit Discharge Detection and Elimination (IDDE)

The Illicit Discharge Detection and Elimination measure has four best management practices which include Training Staff to Implement IDDE, Implementation of the IDDE Plan, Hazardous Waste Collection, and the Drug Take-Back Program which are comprised of six (6) strategies and nine (9) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Measure No. 3 – Illicit Discharge Detection and Elimination (IDDE)</b>			
ID-1 Train Staff to Implement IDDE Plan	Train Staff in Illicit Discharge Investigation and Spill Response	Train new staff members in illicit discharge investigation and spill response. Provide training in some aspect of illicit discharge investigation and spill response every five years for all applicable staff.	Track type of training (webcast, class, certification, on-the-job, etc.), number of employees trained, and the training subject (maintenance, response, investigation, sampling, etc.).
ID-2 Implement IDDE Plan	Conduct Illicit Discharge Inspections	Fieldscreen outfalls.	Inventory type, size, and location of public and private outfalls. Map existing and new development outfall locations in GIS.
		Investigate outfalls for illicit discharges.	Document location, number and types of samples taken, date, cause, and resolution.
	Respond to Illegal Dumps	Clean up illegal dumps.	Track number of illegal dumps, citations issued, and resolution.
	Respond to Illicit Discharges/Spills	Fire Department spill response.	Track date and cause of spills that occur. Document whether the spill reached the stormwater system or a stream and if water sampling was conducted. Document response resolution.
		Public Works illicit discharge/spill response.	Track date and cause of illicit discharges/spills that occur, identified illicit discharges from private wastewater laterals or from failing public infrastructure. Document whether the pollutant reached the stormwater system or a stream and if water sampling was conducted. Document response resolution.
		Provide spill response cards and spill response kits on municipal trucks and sweepers.	Track number of municipal trucks and sweepers with spill response cards and spill kits. Document the number of spill kits used annually in response to spills.
ID-3 Hazardous Waste Collection	Provide Opportunity for Residents to Dispose of Hazardous Waste	Offer free hazardous waste collection service twice per year to City residents.	Track volume of waste received during collection events.

ID-4 Drug Take-Back Collection	Provide Opportunity for Residents to Dispose of Unused Medication	Offer free unused medication collection service to City residents.	Track the volume of unused medication collected annually.
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## 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described below.

### ID-1 Train Staff in Illicit Discharge Investigation and Spill Response (Ongoing)

Staff training on illicit discharge was done using the Excal Visual training video “*A Grate Concern: Illicit Discharge Detection & Elimination*.” The engineering division (six staff members) watched the video and had a discussion on illicit discharge and spill response in January 2018, and the maintenance division managers (five staff members) watched the video and had a discussion on illicit discharge and spill response in February 2018.

### ID-2 Implement IDDE Plan (Ongoing)

The Implementation of the IDDE Plan consists of three strategies and six measurable goals.

#### *Conduct Illicit Discharge Inspections (Ongoing)*

The strategy for conducting illicit discharge inspections consists of two measurable goals.

##### *Fieldscreen Outfalls (Ongoing)*

The City screens outfalls during stormwater system maintenance and stream assessments. As maintenance performs work throughout the system, requests are made to the GIS department to update asset maps.

Additionally, the City did a field walk/investigation of one stream mile on Hess Creek in September 2018. During this field walk, outfalls were observed. No observations were made during the field walk/investigation that resulted in updates to the City’s asset management system.

##### *Investigate Outfalls for Illicit Discharges (Ongoing)*

There were no events in 2018 that warranted samples being taken at an outfall location as a result of a known or suspected illicit discharge.

As part of the City’s Stormwater Credit Program, one participant does perform its own sample testing at discharge locations. These records are kept by the applicant and they coordinate directly with DEQ to meet requirements of their 1200-Z permit.

#### *Respond to Illegal Dumps (Ongoing)*

The City of Newberg had no reported or identified illegal dumps in 2018.

#### *Respond to Illicit Discharges/Spills (Ongoing)*

The strategy for responding to illicit discharges/spills consists of three measurable goals.



#### Fire Department Spill Response (Ongoing)

The Fire Department, Tualatin Valley Fire & Rescue (TVF&R) responded to eight (8) “spill” incidents in 2018. In all cases the spills were either absorbed or contained and oils/petroleum were prevented from entering storm drains.

#### Public Works Illicit Discharge/Spill Response (Ongoing)

Public Works Maintenance Division did not respond to any spills within the City in 2018. However, they did identify an illicit discharge which was then coordinated with DEQ for further investigation (Appendix B).

#### Spill Response Cards/Kits on Municipal Trucks and Sweepers (Ongoing)

The City of Newberg has PIG® Truck Spill Kits available on ten (10) public works vehicles. Maintenance staff are made aware of these spill kits and the associated instruction manual.

#### ID-3 Hazardous Waste Collection (Ongoing)

Yamhill County Solid Waste (YCSW) continues to sponsor hazardous waste collection events for Newberg in May and for McMinnville in October. Both events are open to all Yamhill County residents and it is an opportunity for residents to safely dispose of hazardous items for free. Annual totals from the hazardous waste collection events can be seen in Table 3.

*Table 3: Yamhill County Solid Waste: Hazardous Waste Collection Events Summary*

Year	City of Newberg Event (May)			City of McMinnville Event (October)		
	Hazardous Waste (pounds)	Paint (pounds)	Medications (pounds)	Hazardous Waste (pounds)	Paint (pounds)	Medications (pounds)
2018	32,697	22,500	36.3	31,679	9,500	480
2019	-	-	-	-	-	-
2020	-	-	-	-	-	-
2021	-	-	-	-	-	-
2022	-	-	-	-	-	-
Total	32,697	22,500	36.3	31,679	9,500	480

#### ID-4 Drug Take-Back Collection (Ongoing)

The City of Newberg has a Medication Disposal Site which is located inside the lobby of the City’s Public Safety Building. The safe drop box is for the public to dispose of unneeded or

expired medications. Over the counter and pet medications are also accepted at the drop box location. Medications collected are incinerated so they don't end up in the garbage or flushed down the drain, avoiding contamination of soil and drinking water. Annual totals from the Medication Take-Back Program can be seen in Table 4.

*Table 4: City of Newberg Medication Take-Back Program Summary*

Year	Medication Collected (pounds)
2018	887.5
2019	-
2020	-
2021	-
2022	-
Total	887.5

#### [2018 Adaptive Management](#)

The City of Newberg is not proposing to modify any measurable goals through adaptive management.

#### [Looking Ahead - 2019 Activities](#)

Under Measure No. 3, there are no measurable goals with completion dates in 2019. All nine measureable goals have a status of "ongoing" which means progress is made toward the goal each year via recurring activities.

## Measure No. 4 – Construction Site Stormwater Runoff Control

The Construction Site Stormwater Runoff Control measure has two best management practices which include Training Staff in Erosion and Sedimentation Control (ESC) and Implementation of the Erosion and Sediment Control Program which are comprised of two (2) strategies and four (4) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Measure No. 4 – Construction Site Stormwater Runoff Control</b>			
CS-1 Train Staff in Erosion and Sediment Control (ESC)	Train Staff in Plan Review, Site Inspection, and Enforcement of ESC Program	Train new staff whose responsibilities include erosion and sediment control plan review and enforcement. Provide refresher training to all staff involved in ESC every three years.	Document number of staff trained and type of training (on-the-job training, certification, or recertification).
CS-2 Implement Erosion and Sediment Control Program	Implement ESC Program	Conduct ESC plan review.	Document location and type (commercial, industrial, single-family residential, etc.) of all construction project plan reviews. Document which project obtained a DEQ 1200-C permit. Develop and send a notice letter to applicants on wet weather best management practices as weather conditions change.
		Conduct site inspections at least once during active construction by trained or experienced staff.	Provide number of erosion and sedimentation control inspections for each project. Document location and type (commercial, industrial, single-family residential, etc.) of construction project.
		Enforce ESC ordinances.	Report number of warning letters or non-compliance citations by project and resolution.

