

Willamette Intake Facilities Commission
Board Meeting Agenda
Monday, October 26, 2020 | 6:00 – 7:30 PM
Join Microsoft Teams Meeting

Continuing COVID-19 guidelines, this meeting is a virtual only meeting. It will not be held at a physical location.

If you wish to attend via conference call and need dial-in information, please contact annette.rehms@tvwd.org or call 971-222-5957 by 3:00 p.m. on October 26, 2020. If you wish to address the WIF Board, please request the Public Comment Form and return it 48 hours prior to the day of the meeting. **All testimony is electronically recorded.**

EXECUTIVE SESSION – 5:30 PM

An executive session of the Board is called under ORS 192.660(2)(f) to consider information or records that are exempt by law from public inspection and ORS 192.660(2)(h) to consult with counsel concerning the legal rights and duties of a public body with regard to current litigation or litigation likely to be filed.

REGULAR SESSION – 6:00 PM

CALL TO ORDER

1. GENERAL MANAGER’S REPORT – Dave Kraska

Brief presentation on current activities relative to the WIF Commission

2. PUBLIC COMMENT

This time is set aside for persons wishing to address the Board on items on the Consent Agenda, as well as matters not on the agenda. Additional public comment will be invited on agenda items as they are presented. Each person is limited to five minutes, unless an extension is granted by the Board. Should three or more people testify on the same topic, each person will be limited to three minutes.

3. CONSENT AGENDA

These items are considered to be routine and may be approved in one motion without separate discussion. Any Board member may request that an item be removed by motion for discussion and separate action. Any items requested to be removed from the Consent Agenda for separate discussion will be considered immediately after the Board has approved those items which do not require discussion.

- A. Approve the July 27, 2020 meeting minutes

4. BUSINESS AGENDA

- A. None

5. INFORMATION ITEMS

- A. Legislative Update – *Joel Cary*
- B. Thermal Trading Plan Update – *Christina Walter*
- C. Mission, Vision, Values & Goals – *Dave Kraska/Christina Walter*
- D. The next Board meeting is scheduled on January 25, 2021 via Microsoft Teams

6. COMMUNICATIONS AND NON-AGENDA ITEMS

- A. None scheduled

ADJOURNMENT

MEMO

Date: October 26, 2020
To: Willamette Intake Facilities Board of Commissioners
From: David Kraska, P.E., General Manager
Re: Willamette Intake Facilities General Manager's Report

The following items will be covered during the report by the GM:

1. **Remote Meetings Etiquette** – Thank you for your continued flexibility as we hold our meetings remotely. We request participants continue to adhere to three basic rules:
 - a. Please mute your microphone when you are not talking.
 - b. Please identify yourself before you speak.
 - c. If someone other than a Board member would like to ask a question or make a comment, please use the chat feature to let the General Manager know and wait to be acknowledged.
2. **Safety Minute** – David Kraska, will present the safety minute.
3. **Raw Water Facilities Project Update** – The RWF_1.0 project, which is part of the Willamette Water Supply System (WWSS), includes upgrades to the Willamette Intake Facilities (WIF) including replacing the screens, expanding the air burst system, and improving seismic resiliency. This semi-annual update is intended to keep the WIF Commission apprised of the regular progress being made on this project.

Our last update was provided to the WIF Board at the July 2020 meeting. The update included information on the construction Notice To Proceed (NTP) and initial site work.

There are two phases of construction planned for the RWF_1.0 project. The majority of improvements to the WIF infrastructure are included in the first phase (Phase 1), however, there a few WIF-related improvements in second phase (Phase 2). Phase 1 of construction is underway and is currently scheduled to finish in February of 2022. Phase 2 of construction is planned to start in September of 2022.

Since the July 2020 update, the contractor has completed the upper site mass excavation, grading, and berms and is nearing completion of the lower site access road. Equipment mobilization is complete for the continuous flight auger (CFA) piles at the upper site and construction of the CFA piles will commence in the near future. Mobilization is in process for the trenchless pipeline crossing at Arrowhead Creek.

At the lower site, the deep soil mixing for the caisson stability work is underway. The subcontractor has set up the batch plant operation and continues to mobilize large drill rig equipment in preparation for the work. The deep soil mixing will ramp up to full scale operation over the next several months and will be followed by the jet grout operation.

GM Report to the WIF Board of Commissioners

October 26, 2020

Page 2

The in-water work in the Willamette River, including fish screen replacement, is scheduled for Fall of 2021. The contractor has submitted the fish screen equipment shop drawing for review.

4. **WIF Board Member Tour Scheduled** – At the July 2020 Board meeting, we discussed arranging tours of the RWF_1.0 construction project. There was agreement that two tours were preferred: the first focused on the bank stabilization work that is scheduled to occur between Q4 2020 and Q1 2021, and the second focused on the pump station and intake-related work scheduled to occur in Q3 2021. The first of those tours has now been scheduled for December 10, 2020. We anticipate the tour to begin with a brief safety check and orientation presentation followed by the guided tour of the construction activity. Additional details will be emailed to you as they are finalized.
5. **Curtailment Plan Update** – With the support of the Operations Committee, staff continue to make progress on the draft WIF Curtailment Plan. Staff have progressed the curtailment triggers and responses information and developed proposed decision-making processes and response strategies, nearly ready for Operations Committee review. We anticipate submitting a draft document to the Operations Committee later this fall and beginning coordination with the Finance and Management Committees late in 2020.
6. **Approved Meeting Minutes and Resolutions** – With meetings being held virtually, we need to agree on how to collect signatures for approved minutes and resolutions. We propose collecting electronic signatures using Adobe Sign as that would provide an efficient and safe way to execute these documents.

The following documents from previous meeting need signatures:

- January 27, 2020
 - Meeting Minutes
 - Resolution 01-20 (amending Exhibit 8- Budget Calendar)
 - April 27, 2020
 - Meeting Minutes
 - Resolution 02-20 (approving FY2020-21 AWP & Budget)
 - Resolution 03-20 (approving FY2020-21 Meeting Schedule)
 - July 27, 2020
 - Meeting Minutes
7. **Quarterly Financial Reports** – Task 4.b. of the Annual Work Plan requires the Managing Agency to prepare quarterly financial reports and provide them to the WIF Board as part of the packet. Attached to this General Manager’s report is the WIF quarterly financial statement for the period ending September 30, 2020.



Safety Minute:

Fall Safety Tips

Willamette Intake Facilities Meeting

October 26, 2020

Tualatin Valley Water District




 Delivering the Best Water 💧 Service 💧 Value

1

Fall Safety Tips

With some precautions & safety awareness, you and your family can enjoy the crisp autumn weather while avoiding some of the dangers that come with the season.

- Consider having your furnace and chimney serviced by a professional, and clean out your fireplace
- Replace batteries in smoke alarms and carbon monoxide detectors
- Prepare for shorter days and lower sun angle
- Keep an emergency kit in for your car
- Check windows for leaks
- Get a flu shot

Delivering the Best Water 💧 Service 💧 Value

2

Willamette Intake Facility Commission
For the annual budget period ending June 30, 2021
For the quarter ended September 30, 2020

<i>Activity for the Quarter</i>			<i>Unaudited</i>	<i>Annual Budget</i>				
<i>Budget</i>	<i>Actual</i>	<i>Variance</i>	<i>Resources</i>	<i>Annual Budget</i>	<i>Budget To date</i>	<i>Actual</i>	<i>Variance</i>	<i>Remaining Budget</i>
			Revenues					
46,960	\$ 24,346	\$ (22,614)	Contributions	\$ 187,800	\$ 46,960	\$ 24,346	\$ (22,614)	\$ 163,454
1,706,500	300,763	(1,405,737)	Capital contributions	6,825,998	1,706,500	300,763	(1,405,737)	6,525,235
1,753,460	325,109	(1,428,350)		7,013,798	1,753,460	325,109	(1,428,350)	6,688,689
-	9,658	9,658	Beginning Fund Balance	-	-	9,658	9,658	(9,658)
\$ 1,753,460	\$ 334,767	\$ (1,418,692)	Total Resources	\$ 7,013,798	\$ 1,753,460	\$ 334,767	\$ (1,418,692)	\$ 6,679,031
			Requirements					
			Materials and Services					
\$ 31,256	\$ 14,639	\$ 16,617	Operating expenses	\$ 125,000	\$ 31,256	\$ 14,639	\$ 16,617	\$ 110,361
1,500	82	1,418	Professional services	6,000	1,500	82	1,418	5,918
6,000	9,625	(3,625)	Insurance expense	24,000	6,000	9,625	(3,625)	14,375
450	-	450	Business expense	1,800	450	-	450	1,800
3,253	-	3,253	Audit fees	13,000	3,253	-	3,253	13,000
42,459	24,346	18,113	Total Materials and Services	169,800	42,459	24,346	18,113	145,454
1,706,501	300,763	1,405,738	Capital Outlay	6,825,998	1,706,501	300,763	1,405,738	6,525,235
4,500	-	4,500	Contingency	18,000	4,500	-	4,500	18,000
1,753,460	325,109	1,428,351	Total Expenditures	7,013,798	1,753,460	325,109	1,428,351	6,688,689
-	9,658	(9,658)	Ending Fund Balance	-	-	9,658	(9,659)	(9,658)
\$ 1,753,460	\$ 334,767	\$ 1,418,693	Total Requirements	\$ 7,013,798	\$ 1,753,460	\$ 334,767	\$ 1,418,692	\$ 6,679,031

These statements unaudited and are preliminary for fiscal year ending June 30, 2020.

**Willamette Intake Facilities Commission
Board Meeting Minutes
July 27, 2020**

REGULAR SESSION – 6:01 PM**CALL TO ORDER AND ROLL CALL****Commissioners present:**

Tualatin Valley Water District (TVWD):	Jim Doane (<i>Chair</i>)
City of Beaverton:	Marc San Soucie
City of Hillsboro:	John Godsey
City of Sherwood:	Sean Garland (<i>Vice Chair</i>)
City of Tigard:	John Goodhouse
City of Wilsonville:	Kristin Akervall

Committee Members present:

TVWD:	Paul Matthews, Finance Committee
TVWD:	Carrie Pak, Operations Committee
City of Beaverton:	Chad Lynn, Management Committee
City of Beaverton:	David Winship, Operations Committee
City of Hillsboro:	Niki Iverson, Management Committee
City of Tigard:	Brian Rager, Management Committee

Managing Agency Staff present:

Willamette Water Supply Program Director (WWSP) / WIF Commission General Manager	Dave Kraska
TVWD General Counsel	Clark Balfour
WWSP Assistant Director	Joelle Bennett
WWSP Permitting and Outreach Manager	Christina Walter
WWSP Finance Manager	Lisa Houghton
TVWD Water Resources Division Manager	Joel Cary
WWSP Administrative Assistant / WIF Commission Recorder	Annette Rehms

Other Attendees:

GeoSyntec	Rob Annear
-----------	------------

1. GENERAL MANAGER'S REPORT

Mr. Kraska presented the General Manager's report, which included a safety moment on staying sun-safe outdoors, FY 2020-21 Annual Work Plan Progress, a Curtailment Plan update, information on the status of the WWSS Thermal Trading Plan, and delivery of the quarterly financial report for the period ending June 30, 2020.

2. PUBLIC COMMENT

There were no public comments.

3. CONSENT AGENDA**A. Approve the April 27, 2020 meeting minutes**

Motion was made by Godsey, seconded by San Soucie, to approve the Consent Agenda as presented. The motion passed unanimously with Doane, Garland, Godsey, Goodhouse, Ackervall, and San Soucie voting in favor.

4. BUSINESS AGENDA

None

5. INFORMATION ITEMS

A. Semiannual Update on the Willamette Water Supply Program Raw Water Facilities Project

Mr. Kraska presented a semi-annual update on the WIF-related elements of the Willamette Water Supply Program (WWSP) Raw Water Facilities project (RWF_1.0). The WIF-related elements are seismic mitigation for the caisson and pump building, new fish screens, and air burst system improvements. The update included an overview of the current status of the project, the WIF budget and overall project schedule. He highlighted there are two phases of construction planned for the RWF_1.0 project. The majority of improvements to the WIF infrastructure are included in first phase (Phase 1), with a few improvements in the second phase (Phase 2). Since the January 2020 update, the 100% design has been completed and the Guaranteed Maximum Price (GMP) has been negotiated. The Notice to Proceed (NTP) was issued on June 22, 2020. Kiewit has mobilized, beginning the initial site work including site clearing, installation of construction fencing, and tree removal. Major work elements scheduled to start this year include the upper site mass excavation, lower site access road, and deep soil mixing for the caisson stabilization. The in-water work including screen replacement is scheduled for Fall 2021. Phase 1 of construction is currently scheduled to be complete in February 2022. Phase 2 of construction is planned to start in September 2022. The total projected project cost is \$14,290,766, which is an approximately one million dollars less than the anticipated cost in the WIF IGA Exhibit 11. Mr. Kraska did not recommend reducing the WIF budget at this time as this complicated project is still early in its construction phase.

Upon the conclusion of the semi-annual update and based on previous interest expressed by Commissioners, Mr. Kraska proposed two site visit opportunities: 1) during bank stabilization work between October 2020 and May 2021, and/or 2) during pump station building improvements between May 2021 and September 2021. Commissioners expressed interest in participating in both site visits. WWSP staff will coordinate and schedule a date for each visit.

B. Mission, Vision, Values & Goals

Mr. Kraska and Ms. Walters presented an update on the development of WIF Commission's Mission, Vision, Values, and Goals (MVVG) work. This update included a summary of qualifications desired for the potential facilitator, a tentative project development timeline, and an outline of current MVVG progress. They highlighted that on July 1, 2020 a Request for Proposal (RFP) was released soliciting a qualified facilitator and panel interviews are to begin on August 12th. The contract Scope of Work (SOW) will require the selected facilitator to conduct a series of meetings with the Commission and series of workshops with representatives from each agency. These meetings and workshops will begin in September 2020 with a completion date of June 2021. The WIF Commission Board will have three opportunities to participate in the process, these opportunities will align with regularly scheduled Board meetings in October, January, and April.

C. Independent Audit Update

Mr. Matthews presented the Moss Adams Fiscal Year 2019-20 SAS 114 Planning Letter and Audit Engagement letter. The letters outline certain aspects of the audit, are a standard part of the audit procedures, and are provided to the WIF Board as information. The Commission IGA (Article 7.7) requires an independent audit for the financial affairs of the Commission. Tualatin Valley Water District (TVWD), acting as the managing agency for the WIF Commission, has engaged Moss Adams, LLP, to audit the commission's Basic Financial Statements for the period ending June 30, 2020. TVWD staff have begun coordination with Moss Adams to facilitate the audit and an opinion letter is expected later this fall.

Commissioner San Soucie thanked Mr. Matthews for his brief introduction to the extremely long set of documents.

D. Legislative Update

Mr. Cary presented a Legislative update on four key concepts:

- Engagement with the Governor's office and Legislative members regarding ongoing concerns and financial

impacts to water service providers from COVID-19 continues. The coalition has been advocating for COVID-19 emergency funds to support customer assistance programs and related funding. The coalition met with the Governor's office on July 8, to consider solutions for the distribution of potential funds to municipal and private water service providers, which has been one of the primary challenges to committing funds for this effort.

- Legislative Assembly held a two-day special session that concluded on June 26, much of the focus centered on police accountability and measures deemed time sensitive or necessary in response to COVID-19.
- Senate Bill (SB) 1602 passed. This bill memorializes an historic agreement between environmental advocacy groups and the timber industry regarding forestry spraying practices. This bill increases stream-side riparian buffers, creates additional buffers for aerial spraying, and crucially, requires an inventory of water diversion points to minimize risks to drinking water intakes.
- Work continues with the Legislative Policy Research Office (LPRO) to address cyanoHABs. A meeting with the LPRO's interim Director occurred in May to review and discuss recommendations from last year's HABs Work Group; specifically, how to move forward with the "gaps analysis" of related HABs programs across the state. A select group of individuals from drinking water agencies, the Oregon Health Authority, and the Department of Environmental Quality are convening again to plan the next steps for this work.

In response to Commissioner's question, staff replied that the use of helicopters to spray buffers as stated in Senate Bill 1602, is the typical vehicle used in aerial forestry spraying as opposed to the possible use of airplanes or drones in agriculture spraying. Staff reported that more detailed information is expected as the legislative Bill gets adopted and enacted by the forestry department. Staff will continue to report on this topic as relates to the broader impact across the basin.

A. The next Board meeting is scheduled on October 26, 2020 via Microsoft Teams

6. COMMUNICATIONS AND NON-AGENDA ITEMS

A. None scheduled.

7. ADJOURNMENT

There being no further questions or business, Chairman Doane adjourned the meeting at 6:40 p.m.

