

2016 - 2021 Temperature TMDL 5-Year Report

Area	Management Strategy	Measurable Goals	Milestones	Annual Goal Tracking	Annual Status Update FY 2020-21	Temperature	voluntary parameters		
							bacteria	mercury	pesticides
Data Review & Assessment	1. Utilize GIS data to assess shade/canopy cover, prioritize and document planting projects, and to evaluate changes in the City's tree canopy.	1A Assess 2009 Riparian Shade Inventory to determine applicable updates that may include options for improved constraint/opportunities mapping and increasing the number of available shade categories (FY 2016-17).	Convene workgroup to review 2009 Inventory data and to develop project scope that incorporates collective data needs among different sections.	Identify workgroup involvement, track meetings and significant decisions/outcomes. Track progress made on desktop tasks and field verification and analysis.	IN PROGRESS: This project was revisited in FY 2019-20 with a new consultant. A scope of work for the comparative stream shade study was developed, a contract was signed, and work has begun. The consultant is working with ESRI regarding a potential bug in the software regarding the analysis. The project seeks to compare the 10-year period between 2009 and 2019 to determine change in shade. The project will also determine the amount of shade for different riparian buffer widths. PROPOSED: A shade inventory before and after the February 2021 ice storm to survey the extent of damage to the stream canopy. Nearmap imagery taken in August 2020 is proposed to be compared to imagery taken in May 2021.	x			
			Develop scope of work with project goals (and budget if consultant services needed).						
			Conduct desktop/field analysis internally or with assistance of consultant services.						
		1B Review Riparian Prioritization Database and weighting criteria for potential improvements and increased utility (FY 2016-17).	Convene workgroup to determine desired functionality for increased use.	Identify workgroup involvement, track meetings and significant decisions, and field inspections.	COMPLETED IN FY 2017-18. The stormwater retrofit prioritization tool was completed and it uses riparian values in the assessment for those properties that have streams running through them. Riparian projects can be entered into this database and ranked. Generating and ranking riparian sites for planting will be an ongoing process, and if changes to the tool are found that would make it more useful for reviewing and ranking these projects, then they will be incorporated into the tool.	x			
Identify high priority areas/taxlots based on data review (shade, constraints, ownership, access, opportunity for community involvement etc.)									
Generate prioritized list of future targeted areas for planting and riparian enhancements (FY 2017-18).									

GIS	1C	Create GIS database to document all upland and riparian projects (FY 2017-18).	Develop criteria and tracking mechanism for database.	Identify workgroup involvement, track meetings, and significant decisions/outcomes. Track the number of fines, planting sites, and number of plants planted.	ONGOING: This map was created in FY 2017-18 and is updated once per year after the planting season with Friends of Trees concludes and the year-end report is received. It can be found at https://saalem.maps.arcgis.com/apps/webappviewer/index.html?id=6737d867513d40829fa1268a11610037 The goal is to make this a public-facing map on our TMDL webpage.	x			
			Work with Community Development to ensure knowledge of priority sites for planting (fines).						
			Generate a master map to assist with internal communication and update as needed based on available project data.						
1. Utilize GIS data to assess shade/canopy cover, prioritize and document planting projects, and to evaluate changes in the City's tree canopy.	1D	Complete next update to 2010 Salem Canopy Study (FY 2020-21).	Develop scope of work, hire COR, and update study.	Track progress made on next canopy study.	COMPLETED IN FY 2019-20: The City conducted a tree canopy assessment and discovered that the tree canopy has increased to 24 percent, exceeding the 23 percent goal set in 2013. The 2020 report showed an increase of 6 percent over a 10-year period. This amounts to 9,202 tree acres of the total 38,740-acre study area. Every Salem neighborhood shared the gain. Salem's tree canopy provides \$80 million a year in environmental/ecosystem benefits. PROPOSED: A tree canopy survey to compare between 2020 and 2021 to provide an indication of how badly impacted the city's tree canopy is from the ice storm of February 2021. Nearmap imagery from August 2020 was taken and is proposed to be compared to May 2021 when the imagery was taken.	x			
			Update annual Scope of Work with contractor to outline project location(s), site preparation, planting plan, maintenance needs, and estimated schedule of activities.		AMENDED AND ONGOING: Despite COVID-19, the City was able to contract with Friends of Trees to plant trees in riparian areas. Friends of Trees staff and volunteer crew leads were the only people allowed at the planting sites this year. Two riparian planting events occurred along the stream at McKay School Park and five planting events occurred at non-streamside locations. One follow-up mulching event occurred at McKay School Park. The scope of work has been updated annually the last five years.	x	x	x	