### 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described below.

#### CS-1 Train Staff in Erosion and Sediment Control (Ongoing)

Each department or division within the City is responsible for their own employee training. No specific ESC training was attended in 2018, however the topic of ESC was discussed at several of the trainings noted in best management practice DS-2 Train Staff in Stormwater Management. One Engineering Division staff member is a Certified Erosion and Sedimentation Control Lead.

#### CS-2 Implement Erosion and Sediment Control Program (Ongoing)

The best management practice for implementing the ESC Program consists of three measureable goals.

#### [Conduct ESC Plan Review \(Ongoing\)](#)

Erosion and Sediment Control plans reviewed for major projects are listed in Appendix C. Projects exceeding 1-acre are required to obtain DEQ 1200-C permits and are noted, inspections of these permits are conducted by DEQ. The City had four construction projects in 2018 that were more than a single-family home and less than 1-acre that required City issued Erosion and Sediment Control Permits (see Appendix C). The remainder of the City issued Erosion and Sediment Control Permits in 2018, were reviewed and issued for 54 single-family residential developments.

In 2018 staff gave verbal reminders to permit holders on the upcoming wet weather season and associated best management practices.

#### [Conduct Site Inspections \(Ongoing\)](#)

Staff reported that there were 54 single-family residential ESC permits with associated inspections in 2018 throughout the City of Newberg.

#### [Enforce ECS Ordinances \(Ongoing\)](#)

Staff reported no warning letters or non-compliance citations were issued in 2018.

#### [2018 Adaptive Management](#)

The City of Newberg is not proposing to modify any measurable goals through adaptive management.

#### [Looking Ahead - 2019 Activities](#)

Under Measure No. 4, there are no measurable goals with completion dates in 2019. All four measureable goals have a status of “ongoing” which means progress is made toward the goal each year via recurring activities.

## Measure No. 5 – Post-Construction Runoff Control

The Post-Construction Runoff Control measure has three best management practices which include Develop a Stormwater Management Program, Train Staff in Stormwater Management, and Implement the Stormwater Management Program which are comprised of five (5) strategies and eight (8) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Measure No. 5 – Post-Construction Runoff Control</b>			
DS-1 Develop Stormwater Management Program	Update Stormwater Development Manuals and Standard Details	Update stormwater design standards manual and standard drawings. Notify development community of proposed new requirements before adoption.	Provide summary of changes and link to new design standards when adopted.
DS-2 Train Staff in Stormwater Management	Train Staff in Stormwater Management	Provide training opportunities for staff in watershed and stormwater management.	Track type of training (webcast, class, on-the-job, certification, etc.), number of employees trained, and the training subject (plan review, inspection, enforcement, etc.)
DS-3 Implement Stormwater Management Program	Require Stormwater Management for Development and Redevelopment	Require stormwater plan submittals and conduct plan reviews.	Document number of construction plan submittals, plan reviews, project type (commercial, institutional, residential, etc.), size, and location.
		Require stormwater management per the Stormwater Development Manuals and Standard Details.	Document number and type (detention basin, flow dissipater, raingarden, filtration swale, etc.) of stormwater facilities required for each project.
		Conduct pre-construction conferences to inform contractors about stormwater requirements.	Document number of pre-construction conferences, project type (commercial, institutional, residential, etc.), size, and location.
	Improve Watershed Management	Evaluate stormwater projects for treatment opportunities (new installations vs. existing infrastructure upgrades) i.e. Stormwater Master Plan.	Summarize hierarchy used for screening. Document location and number of sites reviewed, drainage area, and result of evaluation.
		Implement stormwater projects for treatment opportunities (new installations vs. existing infrastructure upgrades) i.e. Stormwater Master Plan.	Document number of projects including location, size, type (LIDA, traditional, etc.), and drainage area.
	Optimize Water Quality	Inspect public stormwater facilities post-construction.	Conduct a post-construction stormwater facility transfer. Complete final inspection at end of the two-year maintenance agreement. Document facility in GIS/asset management program, obtain and file stormwater as-built drawings, and facility maintenance plan.

## 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described below.

### DS-1 Develop Stormwater Management Program (Incomplete, But Started)

This best management practice includes updates to standard drawings in December 2019, and updates to the stormwater design standards in December 2020 (target dates). Based on both staff feedback and feedback from the construction community, updates are currently being made to the City's standard drawings to provide more clarity where necessary. It's anticipated that these changes should be finalized by December 2019.

### DS-2 Train Staff in Stormwater Management (Ongoing)

Each department or division within the City is responsible for their employee training. The following trainings were attended in 2018:

- One Engineering Division staff member attended the TMDL designated management agency (DMA) meetings to learn from other DMA coordinators throughout the Willamette basin.
- Two Engineering Division staff members attended the Mid-Willamette Erosion Control and Stormwater Management Summit in January 2018.
- One Engineering Division staff member attended the ACWA Stormwater Summit in May 2018.
- One Engineering Division staff member attended the Pacific Northwest Clean Water Association (PNWCA) Annual Conference in October 2018.
- The Maintenance Division held a best management practice training for all staff members on LIDA facilities in February 2018.
- Five Maintenance Division staff members attended ODOT Short-School in March 2018, and two staff members attended training called "What Makes Emergency Response Successful?" which covered products for stormwater flooding and management in emergency events.

### DS-3 Implement Stormwater Management Program (Ongoing)

The best management practice Implement Stormwater Management program consists of three strategies; Require Stormwater Management for Development and Redevelopment, Improve Watershed Management, and Optimize Water Quality.

#### *Require Stormwater Management for Development and Redevelopment (Ongoing)*

The strategy Require Stormwater Management for Development and Redevelopment consists of three measurable goals.

##### *Require Stormwater Plan Submittals and Conduct Plan Reviews (Ongoing)*

The City requires that all development/redevelopment projects that create a net new impervious surface area that exceeds 500 square feet of either public or private property must treat and detain stormwater.

The projects found in Appendix D represent construction plans received and reviewed for stormwater management in regards to development and redevelopment. The project type, size, and location are noted.

Additionally the Engineering Division participated in 45 pre-application meetings in 2018 where City stormwater requirements were discussed with applicants.

#### [Require Stormwater Management per the Stormwater Development Manuals and Standard Details \(Ongoing\)](#)

Appendix D notes the number and type of stormwater facilities constructed for each project that was either completed or started in 2018. Public stormwater facilities are then added to the City's GIS system once a development's as-builts are provided to the City.

Private stormwater facilities are required to have recorded Stormwater Maintenance Agreements with the City of Newberg which provide guidance on maintenance activities into perpetuity.

#### [Conduct pre-construction conferences to inform contractors about stormwater requirements \(Ongoing\)](#)

The City typically holds pre-construction conferences for all public improvement projects, and for larger private development projects within the City. Pre-construction meetings are noted in Appendix D. The City held eight pre-construction meetings for projects that were either completed or started in 2018.