Jim Doane, Chair

Sean Garland, Vice Chair

WIF COMMISSION STAFF REPORT

To: Board of Commissioners

From: Joel Cary, TVWD Water Resources Division Manager

Date: October 26, 2020

Subject: Legislative Update

Key Concepts:

- Communication with Oregon Legislative members about the financial impacts to water providers from COVID-19 has continued
- The Harmful Algal Blooms (HABs) Workgroup helped prepare two draft concepts for the 2021 Legislative Session
- Wildfire impacts to water providers has become the focus of recent Legislative engagement and state-wide coordination

Background:**Impacts from COVID-19**

Drinking water and wastewater representatives have continued to meet with the Oregon Legislature's House Committee on Water to discuss the impacts from COVID-19. On September 23, updates were provided to Committee members on a range of issues. These included ongoing revenue impacts to both small and large water utilities, the current state of utility disconnects, and general access rates by customers seeking financial assistance to pay for their water services. The goal of this Committee hearing was to engage members on the efforts water providers have and continue to make during COVID-19 to protect public health while balancing the need to remain financially stable, and to make sure that if additional federal stimulus funds become available, the Oregon Legislature has the right process in place to distribute these funds to water supply agencies across the state. This item will continue to be part of engagement through 2020 and into the 2021 Legislative Session.

CyanoHABs

Work with the Legislative Policy Research Office (LPRO) to address cyanoHABs has continued to move forward at the direction of Representative Helm, Chair of the House Committee on Water. The members of the HABs workgroup and LPRO created an online survey in August to better understand some of the existing gaps and barriers in addressing cyanoHABs. Over 80 respondents completed the survey, from water suppliers to state level agencies and local watershed councils (note: this survey was completed by TVWD as the managing agency for the WIF Commission). Results are still being evaluated but given the September 25 deadline to submit legislative concepts for the 2021 Session, two bills were introduced in draft form – one to supply the Oregon Department of Environmental Quality with additional cyanotoxin testing equipment to support the requirements for seasonal drinking water providers, and another aimed at consolidating resources into a centralized, publicly facing website for improved coordination. The members of the HABs Workgroup will be meeting three additional times later this month to make recommended changes to the current draft bills, which may alter them substantially from their current form.

Oregon Wildfires

With the recent wildfires impacting multiple water agencies across the state, efforts at the Legislative level have focused on this issue in recent weeks. Items in-progress include outreach to the Office of

Emergency Management on targeted debris removal in waterways impacting drinking water sources and outreach to the Oregon Health Authority regarding testing downstream of wildlife impacted areas. In addition, the Oregon Water Utility Council is forming a small wildfire subcommittee to collaborate on this issue with a variety of potential agencies. This includes various state agencies as noted above, and Oregon State University concerning areas of needed research. Progress and subsequent details about this item will be shared during the next WIF Commission Board meeting.

Budget Impact:

Informational items only; no impact to 2020-2021 WIF Budget.



Staff Contact Information:

Joel Cary; TVWD Water Resources Division Manager; 503-848-3019; joel.cary@tvwd.org

Attachments:

WIF Board Legislative presentation PowerPoint slides 10.26.2020

Management Staff Initials:

General Manager		TVWD General Counsel	
TVWD Chief Engineer	N/A	TVWD Chief Financial Officer	N/A

WIF Commission

October 26 Legislative Updates

Joel Cary

Water Resources Division Manager & OWUC Chair

Tualatin Valley Water District

 Delivering the Best Water  Service  Value

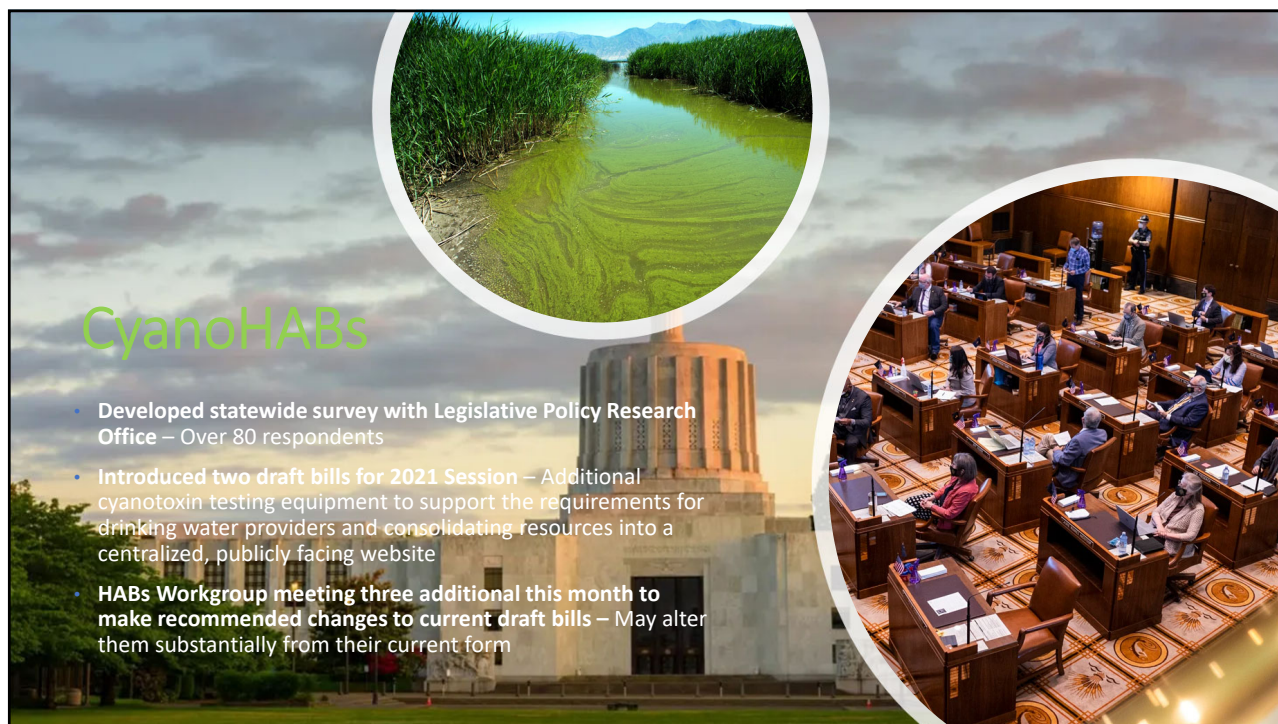
1



Impacts from COVID-19

- **House Committee on Water** – Updates were provided on revenue impacts to water utilities, current state of utility disconnects, and financial assistance programs
- **Presentation Goals** – Share efforts water providers have and continue to make during COVID-19 to protect public health while balancing the need to remain financially stable, and to make sure that if additional federal stimulus funds become available the Legislature has the right process in place to distribute funds
- **This item will continue to be part of engagement through 2020 and into the 2021 Legislative Session.**

2



CyanoHABs

- Developed statewide survey with Legislative Policy Research Office – Over 80 respondents
- Introduced two draft bills for 2021 Session – Additional cyanotoxin testing equipment to support the requirements for drinking water providers and consolidating resources into a centralized, publicly facing website
- HABs Workgroup meeting three additional this month to make recommended changes to current draft bills – May alter them substantially from their current form

3



Oregon's Recent Wildfires and Impacts to Water Utilities

- **Emergency Response** – Outreach to OEM and OHA about debris removal and water quality testing
- **Oregon Water Utility Council** – Creating specific subcommittee to continue targeted engagement
- **Research** – Potential areas where water agencies can collaborate with OSU and others

4

Questions?
Thank-you

WIF COMMISSION STAFF REPORT

To: Board of Commissioners

From: Christina Walter, WWSP Permitting and Outreach Manager

Date: October 26, 2020

Subject: Thermal Trading Plan Update

Key Concepts:

- A final revised Thermal Trading Plan for the WWSS was submitted to the Oregon Department of Environmental Quality (DEQ) on September 1, 2020. Formal approval of the plan by DEQ is anticipated in October 2020.
- WWSP staff has publicly identified two ongoing projects to offset the WWSS's impacts to the Willamette River with its future withdrawals: the Molalla River State Park Floodplain Forest and Riparian Area Health Restoration Project; and the Chicken Creek Habitat Project.
- Once the plan is officially approved, WWSP staff will continue to work closely with DEQ to analyze the credits achieved through the two projects and determine whether full credit needed has been achieved or if additional credits need to be generated.

Background:

A Thermal Trading Plan is a plan to offset temperature impacts to a river from either a discharge to or withdrawal of water from waters of the state. The WWSP was required to submit a plan to the Oregon Department of Environmental Quality (DEQ) as a requirement of the Clean Water Act, Section 401 Water Quality Certification (Permit) for its withdrawal of water from the Willamette River. DEQ has been certifying Thermal Trading Plans since 2004 but until this point, only as conditions of National Pollutant Discharge Elimination System (NPDES) Permits for wastewater dischargers. DEQ is setting a precedent with the WWSS in that it will be the first entity required to submit/implement a Thermal Trading Plan for a water withdrawal.

The WWSP staff submitted its proposed plan to DEQ in November 2019. DEQ conducted its internal review of the plan then held an open public comment period February 14 – April 3, 2020. During that period, DEQ received written public comments on the plan from the following:

- City of Portland, Bureau of Environmental Services
- Oregon Department of Agriculture
- Northwest Environmental Advocates
- WaterWatch of Oregon
- Willamette Riverkeeper
- Melissa Houlberg
- Dale Feik

The comments received could be broken down into two groupings – those with technical questions/concerns on the plan (such as the methodology for calculating the trading ratio); the second grouping was

basic challenges to DEQ's administration of thermal trading plans. At the request of one of the commenters, DEQ held a virtual public hearing on July 1, 2020 regarding the plan.

During the public comments/testimony of the hearing, WWSP staff provided an overview of the two ongoing projects identified to offset the WWSS's impacts to the Willamette River with its future withdrawals. These projects will generate thermal credits as defined by the water quality trading rules and best practices approved by DEQ for other trading plans. The two plans include:

- **Molalla State Park Project:** The first project is the Molalla River State Park Floodplain Forest and Riparian Area Health Restoration Project (Molalla State Park Project) throughout the Molalla River State Park. The site is located at the confluence of the Molalla, Pudding, and Willamette Rivers. It will involve 450 acres of floodplain forest and channels within the 2-year inundation zone of the Willamette River. Native vegetation in the Molalla River State Park has been significantly impacted by large stands of knotweed and other invasive species, resulting in loss of riparian habitat, canopy shade over the river, and necessary riverbank stabilization. The project will include removal of invasive species and replanting of native trees to increase stream shading. Habitat restoration will be incorporated where replanting occurs. The project addresses several factors limiting habitat health identified in the Upper Willamette River Recovery Plan for Chinook salmon and steelhead. The project involves extensive temperature and vegetation data collection, analysis, and interpretation to guide restoration activities, weed removal and replanting with native species, and then maintenance of replanted areas. This project is a partnership with Molalla River Watch, which Oregon State Parks has contracted to do habitat improvements in the park.
- **Chicken Creek Project:** The second project is the Chicken Creek Habitat Project within the Tualatin River National Wildlife Refuge. This project would restore the lower reach of the historic Chicken Creek Channel to a more historical alignment through its former floodplain as well as restore its associated floodplain wetlands. By realigning the creek to a more natural meander and eliminating some levee and other water management infrastructures, natural physical and biological process will be restored to 2 miles of the stream channel and 280 acres of floodplain, benefiting a broad suite of aquatic and wetland-dependent native flora and fauna as well as substantially reducing sediment and nutrient inputs to the Tualatin River. This project is a partnership with the Friends of the Tualatin Wildlife Refuge, which supports Clean Water Services in the project design and implementation.

Following the conclusion of the hearing and closure of this final opportunity for public comment, DEQ provided WWSP staff a short list of requested modifications to the plan. The focus of DEQ's requested modifications were the following:

- Adjustment of the mitigation trading credit ratio from the proposed ratio of 1.7:1 to 2:1. This aligns with the typical ratio carried in other trading plans, as well as mitigation requirements of other environmental permits. Staff anticipated that DEQ would request this change and was comfortable with integrating the change into the plan.
- A restriction of mitigation project locations to areas along the Willamette River and/or along its tributaries below reservoirs. The rationale for this restriction is that any project above a reservoir

would have limited (if any) temperature reductions downstream due to the length of time water sits in the reservoir and would, therefore, not achieve the goal of cooling the water downstream of the WWSP’s point of diversion. Again, staff felt the WWSP could easily accommodate this proposed change and incorporated it into the plan.

- All other modifications were minor editorial changes/a few language clarifications within the document. Staff inserted these modifications as requested by DEQ.

WWSP staff resubmitted the plan with the requested modifications on September 1, 2020. The plan is currently being reviewed by DEQ’s senior management. DEQ staff anticipates the final approval of the plan to occur sometime in October. Once approved, the plan, along with DEQ’s official written responses to all public comments, will be posted on its website.

Once the plan is approved, WWSP staff will continue to work closely with DEQ to analyze the credits achieved through these Molalla State Park and Chicken Creek Habitat Projects and determine whether full credit needed has been achieved. If not, staff will seek additional similar projects as outlined in the plan.

Budget Impact:

No immediate budget impacts are anticipated at this time. With DEQ’s adoption of the plan, staff will work with DEQ to confirm and validate the number of credits already earned and determine what, if any, additional mitigation project funding must be allocated in future budgets.



Staff Contact Information:

David Kraska, P.E.; General Manager; 503-941-4561; david.kraska@tvwd.org
 Christina Walter, Permitting and Outreach Manager; (503) 840-3830; christina.walter@tvwd.org

Attachments:

WWSS Thermal Trading Plan

Management Staff Initials:

General Manager		TVWD General Counsel	
TVWD Chief Engineer	N/A	TVWD Chief Financial Officer	N/A

WILLAMETTE WATER SUPPLY SYSTEM: THERMAL TRADING PLAN

Contents

Regulatory Background Supporting Trading in Oregon.....	2
Eligibility.....	3
OAR 340-039-0015: ELIGIBILITY.....	3
Trading Plan	3
OAR 340-039-0025(5)(A): TEMPERATURE TRADING	3
OAR 340-039-0025(5)(B): BASELINE	3
OAR 340-039-0025(5)(C): TRADING AREA	5
OAR 340-039-0025(5)(D): BMPS.....	6
Stored Water	7
OAR 340-039-0025(5)(E): TRADING RATIOS	7
OAR 340-039-0025(5)(F): CREDITS	7
Credits Needed	8
Methods Used	10
Credit Duration	12
OAR 340-039-0025(5)(G): MONITORING.....	12
OAR 340-039-0025(5)(H): TRADING PLAN PERFORMANCE VERIFICATION	14
OAR 340-039-0025(5)(I): TRACKING AND REPORTING	14
OAR 340-039-0025(6): ADAPTIVE MANAGEMENT	15
OAR 340-039-0025(7): TRADING PLAN REVISION	15
Consistency with Water Quality Trading Purpose and Policy	15
OAR 340-039-0001: PURPOSE AND POLICY	15
Consistency with Water Quality Trading Objectives	16
OAR 340-039-0003: WATER QUALITY TRADING OBJECTIVES.....	16

Regulatory Background Supporting Trading in Oregon

The Oregon Department of Environmental Quality (DEQ) has been issuing permits that include thermal credit trading since 2004, when a permit was issued to Clean Water Services that allowed two publicly owned treatment works (POTWs) to receive thermal credits by restoring and managing riparian areas to create shade and releasing cold water from an upstream reservoir. The thermal trading credits allowed the POTWs to comply with water quality-based effluent limitations for temperature in their National Pollutant Discharge Elimination System (NPDES) permits.

In 2015, the Oregon Environmental Quality Commission (EQC) approved Oregon Administrative Rule (OAR) 340 Division 039, a set of rules outlining the basic requirements for a viable water quality trading program. Following this, in 2016, DEQ updated its Water Quality Trading Internal Management Directive (IMD)¹ to complement the changes in the new rules.

The Willamette Water Supply System Commission (WWSS Commission) is an Oregon intergovernmental entity formed by Tualatin Valley Water District (TVWD), the City of Hillsboro, and the City of Beaverton. The WWSS Commission was formed to build the Willamette Water Supply System (WWSS) in response to planned growth in their service areas. The WWSS will provide an additional, resilient water supply for Washington County. When complete, the WWSS will be one of Oregon's most seismically-resilient water systems—built to better withstand natural disasters, protect public health, and speed regional economic recovery through restoring critical services more quickly.

The Willamette River, one of Oregon's largest rivers, is the WWSS's new supply source. The raw water intake is located at the Willamette River Water Treatment Plant in Wilsonville. From there, raw water will be pumped to the WWSS Water Treatment Plant, a new state-of-the-art water filtration plant where multiple treatment processes will produce high quality drinking water. Drinking water will be pumped to reservoir facilities on Cooper Mountain, then will be gravity-fed to additional storage and customers in the TVWD, Hillsboro, and Beaverton service areas. The new system will be completed by 2026.

TVWD has been designated the Managing Agency for the WWSS Commission, and TVWD operates the Willamette Water Supply Program (WWSP) to plan, design, and construct the WWSS.

The WWSS will include more than 30 miles of water transmission pipelines ranging in diameter from 36 inches to 66 inches from the raw water facilities in Wilsonville north to Hillsboro and the TVWD service areas. The WWSS also includes constructing two finished-water storage tanks (terminal storage) and expanding the raw water facilities, including replacing the fish screens and seismic improvements at the existing intake facility on the Willamette River. The WWSS will provide the Partners and the region with a seismically resilient water supply to meet future water demands and provide redundancy in case of a future emergency event.

This Thermal Trading Plan (TTP) seeks to fulfill the temperature offset requirement of the Clean Water Act (CWA), Section 401 water quality certification (WQC) as it pertains to the WWSS.

