A Department of Ecology Report

Data Summary Report: Yakima Area Creeks Fecal Coliform Total Maximum Daily Load Study

Abstract

This report summarizes water quality and streamflow data collected by the Department of Ecology from December 2004 through March 2006 for the *Yakima Area Creeks Fecal Coliform Total Maximum Daily Load (TMDL) Study*. The final TMDL report will be published later this year.

The study was conducted on Cowiche Creek, Moxee Drain, and Wide Hollow Creek, three tributaries to the Yakima River. These tributaries are located within or near the city of Yakima.

Field data collected include pH, conductivity, dissolved oxygen, temperature, and streamflow. Laboratory data include fecal coliform, *E. coli*, percent KES (Klebsiella, Enterobacter, and Serratia), chloride, total suspended solids, and turbidity. In addition, this data summary includes an analysis of quality assurance/quality control data.

These data will be used by Ecology to (1) develop reach-specific fecal coliform loading capacities for each creek, and (2) estimate fecal count and load reductions necessary to meet these capacities.

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Introduction

Section 303(d) of the federal Clean Water Act requires Washington State to periodically prepare a list of all surface waters in the state that fall short of Washington State water quality standards and are not expected to improve within the next two years. Cowiche Creek, Moxee Drain, and Wide Hollow Creek are on the 1998 303(d) list for fecal coliform (FC) and several other pollutants.

Total Maximum Daily Load (TMDL) evaluations identify the maximum amount of each pollutant allowed into these waterbodies so as not to impair beneficial uses of the water. The TMDL is then used to determine (1) wasteload allocations for point (discrete) sources with wastewater and stormwater permits, and (2) load allocations for various nonpoint (diffuse) sources.

In January 2005 a Quality Assurance (QA) Project Plan was completed. This plan described the TMDL study for FC bacteria in Cowiche Creek, Moxee Drain, and Wide Hollow Creek, and their tributaries. The study will set water quality targets to meet FC bacteria standards, identify key reaches for source reduction, and allocate pollutant loads to point and nonpoint sources.

The TMDL study was conducted by the Washington State Department of Ecology (Ecology) Environmental Assessment Program in cooperation with Ecology's Water Quality Program at the Central Regional Office. This report summarizes the data collected from December 2004 through March 2006.

303(d) Listings and Water Quality Criteria

Ecology's Water Quality Program has determined that a fecal coliform bacteria TMDL study is required for three streams in the Yakima area: Cowiche Creek, Moxee Drain, and Wide Hollow Creek (Figure 1). Table 1 presents the 303(d) FC bacteria listings addressed in this study. The waterbodies also have 303(d) listings for temperature, fish habitat, instream flow, pesticides, and dissolved oxygen. Only FC listings were addressed by this study.

Table 1. Reaches of Cowiche Creek, Moxee Drain, and Wide Hollow Creek with Clean Water Act Section 303(d) listings that do not meet fecal coliform standards and will be addressed in the present study.

Waterbody	Old WBID	New WBID	Township, Range, Section	303(d) List
Cowiche Creek	WA-38-1015	AR69RI	13N 17E 11	1998, 2002/4*
Cowiche Creek, N. Fork	WA-38-1016	TY98TL	13N 17E 3; 14N 17E 8	1996, 1998, 2002/4*
Cowiche Creek, S. Fork	WA-38-1017	VD04IL	13N 17E 3; 14N 16E 35	1996, 1998, 2002/4*
Moxee Drain	WA-37-1048	YE21MH	12N 19E 8	1996, 1998
Wide Hollow Creek	WA-37-1047	DY38VO	12N 19E 6; 12N 19E 7 12N 19E 8; 13N 18E 27; 13N 18E 35	1996, 1998, 2002/4*

* Proposed listing for 2002/2004. WBID – Waterbody identification number.

Project Goals and Objectives

The goal of this project is to establish a fecal coliform bacteria TMDL for Cowiche Creek, Moxee Drain, and Wide Hollow Creek. The TMDL evaluation will be used to develop a water cleanup plan that directs specific activities to reduce or remove pollutant sources.

The project has five data and analysis objectives:

1. Identify FC bacteria loads by stream reach and from specific sources along Cowiche and Wide Hollow Creeks and Moxee Drain under various seasonal or hydrological conditions.
2. Determine the cumulative FC bacteria loads and calculate loading capacities along key points in Cowiche and Wide Hollow Creeks and Moxee Drain.
3. Estimate the FC count and load reductions necessary to meet the loading capacities.
4. Determine the percent Escherichia coli *(E. coli)* and Klebsiella bacteria in some FC samples for better source identification and treatment.
5. Assign FC wasteload allocations to NPDES[1]-permitted wastewater and stormwater sources, and estimate background and nonpoint FC load allocations.

Study Area

The Yakima urban area is located at the intersection of three Water Resource Inventory Areas (WRIAs) in Yakima County (Figure 1). The city of Yakima forms the urban center, with smaller nearby urban communities at Selah, Union Gap, Naches, Tieton, and Moxee City.

Several streams, canals, and drains transect the urban area, carrying water to or from the Naches and Yakima Rivers and from creeks emanating from the surrounding foothills. Many streams and canals were formerly used for irrigation and farmland drainage when the land use was dominated by agriculture. Now they provide water for agriculture but also for a broader range of sometimes conflicting uses such as stormwater conveyance, fish habitat, and recreational opportunities.

The water quality characteristics of the streams, canals, and drains are influenced by the various uses of the water, along with wastewater additions and runoff from adjacent land. The wastewater and runoff loads can add excessive FC bacteria, nutrients, oxygen-demanding substances, pesticides, and suspended sediment. Some reaches of these waterbodies have been monitored and have contaminant concentrations that do not meet state or federal water quality standards. These reaches have been included on Washington State's 303(d) list.

[1] National Pollutant Discharge Elimination System

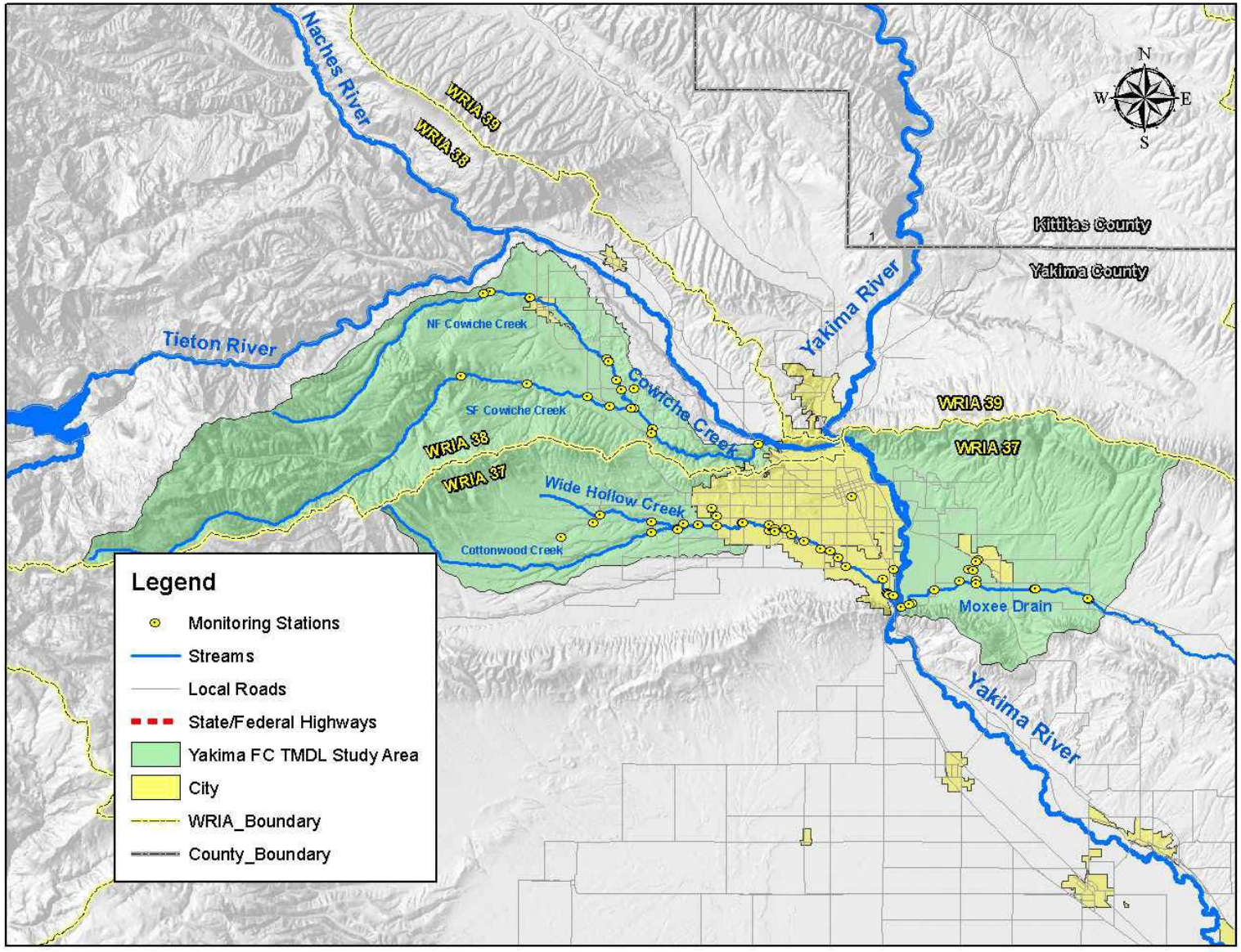

Figure 1. Monitoring stations for the Yakima Area Creeks Fecal Coliform TMDL.

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Moxee Drain and Wide Hollow Creek are in the Lower Yakima River Basin (WRIA 37), and Cowiche Creek is in the Naches River Basin (WRIA 38). The study area lies within parts of the Eastern Cascade Slopes and Foothills Ecoregion and the Columbia Basin Ecoregion. The Eastern Cascade Slope area of the Cowiche and Upper Wide Hollow watersheds gets more rain and snow than the Yakima Valley and Moxee watershed in the Columbia Basin Ecoregion. Temperatures are cooler in the upper reaches of Cowiche and Wide Hollow Creeks than the lower reaches. Winter snow is common and increases with elevation.

All three have seasonal hydrologic characteristics and stream networks that are characteristic of agricultural irrigation or drainage operations (e.g., high summer irrigation flows and low winter natural base flows).

Each of the three watersheds drains less than 150 square miles to the Yakima River but deliver more water than the watersheds generate naturally. During the irrigation season, the three creeks carry interbasin returns transferred through the irrigation network, mainly from the Yakima, Naches, and Tieton Rivers. These return flows can be highly variable because they depend on water availability, the water needs of specific crops, and operational management of the irrigation network.

Water Quality Standards and Beneficial Uses

The Washington State Water Quality Standards, set forth in Chapter 173-201A of the Washington Administrative Code (WAC), include designated beneficial uses, waterbody classifications, and numeric and narrative water quality criteria for surface waters of the state.

A revised water quality standards rule (Chapter 173-201A WAC) was adopted on July 1, 2003. The freshwater bacteria criteria portion of this version has recently been approved by the U.S. Environmental Protection Agency (EPA). Cowiche Creek, Moxee Drain, and Wide Hollow Creek (except for parts of the North Fork Cowiche Creek which are classified as Class AA) are classified as Class A (excellent) according to the 1997 rule.

Under the current 2003 rule, the aforementioned creeks are considered *Primary Contact Recreation* water. According to the 2003 rule, freshwater waterbodies are required to meet water quality standards based on the beneficial uses of the waterbody. For FC bacteria, former Class A waters become *Primary Contact Recreation*. Examples of *Primary Contact* uses are swimming, snorkeling, and activities where the water and skin or body openings (e.g., eyes, ears, mouth, nose, and urogenital) come into direct and extended contact.