#### [Improvement Watershed Management \(Ongoing\)](#)

The strategy Improve Watershed Management consists of two measureable goals.

##### [Evaluate stormwater projects for new treatment opportunities](#)

Each year the City establishes a 5-Year Capital Improvement Plan (CIP) that balances infrastructure needs based on a variety of sources including the Stormwater Master Plan, City Council goals, operational needs, and regulatory obligations.

The stormwater projects included in the fiscal year (FY) 2018-2019 project list include the following:

- **S. Blaine Street; Hancock to 11<sup>th</sup> Street** – Correct flooding problems and upgrade old pipe sections that no longer meet City standards (material type and sizing).
- **N. Elliot Road** – There is currently no storm drainage in N. Elliot Road resulting in frequent ponding alongside the roadway. This project would add an 18-inch storm pipe to the system as part of a larger roadway project.
- **N. Springbrook Road** – There are existing gaps in the public storm drainage system in N. Springbrook Road, improvements will be made as part of the larger street project.

- **800 Block of Wynooski Street** – Correct a current pipe and outfall that is eroding an area east of Wynooski Street.

These projects are scheduled to be constructed over the next 5-years and are consistent with the City’s stormwater infrastructure needs. As projects move toward preliminary design, they will be reviewed for treatment opportunities based on the City’s established stormwater facility hierarchy as noted in the Public Works Design and Construction Standards Section 4.6.8 Facility Selection Hierarchy.

#### [Implement stormwater projects for treatment opportunities](#)

The S. Blaine Street project is a very large undertaking as noted in the Stormwater Master Plan. The City has elected to break the project out into smaller segments due to funding constraints. The first two phases of construction are complete (from approximately 405 S Blaine Street south to the tributary to Chehalem Creek) and the City is planning to construct the next phase in FY 2021/2022 (from approximately 405 S Blaine Street north to Hancock Street).

The 800 Block of Wynooski Street project was started in 2018 with the support of the George Fox University engineering program under the guidance of the City’s Public Works Director. This project is in the engineering phase and is correcting erosion in the vicinity of Hess Creek.

#### [Optimize Water Quality \(Ongoing\)](#)

The City requires a two-year maintenance agreement for all private development of public stormwater facilities. As an example, if a subdivision is built and requires a detention pond to mitigate stormwater, the development enters into a two-year maintenance agreement with the City to maintain that stormwater facility through the establishment phase. When the two year maintenance agreement is coming to an end, a final inspection is scheduled and completed to allow for the developer to correct any problems before the stormwater facility becomes the responsibility of the City.

In 2018 the following stormwater facilities were transferred from the private maintenance agreements to public stormwater maintenance:

- Highlands at Hess Creek Phase 4 and 5 (Detention Pond)
- Columbia Estates (Detention Pond)
- Nova Grace (Detention Pond, Flow Dissipater)

These facilities have been added to the City’s asset management program (both GIS and Cartegraph OMS), and as-builts are available for review through an internal staff portal.

#### [2018 Adaptive Management](#)

The City of Newberg is not proposing to modify any measurable goals through adaptive management.



### Looking Ahead - 2019 Activities

Under Measure No. 5, there is one measurable goal with a completion date in 2019. The City is scheduled to update standard drawings related to stormwater in December 2019. This work has already begun and is on track for completion.

The remaining seven of the eight total measureable goals have a status of “ongoing” which means progress is made toward the goal each year via recurring activities.

## Measure No. 6 – Pollution Prevention in Municipal Operations

The Pollution Prevention in Municipal Operations has three best management practices which include the Operations and Maintenance (O&M) Manual, Operations and Maintenance Training, and Stormwater Infrastructure Maintenance. These three best management practices are comprised of five (5) strategies and fourteen (14) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Measure No. 6 – Pollution Prevention in Municipal Operations</b>			
OM-1 Operations and Maintenance (O&M) Manual	Update O&M Policies	Review existing O&M practices.	Document current procedures in an O&M manual.
		Update O&M manual to optimize water quality.	Document modifications to manual.
	Update Infrastructure Procedures	Review and evaluate the need to update the catch basin cleaning program.	Document current procedures and any modifications to optimize water quality.
		Implement revised catch basin cleaning program.	Track progress.
	Update Street Sweeping Procedures	Review and evaluate the need to update the street sweeping program.	Document current procedures and any modifications to optimize water quality
		Implement revised street sweeping program.	Track progress.
OM-2 Operations and Maintenance Training	Train staff in infrastructure and street sweeping procedures that optimize water quality	Train new staff in stormwater maintenance duties in O&M procedures manual.	Track type of training (webcast, class, certification, on-the-job, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.)
		Train all staff in revised O&M procedures manual every three years.	Track type of training (webcast, class, certification, on-the-job, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.)
OM-3 Stormwater Infrastructure Maintenance	Maintain stormwater infrastructure	Clean catch basins.	Track number of catch basins cleaned per year.
		Place trash racks over major inlets.	Track number and percentage of major inlets installed with trash racks.
		Inspect, clean, repair, replace, and install stormline.	Track length of stormline inspected. Document length of stormline cleaned. Document length and location of stormline repaired or replaced. Track length, diameter and location of stormline installed.

		Inspect, repair, and replace culverts.	Document location of repaired and replaced culverts and reason for repair or replacement. For newly installed culverts, document new culvert size, material, and elevation from culvert bottom to stream bottom.
		Inspect and repair public stormwater facilities.	Document number of inspections, type of facility (detention basin, LIDA facilities, vegetated swale, etc.) and whether facilities were categorized as excellent, fair, or poor condition.
		Sweep streets every 4-6 weeks.	Track curb miles swept and debris collected per curb mile each year. Document disposal method.

## 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described below.

### OM-1 Operations and Maintenance Manual (Complete/Ongoing/Incomplete, But Started/Not Started)

The Operations and Maintenance Manual best management practice consists of three strategies; Update O&M Policies, Update Infrastructure Procedures, and Update Street Sweeping Procedures.

#### Update O&M Policies

The Update O&M Policies strategy consists of two measurable goals.

##### Review existing O&M practices (Completed)

The City developed an Operations and Maintenance Manual in 2018 to document current maintenance procedures as they relate to stormwater. The Manual was completed in early December and sent to DEQ on December 10, 2018. The Manual covers stormwater work flow, public participation in reporting stormwater issues, stormwater inspection and cleaning, stormwater repair and replacement, illicit discharge investigation and spill response, the catch basin cleaning program, the street sweeping program, and the newly deployed operations management program called Cartegraph OMS.

##### Update O&M manual to optimize water quality (Not Started)

The Operations and Maintenance Manual is scheduled to be reviewed and updated every three years. The manual is scheduled for a review and update in December 2022, and this work has not yet been started.

#### Update Infrastructure Procedures

The Update Infrastructure Procedures strategy consists of two measurable goals.

#### *Review and evaluate the need to update the catch basin cleaning program (Incomplete, But Started)*

As part of developing the Stormwater Operations and Maintenance Manual and the implementation of the City's new operations management program called Cartegraph OMS, the existing catch basin cleaning program was discussed. Attribute tables for catch basins inside of the Cartegraph OMS system were modified to capture the data most relevant to our maintenance division and to support reporting as part of the TMDL plan. This initial work will be reviewed and evaluated by July 2019 to determine if additional modifications need to be made.