Previous TTPs have been used to address discharges under NPDES permits. This TTP differs because it describes the plan for offsetting the temperature impact of a water withdrawal, as opposed to a discharge, and because it is associated with a Clean Water Act (CWA) Section 401 water quality certification (WQC), rather than a NPDES permit. While discharges typically result in their maximum impact at the discharge point, a withdrawal is different—its impact is likely to occur well downstream of the withdrawal after atmospheric conditions have had

¹ Oregon Department of Environmental Quality (2016), Water Quality Trading Internal Management Directive. March 31. Available at <https://www.oregon.gov/deq/Filtered%20Library/WQTradingIMD.pdf>

time to act on the reduced volume of water remaining in the river. These impacts are further discussed below in the section describing the trading area.

This TTP is consistent with OAR 340 Division 039 and the 2016 Water Quality Trading IMD.

Eligibility

OAR 340-039-0015: ELIGIBILITY

The WWSS Commission is pursuing this trading program as part of its Section 401 WQC and is therefore eligible to trade under OAR 340-039-0015(1). Temperature is one of the water quality parameters eligible for trading under OAR 340-039-0015(2). The Willamette River is eligible for trading under OAR 340-039-0015 (3) because it is consistent with water quality management plan in the 2006 temperature TMDL.²

Trading Plan

The following subsections describe how the WWSS Commission's trading plan aligns with each of the required components of a trading plan, as described in OAR 340-039-0025(5).

OAR 340-039-0025(5)(A): TEMPERATURE TRADING

A trading plan must identify the parameter for which water quality trading is developed. The WWSS Commission's trading plan is developed for water temperature.

OAR 340-039-0025(5)(B): BASELINE

Oregon defines the "trading baseline" as the "pollutant load reductions, BMP requirements, or site conditions that must be met under regulatory requirements in place *at the time of trading project initiation*." OAR 340-039-0005(6). A trading plan must identify "any applicable regulatory requirements from OAR 340-039-0030(1) that apply within the trading area and that must be implemented to achieve baseline requirements." Credits are generated when the trading project results in water quality benefits above the trading baseline. Establishing a baseline ensures that credits are not used to meet an existing regulatory obligation or used by more than one entity at any given time. Applicable regulatory requirements can include³:

- NPDES permit requirements
- CWA section 401 certifications
- Agricultural water quality management area rules
- Oregon Board of Forestry rules
- Federal management plans or agreements between the state and a federal agency
- Local ordinances
- Tribal laws or rules
- Requirements derived from a TMDL by designated management agencies responsible for TMDL implementation.

The WWSS Commission will evaluate whether any of the baseline requirements described in the rule apply to the potential trading sites. If affirmative requirements do apply to trading project sites, baseline BMPs can be installed or deductions to site thermal benefit totals can be made to ensure that credit is not being taken for actions that were required under baseline obligations. If no baseline obligations exist at the trading project site (described

² Oregon Department of Environmental Quality, (2006). The Willamette Basin Total Maximum Daily Load (TMDL) documents. *Available at* <https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Willamette-Basin.aspx>

³ Draft City of Ashland Trading Plan v3 (March 2018)

below), the baseline obligation would be equal to current conditions. Table 1 provides an overview of the baseline requirements listed in the trading rule that might apply to the trading projects.

Table 1. Overview of Baseline Requirements Potentially Applicable to WWSS Commission Proposed Trading Projects within the Trading Area.

ORS 340-039-0030(1)	BASELINE REQUIREMENT
(a) NPDES permit requirements	None
(b) Rules issued by Oregon Department of Agriculture for an agricultural water quality management area under OAR chapter 603 division 095	The WWSS Commission has identified potential trading projects in the Tualatin River Watershed Agricultural Water Quality Management Area Rules and the Molalla/Pudding/French Prairie/North Santiam Agricultural Water Quality Management Area Rules. Requirements will be evaluated on a case-by-case basis as trading projects are further defined.
(c) Rules issued by Oregon Board of Forestry under OAR chapter 629 divisions 610-680	Not currently applicable; forestry-zoned sites are not currently under consideration for implementation.
(d) Requirements of a federal land management plan, or an agreement between a federal agency and the state	Any projects within National Wildlife refuges will follow associated Comprehensive Conservation Plans. Other requirements will be evaluated on a case-by-case basis as trading projects are further defined.
(e) Requirements established in a Clean Water Act Section 401 water quality certification	Other than the Section 401 WQC, which this Thermal Trading Plan is intended to address, the WWSS Commission is not aware of any WQCs applicable to the proposed trading projects.
(f) Local ordinances	Not currently applicable. No applicable local ordinances have been identified that would impact the potential trading projects. The WWSS Commission will continue to evaluate any applicable local ordinances on a case-by-case basis as trading projects are further defined.
(g) Tribal laws, rules, or permits	Not currently applicable. The WWSS Commission is not aware of Tribal laws, rules or permits applicable to the potential trading projects. Requirements will be evaluated on a case-by-case basis as trading projects are further defined.
(h) Other applicable rules affecting nonpoint source requirements	Not currently applicable. The WWSS Commission is not aware of any other applicable rules affecting nonpoint source requirements at the potential trading projects. Requirements will be evaluated on a case-by-case basis as trading projects are further defined.

(i) Projects completed as part of compensatory mitigation, or projects required under a permit or approval issued pursuant to Clean Water Act section 404, or a supplemental environmental project used to settle a civil penalty imposed under OAR chapter 340 division 012 of the Clean Water Act	Project sites are being evaluated. On a case-by-case basis, the WWSS Commission will verify that the baseline requirements for a CWA or Supplemental Environmental Project site are met prior to calculating credits.
(j) Regulatory requirements a designated management agency established to comply with a DEQ-issued TMDL, water quality management plan or another water pollution control plan adopted by rule or issued by order under ORS 468B.015 or 468B.110.	The WWSS Commission will ensure that projects comply with baseline requirements associated with the Willamette River TMDL prior to calculating credits. Oregon State Parks is a designated management agency in the Willamette Temperature TMDL and may have requirements related to their land management activities. If any trading projects occur on state parks land, the associated baseline requirements will apply. Requirements will be evaluated on a case-by-case basis as trading projects are further defined.

The WWSS Commission will verify that all baseline requirements identified in Table 1 for its trading projects are met before calculating credits for its trading BMPs.

OAR 340-039-0025(5)(C): TRADING AREA

A trading plan must include a “description of the trading area including identification of the location of the discharge to be offset, its downstream point of impact, if applicable, where trading projects are expected to be implemented, and the relationship of the trading projects to beneficial uses in the trading area.” Trades must occur within the same watershed or area covered by a TMDL so that the benefits of the trades occur in same waterbody where the discharge is occurring.⁴ A trading area is also required to “encompass the location of the discharge to be offset, or its downstream point of impact, if applicable, and the trading project to be implemented.”⁵ Trading areas must also be consistent with the TMDL water quality management plans (WQMP), where they exist.⁶

The WWSS withdrawal is located at Willamette River Mile (RM) 38.7, approximately 3 miles upstream of the point where the Molalla River enters the Willamette (RM 35.6). The point of maximum impact of the WWSS withdrawal is located at RM 27.1, approximately 11.6 miles downstream of the withdrawal. The trading area will be the full Willamette River basin upstream of the point of maximum impact (see the map in Appendix A). The map indicates the location of the withdrawal, the point of maximum impact and the location of the reservoirs associated with the U.S. Army Corps of Engineers Willamette Valley Project, from which stored water may be available. The map also indicates the location of the Tualatin River, Pudding River and Molalla River, which enter the Willamette River between the withdrawal and the point of maximum impact. Riparian Shading, Floodplain Resiliency and In-stream Habitat Restoration BMPs (discussed below) may be identified and conducted on the Willamette River mainstem and its tributaries upstream of the point of maximum impact. The map in Appendix A also indicates HUC-12 watersheds which either include Willamette Valley Project reservoirs or are above Willamette Valley Project

⁴ U.S. EPA, Water Quality Trading Policy, 68 Fed. Reg. at 1610. OAR 340-039-0040(1)

⁵ OAR 340-039-0005(5)

⁶ OAR 340-039-0035(2)

reservoirs. The map also indicates as HUC-12 watersheds above Trail Bridge Reservoir, part of the Carmen-Smith Hydroelectric Project on the McKenzie River. There are also other small reservoirs on minor Willamette River tributaries not shown on the map. The WWSS will not conduct Riparian Shade, Floodplain Resiliency or In-stream Habitat Restoration BMP projects upstream of reservoirs. These BMP project types are described in the next section. Additionally, as discussed below, purchase of stored water that would enter the Willamette upstream of the point of maximum impact would be quantitatively demonstrated to reduce the temperature impact at the point of maximum impact. The full trading area is within the Willamette River basin and covered by the 2006 Temperature TMDL.

OAR 340-039-0025(5)(D): BMPS

Pursuant to the trading rule, a trading plan must include a “description of the water quality benefits that will be generated, the BMPs that will be used to generate water quality benefits, and applicable BMP quality standards.” A BMP is defined as “in-water or land-based conservation, enhancement or restoration actions that will reduce pollutant loading or create other water quality benefits. BMPs include, but are not limited to, structural and nonstructural controls and practices and flow augmentation.”⁷ A BMP quality standard must include “specifications for the design, implementation, maintenance and performance tracking of a particular BMP that ensure the estimated water quality benefits of a trading project are achieved, and that allow for verification that the BMP is performing as described in an approved trading plan.”⁸

The primary BMP that will be used to generate thermal benefits under this thermal trading plan is the riparian shade BMP (Appendix B) at the proposed trading projects. The main purpose of the riparian shade BMP is to reduce thermal loading by blocking solar radiation. The methodology for calculating thermal credits will be discussed in the next section.

The BMP quality standard proposed by the WWSS Commission for riparian shade will include the following components:

- Projects will be implemented on public lands that have an established restoration plan and the intent of the land is for restoration and similar public benefit purposes. Conducting restoration on such properties will allow the associated benefits to be adequately preserved. If projects are to be implemented on private property, the appropriate easements and encumbrances will be acquired.
- Riparian Shade BMPs will be designed, implemented, monitored, verified, and tracked consistent with the TTP Standards for Riparian Restoration Projects (see Appendix B), which are based on the Willamette Partnership’s Performance Standards for Riparian Revegetation (Willamette Partnership 2016).
- In accordance with maintenance plans developed at the outset of credit projects, BMPs will be visited regularly for maintenance, especially in early “establishment” years. During site establishment, minimum maintenance on most sites will usually include one spring ring spray, one summer mow or cut, and one fall spot spray. In irrigated riparian areas with water rights, irrigation may be an appropriate option during the first several years. Once a site has become established, maintenance activities will continue, but may occur at less frequent intervals.
- Details on the performance tracking and verification aspects of the WWSS Commission’s proposed BMP quality standards are described below in the subsections corresponding with OAR 340-039-0025(5)(G) verification, and (H) tracking/reporting.

⁷ OAR 340-039-0005(1)

⁸ OAR 340-039-0005(2)

- Projects will include the removal of invasive species and replanting of native trees to increase stream side shading. Habitat restoration will be incorporated where replanting occurs.
- In addition to riparian shading, consideration will be given to increasing instream habitat complexity, enhancing riparian habitat, and reconnecting off-channel habitats. Where possible, efforts will be made to create cold water refugia, which are identified in the 2006 Willamette River TMDL as an important consideration because of the importance of offering migrating salmonids refugia from warmer river temperatures in the summer.

Two additional types of BMPs, Floodplain Resiliency and In-stream Habitat Restoration BMPs, are discussed in Appendix C. The floodplain habitat resiliency BMP focuses on habitat improvements along floodplains (generally within the 100-year floodplain and consisting of riparian and upland habitats) to improve the functions of native aquatic ecosystems. These improvements will allow for continued stream shading after a channel migrates across the floodplain, rather than channel migration into more degraded areas. The in-stream habitat BMP focuses on activities within the stream channel, including side channels inundated with at least a 2-year return interval. Key activities may include increasing stream habitat complexity, reconnecting or creating new side channels, improving cold water refugia access to fish and other activities supporting habitat for key species.

Additional BMP types may be proposed during the life of this TTP. Each new BMP type will be detailed in an addendum to this TTP, with review and approval by DEQ prior to implementation.

Stored Water

Water stored behind U.S. Army Corps of Engineers (USACE)-operated dams as part of the Willamette River Valley Project is in the process of being allocated; some of this water will be allocated to municipalities, including the WWSS partners. This water will become available for water supply and releasing some of this stored water may be a potential mitigation strategy for river water temperature impacts and augmenting summer water supplies for the WWSS partners.

The impact of utilizing stored water could be quantified through CE-QUAL-W2 model simulations. The releases would be added to the model(s) at the appropriate upstream locations and the impact on water temperatures, particularly at the point of maximum impact, could be evaluated using the CE-QUAL-W2 models developed for the Willamette River Temperature TMDL.

OAR 340-039-0025(5)(E): TRADING RATIOS

Trading ratios are “a numeric value used to adjust the number of credits generated from a trading project, or to adjust the number of credits that a credit user needs to obtain.” In Oregon, trading ratios can be used to account for time lags, attenuation of water quality benefits, among other uncertainties.⁹ A trading plan must include a “description of applicable trading ratios, the basis for each applicable trading ratio, including underlying assumptions for the ratio, and a statement indicating whether those ratios increase or decrease the size of a credit obligation or the number of credits generated from an individual trading project.”

To date, in Oregon riparian shade restoration trading programs, DEQ has approved a 2:1 trading ratio. The WWSS proposes to use the same 2:1 trading ratio for its projects.

OAR 340-039-0025(5)(F): CREDITS

The trading rule requires that a trading plan include a “description of the credits needed to meet water quality-based requirements of an NPDES permit or 401 water quality certifications, including:

⁹ OAR 340-039-0005(10)

- Quantity and timing: The number of credits needed and any credit generation milestones, including a schedule for credit generation;
- Methods used: How credits will be quantified, including the assumptions and inputs used to derive the number of credits; and
- Duration of credits: A description of the length of time credits are expected to be used.”

Credits Needed

This subsection identifies the projected excess thermal load exceedance(s) throughout the year. For a discharge, thermal exceedance is equal to: *(Facility Excess Thermal Load) – (Excess Thermal Load Limit)*, or ETL – ETLL, where:

$$ETL = (\text{Flow}_{\text{effluent (cfs)}}) \times (\text{°C}_{\text{effluent}} - \text{°C}_{\text{Temperature Criteria}}) \times (\text{Conversion Factor})$$

$$ETLL = (\text{Flow}_{\text{river (cfs)}} + \text{Flow}_{\text{effluent (cfs)}}) \times (\text{Human Use Allowance}) \times (\text{Conversion Factor})$$

Because the WWSS Commission’s trading plan is for a withdrawal rather than a discharge, the credits to be offset must be calculated differently. Calendar year 2001 was a very dry year in which Willamette River flows were below the 7Q10 flows for much of the summer, making it an appropriate year for consideration of the water temperature impacts of the WWSS withdrawal. Calendar year 2002 was a more typical year, and previous modeling¹⁰ indicated smaller water temperature increases. For each day during the modeled period for Calendar Year 2001 (April through October), a heat load was calculated as follows:

$$\Delta T * Q * 1000 \frac{kg}{m^3} * 86400 \frac{s}{day} * \frac{1 kcal}{kg * °C} = \text{Heat Load (kcal/day)}$$

Where:

ΔT is the increase in Daily Maximum water temperature (above the baseline scenario discussed below), in degrees C

Q is the Daily Average flow in the river at the location of maximum impact, in cubic meters per second (cms)

The previous analysis considered two baseline scenarios:

- TMDL model, with no adjustment
- TMDL model, with 70 MGD of withdrawal to account for the already-permitted WRWTP withdrawal (Baseline-1)

For this analysis, an additional baseline scenario was considered (Baseline-2):

- TMDL model, with the 70-MGD WRWTP withdrawal and a 56-cfs (1.586 cms) withdrawal at the upstream end of the Middle Willamette River model to account for the 56-cfs water right purchased by the City of Hillsboro under Permit S-45565 (GSI, 2017).

The purchase of the 56 cfs water right guarantees that this amount of water remains in the river downstream to the point of the WWSS withdrawal under future conditions. This is analogous to flow augmentation and comparing the maximum WWSS withdrawal scenario to a baseline scenario which includes the 56 cfs of withdrawal upstream of the WWSS withdrawal provides an accurate assessment of the net impact of the increased WWSS withdrawal, which is partially offset by the augmentation of river flows in the middle Willamette River upstream of the withdrawal.

¹⁰ Geosyntec, 2018. Temperature Modeling, Summary. Memorandum to Amy Simpson and Jim Bloom, ODEQ. May 23.

For consistency with the impact quantification approach applied in other trading plans (the City of Ashland Draft Trading Plan¹¹ and the Clean Water Services Thermal Load Management Plan¹²), after calculation of the heat load for each day according to the above formula, the maximum rolling 30-day average heat load was determined.

Based on this analysis, the maximum rolling 30-day average heat load is **30.2 million kcal/day**.

