From: Andrew Annanie <Andrew.Annanie@PuyallupTribe-nsn.gov>
Sent: Monday, November 17, 2025 12:36 PM
To: Rachael N. Brown
Cc: char.naylor
Subject: Normandy Heights MDNS PLPMP20240053
Attachments: 920185.pdf; Puyallup WQ Report 2019_WEB.pdf

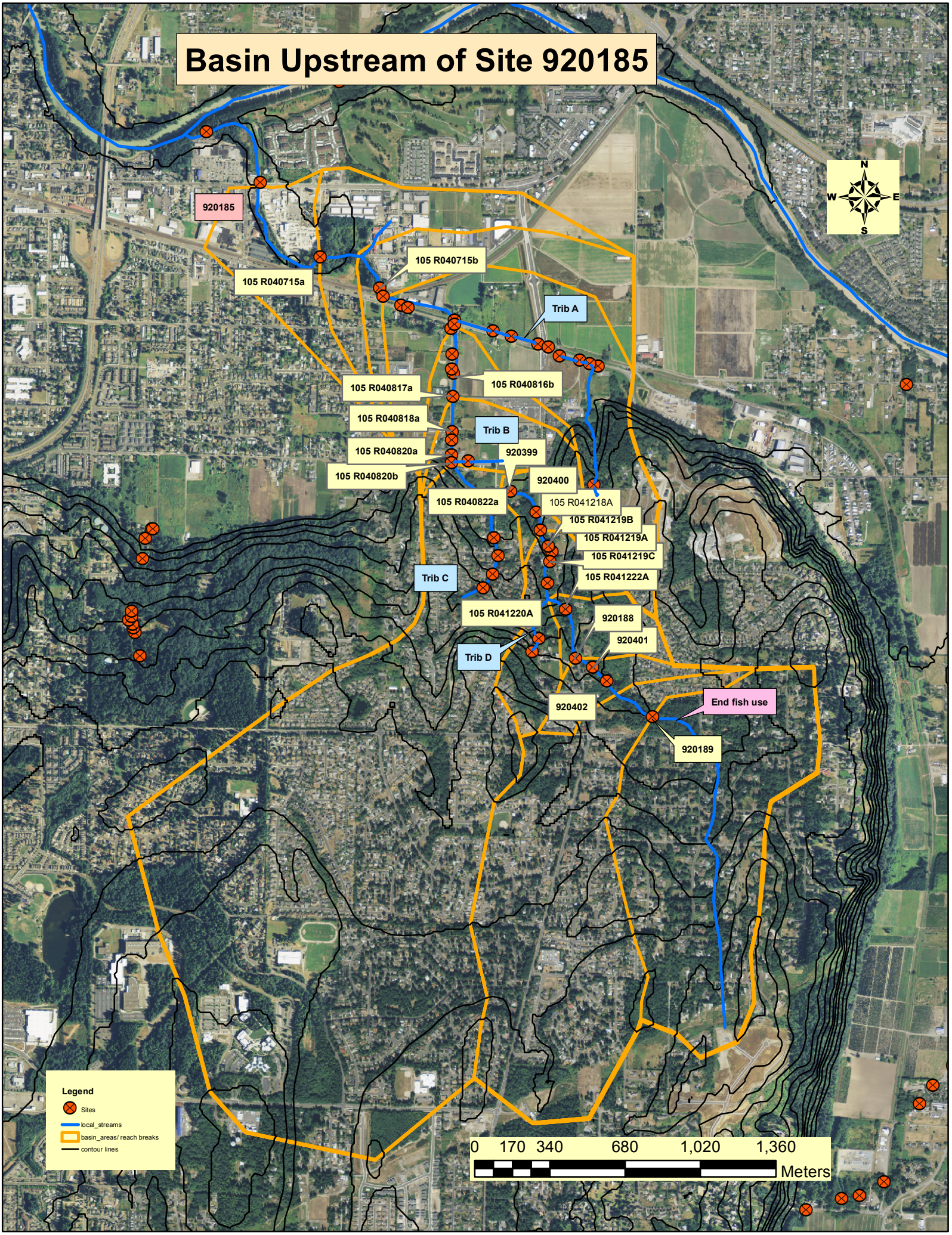
Follow Up Flag: Follow up
Flag Status: Completed