#### *Implement revised catch basin cleaning program (Ongoing)*

The City continues to implement the existing catch basin cleaning program annually, and as the program is revised/updated in July 2019 will follow any modifications made. Information regarding catch basins cleaned annually can be found in section OM-3 Stormwater Infrastructure Maintenance.

#### *Update Street Sweeping Procedures*

The Update Street Sweeping Procedures strategy consists of two measurable goals.

##### *Review and evaluate the need to update the street sweeping program (Not Started)*

The City is scheduled to review and evaluate the need to update the street sweeping program in July 2020. As such, this task has not yet been started.

However, as of September 2018 the City is undertaking a pilot program to have a contractor support with street sweeping along OR99W between the western city limits and Villa Road. This work must be completed at night and put stress on City maintenance division employees who were switching back and forth between day shifts and night shifts. This pilot program is expected to last for an entire year and will be evaluated at the completion to determine if the City wants to continue with this service.

##### *Implement revised street sweeping program (Ongoing)*

The City continues to implement the existing street sweeping program annually, and as the program is revised/updated in July 2020 will follow any modifications made.

#### *OM-2 Operations and Maintenance Training (Ongoing/Incomplete, But Started)*

The Operations and Maintenance Training best management practice has one strategy which is to train staff in infrastructure and street sweeping procedures that optimize water quality. The strategy has two (2) measureable goals.

##### *Train new staff in stormwater maintenance duties in O&M procedures manual (Ongoing)*

The Maintenance Division proactively trains new employees on the day to day tasks associated with stormwater maintenance duties. Much of this training is "on-the-job" and is taught through the experience of completing tasks like cleaning catch basins or stormwater lines. Additionally the following training was attended by the Maintenance Division staff members:

- The Maintenance Division held a best management practice training for all staff members on LIDA facilities in February 2018.
- Five Maintenance Division staff members attended ODOT Short-School in March 2018, and two staff members attended training called “What Makes Emergency Response Successful?” which covered products for stormwater flooding and management in emergency events.

#### Train all staff in revised O&M procedures manual every three years (Incomplete, But Started)

The City developed an Operations and Maintenance Manual to document current maintenance procedures as they relate to stormwater. The Manual was completed in early December and sent to DEQ on December 10, 2018. A presentation of the manual to the entire Maintenance Division is currently being coordinated and is expected to be complete in March 2019. This presentation will then be given every three years in coordination with the manual update.

#### OM-3 Stormwater Infrastructure Maintenance (Ongoing)

The Stormwater Infrastructure Maintenance best management practice has one strategy which is to maintain stormwater infrastructure. The strategy has six (6) measurable goals.

##### Clean catch basins (Ongoing)

There were 75 catch basins/grates cleaned in 2018, as is shown in Table 5.

##### Place trash racks over major inlets (Ongoing)

There were no trash racks installed in 2018, as is shown in Table 5.

##### Inspect, clean, repair, replace, and install stormline (Ongoing)

The amounts of stormline inspected, cleaned, repaired, replaced, and installed in 2018 can be seen in Table 5. It should be noted that a migration between the old data collection system and the new Cartegraph OMS asset management system occurred in October 2018, there were problems with some of the old data migrating into the new software so the number presented may not fully represent all of the maintenance activities in 2018.

##### Inspect, repair, and replace culverts (Ongoing)

The amounts of culverts inspected, repaired, and replaced in 2018 can be seen in Table 5. It should be noted that a migration between the old data collection system and the new Cartegraph OMS asset management system occurred in October 2018, there were problems with some of the old data migrating into the new software so the number presented may not fully represent all of the maintenance activities in 2018.

Table 5: Stormwater Infrastructure Maintenance Activities from 2018 to 2022

Stormwater Maintenance Activity	2018	2019	2020	2021	2022
Catch Basin/Grates Cleaned	75	-	-	-	-
Trash Racks Installed	0	-	-	-	-
Stormline Inspected, feet	2,089	-	-	-	-
Stormline Cleaned, feet	4,390	-	-	-	-
Stormline Repaired, feet	0	-	-	-	-
Stormline Replaced, feet	0	-	-	-	-
Stormline Installed, feet*	0	-	-	-	-
Ditch Cleaned, feet	125	-	-	-	-
Culvert Inspected	0	-	-	-	-
Culvert Repaired	0	-	-	-	-
Culvert Replaced	0	-	-	-	-

\*This value represents stormline installed by the City's Maintenance Division only, and is not inclusive of new development within the City.

#### Inspect and repair public stormwater facilities (Ongoing)

The City inspects and repairs public stormwater facilities on an annual basis, 2018 activities can be seen in Table 6. In 2018, visual inspections of public stormwater facilities including detention areas, spillways, and water quality swales was done in July 2018. Twenty six public stormwater facilities were visually inspected and rated.

Four facilities were identified in poor condition. The following facilities were cleaned and repaired as part of the George Fox University Serve Day in September 2018, where approximately 30 college students were broken into three groups and under the direction of staff in the Maintenance Division performed repairs.

- STS I0901 – N Springbrook Road north of Middle Brook Drive (Detention Area)
- STS G1103 – Renfro Way (Detention Area)
- STS J1202 – Worth Boulevard south side (Detention Area)
- STS G0801 – E Edgewood Dr east of N College St (Detention Area)

It should also be noted that the 12 LIDA facilities along N College Street were also cleaned by George Fox Students. These stormwater facilities were replanted in January 2018, and so students removed newly sprouted weeds and trash from those facilities as part of keeping them on track for new growth success.

*Table 6: Stormwater Facility Activities from 2018-2022*

Stormwater Facility Activities		2018	2019	2020	2021	2022
Total Facilities (Detention Areas, Spillways, and Water Quality Swales)		83	-	-	-	-
Inspections		26	-	-	-	-
Type	Detention Area	21	-	-	-	-
	Spillway	2	-	-	-	-
	Water Quality Swale	3	-	-	-	-
Condition	Excellent	4	-	-	-	-
	Fair	18	-	-	-	-
	Poor	4	-	-	-	-
Facility Repairs		4	-	-	-	-

#### [Sweep streets every 4-6 weeks \(Ongoing\)](#)

The City cleans streets on a 5-week rotation. In 2018, just over one thousand cubic yards of debris were removed while sweeping 3,808 curb miles. As has been noted previously, the City also has a pilot program underway which started in September 2018 where a contracted street sweeping company is sweeping OR99W from the western city limits to Villa Road. Information regarding the contracted street sweeping activities is included in Table 7.

Table 7: Street Sweeping Activities from 2018 to 2022

Street Sweeping Activities (Public and Private)	2018	2019	2020	2021	2022
Sweeping Debris (Cubic Yards)	1,009	-	-	-	-
Street Sweeping Miles	3,808	-	-	-	-
Cubic Yard per Mile Swept	0.26	-	-	-	-
Contracted Sweeping Debris (Cubic Yards)	95*	-	-	-	-
Contracted Street Sweeping Miles	64*	-	-	-	-
Contracted Cubic Yard per Mile Swept	1.5*	-	-	-	-

\*A pilot program was started in September 2019 to have OR99W swept between the western city limits and Villa Road using a third party contractor. That section of OR99W is swept twice a month.

### 2018 Adaptive Management

The City of Newberg is not proposing to modify any measurable goals through adaptive management.