<p>2. Partner with local agencies, non-profits, volunteer groups, and local residents to coordinate plantings and to control invasive vegetation along Salem streams.</p>	<p>2A</p> <p>Continue to utilize contracted services to coordinate multi-year riparian planting projects on City-owned parcels (Annually).</p>	<p>With consideration for the time needed for site prep and invasive vegetation removal in mind, ensure that at least 150 linear feet of streambank are planted with native trees/shrubs and/or receive targeted invasive vegetation removal each year (Annually).</p>	<p>Track annually the number of linear feet planted, number of trees/shrubs installed, and number of volunteers involved.</p>	<p>ONGOING: This year marked the second year of a multi-year restoration project in the wetland area of McKay Park. All riparian planting efforts were focused on McKay Park this year and resulted in 1,475 small stock shrubs and 6 small stock trees being planted. Due to COVID, volunteer groups were small, resulting in 31 volunteers total for three events held at McKay Park. The McKay planting and restoration area is 160 linear feet. Planting on private property was also conducted along the Little Pudding River on a stretch of 1,264 linear feet and resulted in 50 small stock trees and 110 small stock shrubs being planted. Over the 5-year period, upland and riparian plantings have equalled 2,512 volunteers providing 8,537 hours of service to plant over 24,400 small stock plants and 500 large stock plants at 47 events.</p>	x	x	x
		<p>Reassess and document continued project maintenance needs (Annually).</p>		<p>ONGOING: Five sites received ongoing maintenance (Orchard Heights Park, McKay Park, Eola Ridge Park, Judson Middle School, and Woodmansee Park) for an approximate combination of 1,185 linear feet. Due to staff changes at Friends of Trees, staff from the City and Friends of Trees will meet to discuss scope of work in August 2021 and finalize the scope for FY 2021-22 in September 2021. Tentative planting locations are at McKay Park and Orchard Heights Park.</p>	x	x	x
		<p>Reassess contract renewal/continued contracting needs for future planting events.</p>		<p>RENEWED: The contract for FY 2021-22 was signed into effect in June 2021.</p>	x		
	<p>2B</p> <p>Pursue MOA with local school district for multi-year riparian and upland planting projects on school owned lands. (FY 2016-17).</p>	<p>Meet with District staff to discuss possible collaboration and potential concerns.</p>	<p>Document collaboration efforts with District, Council acceptance, progress and/or changes made to MOA, and any associated planting activities. Track number of plants provided, and area planted.</p>	<p>COMPLETED IN FY 2016-17: The current work at Judson Middle School continues (see below) and is a product of this MOA.</p>	<p>x</p>	<p></p>	<p></p>
		<p>Draft MOA that meets District needs and clarifies project scope, boundaries, and future maintenance responsibilities.</p>					
		<p>Submit MOA to City Council for approval to execute.</p>					
		<p>Initiate planting efforts on school owned properties under MOA or alternate agreement.</p>					

Trees & Native Vegetation

2. Partner with local agencies, non-profits, volunteer groups, and local residents to coordinate plantings and to control invasive vegetation along Salem streams.