Numeric criteria for specific water quality parameters are intended to protect designated uses. Under the revised 2003 water quality standards, while the waterbody classification system has changed, the FC bacteria numeric target for each of the waterbodies included in this study has not. Freshwater standards for bacteria are listed below.

Fecal Coliform Bacteria

- For Class A Freshwater (1997 rule) and freshwater Primary Contact Recreation (2003 rule): *"…fecal coliform organism levels shall both not exceed a geometric mean[2] value of 100 colonies/100 mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL."*
- For Class AA Waters (1997 rule) and freshwater Extraordinary Contact Recreation (2003 rule): *"…fecal coliform organism levels shall both not exceed a geometric mean value of 50 colonies/100 mL and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 100 colonies/100 mL."*

The FC criteria have two statistical components, a geometric mean and an upper limit value that 10 percent of the samples cannot exceed. Fecal coliform samples collected randomly, or under a stratified sampling design from most sites, follow a lognormal distribution. In Washington State FC TMDL studies, the upper limit statistic (e.g., not more than 10% of the samples shall exceed) has been interpreted as a 90th percentile value of the lognormalized values (Cusimano, 1997; Joy, 2000).

The 90th percentile statistic uses the variability of FC counts and the number of samples collected at a site in the upper limit criterion estimate. TMDL targets based on the calculated 90th percentile criterion are usually more stringent; rarely are they lower than the 10% upper limit. In this way, the 90th percentile values provide a margin of safety in protecting beneficial uses. In addition, the statistical treatment of the data allows us to use the statistical rollback method (Ott, 1995) approach to setting FC target counts, since loading limits to comply with FC criteria are not useful.

Reaches of the three streams – Cowiche Creek, Moxee Drain, Wide Hollow Creek – in the study area are available to the public for primary and secondary recreation. None of the three have recorded public drinking water system intakes (Yakima Health District, 2004). Some swimming occurs in these streams, most likely in July, August, and early September. Game fishing is allowed in Cowiche Creek and Wide Hollow Creek from June 1 to October 31 (http://wdfw.wa.gov/fish/regs/2004/2004sportregs.pdf).

Study Design and Methods

A total of 38 fixed network monitoring sites, 20 synoptic irrigation sites, and 18 synoptic storm event sites were distributed throughout Cowiche Creek, Moxee Drain, Wide Hollow Creek, and their drainages. Site descriptions and coordinates are located in Appendix A.

- The fixed network sites were sampled once a month from December 2004 through March 2005 and every other month from April through December 2005 (Table 2). Due to drought conditions in the winter of 2004/2005, the project was extended and two additional fixed network runs were conducted in January and March of 2006.

[2] The geometric mean is calculated as the nth root of the product of n numbers.

- Four irrigation and Drainage Improvement District (DID) synoptic surveys were conducted in April, July, August, and October of 2005. Irrigation and DID synoptic survey sites are denoted with an 'IS' in the Station ID (for example, 37-IS-0).
- Storm events were captured on May 9-10, 2005 and March 5, 2006. Additionally, a smaller number of storm samples were collected at key sites on February 28, 2005. Synoptic storm sites are denoted with a 'SS' in the Station ID.

Table 2. Frequency and types of surveys conducted.

	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05
Fixed Network	1	1	1	1	2	2	2	2
Synoptic- Irrigation					1			1
Synoptic- Storm						1		
	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06
Fixed Network	2	2	2	2*	2	1		1***
Synoptic- Irrigation	1		1					
Synoptic- Storm							1**	1

* Samples not collected at Cowiche Creek sites due to field staff injury.
** Samples collected at a limited number of key stations.
*** Samples not collected at Moxee Drain sites due to lack of increased flow conditions.

Methods for collecting laboratory parameters, field parameters, and flow measurements are described in detail in Ecology's field measurements and sampling protocols manual (Ecology, 1993), and in the *Quality Assurance Project Plan: Yakima Area Creeks Fecal Coliform TMDL Study* (Joy, 2005). Table 3 summarizes field and laboratory methods used during the course of the study.

Table 3. Methods used for field measurements and laboratory analyses.

Analysis	Method	Range	Reporting Limits
Field Measurements			
Velocity	Marsh McBirney meter	0.05 – 5.00 feet/second	0.01 ft/s
Water Temperature	Hydrolab MiniSonde®	-5° – 30° C	0.01° C
Specific Conductivity	Hydrolab MiniSonde®	1 – 100,000 umhos/cm	0.1 umhos/cm
Dissolved Oxygen	Hydrolab MiniSonde®	1-20 mg/L	0.01 mg/L
	Winkler Titration	1-20 mg/L	0.1 mg/L
Laboratory Analyses			
Fecal Coliform – MF	SM 9222D	1 cfu/100 mL – depends on dilution	1 cfu/100 mL
Escherichia coli	EPA 1103.1 (mTEC2)	1 cfu/100 mL – depends on dilution	1 cfu/100 mL
% KES	Manchester SOP	0% – 100%	0%
Total Suspended Solids	SM 2540D	1 – 1,000 mg/L	1 mg/L
Turbidity	SM 2130	1 – 800 NTU	1 NTU
Chloride	SM 4110C	0.1 – 300 mg/L	0.1 mg/L

MF – membrane filter; SM – standard method; SOP – standard operating procedure

Data Quality

All Hydrolab MiniSondes® were pre- and post-calibrated in accordance with the manufacturer's instructions. Pre-survey, mid-survey, and post-checks with pH and conductivity standards were used to evaluate field measurement precision and bias. A minimum of 10% of all dissolved oxygen (DO) measurements were checked by a Winkler titration. Duplicate Winkler samples were collected periodically to verify the precision of the Winkler measurements.

Replicate FC, *E. coli*, percent KES, turbidity, chloride, and total suspended solids (TSS) samples were collected in the field in a side-by-side manner. The project goal was to replicate 20% of the samples collected during an individual survey for FC, *E. coli*, percent KES, and replicate 10% of samples for turbidity, chloride, and TSS. The percentage of replicates taken per parameter can be seen in Table 4. All parameters met the QA Project Plan replicate frequency goals.

The relative percent difference (RPD) was calculated for each replicate pair. An average RPD was calculated for all replicates for each parameter and then compared to the precision measurement quality objective (MQO) outlined in the QA Project Plan. Since RPD cannot be calculated using percent values, percent KES replicate values were calculated by taking the arcsine of each value and then calculating the RPD. Three replicate pairs were excluded from calculating RPD for percent KES. Two of these pairs had values of 0% and 2%, and one pair had values of 0% and 11%. The arcsine RPD statistic cannot accurately calculate variability in replicate pairs where one value is 0 and the other value is not 0. Excluding DO measurements, all parameters fell within their respective precision MQOs for field replicates (Table 4).

Table 4. Measurement quality objectives (MQO) and results for field replicates.
Data quality was found to be adequate to use for the purpose of this study.

Parameter	Average RPD%	Precision MQO (RPD%)	Number of replicates taken	Total # of samples (less reps)	% of total samples replicated	% of replicated samples required by QA Project Plan
Chloride	4.27	5	83	752	11%	10%
DO (Winkler vs. Hydrolab)	4.13	2.5	88 (Winkler)	514 (Hydrolab)	17%	10%
DO (Winkler vs. Winkler)	0.76	2.5	4	88	5%	NA
E. coli	11.92	25[1]	42	165	25%	20%
FCMF	11.66	25[1]	173	792	22%	20%
%KES[2]	13.84[3]	25	33	103	32%	20%
TSS	17.69	20	81	736	11%	10%
Turbidity	7.78	20	83	736	11%	10%

[1] Logtransformed data
[2] Excludes results where one value is 0% and one value is higher; the statistical method of evaluation is not suitable for this type of results.
[3] The arcsine of each Percent KES value was used to calculate RPD.
FCMF – Fecal coliform - membrane filter

The average DO was 4.13% RPD compared to the MQO of 2.5%. While this MQO was not met, the average RPD of 469 replicate pairs from six other recent TMDLs was 5.37% (Mathieu, 2006), suggesting that variability between the Hydrolab and Winkler DO measurements was within the normal range for Ecology field operations.

Manchester Environmental Laboratory (MEL) performed routine duplicate sample analyses in the laboratory to determine the presence of bias in analytical methods. MEL followed quality control procedures outlined in the MEL Users Manual (MEL, 2005). Table 5 summarizes the percentage of samples duplicated and the average RPD for laboratory samples.

Table 5. Data quality results for laboratory duplicates.
Data quality was found to be adequate to use for the purpose of this study.

Parameter	Average RPD%	Number of duplicates taken	Total # of samples (less duplicates)	% of total samples duplicated
Chloride	1.09	48	752	6%
E. coli	30.48	50	165	30%
FCMF	28.06	103	792	13%
%KES[1]	19.04[2]	40	103	39%
TSS	6.98	85	736	12%
Turbidity	2.25	65	736	9%

[1] Excludes results where one value is 0% and one value is higher, the statistical method of evaluation is not suitable for this type of results.
[2] The arcsine of each Percent KES value was used to calculate RPD.
FCMF - Fecal coliform - membrane filter

Results

Applicable data collected during the *Yakima Area Creeks Fecal Coliform TMDL Study* are arranged by site and date and presented in the following appendices:

- Appendix A contains site descriptions and coordinates.
- Appendix B consists of results for all parameters analyzed by MEL.
- Appendix C displays field meter and Winkler dissolved oxygen measurements.
- Appendix D includes Ecology's instantaneous and continuous flow results. Limited data from U.S. Bureau of Reclamation are also included.

MEL performed all laboratory analyses within specified holding times using appropriate quality assurance measures unless noted with qualifier codes (Table 6). Qualifiers place specific conditions on the laboratory data. Data reported with qualifiers should be used with caution, and data variability must be taken into consideration when interpreting results and applying data to other analyses. All other data reported by MEL may be used without qualification.

Table 6. Data qualifier codes.

Qualifier	Definition
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. This qualifier often denotes samples analyzed beyond holding times (mostly bacteria samples).
U	The analyte was not detected at or above the reported sample quantitation limit.
UJ	The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
E	Reported result is an estimate because it exceeds the calibration range.
G	Value is likely greater than result reported; result is an estimated minimum value.
Y	Value is replicate taken in a side-by-side method in the field.

All data in Appendices A, B, C, and D are available from Ecology's Environmental Information Management (EIM) online database located at: www.ecy.wa.gov/eim/.

Results may be accessed by searching EIM using the User Study ID, *YUTTMDL*, the Study Name, *Yakima Urban Tributaries Fecal Coliform TMDL*, or any of the locations listed in Appendix A.

Limited provisional flow data for Ecology's continuous streamflow stations is available online at: www.ecy.wa.gov/programs/eap/flow/shu_main.html. These data have not yet been reviewed or checked for accuracy.