### Looking Ahead - 2019 Activities

Under Measure No. 6, there are two measurable goals with a completion dates in 2019. The measurable goal “review and evaluate the need to update the catch basin cleaning program” is scheduled to be completed in July 2019. Some of the work for this goal was started with the completion of the Stormwater Operations and Maintenance Manual.

The other measurable goal due in February 2019 is to “train all staff in the revised Operations and Maintenance Manual every three years.” Coordination for this training has been started and the training is anticipated to occur in March 2019.

Of the 14 total measurable goals under Measure No. 6, one goal has been completed, two goals are incomplete but started, two goals have not yet started, and the remaining nine measureable goals have a status of “ongoing” which means progress is made toward the goal each year via recurring activities.



## Temperature

The Temperature criteria includes Maintaining Existing Stream Vegetation, Increase Effective Shade, and conducting Stream Assessments. These three (3) best management practices are comprised of three (3) strategies, and seven (7) measurable goals which are listed below and a status summary can be found in Appendix A:

Best Management Practice	Strategy	Measureable Goal	Performance Measure
<b>Temperature</b>			
T-1 Maintain Existing Stream Vegetation	Use Municipal Code and other Measures to Maintain Stream Vegetation	Update Municipal Code that can affect stream health.	Update ordinances that affect stream vegetation.
		Update Stream Corridor Overlay.	Document changes to the Stream Corridor Overlay map and code based on wetland inventory and property annexation.
T-2 Increase Effective Shade	Increase Shade along Streams within the City	Continue with established Trees for Streams Program. Provide incentives (free or reduce cost native plant materials) for citizens to plant trees, shrubs, and grasses along tributaries or streams within the City limits.	Document watershed and number of native plant types (trees, shrubs, grasses) planted per year.
T-3 Stream Assessment	Assess Stream Health and Canopy Coverage	Assess at least one stream mile annually for vegetative ground cover, stream channel configuration, and canopy coverage.	Document results of assessment.
		Complete a wetland inventory that encompasses the Urban Reserve areas. Update wetland inventory when Department of Land Conservation and Development (DLCD) provides funding for City's comprehensive plan periodic review.	Track progress. Provide link to wetland inventory and map.
		Develop stream temperature monitoring program.	Document procedures and identify locations for sampling.
		Implement stream temperature monitoring program.	Document sampling locations, dates, and results.

## 2018 TMDL Activities Completed

Activities completed in 2018 for each measurable goal are described.

#### T-1 Maintain Existing Stream Vegetation (Ongoing)

The best management practice Maintain Existing Stream Vegetation has one strategy which is to use the Municipal Code and other measures to maintain stream vegetation. The strategy has two (2) measureable goals.

##### [Update Municipal Code that can affect stream health \(Ongoing\)](#)

The City had no ordinances adopted in 2018 that would affect stream health.

##### [Update Stream Corridor Overlay \(Ongoing\)](#)

There were no code changes or map changes to the Stream Corridor Overlay in 2018.

#### T-2 Increase Shade along Streams within the City (Ongoing)

The City continues to promote and facilitate a Trees for Streams Program in coordination with the Northwest Oregon Restoration Partnership (NORP). Native plant materials are purchased at a reduced cost from NORP in exchange for City volunteer hours each year, in 2018 the City's plant invoice was \$131.00. The City then provides native plant materials for free to interested property owners within the city limits whose properties abut Chehalem Creek, Hess Creek, Spring Brook or tributaries to these stream systems. This program gives the City an opportunity to build relationships with private land owners who own the majority of the property along the City's stream systems, and to stabilize stream temperatures within the City by increasing the amount of shade. Native plant materials provided to residents in 2018 can be seen in Figure 3 and Table 8.

In 2018, two Newberg citizens participated in the Trees for Streams Program and both were located in the Chehalem Creek Watershed. These land owners planted natives along a total of 0.02 miles of stream/tributary and positively impacted a total of 0.29 riparian acres.



*Figure 3: 2018 Plants received from NORP and distributed to Newberg Residents*

Table 8: Trees for Streams Program Native Plant Totals from 2018 to 2022

	2018	2019	2020	2021	2022	Total
Chehalem Creek Watershed						
Trees	19	-	-	-	-	19
Shrubs	24	-	-	-	-	24
Groundcovers	5	-	-	-	-	5
Hess Creek Watershed						
Trees	5	-	-	-	-	5
Shrubs	12	-	-	-	-	12
Groundcovers	8	-	-	-	-	8
Spring Brook Watershed						
Trees	5	-	-	-	-	5
Shrubs	38	-	-	-	-	38
Groundcovers	0	-				0
Total	116	-	-	-	-	116

#### T-3 Stream Assessment (Ongoing/Incomplete, But Started/Not Started)

The best management practice Stream Assessment has one strategy to Assess Stream Health and Canopy Coverage. The strategy has four (4) measureable goals.

*Assess at least one stream mile annually for vegetative ground cover, stream channel configuration, and canopy coverage (Ongoing)*

In March 2018, the City assessed approximately 0.2 stream miles adjacent to the Friendsview Retirement Village between Fulton Street and the railroad along Hess Creek. This visit was done in coordination with George Fox University and the Yamhill County Soil and Water Conservation District to prepare for future restoration efforts (invasive removal, native plantings, and deer resistant tree protection) that occurred in September 2018 and in February 2019.

In September 2018, the City assessed approximately 1.2 stream miles of Hess Creek between OR99W/Hoover Park to the City's Waste Water Treatment Plant. This stream walk was done in coordination with the Maintenance Division and was used to evaluate

both the stream corridor and the City's wastewater infrastructure which follows Hess Creek in this section.

In the 1.4 total miles of stream assessments completed in March and September, qualitative assessments were done concerning vegetative ground cover, stream channel configuration, and canopy coverage.

[Complete a wetland inventory that encompasses the Urban Reserve areas. Update wetland inventory when Department of Land Conservation and Development \(DLCD\) provides funding for City's comprehensive plan periodic review \(Ongoing\)](#)

The Department of Land Conservation and Development (DLCD) is not currently funding periodic reviews for comprehensive plan updates. At the time were DLCD has identified funding, a wetland inventory of the City's urban reserve area will likely be included in Newberg's Comprehensive Plan update.

[Develop stream temperature monitoring program \(Incomplete, But Started\)](#)

The development of the stream temperature monitoring program is schedule to be complete in July 2019. Some work has been started, but the majority of the program development is expected to occur over the coming months.

[Implement stream temperature monitoring program \(Not Started\)](#)

The implementation of the stream temperature monitoring program is not scheduled to be completed in May 2020. No progress has been made on this goal.

## [2018 Adaptive Management](#)

The City of Newberg is not proposing to modify any measurable goals through adaptive management.

## [Looking Ahead - 2019 Activities](#)

Under the Temperature best management practice there is one measurable goal with a completion date in July 2019. The measurable goal is to "develop a stream temperature monitoring program" which is scheduled to be complete in July 2019. Some work for this goal has been started.

Of the seven (7) total measurable goals under Temperature, one (1) goal is incomplete but started, one (1) goal has not yet started, and the remaining five (5) measureable goals have a status of "ongoing" which means progress is made toward the goal each year via recurring activities.