2C	Continue to offer native vegetation to targeted streamside properties (Annually).	Continue to offer native vegetation to at least 20 private streamside residents to supplement public planting projects. These residents are typically adjacent to the contracted project area and identified as having low riparian shade.	Track number of properties receiving assistance and the number of plants provided.	<p>MODIFIED AND CONTINUED: This year, Friends of Trees focused on the Little Pudding River again. Eighteen households participated in the planting, which was done by Friends of Trees staff and contractors. Fifty small stock trees and 110 small stock shrubs were planted along 1,264 liner feet of the Little Pudding River. Over the 5-year period, 60 sites were identified for the program and 24 people participated.</p>	x	x	x		
		If available, continue to provide native trees and shrubs (or offer alternate resources) for additional requests received.		<p>MODIFIED AND CONTINUED: Due to COVID-19, the Free Tree event of FY 2020-21 was moved to and ran through April 2021. The result was that 195 Salem residents received 761 plants for planting next to their stream. Since the reintroduction of the Free Tree Program in FY 19-20, 423 residents have participated and received 1,915 native trees and shrubs.</p>	x	x	x	x	
	Initiate a collaborative effort with another partnering agency to assist private streamside property owners in Salem with invasive vegetation removal and control (FY 2015-16).	2D	Finalize and submit to City Council a staff report with request to enter a MOA. If necessary, identify alternate partnering options.	Document Council Action, number of properties to receive assistance, and assistance provided.	<p>COMPLETED IN PRIOR YEARS: In May 2016, an IGA was signed between the City of Salem and the Marion Soil and Water Conservation District (SWCD) to partner to provide services for removing or treating invasive vegetation on private land. The agreement is with the Marion Soil and Water Conservation District and we continue to work with them on addressing knotweed species along the waterways in Salem.</p>	x			
			Review existing streamside data and identify a proposed list of taxlots to receive assistance.		<p>ONGOING: This is the first year that we used Stream Crew data collected in the field to help us identify sites with knotweed. That information was used to update the list to nearly 100 property owners to contact. In addition, the contractor reaches out to property owners if they find knotweed that has not been previously identified.</p>	x			
			Seek approval/interest from identified streamside residents and initiate control efforts.		<p>ONGOING: During FY 2020-21, eighteen sites were treated in five different waterbodies: Battle Creek, Clark Creek, Croisan Creek, Pringle Creek, and the Willamette Slough. During the four years of this project, 80 sites have been treated, with some of the sites being retreated. Initial surveys indicated a high success rate of knotweed dieback.</p>	x			

	2. Partner with local agencies, non-profits, volunteer groups, and local residents to coordinate plantings and to control invasive vegetation along Salem streams.		Create tracking mechanism to document location of efforts and continued progress made.		IN PROGRESS: Staff is developing an app that can be used by our contractor and project partner to document locations, treatment, and permissions. The app is expected to be available for use in FY 2021-22.	X				
			Continue to provide and track assistance as resources allow.		ONGOING: Funding to continue the project was placed in the FY 2021-22 budget. The City anticipates working with the Marion Soil and Water Conservation District again in FY 2021-22 to hire a certified contractor to provide treatment opportunities to streamside residents who have documented knotweed on their streamside property. The City of Salem has placed up to \$6,000 annually in the budget for invasive species treatment.	X				
		2E	Develop a process for pursuing strategic planting and/or other riparian enhancements on lands donated/vacated to the City and on newly developed/re-developed properties (FY 2019-20).	Initiate internal meeting(s) with staff from multiple Divisions/Departments to determine core stakeholders, needs, and discuss options forward.	Document efforts/progress made on the development of an internal process.	SEE STRATEGY 1B: Strategic planting opportunities and riparian enhancement projects will be prioritized using the Prioritization Tool.	X			
				Finalize and document internal procedures based on predetermined need.						
		2F	Develop mechanism to offer replacement trees to residents/businesses where fallen trees have been removed (FY 2017-18).	Develop long-term approach for providing replacement trees/vegetation and planting assistance if needed.	Document internal coordination and determined approach for replacement trees.	ONGOING. Replacement trees and vegetation will be offered to residents through the Free Tree Program. No requests or opportunities based on fallen streamside trees were identified during this 5-year reporting period. However, several residents did inquire about the Free Tree Program.	X		X	
				Ensure appropriate tracking mechanism for this assistance is developed, as needed.						
n Mitigation Bank	3. Implement Stream Mitigation Banking (SMB) Program as a means to offset impacts to waterways from public infrastructure	3A	Maintain riparian vegetation and control noxious/invasive weeds to ensure establishment of the approved native plant communities.	Track completion of required monitoring activities. Implement management recommendations.	COMPLETED: The site has met vegetation and channel stability requirements. Monitoring by consultant and City staff for vegetation and channel performance has been completed. Although the City has been released from the full monitoring report requirements, the City still keeps an eye on it and hosts the agencies once a year for a field inspection. The City is developing a management plan for the area that will allow for more credits to be released.	X	X	X	X	
			Continue to monitor the approved SMB Project Site (Waln Creek) according to established performance standards (Annually).							Monitor established stream cross-sections to ensure continued streambank stability.
			Document site conditions with photographs from established points.							
			Meet permit and SMB standards for channel stability and habitat.							

