SANTIAM WATER CONTROL DISTRICT

DEQ TMDL Voluntary Implementation Plans for Mercury and Sediment Reduction, and including Stream Temperature Management TMDL

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Santiam Water Control District – Background

The Santiam Water Control District (SWCD) is an Oregon special district formed under O.R.S. 553. The Water Control District was formed in 1954 with the purchase of the Willamette Valley Water Company. The District contains three sub-districts formed for the special benefit purposes of 1) irrigation delivery and 2) two separate soil and erosion control sub-districts. The sub-districts are assessed annually for the operation and maintenance of respective irrigation and revetment facilities and their portion of the general overhead of the district not attributable to any specific sub district. The Irrigation Sub-District's facilities consist of most of the owned infrastructure including 106 miles of open canals and ditches extending from Stayton to Salem, the water street hydropower facilities and the diversion dams. The Santiam Water Control District is governed by an elected Board, consisting of seven members, who are responsible for the administration of the District. The Board appoints the general manager of the District, who acts as the CEO and carries out the day-to-day tasks of management.
SWCD presently delivers water to a hydroelectric plant, raw municipal water to the City of Stayton, irrigation water for over 17,000 acres and other various uses such as fish propagation, wildlife habits, aesthetics, recreation, and wetland maintenance.

Santiam Water Control District – Facilities and Infrastructure

SWCD operates and maintains 2 diversion dams, a fish screen diversion structure, and multiple automated headgates to operate 106 miles of open canal and 4.2 miles of piped conveyance for the purpose of delivering water to approximately 17,000 acres of agricultural land. The District also uses those facilities for delivery of water for domestic, aesthetic, and recreational uses. The District also serves as the local sponsor of several US Army Corps of Engineers (US ACOE) revetments.

Santiam Water Control District currently diverts water from the N. Santiam River and reports water use on 42 water rights certificates. The District delivers these flows via District owned infrastructure (District facilities or Canals) and natural conveyances including Marion Creek, McKinney Creek, and Mill Creek. The majority of water right certificates are issued to SWCD directly, but some are issued to individual irrigators, companies, and municipalities, that contract to use district facilities for delivery.

Facility/Infrastructure	Description
Diversion Dams	2 Diversion Dams on the Santiam River that regulate by virtue of grade control, the water flow into the Power/Stayton Canal and the Salem Ditch
Stayton/Power Canal Fish Screen & Diversion Structure	A fish screen diversion structure that prevents fish from entering the Power/Stayton Canal and directs them to a fish ladder
Salem Ditch Diversion and Canal	An unscreened diversion that diverts water from N Santiam River to supply water rights, including a right for aesthetics and recreation in Mill Creek.
Automated Headgates and SCADA (Supervisory Control And Data Acquisition) system	Multiple automated headgates that control the water distribution along the Power/Stayton Canal and the Salem Ditch, The SCADA system that monitors and remotely operates headgates, the hydropower facility, and the fish screen diversion structure. The system also collects data at those sites included.
Canals and Piped Conveyance	106 miles of open canal and 4.2 miles of piped conveyance that deliver water to various users, including agricultural, domestic, aesthetic, and recreational
Natural Streams and creeks used for conveyance	McKinney, Marion, and Mill creeks are used as conveyance facilities to deliver district water rights.
US ACOE and private Revetments	Several US ACOE revetments that protect the banks of the Santiam River from erosion
Hydropower Facility	A hydropower facility with four generators that produce electricity from the water flow in the Power/Stayton Canal

Diversion Dams

- Upper Bennett Dam: A concrete gravity dam that diverts water from the North Santiam River into the Stayton Canal, which supplies water to the Stayton Power Plant and the Santiam Water Control District
- Lower Bennett Dam: A rockfill dam that regulates the flow of water from the Stayton Canal back to the North Santiam River, downstream of the Upper Bennett Dam

Stayton/Power Canal Fish Screen & Diversion Structure

- The District fish screens, installed in 2004-5 at a cost of 1.8 million including a downstream barrier, prevents fish species from being diverted into irrigation canals at a typical flow of 325 cubic feet per second (cfs). At the downstream end of the screen, a 30" diameter pipe returns fish to the North Santiam River.

