



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

1250 W Alder St • Union Gap, WA 98903-0009 • (509) 575-2490

June 5, 2018

The Honorable Don Wayman, Mayor  
City of Selah  
113 W. Naches Ave.  
Selah, WA 98942

**RE: Acceptance of Selah Ditch Total Maximum Daily Load (TMDL) Action Plan**

Dear Mayor Wayman:

In 2009, the City of Selah submitted to the Department of Ecology (Ecology) an action plan titled "*The Selah Ditch Multi-parameter Total Maximum Daily Load Water Quality Improvement Plan*" (WQIP) addressing pollutant discharges from the City's municipal stormwater sewer system and waste water treatment plant (WWTP) to the Selah Ditch. The goal of this plan is for the Selah Ditch to meet State Water Quality Standards by 2026. The WQIP provides a time table, specific activities, assigned responsibilities and a review process for adapting more effective tasks to meet the goal. Ecology accepts these actions and the time table provided in the submittal as a way to meet this goal. See attached "Memo" document.

The purpose for approving this Action Plan now is to coincide with rewriting the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater General Permit (MS4 Permit) that will be effective from August 1, 2019 to July 31, 2025. A requirement for the NPDES Phase II Municipal Stormwater General Permit (Permit) in *Condition S7 - TMDL Requirements* is to include in Appendix 2 specific activities that meet TMDL goals not covered in the Permit, and provides a time table for reducing pollutant levels in stormwater. There are dates in the WQIP that cover the time period from 2012 – 2016, that are not applicable to the new permit. Only those actions that address municipal stormwater quality during the effective date of the MS4 Permit are included.

The attached copy of Appendix 2 is adapted from the WQIP prepared by the City in 2009. It is placed in the Permit as requirements for the City of Selah, as a Permittee, to implement appropriate and effective stormwater management practices to meet the goals of the Selah Ditch TMDL.

In 2012, Selah submitted *The "Selah Ditch Sampling and Analysis Plan for Environmental Monitoring and TMDL Effectiveness*. (Sampling Plan, 2012). That plan is designed to evaluate potential improvements of the WWTP on water quality in the Selah Ditch as part of the separate NPDES Permit for the treatment plant. It is not designed to provide an evaluation of the efforts implemented to improve stormwater quality identified in the WQIP. This does not negate the importance, nor necessity to address the contributing pollutant loads by the WWTP, or other identified pollutant sources identified in the Action Plan.



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A Technical Advisory Workgroup that included representatives from the City, Ecology, interested private businesses and public entities, initially helped to prepare the WQIP. As part of the tasks they will be re-convened to use an adaptive management approach; evaluating the effectiveness of water quality education and outreach and implementation of Best Management Practices to restore beneficial uses to Selah Ditch. As an active member of this group, Ecology will assist in providing resources, guidance and expertise to accomplish this worthwhile and achievable goal.

Please do not hesitate to contact me if you have further questions. My phone number is (509) 575-2807, and my email address is [ray.latham@ecy.wa.gov](mailto:ray.latham@ecy.wa.gov).

Sincerely:



Ray Latham  
Municipal Stormwater Permit Manager

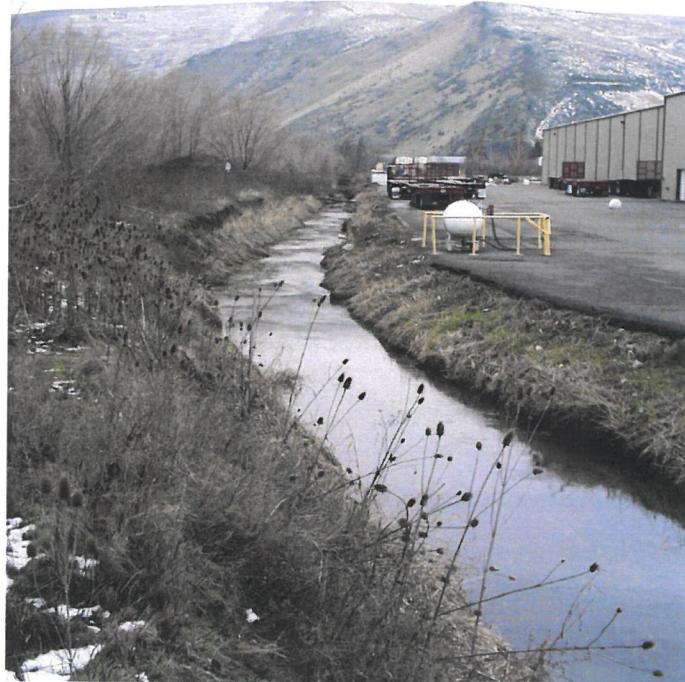
Enclosures: Approval Memo to File  
EW Phase II MS4 Permit Draft Appendix 2

cc: Joe Henne, City of Selah Public Works Director  
Ted Pooler, PE, HLA Engineering-Land Surveying  
Mark Peterschmidt, Ecology-HQ

# **Selah Ditch Multiparameter Total Maximum Daily Load**

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## **Water Quality Improvement Plan**



December 2009



**Huibregtse, Louman Associates, Inc.**

CIVIL ENGINEERING • LAND SURVEYING • PLANNING

HLA Project No. 09006WW

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## INTRODUCTION

Selah Ditch, a man-made, straight-channel body of water, approximately 4,380 feet (0.83 mile) long, is located in the south-central portion of the City of Selah, parallel to and just west of the Burlington Northern Santa Fe railroad tracks. At its southern end, Selah Ditch combines with Golf Club Creek (Taylor Ditch), and the combined flow of both water bodies continues downstream for approximately 0.1 mile, where it empties into the Yakima River at River Mile 117.1. The location of Selah Ditch within the City of Selah is shown on Figure 1.

Selah Ditch receives water from the following sources:

- Storm water runoff from the City of Selah;
- Storm water runoff from a warehouse complex;
- Excess irrigation waters;
- Selah wastewater treatment plant effluent;
- Industrial cooling waters from four industries; and
- Ground water.