Stream	public infrastructure improvements projects.	3B	Submit an annual monitoring report and SMB Report to the ACOE and DSL by January 31 of each year (Annually).	Report to agencies for seven years.	Track completion of required reports.	ONGOING. Each year, staff submits the report by January 31. During FY 2020-21, staff submitted the report to agencies on January 31, 2021.	x			
				Develop a Long-term Management Plan for the SMB Project Site.	Track completion of required reports.	IN PROGRESS: Staff submitted the long-term management plan to ACOE and DSL on April 20, 2021 and the plan is currently undergoing agency review.	x			
Stream Stabilization	4. Pursue options for streambank stabilization and riparian enhancement projects that incorporate bioengineering practices, the instream placement of woody debris, and native plants.	4A	Complete at least one streambank stabilization/enhancement pilot project per TMDL plan cycle that incorporates bioengineering practices and the instream placement of large woody debris (FY 2020-21).	Evaluate options for project funding (FY 2016-17).	Document determined funding mechanism, identified project location/scope, and efforts to project completion.	COMPLETED IN FY 2016-17.	x			
				Based on available funding mechanism determine pilot project location and estimated scope of effort.		COMPLETED IN FY 2016-17: Determined in prior years for Woodmansee Park in the Pringle Creek Watershed. The project was placed on hold due to a mater planning process at Woodmansee Park and the upgrade the Aquifer Storage and Recovery system within the park.	x		x	
				Finalize project scope and design.		ON HOLD: Currently a Parks Master Planning Process and Aquifer Storage and Recovery update are occurring at the site. The site still has potential for large woody debris; however, it would need to be coordinated with any pipeline work that crosses the creek. Consequently, the project will not occur within the next several years. The project noted below was substituted for this project for the 5-year term.	x			
				Initiate bioengineering methods and installation of large woody debris.						
			Complete initial pilot project per final scope and design.			COMPLETED IN FY 2019-20: The previously completed Pringle Creek Demolition and Restoration Project, just upstream of the confluence of Pringle Creek and the Willamette Slough received four awards: ENR Northwest Regional Projects of 2020 Award, APWA Oregon Chapter Project of the Year Award for 2020, APWA National Project of the Year Award for 2021, and Pacific Northwest Clean Water Association (PNCWA) Innovative Stormwater Project Award for 2021. COMPLETED IN 2020-21: In addition, another large woody debris project that was awarded the City's Watershed Protection and Preservation Grant prior to this fiscal year was completed this fiscal year.	x	x	x	x

			<p>Initiate internal meetings to determine best approach forward toward development of a new alternative for assistance.</p>		<p>COMPLETED: In previous fiscal years, it was determined to continue the use of the City's Watershed Protection and Preservation Grant to assist homeowners with streambank erosion. Salem awarded a watershed protection and preservation grant for a streamside project to add woody debris for bank stabilization. That project was scheduled to be completed in FY 2019-20, but was postponed due to COVID-19 restrictions. It is completed in September 2020.</p>	x	x	x	x	
		<p>4B Pursue development of no cost to home owners new options/programs to assist residents with streambank erosion and planting (FY 2019-20).</p>	<p>Finalize plan for providing assistance with streambank erosion.</p>	<p>Identify workgroup involvement, track meetings and significant decisions, and progress made on assistance program.</p>						
Riparian Protections	5. Continue to review and revise Salem Revised Code (SRC) provisions to ensure protection of riparian area buffers.	5A	<p>Initiate internal workgroup to review recently reorganized SRC.</p>	<p>Identify workgroup involvement, track meetings and significant decisions, and changes proposed to SRC.</p>	<p>UPDATE: The trees in the riparian area are protected under Salem Revised Code Chapter 808. The proposed amendments to SRC Chapter 808 are part of the larger code amendment package the Planning Group is taking forward updating the Unified Development Code. The code amendments can be viewed on the City's website: https://www.cityofsalem.net/CityDocuments/salem-udc-proposed-update-draft-2021.pdf</p> <p>The changes to SRC 808 can be found on pages 377 to 387 of the document.</p>	x				
			<p>Coordinate with staff from Public Works, Community Development, and Legal on any proposed adjustments to SRC and/or the Administrative Rules.</p>			<p>Ensure protections for areas identified as having ample riparian canopy cover based on available GIS data.</p>				
	6. Assess and engage the community in education efforts focused on stream	6A	<p>Use updated riparian shade inventory and prioritization database to identify low canopy areas for targeted outreach.</p>	<p>Determine feasible target number for yearly outreach. Create schedule and track number of contacts, interested parties, and plants planted.</p>	<p>REVISITED: Based on consultant recommendations, a proposed updated shade study is scheduled for FY 2020-21. The updated shade study is requested to provide a comparison between the 10-year period from the first study as well as provide shade data for the "area of influence," or possible plantable areas. The updated map will help use better determine our priority areas.</p>	x				
			<p>Assess barriers to audience identified above.</p>			<p>COMPLETED IN FY 2018-19. A survey to assess barriers, values, habits, and actions was conducted in FY 2018-19.</p>	x			
			<p>Develop outreach schedule for targeted properties.</p>			<p>IN PROGRESS: Two studies are currently being conducted and will help identify areas with low canopy that have plantable space. From that data, the City will update our riparian outreach plan. Currently, we continue to work with the homeowners on a stretch of the Little Pudding River that has low canopy. See 2C above.</p>	x			

