
Pierce County, Washington

Scope of Work and Schedule
for the
Spanaway Lake Watershed-Scale Stormwater Planning Process

In compliance with Special Condition S5.C.5.c.ii,
NPDES Phase I Municipal Stormwater Permit

June 2014

Pierce County Public Works and Utilities, Surface Water Management

With assistance from Brown and Caldwell

1.0. INTRODUCTION

Stormwater discharges in unincorporated Pierce County (County) are covered by the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit (Permit) issued by the Washington State Department of Ecology (Ecology). The current Permit became effective on August 1, 2013. Special Condition S5.C.5.c of the Permit requires a watershed-scale stormwater planning process to identify a stormwater management strategy or strategies that would result in hydrologic and water quality conditions that fully support “existing uses” and “designated uses, as those terms are defined in WAC 173-201A-020.” Permit requirement S5.C.5.c.ii required that Pierce County submit a scope of work and schedule to Ecology by April 1, 2014. On March 21, 2014, Pierce County submitted a scope of work and schedule that met Permit requirement S5.C.5.c.ii. Ecology provided comments in a letter dated May 14, 2014. Ecology staff met with Pierce County staff on June 4th to discuss Ecology’s comments and Pierce County’s responses. On June 5, 2014 Ecology notified Pierce County that scope and schedule changes other than substantial deviations would not be considered permit violations (see attached email). The County subsequently prepared this revised scope of work and schedule.

The current Permit requires Pierce County to lead a watershed-scale stormwater planning process on Clover Creek [S5.C.5.c.i] or an Ecology-approved alternative that meets all the following criteria:

1. Has a drainage area of at least 10 square miles [S5.C.5.c.i(1)]
2. Is partially or wholly within the County’s existing municipal separate storm sewer system (MS4) service area with discharges to the stream [S5.C.5.c.i(2)]
3. Has a stream system that has been impacted by development but retains some anadromous fish resources [S5.C.5.c.i(3)]
4. Is target to accept significant population growth and associated development, and is partially, if not fully, within the urban growth area established under Revised Code of Washington (RCW) Chapter 36.70A, or a potential future expansion of the urban growth area [S5.C.5.c.i(4)]

Permittees that wished to propose an alternative watershed were required to submit their proposals to Ecology by October 31, 2013. In a letter to Ecology dated October 31, 2014, Pierce County proposed the Spanaway Lake watershed as an alternative to the Clover Creek watershed. Between November 2013 and March 2014, numerous communications occurred between Ecology and Pierce County concerning the County’s proposed alternative. Pierce County received Ecology’s formal approval of Pierce County’s proposal for the Spanaway Lake watershed on March 11, 2014.

The watershed-scale stormwater planning process was a major component of the appeal of the 2013 NPDES Phase I Municipal Stormwater Permit appeal to the State's Pollution Control Hearings Board (PCHB). Pierce County was one of four Phase I counties that appealed this requirement. Pierce County's appeal was centered on the negative impact the Permit watershed planning process would have on the County's existing watershed planning program. PCHB published its decision on March 21, 2014. In its decision, the PCHB concluded Ecology must consider options presented by Pierce County and that the Permit must be modified to grant Pierce County additional time for an alternative basin.

The following paragraphs summarize the Spanaway Lake watershed characteristics relevant to the four Permit criteria for alternative watersheds. Figure 1 shows the Spanaway Lake watershed-scale stormwater planning area.

- **Drainage area:** Spanaway Creek, a 5.8-mile-long tributary of Clover Creek, is formed by springs and marshes and a tributary, Coffee Creek, within Joint Base Lewis-McChord (JBLM) and flows north through Spanaway Lake and Tule Lake and into Clover Creek at the northwest end of the watershed near the JBLM east boundary. Morey Creek splits from Spanaway Creek downstream of Spanaway Lake and joins Clover Creek downstream of the confluence of Spanaway Creek to Clover Creek.

The Spanaway Lake watershed planning area upstream of the Clover Creek confluence has a drainage area of approximately 23.3 square miles. The planning area includes Spanaway Creek, Coffee Creek, Morey Creek, Spanaway Lake, and Tule Lake, and lands that drain into those water bodies. The watershed is located within Water Resource Inventory Area (WRIA) 12 and is part of the greater Chambers/Clover Creek drainage basin.

- **Jurisdiction:** About 67% of the watershed is under Pierce County jurisdiction. Morey Creek, Spanaway Lake, and the reach of Spanaway Creek downstream of the lake are within Pierce County's MS4 service area. Municipal stormwater discharges in this portion of the watershed are regulated by the Phase I Permits issued by Ecology to Pierce County and to the Washington Department of Transportation.

The remaining 33% of the watershed is within JBLM. Stormwater discharges within JBLM are regulated under a municipal NPDES permit issued by the U.S. Environmental Protection Agency Region 10 (EPA).