- The Power/Stayton Canal diverts water from the Santiam River. It serves as the legal Point of Diversion for all district water rights, in some instances the district utilizes its ditches to deliver water into a downstream natural waterbody which is then used to convey water to an individual's pumping site'; in these instances, District water rights may contain a described re diversion point. The canal is used to deliver raw water to the City of Stayton drinking water plant and also generates some hydropower before reaching the main irrigation canal headgates. Any water not used for irrigation flows towards the fish barrier dam and is returned to the north Santiam River. Flow control into the Power/Stayton Canal is provided by four existing automated sluice gates, which discharge water to a downstream fish screen. The diversion flow rate is determined by measuring the water depth (stage) at a rated section just downstream of the fish screen and applying the measured stage to a stage/discharge equation determined by SWCD.

Salem Ditch Diversion and Canal

- The Salem Ditch is an unscreened diversion originally constructed to supplement flows in Mill Creek. Mill creek is typically a perennial stream that runs dry during summer months but for the addition of N Santiam River water into it. The District delivers up to 102 cfs of water for aesthetic and recreational purposes to serve water rights held by the city of Salem. In addition, irrigation flows are distributed from Salem ditch as well as using mill creek as a conveyance system to additional district water right users downstream. Salem Ditch also receives the majority of stormwater from the City of Stayton and conveys it to Mill Creek.

Automated Headgates and SCADA system

- The District has installed automated headgates at the Power/Stayton and Salem ditch diversions. The Automated gates are controlled by a SCADA Supervisory Control and Data Acquisition system. The SCADA system and automated gates control the flows at the diversion points and at various critical points throughout the districts conveyance system. The SCADA system also collects data such as gate settings, flow information and other parameters that help the district operate the system in an efficient manner. The use of automated gates provides a more consistent flow throughout the delivery system, lessening canal bank erosion caused by fluctuating canal levels. The district's SCADA automation system controls four gates that regulate the flow of water into the Power/Stayton Canal and one gate that regulates flow into Salem ditch. The gates are located at the upstream end of the canals, near the N. Santiam River diversion. The gates are operated remotely by the district staff using a computer interface that communicates with the gate actuators via radio signals. The system allows the district to adjust the flow rate according to the demand for irrigation, drinking water, and hydropower. The system also monitors the water levels in the canal and provides alarms and alerts in case of emergencies or malfunctions.

Canals and Piped Conveyance

a. Upper Main Canal: The Upper Main Canal is an integral part of the District's distribution system. Located at the very top of the system, the Upper Main Canal is used to convey water from the main canal headgates on Norblad lane to the majority of the laterals and ditches throughout the District.

b. Collier Lateral to Mill Creek: The Collier Lateral delivers water from the Main Canal to the north, connecting with the Porter Main Canal and Mix Sublateral to deliver water to patrons just south of Mill Creek. Currently, patrons served off of Mill Creek receive water via the Salem Ditch.

c. Middle Main Canal: The Middle Main Canal stretches from the Collier lateral headgate to the Rishel Lateral, delivering water to the Marion Ditch in the process. Several existing pipelines are also served by this section of the Main Canal.

d. Marion Ditch: The Marion Ditch delivers water from the Main Canal to the southwestern part of the District, eventually ending at Marion Creek. Approximately 10 percent of water deliveries are lost to seepage and evaporation in Marion Ditch.

e. Gilbert Lateral: The Gilbert Lateral receives water from the west-running portion of the Collier Lateral and delivers water to the western part of the District.

f. Lower Main Canal: The Lower Main Canal delivers water from the Rishel Lateral to the westernmost area of SWCD's system.

g. Coates and Meadowlawn Laterals: The Coates and Meadowlawn laterals deliver water from Mill Creek to the northernmost area of the District.

Natural Streams and creeks used for conveyance.

- Several downstream creeks are used to convey District water rights to individual patrons, the district uses the natural systems as conveyance but performs no maintenance functions on the creeks themselves. Individual users are responsible to ensure compliance related to their re-diversion activities.
    (a) Mill Creek
    (b) McKinney creek
    (c) Marion Creek

US ACOE and private Revetments

- The district serves as the local sponsor for the care and maintenance of several US ACOE revetments, all activities associated with the repair of levies go through a full state and federal permitting process and therefore have no impact on the day-to-day operations or maintenance activities of the district as it pertains to TMDL's.