In the late 1990s, the southern (lower) end of Selah Ditch was reconstructed to improve fish and wildlife habitat. The direction of flow was changed from discharge south to the Yakima River under State Route 823, to a new easterly discharge into Golf Club Creek. Meanders were constructed within the lower end of Selah Ditch, and woody debris was added to enhance the stream characteristics. The warm water found within the ditch is thought to be beneficial for salmon smolts during the winter months, and may be detrimental to salmon in the summer months.

Selah Ditch, a Class A water body, was included in the State of Washington's 2004 303(d) listings of impaired water bodies for the parameters of fecal coliform (FC) bacteria and temperature due to the results of water quality sampling during 1988, 2000 and 2003. Consequently, a Total Maximum Daily Load (TMDL) had to be developed for Selah Ditch. The first step in the TMDL process consisted of preparation of a technical assessment to analyze water quality data and identify the extent of the pollution. The results of that effort were published in the Selah Ditch Multiparameter Total Maximum Daily Load – Technical Assessment (Bohn, 2005). (See Appendix C.) The next step in the process was the development of a water quality improvement report (WQIR) that presented the general strategy for reducing the identified pollution, published as the Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006). (See Appendix D.)

This Water Quality Improvement Plan (WQIP) is prepared to satisfy the third step of the TMDL process – development of a water quality improvement plan (previously known in the TMDL process as "detailed implementation plan") that presents a detailed strategy for reducing the identified pollution. To that end, this WQIP will address the following questions:

- Who will do the activities that are required to reduce the identified pollutants in Selah Ditch?
- What activities (i.e., actions taken to reduced pollution) will be implemented?
- Where might the various activities occur?
- When will the activities be completed?
- How will the activities be paid for?

FIGURE 1 – LOCATION MAP

Additionally, background information on the TMDL process is provided, identified pollutants and their potential sources are discussed, and targeted water quality goals are provided.

## BACKGROUND

The Federal Clean Water Act established a process to identify and clean up polluted waters. Consequently, the Washington State Department of Ecology (WDOE) was required to develop a list of water bodies that do not meet water quality standards, known as the 303(d) list of impaired water bodies. Selah Ditch was placed on that list, which is now found in the State's Water Quality Assessment, and is considered at Category 5 stream. Category 5 streams are polluted waters that require the development of a TMDL. The TMDL process was initiated and has moved through the completion and EPA approval of the Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006). That report provides the foundation for preparation of this WQIP.

The Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006) provided the following implementation strategy, which has been used in the development of this Water Quality Improvement Plan:

*Selah Ditch has historically been impaired by three water quality pollutant parameters: dissolved oxygen (DO), fecal coliform (FC) bacteria and temperature. The goals and objectives of the Selah Ditch Multiparameter TMDL are to reduce such pollution in the ditch, so that it ultimately complies with state surface water quality standards (Chapter 173-201A WAC). When establishing a TMDL, reductions of a particular pollutant parameter are allocated among the various sources of pollution in the watershed. The sources of pollution applicable to the Selah Ditch Multiparameter TMDL consist of both point and non-point sources.*

*The pollution in the upper reach of Selah Ditch is caused by municipal (POTW and stormwater) discharges that account for all of ditch's flow in that reach. Therefore, the reduction of pollution in the upper reach will be reasonably assured by the setting of WLAs [waste load allocations] and implementing them as numerical effluent limitations into the municipality's POTW NPDES permit and as required BMPs into the municipality's NPDES stormwater permit.*

*The pollution (predominantly high water temperatures) in the lower reach of Selah Ditch, however, is due exclusively to non-point source pollution: solar radiation. The reduction of such pollution in the lower reach will be reasonably assured by setting variable LAs [load allocations] of minimum percent effective shade for the individual months of the critical condition (April 1 through October 31). Such LAs will be mitigated through the implementation of the specific best management practice (BMP) of "maximum mature riparian vegetation". The physical narrowness of Selah Ditch ( $\approx$  2m) and a 20-year TMDL compliance deadline should give additional reasonable assurance that the temperature LAs contained in this WQIP can be met.*

*Selah Ditch is expected to fully comply with state surface water quality standards by July 1, 2026. Ecology believes that the following ongoing activities provide additional reasonable assurance that the DO, FC and temperature impairments in Selah Ditch will be mitigated by the above time limit:*

- There is considerable local interest and involvement toward resolving the water quality problems in Selah Ditch, as seen by the excellent attendance and conversations at the Technical Advisory Workgroup meetings.
- Members of the city of Selah management and the local community are active participants in salmon recovery organizations and are actively vying for Salmon Recovery Funds and other grants/loans for implementation activities.
- The city of Selah, the Washington State Department of Transportation, and the Yakama Nation have already spent considerable resources on salmonid habitat restoration efforts in the lower reach of Selah Ditch.
- The North Yakima Conservation District has indicated their support to improving the ditch's water quality through whatever means they have available, principally technical and implementation assistance and as a source of plantings.

The requirements of this Water Quality Improvement Plan can be summarized in the following organizational actions described in the Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006):

*The implementation of actions needed to mitigate DO, FC and temperature pollution within Selah Ditch must be a cooperative venture between local government and companies, tribal, state, and federal groups. Although Ecology will maintain overall regulatory authority over the Selah Ditch Multiparameter TMDL, the city of Selah has assumed supervisory authority over implementation activities. Individual groups that have been instrumental in developing this Water Quality Improvement Report are the city of Selah, the Yakama Nation, Ecology, the Washington State Department of Transportation, the Burlington Northern Santa Fe (BNSF) railroad company, the North Yakima Conservation District, and various local businesses (Tree Top, Inc., Matson Fruit Company and Larson Fruit Company).*

*Regarding future TMDL implementation actions, the city of Selah has indicated that it will:*

- Complete, by January 1, 2008, a survey of illicit connections within its stormwater sewers for reducing concentrated sources of FC bacteria. All illicit sanitary connections that are found will be repaired by January 1, 2010.
- Plant trees all along Selah Ditch in order help mitigate high water temperatures caused by solar radiation input. Such activity will be completed by January 1, 2009.
- Reduce water temperatures within both its POTW and its stormwater sewer system through the application of AKART and BMPs, respectively. Such activity will occur throughout the duration of the TMDL.
- Increase DO in its municipal discharges to meet the DO WLAs by January 1, 2010 and potentially reduce BOD<sub>5</sub>, if needed, after the completion of a DO Effectiveness Evaluation, which will be completed by January 1, 2012.
- Conduct effectiveness monitoring of the TMDL at the edge of the mixing zone, every five years after EPA approval of this WQIP.