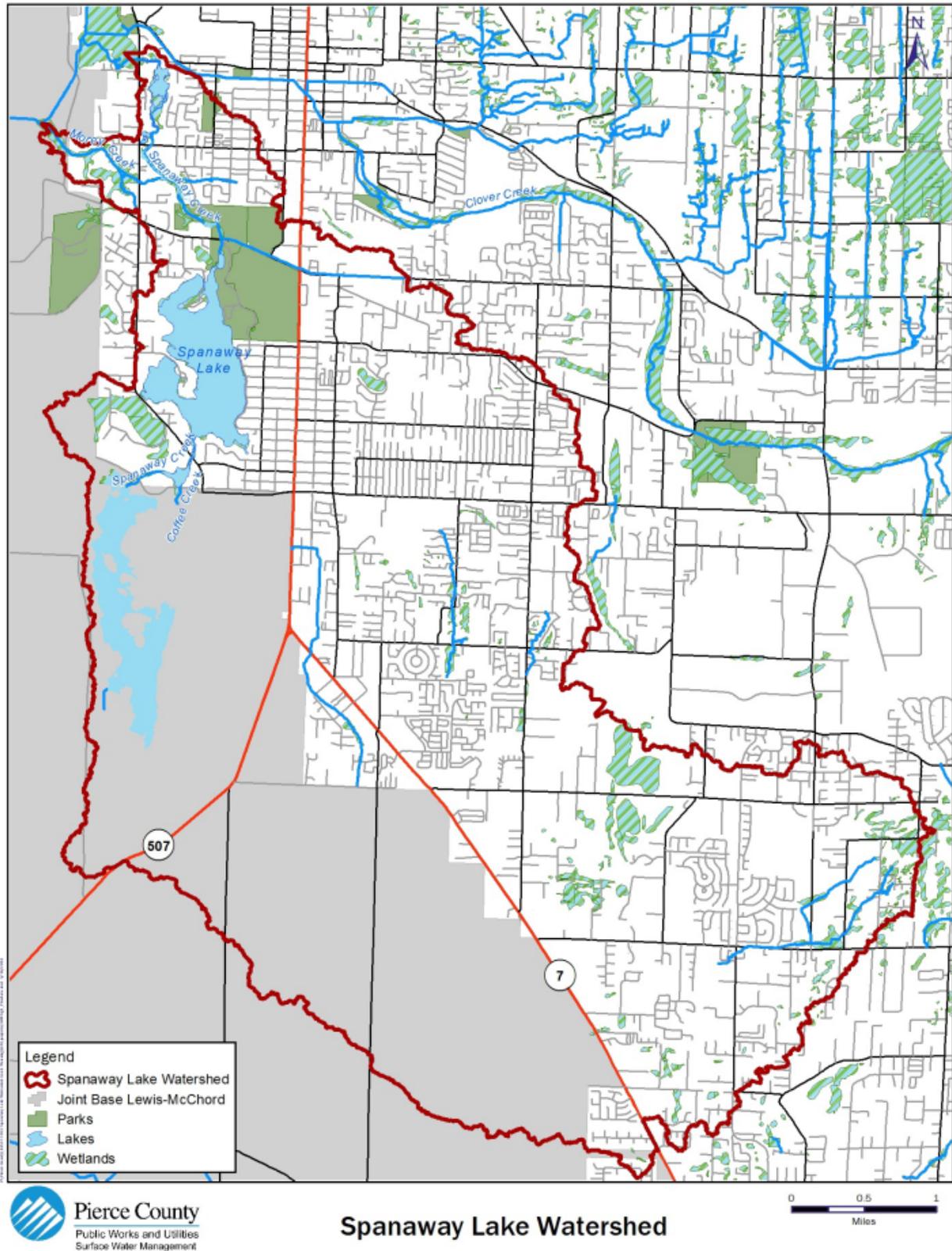


Figure 1. Watershed-scale stormwater planning study area.

- **Urban development and anadromous fish:** Urban development has affected the stream system in the Spanaway Lake watershed. Approximately 38,000 people live in the Spanaway Lake watershed. Residential and commercial land uses cover approximately 64% and 4% of the non-Federal portion of the watershed, respectively (see Figure 2). Much of the area is served by onsite wastewater treatment systems. Pierce County's 2012 water quality report card cited low dissolved oxygen (DO) concentrations, high water temperatures, and low Benthic Index of Biotic Integrity (BIBI) scores in Spanaway Creek. Spanaway Lake has experienced toxic blue-green algae and fecal coliform levels above state water quality criteria. Morey Creek is on the state's 303(d) list due to low DO concentrations.

Despite the substantial urban development in the watershed, Spanaway Creek has known distributions of cutthroat trout and coho salmon extending the entire length of the stream (Washington Department of Fish and Wildlife, 2011 and 2013; Pierce County, 2013; US Department of Transportation, 2003; Pierce Conservation District, 2003).

- **Future growth:** About two-thirds of the Spanaway Lake watershed is within Pierce County's jurisdiction and the remainder is within JBLM (see Figure 3). The northern portion of the watershed is in the Parkland/ Spanaway/ Midland unincorporated area, which is part of the Urban Growth Area for the City of Tacoma. The southeast portion of the Spanaway Lake watershed, about 5.4 square miles (23% of the area), is outside of the Tacoma Urban Growth Area, but within the Pierce County Comprehensive Urban Growth Area. According to the Pierce County Comprehensive Plan, the Parkland/Spanaway/Midland unincorporated area is expected to experience an urban population increase of nearly 10,000 people, or 16%, during 2000–22. The south east region of the watershed includes portions of Frederickson and Graham communities, which are expected to experience urban population increases of about 3,000 people (23%) and 1,500 people (89%), respectively.

Under the current Permit language, Pierce County must submit the complete watershed plan to Ecology by October 1, 2016. The County understands that Ecology is considering extending the deadline to October 1, 2017, and the County retains the option to extend its schedule accordingly.

