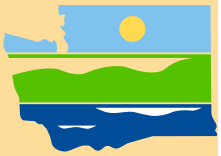

DEPARTMENT OF
ECOLOGY
State of Washington

Addendum 2 To
Quality Assurance Project Plan

South Prairie Creek Total Maximum Daily Load Phase II Evaluation

March 2010

Publication No. 10-10-014

Publication Information

Addendum 2

Addendum 2 is an addition to the original Quality Assurance Project Plan (Roberts, 2001). Addendum 2 is not a correction to the original plan.

Addendum 2 is available on the Department of Ecology's website at http://www.ecy.wa.gov/biblio/1010014.html

Original Publication

Roberts, M. 2003. South Prairie Creek Bacteria and Temperature Total Maximum Daily Load Study. Washington State Department of Ecology, Olympia, WA. Publication No. 03-03-021. http://www.ecy.wa.gov/biblio/0303021.html

The Quality Assurance Project Plan is available on the Department of Ecology's website at http://www.ecy.wa.gov/pubs/0103064.pdf

Addendum 1 to the Quality Assurance Project Plan is available on the Department of Ecology's website at www.ecy.wa.gov/biblio/0103064ADD1.html

Author and Contact Information

Betsy Dickes
Water Quality Program – Southwest Regional Office
Washington State Department of Ecology
Olympia, Washington 98504-7775

For more information contact:

Water Quality Program
PO Box 47775
Olympia, WA 98504-7775
Phone: 360-407-6300

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DEPARTMENT OF ECOLOGY

March 12, 2010

TO: Cindy James**,** South Puget Sound TMDL Coordinator
Water Cleanup/Technical Assistance Unit, Water Quality Program, Southwest Regional Office

THROUGH: Garin Schrieve, Southwest Region Manager, Water Quality Program
Kim McKee, Water Cleanup /Technical Assistance Unit Supervisor, Water Quality Program, Southwest Regional Office

FROM: Betsy Dickes, Water Quality Cleanup/Technical Assistance Unit, Water Quality Program, Southwest Regional Office

SUBJECT: **Addendum 2 to Quality Assurance Project Plan: South Prairie Creek Total Maximum Daily Load Phase II Evaluation**

Associated Publication #s: 01-03-064 & 01-03-064ADD1

The purpose of this Quality Assurance Project Plan (QAPP) Addendum 2 is to outline a plan for sampling that will assist in verifying that the bacteria source has been eliminated from a drain tile entering Inglin Creek. Sampling procedures will be similar to the original QAPP (Roberts, 2001) and Addendum1 (Kardouni, 2009). This addendum includes project background, goal and objectives, field and laboratory procedures, proposed sampling schedule, project organization, and literature references.

Background

South Prairie Creek has a watershed cleanup plan designed to reduce fecal coliform (FC) bacteria loading (Roberts, 2003). The clean up process began in 2006 (Seabrook, et al, 2006). In 2008 and 2009 Ecology's Environmental Assessment Program conducted follow-up monitoring on two of the tributaries of concern, Inglin Creek and Spiketon Ditch. Sampling identified a drain tile (site T4DT) entering Tributary 4, a tributary to Inglin Creek. The FC bacteria concentrations at the drain tile were exceptionally high during most of the sampling events. The estimated geometric mean, from 27 samples taken from the drain tile during the 2008/2009 study, was 6,788 cfu/100mL (Kardouni, unpublished data; the technical report is expected in April 2010). The results from this sampling prompted the Pierce County Health Department to investigate the area and conduct corrective actions, where necessary. A septic system failure was found and is assumed to be corrected as of January 2010 (James, 2010).

Goals and Objectives

The project goal for water quality monitoring is:

- Characterize FC bacteria concentrations exiting from drain tile T4DT to verify that the human source was eliminated.

Project objectives for water quality monitoring are:

- Collect water quality samples to be analyzed for FC bacteria.
- Assess compliance with freshwater State Primary Contact water quality standards for FC bacteria. The standard is that the geometric mean concentration cannot exceed 100 cfu/100mL, with not more than 10% of the samples exceeding 200 cfu/100mL (Ecology 2006).
- Document FC bacteria concentrations exiting from drain tile T4DT.

Field Procedures

Ecology will collect a sample and replicate from the drain tile T4DT located at Tributary 4 on Inglin Creek (Figure 1). The sample location is at latitude 47.13459 and longitude -122.11034 near South Prairie Carbon River Rd. (Kardouni, unpublished). The samples will be collected weekly for ten weeks (Table 1). Table 2 describes the project deadlines.

Procedures for sampling FC bacteria will follow the most up-to-date protocols of Mathieu (2006). These protocols are similar to those of the original QAPP for the South Prairie Creek Total Maximum Daily Load study (Roberts, 2001).