Good Morning Rachael,

I know there is no open comment period for the Normandy Heights MDNS since the optional DNS process was used to evaluate the project, but I was wondering if it would be possible for the Tribe to request some additional mitigations measures to help protect Deer Creek? I spoke to Miles Penk from WDFW last week and he sent me a map from the RSFS that was conducted for Deer Creek back in 2013 (see attached). That survey determined the end of fish use to be a bit further upstream than what is depicted in the SWIFD dataset, ending about 150 m upstream of Crystal Ridge Dr SE rather than just upstream of 16th Ave SE. My understanding is that there is little if any fish use in that area currently, due at least partly to the number of fish passage barrier culverts located along that section of stream. However, this could change in the future as these culverts are corrected. I know the city is currently in the process of working on some culvert replacement and restoration projects along 27th St SE and East Main. Adding additional protections to the headwaters of the stream would contribute to these projects in the form of improved fish habitat and water quality. I see from a 2019 Pierce Conservation District Annual Stream Team Report (the most recent report for which data is available) that DO and Temperature were found to be below standards at their Deer Creek 1.6 site (see attached). The implementation of additional protective measures, such as an increased riparian buffer, would go a long was towards helping to curtail these issues. I saw in the proposed Critical Areas Ordinance update that the city is moving towards using WDFW's 200 year site tree height potential mapping tool for establishing buffer distances. That tool recommends a buffer distance of 231 ft for the section of Deer Creek where the proposed development is located. The Puyallup-White River Local Integrating Organization, a Puyallup River Watershed Council and Puget Sound Partnership sponsored forum, recommends a 300 ft buffer and Pierce County recommends a 175 ft buffer. I know space is limited on the property, but any additional buffer that could be added to the upland area above the ravine would provide a significant benefit, especially given the landslide and erosion hazards that exist along the embankment in tracks C & D. It would be great if the benches that are going to be cut along the face of the embankment could be planted with a multi-storied array of native tree's, shrubs, and ground cover, rather than just being hydroseeded. It would also be great if the discharge point for the stormwater vault could be dispersed into a native grass buffer strip (coupled with applicable soil amendments) to help reduce water velocity, allow for limited infiltration to the extent the soil will allow, and provide additional filtration (in addition to the enhanced stormwater filtration that is being proposed) prior to working its way through the forested buffer. I'm happy to meet to discuss this further if you would like? Thank you.

All the best,

Andrew Annanie
Puyallup Tribe of Indians
Fisheries Department
Environmental Permit Reviewer & Coordinator
Cell: 253-778-0565
Office: 253-573-7800 ext. 5524
Andrew.Annanie@PuyallupTribe-nsn.gov


Basin Upstream of Site 920185
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2019 | PUYALLUP

Pierce Conservation District
Annual Stream Team Report

PIERCE CONSERVATION DISTRICT
CONSERVING PIERCE COUNTY NATURAL RESOURCES SINCE 1949

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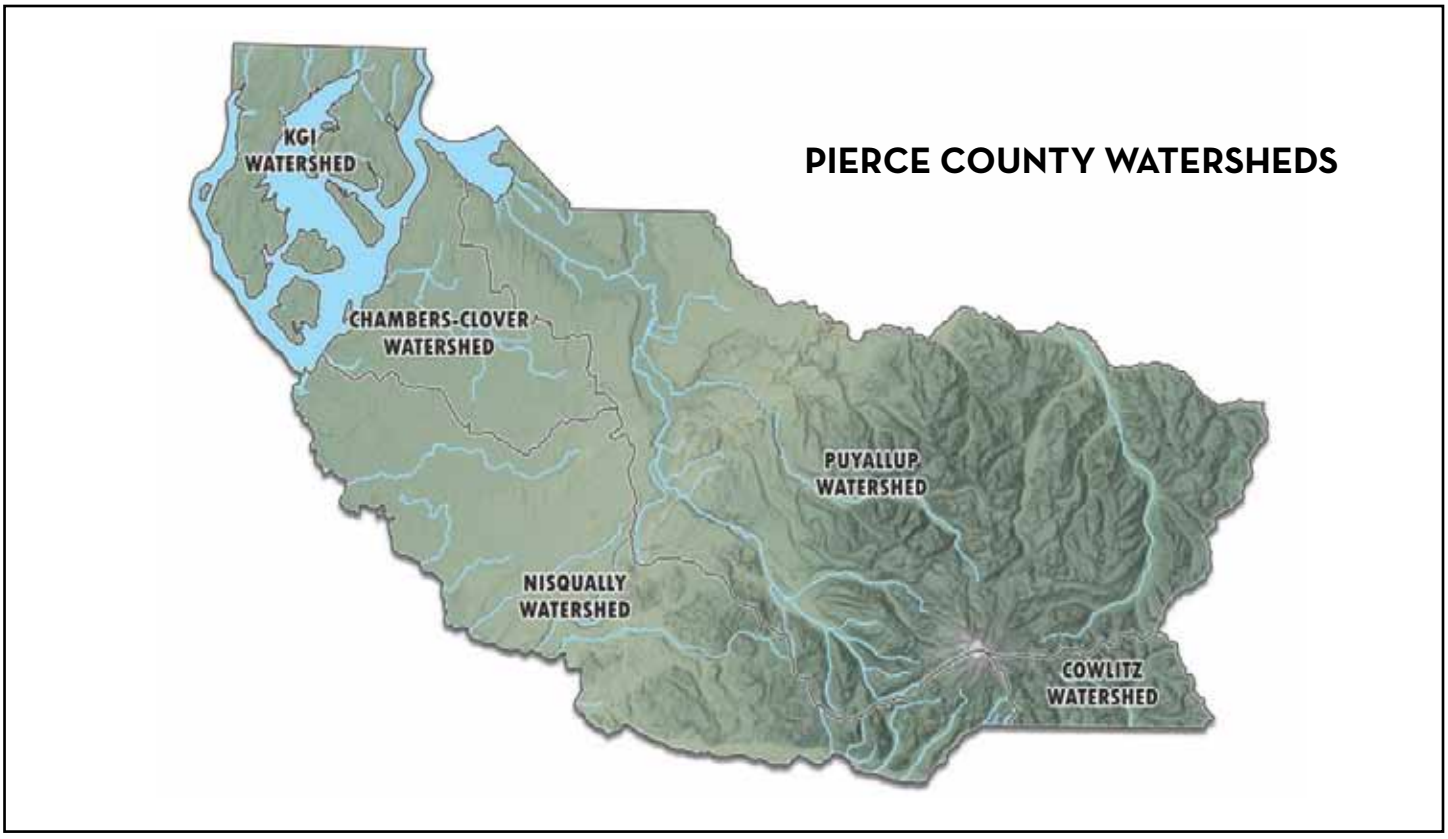
Puyallup Field Office (253) 845-9272