Public Education & Outreach	temperature.		Pursue the development of incentives to encourage planting along streambanks.		IDENTIFIED: The City has the following programs available to encourage streamside planting: Free Tree Program, Watershed Grant Program, and private homeowner plantings. The City is also considering developing a backyard buffer/habitat program in the future.	x	x	x	
	6B	Update Riparian Outreach Plan, incorporating results of streamside survey (FY 2018-19)	Develop and conduct survey for streamside residents.	Track survey development, number of surveys completed, and results.	COMPLETED IN FY 2018-19. A survey to streamside homeowners was conducted in FY 2018-19 and has been used to guide program progress and development considerations.	x			
			Update outreach plan based on the survey results.		ONGOING: The results of the survey conducted in FY 2018-19 will be used in combination with the results of the updated shade inventory to update the action plan.	x			
	6C	Use a variety of tools to convey riparian values to the general public (Annually).	Update retooled website with "key components" information from Riparian Outreach Plan.	Track number/content of updated materials to website. Document planting incentives (materials, trainings, etc.) provided to citizens.	COMPLETED IN FY 2019-20. A new TMDL web page has been created at https://www.cityofsalem.net/Pages/salems-plan-to-cool-streams-temperatures.aspx .	x			
			Compile updated information for streamside mailers, online ads, radio, presentations.		ONGOING: The City's streamside guide is a direct mailer sent to streamside homeowners annually. The mailer was sent in June 2021 to over 1,800 addresses. Radio ads about the benefits of riparian areas were aired on two local radio stations for four weeks of the year. Over the 5-year period, five mailers were sent to streamside residents, 24 weeks of radio advertisements providing information on riparian benefits and planting opportunities, and eight articles in the Stream Currents news letter that began in January 2019.	x	x	x	x
	6. Assess and engage		Assist with development and implementation of a local backyard habitat program.		REASSESSING: Staff continued to assist the Marion Soil and Water Conservation District with the program where needed. However, this item is currently placed on hold by the district. In FY 2021-22, we will explore options for a Clean Streams Streamside Program.	x			