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Appendices

A. Site Descriptions

B. Laboratory Results

C. Field Measurements

D. Flow monitoring

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Appendix A. Site Descriptions

Table A-1. Site identification information for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	River or Tributary Mile	Station Description	NAD83 Latitude	NAD83 Longitude
38-FC-1	0.7	Cowiche Creek at Powerhouse Road	46.6272 ˚N	120.5812 ˚W
38-FC-1.5	6.3	Cowiche Creek at Zimmerman Road Bridge	46.6361 ˚N	120.6667 ˚W
38-FC-2	0.1	SF Cowiche Creek at Pioneer Road/confluence	46.6471 ˚N	120.6842 ˚W
38-FC-2.5	4.8	SF Cowiche Creek at WDFW bridge	46.6606 ˚N	120.7689 ˚W
38-FC-3	0.0	NF Cowiche Creek at Mahoney Road	46.6475 ˚N	120.6822 ˚W
38-FC-3.5	1.1	NF Cowiche Creek at Thompson Road	46.6577 ˚N	120.6921 ˚W
38-FC-4	7.7	SF Cowiche Creek at Cowiche Mill Road	46.6649 ˚N	120.8229 ˚W
38-FC-6	6.7	NF Cowiche Creek at Rosenkranz Road Bridge	46.7093 ˚N	120.7672 ˚W
38-FC-7	8.7	NF Cowiche Creek at French Rd above reservoir	46.7110 ˚N	120.8047 ˚W
38-FC-WWE	NA	Cowiche WWTP effluent from UV chamber	46.6749 ˚N	120.7042 ˚W
38-FC-WWR	NA	WWTP effluent after wetland treatment	46.6735 ˚N	120.7028 ˚W
37-FM-1	0.5	Moxee Drain near mouth off Thorp Road	46.5378 ˚N	120.4587 ˚W
37-FM-3	2.1	Moxee Drain at Birchfield Road	46.5458 ˚N	120.4383 ˚W
37-FM-3.5	3.3	Moxee Drain just below DID #11	46.5505 ˚N	120.4176 ˚W
37-FM-3.6	NA	DID #11 at mouth	46.5507 ˚N	120.4175 ˚W
37-FM-4	NA	Hubbard canal at Bell Road	46.5570 ˚N	120.4104 ˚W
37-FM-5	NA	DID #11 at Bell Road	46.5568 ˚N	120.4064 ˚W
37-FM-5.5	NA	DID #11 at Beaudry Road	46.5617 ˚N	120.4040 ˚W
37-FM-7	NA	Irrigation ditch to Moxee Drain at Beaudry	46.5510 ˚N	120.4042 ˚W
37-FM-8	4.0	Moxee Drain at Beaudry near Beauchene Rd	46.5489 ˚N	120.4041 ˚W
37-FM-9	6.3	Moxee Drain at Walters Road	46.5459 ˚N	120.3561 ˚W
37-FM-9.5	NA	Outfall to Moxee Drain at Walters Road	46.5460 ˚N	120.3562 ˚W
37-FM-10	8.5	Moxee Drain at Beane Road	46.5408 ˚N	120.3134 ˚W
37-FM-WWE	NA	Moxee WWTP effluent at UV chamber	46.5623 ˚N	120.4024 ˚W
37-FM-WWO	NA	Moxee WWTP outfall to DID #11	46.5567 ˚N	120.4064 ˚W
37-FW-0	0.6	Wide Hollow Creek at Union Gap Public Works	46.5429 ˚N	120.4752 ˚W
37-FW-1	0.7	Wide Hollow Creek at Main St. in Union Gap	46.5436 ˚N	120.4759 ˚W
37-FW-2	0.1	Spring Creek at Union Gap Public Works	46.5427 ˚N	120.4715 ˚W
37-FW-4	4.4	Wide Hollow Creek at 16th Ave	46.5685 ˚N	120.5305 ˚W
37-FW-5	5.3	Wide Hollow Creek at Conoco near airport	46.5731 ˚N	120.5442 ˚W
37-FW-6	6.7	Wide Hollow Creek at 44th Ave/Randall Park	46.5782 ˚N	120.5676 ˚W
37-FW-8	9.6	Wide Hollow Creek at park off 80th Ave	46.5813 ˚N	120.6146 ˚W
37-FW-12	11.3	Wide Hollow Creek at Dazet Road	46.5798 ˚N	120.6464 ˚W
37-FW-13	0.2	Cottonwood Creek at Dazet Road	46.5792 ˚N	120.6464 ˚W
37-FW-14	1.3	Cottonwood Creek at Moore Road	46.5778 ˚N	120.6675 ˚W
37-FW-15	12.6	Wide Hollow Creek at Wide Hollow Rd./Douglas	46.5838 ˚N	120.6674 ˚W
37-FW-16	14.8	Wide Hollow Creek at Stone Road nr school	46.5873 ˚N	120.7095 ˚W
37-FW-17	15.3	Trib of Wide Hollow at Stone Rd nr Cook Rd	46.5832 ˚N	120.7149 ˚W
37-FW-18	16.7	Trib of Wide Hollow at Stone nr Burnham Rd	46.5749 ˚N	120.7411 ˚W
37-IS-0	NA	Irrigation return to Moxee Drain near FM-1	46.5380 ˚N	120.4561 ˚W
37-IS-1	NA	DID #11 at Bell Road x-ing; same as FM-5	46.5568 ˚N	120.4064 ˚W
37-IS-1.5	NA	Irrigation outfall to DID #11 at FM-5	46.5568 ˚N	120.4064 ˚W
37-IS-2	NA	Hubbard canal at Bell Road	46.5570 ˚N	120.4104 ˚W

Table A-1. Site identification information for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	River or Tributary Mile	Station Description	NAD83 Latitude	NAD83 Longitude
37-IS-3	NA	Irrigation ditch to Moxee Drain at Beaudry	46.5510 ˚N	120.4042 ˚W
37-IS-4	NA	Irrigation outfall to Moxee Drain at Walters	46.5460 ˚N	120.3567 ˚W
37-IS-4.5	NA	Irrigation outfall to Moxee Drain at FM-8	46.5488 ˚N	120.4042 ˚W
37-IS-4.6	NA	N. Irrigation outfall to Moxee Drain at FM-8	46.5489 ˚N	120.4041 ˚W
37-IS-5	NA	Outfall from Roza Canal to Moxee Drain	46.5404 ˚N	120.3127 ˚W
38-IS-7	NA	Loop return to NF Cowiche off Thompson Rd	46.6584 ˚N	120.6821 ˚W
38-IS-7.5	1.0	SF Cowiche Creek at Summitview Road	46.6540 ˚N	120.7203 ˚W
38-IS-7.6	2.2	SF Cowiche Creek at Pioneer Way	46.6484 ˚N	120.7015 ˚W
38-IS-8	NA	Side branch return to Cowiche at Weikel Rd	46.6334 ˚N	120.6675 ˚W
38-IS-8.5	NA	Irrigation return to SF Cowiche Creek at FC-2	46.6471 ˚N	120.6843 ˚W
37-IS-10	NA	Drain at 4th Ave & Pine in Union Gap	46.5519 ˚N	120.4802 ˚W
37-IS-12	NA	DID #24 outfall L1 at 3rd Ave	46.5588 ˚N	120.5096 ˚W
37-IS-13	NA	DID #24 outfall L2; nr Pioneer & Cornell	46.5639 ˚N	120.5159 ˚W
37-IS-15	NA	DID #4 outfall at Gardner's Nursery	46.5677 ˚N	120.5228 ˚W
37-IS-16	NA	Congdon Canal east of 101st Ave	46.5824 ˚N	120.6417 ˚W
37-IS-17	NA	DID #40 outfall at 38th and Logan	46.5799 ˚N	120.5592 ˚W
37-IS-17.5	NA	Randall Park Pond outlet on 44th Ave	46.5800 ˚N	120.5673 ˚W
37-IS-18	NA	DID #48 near Viola & 48th Ave	46.5821 ˚N	120.5726 ˚W
37-IS-19	NA	Large blue culvert under 64th Ave bridge	46.5833 ˚N	120.5939 ˚W
37-SS-1	0.6	Wide Hollow Creek at Union Gap Public Works	46.5429 ˚N	120.4752 ˚W
37-SS-2	NA	City storm drain at east end of Ahtanum Road	46.5570 ˚N	120.4714 ˚W
37-SS-4	NA	Storm drain for Del Monte Foods 125	46.5982 ˚N	120.5054 ˚W
37-SS-5	0.7	Wide Hollow Creek at Main St. in Union Gap	46.5436 ˚N	120.4759 ˚W
37-SS-6	NA	City stormwater outfall at 3rd Ave	46.5589 ˚N	120.5097 ˚W
37-SS-7	4.4	Wide Hollow Creek at 16th Ave	46.5685 ˚N	120.5305 ˚W
37-SS-8	NA	City storm drain at end of 34th Ave	46.5769 ˚N	120.5542 ˚W
37-SS-9	NA	Randall Park Pond outlet on 44th Ave	46.5800 ˚N	120.5673 ˚W
37-SS-11	7.0	Wide Hollow Creek at 48th Ave/Randall Park	46.5791 ˚N	120.5723 ˚W
37-SS-12	8.3	Wide Hollow Creek at 64th Ave	46.5834 ˚N	120.5940 ˚W
37-SS-13	0.4	Shaw Creek W. of 80th Ave & N. of Nob Hill	46.5868 ˚N	120.6150 ˚W
37-SS-14	9.6	Wide Hollow Creek in west Valley Park at 80th	46.5813 ˚N	120.6146 ˚W
37-SS-15	10.4	Wide Hollow Cr. at 91st Ave & Wide Hollow Rd	46.5822 ˚N	120.6295 ˚W
37-SS-16	11.3	Wide Hollow Creek at Dazet Road	46.5798 ˚N	120.6464 ˚W
37-SS-17	12.6	Wide Hollow Creek at Wide Hollow Rd./Douglas	46.5838 ˚N	120.6674 ˚W
37-SS-18	0.2	Cottonwood Creek at Dazet Road	46.5792 ˚N	120.6464 ˚W
37-SS-38	NA	DID outfall #38 at 64th Ave	46.5833 ˚N	120.5939 ˚W
37-SS-48	NA	DID outfall #48 at 64th Ave	46.5833 ˚N	120.5939 ˚W
37-YAK-1	NA	Yakima River at Thorp Road boat launch	46.5358 ˚N	120.4650 ˚W

NF – North Fork
SF – South Fork
WDFW – Washington Department of Fish and Wildlife
WWTP – Wastewater Treatment Plant
DID – Drainage Improvement District

Appendix B. Laboratory Results

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
38-FC-1	12/6/04	9:30		21					
38-FC-1	12/6/04	9:30		19					
38-FC-1	12/14/04	13:46		5	11	0	6.6	2	1.6
38-FC-1	12/14/04	13:46	Y	2	6	0	6.65	3	1.9
38-FC-1	1/10/05	15:20		6	8	14	6.46	6	2.8
38-FC-1	2/7/05	14:00		2	1 U		4.77	3	2.4
38-FC-1	3/7/05	14:15		1 U			5.73	5	2
38-FC-1	4/5/05	17:45		2			4.9	3	1.8
38-FC-1	4/19/05	17:10		5			5.09	6	2.6
38-FC-1	5/3/05	16:20		9	5		3.32	18	6.6
38-FC-1	5/24/05	16:40		31			2.66	24	11
38-FC-1	6/14/05	16:55		92			7.35	28	8.3
38-FC-1	6/28/05	16:15		100			6.29	3	2.4
38-FC-1	7/12/05	17:25		330			6.5	3	2.9
38-FC-1	7/26/05	17:00		130	140		7.28	3	1.7
38-FC-1	8/9/05	16:45		380	220		8.58	3	1.7
38-FC-1	8/9/05	16:45	Y	420					
38-FC-1	8/23/05	16:50		300	210	7	8.53	3	1.6
38-FC-1	9/13/05	18:05		180	54	20	10	4	2.6
38-FC-1	9/13/05	18:05	Y	200	84	4	10.2	4	2.4
38-FC-1	9/14/05	10:10		120					
38-FC-1	9/14/05	10:10		92					
38-FC-1	9/27/05	17:00		51			10.6	4	1.9
38-FC-1	10/4/05	16:55		92			6.29	7	3.4
38-FC-1	10/18/05	16:10		36			9.81	2	1
38-FC-1	11/30/05	12:38		55			8.99	4	1.8
38-FC-1	12/7/05	13:25		6			8.73	2	1.4
38-FC-1	12/21/05	13:05		19	12		8.86	1	1
38-FC-1	12/21/05	13:05	Y	19	15				
38-FC-1	1/11/06	15:21		120			2.75	114	49
38-FC-1	3/7/06	14:40		3 U			3.85	5	3.5
38-FC-1	3/7/06	14:40	Y	1 U					
38-FC-1.5	12/14/04	13:13		33	57		5.66	2	1.8
38-FC-1.5	1/10/05	14:40		20			5.45	2	2
38-FC-1.5	2/7/05	13:25		37			4.02	2	2.9
38-FC-1.5	2/7/05	13:25	Y	39					
38-FC-1.5	3/7/05	13:40		70	110	0	4.39	8	5.6
38-FC-1.5	4/5/05	14:40	Y	26			3.96	8	3.6
38-FC-1.5	4/5/05	17:20		33	20		3.99	8	3.8
38-FC-1.5	4/19/05	16:50		27	37	0	3.93	11	5.4
38-FC-1.5	4/19/05	16:50	Y	36			3.89	12	5.4
38-FC-1.5	5/3/05	15:50		110			2.67	17	7.5
38-FC-1.5	5/24/05	16:25		100			2.09	11	6.5
38-FC-1.5	6/14/05	16:25		180			5.56	5	3.2