CONTACT US

PIERCE CONSERVATION DISTRICT
308 Stewart Avenue | Puyallup, WA 98371
P: (253) 845-9770 | TF: (866) 845-9485

EMAIL: info@piercecd.org
MAIL: PO BOX 1057 | Puyallup, WA 98371

ANNUAL STREAM TEAM REPORT



STREAM TEAM PROGRAM GOALS

- Watershed education
- Involve community in citizen science monitoring
- Increase available water quality data
- Identify areas of concern

WHAT DO OUR STREAM TEAM MONITORS DO?

- Measure dissolved oxygen, air and water temperature, pH, nitrate-nitrogen, and turbidity
- Measure stream flow
- Conduct an annual habitat assessment
- Provide observations of stream site

The Pierce Conservation District has coordinated a volunteer stream monitoring program, Stream Team, in all four watersheds in Pierce County since 1994. Since that time PCD has engaged over 2,000 citizens in this program and currently more than 70 volunteers are actively involved with this effort. Stream Team has 39 sites currently, 22 of which are prioritized by jurisdictional partners. The goals of this program are to provide education to Pierce County residents about local streams, and the impact of our daily lives on stream water quality and habitat; as well as provide information on current stream conditions.

WHY IS MONITORING IMPORTANT?

Monitors raise awareness of potential pollution areas and problem stream sites, learn about pollution prevention, provide data for streams that are usually unassessed, and increase the amount of water quality information available to local communities and decision makers.

HOW DOES THIS PROGRAM WORK?

Local citizens are recruited from the community through the PCD newsletter, schools, Facebook page, and other media. Volunteers attend a three-hour training focused on the basics of watershed health, stream ecology; why we monitor; water quality testing for dissolved oxygen, nitrates, pH, and turbidity; flow measurement; and a habitat assessment with time for participants to practice sampling techniques.

Monitoring sites have been selected on jurisdictional preference for particular stream(s) and where the jurisdiction wants stream health indicators. Stream monitors select their site from this list, at times monitoring where another group monitors to gather as many datapoints as possible on each site. Stream monitors select one of three different monitoring schedules (monthly, every other month or quarterly) based on best fit with their personal schedule. PCD provides the water quality kits to the volunteers.

PCD staff provides on-going maintenance of the kits including annual calibration of thermometers, cleaning of the kits, checking and replacing reagents on a regular basis, and updating equipment as needed. The data collected using these kits is "red-flag" data, highlighting areas of concern where a more focused effort may be needed.

WHAT HAPPENS WITH THE DATA AFTER IT IS COLLECTED?

The data is reviewed when submitted for any missing, or unusual results or to clarify comments about conditions seen at the site. The results and additional comments are entered into an Excel database. An annual snapshot of the data is prepared and sent to the volunteers and to our jurisdictional partners.

STREAM OF CONCERN PROCESS

Data is reviewed quarterly and highlighted if not meeting state standards set by the Washington State Department of Ecology. If data does not meet the state standard three times in a row, staff will sample with meters at these sites. Stream Team monitors will be contacted to confirm sampling protocols and sample collection method in the stream. Stream of Concern data and results are communicated to jurisdictional partners.

STATE STANDARDS FOR STREAMS IN PIERCE COUNTY

The Washington State Department of Ecology sets standards for each stream based on beneficial uses for water temperature, dissolved oxygen, pH, and turbidity. While there are no nitrate standards issued by the Department, nitrate concentrations in our surface waters can have significant impacts on the other metrics we do have standards for and can cause significant alterations in biotic potential as well as overall habitat. The water quality data collected by volunteer stream monitors is presented in graphs along with the Washington State Department of Ecology standards. Red bars or red circles indicates those data points not meeting state standards.

WATER TEMPERATURE AND DISSOLVED OXYGEN

Temperature and dissolved oxygen are two very important water quality features, and their levels determine what can live in our streams. High water temperatures reduce the ability of water to hold oxygen and stresses the plants and animals that live in the stream. Warm water temperatures can be caused by lack of shading, erosion, stormwater runoff, and flow. Dissolved oxygen levels are affected by temperature, turbulence, photosynthesis, respiration, salinity, elevation, and amount of decaying matter.

pH

pH is a measure of the hydrogen ion concentration of water, which determines whether the water is acidic or basic. Aquatic plants and animals are sensitive to high or low pH. Factors that affect pH levels include photosynthesis, respiration, decomposition, stormwater runoff, and chemical spills. pH is measured on a scale ranging from 0 to 14 of pH units. A pH reading below 7 is considered acidic; above 7 is considered basic. It is important to know that the pH scale is "logarithmic", meaning that for each one whole unit of change in pH, there is a ten-fold change in its acid or base level.

NITROGEN

Nitrogen is an essential plant nutrient required by all plants and animals for building protein. Nitrogen is present in several different forms in aquatic ecosystems. Nitrate is one form of nitrogen that can be easily used by plants and animals. The concentration and supply of nitrates in a stream depends on the surrounding land use. Sources of nitrates include human and animal waste, fertilizers, and stormwater run-off. Excessive amounts of nitrates stimulate increased plant and algae growth which leads to lower oxygen levels as they begin to die off (eutrophication). During spring, nitrate levels may increase due to fertilization of lawns and fields. During winter, high rainfall can cause increased run-off of organic matter such as leaves, twigs, grass, and other debris. Decomposition of this organic material releases nitrates.