Hydropower Facilities

- The District operates a small hydropower generation facility that operates under a FERC exemption. The water flowing towards the irrigation system generates a small amount of hydropower (like in conduit) as the water travels towards the main canal headgates, any flows during non-irrigation season or in excess of the needs of irrigation are returned to the river via the tailrace and fish barrier dam. The

hydropower site is automated with sensors monitoring the generators and integration of real-time data from the site into the SCADA system.

Willamette Basin Mercury TMDL – 2019

The OR Department of Environmental Quality (DEQ) released the final revised Willamette Basin Mercury TMDL plan in November of 2019 listing the Santiam Water Control District as a "responsible person" under the plan,

13.3.1.23 Water Delivery and Conveyance Systems

Irrigation districts, drainage districts, and other water delivery and conveyance systems influence the quality and timing of sediment delivery to downstream river reaches. Return flows can enter waters of the state through ditches and pipes. Consequently, owners and operators of these systems are included as responsible persons in the WQMP because maintenance and management of these systems can impact sediment transport and erosion. Such systems are **responsible only for sedimentation resulting from conveyance systems**, not from upland agricultural activities such as raising livestock, cultivation, and irrigation. These activities are covered by the Department of Agriculture as part of its responsibilities as a DMA.

Therefore, the Santiam Water Control District is responsible for implementing strategies to reduce mercury according to requirements identified in the Water Quality Management Plan (WQMP) that are specific to the Santiam Water Control District's maintenance and management of its facilities and are further limited to those activities that influence the quality of any return flows.

SWCD DEQ TMDL MERCURY Sediment Implementation Plan 2023

The SWCD has developed a Total Maximum Daily Level (TMDL) plan for mercury that includes Best Management Practices (BPMs) to prevent or reduce sediment discharges into receiving streams caused by other DMA's or by maintenance and management of its delivery facilities. The Santiam Water Control District TMDL Mercury Plan will develop and implement best management practices for silt reduction as requested by the DEQ WQMP while continuing to serve our purpose and provide SWCD Patrons with irrigation water.

1. Inventory and Assessment.

The SWCD assessed its facilities maintenance and management activities and found that soil erosion is primarily caused by two methods related to District maintenance and management. 1) silt caused by manual excavation or disturbance or 2) Bank erosion caused by high velocities usually caused by rapidly changing water levels and erosion caused by sinuosity due to lack of cleaning out deposited silts or weeds that have not been controlled.

A properly designed canal system would not erode beds or banks, and baring other inputs would pass the same turbidity through the system that was present at the intake. The Inputs of silt into the Districts system all occur via activities from other Designated Management Agencies (DMA's). The DEQ is naming the district as a responsible party, but the DEQ holds proper authority to prevent silt caused by the named DMA's and should not allow the passage of silt to also pass responsibility and cost on to the district. I.E. The operation and maintenance of district facilities does not create silt and there would be no need to excavate deposited silt if it weren't for the input caused by outside sources. Sources of silts by outside parties include.

Marion County Drains	• Silt runoff from roads draining directly into to SWCD facilities. • Silt from projects approved by Marion County entering district canals	Public works, permitting, and regulatory authority. LUCS process does not include or protect districts
City of Stayton Drains	• Stormwater pipes directly draining into SWCD facilities • Silt from projects approved by Stayton entering district canals • Silt runoff from roads draining directly into to SWCD facilities.	Public works, permitting, and regulatory authority. LUCS process does not include or protect district
Dept of Agriculture farm drainage	Silt runoff from farms and farming activity that discharges into SWCD facilities	SB 1010 authority
Oregon DEQ	Silt runoff caused by approving 1200 permits, NPDES permits and other authorizations that allow discharges that ultimately drain into district facilities	Permitting programs grant a permit without ensuring permission or notice is given to the district. LUCS process does not include districts
City of Salem Drains	• Silt runoff from roads draining directly into to SWCD facilities. • Silt from projects approved by Salem entering district canals	Public works, permitting, and regulatory authority. LUCS process does not include or protect district