## [Next Steps](#)

As has been documented in the annual report the City of Newberg made a significant effort in 2018 to continue to protect water quality and the environment within the City through seven focus areas. Looking forward to the 2019 plan year, the City will continue to make progress on the "ongoing" measurable goals, and has identified the following items to be completed in 2019:

- **PI-4 Public Participation in Determining Stormwater Educational Focus:** Conduct a public survey to revise and refine educational messages related to stormwater and the TMDL Implementation Plan (June/July 2019)
- **DS-1 Develop Stormwater Management Program:** Update stormwater standard drawings and notify the development community of proposed new requirements/modifications before adoption (December 2019)
- **OM-1 Operations and Maintenance (O&M) Manual:** Review and evaluate the need to update the catch basin cleaning program (July 2019)
- **OM-2 Operations and Maintenance Training:** Train all staff in revised O&M procedures manual every three years (February 2019)
- **T-3 Stream Assessment:** Develop stream temperature monitoring program (July 2019)

We look forward to our continued stewardship of the Chehalem Creek, Hess Creek, and Spring Brook watersheds.

## Appendices

[Appendix A: City of Newberg TMDL Implementation Matrix 2018-2022](#)

[Appendix B: Illicit Discharge Investigations 2018-2022](#)

[Appendix C: Construction Site Stormwater Management 2018-2022](#)

[Appendix D: Post-Construction Stormwater Management 2018-2022](#)

## Appendix A: City of Newberg TMDL Implementation Matrix 2018-2022

Appendix A: City of Newberg TMDL Implementation Matrix 2018-2022 (Update 11/28/2018)

Best Management Practice	Strategy	Measureable Goal	Performance Measure	Expected Implementation Timeline	2018 Status	Pollutants		
						Mercury	Bacteria	Temperature
Measure No. 1 – Public Education								
PE-1 Stormwater Education	Website Education	Provide stormwater information on the City’s website.	Provide general stormwater information and website links to the annual TMDL Implementation Plan.	Ongoing	Ongoing	X	X	X
	Citizen Group Education	Present stormwater information to interested citizen groups at local venues.	Track number of presentations, presentation messages, and number of participants (if available).	Ongoing	Ongoing	X	X	X
	Water Quality Report	Provide stormwater education in the City’s annual Water Quality Report.	Provide website links to the annual Water Quality Report, and track stormwater messages included in the report.	Ongoing	Ongoing	X	X	X
PE-2 Watershed Education	Public Signage	Develop public infrastructure signage program.	Develop public infrastructure signage program to determine sign locations and messaging.	December 2020	Not Started	X	X	X
		Provide signage at stream crossings or LIDA infrastructure facilities.	Track number of signs installed and associated messages.	December 2022	Not Started	X	X	X
		Mark 50 unmarked catch basins a year with “No Dumping, Drains to Stream” type language.	Track number of catch basins marked per year. Prepare GIS map showing coverage of locations that are permanently marked or marked with after-market plastic labels.	Ongoing	Ongoing	X	X	X
	Student Education	Provide watershed education to students.	Track number of presentations, presentation messages, and number of participants (if available).	Ongoing	Ongoing	X	X	X
Measure No. 2 – Public Involvement								
PI-1 Stormwater Utility Fee	Participate in Citizen Rate Review Committee (CRRC) Meetings	Present stormwater funding needs to CRRC.	Document meeting attendance, adopted rates, and effective dates of rate changes.	Ongoing; Fall 2019/Spring 2020; Fall 2021/Spring 2022	Ongoing	X	X	X
PI-2 Public Participation in Stormwater Management	Provide Grant Funding for Water Quality Improvement or Watershed Awareness Projects	Provide a minimum of \$2,000 in a grant program to fund non-profit projects that fulfill goals of the TMDL plan.	Track number of funded projects, amount disbursed per project, stream affected, and either the number of stream miles affected or the number of participants.	Ongoing	Ongoing	X	X	X



Best Management Practice	Strategy	Measureable Goal	Performance Measure	Expected Implementation Timeline	2018 Status	Pollutants		
						Mercury	Bacteria	Temperature
PI-3 Public Participation in Reporting Stormwater Issues	Public Participation in Stormwater, Illicit Discharge, and Erosion Control Issues	Provide methods for citizens to report concerns during and after business hours. Notify public of available reporting methods.	Document methods and frequency of public notifications.	Ongoing	Ongoing	X	X	X
		Respond to public concerns.	Document number of stormwater, erosion control, and illicit discharge complaints reported by citizens and note resolutions.	Ongoing	Ongoing	X	X	X
PI-4 Public Participation in Determining Stormwater Educational Focus	Determine Focus of Stormwater Educational Messages to the Public	Conduct a public survey to revise and refine educational messages related to stormwater and the TMDL Implementation Plan.	Provide copy or link to survey and report results of the survey.	June/July 2019	Incomplete, But Started	X	X	X
<b>Measure No. 3 – Illicit Discharged Detection and Elimination (IDDE)</b>								
ID-1 Train Staff to Implement IDDE Plan	Train Staff in Illicit Discharge Investigation and Spill Response	Train new staff members in illicit discharge investigation and spill response. Provide training in some aspect of illicit discharge investigation and spill response every five years for all applicable staff.	Track type of training (webcast, class, certification, on-the-job, etc.), number of employees trained, and the training subject (maintenance, response, investigation, sampling, etc.).	Ongoing	Ongoing	X	X	X
ID-2 Implement IDDE Plan	Conduct Illicit Discharge Inspections	Fieldscreen outfalls.	Inventory type, size, and location of public and private outfalls. Map existing and new development outfall locations in GIS.	Ongoing; December 2019 (Initial Mapping); December 2022 (Complete mapping and ongoing for new development)	Ongoing	X	X	X
		Investigate outfalls for illicit discharges.	Document location, number and types of samples taken, date, cause, and resolution.	Ongoing	Ongoing	X	X	X
	Respond to Illegal Dumps	Clean up illegal dumps.	Track number of illegal dumps, citations issued, and resolution.	Ongoing	Ongoing	X	X	X
	Respond to Illicit Discharges/Spills	Fire Department spill response.	Track date and cause of spills that occur. Document whether the spill reached the stormwater system or a stream and if water sampling was conducted. Document response resolution.	Ongoing	Ongoing	X	X	X

Best Management Practice	Strategy	Measureable Goal	Performance Measure	Expected Implementation Timeline	2018 Status	Pollutants		
						Mercury	Bacteria	Temperature
		Public Works illicit discharge/spill response.	Track date and cause of illicit discharges/spills that occur, identified illicit discharges from private wastewater laterals or from failing public infrastructure. Document whether the pollutant reached the stormwater system or a stream and if water sampling was conducted. Document response resolution.	Ongoing	Ongoing	X	X	X
		Provide spill response cards and spill response kits on municipal trucks and sweepers.	Track number of municipal trucks and sweepers with spill response cards and spill kits. Document the number of spill kits used annually in response to spills.	Ongoing	Ongoing	X	X	X
ID-3 Hazardous Waste Collection	Provide Opportunity for Residents to Dispose of Hazardous Waste	Offer free hazardous waste collection service twice per year to City residents.	Track volume of waste received during collection events.	Ongoing	Ongoing	X	X	X
ID-4 Drug Take-Back Collection	Provide Opportunity for Residents to Dispose of Unused Medication	Offer free unused medication collection service to City residents.	Track the volume of unused medication collected annually.	Ongoing	Ongoing	X	X	X
Measure 4 – Construction Site Stormwater Runoff Control								
CS-1 Train Staff in Erosion and Sediment Control (ESC)	Train Staff in Plan Review, Site Inspection, and Enforcement of ESC Program	Train new staff whose responsibilities include erosion and sediment control plan review and enforcement. Provide refresher training to all staff involved in ESC every three years.	Document number of staff trained and type of training (on-the-job training, certification, or recertification).	Ongoing	Ongoing	X	X	X
CS-2 Implement Erosion and Sediment Control Program	Implement ESC Program	Conduct ESC plan review.	Document location and type (commercial, industrial, single-family residential, etc.) of all construction project plan reviews. Document which project obtained a DEQ 1200-C permit. Develop and send a notice letter to applicants on wet weather best management practices as weather conditions change.	Ongoing	Ongoing	X	X	X
		Conduct site inspections at least once during active construction by trained or experienced staff.	Provide number of erosion and sedimentation control inspections for each project. Document location and type (commercial, industrial, single-family residential, etc.) of construction project.	Ongoing	Ongoing	X	X	X
		Enforce ESC ordinances.	Report number of warning letters or non-compliance citations by project and resolution.	Ongoing	Ongoing	X	X	X
Measure No. 5 – Post-Construction Runoff Control								