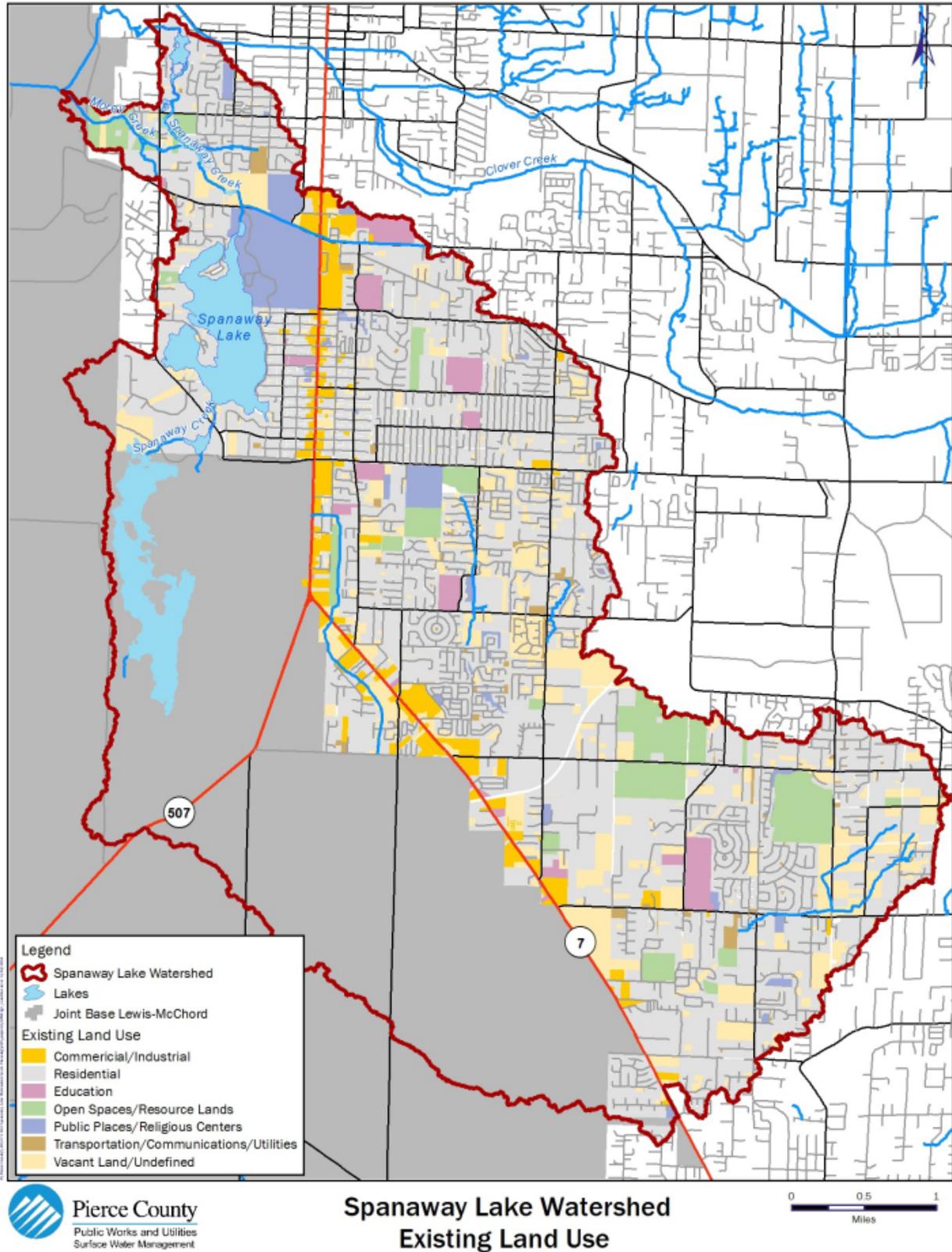


Figure 2. Existing land use in Spanaway Lake watershed.