A properly designed canal system can significantly reduce overall return flow silt discharged into streams and creeks. Incorporating features that allow silt to settle or designing canals such that silt settles within the canal itself. By allowing silt to deposit within the canal, the system acts as a sediment trap, capturing and containing the silt in a controlled environment where it can be managed more effectively. This is achieved by designing the canal with a gentle slope and appropriate flow velocity, which encourages sediment to settle at the bottom rather than being carried downstream. While this may necessitate periodic excavation to remove the accumulated silt, it is still beneficial because it prevents the silt from being passed on to downstream water bodies, where it could cause more significant environmental issues.

In general, the irrigation facilities of the district serve as a sediment trap for the benefit of many DMAs, but any cost of doing so is borne upon the ratepayers of the district. The cost related to farm and farm activities was appropriate when the district was in partnership with the Dept of Ag and the farm activity combined with district activities to remove farm silts was covered under a single DMA (OR Dept AG). The foregoing example allowed the district to tie the costs to the benefits enjoyed by farm ratepayers. The split creates a statutory difficulty in properly assessing costs under the district's legal authorities.

In summary, a well-designed canal system that allows silt to settle and be periodically excavated is beneficial for reducing silt discharged by return flows, as it prevents the silt from being transported to downstream water bodies and causing environmental issues.

2. Best Management Practices.

The district selected the following BPMs to prevent or reduce sediment discharges carried by return flows into downstream streams

- Sediment controls: The district facilities perform as sediment traps to capture sediment-laden runoff before it reaches receiving streams. Wiers checks and other methods promote deposition prior to being carried to streams through return flows. The district facilities themselves serve a Best management function for the benefit of outside DMA's

- Scheduling maintenance activities: The district will schedule maintenance activities during dry or low ditch flow periods to reduce the potential for sediment-laden runoff.

- Education and partner TMDL agency communications: The district will educate DMA's and other partner agencies on the effects of their activities on district facilities. The District will stay engaged on law and land use ordinance development by the DMAs which impact district facilities.

3. Excavation and Disposal of Settled Silt.

Excavation and disposal of settled silt: When excavating silts settled in ditches, the irrigation district will minimize the amount of sediment re-suspended and discharged into the receiving streams. This may involve using sediment barriers or silt curtains to contain sediment-laden water, and pumping water out of the excavation site to prevent it from flowing into receiving streams. The district will also ensure that the excavated sediment is disposed of properly, in accordance with all relevant regulations and guidelines. This may involve transporting the sediment to an approved disposal site or using it for beneficial reuse, such as placing it on nearby farm ground to have it reworked into farm practices. By taking these steps, the district can minimize the amount of sediment that is discharged into the receiving streams during excavation activities. The district may use silt to build up the top of the canal bank to out slope canal banks, this practice aids in controlling ditch bank erosion.

4. Implementation

Implementing this plan will help the irrigation district prevent the discharge of settled silt into receiving streams and maintain the health of local ecosystems. The district will implement the selected BMPs in accordance with its policies and procedures. It will modify these policies and procedures to ensure that BMPs are fully integrated into maintenance activities.

5. Monitoring and Reporting

The district will regularly monitor the effectiveness of BMPs and record all monitoring data. It will report the data to relevant agencies, stakeholders, and the public.

6. Education and Outreach

The district will educate the public and stakeholders about the importance of BMPs for preventing or reducing sediment discharges into receiving streams. The District will engage local cities and counties on methods to implement BMPs that will reduce silt reaching district canals and therefore reduce the need for excavation It will provide training for irrigation district staff on how to implement BMPs effectively.

7. Plan Review

The district will periodically review and update the TMDL plan as needed to ensure its effectiveness in preventing or reducing sediment discharges into receiving streams. It will revise BMPs or implement additional BMPs based on changes in maintenance activities, environmental conditions, or other factors. Overall, this TMDL plan will help the irrigation district prevent or reduce sediment discharges into receiving streams, improving water quality, and supporting the health of the local ecosystem.