Best Management Practice	Strategy	Measureable Goal	Performance Measure	Expected Implementation Timeline	2018 Status	Pollutants		
						Mercury	Bacteria	Temperature
DS-1 Develop Stormwater Management Program	Update Stormwater Development Manuals and Standard Details	Update stormwater design standards manual and standard drawings. Notify development community of proposed new requirements before adoption.	Provide summary of changes and link to new design standards when adopted.	December 2019 (Standard Drawing Updates); December 2020 (Standard Manual Amendments)	Incomplete, But Started	X	X	X
DS-2 Train Staff in Stormwater Management	Train Staff in Stormwater Management	Provide training opportunities for staff in watershed and stormwater management.	Track type of training (webcast, class, on-the-job, certification, etc.), number of employees trained, and the training subject (plan review, inspection, enforcement, etc.)	Ongoing	Ongoing	X	X	X
DS-3 Implement Stormwater Management Program	Require Stormwater Management for Development and Redevelopment	Require stormwater plan submittals and conduct plan reviews.	Document number of construction plan submittals, plan reviews, project type (commercial, institutional, residential, etc.), size, and location.	Ongoing	Ongoing	X	X	X
		Require stormwater management per the Stormwater Development Manuals and Standard Details.	Document number and type (detention basin, flow dissipater, raingarden, filtration swale, etc.) of stormwater facilities required for each project.	Ongoing	Ongoing	X	X	X
		Conduct pre-construction conferences to inform contractors about stormwater requirements.	Document number of pre-construction conferences, project type (commercial, institutional, residential, etc.), size, and location.	Ongoing	Ongoing	X	X	X
	Improve Watershed Management	Evaluate stormwater projects for treatment opportunities (new installations vs. existing infrastructure upgrades) i.e. Stormwater Master Plan.	Summarize hierarchy used for screening. Document location and number of sites reviewed, drainage area, and result of evaluation.	May 2014, and Ongoing; June 2020 (Re-evaluate Stormwater Master Plan project list)	Ongoing	X	X	X
		Implement stormwater projects for treatment opportunities (new installations vs. existing infrastructure upgrades) i.e. Stormwater Master Plan.	Document number of projects including location, size, type (LIDA, traditional, etc.), and drainage area.	May 2014, and Ongoing; June 2020	Ongoing	X	X	X
	Optimize Water Quality	Inspect public stormwater facilities post-construction.	Conduct a post-construction stormwater facility transfer. Complete final inspection at end of the two-year maintenance agreement. Document facility in GIS/asset management program, obtain and file stormwater as-built drawings, and facility maintenance plan.	Ongoing	Ongoing	X	X	X
Measure No. 6 – Pollution Prevention in Municipal Operations								

Best Management Practice	Strategy	Measureable Goal	Performance Measure	Expected Implementation Timeline	2018 Status	Pollutants		
						Mercury	Bacteria	Temperature
OM-1 Operations and Maintenance (O&M) Manual	Update O&M Policies	Review existing O&M practices.	Document current procedures in an O&M manual.	December 2018	Completed	X	X	X
		Update O&M manual to optimize water quality.	Document modifications to manual.	December 2022	Not started	X	X	X
	Update Infrastructure Procedures	Review and evaluate the need to update the catch basin cleaning program.	Document current procedures and any modifications to optimize water quality.	July 2019	Incomplete, But Started	X	X	X
		Implement revised catch basin cleaning program.	Track progress.	Ongoing	Ongoing	X	X	X
	Update Street Sweeping Procedures	Review and evaluate the need to update the street sweeping program.	Document current procedures and any modifications to optimize water quality	July 2020	Not Started	X	X	X
		Implement revised street sweeping program.	Track progress.	Ongoing	Ongoing	X	X	X
OM-2 Operations and Maintenance Training	Train staff in infrastructure and street sweeping procedures that optimize water quality	Train new staff in stormwater maintenance duties in O&M procedures manual.	Track type of training (webcast, class, certification, on-the-job, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.)	Ongoing	Ongoing	X	X	X
		Train all staff in revised O&M procedures manual every three years.	Track type of training (webcast, class, certification, on-the-job, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.)	February 2019 (following manual completion, then every three years); August 2022	Incomplete, But Started	X	X	X
OM-3 Stormwater Infrastructure Maintenance	Maintain stormwater infrastructure	Clean catch basins.	Track number of catch basins cleaned per year.	Ongoing	Ongoing	X	X	X
		Place trash racks over major inlets.	Track number and percentage of major inlets installed with trash racks.	Ongoing	Ongoing	X	X	X
		Inspect, clean, repair, replace, and install stormline.	Track length of stormline inspected. Document length of stormline cleaned. Document length and location of stormline repaired or replaced. Track length, diameter and location of stormline installed.	Ongoing	Ongoing	X	X	X
		Inspect, repair, and replace culverts.	Document location of repaired and replaced culverts and reason for repair or replacement. For newly installed culverts, document new culvert size, material, and elevation from culvert bottom to stream bottom.	Ongoing	Ongoing	X	X	X
		Inspect and repair public stormwater facilities.	Document number of inspections, type of facility (detention basin, LIDA facilities, vegetated swale, etc.) and whether facilities were categorized as excellent, fair, or poor condition.	Ongoing	Ongoing	X	X	X

Best Management Practice	Strategy	Measureable Goal	Performance Measure	Expected Implementation Timeline	2018 Status	Pollutants		
						Mercury	Bacteria	Temperature
		Sweep streets every 4-6 weeks.	Track curb miles swept and debris collected per curb mile each year. Document disposal method.	Ongoing	Ongoing	X	X	X
Temperature								
T-1 Maintain Existing Stream Vegetation	Use Municipal Code and other Measures to Maintain Stream Vegetation	Update Municipal Code that can affect stream health.	Update ordinances that affect stream vegetation.	Ongoing	Ongoing	X	X	X
		Update Stream Corridor Overlay.	Document changes to the Stream Corridor Overlay map and code based on wetland inventory and property annexation.	Ongoing	Ongoing	X	X	X
T-2 Increase Effective Shade	Increase Shade along Streams within the City	Continue with established Trees for Streams Program. Provide incentives (free or reduce cost native plant materials) for citizens to plant trees, shrubs, and grasses along tributaries or streams within the City limits.	Document watershed and number of native plant types (trees, shrubs, grasses) planted per year.	Ongoing	Ongoing	X	X	X
T-3 Stream Assessment	Assess Stream Health and Canopy Coverage	Assess at least one stream mile annually for vegetative ground cover, stream channel configuration, and canopy coverage.	Document results of assessment.	Ongoing	Ongoing	X	X	X
		Complete a wetland inventory that encompasses the Urban Reserve areas. Update wetland inventory when Department of Land Conservation and Development (DLCD) provides funding for City's comprehensive plan periodic review.	Track progress. Provide link to wetland inventory and map.	Ongoing	Ongoing	X	X	X
		Develop stream temperature monitoring program.	Document procedures and identify locations for sampling.	July 2019	Incomplete, But Started	X	X	X
		Implement stream temperature monitoring program.	Document sampling locations, dates, and results.	May 2020, and Ongoing	Not Started	X	X	X