More detailed results are presented in Figure 1, which shows the backwards-looking rolling 30-day average heat load increase for the maximum scenario relative to the two baseline scenarios. The value for a given date is the average of the heat load increases for the preceding 30 days. For dates where the line is not visible, the 30-day average heat load increase is negative (i.e. the maximum scenario is colder than the baseline scenario). The figure indicates that the maximum rolling 30-day average heat load increase above the “Baseline-1” scenario is 237.3 million kcal/day. The maximum 30-day average heat load increase above the “Baseline-2” scenario, which accounts for the “flow augmentation” guaranteed by the purchase of the 56-cfs water right, occurs 10-days later and is 30.2 million kcal/day, 12.7% of the increase above “Baseline-1.”

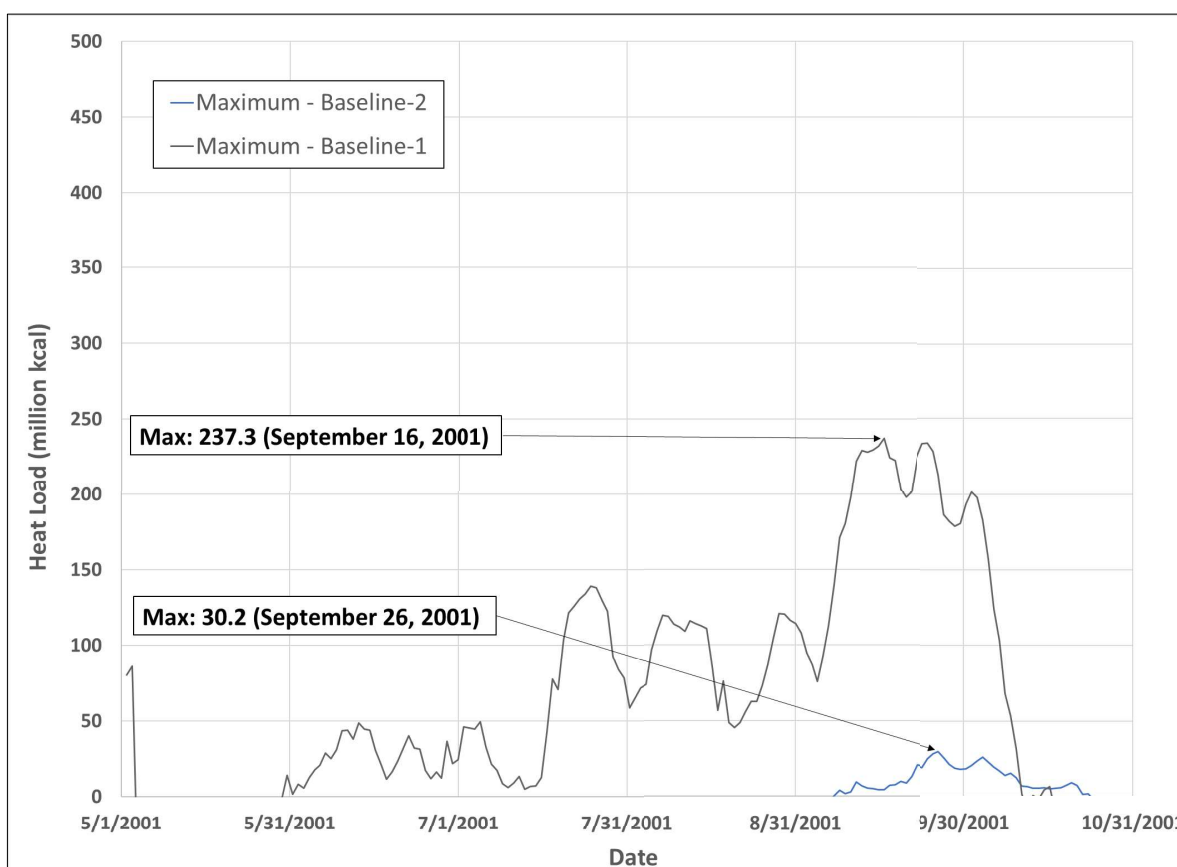


Figure 1. Rolling Backwards-Looking 30-Day Average Heat Load Increase for the Maximum Scenario above Two Baseline Scenarios, at the Point of Maximum Impact (RM 27.1).

The average values for each calendar month (average of the daily heat-load increases for each day within the calendar month) are shown in Table 2. The calendar months where the average increases are negative (i.e. a decrease) are indicated. For both scenarios, the maximum rolling 30-day average includes dates from both August and September, explaining why the maximum values in Table 2 are lower than those indicated in Figure 1.

¹¹ Draft City of Ashland Trading Plan v3 (March 2018)

¹² Clean Water Services (2016). Thermal Load Management Plan Package. Memorandum to File. May.

Table 2. Average Daily Heat Load Increase for each calendar month for the Maximum Scenario above Two Baseline Scenarios, at the Point of Maximum Impact (RM 27.1).

Month	Maximum – Baseline-1 (million kcal/day)	Maximum – Baseline-2 (million kcal/day)
April	70.2	<0
May	13.8	<0
June	24.7	<0
July	77.5	<0
August	107.7	<0
September	193.6	18.7
October	<0	<0

Table 3 presents the highest backwards-looking rolling 30-day average heat load increase for each calendar month (e.g. the value for a given date represents the preceding 30 days—the value reported for July 31 would represent the average heat load increase for July 1 – July 30). April is thus omitted from the table because the first backwards-looking 30-day average heat load is reported in May. The table indicates that the maximum values occur in September, which is also demonstrated in Figure 1.

Table 3. Highest Backwards-Looking Rolling 30-Day Average Heat Load Increase Ending in Each Calendar Month for the Maximum Scenario above Two Baseline Scenarios, at the Point of Maximum Impact (RM 27.1).

Month	Maximum – Baseline-1 (million kcal/day)	Maximum – Baseline-2 (million kcal/day)
May	86.2	<0
June	48.9	<0
July	139.2	<0
August	120.8	<0
September	237.3	30.2
October	201.7	26.3

The methodology for calculating the credits will be demonstrated in a subsequent section. As previously discussed, the WWSS Commission proposes to use a trading ratio of 2:1.

Methods Used:

The WWSS Commission will estimate the thermal benefits from riparian shade best management practice projects (BMPs) using version 8 of DEQ’s Shade-a-Lator model. Shade-a-Lator is a part of the Heat Source model, which is a stream assessment tool used by DEQ.¹³ Heat Source was developed in 1996 as a Master’s Thesis at Oregon State University in the Departments of Bioresource Engineering and Civil Engineering. DEQ currently maintains the Heat

¹³ Boyd & Kasper, Analytical Methods for Dynamic Open Channel Heat and Mass Transfer: Methodology for the Heat Source Model Version 7.0 (2003), available at <https://www.oregon.gov/deq/wq/tmdl/Tools.aspx>. DEQ has posted this document on its website as a resource for generally describing the math and assumptions used in Heat Source. While the document explicitly covers Heat Source version 7 (and therefore Shade-a-Lator version 7), the math and assumptions in version 7 are mostly the same as version 8, and so DEQ considers this document appropriate for summarizing both versions 7 and 8.

Source methodology and software. TTools, an ArcGIS extension maintained by DEQ, will be used to sample geospatial data and assemble high-resolution topographic and vegetative inputs necessary to run the Heat Source model.

Shading credits will be evaluated using the Shade-a-Lator component of the Heat Source tool, not the full Heat Source model. This eliminates the need to use a model that has been calibrated to water temperature data since only the solar radiation blocked by baseline and project conditions shade will be considered.

To determine the potential reduction in solar loading that results from its project, the WWSS Commission will compare the current project area to a future conditions scenario that assumes BMP conditions at maturity. The difference in the incoming solar load (expressed in kilocalories per day) between the two scenarios represents the net thermal benefits generated from the BMPs.

Model inputs such as the upstream and downstream boundaries of the modeled stream reach, local topography, bank slope, and stream orientation will be assumed to be the same in the current condition and future condition scenarios. An exception is the wetted width of the stream, which may differ between future conditions scenarios due to the potential creation of new side channels during the project. The future conditions scenario will use the tree height and density based on the expected conditions after the project is complete.

For both the current and future conditions scenarios, the model calculates the sun angle at a series of calculation points (nodes along the center of the modeled stream reach for every model time step (typically once per minute). At each node, the model calculates the total load of incoming solar radiation by considering the physical characteristics surrounding the node and the characteristics of the topographic and vegetation present on the streambanks (Figure 2).

Figure 2 demonstrates that the sun angle is a key parameter in the Shade-a-Lator model. The time of day and time of year affect the sun angle and the associated incoming solar radiation that reaches the surface of the stream.

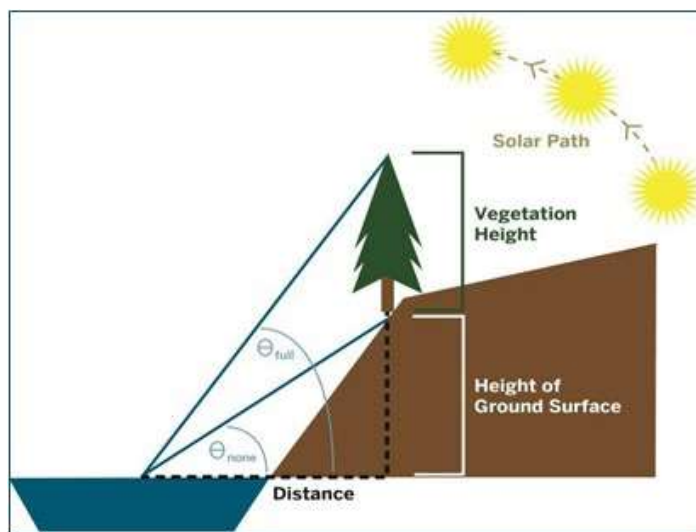


Figure 2. Schematic of the processes included in Shade-a-Lator modeling. When the sun angle is less than θ_{none} , all incoming solar radiation is blocked by the local topography. When the sun angle is greater than θ_{full} , all incoming solar radiation reaches the surface of the stream. When the sun angle is between θ_{none} and θ_{full} , vegetation attenuates a portion of the incoming solar radiation.

Credit Duration:

Credit duration refers to the “length of time credits are expected to be used.”¹⁴ This refers to the time period between when a credit becomes usable as an offset and when the credit is no longer valid. Credits are generated after a trading plan has been approved by DEQ and the restoration action has been implemented and verified. BMPs such as riparian restoration require time to realize their full benefits. Because of this, the projects must be durable and verification and ongoing monitoring and maintenance of project sites are critical parts of the program. The 2003 EPA Trading Policy provides that “credits may be generated as long as the pollution controls or management practices are functioning as expected.”¹⁵ In addition, the Oregon rule definition of a credit identifies the need to specify the period over which water quality benefits will be generated.

For the purposes of this TTP, the WWSS Commission suggests both a minimum credit life consistent with the rules, and the appropriate start date for the credit life. For reference, the City of Ashland proposed a 20-year credit life for its credits.¹⁶ The City of Medford’s program uses an average 20-year credit life, protected by long-term leasehold interests in the properties where the restoration occurs.¹⁷ Clean Water Services also uses a minimum 20-year credit life in its temperature management plan.¹⁸ Consistent with the 2003 EPA Trading Policy and these previous programs, the WWSS Commission proposes that the credits it produces from riparian vegetation projects have a minimum 20-year credit life, with the possibility of extending those credits beyond the minimum life for as long as the restoration sites and shade continue to function as expected and as long as the credits are needed to offset the temperature impact. This approach is consistent with the minimum time period for which these projects are expected to function and the 2003 EPA Trading Policy. The WWSS Commission proposes that the credit life begins in 2026, when the withdrawals will begin. This would be conservative because benefits of trading projects will begin before 2026. Implementation of credit trading projects is expected to begin in Winter 2022. Table 4 below, shows a schedule for key events relevant to the timing of trading projects and the thermal impact of the withdrawal.

Table 4. Selected events relevant to the timing of trading projects and the thermal impact of the withdrawal.

Approximate Date	Event
Winter 2020	Expected TTP Approval
Winter 2022	Beginning of Credit Generation
2026	WWSS Comes Online, Credit Life Begins
2085	Full Water Temperature Impact Reached

OAR 340-039-0025(5)(G): MONITORING

Pursuant to the trading rule, a trading plan must include a “description of the following: (A) Proposed methods and frequency of trading project BMP monitoring; and (B) Proposed methods and frequency of how water quality benefits generated by a trading project will be monitored.” In addition, an entity that engages in trading must submit an annual report that includes all of the elements described in OAR 340-039-0017(3) (See Appendix D).

The WWSS Commission will submit an annual report that includes the elements described in OAR 340-039-0017(3). In addition to submitting an annual monitoring report, the WWSS Commission proposes a monitoring schedule (Appendix B) that is based in part on the Willamette Partnership’s February 2016 riparian addendum to its General

¹⁴ OAR 340-039-0025(5)(f)(C)

¹⁵ U.S. EPA, Water Quality Trading Policy, 68 Fed. Reg. 1608, 1610 (Jan. 13, 2003), available at <https://www.gpo.gov/fdsys/pkg/FR-2003-01-13/html/03-620.htm>.

¹⁶ Draft City of Ashland Trading Plan v3 (March 2018)

¹⁷ City of Medford, Medford Regional Water Reclamation Facility Thermal Credit Trading Program Plan (2011). <https://www.oregon.gov/deq/FilterDocs/MedfordThermalTrading.pdf>.

¹⁸ Clean Water Services (2016). Thermal Load Management Plan Package. Memorandum to File. May.

Crediting Protocol. Consistent with that protocol, a specific combination of the following three types of monitoring approaches will be applied throughout the life of each riparian restoration project to demonstrate that the project continues to function as expected as it relates to the performance metrics identified in Appendix B:

- 1) **Quantitative monitoring:** the project developer, on behalf of the WWSS Commission, will implement a vegetation monitoring protocol (Appendix B) by sampling random plots on site; implementing repeat photo monitoring; and reporting on a comparison of monitoring data to performance standards.
- 2) **Qualitative monitoring:** an on-site, rapid, but standardized, qualitative review of site conditions and progress toward performance metrics will be accompanied by a subset of repeat photos from on-the-ground camera points used in quantitative years. The same set of camera points will be used in all qualitative monitoring years.
- 3) **Remote monitoring:** remote sensing information will be collected to provide visual evidence that the site still exists (e.g., a current year aerial image or LiDAR taken during the growing season to document site persistence). To remain consistent with Willamette Partnership approaches, the WWSS Commission proposes to monitor sites according to the schedule in Table 5.

Table 5. Monitoring and reporting approaches over the life of a project.

Monitoring Approach	Completed Growing Seasons After Planting and Initial Verification										
	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Quantitative Monitoring	•	•		•		•					•
Qualitative Monitoring			•		•		•		•		
Remote Monitoring ¹⁹								•		•	
Monitoring Approach	Completed Growing Seasons After Planting and Initial Verification										
	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	
Quantitative Monitoring					•					•	
Qualitative Monitoring		•					•				
Remote Monitoring	•		•	•		•		•	•		

In addition to this standard proposed site monitoring, if project sites are damaged by causes beyond the reasonable control of the WWSS Commission (such as wildlife damage or vandalism), the WWSS Commission will report that damage to DEQ. The WWSS Commission proposes reporting such incidents to DEQ within 90 days of learning of the damage. The reporting would include a description of the event, including an assessment of the damage; a plan for addressing the damage; and a schedule for implementing the plan. Following the City of Ashland's Draft TTP, WWSS Commission proposes that natural restoration and/or active replanting of the damaged site be allowed if repair or continued maintenance of the damaged site provides the reasonable potential for long-term restoration of the thermal benefits of the site in an ecologically appropriate manner. Replacement with an alternative site or sites could also be pursued. The WWSS Commission proposes that damage to a project site that is beyond the reasonable control of the WWSS Commission should not in and of itself be considered a violation of its WQC requirements. Under such conditions, the WWSS Commission will demonstrate to DEQ that the sites will be restored, or alternative solutions will be implemented within a reasonable timeframe. This suggested approach follows the City of Ashland Draft TTP²⁰ and is consistent with the

¹⁹ If remote information is not available for a monitoring year designated for remote monitoring, the qualitative monitoring approach can instead be used for that year. If this occurs, a later year designated as qualitative monitoring may be remotely monitored if this does not result in more than two consecutive years of remote monitoring in the first 10 years.

²⁰ Draft City of Ashland Trading Plan v3 (March 2018)

approach outlined in the City of Medford’s NPDES permit.²¹

- 4) After the first 20 years, so long as credits are still required to offset the temperature impact of the WWSS, the WWSS Commission proposes that quantitative monitoring be conducted every 10 years. For qualitative and remote monitoring, the WWSS Commission proposes that the Year 11-20 pattern shown in Table 5 be repeated in each subsequent decade. For example, in Years 21, 23, 24, 26, 28, and 29 remote monitoring would be conducted and in years 22 and 27 qualitative monitoring would be conducted.

OAR 340-039-0025(5)(H): TRADING PLAN PERFORMANCE VERIFICATION

Pursuant to the trading rule, a trading plan must include a “description of how the entity will verify and document for each trading project that BMPs are conforming to applicable quality standards and credits are generated as planned.”