- *Provide community awareness of the TMDL by helping to disseminate information concerning Selah Ditch and its pollution.*

The City of Selah is also regulated as a small municipal separate storm sewer system (MS4) under the terms of the Eastern Washington Phase II Municipal Stormwater Permit. Subsequent to establishing the above dates, the following schedule was included as an additional stormwater permit requirement based on established TMDLs in Appendix 2 of the Eastern Washington Phase II Municipal Stormwater Permit:

1. The City of Selah will submit to Ecology for approval a Water Quality Improvement Plan by January 1, 2010.
2. The City of Selah will complete a survey of illicit connections to the stormwater sewer system by January 1, 2011.
3. The City of Selah will remove all illicit connections to the stormwater sewer system within the city limits by January 1, 2012.

The implementation schedule developed in this Water Quality Improvement Plan includes these required deadlines. Furthermore, detailed implementation of the strategies outlined in the Selah Ditch Multiparameter TMDL Water Quality Improvement Report (Bohn, 2006) will be adaptively managed such that Selah Ditch will meet state surface water quality standards by July 1, 2026. Effectiveness monitoring throughout the duration of the TMDL will determine if the best management practices (BMPs) and other activities being implemented will allow Selah Ditch to meet the water quality standards by the above deadline.

## POLLUTION SOURCES AND REDUCTION TARGETS

The Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006) identified three pollutant parameters of concern – dissolved oxygen (DO), fecal coliform (FC) bacteria, and temperature. After the water quality improvement report was prepared, because of improved water quality in Selah Ditch, dissolved oxygen was removed as a pollutant of concern. Therefore, this Water Quality Improvement Plan only focuses on the pollutants fecal coliform bacteria and temperature.

Since the Selah Ditch is a man-made water body, the sources of water to the channel are man-made, or human influenced, as well. The two main sources flow at the upstream end of the Selah Ditch are the effluent from the Selah wastewater treatment plant (publicly owned treatment works, or POTW), and discharge from the City's storm drain collection system. Lower portions of the storm drain collection system also collect shallow groundwater, so the storm drain flows continually. Approximately half way down the ditch, another storm drain pipe discharges to Selah Ditch via a side channel. Both of these storm drain discharges also carry excess irrigation water during the irrigation season. Near the bend in the channel, where the ditch turns southeasterly and passes beneath the Burlington Northern Santa Fe (BNSF) railroad tracks, seasonal irrigation flows return to the ditch and storm runoff is discharged during storm events. The last source contributing flow to the ditch is groundwater, which augments the flow as you move downstream.

With the exception of groundwater, all other sources of flow to the Selah Ditch could be sources of the pollutants of concern. Another potential source of pollutants is direct runoff from the adjacent properties. Groundwater is not thought to be source of fecal coliform bacteria. However, once it enters the storm drain system, it can carry sources of fecal coliform bacteria to the storm

drain discharge. Irrigation water that passes through the storm drain system could also be a source of fecal coliform bacteria and contamination could occur before it enters the storm drain piping. The primary sources of temperature pollution are the Selah POTW and solar radiation.

Each of the pollutants of concern, fecal coliform bacteria and temperature, are discussed further below.

### Fecal Coliform Bacteria

Fecal coliform bacteria concentrations in Selah Ditch were found to exceed the water quality criteria for primary contact recreation. To meet water quality criteria, the concentration of fecal coliform bacteria must not exceed a geometric mean value of 100 cfu/100ml, with not more than 10% of all samples (or any single sample when less than 10 sample points exist) obtained for calculating the geometric mean value exceeding 200 cfu/100ml. Waste load allocations (WLAs) were then set based on this water quality standard.

Fecal coliform (FC) bacteria WLAs are set to a monthly average geometric mean density 113 cfu/100 ml and 136 cfu/100 ml for the wastewater treatment plant discharge and the stormwater discharge, respectively. The discharge of fecal coliform bacteria contamination from the POTW is best managed through disinfection of the effluent prior to discharge. Selah's POTW effectively uses ultraviolet radiation to meet the specified discharge limitation. Fecal coliform bacteria concentrations in the stormwater, irrigation and surface runoff flows into Selah Ditch are best managed through the implementation of best management practices (BMPs). The stormwater WLA will not be imposed as numerical effluent limitations in the municipality's stormwater permit, as the EPA requires such permits to only contain a set of required BMPs.

### Temperature

During the summer months, the temperature of the water in Selah Ditch has exceeded the water quality standard. In Class A waters, the temperature shall not exceed 18°C due to human activities. When natural conditions exceed 18°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C. Incremental temperature increases resulting from non-point activities shall not exceed 2.8°C. Incremental increases from point source activities shall not, at any time, exceed  $t=28/(T+7)$ . ("T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. "t" represents the maximum permissible temperature increase measured at a mixing zone boundary.)

Due to its orientation and lack of vegetative cover, solar radiation was identified as the primary source of heat to the Selah Ditch. Heat energy is best managed by "percent effective shade," which is defined as the fraction of the solar shortwave radiation that is blocked by vegetation and topography before it reaches the stream surface. The Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006) set a load allocation of a maximum of 71% effective shade for the month of July, in accordance with the findings of previously published shading studies of small streams. As a result, the "critical condition" temperature load allocations required by the Selah Ditch Multiparameter TMDL were established as follows:

- November through March:  $\geq 0$  percent effective shade.
- April:  $\geq 6$  percent effective shade.
- May:  $\geq 15$  percent effective shade.

- June:  $\geq$  19 percent effective shade.
- July:  $\geq$  71 percent effective shade.
- August:  $\geq$  59 percent effective shade.
- September:  $\geq$  37 percent effective shade.
- October:  $\geq$  15 percent effective shade.

Selah Ditch will be assumed to be in full compliance with all of the temperature LAs given above when “maximum mature riparian vegetation” has been grown.