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
38-FC-1.5	6/28/05	15:50		300			4.96	5	3.1
38-FC-1.5	7/12/05	17:00		290			9.78	4	2.6
38-FC-1.5	7/26/05	16:30		250	150	4	11.6	3	8
38-FC-1.5	7/26/05	16:30	Y	230					
38-FC-1.5	8/9/05	16:30		360	260	6	11.8	3	1.7
38-FC-1.5	8/23/05	16:25		120			12.2	2	1.3
38-FC-1.5	8/23/05	16:25		320	250	22	8.49	4	1.6
38-FC-1.5	9/13/05	17:30		120			9.14	7	3.2
38-FC-1.5	9/27/05	16:30		470			9.34	2	1.9
38-FC-1.5	10/4/05	16:40		210			5.46	5	3
38-FC-1.5	10/18/05	15:50		1000			9.95	2	1.6
38-FC-1.5	11/30/05	12:11		14			8.45	2	1.5
38-FC-1.5	12/7/05	13:00		5	6		8.06	1	1.3
38-FC-1.5	12/7/05	13:00	Y	6	4				
38-FC-1.5	12/21/05	12:30		20			8.16	2	1.6
38-FC-1.5	1/11/06	15:20	Y	80 J			2.38	86	38
38-FC-1.5	1/11/06	15:20		84			2.32	89	39
38-FC-1.5	3/7/06	14:00		5			3.39	4	2.7
38-FC-2	12/14/04	10:24		620			2.42		
38-FC-2	1/10/05	14:00		27			2.14	1	1.8
38-FC-2	2/7/05	12:50		1 U	1 U	0	1.84	2	2.1
38-FC-2	2/7/05	12:50	Y	5	1	0	1.9	2	2.3
38-FC-2	3/7/05	13:10		70			1.98	4	2.5
38-FC-2	3/7/05	13:10	Y	80					
38-FC-2	4/5/05	16:55		4	10		1.97	5	3
38-FC-2	4/19/05	16:15		52			2.19	8	4
38-FC-2	5/3/05	15:30		310 J			1.5	13	6.5
38-FC-2	5/3/05	15:30	Y	280			1.52	14	6.4
38-FC-2	5/24/05	16:05		63			1.28	9	5.7
38-FC-2	6/14/05	0:00		430			1.78	4	3.4
38-FC-2	6/28/05	15:30		390			2.36	5	3
38-FC-2	7/12/05	16:45		130			3.28	4	3.3
38-FC-2	7/26/05	16:10		72	49	0	4.79	20	2.4
38-FC-2	7/26/05	16:10	Y	100	67	0	4.82	14	2.5
38-FC-2	8/9/05	16:15		330	180	0	4.52	5	3
38-FC-2	8/9/05	16:15	Y	230	200	0	4.55	5	2.9
38-FC-2	8/23/05	16:10		140			4.75	3	2.3
38-FC-2	9/13/05	17:19		43			4.78	19	2.7
38-FC-2	9/14/05	9:55		410					
38-FC-2	9/14/05	9:55		350					
38-FC-2	9/27/05	16:15		2200 J			4.36	3	3.9
38-FC-2	10/4/05	16:20		590			5.51	3	1.9
38-FC-2	10/18/05	15:40		1300	440		5.07	2	1.5
38-FC-2	10/18/05	15:40	Y	1800	700				
38-FC-2	11/30/05	12:00		210	92		3.75	1	1.9
38-FC-2	11/30/05	12:00	Y	400	84				
38-FC-2	12/7/05	12:45		17			3.56	1	2.1

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
38-FC-2	12/21/05	12:15		17			3.48	1	1.5
38-FC-2	12/21/05	12:15	Y	17			3.47	2 U	1.3
38-FC-2	1/11/06	14:47		73			1.9	63	25
38-FC-2	3/7/06	12:25		1			2.2	3	3.3
38-FC-2.5	6/28/05	14:45		100	80		0.85	8	5.3
38-FC-2.5	6/28/05	14:45	Y	82					
38-FC-2.5	7/12/05	16:10		120	100	0	1.04	10	6.3
38-FC-2.5	8/9/05	14:55		80			1.38	5	5
38-FC-2.5	8/23/05	16:00		300			1.53	3	4.3
38-FC-2.5	9/13/05	17:00		100			1.38	6	4.5
38-FC-2.5	9/27/05	16:05		1500 J			1.51	16	10
38-FC-2.5	10/4/05	16:00		79			1.53	4	3.3
38-FC-2.5	10/18/05	15:30		48			1.57	2 U	2.8
38-FC-2.5	11/30/05	12:45		27			1.8	1 U	1.7
38-FC-2.5	12/7/05	12:05		12			1.78	1 U	1.8
38-FC-2.5	12/7/05	12:05	Y	22			1.76		1.8
38-FC-2.5	12/21/05	12:00		11	10		1.76	1	2.6
38-FC-2.5	1/11/06	14:30		40			1.65	46	19
38-FC-2.5	3/7/06	12:15		1			1.6	3	3.1
38-FC-3	12/14/04	12:41		2	2		14.5		
38-FC-3	12/14/04	12:41	Y	1	4		14.4		
38-FC-3	1/10/05	12:15		22	8		14.7	2	2.1
38-FC-3	1/10/05	12:15	Y	22	10		14.2	3	2.1
38-FC-3	2/7/05	11:30		11	1	0	15	1 U	0.9
38-FC-3	3/7/05	11:45		6	5		16.4	3	1.5
38-FC-3	4/5/05	15:45		2			16	11	2.3
38-FC-3	4/19/05	14:45		4			15.8	3	1.5
38-FC-3	5/3/05	15:00		24			13.1	15	2.4
38-FC-3	5/24/05	15:20		110			10.6	3	3.6
38-FC-3	5/24/05	15:20	Y	130					
38-FC-3	6/14/05	16:00		150	110		19.6	4	3.1
38-FC-3	6/28/05	11:10	Y				13.7	6	3.8
38-FC-3	6/28/05	15:15		200	110	2	13.7	3	3.3
38-FC-3	6/28/05	15:15	Y	130	140	0			
38-FC-3	7/12/05	16:35		330			16	4	3.8
38-FC-3	7/26/05	15:30		150			17.7	7	5.1
38-FC-3.5	8/9/05	15:55		130			17.8	7	5.1
38-FC-3.5	8/23/05	14:55		84			18.4	6	2.9
38-FC-3.5	9/13/05	16:20		200			9.3	9	6
38-FC-3.5	9/27/05	15:00		120	66		7.1	5	3.8
38-FC-3.5	9/27/05	15:00	Y	66	120				
38-FC-3.5	10/4/05	15:05		84			4.41	6	3.6
38-FC-3.5	10/18/05	14:40		35			13.2	7	5.1
38-FC-3.5	10/18/05	14:40	Y	41			13.2	8	5
38-FC-3.5	11/30/05	10:25		4			17.1	1	1.6
38-FC-3.5	12/7/05	10:40		54 J			18.7	9	3.6
38-FC-3.5	12/21/05	11:00		12			15.9	6	4.4

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
38-FC-3.5	1/11/06	13:37		170			2.89	101	59
38-FC-3.5	3/7/06	10:35		100			6.24	4	2.6
38-FC-4	12/14/04	9:21		15	14	0	1.46	2	2.5
38-FC-4	1/10/05	13:00		4	7		1.46	5	3.1
38-FC-4	1/10/05	13:00	Y	5					
38-FC-4	2/7/05	12:05		4			1.36	3	2.6
38-FC-4	3/7/05	12:25		3			1.5	2	2.3
38-FC-4	4/5/05	16:20		1			1.28	3	2.4
38-FC-4	4/19/05	15:35		3			1.2	5	2.7
38-FC-4	5/3/05	14:30		29			1.01	10	4.9
38-FC-4	5/3/05	14:30	Y	27					
38-FC-4	5/24/05	14:25		9			0.89	7	4.5
38-FC-4	6/14/05	15:20		150 J			0.87	8	4.4
38-FC-4	6/14/05	15:20	Y	150					
38-FC-4	6/28/05	14:20		99	69	0	0.95	9	4.8
38-FC-4	7/12/05	15:45		57	49	0	0.95	9	5
38-FC-4	7/12/05	15:45	Y	31	51	0	1.05	8	5.2
38-FC-4	8/9/05	14:30		35			1.46	4	3.9
38-FC-4	8/23/05	15:30		28			1.59	4	3.7
38-FC-4	9/13/05	16:40		18			1.47	7	3.8
38-FC-4	9/27/05	15:45		12			1.5	3	3
38-FC-4	10/4/05	15:45		36	4		1.55	5	2.3
38-FC-4	10/4/05	15:45		9	4				
38-FC-4	10/18/05	15:20		14			1.6	1	2.2
38-FC-4	11/30/05	11:15		19			1.82	1	1.7
38-FC-4	11/30/05	11:15	Y	11			1.79	2 U	1.9
38-FC-4	12/7/05	11:30		1			1.71	1 U	1.9
38-FC-4	12/21/05	11:45		16			1.69	2	2.9
38-FC-4	1/11/06	14:08		49			1.58	22	12
38-FC-4	3/7/06	11:45		15			1.58	3	2.6
38-FC-6	8/24/05	9:20		690 J			0.89	1	1.9
38-FC-6	9/27/05	14:40		63			0.91	1	2.3
38-FC-6	10/4/05	14:30		92			0.88	1	1.9
38-FC-6	12/21/05	10:25		14			1.06	2 U	1.1
38-FC-6	1/11/06	12:55		120	57	0	1.15	21	19
38-FC-6	1/11/06	12:58	Y	96	61	0			
38-FC-6	3/7/06	11:15		3 U			1.65	3	2.8
38-FC-7	1/11/06	12:30		41	29	0	1.46	24	13
38-FC-7	3/7/06	11:08		1			1.47	1 U	0.8
38-FC-7	3/7/06	11:08	Y	1 U			1.48	1 U	0.8
38-FC-WWE	12/14/04	0:00		68			55		
38-FC-WWE	1/10/05	11:25		2400 J			47.9	2	15
38-FC-WWE	2/7/05	10:45		11			46.5	1	0.9
38-FC-WWE	3/7/05	11:00		43	54	4	57.2	4	2.2
38-FC-WWE	3/7/05	11:00	Y	43	47	9	58.6	5	2.1
38-FC-WWE	4/5/05	14:22		41			55.2	16	6
38-FC-WWE	4/19/05	14:00		120 J	100		56.4	14	6.6