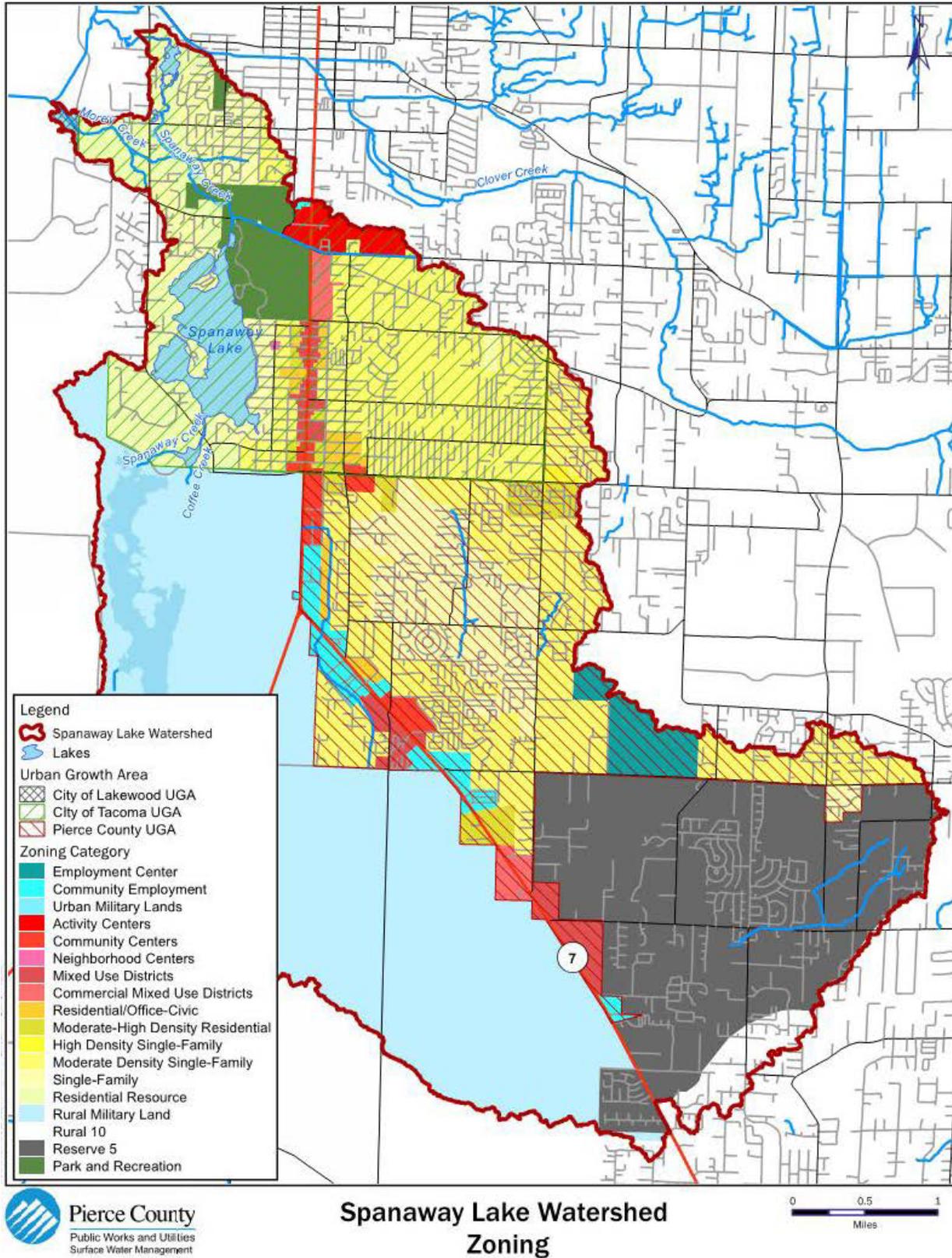


Figure 3. Zoning of Pierce County land in Spanaway Lake watershed.

2.0. TASKS

This section describes the scope of work for Pierce County's Spanaway Lake watershed-scale stormwater plan. In accordance with Special Condition S5.C.5.c of the Permit, the scope of work includes an existing conditions assessment; hydrologic, biologic, and water quality modeling to assess changes between existing and future conditions; an evaluation of stormwater management strategies; implementation planning; and a public review process.

The following sections describe the anticipated tasks in the County's scope of work. As previously discussed with Ecology, this scope of work is based on limited information; consequently, the County may need to adjust and refine this scope of work as additional data become available. Based on Ecology's June 5, 2014 e-mail from Chris Montague-Breakwell, the County understands that minor adjustments in the scope of work or schedule are essentially pre-approved while more substantive changes, such as significant changes in monitoring sites or modeling software, will require a written request by the County and approval by Ecology.

2.1 Task 1: Assessment of Existing Conditions [S5.C.5.c.ii(1)]

Pierce County will assess the current hydrologic, biologic, and water quality conditions and the status of the aquatic community within the Spanaway Lake watershed, in accordance with the Permit. The County will review available monitoring data (streamflow, water quality, macro-invertebrate) and mapping data to assess whether those data are adequate to meet requirements in Special Condition S5.C.5.c.ii of the Permit and adequate to support continuous runoff modeling. The assessment task is intended to characterize current conditions in the Spanaway Lake watershed including flow, water quality, benthic macroinvertebrates, land cover and land use, and the salmonid community using observed local and regional data. The results will serve as input data for hydrologic model calibration described in Special Condition S5.C.5.c.ii.(4).

Pierce County will begin the assessment of existing conditions by reviewing existing data and reports relevant to the Spanaway Lake watershed, including the documents listed below:

Mastin, M.C., 1996, *Surface-water hydrology and runoff simulations for three basins in Pierce County, Washington*, U.S. Geological Survey Water-Resources Investigations Report 95-4068, 148 p.

McCarthy, Kathleen A., 1996, *Surface-Water Quality Assessment of the Clover Creek Basin, Pierce County, Washington 1991-92*, U.S. Geological Survey Water-Resources Investigations Report 95-4181, 113 p.

Scope of Work and Schedule for the Spanaway Lake Watershed-Scale Stormwater Planning Process

Pierce Conservation District, 2003, *Salmonid Habitat Limiting Factors Analysis—Chambers-Clover Creek Watershed, Water Resource Inventory Area 12*, 130 p.

Pierce County, 2007, *Buildable Lands Report: A Monitoring and Evaluation Analysis of Urban Growth and Development Capacity for Pierce County and its Cities and Towns*, 360 p.

Pierce County, 2008, *Frederickson Community Plan: A Component of the Pierce County Comprehensive Plan*, Ordinance No. 2003-93s2, amended by Ordinance No. 2007-86s, 155 p.

Pierce County, 2008, *Graham Community Plan: A Component of the Pierce County Comprehensive Plan*, Ordinance No. 2010-87, 238 p.

Pierce County, 2010, *Parkland-Spanaway-Midland Communities Plan: A Component of the Pierce County Comprehensive Plan*, Ordinance No. 2002-21s, amended by Ordinance No. 2009-71s, 230 p.

Pierce County Public Works & Utilities Water Programs Division, 2005. *Clover Creek Basin Plan*, 2005.

Pierce County Public Works & Utilities Water Programs Division, 2013, 2013 Report Card: Surface Water Health.

U.S. Department of Transportation Federal Highway Administration, Washington State Department of Transportation, and Pierce County, 2003, *Cross-Base Highway (State Route 704) I-5 to SR 7 Final Environmental Impact Statement Appendix K – Vegetation, Wildlife, and Fisheries Discipline Report*, Lakewood and Pierce County, Washington.

U.S. Geological Survey, 2010, *Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Chambers-Clover Creek Watershed and Vicinity, Pierce County, Washington*, Scientific Investigations Report 2010-5055, 46 p.

U.S. Geological Survey, 2011, *Numerical Simulation of the Groundwater-Flow System in Chamber-Clover Creek Watershed and Vicinity, Pierce County, Washington*, Scientific Investigations Report 2011-5086, 108 p.

Washington State Department of Ecology, 2013, *Clover Creek Dissolved Oxygen, Fecal Coliform, and Temperature Total Maximum Daily Load Water Quality Study Design (Quality Assurance Project Plan)*, Publication No. 13-03-109, 92 p.

Washington State Department of Ecology, 2013, First Quarterly Report for *Clover Creek Dissolved Oxygen, Fecal Coliform, and Temperature Total Maximum Daily Load Water Quality Study*.