## MANAGEMENT AND IMPLEMENTATION ROLES

The following entities will be involved in the management and implementation of the Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Plan (WQIP).

City of Selah – The City of Selah has assumed supervisory authority over implementing activities and will be at the forefront in implementation and effectiveness monitoring activities. Selah’s role will include:

- Lead entity for implementation – organize and review implementation activities
- Lead entity for conducting effectiveness monitoring – conduct in-field monitoring, host and attend Technical Advisory Workgroup (TAW) review meetings
- Conduct public education and involvement activities in accordance with their NPDES stormwater permit, provide additional public education and involvement activities as may be needed for adaptive management to assure WQIP goals are achieved
- Conduct illicit discharge detection and elimination (IDDE) survey of the stormwater collection system.
- Remove illicit connections to the stormwater system
- Operate and maintain wastewater collection and treatment facilities, and stormwater collection system, in accordance with their respective NPDES permits

Washington State Department of Ecology – WDOE has overall regulatory authority. Their role will include:

- Monitor progress of the WQIP and intervene as needed to assure WQIP goals are being met
- Review of effectiveness monitoring results
- Help locate and obtain financial assistance for implementation activities
- Convene and attend TAW review meetings
- Work cooperatively with the City of Selah in the public education and involvement process

Selah Industrial Dischargers: Tree Top, Yakama Juice, Larson Fruit and Matson Fruit – These entities are significant industrial dischargers to the City of Selah POTW. Their industrial discharges could affect POTW operation and they have large impervious areas that generate stormwater runoff. Their role will include:

- Managing their industrial wastewater discharges in accordance with their State Waste Discharge Permits

- Managing stormwater runoff in accordance with State Waste Discharge Permits or approved stormwater management plans.
- Removal of all sources of warm water from the storm drain system during the annual critical period – April 1 to October 1
- Attend TAW review meetings

Washington State Department of Transportation – WSDOT has worked extensively to restore the riparian habitat next to the meandering section of the lower reach of the Selah Ditch. They also own right-of-way adjacent to this area of the project. Their role will include:

- Continued assistance with the restoration of the riparian habitat along the downstream reach of Selah Ditch
- Manage stormwater runoff from their adjacent right-of-way in accordance with an approved stormwater plan
- Attend TAW review meetings

Yakama Nation – the Yakama Nation fisheries biologist was instrumental in identifying the beneficial fish habitat provided by the Selah Ditch. Their role will include:

- Continued assistance with the restoration of riparian habitat
- Review of effectiveness monitoring results
- Attend TAW review meetings

Naches Selah Irrigation District – Under normal operation, the Naches Selah Irrigation District (NSID) discharges excess irrigation water to several points within the City of Selah's stormwater collection system, and at one location into the Selah Ditch. Though stormwater regulations do not apply to irrigation water that passes through a MS4, the irrigation water could be a source of pollutants to the Selah Ditch. The irrigation district is currently piping a portion of its open canal system, so discharge flow rates could change and the potential for contamination could be reduced. Their role will include:

- Assistance with sampling of irrigation water at the points where it enters the City's MS4
- Provide updates regarding irrigation system operation and the possible changes resulting from piping operations
- Attend TAW review meetings

North Yakima Conservation District – The North Yakima Conservation District (NYCD) is heavily involved in stream restoration activities and has the knowledge and resources available to guide the restoration activities along the Selah Ditch. The district also has access to the plant materials center and has plantings available for purchase. Their role will include:

- Develop a planting plan for re-vegetation along the Selah Ditch (this plan has already been completed)
- Assist with and guide the re-vegetation effort, both during the planting activities and during the establishment period
- Participate in effectiveness monitoring with respect to the effectiveness of the shade provided to the Selah Ditch
- Attend TAW review meetings

Burlington Northern Santa Fe Railway – The Selah Ditch was constructed on property owned by the Burlington Northern Santa Fe Railway, and the Selah Ditch is operated and maintained under the terms of an agreement with the City. Their roll will include:

- Giving permission to plant shade along the banks of the Selah Ditch
- Notify the City if trees are obstructing railroad operations

Adjacent Property Owners – Private property owners abut the BNSF property on the west side of Selah Ditch. There is a potential for runoff from these properties to enter Selah Ditch. Access may be needed across their property during planting activities. Their roll will include:

- Voluntarily participate in public education and public involvement activities
- When so requested, provide reasonable access to the Selah Ditch during planting, establishment and maintenance activities

## IMPLEMENTATION ACTIVITIES AND SCHEDULE

The major goal of the TMDL is to reduce the pollutants of concern – fecal coliform bacteria and temperature. Underlying objectives related to this goal and the associated activities are listed below.

- Reduce fecal coliform bacteria – POTW effluent limits will be set through the NPDES permit process. Stormwater BMPs will be implemented to reduce coliform levels in the stormwater discharges.
- Reduce water temperature – the temperature of water at the downstream end of Selah Ditch will be reduced by establishing “maximum mature riparian vegetation” along Selah Ditch in accordance with the percent effective shade load allocation.
- Provide effectiveness monitoring – a measurement of how the TMDL is doing to meet the water quality goals.
- Institute adaptive management – when the expected outcome of the TMDL will not meet the water quality goals, changes will be made as needed to put the TMDL back on track to achieve the water quality goals.
- Public education – this stormwater BMP has been shown to be an effective means of improving stormwater quality. This BMP is particularly applicable in this case to reduce fecal coliform bacteria.

An important element of establishing “maximum mature riparian vegetation” is the preparation of a planting/conservation plan. This plan has already been prepared by the North Yakima Conservation District, and a copy is included as Appendix B.

One implementation activity not specifically mentioned elsewhere in the WQIP is the construction of a public education area on City-owned property adjacent to the meander section of Selah Ditch. This facility will enhance the stormwater management program by providing a recreational and educational opportunity with a focus on wetlands, their roll to treat stormwater, improve water quality, and support wildlife and fish habitat. The desired end result is to have an interpretive walking path through the area with educational signage. However, implementation will depend entirely on available funding. At a minimum, whether or not the interpretive pathway is constructed, riparian vegetation will be planted along the meander section.