The Oregon trading rules require an entity to verify and document that BMPs conform to quality standards, and that the credits are tracked and made available to the public. To be consistent with the Oregon water quality trading rule, the WWSS Commission will pursue a verification approach consistent with the Willamette Partnership’s standards for verification.²²

Specifically, after a project site has been implemented with BMPs, the project will undergo a review for verification. The review will include administrative review of the site’s eligibility, an independent technical review of credit calculation, and a site visit to demonstrate that the project has been implemented in a manner consistent with the BMP quality standards included in this trading plan. Prior to Year 5 of the project, verifiers will review monitoring reports and attest that the site does not appear at risk of failure. At later milestones in the project (specifically, Years 5, 10 and 15), a third-party verifier will confirm that the site is continuing to mature and develop on a trajectory that is materially consistent with the as-built site and quality standards. In the years between these milestone verifications, verifiers will review annual monitoring reports and attest that the site does not appear at risk of failure. At year 20, a third-party verifier will review originally estimated credit calculations versus final credit calculations, a comparison of predicted Year 20 site conditions versus actual Year 20 site conditions, and an on-site visit to confirm that Year 20 quality standards have been met.

OAR 340-039-0025(5)(I): TRACKING AND REPORTING

Pursuant to the trading rule, a trading plan must include a “description of how credit generation, acquisition and usage will be tracked and how this information will be made available to the public.”

Transparency is critical to a credible trading program. Therefore, in addition to completing monitoring (as described above), submitting annual compliance reports to DEQ and completing performance verification, the WWSS Commission will evaluate posting trading credit information on a publicly accessible website to disclose progress at the proposed trading project site. One example of a publicly accessible portal for information is MarkIt, an environmental credit registry being used for the City of Medford temperature compliance plan managed by the Freshwater Trust.

²¹ Oregon Department of Environmental Quality, City of Medford National Pollutant Discharge Elimination System Waste Discharge Permit, No. 100985, Schedule D(7)(b)(v) (Dec. 13, 2011).

²² Willamette Partnership, Ecosystem Credit Accounting System Third Party Verification Protocol Version 1.0 (2009), *available at* <http://willamettepartnership.org/publications/>.

Regarding tracking and reporting, the WWSS Commission will verify that:

- Individual thermal benefits and transactions are accounted for and can be tracked,
- Program implementation progress can be tracked, and
- Enough information is provided related to individual project site trajectory (i.e., annual monitoring reports).

OAR 340-039-0025(6): ADAPTIVE MANAGEMENT

Pursuant to the trading rule, a trading plan must include a “description of how monitoring and other information may be used over time to adjust trading projects and under what circumstances.” Significant program amendments may require public review and comment (see OAR 340-039-0025(7)), but other small changes will fall under the scope of adaptive management.

The WWSS Commission recognizes the importance of long-term maintenance and monitoring to verify that the overall trading program and specific projects are successful, demonstrate ecological improvement in program areas, and are meeting the temperature condition of the 401 WQC. The monitoring plan described in this TTP is a key part of evaluating progress towards achieving the needed credits and achieving the thermal benefit described in this TTP. Because the proposed project will extend over a long (multi-decade) time frame, the ability to adapt any aspect of the program (monitoring, maintenance, implementation or reporting) is important. As technologies, BMP implementation, and monitoring practices evolve, the WWSS Commission will evaluate approaches to adapt its implementation plan as appropriate.

To adapt and improve the program over time, the WWSS Commission proposes a five-year adaptive management cycle. This length of time is an appropriate cycle to review information from the previous cycle and apply any new technologies, standards or lessons learned to update the plan to maintain sufficient progress towards the goals of the project. Periodic review also affords transparency and quality control. A five-year cycle is also an appropriate length of time to take into account any time-lag in measuring the effectiveness of the BMPs and provides more flexibility to appropriately collect and analyze these data. This process will be internal, but if substantive changes are required, the requirements of OAR 340-039-0025(7) will be met.

OAR 340-039-0025(7): TRADING PLAN REVISION

The WWSS Commission will comply with the requirements in OAR 340-039-0025(7) for trading plan revision if there are substantive changes that affect one of the trading plan elements as required by OAR 340-039-0025(5). Any revised trading plan will be submitted to DEQ for review.

Consistency with Water Quality Trading Purpose and Policy

OAR 340-039-0001: PURPOSE AND POLICY

“(1) Purpose. This rule implements ORS 468B.555 to allow entities regulated under the CWA to meet pollution control requirements through water quality trading. This rule establishes the requirements for water quality trading in Oregon.

(2) Policy. The Oregon Department of Environmental Quality may approve water quality trading only if it promotes one or more of the following Environmental Quality Commission policies: (a) Achieves pollutant reductions and progress towards meeting water quality standards; (b) Reduces the cost of implementing Total Maximum Daily Loads (TMDLs); (c) Establishes incentives for voluntary pollutant reductions from point and nonpoint sources within a watershed; (d) Offsets new or increased discharges resulting from growth; (e) Secures long-term improvement in water quality; or (f) Results in demonstrable benefits to water quality or designated uses the water quality standards are intended to protect.”

This TTP is consistent with the EQC policies. The WWSS Commission trading plan is expected to create thermally

cooler water and thermal refugia for fish and will have substantial habitat benefits.

While not a discharge, the thermal impact of the WWSS withdrawal results in increased water temperatures downstream and the trading plan will offset the thermal impact of the increased withdrawal.

Consistency with Water Quality Trading Objectives

OAR 340-039-0003: WATER QUALITY TRADING OBJECTIVES

As stated in OAR 340-039-0003, Water quality trading under this rule must:

- 1) Be consistent with anti-degradation policies
- 2) Not cause or contribute to an exceedance of water quality standards
- 3) Be consistent with local, state, and federal water quality laws
- 4) Be designed to result in a net reduction of pollutants from participating sources in the trading area
- 5) Be designed to assist the state in attaining or maintaining water quality standards
- 6) Be designed to assist in implementing TMDLs when applicable
- 7) Be based on transparent and practical Best Management Practices (BMPs) quality standards to ensure that water quality benefits and credits are generated as planned
- 8) Not create localized adverse impacts on water quality and existing and designated beneficial uses.

This TTP is consistent with these objectives, as follows:

(1, 2, 4) Anti-degradation & Net Reduction in Pollutant Loading: Oregon's anti-degradation policy is found in OAR 340-041-0004. Oregon's anti-degradation policy generally prohibits the lowering of existing water quality. In line with the 2003 EPA Trading Policy²³, the 2016 water quality trading IMD²⁴ instructs DEQ staff to ensure that trades are designed to result in a net reduction of pollutants in the trading area as required in OAR 340-039-0003(4). The WWSS withdrawal has an impact only on temperature, and not other pollutants. This TTP describes how the temperature impact of the WWSS withdrawal will be mitigated and will not violate the anti-degradation or water quality standards.

(3) Consistent with local, state, and federal water quality laws:

The trading program is consistent with Oregon's anti-degradation policy, the 2006 Willamette River Temperature TMDL²⁵ and the Oregon trading rule (OAR 340-039). The TTP considers and is consistent with baseline regulations that ensure credits will be achieved above the baseline condition. A requirement for the development of this TTP is incorporated into the WWSS Commission's 401 WQC.

(5,6) Designed to Assist State in Attaining Water Quality Standards and Implementing a TMDL:

The 2006 Willamette River Temperature TMDL did not consider water temperature impacts of withdrawals, with the exception of temporary diversion along the McKenzie River. As a result, the WWSS is not assigned a heat load in the TMDL. The WWSS Commission will use water temperature credit trading, as described in this TTP, to offset its thermal impact. This TTP will assist the State in attaining water quality standards and meeting the criteria of the

²³ U.S. EPA, Water Quality Trading Policy, 68 Fed. Reg. 1608, 1610 (Jan. 13, 2003), available at <https://www.gpo.gov/fdsys/pkg/FR-2003-01-13/html/03-620.htm>.

²⁴ Oregon Department of Environmental Quality (2016), Water Quality Trading Internal Management Directive. March 31. Available at <https://www.oregon.gov/deq/Filtered%20Library/WQTradingIMD.pdf>

²⁵ Oregon Department of Environmental Quality, (2006). The Willamette Basin Total Maximum Daily Load (TMDL) documents. Available at <https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Willamette-Basin.aspx>

Willamette River mainstem TMDL.

(8) Based on transparent and practical BMPs quality standards:

The proposed BMP quality standards are described in detail above.

(9) Avoidance of Localized Impacts on Fish:

The WWSS withdrawal location is at River Mile (RM) 38.7 and the point of maximum impact is at RM 27.1. The thermal impact of the withdrawal is not localized, because it takes time for the reduced river flow to result in increased water temperatures. Therefore, this criterion is not applicable to the WWSS withdrawal. In addition, the point of maximum impact is temporary in time and space and, as noted above, the maximum water temperature increase is very small (i.e. less than one-tenth of a degree).

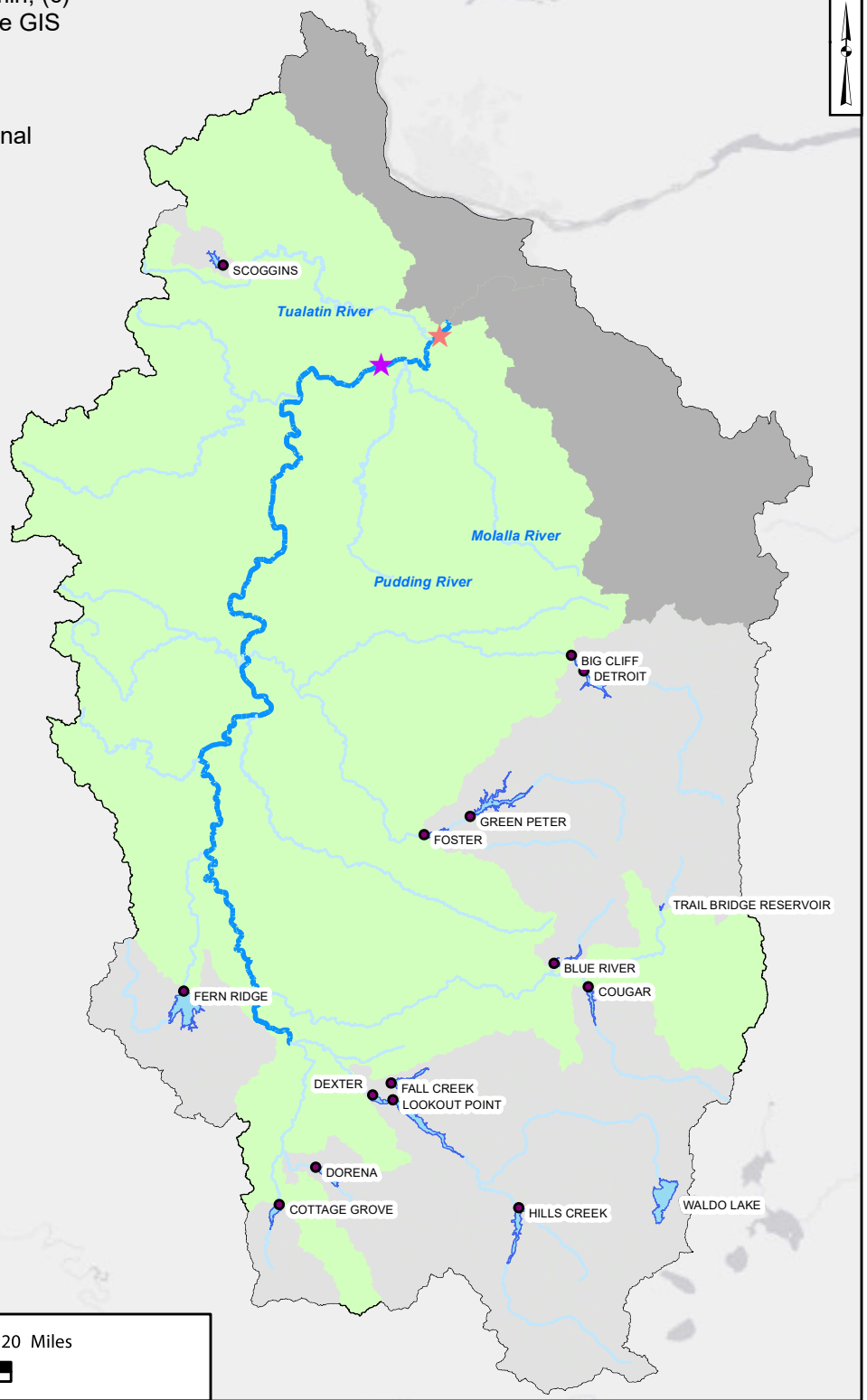
Appendix A: Willamette Water Supply System Trading Area Map



Basemap Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Dams: Oregon Spatial Data Library

Rivers, Lakes and Reservoirs: National Hydrography Dataset



Path: D:\Clients\Hillboro_City_of\Projects\PMW0340_Temperature_Modeling\Analysis_Technical\GIS\Map_Trading_Area_V3.mxd

- Legend**
- ★ Point of Maximum Impact
 - ★ Withdrawal Location
 - Willamette Basin
 - Lower Willamette and Clackamas Basins
 - Willamette Valley Project Dams
 - Areas Above Reservoirs
 - Lakes and Reservoirs
 - Major Tributaries
 - Willamette River

Notes
 Scoggins Dam, owned by the U.S. Bureau of Reclamation, is not operated by the U.S. Army Corps of Engineers but provides additional storage and is often included on Willamette Project Maps.

Willamette Water Supply System Trading Area Map

Oregon



Figure

A-1

Portland, Oregon

27-Jul-2020

**Appendix B: Riparian Shade BMP Performance Standards for the
Willamette Water Supply System Thermal Trading Plan**

Riparian Shade BMP Performance Standards for the

Willamette Water Supply System Commission's Temperature Trading Plan

Introduction

The following performance standards are to be applied to the Riparian Shade Best Management Practice (BMP) associated with the Willamette Water Supply System (WWSS) Commission's Temperature Trading Program (TTP). These standards have been developed based on the Performance Standards for Riparian Vegetation (Willamette Partnership 2016). Instances where the proposed standards deviate from the Willamette Partnership's are noted below (i.e. use of reference sites).

Performance Criteria

At the end of the 5th, 10th, 15th, and 20th restoration project year, monitoring data will demonstrate that the project meets the standard performance criteria shown in Table 1. Alternate performance criteria may be allowed if supported by appropriate documentation of suitable reference site conditions. Alternate criteria should be documented and approved by the Oregon Department of Environmental Quality (DEQ) prior to restoration project implementation.

TABLE 1 STANDARD PERFORMANCE CRITERIA FOR WWSS TTP RIPARIAN SHADE PROJECTS

Criteria	Performance Criteria			
	Year 5	Year 10	Year 15	Year 20
EITHER: Mean stem density of native shrubs and woody vines * OR Site average for combined native shrub and woody vine cover	Meets or exceeds 1,600 live native woody stems per acre	80% of the native woody stem density identified at the end of the fifth growing season	70% of the native woody stem density identified at the end of the fifth growing season	Same as performance criteria for year 15
% Canopy closure or cover	N/A	N/A	≥25%	
Native trees/acres	None	≥ 100 trees/acre **		
Number of native woody species	At least 5 native woody species present			
Invasive woody and herbaceous cover	No greater than 20% cover invasive herbaceous species. No greater than 10% cover invasive woody species			
Non-native woody and herbaceous cover	Take and document actions reasonably necessary to evaluate the risk posed to project site by non-native species, where they are problematic (e.g., <i>Phalaris arundinacea</i> (reed canarygrass), <i>Hedera helix</i> (English ivy), <i>Ilex aquifolium</i> (English holly)), taking the steps			

	necessary to control those non-native species such that their presence does not prevent the successful establishment and propagation of native ecosystem characteristics and functions. This includes monitoring and reporting percent cover of such species.
<p>* Mean woody stem density is determined by counting all live woody stems taller than six inches (regardless of vigor) by species within reference sites. Count multi-stem species (e.g., <i>Symphoricarpos</i>, <i>Rosa</i>) as one stem per square foot (1' x 1').</p> <p>** Based on Willamette Partnership (2016) criteria for wet ecoregions</p>	

The following definitions are associated with the above performance criteria:

<i>Canopy closure</i>	Canopy closure is an upward-looking point estimate of the coverage of a forest canopy, and may be measured in the field with a spherical densitometer (also called a mirror optometer) or by analyzing upward-looking hemispherical photographs.
<i>Cover (or Absolute Cover):</i>	Cover is a downward-looking measure of the percentage of the ground surface covered by living plant leaves and stems. Areas not covered by vegetation are counted as unvegetated substrate. Total cover may be greater than 100% if species are present in multiple strata (i.e., tree, shrub, and herbaceous layers.)
<i>Cover (Canopy)</i>	Absolute cover as viewed from above tree height
<i>Cover (Native Shrub and Vine)</i>	Absolute cover as viewed from beneath tree height.
<i>Invasive species</i>	A plant species should automatically be labeled as invasive if it appears on the current Oregon Department of Agriculture Noxious Weed list, plus known problem species including <i>Mentha pulegium</i> (pennyroyal) and <i>Elaeagnus angustifolia</i> (Russian olive).
<i>Project year</i>	Project year is measured as the number of completed growing seasons following initial verification, starting at 0. For example, where plantings are installed in the winter, the following fall would be considered the beginning of the project year 1, because the plantings have gone through one spring and summer growing season.
<i>Shrub</i>	A perennial woody plant that is usually multi-stemmed and normally grows no taller than 16 feet
<i>Tree</i>	A perennial woody plant, usually with a single stem or few stems, that normally grows taller than 16 feet

Reference Sites

The following discussion of reference sites contains a minor deviation from that proposed by the Willamette Partnership (2016). It allows for less intensive documentation of reference sites when using the standard performance criteria provided in Table 1.