SWCD DEQ TMDL TEMPERATURE Implementation Plan 2023

The SWCD has developed a Total Maximum Daily Level (TMDL) plan for temperature water quality standards that includes Best Management Practices (BPM) to better control water temperature when discharging water into receiving streams per the Middle Willamette Subbasin Stream Temperature TMDL.

1. Inventory and Assessment.

The SWCD assessed its key actions to address water temperature – focus on education;

2. Best Management Practices.

The district selected the following BPMs to prevent or reduce water temperature

- Patron education: Use newsletters, website and other communication tools to educate the public about the temperature TMDL

3. Education and Outreach

The district will educate the public and stakeholders about the importance of BMPs for reducing stream temperatures.

Implementation Strategies

Adaptive Management

SWCD will review documents and tracking forms for mercury TMDL at the District Annual meeting (or other means for Board approval). Any changes in the plan or log should be clearly marked and submitted to DEQ. Adaptive management measures may include examples such as, changes to logs, changes in drainage and return flow schedule, new or changed maintenance BMPs to adjust for emergencies, sediment reduction fixes, and standard season of water delivery. SWCD will review and revise their Implementation Plan as they are able following DEQ reevaluation of the TMDL using the Adaptive Management Approach. Any delays in the implementation of these strategies will be included in reports to DEQ.

Reporting

The SWCD will report annually on implementation progress by filling in the logs and submitting them to DEQ as required. The annual report will be submitted to DEQ using the DEQ provided date with plan approval.

Costs and funding for implementing management strategies in Plan.

The District is served by a 7-member elected board of Directors. The Board of Directors manages the operation and maintenance of the infrastructure. Funding for operations and maintenance of the District is by annual assessment to the landowners of the District. The board levies annual apportionments for the use of the infrastructure, with members paying for use, based on acreage, and accessibility to water provided.

The board meets monthly and keeps a record of all meeting minutes. At the annual meeting Board members review the costs incurred, payments made, and maintenance issues. At this time, we are not sure how this new regulatory burden will affect the District and assessment collection.

Funding Source	Category	Notes
Patron annual assessments	Staff salaries, District overhead expenses, supplies, and regulatory fees	Rates are set annually and voted upon by the board at the annual meeting.

Santiam Water Control District disclaimer letter and statement of Voluntary Plan

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** Disclaimer: Our district voluntarily submits this plan to cooperate with the Oregon Department of Environmental Quality's (DEQ) request related to implementation of the Willamette Basin Mercury TMDL. However, pursuant to the recent court decision related to the Upper Klamath Basin TMDL, the district does not agree that DEQ has the authority to require this plan of the district, and hereby contests the district's alleged status as a "responsible party" for purposes of implementation of the Willamette Basin Mercury TMDL. Our submission of this plan in no way waives our rights to contest or otherwise dispute DEQ's authorities with respect to implementation of, and its rules and policies governing, the Willamette Basin Mercury and temperature TMDL's. **

Santiam Water Control District is organized under ORS 553 and our primary purpose is to deliver water to agricultural lands within the district boundaries. Our district patrons are farmers, ranchers, nurserymen, and other agricultural producers who collectively pay for the operations and maintenance of the district's irrigation/drainage system.

SWCD operates and maintains over 90 miles of open ditches and canals as well as approximately 14 miles of irrigation pipeline. The District also operates and maintains fish screens, several dams, and multiple headgates within its boundaries. Santiam Water Control District acts as the single largest diversion from the water reservoir system of 13 dams owned and operated by the Army Corps. of Engineers. Of these dams, the Detroit dam and reservoir make up the primary source of water for the District.

In 2021 the District officially began a planning process through the NRCS to evaluate a proposed piping project that would improve water quality, including mercury levels, and quantity for our patrons through an infrastructure modernization project.

The Santiam Water Control District has always participated in and understood its operations, and those of its patrons, to be covered under the Oregon Department of Agriculture's (ODA) Agricultural Water Quality Management Program and subject to the Willamette Basin and Middle Willamette subbasin Plans.

The Area Plan and associated Area Rules apply to all agricultural lands and related agricultural activities within our region. Our district engages with the local Soil and Water Conservation District (SWCD) who can assist local farmers and ranchers with information and technical assistance related to agricultural water quality management.