TURBIDITY

Turbidity is a measure of a stream's overall clarity. This generally varies throughout the year within any stream system, but large variations throughout a given period can be an indicator of problems with runoff, erosion, deforestation, or human activity. Clear water is important for many types of aquatic animal and plants species throughout their lifespan, and the hallmark of clear, cool water is especially important to anadromous salmonid species in the area.

WHAT CAN YOU DO

LOW DISSOLVED OXYGEN AND HIGH WATER TEMPERATURE

One possible solution to mitigate low dissolved oxygen and high water temperatures is to remove invasive vegetation, like reed canarygrass from streams. Invasive vegetation tends to slow down flow and increase decomposition, both which contribute to low dissolved oxygen. Physical removal of reed canarygrass is not recommended, but instead shading it out with trees and shrubs can have an impact. If sites are devoid of vegetation, installing trees and shrubs can increase canopy cover to shade streams and lower water temperature.

LOW OR HIGH pH

pH outliers above and below a neutral pH can indicate inputs to a stream system, such as stormwater or chemical runoff. Decomposition can also affect pH if there is excess vegetative growth from nutrients or salmon are decaying. While it is not feasible to control stormwater or chemical runoff, you can filter some out before it enters a stream through installing native vegetation. Riparian buffers not only filter out pollution but hold in streambanks. Examples of streamside vegetation include willows, red osier dogwood and Pacific ninebark.

HIGH NITRATES

Similar to pH, high nitrates can be contributed by external inputs to streams. Nitrates are most commonly found in fertilizers, animal waste, waste water treatment plants, septic systems, and biological decomposition. Control options include eliminating the source or installing native vegetation to act as a filter.

HIGH TURBIDITY

High turbidity is caused by excess particles making water appear cloudy or unclear. Particles can be a result from streamside sediment that washes in from erosion or rainfall. Construction and agriculture production can also contribute to excess sediment in streams. High turbidity caused by natural rainfall is an episodic event and not a concern. High turbidity from human-caused sources can be mitigated through restrictions on streamside construction or plant installation on erodible banks.

CLARKS CREEK 4.1 SITE DATA

SITE OVERVIEW

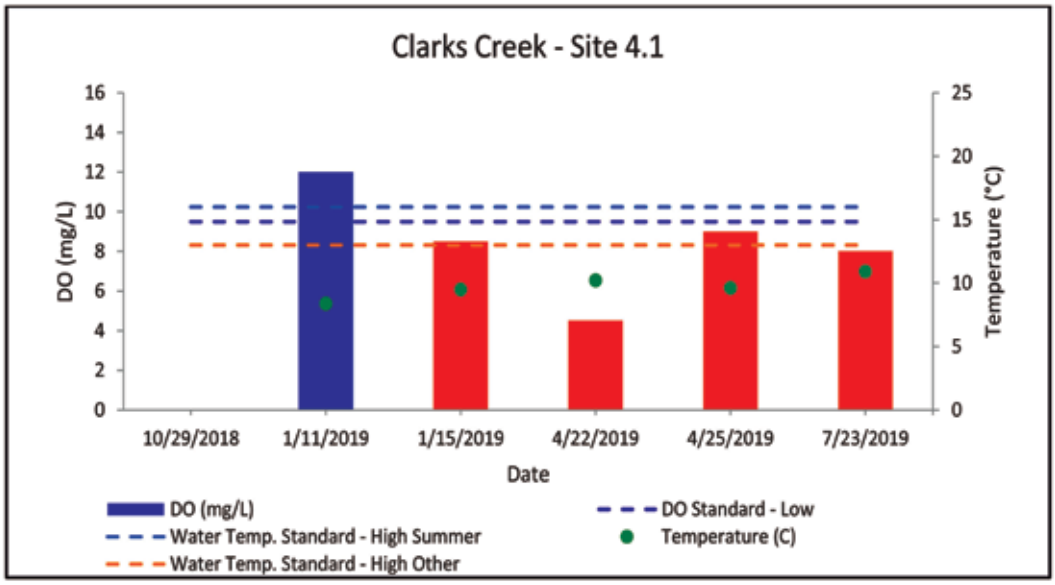
Clarks Creek is a small tributary of the Puyallup River and is located in the Puyallup Watershed. It flows approximately 3 miles from its headwaters to the river. This creek supports runs of Chinook, coho, chum, winter steelhead and pink salmon.

Clarks Site 4.1 is located behind the Puyallup Historical Fish Hatchery.

Testing was not conducted in October 2018 due to salmon presence.