Washington State Department of Ecology, 2013, Second Quarterly Report for *Clover Creek Dissolved Oxygen, Fecal Coliform, and Temperature Total Maximum Daily Load Water Quality Study*.

Washington State Department of Ecology, 2013, Third Quarterly Report for *Clover Creek Dissolved Oxygen, Fecal Coliform, and Temperature Total Maximum Daily Load Water Quality Study*.

Washington State Department of Ecology, 2014, Fourth Quarterly Report for *Clover Creek Dissolved Oxygen, Fecal Coliform, and Temperature Total Maximum Daily Load Water Quality Study*.

2.2 Task 1a: Water Quality [S5.C.5.c.ii(1).a]

The current Permit requires that the watershed-scale stormwater planning evaluate dissolved copper, dissolved zinc, temperature, and fecal coliform bacteria. Pierce County will compile and review existing data relevant to these parameters. Potential data sources include:

- Pierce County water quality report cards/water quality index
- Monthly stream water quality data at Spanaway Creek at Spanaway Park (Ecology site ID MS006) (fecal coliform, DO, total Kjeldahl nitrogen [TKN], pH, total suspended solids [TSS], specific conductance, temperature, total phosphorus [TP], turbidity)
- Clover Creek Basin Plan (Pierce County, 2005)
- Clover Creek Total Maximum Daily Load Study (Ecology, 2014)
- Long Term Groundwater Monitoring Program (Tacoma Pierce County Health Department)

Pierce County will review the existing data in light of the Permit requirements and identify key data gaps. Pierce County will then design and implement a water quality monitoring program to supplement the existing data and support development of the Spanaway Lake watershed-scale stormwater plan.

To guide the monitoring activities, Pierce County will prepare a quality assurance project plan (QAPP) for internal use. The QAPP will describe data quality objectives and procedures for data collection, data quality assurance and quality control, and comparison of new data to existing data.

The monitoring program will include monitoring upstream and downstream of stream reaches influenced by MS4 discharges. Figure 4 shows the five tentative monitoring locations for water quality. During the watershed assessment, the County may adjust these monitoring locations and include additional locations if deemed necessary (e.g., locations to monitor reaches with

substantial interchange with groundwater). Monitoring locations will be refined based on site characteristics and legal and physical access.

Grab samples will be collected monthly at each monitoring location during baseflow conditions. Three grab samples will be collected at each location during six storm events, to gather data on water quality during various storm sizes. Storms will be selected using National Weather Service forecasts and the monitoring team will be deployed for sampling based on runoff-response timing informed by flow monitoring (Task 1b) and HSPF model development (Task 3). The County may refine this monitoring approach as additional information becomes available regarding rainfall-runoff relationships at the monitoring locations. Samples will be analyzed individually (rather than composited) in order to provide multiple observations during storm events. Samples will be analyzed for fecal coliform bacteria, dissolved copper, dissolved zinc, and hardness at a state-certified laboratory. Temperature data loggers will be deployed at each location to measure water temperatures at 30 minute intervals.

The County recognizes the importance of considering groundwater interactions with surface water and influences on the Spanaway Lake watershed water quality and habitat. The County will monitor ten groundwater locations quarterly for dissolved copper, dissolved zinc, hardness, fecal coliform, and temperature. Wells will be located near Spanaway Lake and up-gradient of the lake and creeks, with locations based on groundwater flow data from previous USGS studies, County infiltration pond sites, and development density. Specific well locations will be determined during watershed characterization.

Concurrent with this watershed-scale stormwater planning process, the County is initiating a lake management plan study for Spanaway Lake. Nutrients are the primary concern for the lake management plan, while bacteria are a secondary concern. The study will include lake, creek, and groundwater monitoring. The lake management monitoring plan is currently under development, but the County anticipates that it will include groundwater sampling near the lake, lake profile sampling, and sampling of the inflow and outflow creeks. To support development of the watershed-scale stormwater plan, samples collected for the lake management plan will be analyzed for temperature, fecal coliform, dissolved copper, dissolved zinc, and hardness.