Any fill and removal work conducted as part of district operations is subject to existing applicable permitting requirements by the Oregon Department of Agriculture, Oregon Department of State Lands, and/or the U.S. Army Corps of Engineers.

We will continue to engage with our local SWCD and ODA, promote ongoing education about the plan, and ensure district operations follow any applicable requirements. Our district is committed to helping with educational outreach and connecting individual district patrons with resources through our local SWCD and ODA. We will also encourage our patrons who have questions about their obligations under the local area plan to contact the local SWCD and/or ODA, and we will work cooperatively with our patrons and ODA to resolve any concerns.

By: Brent Stevenson Brent Stevenson, District Manager Date: 9-30-2024

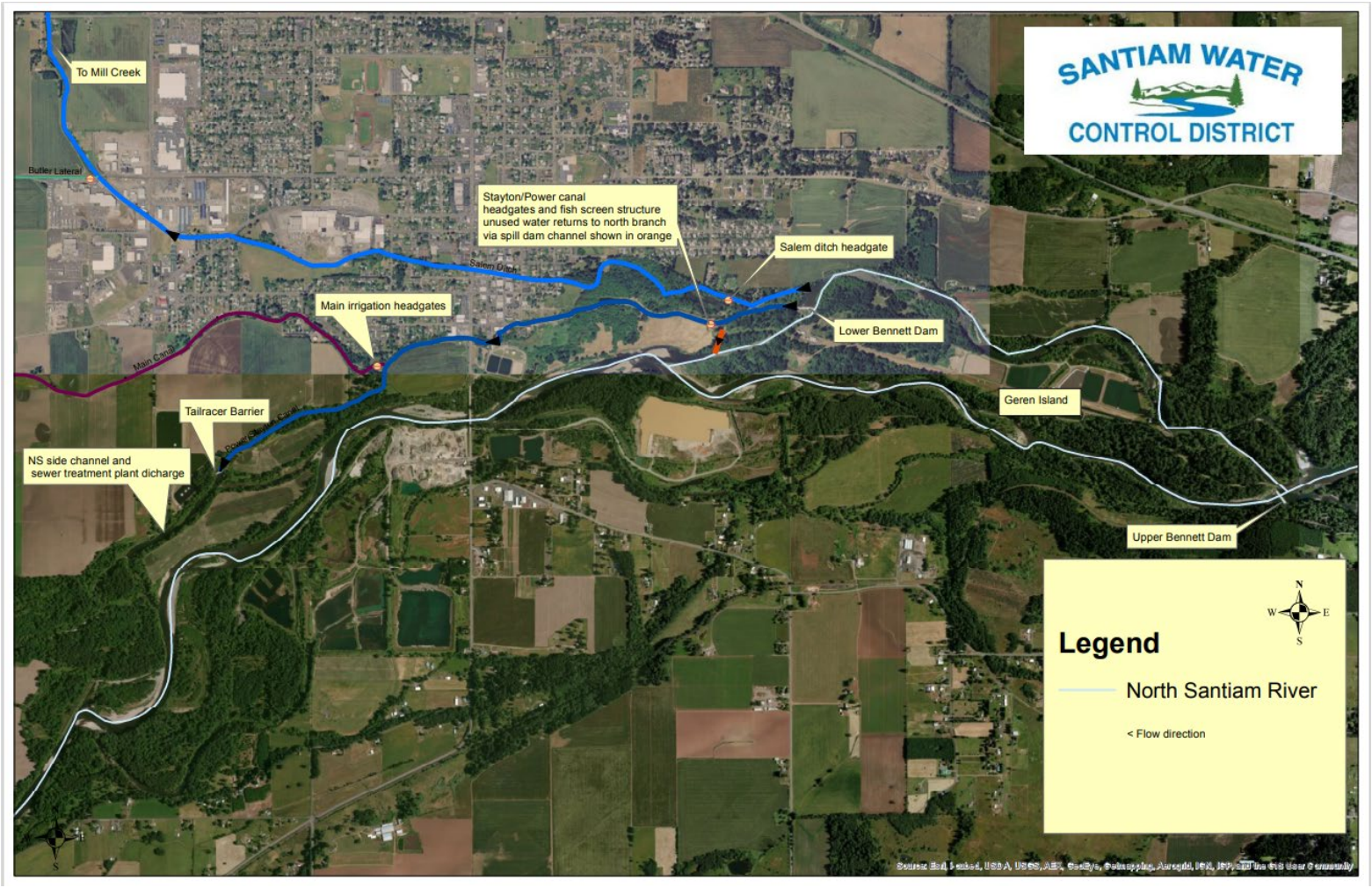
Acknowledged by: Oregon Department of Environmental Quality