Planned activities to implement the TMDL are listed on Table 1 – Implementation Activities and Schedule.

## MEASURING PROGRESS TOWARD GOALS

### Performance Measures

Implementation activities in this plan are driven by schedules prescribed in the Water Quality Improvement Report and in Appendix 2 of the Eastern Washington Phase II Municipal Stormwater Permit. Therefore, in most cases, performance can be measured by completing an implementation activity by the scheduled date. Other performance measures not tied to completion dates include:

1. Implementing the adaptive management measures that are identified at the TAW review meetings to keep the TMDL on track to meet water quality goals by July 1, 2026;
2. Meeting the public education and public involvement requirements included in Selah's Stormwater Management Program; and
3. Compliance with the NPDES permits issued to the City of Selah for the POTW and the MS4.

In these last three areas, the performance measure would be considered to be met when:

1. The adaptive management measures are implemented as recommended by the TAW;
2. The City of Selah provides the public education and public involvement activities contained in its Stormwater Management Program, which is yet to be defined, but will be implemented in accordance with their permit; and
3. The City does not violate the terms of the NPDES permit for the POTW or the terms of its NPDES Eastern Washington Phase II Municipal Stormwater Permit.

Performance measures are summarized in Table 2 – Activity Performance Measures.

### Effectiveness Monitoring Plan

The Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006) provided the following effectiveness monitoring plan, which remains applicable to this Water Quality Improvement Plan:

*Effectiveness monitoring is an element of adaptive management and provides a feedback process to determine the effectiveness of pollution reduction activities, thereby supporting adaptive management decisions. Such monitoring is necessary to determine if the goals of the Selah Ditch Multiparameter TMDL have been reached. The city of Selah will be the lead entity for conducting all effectiveness monitoring related to the Selah Ditch Multiparameter TMDL.*

**TABLE 1 – IMPLEMENTATION ACTIVITIES AND SCHEDULE**

	<b>Implementation Activity</b>	<b>Responsible Entity</b>	<b>Completion Date</b>	<b>Related Objective</b>
1	Complete Selah Ditch Multiparameter Total Maximum Daily Load – Water Quality Improvement Plan	City of Selah – Development Ecology – Review/Approval	May 2010	Meet overall water quality goals
2	Complete stormwater collection system illicit discharge detection and elimination survey	City of Selah	January 1, 2011	Reduce FC bacteria
3	Complete design of “Public Education Area” for meander section of Selah Ditch	City of Selah w/ consultant	June 2010	Public education
4	Begin planting trees and other riparian vegetation along Selah Ditch. Focus on straight section of channel.	City of Selah – planting North Yakima Conservation District – planting plan (completed) and supervision	Spring 2010	Reduce temperature
5	Plant trees and other riparian vegetation in the meander section of Selah Ditch. Coordinate with “Public Education Area” design.	City of Selah – planting North Yakima Conservation District – supervision	Spring 2011	Reduce temperature
6	Perform 1 <sup>st</sup> Performance Monitoring	City of Selah – sampling and testing Ecology – review results	July 2011	Effectiveness monitoring
7	Hold 1 <sup>st</sup> Technical Advisory Workgroup review meeting	City of Selah – host Workgroup members: City of Selah, Ecology, Industries, WS DOT, NSID, NYCD, Yakama Nation	October 2011	Effectiveness monitoring and adaptive management
8	Complete planting of all trees and other riparian vegetation along Selah Ditch	City of Selah – planting North Yakima Conservation District – supervision	November 2011	Reduce temperature
9	Complete removal of illicit connections from stormwater collection system	City of Selah	January 1, 2012	Reduce FC bacteria
10	Construct “Public Education Area” in meander section of Selah Ditch	City of Selah – if funding is available	December 2014	Public education
11	Perform 2 <sup>nd</sup> Performance Monitoring	City of Selah – sampling and testing Ecology – review results	July 2016	Effectiveness Monitoring

**TABLE 1 – IMPLEMENTATION ACTIVITIES AND SCHEDULE**

	<b>Implementation Activity</b>	<b>Responsible Entity</b>	<b>Completion Date</b>	<b>Related Objective</b>
12	Hold 2 <sup>nd</sup> Technical Advisory Workgroup review meeting	City of Selah – host Workgroup members: City of Selah, Ecology, Industries, WSDOT, NSID, NYCD, Yakama Nation	October 2016	Effectiveness monitoring and adaptive management
13	Perform 3 <sup>rd</sup> Performance Monitoring	City of Selah – sampling and testing Ecology – review results	July 2021	Effectiveness Monitoring
14	Hold 3 <sup>rd</sup> Technical Advisory Workgroup review meeting	City of Selah – host Workgroup members: City of Selah, Ecology, Industries, WSDOT, NSID, NYCD, Yakama Nation	October 2021	Effectiveness monitoring and adaptive management
15	Perform Final Performance Monitoring	City of Selah – sampling and testing Ecology – review results	July 2026	Effectiveness Monitoring
16	Provide Public Education materials and opportunities	City of Selah	As included in City of Selah's Stormwater Management Program	Public education, reduce FC bacteria
17	Provide Public Involvement opportunities	City of Selah	As included in City of Selah's Stormwater Management Program	Public education, reduce FC bacteria
18	Establishment and maintenance of trees and riparian vegetation	City of Selah w/ assistance from North Yakima Conservation District	Ongoing	Reduce temperature
19	Annual monitoring of tree and riparian vegetation development and performance	City of Selah w/ assistance from North Yakima Conservation District	Spring, Summer and Fall beginning in 2011	Reduce temperature
20	Manage and maintain the City of Selah's POTW and sewage collection system in compliance with NPDES permit requirements	City of Selah	Ongoing	Meet overall water quality goals
21	Manage and maintain the City of Selah's stormwater system in compliance with NPDES permit requirements	City of Selah	Ongoing	Meet overall water quality goals