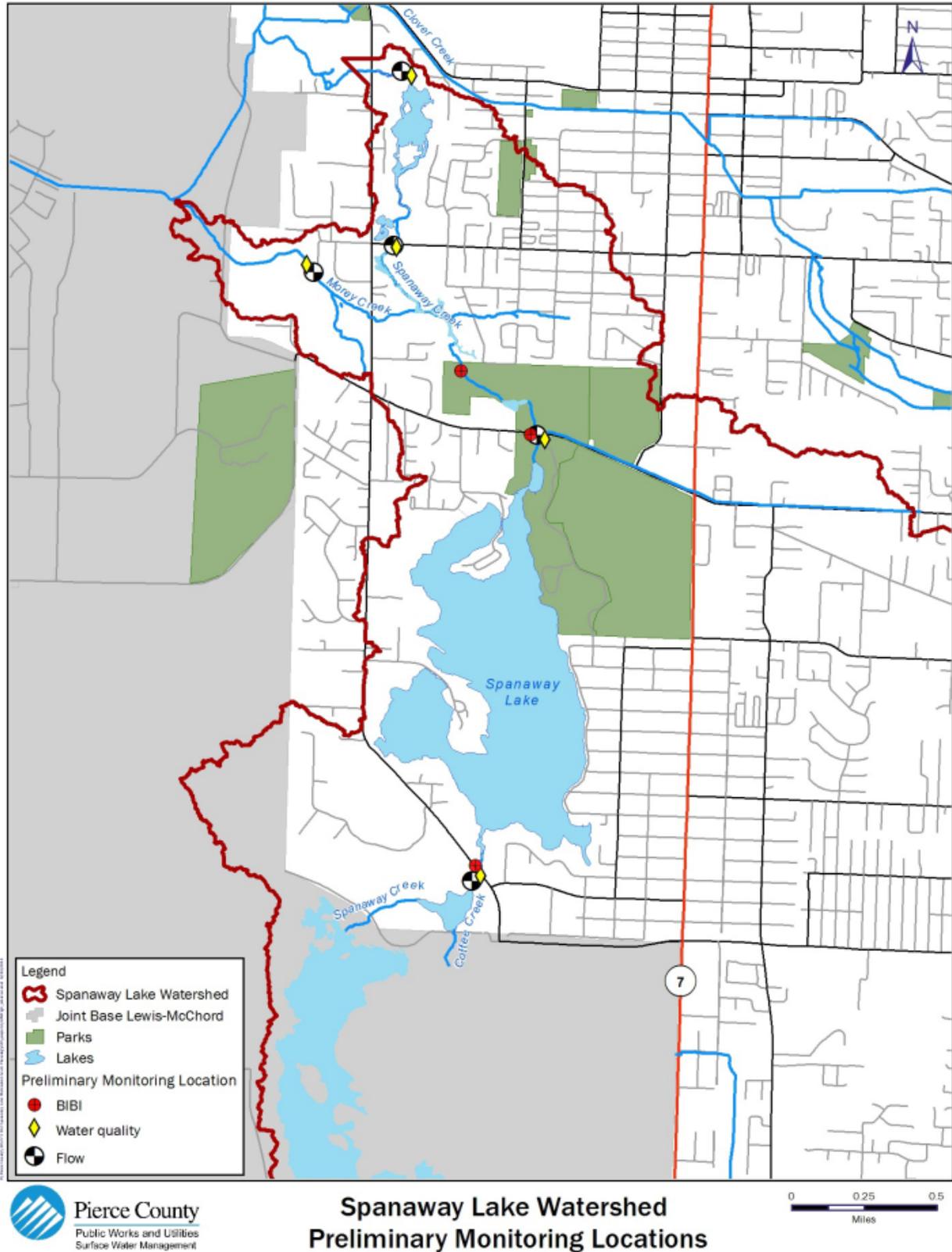


Figure 4. Preliminary monitoring locations for Spanaway Lake watershed-scale stormwater planning.

2.3 Task 1b: Flow [S5.C.5.c.ii(1).b]

Flow data has been collected by the U.S. Geological Survey (USGS) at several locations within the Spanaway Lake watershed:

- USGS 12090448 – Spanaway Creek at Spanaway Loop Rd near Spanaway, WA (upstream of Spanaway Lake)
- USGS 12090452 – Spanaway Creek at Spanaway Lake outlet near Spanaway, WA
- USGS 12090463 – Spanaway Creek at Spanaway Loop Rd near Parkland, WA (near Spanaway Lake watershed outlet)
- USGS 12090478 – Morey Creek at Spanaway Loop Rd near Parkland, WA

The only currently operational continuous flow monitoring station is a Pierce County gage on Spanaway Creek near Military Road, at the outlet of Spanaway Lake. Pierce County plans to install four additional flow gages at the approximate locations shown on Figure 4. The number and locations of flow gages may be adjusted based on site characteristics and access. The County plans to collect one year of continuous flow data at the five gages in order to calibrate a continuous runoff model of the Spanaway Lake watershed. Instantaneous flow measurements will be collected to develop stage-discharge rating curves for each monitored cross-section. The County will collect rainfall data from Spanaway Park and will install a new station at Spanaway Lake as part of the assessment. The County will also use applicable meteorological data from existing weather stations in the vicinity of the Spanaway Lake watershed (e.g., WSU Puyallup and McMillin Reservoir).

2.4 Task 1c: Macroinvertebrate Data [S5.C.5.c.ii(1).c]

The County will perform benthic macroinvertebrate sampling at Coffee Creek (aka Spanaway Creek) upstream of Spanaway Lake; Spanaway Creek downstream of Spanaway Lake; and Spanaway Creek below Breseman Dam. Benthic macroinvertebrate samples will be collected during the late summer. Samples will be collected as described in Ecology's Regional Stormwater Monitoring Program QAPP (Ecology, 2014).

The benthic sampling results will be used to calculate BIBI scores for comparison with scores predicted by modeled hydrologic metrics developed in Task 4 as in S5.C.5.c.ii.(4), using the correlations described in DeGasperi et al. (2009).

During the initial watershed assessment, the County found no locations on Morey Creek and Spanaway Creek downstream of the channel split that are suitable for benthic macroinvertebrate sampling based on channel characteristics and physical and legal

accessibility. As discussed with Ecology in the June 4, 2014 meeting, the County will use an alternative method to evaluate potential impacts of future hydrologic changes on channel conditions. The County will collect data on channel conditions in those reaches and perform an effective work analysis to provide context for interpreting model-simulated changes in hydrologic metrics due to future development/redevelopment.

2.5 Task 1d: Aquatic Community [S5.C.5.c.ii(1).d]

Fish community monitoring has been conducted in the Spanaway Lake watershed by the Washington Department of Fish and Wildlife (WDFW) as well as Pierce County fish biologists, both of which have confirmed the use of Spanaway, Coffee, and Morey creeks by salmonids and noted the presence of salmonid spawning in the creek at the outlet of Spanaway Lake. Observation data, stream surveys, stocking reports, and other available data from WDFW and the County will be used to document the aquatic community of the watershed.

2.6 Task 2: Mapping [S5.C.5.c.ii(2)]

A series of watershed maps will be prepared using readily available data to identify the existing distribution and totals of general soil types, vegetative land cover, impervious land covers, MS4s, and non-regulated public stormwater systems (if applicable). The maps may identify areas that appear especially vulnerable to hydrologic and water quality impacts. These maps will focus on the types of information necessary for construction of a rainfall/runoff model representation of the watershed. Potential data sources include County GIS layers (topography, hydrography, MS4 data, planimetrics, land use), soils data from the Washington State Department of Natural Resources, LIDAR from the Puget Sound LIDAR Consortium, and ortho-imagery from the National Agriculture Imagery Program from the National Map data server. The sources may change if more appropriate data are identified during Task 1 Assessment of Existing Conditions or Task 2 Mapping.