Existing state and federal agencies and Programs

Agency	Program	Regulatory process, permit, certification, exemptions
U.S. Army Corp of Engineers and U.S. Bureau of Reclamation	Willamette Valley Project Water	Water Service Contracts
U.S. Army Corp of Engineers	404	DSL removal-fill permit may also require a Clean Water Act Section 404 permit
DEQ	401 Program- 1200C- 1200Z approvals- City and County TMDL or NPDES permit approval	Water Quality Certification for 404 permits, issuance of 1200 c and z permits that discharge into district facilities. Approval of Cities; Salem, Stayton, Aumsville, Turner, and Marion Counties TMDL plans that discharge into Santiam Water Control District facilities
Department of State Lands	Waterways and Wetlands	Removal/ Fill Permit
Department of State Lands	Waterways and Wetlands	Permit exempt requirements for: Maintenance or Reconstruction of Water Control Structures; Wood removal; Habitat restoration and trash removal, bulge clearings for board installation
ODFW	Fish Screen	Fish screen at power canal, Salem ditch and mill creek screens POD; In water work period on all natural streams unless exempt maintenance
ODA / ODFW	Drainage	State of Oregon: Natural Resources - Agricultural Drainage Channel Maintenance.
Oregon Water Resources Department	Water Rights	Water right certificate and water law compliance, requires efficient delivery, maintenance of ditches

Santiam Water Control District TMDL Implementation Matrix 2024 - 2029

Management Measures	TMDL	Location, Activity	Management Activity	Measures	Monitoring Evaluation (report annually)	Timeline	Annual Status to DEQ 2024 2025 2026 2027 2028
Flow Management to reduce heating and sediment delivery and erosion during Irrigation Season	Mercury Temp	Water conveyance & Diversion operations. District facilities	Utilize SCADA system to remotely operate gates to reduce fluctuations Leading to reduced stream heating, erosion & sediment delivery via return flows to streams	Manage flows utilizing SCADA automation system and automated gates. Use the district facilities to capture and deposit silts for later removal, reducing the amount of silt carried to streams by return flows.	Only problems	Primary operations May-Sept in season Extended Season April - October OFF season Nov- March 1 Domestic raw water and hydropower year around in Stayton power canal	
Flow Management to reduce sediment delivery during canal Maintenance / Canal stabilization practices including structural and non-structural best management practices	Mercury	District ditches and canals	Cease diversion of water and management of Return flows Continue to limit sediment clean out to low water level months (non-irrigation season). and use least invasive methods. Natural water courses during instream work windows or ODFW approval as required	Shut headgates, dewater and minimize or eliminate return flows by rerouting any drain water around areas where silt excavation will take place	Canal Maint season	Nov-Feb/March	
Public Involvement	Mercury Temp	Board member Adoption and education; Website education	District acknowledgement of plan approval and annual status reports sent to DEQ.	Share information at meetings. Update SWCD site to provide education on Mercury and Temperature TMDL programs.	Review at year end; Meeting typically December	2024-2028 annual meeting	
Conduct education and outreach Engage and educate other DMAs on their effect on district facilities	Mercury	NA	Review other DMAs plans and provide comment and engagement as necessary conveying effect on district facilities	Work with stakeholders and partners, such as Oregon Dept Ag, Cities of Stayton and Salem, Marion county and DEQ	Describe # meetings and interactions	2023-2028	