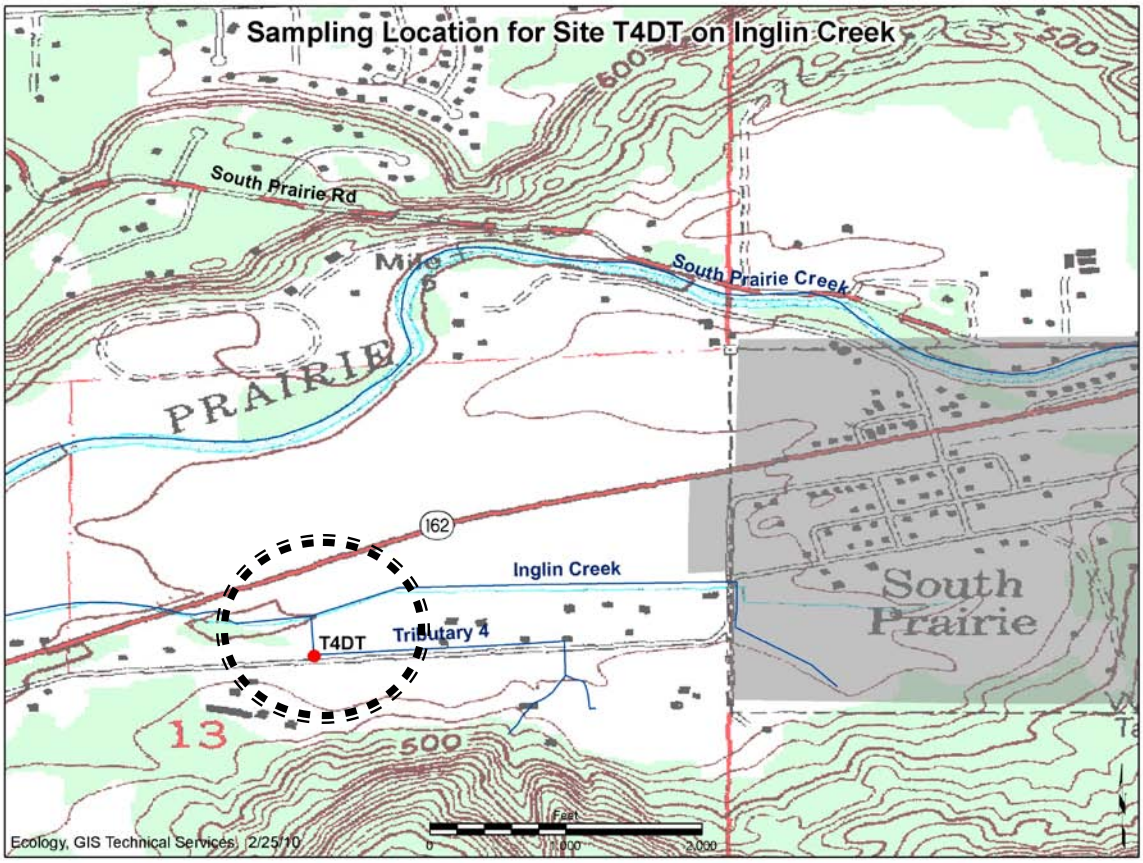

Figure 1. Detailed view of the sample location, T4DT, on a tributary to Inglin Creek. *The area of the site is circled.*

Table 1. Proposed Sampling Schedule for T4DT.

Year	Month	Day
2010	March	9, 16, 23, 30
	April	6, 13, 20, 27
	May	4, 11

Table 2. Proposed Project Schedule

Task	Date of Completion
Completion of Final Approved QA Project Plan	March 2010
Sampling Period	March - May 2010
EIM data entry and QA	July 2010
Draft Study Report	August 2010
Final Report	November 2010

Quality control

Quality control will be assessed through the collection of replicate samples. One hundred percent replication will be performed by collecting a field replicate for each sample. Field precision will be expected to be within 28% relative standard deviation (RSD) (Roberts, 2001). RSD is the standard deviation of the replicates divided by the average of the replicates, expressed as a percentage. The Manchester Environmental Laboratory routinely takes duplicate samples to determine laboratory precision. The Lab accepts a 40% relative percent difference (RPD). The RPD is the difference between two sample results divided by their mean and expressed as a percentage.

Laboratory Procedures

The laboratory will follow protocols described in the Manchester Environmental Laboratory (MEL) User's Manual (MEL, 2008). The protocols are similar to those followed in the original QAPP.

- Method: membrane filter (MF), Standard Methods 9222D
- Detection Limit: 1 cfu/100 mL

The laboratory budget is estimated at $460. This includes two samples for 10 events at $23 per sample.

Project Organization

The following people are involved in this project:

Table 3. Organization of project staff and responsibilities.

Staff	Title	Responsibilities
Cindy James Water Quality Program Southwest Regional Office Phone: 360-407-6556	Client	Clarifies scope of the project. Provides internal review of the QAPP and approves the final QAPP. Field assistance. Reviews and approves draft and final report.
Betsy Dickes Water Quality Program Southwest Regional Office Phone: 360-407-6296	Project Manager	Writes the QAPP. Oversees field sampling and transportation of samples to the laboratory. Conducts QA review of data, analyzes and interprets data, and enters data into EIM. Writes the draft report and final report.
Kim McKee Water Quality Program Southwest Regional Office Phone: 360-407-6407	Unit Supervisor	Provides internal review of the QAPP, approves the budget, tracks progress, and approves the final QAPP. Reviews and approves draft and final report.
Garin Schrieve Water Quality Program Southwest Regional Office Phone: 360-407-6271	Section Manager	Reviews the project scope and budget, reviews the draft QAPP, and approves the final QAPP. Reviews and approves draft and final report.
Stuart Magoon Manchester Environmental Laboratory Phone: 360-871-8801	Director	Provides laboratory staff and resources.
Mike Herold Water Quality Program Phone: (360) 407- 6434	Quality Assurance Officer	Reviews the draft QAPP and approves the final QAPP.
Shawna Beers Water Quality Program Southwest Region Phone: 360-407-6270	Secretary Lead	Formats draft QAPP and report.
Kelsey Highfill Water Quality Program Phone: 360-407-6722	Communication Consultant	Formats final QAPP and report. Arranges to get documents onto the web.
EIM – Environmental Information Management system. QAPP – Quality Assurance Project Plan.		

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