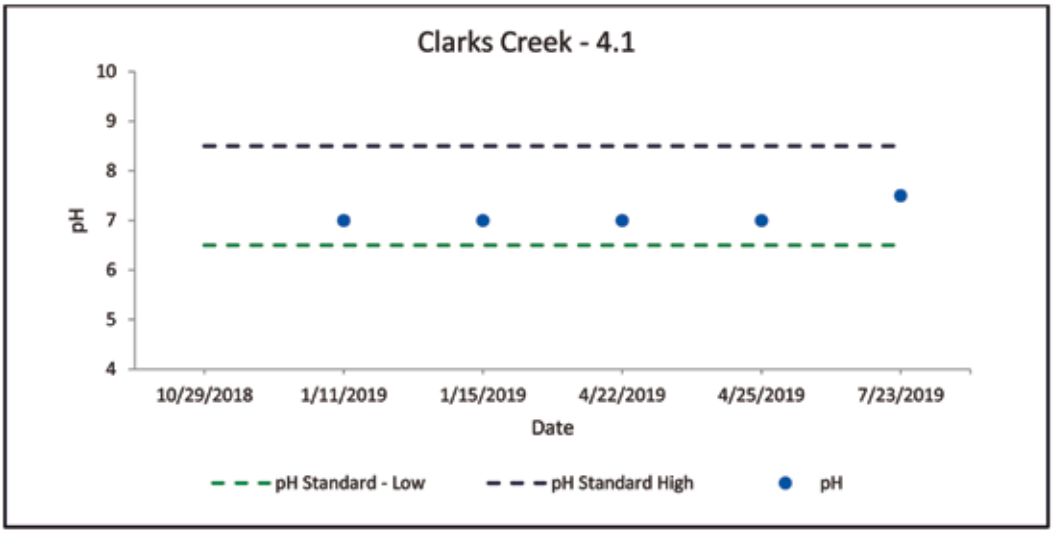
VOLUNTEERS

In 2019, Dennis and Joyce Anderson, Astra Palmer and Victoria Reddin participated in monitoring of Clarks Creek Site 4.1 contributing a total of 20 hours of volunteer time.



Clarks Creek Site 4.1: DO & Temperature

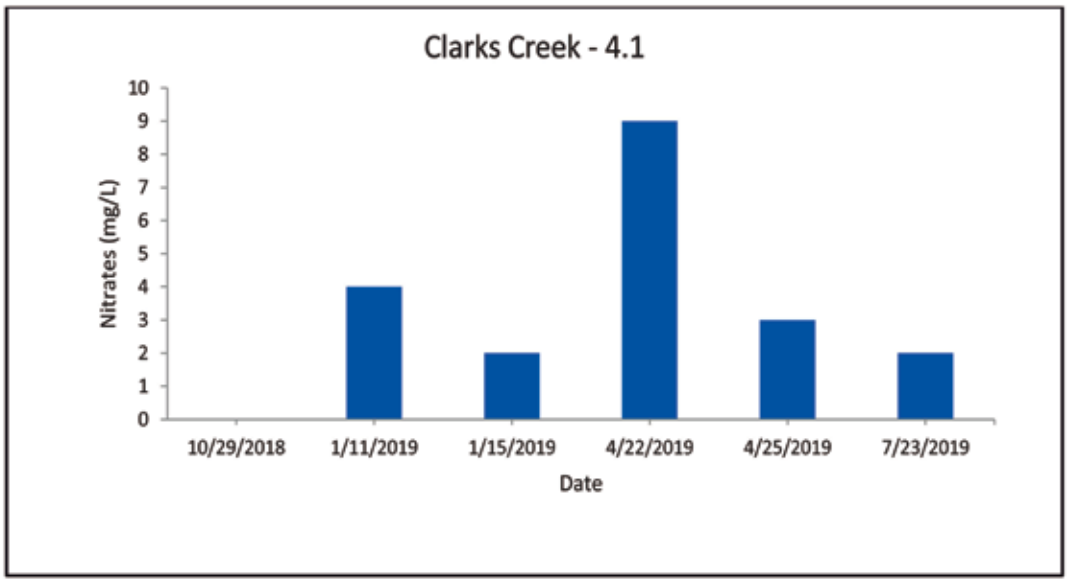
This figure shows the recorded dissolved oxygen (mg/L) and temperature (°C) readings for Clark's Creek throughout the 2019 water year. Dissolved oxygen failed to meet the DO standard of 9.5mg/L from samples taken between January and July 2019. Water temperature met the standard of 13°C during the water year and 16°C during the summer months.



Clarks Creek Site 4.1: pH

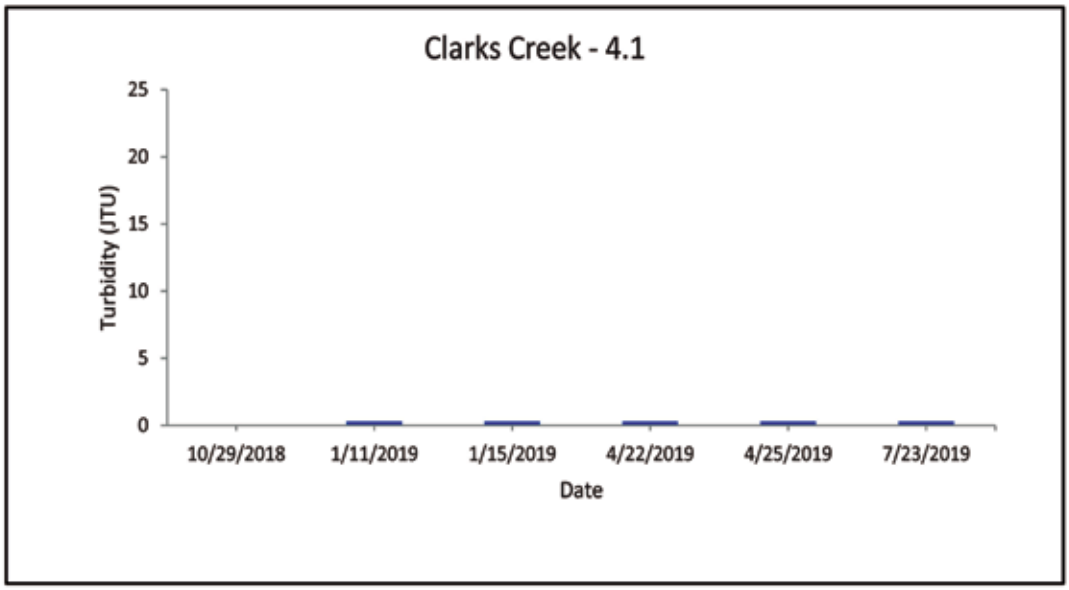
This figure shows the water pH for Clarks Creek 4.1 throughout the 2019 water year. The recorded pH remained within the pH Standard range of 6.5 – 8.5.