Reference sites should be used to develop proposed restoration plans. Reference sites should be situated in similar ecological settings as the proposed restoration site (e.g. similar soils, hydrologic regime, general elevation range, geomorphic setting). The reference sites should have plant community characteristics similar to the desired mature condition of the proposed restoration site (e.g. moderate to high plant species diversity, percent cover by invasive plants less than 20 percent). If the standard criteria provided in Table 1 are used, then collection of reference site data may be of a qualitative nature to help develop a plant species list and general proportions of each species contribution to its plant community stratum (e.g. tree stratum cover totals approximately 80 percent, with approximately 60 percent black cottonwood and 20 percent Oregon ash). However, if the standard criteria are not being used, then quantitative sampling of the reference site will be required in order to justify changes to the standard criteria.

Monitoring

Annual monitoring shall occur that documents site conditions, management actions over the past year and proposed for the upcoming year, and overall progress toward the performance standards. Monitoring efforts shall be commensurate with the performance criteria listed in Table 1, with the scheduled intensity level as noted in the WWSS Commission's TTP (i.e. quantitative, qualitative, and remote monitoring). Monitoring shall include the use of random plots, repeat photo stations, and reporting on a comparison of monitoring data to performance standards.

Other BMPs

Additional BMP types may be proposed during the life of the WWSS Commission's TTP (e.g. improved summer time connectivity to cold-water refugia, floodplain vegetation management). Each new BMP type will be detailed in an addendum to the TTP, with review and approval by DEQ to occur prior to implementation.

**Appendix C: Floodplain Resiliency BMP
and In-stream Habitat Restoration BMP**

Supplement to Willamette Water Supply System Thermal Trading Plan

Floodplain Resiliency BMP and In-stream Habitat Restoration BMP

Prepared for:

Willamette Water Supply
Our Reliable Water

City of Hillsboro Water Department
150 E. Main Street
Hillsboro, OR 97123-4028

Prepared by:



David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

August 2019

TABLE OF CONTENTS

1 INTRODUCTION	1
2 BMP RATIONALE	3
3 DESCRIPTION OF PROPOSED BMPS	4
3.1 FLOODPLAIN HABITAT RESILIENCY BMP	4
3.2 IN-STREAM HABITAT RESTORATION BMP	5
4 PERFORMANCE CRITERIA	6
4.1 FLOODPLAIN RESILIENCY BMP PERFORMANCE CRITERIA	6
4.2 IN-STREAM HABITAT RESTORATION BMP PERFORMANCE CRITERIA	8
5 MONITORING	9
5.1 PERFORMANCE STANDARDS MONITORING	9
5.2 SUPPLEMENTAL MONITORING AND DOCUMENTATION TO SUPPORT ADAPTIVE MANAGEMENT	9
6 REFERENCES	10

FIGURES

Figure 1: Conceptual View of WWSP TSS BMPs at a Common Project Site	2
---	---

LIST OF TABLES

Table 1 Willamette Model Watershed Program and UWR Chinook and Steelhead Recovery Plan Enhancement Strategies related to the WWSS BMPs	4
Table 2: List of Potential Floodplain Habitat Resiliency BMP Activities and Anticipated Benefits to Aquatic Ecosystem (benefits derived from Nadeau et. al. 2018a and 2018b, and Adamus et. al. 2016)	5
Table 3. List of Potential In-stream Habitat Restoration BMP Activities and Anticipated Benefits to Aquatic Ecosystem (benefits derived from Nadeau et. al. 2018a and 2018b)	6
Table 4. Standard Vegetation Performance Criteria for WWSP TTP Floodplain Resiliency BMP Projects	7
Table 5. Standard Non-Vegetation Performance Criteria for WWSP TTP Floodplain Resiliency BMP Projects	8
Table 6. Design Performance Criteria for WWSP TTP In-stream Habitat Restoration BMP Projects	9
Table 7 Functional Performance Criteria for WWSP TTP In-stream Habitat Restoration BMP Projects	9

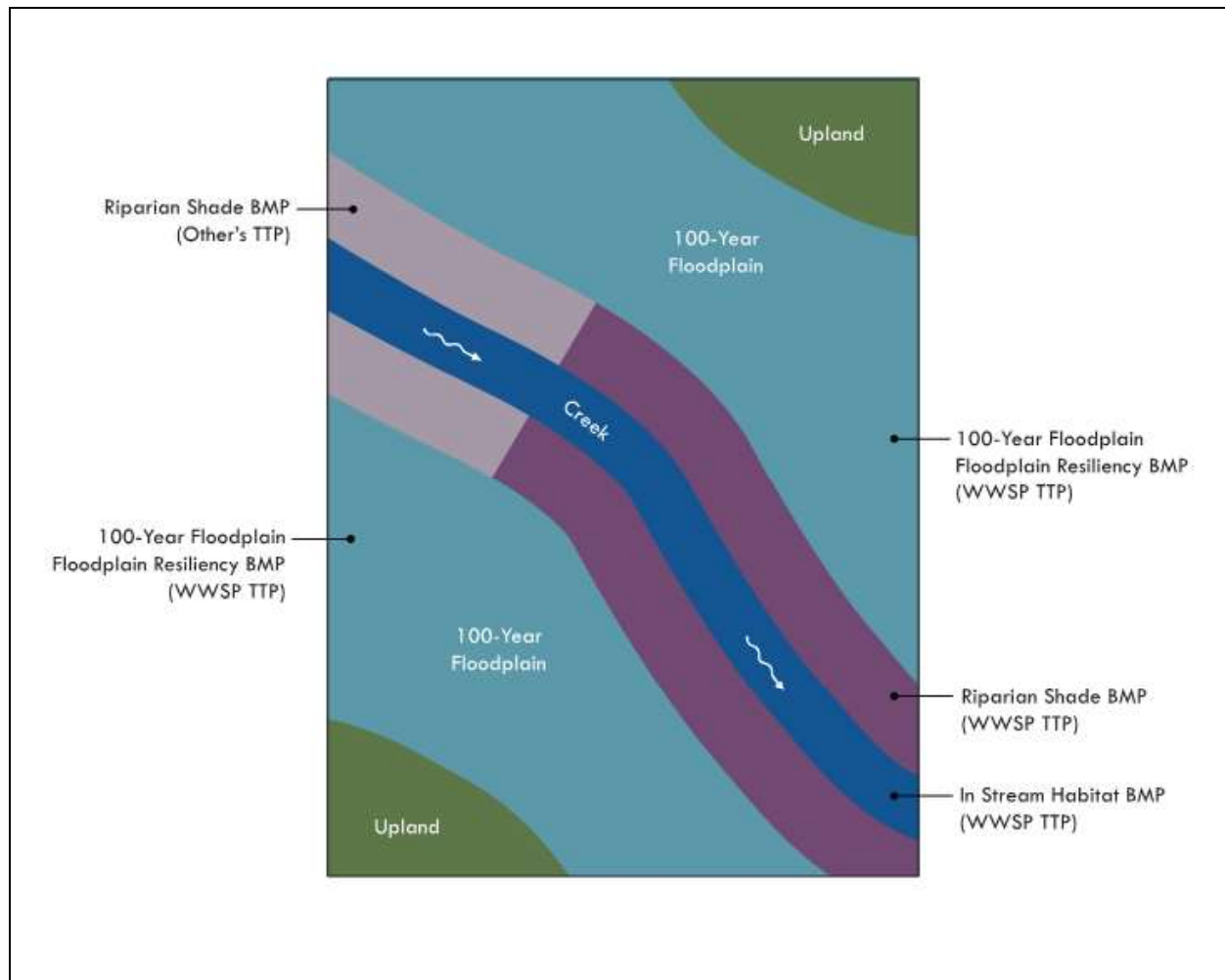
1 INTRODUCTION

This report discusses proposed floodplain and in-stream habitat restoration Best Management Practices (BMPs) associated with the Willamette Water Supply System (WWSS) Commission's Thermal Trading Plan (TTP). These habitat restoration BMPs are distinguished from the Riparian Shade BMPs that have been included in the WWSS Commission's TTP as follows: the Riparian Shade BMP is focused solely on the thermal benefits associated with direct shading of streams from revegetation projects that can be quantified through the DEQ approved Shade-a-lator model (i.e. kilocalorie heat load reduction can be calculated). The floodplain and aquatic habitat restoration BMPs discussed in this report are focused on other types of habitat restoration actions that benefit the physical, chemical, and biological aspects of aquatic ecosystems but are currently difficult to quantify directly, in terms of their thermal load reduction benefits. However, the literature (see list of resources below) reveal the important linkages between habitat restoration actions and improvements to ecosystem functions – including benefits to water quality and improved vigor of native biological communities. These benefits help to offset the potential adverse effects of increased heat load in the main stem Willamette River that may result from water withdrawals for the WWSS.

The following BMPs are reviewed in this report:

- Floodplain Habitat Resiliency BMP
- In-stream Habitat Restoration BMP

To avoid the risk of double counting thermal load reductions, different BMP types proposed by the WWSS Commission will not overlap geographically with one another. However, it is anticipated that some BMPs will often occur adjacent to one another and will also be supportive of one another (e.g., the Riparian Shade BMP will support the In-stream BMP beyond just providing thermal benefits). Figure 1 shows how this may look at a single site with multiple BMP types, including BMP's that could be part of another entity's TTP.

Figure 1: Conceptual View of WWSP TSS BMPs at a Common Project Site

The following resources have informed this effort:

- A Scientific Rationale in Support of the Stream Function Assessment Method for Oregon (SFAM, Version 1.0) (Nadeau et. al 2018a)
- Stream Function Assessment Method for Oregon (SFAM, Version 1.0) Oregon Dept. of State Lands, Salem, OR, EPA 910-D-18-001, U.S. Environmental Protection Agency, Region 10, Seattle, WA. (Nadeau et. al. 2018b)
- Oregon Rapid Wetland Assessment Protocol (ORWAP, revised): Version 3.1 calculator spreadsheet, databases, and data forms. Oregon Dept. of State Lands, Salem, OR. (Adamus et. al. 2016)
- Performance Standards for Riparian Revegetation (Willamette Partnership 2016)
- Willamette Model Watershed Program Conceptual Model (Bonneville Environment Foundation date not specified)
- Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (ODFW and NMFS 2011)

2 **BMP RATIONALE**

The floodplain and in-stream BMPs may include a number of different actions that result in a net benefit to the aquatic ecosystems affected by the WWSS withdrawal by improving ecological processes and functions. For example, the Floodplain Habitat Resiliency BMP could include the following types of activities: controlling invasive species, planting native species, improving off-channel habitat, improving hydrologic connectivity between floodplain and associated streams, and promoting beaver activity. The In-stream Habitat Restoration BMP could include the following types of activities: improving in-stream habitat complexity (e.g. re-meandering straightened creek channels, placing large wood), removing fish barriers, increasing the amount of cold-water refugia, and improving access to cold-water refugia. These activities are intended as examples and do not preclude other types of activities from being considered. The connection between the activities listed above for each WWSS BMP and their associated benefits to aquatic ecosystems is described for each BMP in later sections of this report. A description of how the WWSS BMPs tie in to the strategies proposed by various Willamette River watershed ecosystem improvement efforts is provided below.

The Willamette Model Watershed Program, coordinated by the Bonneville Environment Foundation (BEF), has developed a detailed conceptual model that highlights the connections between key focal targets (e.g. aquatic ecosystems and native species) in the Willamette River basin, threats to these targets, and enhancement strategies to protect and improve conditions for the focal targets (BEF date not specified). Similarly, the Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (Recovery Plan) (ODFW and NMFS 2011) provides a list of strategies to support the recovery of these species. Willamette Model Watershed Program and Recovery Plan strategies that directly relate to the proposed WWSS BMPs are listed in Table 1.

Table 1. Willamette Model Watershed Program and Upper Willamette River Chinook and Steelhead Recovery Plan Enhancement Strategies Related to the WWSS BMPs

Willamette Model Watershed Enhancement Strategies Related to WWSS BMPs	UWR Chinook and Steelhead Recovery Plan General Strategies Related to WWSS BMPs
<ul style="list-style-type: none"> • Manage invasive species • Reconnect floodplains/wetlands • Support persistence of beavers in appropriate areas • Increase hydraulic diversity and wood • Reconnect side channels, alcoves, and remeander channels • Revegetate riparian areas • Remove artificial fish passage and sediment transport barriers 	<ul style="list-style-type: none"> • Protect and conserve natural ecological processes that support the viability of wild salmon and steelhead populations and their life history strategies throughout their life cycle. • Restore floodplain connectivity and function • Restore riparian condition and large woody debris recruitment • Restore passage and connectivity to habitats blocked or impaired by artificial barriers. • Restore and maintain hydrologic regimes that support ecological needs of wild salmon and steelhead populations. • Restore channel structure and complexity. • Restore impaired food web dynamics and function. • Restore degraded water quality • Reduce the impact of non-native plants and animals on wild salmon and steelhead populations and prevent introduction of new non-native plants and animals.

3 DESCRIPTION OF PROPOSED BMPs

3.1 FLOODPLAIN HABITAT RESILIENCY BMP

The Floodplain Habitat Resiliency BMP will consist of habitat improvements along floodplains, typically within the 100-year floodplain and consisting of wetland or upland riparian habitats, that will improve the long-term functions of native aquatic ecosystems. Actions will typically involve vegetation management (i.e., invasive species removal and native plant establishment) similar to the Riparian Shade BMP.

Floodplain Habitat Resiliency BMP actions will be situated beyond the geographic extent of the Riparian Habitat BMP and, therefore, are not intended to provide direct shading/temperature benefits to the current location of an adjacent stream channel. However, such activities will still benefit the aquatic ecosystem by making it more resilient to future change. For example, as stream channels laterally migrate across the floodplain over time they will migrate into areas with high functioning riparian conditions, including forested vegetation that will continue to provide shade to the stream. Without this BMP, streams may otherwise migrate out of higher quality areas into degraded areas.

Supporting native riparian community development along the floodplain will also provide important benefits in the form of a host of important ecological functions that are highlighted by the Recovery Plan and Willamette Model Watershed Program, such as nutrient cycling; sediment retention; flood storage and delay; increased floodwater infiltration and subsequent release of cold water to the stream system; food and dam building material for beaver; and food and cover for other native wildlife. In addition to vegetation management actions, additional activities may include wetland habitat restoration or

enhancement including potential grading activities, and placement of large wood or other habitat structures. Other opportunities for floodplain improvements may also occur and will be evaluated on a case-by-case basis. Table 2 provides a list of activities that may be conducted as part of this BMP, along with the anticipated benefits to aquatic ecosystem processes.

Table 2: List of Potential Floodplain Habitat Resiliency BMP Activities and Anticipated Benefits to Aquatic Ecosystem (benefits derived from Nadeau et. al. 2018a and 2018b, and Adamus et. al. 2016)

Floodplain Habitat Resiliency BMP Activities	Example Benefits to Aquatic Ecosystem
Control of invasive species and re-planting with native species	Invasive plant species can reduce the long-term viability of existing native plant communities and prevent the successful establishment of native plant communities. Native plant communities are typically more supportive of native ecosystem functions.
Improvement of off-channel habitat	Provides off-channel habitat and refugia during times of flood. This can include side channels that are typically only connected during high flood events (e.g., greater than the ordinary high water elevation or 2-year channel forming flood event) or the broader floodplain.
Improving hydrologic connectivity between floodplain and associated streams (e.g. through levee removal)	Provides water quality benefits by allowing sediment to settle out onto floodplain, expanding area for biochemical processes to occur that support nutrient cycling processes, increased opportunity for groundwater recharge to occur with subsequent cool water return flow downstream. Allows for more diverse and complex habitat conditions to form, which support a greater diversity of native wildlife.
Promoting beaver activity (this may include activities similar to those listed above, but with emphasis on supporting beavers. For example, focusing plantings on species highly desired by beavers.)	Beavers are a keystone species in the Willamette River basin and their activities (e.g., dam building) are highly beneficial to supporting aquatic ecosystem processes. Beaver dams add complexity to streams and rivers while slowing water velocity. The ponds behind these dams store water, which is slowly released during low flow conditions (Beavers Northwest 2019). They also increase groundwater recharge and retention, store sediment and increase riparian habitat. Supporting recovery of beaver through increasing food and dam building material, particularly in protected areas, will benefit native ecosystems and water quality functions.

3.2 IN-STREAM HABITAT RESTORATION BMP

The In-stream Habitat Restoration BMP will entail restoration activities within the bed and banks of stream channels, including side channels that typically are inundated at least every other year (i.e., 2-year recurrence interval). Side channels that are inundated less frequently would likely fall within the Floodplain Resiliency BMP. As previously described, activities will include efforts that increase in-stream habitat complexity, creating new, or reconnecting old, side channels, removing fish barriers, improving cold water refugia access, and supporting beaver dam formation through installation of beaver dam analogs (i.e. simple structures that act like beaver dams and provide the scaffolding for beavers to further build upon).