**TABLE 2 – ACTIVITY PERFORMANCE MEASURES**

	<b>Implementation Activity</b>	<b>Performance Measure</b>
<b>1</b>	Complete Selah Ditch Multiparameter Total Maximum Daily Load – Water Quality Improvement Plan	Ecology approval of WQIP by May 2010
<b>2</b>	Complete stormwater collection system illicit discharge detection and elimination survey	Complete IDDE survey by January 1, 2011
<b>3</b>	Complete design of “Public Education Area” for meander section of Selah Ditch	Complete design by June 30, 2010
<b>4</b>	Begin planting trees and other riparian vegetation along Selah Ditch. Focus on straight section of channel.	Begin plantings in Spring 2010
<b>5</b>	Plant trees and other riparian vegetation in the meander section of Selah Ditch. Coordinate with “Public Education Area” design.	Begin plantings in Spring 2011
<b>6</b>	Perform 1 <sup>st</sup> Performance Monitoring	Complete monitoring by July 31, 2011
<b>7</b>	Hold 1 <sup>st</sup> Technical Advisory Workgroup review meeting	Hold meeting by October 31, 2011 Implement identified adaptive management measures over next 5-year period
<b>8</b>	Complete planting of all trees and other riparian vegetation along Selah Ditch	Complete all plantings by November 31, 2011
<b>9</b>	Complete removal of illicit connections from stormwater collection system	Remove identified illicit connections by January 1, 2012
<b>10</b>	Construct “Public Education Area” in meander section of Selah Ditch	Complete construction by December 2014 –only if funding is available–
<b>11</b>	Perform 2 <sup>nd</sup> Performance Monitoring	Complete monitoring by July 31, 2016
<b>12</b>	Hold 2 <sup>nd</sup> Technical Advisory Workgroup review meeting	Hold meeting by October 31, 2016 Implement identified adaptive management measures over next 5-year period
<b>13</b>	Perform 3 <sup>rd</sup> Performance Monitoring	Complete monitoring by July 31, 2021

**TABLE 2 – ACTIVITY PERFORMANCE MEASURES**

	<b>Implementation Activity</b>	<b>Performance Measure</b>
<b>14</b>	Hold 3 <sup>rd</sup> Technical Advisory Workgroup review meeting	Hold meeting by October 31, 2021 Implement identified adaptive management measures over next 5-year period
<b>15</b>	Perform Final Performance Monitoring	Complete monitoring by July 31, 2026
<b>16</b>	Provide Public Education materials and opportunities	Public education element meets the requirements of Selah's Stormwater Management Program
<b>17</b>	Provide Public Involvement opportunities	Public involvement element meets the requirements of Selah's Stormwater Management Program
<b>18</b>	Establishment and maintenance of trees and riparian vegetation	Establishment of "maximum mature riparian vegetation" by July 2026
<b>19</b>	Annual monitoring of tree and riparian vegetation development and performance	Establishment of "maximum mature riparian vegetation" by July 2026
<b>20</b>	Manage and maintain the City of Selah's POTW and sewage collection system in compliance with NPDES permit requirements	Compliance with NPDES permit
<b>21</b>	Manage and maintain the City of Selah's stormwater system in compliance with NPDES permit requirements	Compliance with NPDES permit

*Effectiveness monitoring will be conducted every five years, beginning with the critical condition (April 1 – October 31) of 2011. Subsequent monitoring will also be collected during the critical condition. The actual sampling days (events) and methodology shall be determined by the city of Selah, in conjunction with Ecology, in order to best coincide with its normal activities. The monitoring will consist of, at a minimum, BOD<sub>5</sub>, DO, FC, and temperature.*

*Effectiveness monitoring samples will be collected at the downstream edge of the Ecology-approved mixing zone in order to verify if TMDL implementation activities are demonstrating the desired effect (reducing pollution) and on schedule for compliance with state water quality standards by July 1, 2026. The downstream edge of the mixing zone is located at the site where the BNSF railroad tracks cross Selah Ditch, and represents the beginning of the lower reach of the ditch. Additional sampling may need to be collected from throughout the length of the ditch in order to document specific source reductions of pollution.*

## **ADAPTIVE MANAGEMENT**

The Selah Ditch Multiparameter Total Maximum Daily Load Water Quality Improvement Report (Bohn, 2006) provided the following adaptive management strategy, which remains applicable to this Water Quality Improvement Plan:

*Implementation of the Selah Ditch Multiparameter TMDL will be adaptively managed such that Selah Ditch will fully comply with state surface water quality standards by July 1, 2026. Adaptive management methods that may be used include, but are not limited to, the following:*

- *Adjusting the type, intensity or number of BMPs commonly utilized for the pollution parameters of concern.*
- *Helping develop and fund additional BMPs that would address specific pollution parameters, in the event that pollution mitigation is not progressing satisfactorily toward the TMDL's goal.*
- *Conduct additional educational outreach activities to improve awareness and support of the local community.*
- *Any other actions deemed necessary by the Technical Advisory Workgroup to improve the water quality of Selah Ditch.*

*The Selah Ditch Multiparameter TMDL goal will be considered met when, on July 1, 2026, Selah Ditch meets state surface water quality standards after successful implementation of BMPs for non-point sources and NPDES requirements for point sources. If state water quality standards are met prior to complete implementation of the LAs and WLAs specified by the TMDL, then the TMDL objectives will be considered achieved and no further BMP implementation will be required. Under this same scenario, the WLAs may need to be adjusted so as to not overly limit the point sources discharging into Selah Ditch. However, if the LAs and WLAs specified in the TMDL have been completely implemented, but yet the water body still does not comply with state water quality standards, then adaptive management methods shall be employed to further try to meet the objectives of the TMDL.*

*TMDLs are “living” documents, which are intended to be: revisited periodically to evaluate whether the measures to implement the needed reductions are achieving targets, and revised as conditions change and understanding of the pollution in the water body is broadened. The TAW and other interested entities will work together to monitor progress toward the TMDL goals, evaluate successes, identify obstacles and changing needs, and make adjustments to the water quality improvement plan strategy as needed. However, it is ultimately Ecology’s responsibility to assure that cleanup of the pollution in Selah Ditch is being actively pursued and state water quality standards are achieved.*

## **ENFORCEMENT**

The Water Pollution Control Act (Chapter 90.48 RCW) provides broad authority to issue permits and regulations, and prohibits all unregulated discharges to water. The act clearly states that it is the policy of the state to maintain the highest possible standards to ensure the purity of all waters of the state, and to require the use of all known, available, and reasonable means to prevent and control water pollution. Ecology is authorized under this act to control and prevent pollution, and to make and enforce rules, including water quality standards. The act also designates Ecology as the state water pollution control agency for all the purposes of the federal Clean Water Act.