CLARKS CREEK 4.1 SITE DATA



Clarks Creek Site 4.1: Nitrates

This figure shows the water nitrogen/nitrate level (mg/L) for Clarks Creek Site 4.1 throughout the 2019 water year. Nitrates spiked to 9 mg/L in April.



Clarks Creek Site 4.1: Turbidity

This figure shows the water turbidity (JTU) for Clarks Creek Site 4.1 throughout the 2019 water year. Turbidity did not register above 0 JTU.

SUMMARY

Clarks Creek did not meet the dissolved oxygen state standard from the January 15, 2019 reading through July 2019. Decomposing salmon in January 2019 and a high summer temperature in July 2019 could account for this result. Biological decomposition uses up dissolved oxygen and warmer water tends to hold less dissolved oxygen. Monitors also noted possible problems with procedures while sampling. Monitors observed high water flow during the April 2019 sampling.

DEER CREEK 1.6 SITE DATA

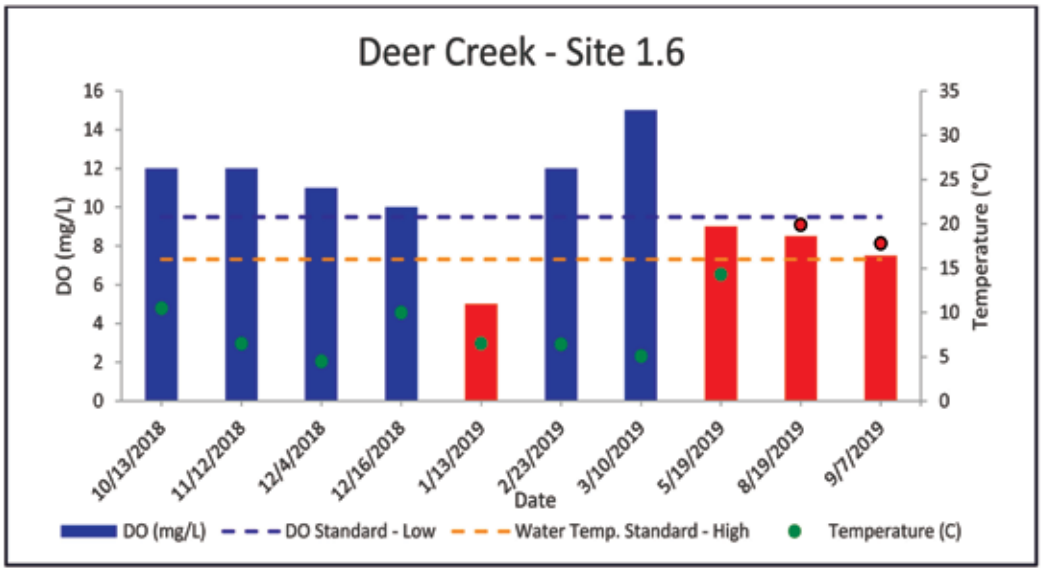
SITE OVERVIEW

Deer Creek is located within the Puyallup Watershed and flows approximately 3.5 miles from South Hill Puyallup to its confluence with the Puyallup River. It supports runs of coho salmon.

Deer Creek Site 1.6 is located at the corner of 25th St. SE. and 12th Ave. SE.