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
38-FC-WWE	5/3/05	13:25		11			57	27	8.8
38-FC-WWE	5/24/05	13:30		21			55.9	8	4
38-FC-WWE	5/24/05	13:30	Y	17			57.4	9	4
38-FC-WWE	6/14/05	14:30		4			53.5	10	6.8
38-FC-WWE	6/28/05	13:30		100			56.4	8	12
38-FC-WWE	7/12/05	14:50		43			57.2	1	7.8
38-FC-WWE	7/27/05	15:05		500			57.9	3 U	2.2
38-FC-WWE	8/9/05	15:10		160			24.8	2	1.3
38-FC-WWE	8/23/05	14:40		88	96		55.9	4	3.4
38-FC-WWE	8/23/05	16:50	Y	180	150				
38-FC-WWE	9/13/05	0:00		700	250	16	57.5	6	2.4
38-FC-WWE	9/27/05	13:40		6 U	8 U		59.3	7	4.3
38-FC-WWE	9/27/05	13:40	Y	8 U	8 U		59.5	7	4.4
38-FC-WWE	10/5/05	13:50		240 J			56.5	12	3.9
38-FC-WWE	10/18/05	13:45		77			51.9	5	3.1
38-FC-WWE	11/30/05	9:28		220			59.3	3	3.1
38-FC-WWE	12/7/05	9:50		51 J			56.4	2	2
38-FC-WWE	12/21/05	9:30		1			58.5	2	4.2
38-FC-WWE	1/11/06	11:53		960 J			44.3	2	3
38-FC-WWE	3/7/06	13:30		230 J			43.3	18	4.4
38-FC-WWR	12/14/04	0:00		53			28		
38-FC-WWR	1/10/05	11:35		1700 J			26.6	2	7.9
38-FC-WWR	2/7/05	10:55		42			27.6	13	6.5
38-FC-WWR	3/7/05	11:10		14			33.9	5	1.4
38-FC-WWR	4/5/05	14:40		330 J	210 J	2	34.8	7	2.8
38-FC-WWR	4/5/05	17:20	Y	240					
38-FC-WWR	4/19/05	14:05		66 J			32.8	4	2.7
38-FC-WWR	4/19/05	14:05	Y	40 J					
38-FC-WWR	5/3/05	13:30		6	3 U	0	29.6	8	2.3
38-FC-WWR	5/24/05	13:40		17	9	0	24.7	2	1.4
38-FC-WWR	6/14/05	14:45		20	12	10	7.74	2	0.7
38-FC-WWR	6/14/05	14:45	Y	18			7.69	1	0.7
38-FC-WWR	6/28/05	13:40		45			29.1	3	4.5
38-FC-WWR	7/12/05	14:40		110			29.3	8	3.5
38-FC-WWR	7/27/05	14:55		290			33.3	1	1.4
38-FC-WWR	8/9/05	15:15		92			56	8	2.2
38-FC-WWR	8/23/05	14:30		1200			30.2	4	2.1
38-FC-WWR	9/13/05	0:00		460			35.8	2	1
38-FC-WWR	9/13/05	0:00	Y	820	360				
38-FC-WWR	9/14/05	9:30		880					
38-FC-WWR	9/14/05	9:30		1100					
38-FC-WWR	9/27/05	13:30		570	400	11	8.01	4	1.1
38-FC-WWR	10/5/05	13:45		4300			36.5	4	2.3
38-FC-WWR	10/5/05	13:45	Y	4400			36.4	5	2.2
38-FC-WWR	10/18/05	13:40		290			27.4	4	1.5
38-FC-WWR	11/30/05	9:36		340			22.4	1	0.8
38-FC-WWR	12/7/05	10:00		80 J			31.4	1 U	1

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
38-FC-WWR	12/21/05	9:40		44			29.9	1 U	2
38-FC-WWR	1/11/06	12:05		690 J			20	1 U	1
38-FC-WWR	3/7/06	13:35		270 J			17.9	6	1.5
37-FM-1	12/6/04	10:40		33					
37-FM-1	12/6/04	10:40		27					
37-FM-1	12/13/04	16:29		45	33	16	17.6	128	24
37-FM-1	12/13/04	16:29	Y	36	56	5	17.8	23	8.1
37-FM-1	1/12/05	12:15		120			17.2	29	12
37-FM-1	2/9/05	13:15		9			17.6	25	7.1
37-FM-1	3/9/05	11:50		29			18.6	8	3.8
37-FM-1	4/5/05	11:55		150			8.26	104	18
37-FM-1	4/19/05	12:00		17 J			9.05	158	7
37-FM-1	5/3/05	12:05		60			7.43	195	21
37-FM-1	5/24/05	11:40		190			6.38	127	28
37-FM-1	6/14/05	12:25		300			6.54	29	8.5
37-FM-1	6/28/05	11:50		100			7.36	9	5.9
37-FM-1	7/12/05	13:10		170			7.33	17	5.9
37-FM-1	7/26/05	13:30		290			7.64	18	8.2
37-FM-1	8/9/05	12:30		690			7.56	12	7.4
37-FM-1	8/23/05	12:50		180			6.52	75	4.9
37-FM-1	8/23/05	12:50	Y	210					
37-FM-1	9/13/05	14:10		230	160		6.27	18	5.1
37-FM-1	9/26/05	15:05		82	69	15	7.35	17	4.8
37-FM-1	10/3/05	14:55		83			10.1	9	6.2
37-FM-1	10/3/05	14:55	Y	82	61	2	10.2	23	8.5
37-FM-1	10/17/05	14:35		84			9.82	25	7.2
37-FM-1	11/7/05	13:20		260			17.9	32	10
37-FM-1	11/29/05	12:26		43			17.5	34	10
37-FM-1	12/6/05	13:00					17.1	46	20
37-FM-1	12/20/05	13:30		41			16.8	50	19
37-FM-1	12/20/05	13:30	Y	51					
37-FM-3	12/6/04	10:45		37					
37-FM-3	12/6/04	10:45		29					
37-FM-3	12/13/04	16:15		140	92		21.3	4	2
37-FM-3	1/12/05	11:40		250	210	2	19.6	4	2.7
37-FM-3	1/12/05	11:40	Y	160	260	3	19.8	4	2.7
37-FM-3	2/9/05	13:00		80			21.6	4	2.2
37-FM-3	3/9/05	11:30		170			11.4	9	3.2
37-FM-3	4/5/05	11:30		260			3.42	133	19
37-FM-3	4/19/05	11:40		20 J			8.09	68	9.8
37-FM-3	4/19/05	11:40	Y	23 J					
37-FM-3	5/3/05	11:50		110			6.33	140	21
37-FM-3	5/3/05	11:50	Y	79					
37-FM-3	5/24/05	11:20		280			5.17	147	25
37-FM-3	6/14/05	12:05		350			5.71	32	12
37-FM-3	6/28/05	11:35		80			7.58	18	8.1
37-FM-3	7/12/05	12:25		560			6.31	29	12

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FM-3	7/26/05	13:15		300			6.54	11	4.8
37-FM-3	8/9/05	12:10		670			6.66	18	7.8
37-FM-3	8/9/05	12:10	Y	560					
37-FM-3	8/23/05	12:35		170	92		5.28	20	6.7
37-FM-3	9/13/05	13:55		190	140	19	5.34	36	10
37-FM-3	9/26/05	14:50		160			6.23	29	7.2
37-FM-3	9/26/05	14:50	Y	200			6.21	32	7.9
37-FM-3	10/3/05	14:30		140			10.3	18	4.9
37-FM-3	10/17/05	14:00		250			8.58	27	7.2
37-FM-3	11/7/05	13:00		600 J			21	6	2.6
37-FM-3	11/7/05	13:00	Y	710 J					
37-FM-3	11/29/05	12:08		120			21.9	8	2.4
37-FM-3	12/6/05	12:30		120			21.6	6	3.1
37-FM-3	12/6/05	12:30	Y	71					
37-FM-3	12/20/05	13:05		67	59		22	11	5.2
37-FM-3	1/11/06	10:44		240 J			21.7	17	25
37-FM-3.5	7/26/05	12:30		270			6.9	16	4.7
37-FM-3.5	8/9/05	11:55		1100 J			7.23	34	14
37-FM-3.5	8/23/05	12:25		180	150		5.22	38	11
37-FM-3.5	9/13/05	12:45		250			5.61	53	12
37-FM-3.5	9/26/05	14:35		170			6.63	38	8.3
37-FM-3.5	10/3/05	14:10		190			11	38	9.5
37-FM-3.5	10/17/05	13:50		520	520	0	8.98	88	23
37-FM-3.5	11/7/05	12:35		220	110	0	21.1		4.6
37-FM-3.5	11/29/05	11:55		520			23.9	13	5.3
37-FM-3.5	12/6/05	12:10		250			23.5	28	11
37-FM-3.5	12/20/05	12:45		220			22.1	8	4.2
37-FM-3.5	1/11/06	10:38		520 J			22.8	21	27
37-FM-3.6	7/26/05	12:45		650			6.19	18	5.9
37-FM-3.6	8/9/05	12:00		3600 J			9.77	66	25
37-FM-3.6	8/23/05	12:15		300	25		8.26	10	4.3
37-FM-3.6	9/13/05	13:00		470			8.98	23	7.9
37-FM-3.6	9/26/05	14:30		420			8.45	38	9
37-FM-3.6	10/3/05	14:05		470	210	4	12.5	34	8.5
37-FM-3.6	10/17/05	13:40		200	250	5	9.48	128	37
37-FM-3.6	10/17/05	13:40	Y	270	270	7	9.72	116	33
37-FM-3.6	11/7/05	12:30		200			22.1	22	10
37-FM-3.6	11/29/05	11:30		150			22.5	11	3.8
37-FM-3.6	12/6/05	12:05		120			22.3	14	5.3
37-FM-3.6	12/20/05	12:50		340			24.5	21	10
37-FM-3.6	1/11/06	10:33		890 J			24.9	41	52
37-FM-4	5/3/05	11:25		72			3.09	4	2.9
37-FM-4	5/24/05	10:45		1300 J			3.4	5	4.6
37-FM-4	6/14/05	11:45		250			1.94	4	3.4
37-FM-4	6/28/05	11:20		180			1.67	5	4.3
37-FM-4	7/12/05	12:10		230			1.69	6	4.9
37-FM-4	7/26/05	11:45		230	80		1.63	14	3.8