Pierce County has requested GIS data from JBLM to allow mapping of the Spanaway Lake watershed area within the base. In addition, the County asked JBLM about its future land use plans within the watershed. Based on recent conversations with JBLM staff, the County understands that the portion of JBLM within the Spanaway Lake watershed is undeveloped and JBLM does not plan to change land use/land cover within its portion of the watershed.

2.7 Task 3: Watershed Model Calibration [S5.C.5.c.ii(3)]

The County will develop a continuous hydrologic model to simulate flow and selected water quality parameters in creeks within the Spanaway Lake watershed. The County will use the

existing Hydrologic Simulation Program-Fortran (HSPF) model that was developed by USGS (Mastin, 1996) and adapted for the Clover Creek Basin Plan (Pierce County Water Programs, 2005) to develop an HSPF model for this effort. Due to the importance of groundwater interactions with surface water and influences on the Spanaway Lake watershed, the HSPF groundwater parameterization will be informed by previous USGS groundwater studies and MODFLOW products (reviewed under Task 1), as well as the groundwater elevation and water quality data collected from monitoring wells installed in Task 2 of this study.

Other data needed to build the HSPF model include precipitation, evapotranspiration, and other meteorological data, and will be gathered as part of Task 1 to support the model development and calibration.

The model will include at least five sub-basins: one for each of the five proposed flow monitoring locations. Further sub-delineation for existing conditions will be determined during Task 1 Assessment of Existing Conditions or Task 2 Mapping. For example, the County may subdivide sub-basins found to contain regional stormwater retention facilities with distinctly different land use/land cover characteristics in their respective catchment areas. Sub-basin delineation will also be informed by development of the potential management strategies to be evaluated in Task 5. The flow split between Morey Creek and Spanaway Creek will be modeled based on past modeling efforts for the Clover Creek Basin Plan, and adjusted based on flow gage data collected for this study.

The hydrologic model will be calibrated based on the flow and water quality data collected under Task 1. Calibration will occur at locations where the requisite data are collected, and sufficiency will be determined with a weight-of-evidence approach through statistical evaluations and graphical plots (e.g. Donigian et al., 1984; King County, 2012). The model output will be used to calculate hydrologic metrics, such as high pulse counts, that will be used to estimate future BIBI scores using the correlations developed in Task 1c.

2.8 Task 4: Historical and Future-Conditions Modeling [S5.C.5.c.ii(4)]

Pierce County will use the calibrated HSPF model to simulate natural background (historic) and future land use scenarios in the Spanaway Lake watershed. Historical flows will be modeled by revising the land use/land cover to prairie and forested conditions as appropriate based on the available data. The future-conditions scenario will be based on the County's current comprehensive land use management plan, applicable development regulations, estimated redevelopment rates and buildable lands analysis and will include estimated future impervious surface, land cover, and undisturbed land percentages. The future-conditions scenario will assume no stormwater management retrofits of existing development. The watershed

planning team will coordinate with Pierce County Planning and Land Services (PALS) Department to develop assumptions regarding redevelopment rates and the levels of flow control and water quality treatment that will be required of future development within Pierce County's jurisdiction. The County will contact the City of Tacoma and the City of Lakewood to obtain information about future land use plans for their respective UGAs. In addition, the County will contact JBLM to confirm that the base has no plans to alter land use/land cover in its portion of the Spanaway Lake watershed.

Alberti et al. (2010) developed the UrbanSim/Land Cover Change Model to predict future land cover from 2005 to 2050 for the Central Puget Sound region (including Pierce County). The model considers interactions between land use, land cover change, environmental variables, and socioeconomic development. Pierce County will project future land use/land cover percentages for the planning area based on output from Alberti et al. (2010) and other relevant data as appropriate, as well as full application of Permit Minimum Technical Requirements and the Stormwater Management Manual for Western Washington.

The HSPF model developed in Task 3 will be used to simulate the hydrology and water quality associated with the future land use scenarios. Future hydrologic conditions will then be used to estimate the future BIBI scores based on the correlations described in DeGasperi et al. (2009). At a minimum, the line of best fit will be used to estimate future BIBI scores based on hydrologic metrics.

Future land use scenarios, local modeling efforts, and literature-based assumptions on changes in pollutant loading resulting from changes in land cover will be used estimate concentrations of dissolved copper, dissolved zinc, temperature, and fecal coliform.

2.9 Task 5: Evaluation of Stormwater Management Strategies [S5.C.5.c.ii(5)]

The simulated future water quality conditions will be compared to Washington State water quality standards for copper, zinc, fecal coliform, and temperature. If the simulation predicts that water quality standards will not be met, Pierce County will identify potential stormwater strategies to meet the standards. The County will coordinate with PALS, stakeholders, and other jurisdictions to identify viable stormwater management strategies that involve:

- Changes to development-related codes, rules, standards, and plans
- Potential future structural stormwater control projects consistent with NPDES permit obligations described in section S5.C.6.a

Information used in the strategy development and evaluation process may include local BMP effectiveness studies (e.g., studies recently completed by Phase I Permittees), literature values for pollutant removal efficiency of BMPs (such as from the International Stormwater BMP Database), and County data on infiltration rates throughout the watershed. The County will use its infiltration data and drainage compliant data to delineate area where infiltration measures may be infeasible due to low-permeability soils or shallow groundwater. Existing County and USGS data will inform assumptions developed for surface flow regulation and infiltration rates.