## **REASONABLE ASSURANCES**

When establishing a TMDL, reductions of a particular pollutant are allocated among the pollutant sources in the Selah Ditch – for the Selah Ditch Multiparameter TMDL, both point and nonpoint sources exist. TMDLs (and related Action Plans) must show “reasonable assurance” that these sources will be reduced to their allocated amount. Education, outreach, technical and financial assistance, permit administration, and enforcement will all be used to ensure that the goals of this water clean-up plan are met.

Ecology believes that the following activities already support this TMDL and add to the assurance that fecal coliform bacteria and temperature in the Selah Ditch will meet conditions provided by state water quality standards. This assumes that the activities described below are continued and maintained.

The goal of the Selah Ditch Water Quality Improvement Plan for fecal coliform bacteria and temperature is for the waters of the basin to meet the state’s water quality standards. There is considerable interest and local involvement toward resolving the water quality problems in the Selah Ditch. Numerous organizations and agencies are already engaged in stream restoration, and improving salmon habitat. With ongoing collaboration, these corrective actions will help resolve the fecal coliform bacteria and temperature problem. The following rationale helps provide reasonable assurance that the Selah Ditch nonpoint source TMDL goals will be met by July 1, 2026:

- Significant interagency interest has been expressed in improving water quality in the Selah Ditch. The water body has been identified as a winter refuge for salmon smolts, and the Yakima Nation and WSDOT are interested in restoring the wetlands/riparian habitat in the meander section of Selah Ditch.

- The North Yakima Conservation District is lending their technical expertise to the restoration of the riparian habitat along Selah Ditch. They have prepared a planting/conservation plan (included in Appendix B) that is designed to develop “maximum mature riparian vegetation” along Selah Ditch.
- The City of Selah has a desire to develop an interpretive pathway in the meander section of the ditch to provide wetland and water quality public education opportunities. Funding for design of the pathway is in place through the City’s Phase II Stormwater Pass-Through Grant Program. The design will be completed by June 2010.
- Under the terms of an agreement with the Selah School District, the City of Selah has a public education program in place. An educational consultant is working with the school district, providing classroom education and field activities on such topics as stormwater runoff, salmon habitat restoration, and storm drain stenciling.
- Much of the illicit discharge detection and elimination survey effort is complete. The City has completed mapping of the storm drain system. All system components were examined in March 2009, after the rainy season and before the irrigation season. This work went beyond the effort needed to find illicit connections in the “dry” section of the system – all underground injection control (UIC) wells were also identified and logged.
- The City of Selah is required to manage its stormwater system under the terms of the NPDES Eastern Washington Phase II Municipal Stormwater Permit. Stormwater related elements of this TMDL are included in Appendix 2 of that permit.
- The City of Selah is familiar with the available funding opportunities, and will be examining the financial requirements of its stormwater management program.

While Ecology is authorized under Chapter 90.48 RCW to impose strict requirements or issue enforcement actions to achieve compliance with state water quality standards, it is the goal of all participants in the Selah Ditch TMDL process to achieve clean water through voluntary control actions. Adaptive management will be one tool used to modify implementation activities over time and to further identify/modify voluntary control actions. To reasonably assure the success of adaptive management, the following elements have been included in this WQIP:

- Effectiveness monitoring will be performed every 5 years. The results of the effectiveness monitoring will be reviewed by the technical advisory workgroup, and adaptive management measures will be identified and implemented to achieve water quality goals.
- The performance measures included in this plan are straightforward and easily identifiable.
- Annual monitoring of the riparian vegetation (spring, summer and fall) will be done to monitor progress toward developing maximum mature riparian vegetation. North Yakima Conservation District will be notified of any changes in the vegetation so establishment and maintenance activities can be modified as needed.

Ecology will consider and issue notices of noncompliance in accordance with the Regulatory Reform Act in situations where the cause or contribution of cause of noncompliance with load allocations can be established.

## PUBLIC INVOLVEMENT

Development of the Selah Ditch Multiparameter TMDL Technical Assessment (Bohn, 2005) and the Selah Ditch Multiparameter TMDL Water Quality Improvement Report (Bohn, 2006) included both Technical Advisory Workgroup meetings and a public meeting.

A technical advisory workgroup (TAW) was formed on March 3, 2003, to guide development of the Selah Ditch Multiparameter TMDL. Entities represented in the workgroup included the City of Selah, the Yakama Nation, Washington State Department of Fish and Wildlife, local industrial dischargers, and the Washington State Department of Ecology. The Technical Advisory Workgroup (TAW) held five meetings:

1. March 3, 2003, at the City of Selah City Council Chambers
2. April 7, 2005, at the City of Selah Fire Station
3. August 30, 2005, at the Ecology offices (Borealis Room)
4. November 15, 2005, at the City of Selah Fire Station
5. April 21, 2006, at the City of Selah Fire Station

A Public Meeting concerning the Selah Ditch Multiparameter TMDL – Water Quality Improvement Report was held on May 4, 2006, from 7:00 to 9:00 pm at the city of Selah Fire Station located at 206 W. Fremont Ave.

A discussion of the public participation process related to this Water Quality Improvement Plan will be added after the comment period is completed.

## FUNDING OPPORTUNITIES

Funds may be available for financing the proposed improvements from several sources – local public funds and funds from outside sources. To date, Selah's work on the Selah Ditch TMDL project has been budgeted and paid for using local sewer fund monies. Revenues for this fund are generated by user fees (sewer rates) charged to sewer system customers. However, as implementation costs increase, other sources of funding may be necessary, or financing of improvements may be needed, to reduce the cost to ratepayers.