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FM-4	7/26/05	11:45	Y	220					
37-FM-4	8/9/05	11:30		140	31		1.89	6	4.8
37-FM-4	8/23/05	12:00		360 J	110	92	1.86	3	2.5
37-FM-4	9/13/05	12:15		220			2.59	5	3.2
37-FM-4	9/13/05	12:15	Y				2.53	5	2.8
37-FM-4	9/14/05	8:00		250					
37-FM-4	9/14/05	8:00		280 J					
37-FM-4	9/14/05	8:00	Y	150					
37-FM-4	9/14/05	8:00	Y	240 J					
37-FM-4	9/26/05	14:10		84 J			2.59	6	3.4
37-FM-4	10/3/05	13:55		100			2.83	3	1.9
37-FM-4	10/17/05	13:10		36			3.46	5	3.5
37-FM-5	12/13/04	14:40		1100 J			16.4		
37-FM-5	1/12/05	10:45		310 J			16.3	30	12
37-FM-5	2/9/05	12:20		3700			17.5	7	3.6
37-FM-5	2/9/05	12:20	Y	1840 J			17.5	8	2.7
37-FM-5	3/9/05	11:00		14000	9200	0	17.7	11	4.1
37-FM-5	4/5/05	11:10		7700	970		14.5	30	13
37-FM-5	4/5/05	11:10	Y	7700					
37-FM-5	4/19/05	9:45		1100 J			13.3	23	8
37-FM-5	5/3/05	11:00		1500	500		13.3	50	14
37-FM-5	5/24/05	10:30		1000			9.02	67	23
37-FM-5	6/14/05	11:20		2000			8.99	17	6.8
37-FM-5	6/14/05	11:20	Y	1800					
37-FM-5	6/28/05	11:05		240			1.77	14	5.8
37-FM-5	7/12/05	11:45		2700	1100	7	7.58	11	4.7
37-FM-5	7/26/05	11:25		430			7.82	20	6
37-FM-5	7/26/05	11:25	Y	970			39.6	20	6
37-FM-5	8/9/05	11:10		5200 J			10.4	147	45
37-FM-5	8/23/05	11:40		530			10.2	22	6.9
37-FM-5	9/13/05	12:00		1700			10.9	36	10
37-FM-5	9/14/05	7:50		840					
37-FM-5	9/14/05	7:50		1300 J					
37-FM-5	9/26/05	13:45		1600 J			10.8	34	16
37-FM-5	10/3/05	13:20		1000			13.4	34	10
37-FM-5	10/17/05	12:50		1100			14.7	18	6.6
37-FM-5	10/17/05	13:40	Y	970					
37-FM-5	11/7/05	12:10		2400			16.2	17	9.5
37-FM-5	11/29/05	11:21		490 J			17.1	19	8.8
37-FM-5	12/6/05	11:45		7700 J			16.8	14	8.6
37-FM-5	12/20/05	12:20		1000			16.7	37	7.9
37-FM-5	12/20/05	12:20	Y	560			17.1	15	8.1
37-FM-5	1/11/06	10:25		2100 J			21.2	79	120
37-FM-5.5	4/19/05	9:15		320 J					
37-FM-5.5	4/19/05	9:15	Y	320 J					
37-FM-5.5	5/3/05	10:55		180					
37-FM-7	4/5/05	10:45		15 J			3.42	6	4.7

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FM-7	4/19/05	17:45		1			3.22	5	3.3
37-FM-7	5/3/05	10:10		300	170 J	1	3.19	5	3.8
37-FM-7	5/24/05	10:05		360			3.36	2	3.2
37-FM-7	6/14/05	11:00		150			2.08	4	3.8
37-FM-7	6/28/05	10:45		140			62.2	10	5.4 J
37-FM-7	7/12/05	11:00	Y	190					
37-FM-7	7/12/05	11:10		150			1.74	5	3.3
37-FM-7	7/26/05	11:10		100			1.7	2	2.5
37-FM-7	8/9/05	11:00		80	49	40	1.7	2	2
37-FM-7	8/23/05	11:20		96			1.94	2	2.5
37-FM-7	8/23/05	11:20	Y	170			1.95	3	2.4
37-FM-7	9/13/05	11:35		17			2.65	3	1.8
37-FM-7	9/26/05	13:20		28			2.78	1	1.2
37-FM-7	10/3/05	12:45		23			3.42	2	1.3
37-FM-7	10/17/05	12:35		22			3.65	3	2.1
37-FM-8	12/6/04	10:55		9					
37-FM-8	12/6/04	10:55		8					
37-FM-8	12/6/04	10:55	Y	9					
37-FM-8	12/6/04	10:55		4					
37-FM-8	12/13/04	15:05		71 J			19.5		
37-FM-8	1/12/05	11:10		35			19.7	8	3.8
37-FM-8	2/9/05	12:00		8			20.1	4	2.5
37-FM-8	2/9/05	12:00	Y	2					
37-FM-8	3/9/05	10:30		8	8	63	22.6	6	1.7
37-FM-8	4/5/05	12:50		81			6.64	207	26
37-FM-8	4/19/05	11:15		5 J			19.7	53	12
37-FM-8	5/3/05	10:00		96			5.64	139	20
37-FM-8	5/24/05	9:40		150 J	120 J		5.17	159	26
37-FM-8	5/24/05	9:40	Y	200 J					
37-FM-8	6/14/05	10:45		180	180		5.19	48	11
37-FM-8	6/28/05	10:20		110	240	4	7.66	32	9.3
37-FM-8	7/12/05	11:00		96			5.67	40	10
37-FM-8	7/12/05	11:00	Y	86			5.47	44	10
37-FM-8	7/26/05	10:40		560			5.82	23	6.3
37-FM-8	8/9/05	10:45		180			5.22	26	8.4
37-FM-8	8/23/05	11:15		310 J			4.56	71	15
37-FM-8	9/13/05	11:10		180 J			5.1	57	11
37-FM-8	9/14/05	8:05		160					
37-FM-8	9/14/05	8:05		100 J					
37-FM-8	9/26/05	12:55		71 J			5.91	43	9.8
37-FM-8	9/26/05	12:55	Y	84					
37-FM-8	10/3/05	12:30		44			10.8	29	7.2
37-FM-8	10/3/05	12:30	Y	40					
37-FM-8	10/17/05	12:00		170			9.36	19	5.1
37-FM-8	11/7/05	11:45		23	49	13	20.5	5	2.6
37-FM-8	11/7/05	11:45	Y	220					
37-FM-8	11/29/05	10:55		21	14		21.2	8	1.7

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FM-8	12/6/05	11:10		8			20.4	5	2.6
37-FM-8	12/6/05	11:10	Y	5			20.9	6	3.3
37-FM-8	12/20/05	12:00		92	130		21.2	7	4.2
37-FM-8	12/20/05	12:00				0			
37-FM-8	1/11/06	10:20		88 J			21.5	8	4.9
37-FM-9	12/13/04	16:29		5	14	0	17.9	7	3.7
37-FM-9	1/12/05	10:00		3			17.9	4	2.4
37-FM-9	1/12/05	10:00	Y	7					
37-FM-9	2/9/05	11:30		21	33		18.3	8	4.4
37-FM-9	3/9/05	10:00		4			19.6	6	2.4
37-FM-9	4/5/05	8:50		14 J			6.38	16	3.5
37-FM-9	4/19/05	10:45		7 J			8.48	5	2.7
37-FM-9	5/3/05	9:30		81			5.04	14	4.4
37-FM-9	5/24/05	9:10		200 J	160 J	0	5.23	50	16
37-FM-9	6/14/05	10:15		180	84	0	4.76	10	5.3
37-FM-9	6/28/05	10:10		92			6.21	6	3.5
37-FM-9	6/28/05	10:10	Y	140			6.16	6	3.7
37-FM-9	7/12/05	10:25		510			5.02	20	8.5
37-FM-9	7/26/05	10:25		85			4.06	7	3.2
37-FM-9	8/9/05	10:35		180			4	9	3.8
37-FM-9	8/23/05	11:05		120			4.14	9	3
37-FM-9	9/13/05	10:55		64			4.56	17	5.4
37-FM-9	9/26/05	11:50		40			6.44	5	2.6
37-FM-9	10/3/05	12:05		35			8.34	4	1.5
37-FM-9	10/17/05	11:40		33	47		6.49	44	11 J
37-FM-9	11/7/05	11:10		12			17.5	2	1.2
37-FM-9	11/29/05	10:30		7			18.4	6	2.5
37-FM-9	11/29/05	10:30	Y	7			18.3	6	2.5
37-FM-9	12/6/05	10:40		6	8	0	18.2	6	3.2
37-FM-9	12/20/05	11:30		110	110		18.3	5	2.4
37-FM-9	12/20/05	11:30				0			
37-FM-9	1/11/06	10:15		14 J			19.4	6	3.5
37-FM-9	1/11/06	10:15	Y	16 J					
37-FM-9.5	4/5/05	8:55		16 J					
37-FM-10	12/14/04	14:35		88			16.1		
37-FM-10	1/12/05	9:40		43	32	31	15.8	16	6
37-FM-10	2/9/05	11:05		32			16.3	1	0.8
37-FM-10	3/9/05	9:30		380 J			16.7	4	1.4
37-FM-10	3/9/05	9:30	Y	240 J			16.6	3	1.3
37-FM-10	4/5/05	8:00		430 J			6.23	6	2.2
37-FM-10	4/19/05	10:10		2300 J	1300	0	16.4	4	1.9
37-FM-10	4/19/05	10:10	Y	2300 J	1100	0	16.7	3	2.1
37-FM-10	5/3/05	9:00		380 J			4.9	6	2.9
37-FM-10	5/24/05	8:25	Y	400 J	280 J	0	5.2	7	4.5
37-FM-10	5/24/05	8:40		470 J	250 J	0	5.01	8	4.8
37-FM-10	6/14/05	9:30		480	300	0	3.45	9	3.4
37-FM-10	6/14/05	9:30	Y	310	150	0	3.52	8	3.6

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FM-10	6/28/05	10:00		570			3.68	4	2.4
37-FM-10	7/12/05	10:15		77			3.25	13	5.1
37-FM-10	7/26/05	10:15		140			3.59	10	3.9
37-FM-10	8/9/05	10:25		88			3.77	7	2.8
37-FM-10	8/23/05	10:55		220			4.62	8	2.8
37-FM-10	9/13/05	10:40		140			6.01	5	1.8
37-FM-10	9/13/05	10:40	Y	120					
37-FM-10	9/26/05	11:10		410	340		6.11	4	1.3
37-FM-10	10/3/05	11:30		490	380		16.3	3	1.2
37-FM-10	10/17/05	11:00		3800			19.4	1	0.5 U
37-FM-10	11/7/05	10:45		360			18.2	1	0.5
37-FM-10	11/29/05	9:55		200	66	0	17.8	3	1.5
37-FM-10	12/6/05	10:10		57	23	0	17.5	1 U	0.5 U
37-FM-10	12/20/05	11:00		100			17.7	1 U	0.5 U
37-FM-10	1/11/06	10:10		100 J			17.8	1	1.1
37-FM-WWE	1/12/05	9:25		22			54	12	7.8
37-FM-WWE	2/9/05	9:00		1 UJ			55.4	8	7.4
37-FM-WWE	3/9/05	9:00		1 UJ			67.1	4	2.3
37-FM-WWE	4/5/05	9:55		1 J	1 J	0 J	60.2	5	3.7
37-FM-WWE	4/5/05	9:55	Y	1 J	1	0	60.2	5	3.4
37-FM-WWE	4/19/05	9:00		1 UJ			54.4	7	4.8
37-FM-WWE	5/3/05	8:35		1 UJ			69.2	6	5.5
37-FM-WWE	5/24/05	8:25		16 J			64.8	6	7.1
37-FM-WWE	6/14/05	9:05		1			53.5	6	4
37-FM-WWE	6/28/05	9:45		1			62.5	6	4.5
37-FM-WWE	7/12/05	9:50		1 U			60.3	8	6.4
37-FM-WWE	7/26/05	9:50		3			63.6	7	4.2
37-FM-WWE	8/9/05	10:00		4			59.1	9	4.3
37-FM-WWE	8/23/05	10:10		1 U			53.4	5	2.8
37-FM-WWE	9/13/05	10:15		1 U			55.9	7	3.2
37-FM-WWE	9/26/05	10:40		13			54.6	7	2.7
37-FM-WWE	10/3/05	10:55		1 U			58.8	11	6.3
37-FM-WWE	10/17/05	10:30		1 U			62.6	6	4.3
37-FM-WWE	11/7/05	10:30		1 U			53.2	15	7.1
37-FM-WWE	11/29/05	9:35		35			59.3	3	2.1
37-FM-WWE	12/6/05	9:55		1 U			56.9	3	2.2
37-FM-WWE	12/20/05	9:55		1 UJ			52.7	1	1.1
37-FM-WWE	1/11/06	10:00		3 J			58.1	12	5.8
37-FM-WWO	12/13/04	15:59		49			60.1		
37-FM-WWO	1/12/05	10:50		5			55.4	10	6.5
37-FM-WWO	2/9/05	12:30		10	14	30	55.9	7	6.6
37-FM-WWO	3/9/05	11:10		6			13.2	4	2
37-FM-WWO	3/9/05	11:10	Y	1					
37-FM-WWO	4/5/05	11:15		3			60.5	6	3.5
37-FM-WWO	4/19/05	9:50		6 J			54.3	11	5.7
37-FM-WWO	5/3/05	11:10		5	6	100	69.6	3	3
37-FM-WWO	5/3/05	11:10	Y	15	9	40	69.5	3	2.9