The County will work closely with PALS to develop the stormwater management strategy elements related to development codes, rules, standards, and plans. In addition, the County will coordinate with other jurisdictions in the watershed to address development in their Urban Growth Areas.

After developing the potential stormwater management strategies, the County will use the calibrated watershed model to evaluate stormwater management strategies. The County will use hydrologic metrics, BIBI correlations and water quality parameters developed in Task 4 to evaluate the relative effectiveness of the strategies with regard to meeting water quality standards.

2.10 Task 6: Implementation Plan and Schedule [S5.C.5.c.ii(6)]

Pierce County will develop planning-level cost estimates for the most effective strategies evaluated in Task 5. The planning-level cost estimates will consider potential costs to the County and private entities such as costs for planning, permitting, staffing, capital projects, operations, maintenance, and land costs. The County will develop cost estimates based on recent Pierce County Basin Plans, County Assessor Office property valuation, our extensive experience with specific capital facilities cost estimates, Puget Sound Partnership's "Preliminary Needs Assessment", and other relevant information.

Pierce County will develop a plan and schedule for implementing the most cost-effective stormwater strategies. The implementation plan and schedule will identify potential future actions to implement the identified stormwater management strategies, responsible parties, estimated costs, and potential funding mechanisms. The implementation plan and schedule will be submitted as part of the final watershed-scale stormwater plan.

2.11 Task 7: Public Process [S5.C.5.c.ii(7)]

The draft watershed-scale stormwater plan will be published with opportunities for stakeholders and the public to provide review and comments to be considered in development of the final watershed-scale stormwater plan.

2.12 Task 8: Evaluation of Other Strategies [S5.C.5.c.iii]

The watershed-scale stormwater planning process may include an evaluation of other strategies to preserve or improve factors that influence maintenance of the existing and designated uses of the Spanaway Creek.

2.13 Task 9: Final Watershed-Scale Stormwater Plan [S5.C.5.c.iv]

The final watershed-scale stormwater plan will be submitted to Ecology in accordance with the attached schedule. The schedule may be adjusted if Ecology extends the deadline for submittal of the final plan. The plan will summarize results of the monitoring, modeling, and planning process; describe results of the evaluation of strategies under Task 5; and include the implementation plan and schedule developed under Task 6.

3.0. SCHEDULE

The approximate task schedule for development of the Spanaway Lake Watershed-scale Stormwater Plan is summarized below. This schedule is based on current Permit language, which requires that the final watershed-scale stormwater plan must be submitted to Ecology no later than October 1, 2016.

Over the course of this project, the County may need to adjust interim target dates. Ecology’s June 5, 2014 e-mail from Chris Montague-Breakwell to Pierce County indicates that deviations from interim schedule milestones will essentially be pre-approved.

Pierce County understands that Ecology is considering extending the deadline for submitting the final watershed-scale stormwater plan to October 1, 2017. At its own option, the County may revise the schedule shown below if Ecology extends the deadline to October 1, 2017.

Approximate Task Schedule									
Tasks	2014		2015				2016		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
1: Assessment of Existing Conditions/QAPP	X	X	X	X	X				
2: Mapping	X								
3: Watershed Model Calibration				X	X	X	X		
4: Historical and Future-Conditions Modeling					X	X	X		
5: Evaluation of Stormwater Management Strategies	X	X	X	X	X	X	X	X	
6: Implementation Plan and Schedule						X	X	X	
7: Public Process	X	X	X	X	X	X	X	X	X
8: Evaluation of Other Strategies						X	X		
9: Final Watershed-Scale Stormwater Plan								X	X

From: Montague-Breakwell, Chris (ECY) <chris.montague-breakwell@ecy.wa.gov>
Sent: Thursday, June 05, 2014 4:00 PM
To: Dan Wrye; John Collins; Tom Kantz
Cc: Cornett, Deborah (ECY); Cox, Lisa (ECY); McCrea, Rachel (ECY)

Hi Dan and Pierce County Watershed Planning Team,

Recently, the Department of Ecology (Ecology) staff discussed concerns raised by permittees about enforcing elements of the Watershed Planning Scope of Work (SOW), and about the possibility that missing deadlines by a few days or other minor changes could be interpreted as a permit violation. Ecology understands these concerns, and proposes the following clarifications to our approach to SOW changes.

First, Ecology's final review and approval of a permittee's SOW will be flexible. Specifically, Ecology's approval letter will note that deviations from interim schedule milestones, minor alterations to the proposed monitoring regime, and other insignificant or non-substantive adjustments will be essentially pre-approved; they will not require authorization from Ecology to implement, nor will they be construed as permit violations.

Second, permittees can prevent violations of the permit caused by substantial deviations from the approved SOW by seeking prior approval from Ecology. In order to make a significant or substantive change to the SOW, a written request must be submitted to Ecology for approval. Significant changes to the SOW include but are not limited to:

- Significantly changing monitoring sites,
- Significantly changing sampling procedures or amount of field data collection,
- Switching modeling software,
- Changing the calibration procedure or basis for acceptance,
- Changing assumptions for estimating future pollutant concentrations or loads, and
- Altering interim schedule milestones that have the potential to affect the project end date.

If and when Ecology authorizes a request, it will constitute an update to the SOW, and the change may be implemented.

Finally, each permittee should write their SOW in such a way as to allow flexibility for minor or non-substantive alterations. While Ecology does expect sufficient specificity in the SOW to determine that all of the necessary elements of the planning process will be completed on time and be of sufficient quality, the SOW should not be written so that routine adjustments would require a notification to Ecology. For example, while Ecology expects to approve monitoring site locations in the SOW, monitoring locations should not be so precisely located that an adjustment of a few hundred feet which does not affect use of the data would require authorization from Ecology.

If you require further clarification about how the terms of the SOW will be enforced, please contact me.

Best Regards,

Chris

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