As mentioned previously, the NPDES Eastern Washington Phase II Municipal Stormwater Permit includes Selah's TMDL activities. Selah has received several grants for stormwater management efforts and permit compliance. Most recently, the City has a grant agreement for \$50,000 in funds from the FY 2010-2011 Phase II Stormwater Pass-Through Grant Program. Task 2.B. of the grant agreement, which specifies eligible activities in the scope of work, includes "Other activities consistent with funding purposes of this program that support stormwater management programs or permit compliance." Since clean-up of Selah Ditch is closely tied to stormwater management efforts, several activities included in this Water Quality Improvement Plan are eligible for grant funding, including:

1. Preparation of the Selah Ditch Multiparameter Total Maximum Daily Load – Water Quality Improvement Plan;
2. Completing the stormwater collection system illicit discharge detection and elimination survey; and
3. Removal of illicit connections from stormwater collection system.

Another possible source of local funds may be the formation of a stormwater utility. As part of Selah's stormwater management program, consideration may be given to creating a stormwater utility to fund improvements to, and operation and maintenance of, the stormwater system. Since Selah Ditch is an integral part of, and water quality is affected by, the storm drain system, funds

generated through a stormwater utility could be used implement the activities considered in this Water Quality Improvement Plan.

Table 3 provides a list of commonly available outside sources of grant and loan funding. This list was taken from the Department of Ecology's website at the address shown at the bottom of the table. Some of the funding sources found on Ecology's website were not included because the City would not be eligible, or the type of implementation activities proposed for the Selah Ditch TMDL were not suited to the source of funding. Other sources of funds may also be available through Federal programs, Indian Tribes, and conservation groups who are interested in implementing the activities presented in this Water Quality Improvement Plan. Over time, new sources of funding may become available, which should be pursued to accomplish the water quality goals in Selah Ditch.

**TABLE 3 – POTENTIAL FUNDING OPPORTUNITIES**

<b>Sponsoring Entity</b>	<b>Funding Source</b>	<b>Uses to be Made of Funds</b>
<b>Natural Resources Conservation Service</b>	Conservation Programs <a href="http://www.nrcc.usda.gov/PROGRAMS">www.nrcc.usda.gov/PROGRAMS</a>	These programs "...help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters."
<b>Office of Interagency Committee, Salmon Recovery Board</b>	Salmon Recovery Funding Board <a href="http://www.iac.wa.gov/srfb/grants.asp">www.iac.wa.gov/srfb/grants.asp</a>	Provides grants for habitat restoration, land acquisition and habitat assessment.
<b>Washington State Conservation Commission</b>	<a href="http://www.scc.wa.gov/index.php/contact/Conservation-Districts">www.scc.wa.gov/index.php/contact/Conservation-Districts</a>	Various environmental program grants.
<b>Washington State Department of Ecology: Water Quality Program (WQP)</b>	Centennial Clean Water Fund, Section 319, and State Revolving Fund <a href="http://www.ecy.wa.gov/programs/wq/funding/funding.html">www.ecy.wa.gov/programs/wq/funding/funding.html</a>	Facilities and water pollution control-related activities; implementation, design, acquisition, construction, and improvement of water pollution control. Priorities include: implementing water cleanup plans; keeping pollution out of streams and aquifers; modernizing aging wastewater treatment facilities; reclaiming and reusing waste water.
<b>Washington State Public Works Board</b>	Public Works Trust Fund <a href="http://www.pwb.wa.gov/Program_Information.asp">www.pwb.wa.gov/Program_Information.asp</a>	Administered by the Public Works board, this funding provides financial assistance to local government and private water systems. It supports public works projects and encourages independence at the local level.
<b>U.S. Environmental Protection Agency</b>	Watershed Funding: <a href="http://www.epa.gov/owow/funding.html">www.epa.gov/owow/funding.html</a>	Provides tools, databases, and information on funding sources that can be used to protect watersheds.

**Notes:**

1. This list is not intended to be a comprehensive list of potential funding sources.
2. Source: Washington Department of Ecology, <http://www.ecy.wa.gov/programs/wq/tmdl/TMDLFunding.html>

## REFERENCES

Bohn, G. (2005) *Selah Ditch Multiparameter Total Maximum Daily Load – Technical Assessment*. Washington State Department of Ecology. Publication #05-10-020. 55 pp.

Bohn, G. (2006) *Selah Ditch Multiparameter Total Maximum Daily Load – Water Quality Improvement Report*. Washington State Department of Ecology. Publication #06-10-040. 41 pp.

## Appendix A - Response to Comments

Responses to comments will be added after the 30-day public review and comment period.

## **Appendix B – North Yakima Conservation District – Selah Ditch Conservation and Planting Plan**

The City of Selah contacted the North Yakima Conservation District for assistance with developing a conservation and planting plan to meet the objective of shade development along Selah Ditch by establishing “maximum mature riparian vegetation.” In response, Brian Schmidt with the North Yakima Conservation District provided the following plan elements:

- Conservation Assistance Notes
- Conservation Plan
- NRCS (National Resource Conservation Service) Conservation Standards
  - Tree/Shrub Establishment – Code 612
  - Mulching – Code 484
- Plant Guides
  - Bebb Willow
  - Peachleaf Willow
  - Mackenzie Willow

This Conservation and Planting Plan will be used to establish “maximum mature riparian vegetation” along Selah Ditch.

## Appendix C - Selah Ditch Multiparameter TMDL Technical Assessment

The *Selah Ditch Multiparameter TMDL – Technical Assessment* was published by Ecology in January 2005 (Publication #05-10-020). The document can be viewed as a PDF file at [www.ecy.wa.gov/biblio/0510020.html](http://www.ecy.wa.gov/biblio/0510020.html) or may be ordered from Ecology in the form of a hardcopy from that agency's publications site, or by contacting Gregory Bohn at (509) 454-4174.

## **Appendix D - Selah Ditch Multiparameter TMDL Water Quality Improvement Report**

The *Selah Ditch Multiparameter TMDL – Water Quality Improvement Report* was published by Ecology in June 2006 (Publication #06-10-040). The document can be viewed as a PDF file at [www.ecy.wa.gov/biblio/0610040.html](http://www.ecy.wa.gov/biblio/0610040.html) or may be ordered from Ecology in the form of a hardcopy from that agency's publications site, or by contacting Gregory Bohn at (509) 454-4174.