## Appendix B: Illicit Discharge Investigations 2018-2022

## Appendix B: Illicit Discharge Investigations 2018-2022

Date	Cause	Watershed	Water Samples	Resolution
1/2019	Concern about an existing oil-water separator and petroleum releasing to a storm drain ditch.	Chehalem Creek	0	A DEQ Hazardous Waste coordinator come out on site and did a field investigation. It was determined that the oil-water separator was in good working order, but there were other site conditions that need to be corrected. A Complaint Investigation #18-141 letter was sent to the owner.

## Appendix C: Construction Site Stormwater Management 2018-2022



### Appendix C: Construction Site Stormwater Management 2018-2022

Project Name	Location	Watershed	1200-C Permit (Yes/No)	ESC Inspections					Completed
				2018	2019	2020	2021	2022	
Gracie's Landing, Ph 1	North Valley Rd/Chehalem Dr	Chehalem Creek	Yes	NA	-	-	-	-	2018
Gracie's Landing, Ph 2 & 3	North Valley Rd/Chehalem Dr	Chehalem Creek	Yes	NA	-	-	-	-	2018
Chehalem Pointe Apartments	1317 Villa Rd	Hess Creek	Yes	NA	-	-	-	-	2018
CPRD Pool Expansion	1802 Haworth Ave	Hess Creek	Yes	NA	-	-	-	-	2018
Freeman Manufacturing Building	1001 Wilsonville Rd	Hess Creek	Yes	NA	-	-	-	-	2018
GFU Student Activity Center	1400 E Sherman St	Hess Creek	Yes	NA	-	-	-	-	2018
GFU Austin Sports Complex	1953 N Center St	Hess Creek	Yes	NA	-	-	-	-	2018
Grace Baptist Church	1619 E 2 <sup>nd</sup> St	Hess Creek	Yes	NA	-	-	-	-	2018
Hazelwood Farms	E Henry Rd	Hess Creek	Yes	NA	-	-	-	-	2018
Villa Rd Improvements	Villa Rd	Hess Creek	Yes	NA	-	-	-	-	2018
Dayton Avenue Pump Station	840 S Dayton Ave	Chehalem Creek	No	144	-	-	-	-	2018
Dutchman Ridge, Ph 1	25300 NE North Valley Rd	Chehalem Creek	Yes	NA	-	-	-	-	Under Construction
Page Landing	400 E Columbia Dr	Chehalem Creek	Yes	NA	-	-	-	-	2018
Airport Commercial Building	1000 S Commerce Pkwy	Hess Creek	No	1	-	-	-	-	Under Construction
GFU Edwards Hall	617 N Villa Rd	Hess Creek	Yes	NA	-	-	-	-	Under Construction
McCann Apartments	800 E 2 <sup>nd</sup> St	Hess Creek	No	1	-	-	-	-	Under Construction
Old Mill Development	2401 Portland Rd	Hess Creek	No	30	-	-	-	-	2018
South Park	609 Wyooski St	Hess Creek	Yes	NA	-	-	-	-	2018
Harding School	601 Wyooski St	Hess Creek	Yes	NA	-	-	-	-	Under Construction
Providence Medical Office Building	1001 Providence Dr	Springbrook Creek	Yes	NA	-	-	-	-	Under Construction

Under Construction: The public improvement permit is still active and has not yet been closed out.

## Appendix D: Post-Construction Stormwater Management 2018-2022

### Appendix D: Post-Construction Stormwater Management 2018-2022

Project Name	Location	Acres	Project Type-Zoning	Pre-Construction Meeting	Project	Stormwater Facility	Completed
Freeman Manufacturing Building	1001 Wilsonville Rd	2.04 (1200-C)	Commercial	No	Commercial Building	3 public stormwater planters, 3 private flow through planters, private Contech underground detention	2018
Chehalem Pointe Apartments	1317 Villa Rd	5.8 (1200-C)	Residential	Yes	Apartment Complex	2 public stormwater planters, detention pond, underground detention	2018
Shelly Cate Partition	1305 Newall Rd	0.38	Residential	No	Partition	1 raingarden	Under construction
Page Landing	400 E Columbia Dr	3.19 (1200-C)	Residential	Yes	25 Lot Subdivision	1 detention pond	2018
South Park	609 Wynooski St	1.21 (1200-C)	Residential	No	13 Lot Subdivision	None required. No new impervious surface areas.	2018
GFU Edwards Hall	617 N Villa Rd	6.6 (1200-C)	Institutional	No	Residence Hall	Vegetated water quality/detention basin	Under Construction
Providence Medical Office Building	1001 Providence Dr	5.10 (1200-C)	Institutional	Yes	Medical Office Building	6 private water quality facilities, 2 underground detention tanks, and flow control manholes	Under Construction
Harding School	601 Wynooski St	0.77	Residential	No	Multi-family residential and 5 single-family lots	5 public stormwater planters, and 3 private raingardens	Under Construction
1002 S Pacific Partition	1002 S Pacific St	0.16	Residential	No	Partition	1 raingarden	2018
Dutchman Ridge, Ph 1	25300 NE North Valley Rd	13.3 (1200-C)	Residential	No	46-lot Subdivision	1 detention pond	Under Construction
Gracie's Landing, Ph 1	North Valley Rd/Chehalem Dr	10.6 (1200-C)	Residential	No	24-lot Subdivision	Detention pond, water quality swale	2018

Project Name	Location	Acres	Project Type-Zoning	Pre-Construction Meeting	Project	Stormwater Facility	Completed
Gracie's Landing, Ph 2 & 3	North Valley Rd/Chehalem Dr	See Gracie's Ph 1 1200-C permit	Residential	No	29-lot Subdivision	Detention pond, water quality swale	2018
CPRD Pool Expansion	1802 Haworth Ave	5.1 (1200-C)	Residential	Yes	Recreation Facility	Detention pond	2018
GFU Student Activity Center	1400 E Sherman St	2.4 (1200-C)	Institutional	Yes	Activity Center	1 detention pond, stormwater planters	2018
GFU Austin Sports Complex	1953 N Center St	3.8 (1200-C)	Institutional	Yes	Sports Complex	Vegetated strips, vegetated swales	2018
Grace Baptist Church	1619 E 2 <sup>nd</sup> St	3.0 (1200-C)	Residential	No	Church Expansion	None required. No new impervious surface areas.	2018
Hazelwood Farms	E Henry Rd	4.9 (1200-C)	Residential	No	19-lot Subdivision	Detention pond	2018
Villa Rd Improvements	Villa Rd	(1200-C)	NA	Yes	Roadway Improvement	Stormwater planters, detention pond, underground detention	2018
Dayton Avenue Pump Station	840 S Dayton Ave	0.28	Public Facility	Yes	Pump Station	Detention pond	2018