SANTIAM WATER
CONTROL DISTRICT
To Mill Creek
Butler Lateral
Stayton/Power canal
headgates and fish screen structure
unused water returns to north branch
via spill dam channel shown in orange
Salem ditch headgate
Salem Ditch
Main irrigation headgates
Main Canal
Lower Bennett Dam
Geren Island
Tailracer Barrier
Power Channel Canal
NS side channel and
sewer treatment plant dicharge
Upper Bennett Dam
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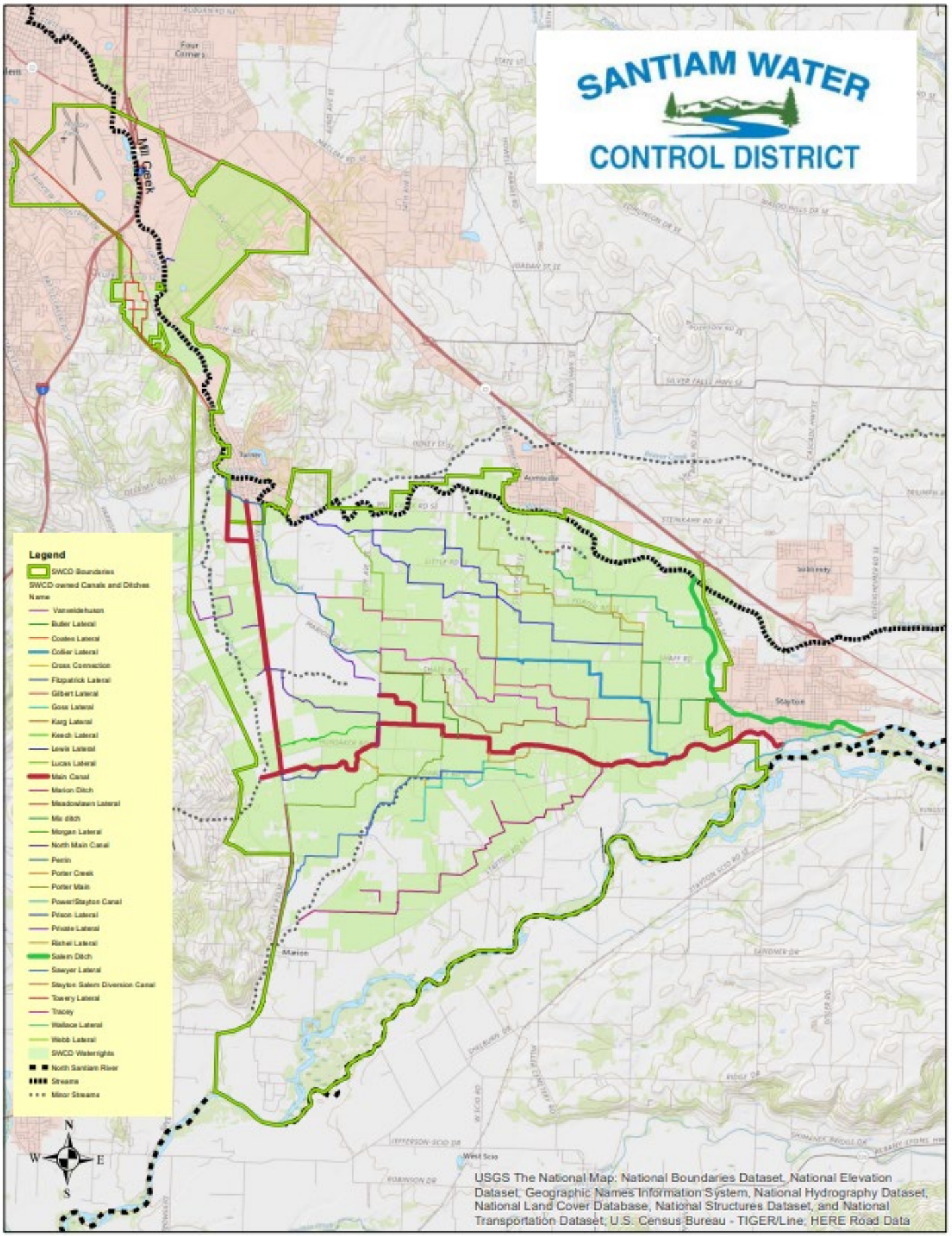
Legend
North Santiam River
< Flow direction



District Facilities Map