The activities described above are highlighted by the Recovery Plan and Willamette Model Watershed Program as providing important functions that benefit the stream system and recovery of listed fish species. These activities also work hand in hand with the other WWSS BMPs. For example, restoring in-stream channel characteristics will help restore connectivity between the stream and its floodplain. Similarly, supporting native plant communities as part of the Floodplain Resiliency BMP and Riparian

Shade BMP will provide dam building materials for beavers within the active stream channel. Table 3 provides a list of activities that may be conducted as part of this BMP, along with the anticipated benefits to aquatic ecosystem processes.

Table 3. List of Potential In-stream Habitat Restoration BMP Activities and Anticipated Benefits to Aquatic Ecosystem (benefits derived from Nadeau et. al. 2018a and 2018b)

In-stream Habitat Restoration	Example Benefits to Aquatic Ecosystem
Improving in-stream habitat complexity (e.g. re-meandering straightened creek channels, restoring channel form, placement of large wood)	Provides habitat for a more diverse array of native species and also better provides the variety of habitats needed by individual species (e.g., formation of deep pools provides cold water refuge for fish, while riffles provide sediment free substrates and oxygenated water for macroinvertebrates which are food sources for fish and amphibians and also improved spawning habitat for fish.).
Creation of side channel habitat	Provides for expanded in-stream habitat area. Provides refuge during periods of high flows.
Removing fish barriers	Allows fish and other aquatic species to migrate freely up and down the stream network. Also allows for geomorphic processes to occur more naturally (e.g., sediment transport).
Creation of and/or improved access to cold-water refugia	Allows fish and other native aquatic species to access areas of colder water during times of overall high water temperatures. High water temperatures can be adverse to the health and survival of individual organisms.
Beaver dam analogs	These features act as artificial beaver dams and also provide the scaffolding for beavers to further build upon. Beaver dams provide a host of ecological functions to the aquatic ecosystem (see Table 2 -Promoting Beaver Activity for additional details).

4 PERFORMANCE CRITERIA

Each BMP project will be required to meet a set of performance standards that can be readily monitored. These are described for each BMP below.

4.1 FLOODPLAIN RESILIENCY BMP PERFORMANCE CRITERIA

The majority of Floodplain Resiliency BMP project activities will consist of invasive vegetation control and establishment of native plant communities. These activities are similar to those described for the Riparian Shading BMP and, therefore, the same performance criteria are proposed. For some projects, additional activities may be proposed, such as installation of large woody debris habitat features or grading to improve hydrologic conditions. Performance criteria for such activities will be based on successful construction of such features in the approximate locations and quantities specified in the design plans (i.e. comparison of design to as-built conditions).

For vegetation management projects, the following performance criteria are provided and are the same as for the Riparian Shade BMP. At the end of the 5th, 10th, 15th, and 20th restoration project year, monitoring data will demonstrate that the project meets the standard vegetation performance criteria shown in Table 4. Alternate performance criteria may be allowed if supported by appropriate documentation of suitable reference site conditions or based on documented standard vegetation management practices (e.g., Clean Water Services Design and Construction Standards planting requirements). Table 5 provides the

performance criteria for potential non-vegetation related project elements. Alternate criteria, if proposed, should be documented and approved by DEQ prior to restoration project implementation.

Table 4. Standard Vegetation Performance Criteria for WWSP TTP Floodplain Resiliency BMP Projects

Criteria	Performance Criteria			
	Year 5	Year 10	Year 15	Year 20
EITHER: Mean stem density of native shrubs and woody vines *	Meets or exceeds 1,600 live native woody stems per acre	80% of the native woody stem density identified at the end of the fifth growing season	70% of the native woody stem density identified at the end of the fifth growing season	Same as performance criteria for year 15
OR: Site average for combined native shrub and woody vine cover	Site average for combined native shrub and woody vine cover \geq 25%			
% Canopy closure or cover	N/A	N/A	\geq 25%	
Native trees/acres	None	\geq 100 trees/acre **		
Number of native woody species	At least 5 native woody species present			
Invasive woody and herbaceous cover	No greater than 20% cover invasive herbaceous species. No greater than 10% cover invasive woody species			
Non-native woody and herbaceous cover	Take and document actions reasonably necessary to evaluate the risk posed to project site by non-native species, where they are problematic (e.g., <i>Phalaris arundinacea</i> (reed canarygrass), <i>Hedera helix</i> (English ivy), <i>Ilex aquifolium</i> (English holly)), taking the steps necessary to control those non-native species such that their presence does not prevent the successful establishment and propagation of native ecosystem characteristics and functions. This includes monitoring and reporting percent cover of such species.			

* Mean woody stem density is determined by counting all live woody stems taller than six inches (regardless of vigor) by species within reference sites. Count multi-stem species (e.g., *Symphoricarpos*, *Rosa*) as one stem per square foot (1' x 1').

** Based on Willamette Partnership (2016) criteria for wet ecoregions

The following definitions are associated with the above performance criteria:

<i>Canopy closure</i>	Canopy closure is an upward-looking point estimate of the coverage of a forest canopy, and may be measured in the field with a spherical densitometer (also called a mirror optometer) or by analyzing upward-looking hemispherical photographs.
<i>Cover</i> <i>(or Absolute Cover)</i>	Cover is a downward-looking measure of the percentage of the ground surface covered by living plant leaves and stems. Areas not covered by vegetation are counted as unvegetated substrate. Total cover may be greater than 100% if species are present in multiple strata (i.e., tree, shrub, and herbaceous layers.)
<i>Cover (Canopy)</i>	Absolute cover as viewed from above tree height

<i>Cover</i> (<i>Native Shrub</i> <i>and Vine</i>)	Absolute cover as viewed from beneath tree height.
<i>Invasive species</i>	A plant species should automatically be labeled as invasive if it appears on the current Oregon Department of Agriculture Noxious Weed list, plus known problem species including <i>Mentha pulegium</i> (pennyroyal) and <i>Elaeagnus angustifolia</i> (Russian olive).
<i>Project year</i>	Project year is measured as the number of completed growing seasons following initial verification, starting at 0. For example, where plantings are installed in the winter, the following fall would be considered the beginning of the project year 1, because the plantings have gone through one spring and summer growing season.
<i>Shrub</i>	A perennial woody plant that is usually multi-stemmed and normally grows no taller than 16 feet
<i>Tree</i>	A perennial woody plant, usually with a single stem or few stems, that normally grows taller than 16 feet

Table 5. Standard Non-Vegetation Performance Criteria for WWSP TTP Floodplain Resiliency BMP Projects

Criteria	Performance Criteria		
	Year 0	Year 1	Years 5, 10, 15, and 20
Design feature intent has been met	As-built matches design	Constructed features remain stable within project design parameters (e.g. fixed rootwads remain in place, excessive erosion not observed). ¹	Same as Year 1

¹ This criterion acknowledges that floodplains are dynamic systems and that conditions are likely to change over time. So long as the constructed features function as intended, then they have met this criterion.

4.2 IN-STREAM HABITAT RESTORATION BMP PERFORMANCE CRITERIA

In-stream habitat restoration projects are likely to consist of several different activities (e.g., grading, installation of root wads and beaver dam analogs, removal of structures impeding fish passage, and potentially plantings). Due to the diverse nature of potential activities and because the proposed activities are likely to be very site dependent, it is not practical to provide a discreet set of performance criteria similar to the revegetation performance criteria provided for the Floodplain Resiliency and Riparian Shade BMPs. Therefore, performance criteria for the In-stream Habitat Restoration BMP will be tied more to a comparison of designed conditions to constructed conditions. In addition, performance criteria will be tied to a demonstration of increased stream function over time. Table 6 provides the proposed design elements performance criteria and Table 7 provides the functional performance criteria for the In-stream Habitat Restoration BMP.

Table 6. Design Performance Criteria for WWSP TTP In-stream Habitat Restoration BMP Projects

Criteria	Performance Criteria		
	Year 0	Year 1	Years 5, 10, and 20
Design feature intent has been met	As-built matches design	Constructed features remain stable within project design parameters (e.g. fixed rootwads remain in place, excessive erosion not observed). ¹	Same as Year 1

¹ This criterion acknowledges that streams are dynamic systems and that conditions are likely to change over time. So long as the constructed features function as intended, then they have met this criterion.

Table 7. Functional Performance Criteria for WWSP TTP In-stream Habitat Restoration BMP Projects

Criteria	Performance Criteria		
	Pre-project Baseline	Year 5	Years 10 and 20
Stream functional assessment shows increased functions relative to pre-project baseline conditions ¹	A functional assessment will be conducted to establish pre-project baseline conditions.	Functional assessment results show a net increase in stream function relative to pre-project baseline, with the majority of functions rating moderate or higher.	Functional assessment results show the same or increased stream function relative to Year 5 conditions.

¹ Stream Functional Assessment Method (SFAM) to be used or other method if in the future SFAM is no longer supported.

5 MONITORING

5.1 PERFORMANCE STANDARDS MONITORING

Annual monitoring shall occur that documents site conditions, management actions over the past year and proposed for the upcoming year, and overall progress toward the performance standards. Monitoring efforts shall be commensurate with the performance criteria. Monitoring shall include, as appropriate to the specific criteria, the use of random vegetation plots, repeat photo stations, comparison of design intent to as-built conditions, and reporting on a comparison of monitoring data to performance standards. Monitoring and reporting during in-between years (i.e. years not specified in Performance Criteria) will typically be of a lower intensity with the intent of directing management activities as needed in order to meet the Performance Criteria at the next specified Performance Criteria year. Reporting of monitoring results will be governed by the requirements provided in the TTP document.

5.2 SUPPLEMENTAL MONITORING AND DOCUMENTATION TO SUPPORT ADAPTIVE MANAGEMENT

Supplemental monitoring may occur on a voluntary basis to support management decisions and to gain a better understanding of ecological processes and project effectiveness. Such potential monitoring, along with the required monitoring described above, will support adaptive management.

Potential voluntary supplemental monitoring may include:

- Measurement of stream temperature and/or other water quality parameters
- Documentation of fish use

- Macroinvertebrate sampling

6 REFERENCES

- Adamus, P., J. Morlan, K. Verble, and A. Buckley. 2016. Oregon Rapid Wetland Assessment Protocol (ORWAP, revised): Version 3.1 calculator spreadsheet, databases, and data forms. Oregon Dept. of State Lands, Salem, OR.
- Beavers Northwest. 2019. Beaver benefits description on website. Accessed 3/24/19.
<http://www.beaversnw.org/about-beavers.html>
- Bonneville Environment Foundation. date not specified. Willamette Model Watershed Program Conceptual Model.
- Nadeau, T-L., C. Trowbridge, D. Hicks, and R. Coulombe. 2018a. A Scientific Rationale in Support of the Stream Function Assessment Method for Oregon (SFAM, Version 1.0). Oregon Department of State Lands, Salem, OR, EPA 910-S-18-001, U.S. Environmental Protection Agency, Region 10, Seattle, WA
- Nadeau, T-L., D. Hicks, C. Trowbridge, N. Maness, R. Coulombe, N. Czarnomski. 2018b. Stream Function Assessment Method for Oregon (SFAM, Version 1.0) Oregon Dept. of State Lands, Salem, OR, EPA 910-D-18-001, U.S. Environmental Protection Agency, Region 10, Seattle, WA
- Oregon Department of Fish and Wildlife (ODFW) and National Marine Fisheries Service (NMFS). 2011. Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead. August 5, 2011.
- Willamette Partnership. 2016. Performance Standards for Riparian Revegetation. February 16, 2016.

Appendix D: Requirements for Annual Reporting

Consistent with the annual reporting requirements in OAR 340-039-0017(3), the annual reports submitted by the WWSS Commission will include:

- (a) The location of each trading project and BMPs implemented in the preceding year;
- (b) The trading project baseline;
- (c) The trading ratios used;
- (d) Trading project monitoring results;
- (e) Verification of trading plan performance including the quantity of credits acquired from each trading project, and the total quantity of credits generated under the trading plan to date;
- (f) A demonstration of compliance with OAR 340-039-0040(4), if applicable; and
- (g) Adaptive management measures implemented under the trading plan, if applicable.

WIF COMMISSION STAFF REPORT

To: Board of Commissioners

From: Christina Walter, WWSP Permitting and Outreach Manager

Date: October 26, 2020

Subject: Mission, Vision, Values, and Goals Update

Key Concepts:

Development of WIF Commission's Mission, Vision, Values and Goals (MVVG)

- Request for Proposal (RFP) selection process completed in September- facilitator, Water Systems Consulting, Inc. (WSC) awarded contract
- Informational interviews with all WIF Board members completed week of September 21, 2020
- "Kickoff" Workshop with MVVG working group held September 30, 2020

Background:

On September 8, 2020 staff concluded the RFP process with the selection and award of contract to WSC to assist the WIF Commission Board in its development of MVVG statements specifically related to watershed planning and water rights stewardship as related to the Mid-Willamette River.

On September 9, 2020 program staff held a contract kickoff meeting with WSC project lead staff, Holly Tichenor and Susan Schlagen, to orient them to the WIF, its make-up and current tasks, as well as its association and connections with the Willamette Water Supply System (WWSS), Willamette Water Supply Program (WWSP), and Willamette River Water Coalition(WRWC).

Following the meeting, during the week of September 21st, WSC conducted one-on-one informal interviews with each of the WIF Board Commissioners to gather perspectives and understanding on:

- WIF Commission roles and related watershed public / organization roles
- Discovering views WIF Commission success factors
- Hearing respective visions for the future of the WIF Commission
- Discussing ideas on the use of the MVVG framework in the future

A summary of the perspectives was then shared to the MVVG Working Group at the first workshop held on September 30th. The interview take-aways were presented to the MVVG and are also shown in the Board presentation included in this Board packet and below. Board input offered the MVVG Working group guidance, perspective, and the direction on issues that they should consider while developing the MVVGs.

Desired outcomes from the MVVG development process as expressed by the Board in summary include: Building a strong partnership and collaboration; Constructing the WIF on schedule and on budget; Developing responsible, reliable facility operations; Leveraging influence to protect watershed; and Creating a foundation to adapt to uncertainties in the future. Additional areas of focus are summarized in the presentation included in the Board packet and will also be presented by WSC.

The MVVG Working Group consists of representatives of each of the WIF partner agencies as well as the WWSP. The working group members are:

- Dave Kraska – WIF General Manager/WWSP Program Director
- Joelle Bennett – WWSP, Assistant Program Director
- Christina Walter – WWSP, Permitting & Outreach Manager
- Joel Cary – TVWD, Water Resources Division Manager
- Carrie Pak- TVWD, Chief Engineer
- Brian Rager – City of Tigard, Public Works Director
- John Goodrich – City of Tigard, Utilities Director
- David Winship – City of Beaverton, Principal Engineer
- Dianna Ballash – City of Beaverton, Media & Communications Office
- Rich Sattler – City of Sherwood, Public Works Director
- Delora Kerber – City of Wilsonville, Public Works Director
- Jessica Dorsey – City of Hillsboro, Water Resources Manager

During the three-hour workshop topics covered included: desired outcomes for the group; long-term visioning; review of the Board’s input; and a mission-focused discussion.

The Working Group’s desired outcomes included the following:

- Aligning interests, goals, investments and priorities
- Clarifying operations measures of success: cost, compliance, efficiencies
- Looking toward future needs together
- Proactively managing water rights
- Creating partnerships and shared ownership
- Building a product that clearly communicates mission for public and elected officials

Additionally, the Working Group worked on visioning activities in the first workshop. The following themes emerged from that forward-looking activity.

- Strong Partnerships
- Watershed Protectors
- Regional Influencers

These will be discussed further with the Board in the October 26th meeting during the 30-minute MVVG report out by WSC.

The next MVVG Working Group Workshop will be held on November 18th. The focus of that session will center on the topic of “Values and the Keys to Success.” Elements to be drawn out and discussed include: How we work together; What we believe; Unique skills of WIF; Further Work on the Mission and Vision as a continuation from the first workshop; Keys to Success especially as it relates to the mission in the areas of: Environmental, Social and Economic.

Budget Impact:

Informational item. No Board action required.

Page 3 of 3
 October 26, 2020
 Mission, Vision, Values, and Goals Update



Staff Contact Information:

David Kraska, P.E.; General Manager; 503-941-4561; david.kraska@tvwd.org
 Christina Walter, Permitting and Outreach Manager; (503) 840-3830; christina.walter@tvwd.org

Attachments:

WIF Board Mission, Vision, Values and Goals presentation slides 10.26.2020

Management Staff Initials:

General Manager		TVWD General Counsel	
TVWD Chief Engineer	N/A	TVWD Chief Financial Officer	N/A

Mission | Vision | Values | Goals

WIFC BOARD PRESENTATION

October 26, 2020 | 6:00 PM Board Meeting

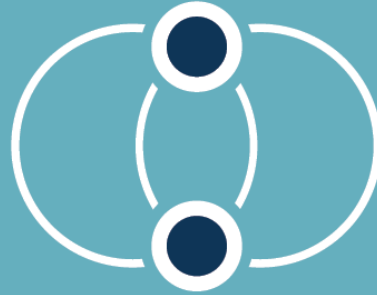


Why Here? Why Now?