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FM-WWO	5/24/05	10:35		7			64.2	2	3.2
37-FM-WWO	6/14/05	11:30		24			54	21	35
37-FM-WWO	6/28/05	11:10		19	5		8.65	20	7.8
37-FM-WWO	6/28/05	11:10	Y	8					
37-FM-WWO	7/12/05	11:50		21	12		61.2	8	6
37-FM-WWO	7/26/05	11:30		9	7	89	63.9	4	2.3
37-FM-WWO	8/9/05	11:15		31			58.8	11	3.8
37-FM-WWO	8/9/05	11:15	Y	25			59.4	8	4.2
37-FM-WWO	8/23/05	11:50		9			54.6	4	2.1
37-FM-WWO	9/13/05	12:05		12			56.1	5	3
37-FM-WWO	9/26/05	13:50		14 J			56.5	6	2.9
37-FM-WWO	10/3/05	13:30		8			59.8	11	5.4
37-FM-WWO	10/17/05	13:00		1			64.1	4	3.8 J
37-FM-WWO	11/7/05	12:15		100			53.4	28	12
37-FM-WWO	11/29/05	11:25		18			59.7	4	2.5
37-FM-WWO	11/29/05	11:25	Y	33					
37-FM-WWO	12/6/05	11:50		7	4		57.9	6	2.6
37-FM-WWO	12/20/05	12:30		1 U			54.2	2 U	1.1
37-FM-WWO	1/11/06	10:30		140 J			58.2	18	8.2
37-FM-WWO	1/11/06	10:30	Y	110 J			59.7	24	6.4
37-FW-0	12/6/04	10:10		120					
37-FW-0	12/6/04	10:10		96					
37-FW-0	12/15/04	13:20		41	40	10	14.8	7	3.2
37-FW-0	12/15/04	13:20	Y	43	41	3	14.8	7	3.6
37-FW-0	1/11/05	16:01		120	130	13	20.2	9	4.3
37-FW-0	2/8/05	12:45		39			16.5	5	3.3
37-FW-0	3/8/05	12:30		44			7.95	6	2.1
37-FW-0	4/4/05	16:10					6.49		
37-FW-0	4/4/05	16:10		220 J					
37-FW-0	4/4/05	16:10						16	
37-FW-0	4/4/05	16:10							6.8
37-FW-0	4/18/05	15:40		39	31	3	5.84	13	4.8
37-FW-0	4/18/05	15:40	Y	43	32	3	5.85	14	4.4
37-FW-0	5/2/05	16:50		130	48		5.62	18	6.7
37-FW-0	5/23/05	15:50		520			6.06	10	5.4
37-FW-0	6/13/05	15:10		350			9.12	2	1.1
37-FW-0	6/27/05	15:00		1400			10	3	1.6
37-FW-0	7/11/05	16:55		730			6.59	9	3.6 J
37-FW-0	7/11/05	16:55	Y	700	830	5			
37-FW-0	7/25/05	15:10		390			7.32	9	3.3
37-FW-0	8/8/05	16:10		540	290	22	8.9	14	3.3
37-FW-0	8/22/05	15:05		930			9.95	6	1.5
37-FW-0	8/22/05	15:05	Y	970					
37-FW-0	9/12/05	15:20		440	350		6.23	7	2.7
37-FW-0	9/14/05	8:25		330					
37-FW-0	9/14/05	8:25		270 J					
37-FW-0	9/14/05	8:25	Y	410					

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-0	9/14/05	8:25	Y	340 J					
37-FW-0	9/27/05	12:25		85			6.15	8	2.5
37-FW-0	10/4/05	12:45		130	16	18	5.98	6	2.1
37-FW-0	10/4/05	12:45	Y	63	12	23	6	5	2.1
37-FW-0	10/18/05	12:10		84			13.8	2	1.3
37-FW-0	11/6/05	17:10		490			12.6	3	3
37-FW-0	11/6/05	17:10	Y	410					
37-FW-0	11/28/05	15:37		250			16.2	5	2.5
37-FW-0	12/5/05	15:25		49			16.4	6	3
37-FW-0	12/19/05	16:15		220			14.8	18	8.1
37-FW-0	12/19/05	16:15	Y	180					
37-FW-0	1/10/06	15:05		96			14.1	20	7.9
37-FW-0	3/6/06	15:00		13			17.8	4	0.9
37-FW-1	12/6/04	10:00		77					
37-FW-1	12/6/04	10:00		76					
37-FW-1	12/6/04	10:00	Y	49					
37-FW-1	12/6/04	10:00		79					
37-FW-1	12/15/04	12:40		26			15.5		
37-FW-1	1/11/05	12:30		35			12.6	32	14
37-FW-1	2/8/05	16:15		13			19.3	8	3.4
37-FW-1	3/8/05	12:45		11			16.9	9	3.5
37-FW-1	4/4/05	16:30					5.59		
37-FW-1	4/4/05	16:30			59				
37-FW-1	4/4/05	16:30		90					
37-FW-1	4/4/05	16:30				0			
37-FW-1	4/4/05	16:30						15	
37-FW-1	4/4/05	16:30							6.2
37-FW-1	4/4/05	16:30	Y	95					
37-FW-1	4/18/05	16:10		10			5.12	16	6.3
37-FW-1	5/2/05	17:10		180			4.67	20	7.1
37-FW-1	5/23/05	16:15		440			5.31	10	6.7
37-FW-1	6/13/05	15:35		200			8.19	2	1.1
37-FW-1	6/27/05	15:15		830			9.33	2	1.5
37-FW-1	7/11/05	17:25		840	560		5.65	9	3.8 J
37-FW-1	7/25/05	15:30		250			6.42	10	3.6
37-FW-1	8/8/05	15:45		410			7.64	4	1.7
37-FW-1	8/8/05	16:10	Y	410					
37-FW-1	8/22/05	15:30		400	220		8.58	3	1.2
37-FW-1	9/12/05	15:50		260	200	38	5.12	9	2.6
37-FW-1	9/27/05	12:50		150	83	8	5.5	8	2.9
37-FW-1	9/27/05	12:50	Y	150			5.5	8	3.1
37-FW-1	10/4/05	17:20		250			5.39	7	2.6
37-FW-1	10/18/05	12:30		110			14.2	2	1.5
37-FW-1	11/6/05	17:20		220			12.1	4	3.4
37-FW-1	11/28/05	15:20		210			15.4	7	2.7
37-FW-1	12/5/05	15:50		6			17.2	11	4.8
37-FW-1	12/5/05	15:50	Y	6					

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-1	12/19/05	16:40		170			15.4	34	13
37-FW-1	1/10/06	15:35		49			14.1	17	7.6
37-FW-1	3/6/06	16:00		2			18.3	3	1.1
37-FW-2	12/6/04	10:05		51					
37-FW-2	12/6/04	10:05		36					
37-FW-2	12/15/04	12:55		27			12.7		
37-FW-2	1/11/05	12:30	Y	110			26.6	9	4.3
37-FW-2	1/11/05	15:30		88			26.3	9	4.6
37-FW-2	2/8/05	15:50		7			12.4	34	14
37-FW-2	3/8/05	12:00		10			12.8	20	7.6
37-FW-2	4/4/05	15:50					12.6		
37-FW-2	4/4/05	15:50		25					
37-FW-2	4/4/05	15:50						38	
37-FW-2	4/4/05	15:50							14
37-FW-2	4/18/05	15:25		65	41	3	11.8	26	8
37-FW-2	5/2/05	16:30		62			12.4	21	6.1
37-FW-2	5/2/05	16:30	Y	75					
37-FW-2	5/23/05	15:30		240			12.9	42	14
37-FW-2	6/13/05	14:55		180			5.28	12	5.2
37-FW-2	6/27/05	14:40		300			11.9	7	2.9
37-FW-2	7/11/05	16:30		270			11.7	10	4.2 J
37-FW-2	7/25/05	14:45		200			12.4	7	2.5
37-FW-2	7/25/05	14:45	Y	220					
37-FW-2	8/8/05	15:20		180	140		12.2	9	3
37-FW-2	8/22/05	14:45		220	60	5	12.5	7	2.4
37-FW-2	9/12/05	15:00		74	57	12	11.9	6	2
37-FW-2	9/12/05	15:00	Y	140			2.21	7	3.1
37-FW-2	9/27/05	11:55		80			12.2	6	1.6
37-FW-2	10/4/05	12:25		120			12.4	6	1.9
37-FW-2	10/18/05	11:55		120			12.7	14	4.8 J
37-FW-2	11/6/05	16:55		63			13.2	8	3.2
37-FW-2	11/28/05	15:10		68			13.1	16	6.8
37-FW-2	11/28/05	15:10	Y	71					
37-FW-2	12/5/05	15:05		57			13	7	2.7
37-FW-2	12/19/05	16:00		89 J	40	3	12.7	28	8.1
37-FW-2	1/10/06	15:21		160 J			15.1	20	7.5
37-FW-2	1/10/06	15:21	Y	120					
37-FW-2	3/6/06	14:40		23			17.1	10	4
37-FW-2	3/6/06	14:40	Y	31					
37-FW-4	12/15/04	12:15		20	8		17.8	1 U	0.7
37-FW-4	1/11/05	12:05		13			27.8	1	1.5
37-FW-4	2/8/05	15:30		41			18.1	21	8.6
37-FW-4	3/8/05	11:35		11	5	0	17.9	4	2.3
37-FW-4	3/8/05	11:35	Y	16	3	0	18.2	5	2
37-FW-4	4/4/05	15:10					4.54		
37-FW-4	4/4/05	15:10		28					
37-FW-4	4/4/05	15:10						11	