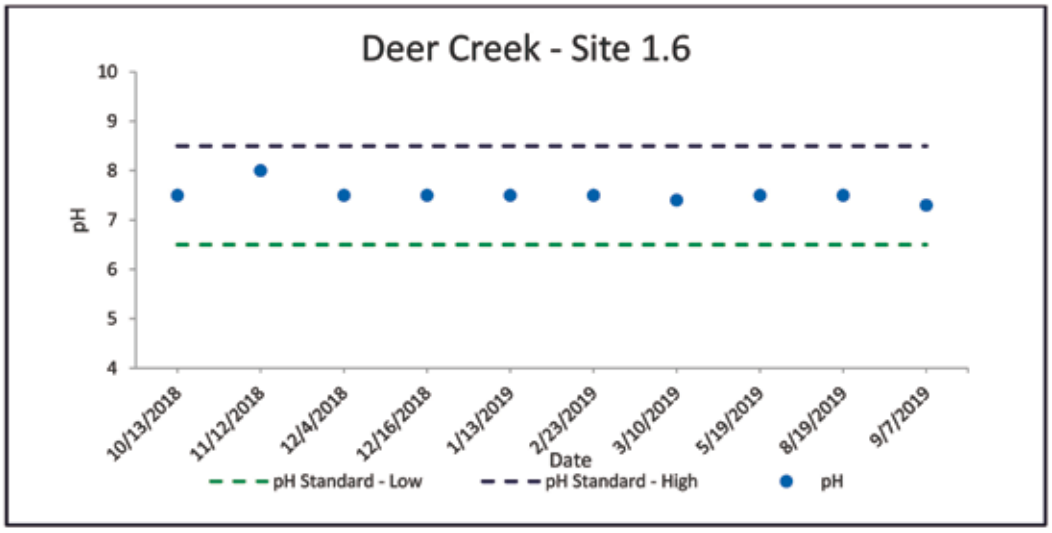
VOLUNTEERS

In 2019, Aly Goss and Karin McNett participated in monitoring of Deer Creek Site 1.6 contributing a total of 23 hours of volunteer time.



Deer Creek Site 1.6: DO & Temperature

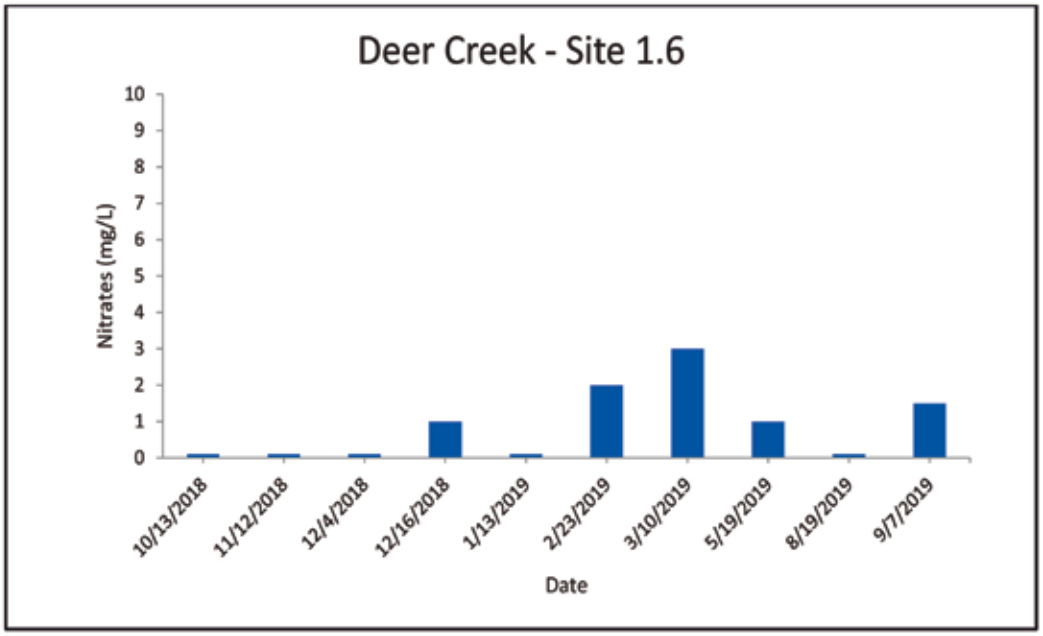
This figure shows the recorded dissolved oxygen (mg/L) and temperature (°C) readings for Deer Creek throughout the 2019 water year. Dissolved oxygen failed to meet the DO standard of 9.5 mg/L from samples taken in January and May through September 2019. Water temperature did not meet the standard of 16°C during August and September 2019.



Deer Creek Site 1.6: pH

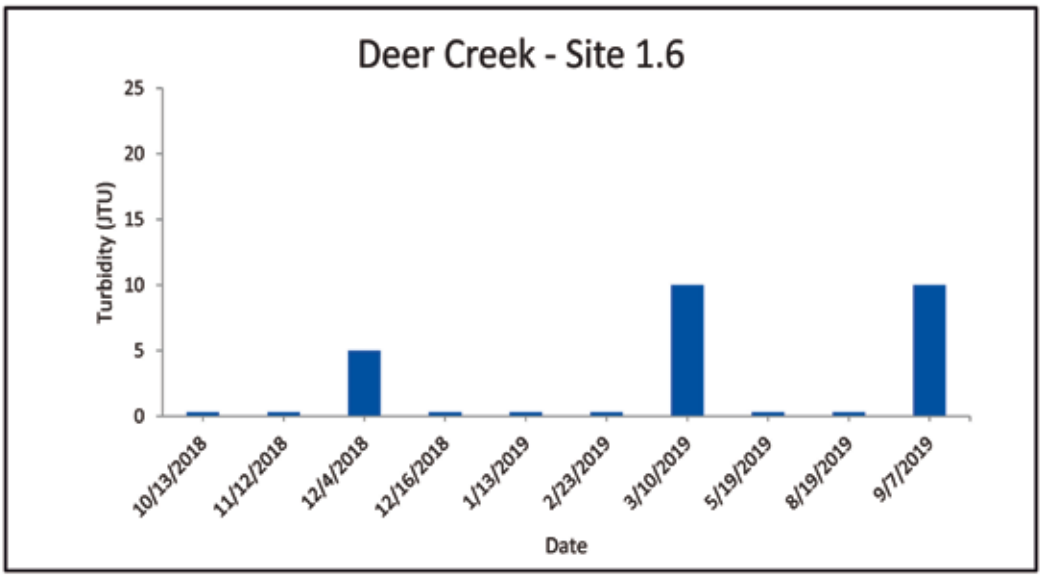
This figure shows the water pH for Deer Creek 1.6 throughout the 2019 water year. The recorded pH remained at or within the pH Standard range of 6.5 – 8.5.