	the community in education efforts focused on stream temperature.	6D	Continue/develop partnerships to share messages and leverage resources (Annually).	Continue to participate in MWOOG and regional coalition.	Track progress made on habitat program, number of applications, partners, and participants.	ONGOING: Staff attend monthly MWOOG meetings. The two culminating events are the annual Erosion Control Summit designed for construction professionals, agency staff, engineers, and operations staff; and the Water Festival designed for 4th and 5th grade students to learn about water-related urban issues. This year the Erosion Control Summit (ECS) was held online and had 106 people registered. The outdoor Water Festival event was held at Lamb Elementary for two teachers' classes and a total of 65 students. Over the 5-year period, the Erosion Control Summit reached 594 participants and the Water Festival reached 495 students.	x		x		
			Develop and implement streamside workshops for riparian landowners.			ONGOING: In October 2020, the City provided a virtual workshop to residents along Goldcrest Brook regarding erosion along the stream. A follow up is scheduled for July 2021. An outline of topics has been drafted for the streamside owners.	x		x		
	6. Assess and engage the community in education efforts focused on stream temperature.	6E	Continue to support/promote weed control efforts of Salem-based volunteer groups (Annually).	Promote efforts by local volunteer groups by providing materials to the public during community events, utilizing social media and internal communications, and advertising their efforts and the associated benefits through other tools as the resources are available.	Track advertising activities and all efforts associated with planting projects on public or private streamside properties.	ON HOLD: Due to COVID-19, City of Salem volunteer events were not hosted this year. Over the 5-year period, the No Ivy Coalition participated in 43 outreach and ivy pull events, recorded over 1,900 volunteer hours, and saved over 1,100 trees from ivy.	x			x	
			Pursue options to utilize volunteer weed removal services to supplement both public planting projects and efforts to assist private streamside properties.								
Internal Communication	7. Ensure internal awareness of TMDL requirements, Implementation Plan strategies, and project updates/needs.	7A	Develop informational report that provides an overview of the City's TMDL Implementation Plan (Plan) and annual reporting requirements to Salem City Council (FY 2016-17).	Provide staff report to City Council once per 5-year TMDL cycle.	Track progress made/comments on staff report, number of event summaries provided in management reports, and number of articles completed.	COMPLETED IN FY 2020-21: Staff provided an information report to City Council in June 2021 that provided background about the TMDL and other City permits, the 5-year TMDL plan, and highlights from the TMDL Plan.	x				
			Ensure that information about TMDL requirements and/or associated tree planting events is included in management reports and internal newsletter. (Ongoing/Annually)	Draft an event summary following each coordinated planting event.		ONGOING: Instead of the event summaries, staff shared an annual tree report with the City Council that documents tree-planting efforts for both riparian and upland projects. In non-COVID years, outreach events with Friends of Trees are reported in the monthly management reports.	x				

Complete 2 TMDL related articles per year for internal newsletter.

DISCONTINUED. The internal PW newsletter, In the Trenches, is currently not being produced.

Voluntary Items for Fiscal Year 2020-21

Source Water Protection	9. Support protection and enhancement of North Santiam River Watershed	9A	Provide mechanisms for the support and enhancement of the North Santiam River function.	Provide funding to North Santiam Watershed Council to support their work plan.	Develop list of projects that are in part funded by the City's Grant.	<p>GRANTS AWARDED: The City of Salem awarded the North Santiam Watershed Council two grants this year. One was for the mechanical removal of Ludwigia, an aquatic invasive plant in the North Santiam River above the City of Salem's water intake at Geren Island. The second was a grant to provide assistance for fire recovery following the Beachie Creek wildfire.</p>	x	x	x	x
Streambank erosion	10	10	Assist with identifying potential causes to erosion concerns	Perform hydromodification analysis and develop remediation plan to address erosion issues along Goldcrest Brook.	Track activities and efforts associated with efforts along Goldcrest Brook.	<p>CONTINUED: In FY 2019-20, the City received results from a hydromodification analysis of the Goldcrest Brook catchment in the Glenn-Gibson watershed performed by WEST Consultants. This year, Environmental Science Associates continued that work to develop the plan to implement improvements to address erosion on Goldcrest Brook.</p>	x		x	
Oak Savannah Restoration	11	11	Conserve and enhance Oregon White Oak savanna and forest habitat including riparian/wetland habitat	Develop and implement management plans for conservation sites.	Track progress outlined in the management plan(s).	<p>STARTED: The City successfully applied for a Landowner Assistance Program Grant from Marion Soil and Water Conservation District, cut back the reed canary grass and blackberries, and had a contractor apply herbicide at the site to kill the invasive plants. The herbicide application was performed by applicators with aquatic licenses and using aquatic approved herbicides and was done during a time when there was no surface water to reduce the chances of harmful effects to aquatic organisms and contamination of water. Native plants and seed were also ordered during that time. The planting plan includes trees and shrubs that will shade the drainage ditch and an increase in species diversity of forbs and other vegetation to provide a more diverse habitat for aquatic organisms. This project will also reduce invasive weed pressure in the mitigation wetland site where reed canary grass is already trying to establish.</p>	x			