ENVISION

Create a shared vision,
understand gaps /
perspectives and
success for the WIF
Commission



ENGAGE

Build engaging
workshop interactions
that progressively
advance M, V, V, G



DELIVER

Facilitate a well-crafted and
designed mission, vision,
values and goals

The Core Ingredients



MISSION

Why the Commission exists—its purpose, goal or critical function especially as it relates to *watershed protection and water rights*.



VISION

An aspirational view of what the Commission wants to be in the future.



VALUES

The Commission's foundational character—how it conducts business and how it is perceived.

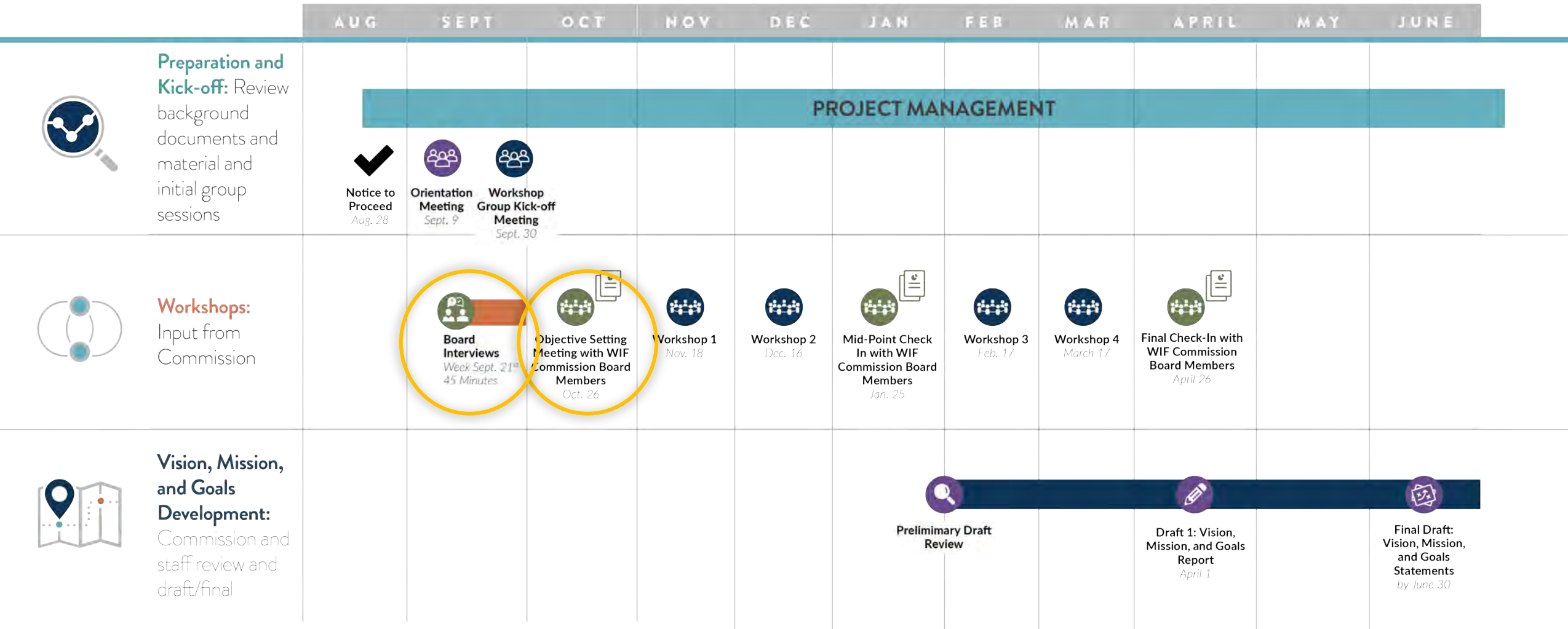


GOALS

The Commission's prioritized areas of focus that will drive strategies and actions to achieve your M, V, V.

PROJECT SCHEDULE

2021



Shared vision of success



Workshops & planning framework



Mission, vision, and goals draft



Part 1

Board Member Interviews

Board Input

Desired Outcomes

Build strong partnership and collaboration

Construct WIF on schedule, on budget

Responsible, reliable facility operations

Leverage influence to protect watershed

Adapt to uncertainties in future

Board Input

Board Desired Outcomes for Process

Unified Voice

**Guidelines
for Priority
Setting &
Decision
Making**

**Defined
Success**

**Mechanisms
to Communicate
Purpose
(w/ public)**

Board Input on Areas of Focus

... general question to what degree?

**Water Quality and
Watershed Protection**

**Curtailment
planning & Future
Supply Needs**

**Construction,
Operation of
Facility**

Education

**Disaster /
emergency
preparedness**

*Long-term
planning >30
years out*

DEI

Part 2

Workgroup Workshop



We asked...

responses very consistent with Board.

- Aligning goals, investments and priorities
- Effective management of WIF
- Protecting Willamette River Watershed
- Proactively managing water rights
- Creating partnerships and shared ownership
- Aligned communications around purpose and mission

What do you hope for from process?

What do you want from the MVVG product?

We asked...

*what is possibility when we envision
success of by WIFC 20 years from now?*

THEMES related to mission and vision. WIFC is recognized as:



Strong Partners

Results-focused collaboration

Long-term **aligned vision and plans**

Shared **Purpose**

Partnering for Watershed

Watershed Protectors

Supporting **source water protection**

Protecting **habitat and environment**

Resiliency to disasters

Regional Influencers

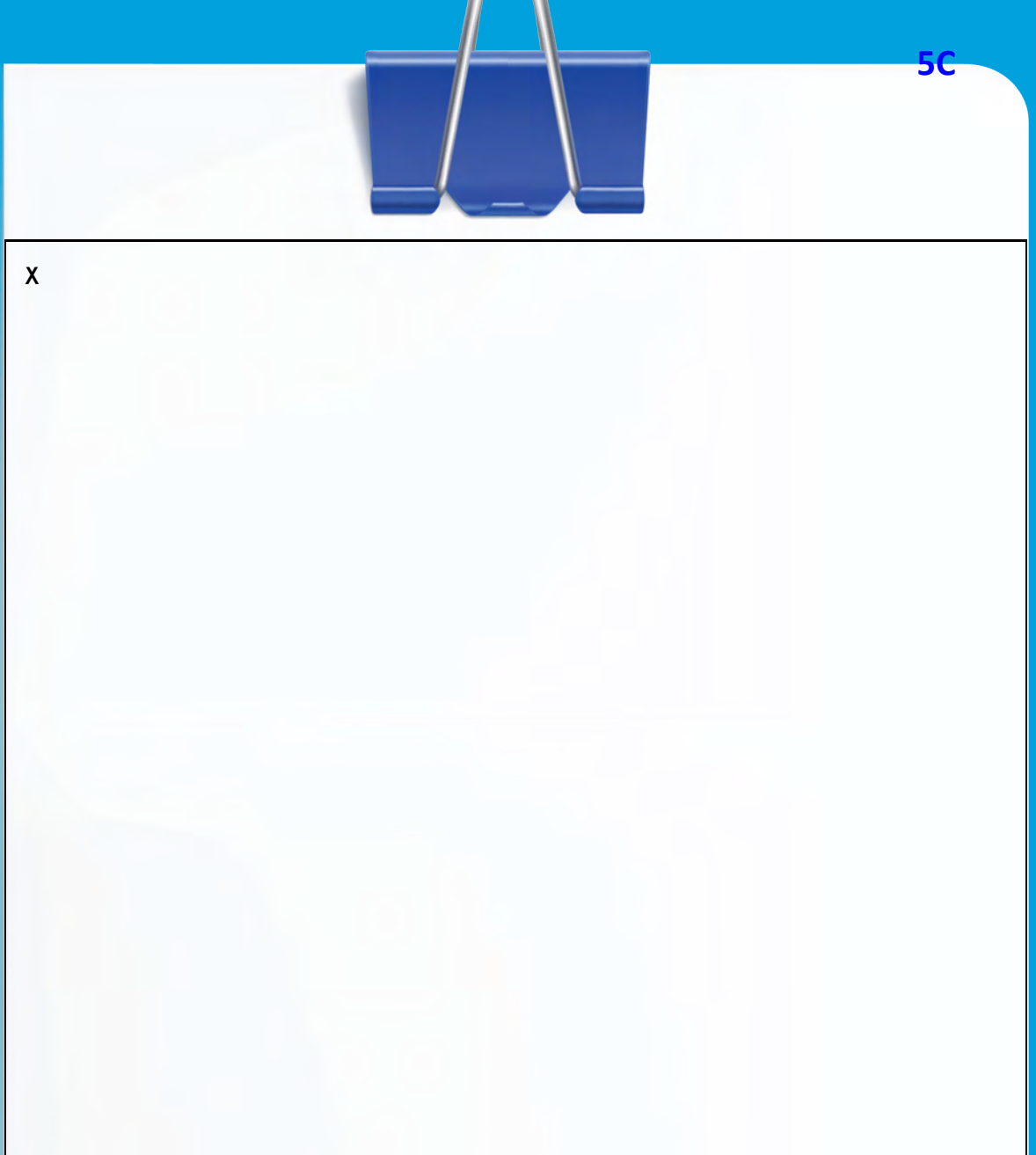
Advocating for **legislation**

Providing **Watershed Education**

Securing **funding and support**

What is your desire for WIFC in each of the 3 areas?

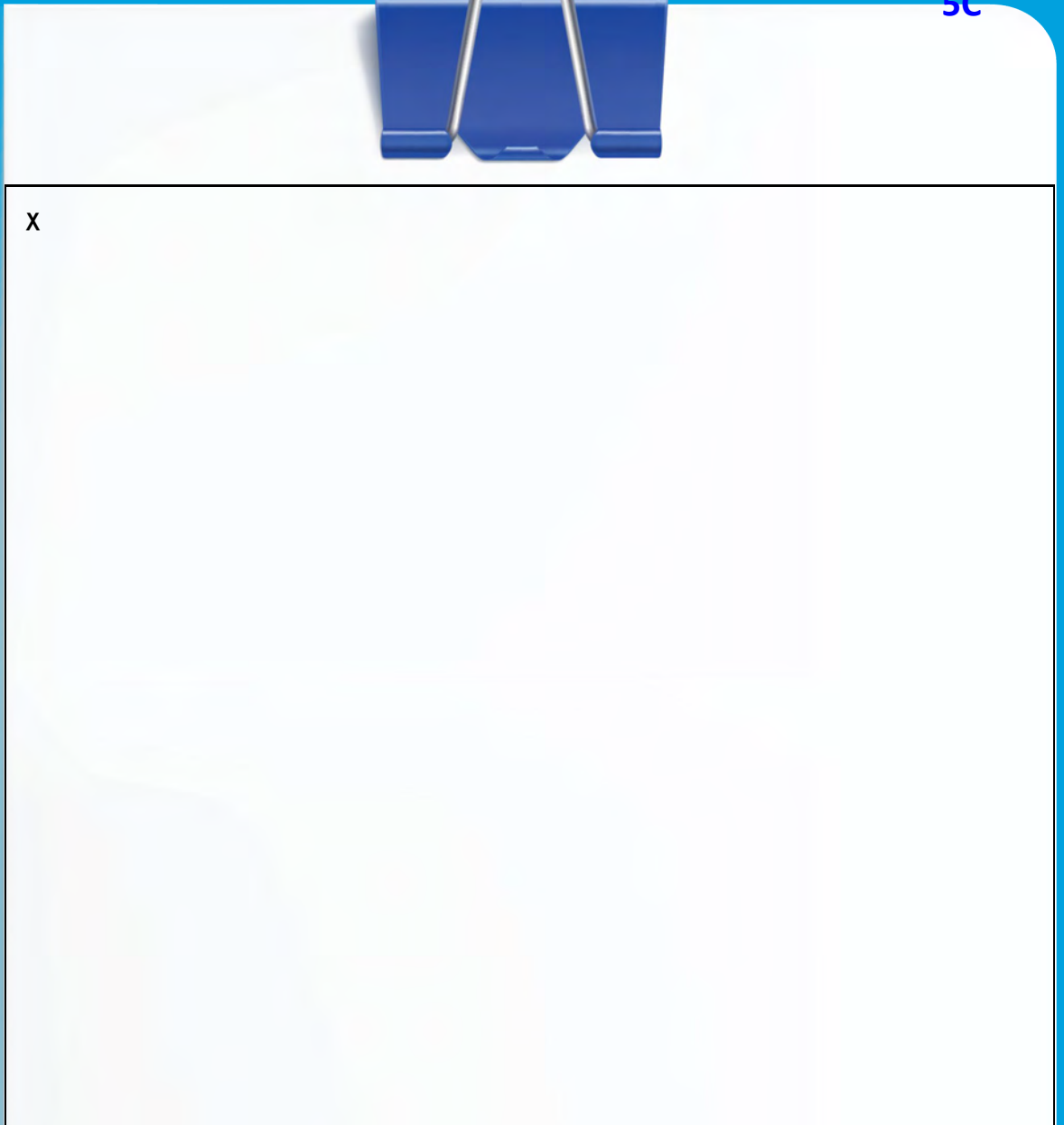
Write down **1 Top Priority** for:



x

What is your desire for WIFC in each of the 3 areas?

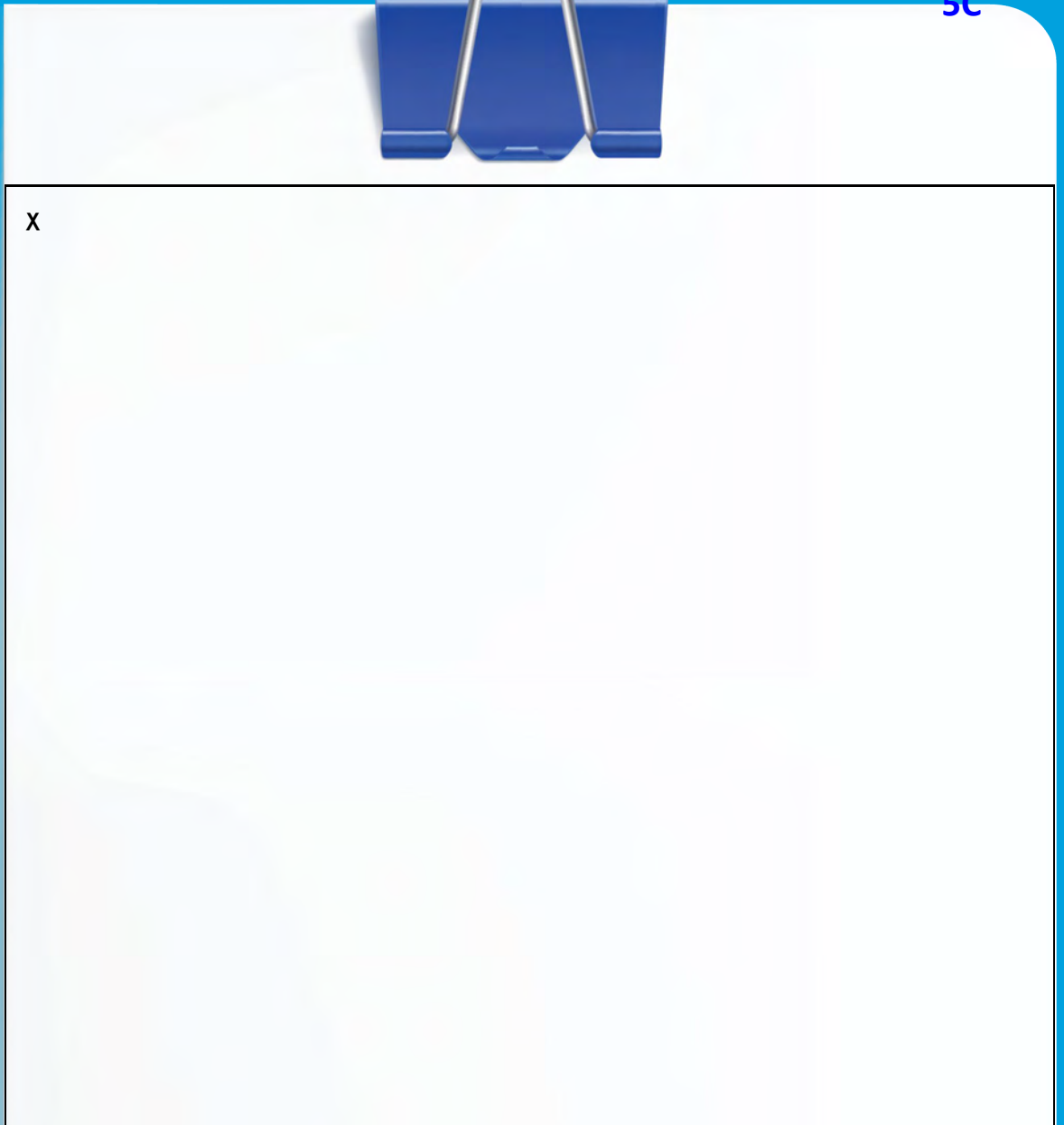
Write down **1 Top Priority** for:



x

What is your desire for WIFC in each of the 3 areas?

Write down **1 Top Priority** for:



x

Mission | Vision | Values | Goals

WIFC BOARD PRESENTATION

October 26, 2020 | 6:00 PM Board Meeting