DEER CREEK 1.6 SITE DATA



Deer Creek Site 1.6: Nitrates

This figure shows the water nitrogen/nitrate level (mg/L) for Deer Creek Site 1.6 throughout the 2019 water year. Nitrates registered 0 mg/L during the months of October-December 2018, as well as January and August 2019. Nitrates did not exceed 3 mg/L.

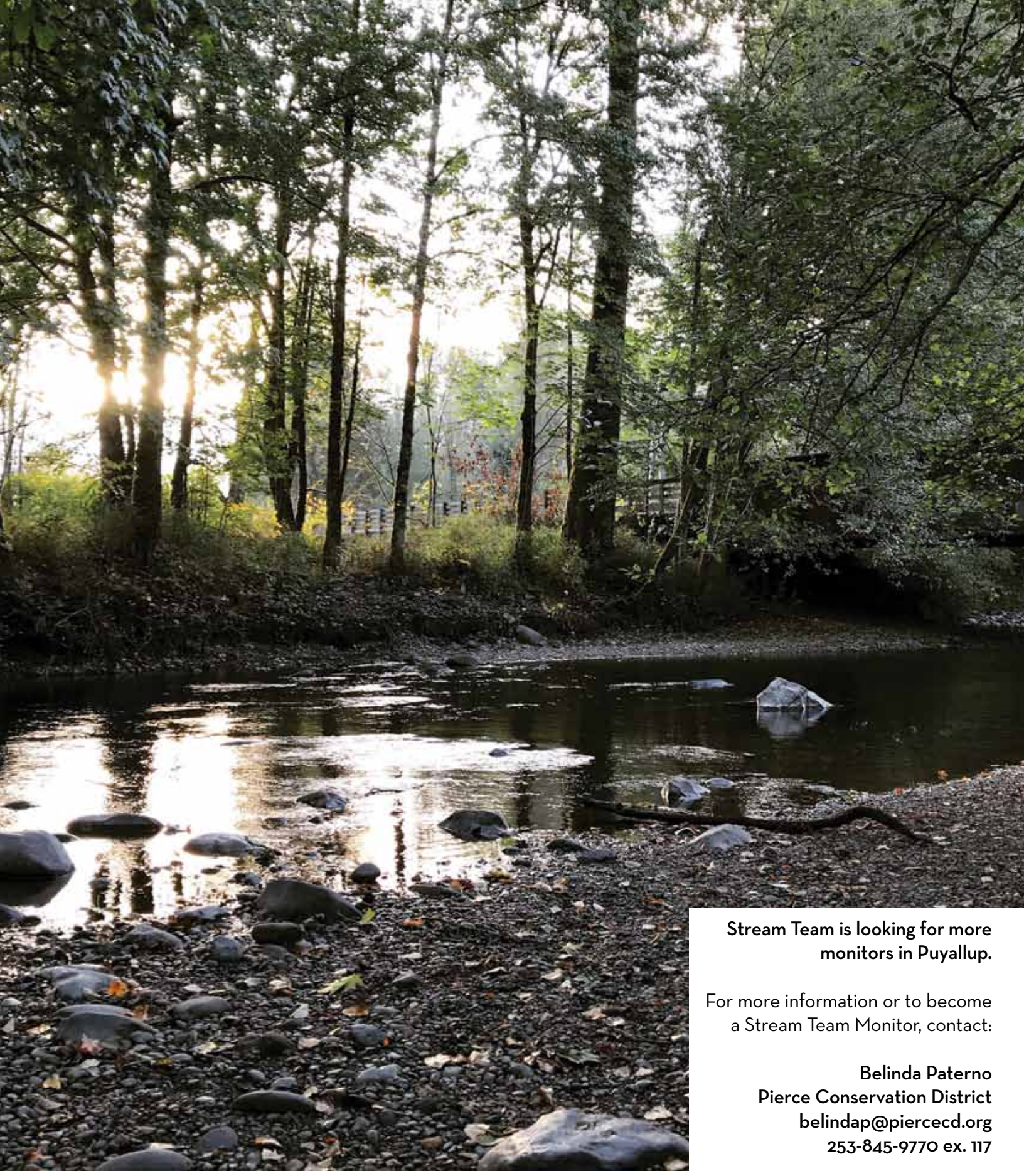


Deer Creek Site 1.6: Turbidity

This figure shows the water turbidity (JTU) for Deer Creek Site 1.6 throughout the 2019 water year. Turbidity did not exceed 10 JTU.

SUMMARY

Deer Creek failed to meet the dissolved oxygen state standard during the summer 2019 months. The creek at this site is narrow and choked with reed canarygrass causing slow flow. These conditions coupled with warm summer temperatures most likely contributed to the low dissolved oxygen readings. For the January 2019 dissolved oxygen reading the monitor was unsure they completed the test correctly. Monitors observed Himalayan blackberry and lots of reed canarygrass summer growth.



Stream Team is looking for more monitors in Puyallup.

For more information or to become a Stream Team Monitor, contact:

Belinda Paterno
Pierce Conservation District
belindap@piercecd.org
253-845-9770 ex. 117

PIERCE CONSERVATION DISTRICT
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