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-4	4/4/05	15:10							4.9
37-FW-4	4/18/05	14:50		25			4.54	6	2.4
37-FW-4	5/2/05	15:58		110	61	2	2.96	14	4.8
37-FW-4	5/23/05	15:00		200			3.35	14	7
37-FW-4	6/13/05	14:25		300			12.4	13	5.7
37-FW-4	6/27/05	14:05		250			4.31	11	5.2
37-FW-4	7/11/05	15:55		250			3.36	17	6.7
37-FW-4	7/11/05	15:55	Y	260					
37-FW-4	7/25/05	14:05		230	85		3.53	16	5.3
37-FW-4	8/8/05	14:40		450			3.59	9	3.3 J
37-FW-4	8/22/05	14:10		210	190	10	4.81	7	2.4
37-FW-4	8/22/05	14:10	Y	240			4.84	7	2.4
37-FW-4	9/12/05	14:15		540			2.71	16	6.2
37-FW-4	9/27/05	11:15		200			2.72	10	4.1
37-FW-4	10/4/05	11:40		150			2.82	6	2.7
37-FW-4	10/18/05	11:05		80			15.4	2	1.6
37-FW-4	10/18/05	11:05	Y	54					
37-FW-4	11/6/05	16:25		700			12.9	2	3.8
37-FW-4	11/6/05	16:25	Y	670			12.9	2	3.9
37-FW-4	11/28/05	14:30		37			45.6	3 U	0.8
37-FW-4	12/5/05	14:25		6	2	17	18.8	1 U	0.6
37-FW-4	12/19/05	15:30		9 J	12	11	38.5	2 U	1.5
37-FW-4	12/19/05	15:30	Y	3	11	0	38.8	2 U	1.5
37-FW-4	1/10/06	14:39		110			12.5	14	8.4
37-FW-4	3/6/06	13:55		5			18.5	3	0.9
37-FW-5	12/15/04	11:45		60			17.8		
37-FW-5	1/11/05	11:40		88 J			19.8	5	4.2
37-FW-5	2/8/05	14:40		160			16.7	30	15
37-FW-5	3/8/05	11:00		250			18.1	6	2.7
37-FW-5	3/8/05	11:00	Y	220					
37-FW-5	4/4/05	14:40					4.02		
37-FW-5	4/4/05	14:40			16				
37-FW-5	4/4/05	14:40		57					
37-FW-5	4/4/05	14:40				0			
37-FW-5	4/4/05	14:40						115	
37-FW-5	4/4/05	14:40							4.3
37-FW-5	4/18/05	13:55		20			3.89	63	6.1
37-FW-5	5/2/05	15:30		180 J			2.79	22	4.4
37-FW-5	5/23/05	14:10		200			3.11	42	7.4
37-FW-5	6/13/05	14:10		460			5.28	15	5.7
37-FW-5	6/27/05	13:30		680			4.08	15	6.6
37-FW-5	6/27/05	13:30	Y	800					
37-FW-5	7/11/05	15:20		440	290		2.97	14	5.5
37-FW-5	7/25/05	13:40		310	180	29	3.39	13	5.1
37-FW-5	8/8/05	13:45	Y	1400 J			3.45	11	4.4
37-FW-5	8/8/05	14:10		1800	1100	0	3.44	11	4.3
37-FW-5	8/22/05	13:40		620			4.68	10	3.9

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-5	9/12/05	13:35		570			2.49	14	5.1
37-FW-5	9/27/05	10:30		310			2.48	13	5.2
37-FW-5	10/4/05	11:05		180			2.64	8	3.8
37-FW-5	10/4/05	11:05		250					
37-FW-5	10/18/05	10:40		380			15.2	3	1.9
37-FW-5	11/6/05	15:50		630	240	8	15.1	2	3.2
37-FW-5	11/28/05	14:04		210	86	5	33.4	1 U	1.2
37-FW-5	12/5/05	13:45		220 J	130	0	19.4	1 U	1.6
37-FW-5	12/5/05	13:45	Y	560 J	99	0	19.3	2 U	1.4
37-FW-5	12/19/05	15:10		210			19.2	2	1.5
37-FW-5	1/10/06	14:29		92			13.4	25	13
37-FW-5	3/6/06	13:30		23			18.5	5	1.1
37-FW-5	3/6/06	13:30	Y	17					
37-FW-6	12/15/04	11:00		59			15		
37-FW-6	1/11/05	11:15		310 J			14.9	31	15
37-FW-6	2/8/05	14:10		14	3	0	14.5	4	2.2
37-FW-6	2/8/05	14:15		55	9		14.6	4	
37-FW-6	2/8/05	14:15	Y			0			2.1
37-FW-6	3/8/05	10:30		25	14		15	4	1.6
37-FW-6	4/4/05	12:40					3.53		
37-FW-6	4/4/05	12:40		25					
37-FW-6	4/4/05	12:40						7	
37-FW-6	4/4/05	12:40							4.2
37-FW-6	4/18/05	12:55		10			3.26	5	2.6
37-FW-6	5/2/05	14:35		25			2.87	7	2.7
37-FW-6	5/23/05	13:30		110			3.23	7	4.4
37-FW-6	6/13/05	13:25		660			4.51	21	5
37-FW-6	6/13/05	13:25	Y	530					
37-FW-6	6/27/05	12:50		280	300		6.07	6	3.2
37-FW-6	7/11/05	14:45		2100	970	2	3.17	8	3.4 J
37-FW-6	7/25/05	13:15		180	100	29	4.13	6	2.9
37-FW-6	7/25/05	13:15	Y	350	75	36	4.08	6	2.4
37-FW-6	8/8/05	13:45		260			4.23	14	4.5
37-FW-6	8/22/05	13:05		800			3.86	23	6.9
37-FW-6	9/12/05	13:00		500			2.37	11	4.2
37-FW-6	9/14/05	8:50		250					
37-FW-6	9/14/05	8:50		180					
37-FW-6	9/27/05	10:00		500 J			2.34	12	5.2
37-FW-6	9/27/05	10:00	Y	250 J					
37-FW-6	10/4/05	10:30		200			2.41	5	2.9
37-FW-6	10/18/05	10:05		74	46	0	13.6	6	1.8
37-FW-6	11/6/05	15:40		57	9	40	8.3	3	6.1
37-FW-6	11/28/05	13:22		69			19.7	1 U	0.6
37-FW-6	11/28/05	13:22	Y	56			20	2 U	0.6
37-FW-6	12/5/05	13:10		110			14.9	2	0.8
37-FW-6	12/19/05	14:40		120			14.7	2	1.6
37-FW-6	1/10/06	14:21		100			9.81	14	7.7

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-6	3/6/06	13:06		14			16.9	4	1.6
37-FW-8	12/15/04	9:50		33 J			11.9		
37-FW-8	1/11/05	10:51		80			11.7	2	1.4
37-FW-8	2/8/05	10:15		23	6		12.7	16	7.8
37-FW-8	3/8/05	10:00		62 J	57		13.5	10	4
37-FW-8	4/4/05	12:00				0			
37-FW-8	4/4/05	12:00						5	
37-FW-8	4/4/05	12:00							4
37-FW-8	4/4/05	12:00	Y	6	2	0	2.99	5	4.5
37-FW-8	4/4/05	12:00					2.94		
37-FW-8	4/4/05	12:00			4				
37-FW-8	4/4/05	12:00		10					
37-FW-8	4/18/05	11:30		15			2.64	4	2.4
37-FW-8	5/2/05	13:30		96 J			3.04	6	2.5
37-FW-8	5/23/05	12:45		120	81		2.52	7	4.8
37-FW-8	5/23/05	12:45	Y	120			2.61	7	4.1
37-FW-8	6/13/05	12:35		260			3.34	8	3.7
37-FW-8	6/27/05	12:15		780	370	37	3.45	9	4.8
37-FW-8	7/11/05	14:10		280	43	4	10.4	7	3.2
37-FW-8	7/11/05	14:10	Y	160			3.13	7	3.2 J
37-FW-8	7/25/05	12:25		290			3.11	5	2.4
37-FW-8	8/8/05	12:55		330			3.4	6	3.2
37-FW-8	8/22/05	12:25		800			2.46	5	1.8
37-FW-8	9/12/05	12:20		46			2.23	6	3.1
37-FW-8	9/12/05	12:20	Y	31					
37-FW-8	9/27/05	9:15		41 J			2.25	6	2.8
37-FW-8	10/4/05	9:45		55			2.37	5	2.6
37-FW-8	10/18/05	9:40		260	84	0	9.95	4	1.9
37-FW-8	10/18/05	9:40	Y	300 J			9.93	3	1.8
37-FW-8	11/6/05	15:10		120			10.8	1 U	1
37-FW-8	11/28/05	12:45		890 J			12.1	2	1.5
37-FW-8	12/5/05	12:30		63			12.3	1 U	0.5
37-FW-8	12/19/05	14:10		6			11.7	2 U	0.6
37-FW-8	1/10/06	13:37		150 J			5.92	66	25
37-FW-8	3/6/06	12:36		1			17.9	2	0.9
37-FW-12	12/15/04	9:10		19 J			14		
37-FW-12	12/15/04	9:10	Y	18 J					
37-FW-12	1/11/05	10:06		6	1	0	14.7	4	2.2
37-FW-12	2/8/05	9:20		2 J			17	4	1.1
37-FW-12	2/8/05	9:25	Y	3 J					
37-FW-12	3/8/05	9:00		1 J			16.5	1	0.6
37-FW-12	4/4/05	11:20					16.6		
37-FW-12	4/4/05	11:20		14					
37-FW-12	4/4/05	11:20						2	
37-FW-12	4/4/05	11:20							1
37-FW-12	4/18/05	11:10		3	1		15.9	2	1
37-FW-12	5/2/05	12:50		160	82	0	17	3	1.1

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-12	5/2/05	12:50	Y	60	60	2	17	4	1.1
37-FW-12	5/23/05	12:05		210	140	0	18.6	4	2.3
37-FW-12	6/13/05	12:05		74	57	0	17.2	2	1.4
37-FW-12	6/27/05	11:40		390	170	0	17.4	3	2.4
37-FW-12	6/27/05	11:40	Y	300	200	0	17.3	9	2.1
37-FW-12	12/19/05	13:30		8			14.6	3	1
37-FW-12	1/10/06	13:08		47	170	0	7.25	6	5.3
37-FW-12	3/6/06	12:17		2			16.3	1	0.5 U
37-FW-13	12/15/04	9:20		1 UJ			11.7		
37-FW-13	1/11/05	9:40		3					
37-FW-13	1/11/05	9:40	Y	7					
37-FW-13	2/8/05	9:35		3 J	1	66	12.7	1 U	0.5 U
37-FW-13	3/8/05	9:10		1 UJ			13.3	1	0.6
37-FW-13	4/4/05	11:05					13.6		
37-FW-13	4/4/05	11:05		68					
37-FW-13	4/4/05	11:05						3	
37-FW-13	4/4/05	11:05							2.2
37-FW-13	4/18/05	10:54		120	71		12.6	2	0.9
37-FW-13	5/2/05	11:20		41			12.8	3	1.3
37-FW-13	5/23/05	11:55		49	710	0	13.4	1 U	0.8
37-FW-13	6/13/05	11:30		670 J	380 J	0 J	12.9	5	2.8
37-FW-13	6/13/05	11:35	Y	560	320	0	12.8	6	2.9
37-FW-13	6/27/05	11:10		670			13.3	3	1.2
37-FW-13	7/11/05	12:45		1000			10.3	21	1.4
37-FW-13	7/25/05	12:00		900			5.42	2 U	1.2 J
37-FW-13	12/5/05	11:50		3			12.7	4	0.6
37-FW-13	12/19/05	13:40		10 J			12	2 U	0.6
37-FW-13	1/10/06	12:51		240 J			3.09	48	23
37-FW-13	3/6/06	12:22		6			23.2	1 U	0.5 U
37-FW-14	12/15/04	8:45		28 J	37		13.2	2	0.6
37-FW-14	1/11/05	9:05		10	7		12.8	1	0.8
37-FW-14	2/8/05	9:00		5 J			13.7	1 U	0.5
37-FW-14	3/8/05	8:30		14 J			13.8	1	0.5
37-FW-14	4/4/05	10:40					13.2		
37-FW-14	4/4/05	10:40		21					
37-FW-14	4/4/05	10:40						1	
37-FW-14	4/4/05	10:40							0.6
37-FW-14	4/18/05	10:25		560 J	660 J	0	13.3	3	1.5
37-FW-14	4/18/05	10:25	Y	360 J					
37-FW-14	5/2/05	10:35		590 J			6.88	1 U	1
37-FW-14	5/23/05	11:30		2700 J			10.3	2	2.7
37-FW-14	5/23/05	11:30	Y	3200 J	2400 J	0			
37-FW-14	1/10/06	12:30		270	1100 J	0	1.95	52	30
37-FW-14	3/6/06	11:28		23			16.5	1 U	0.6
37-FW-15	1/10/06	12:15		35			5.62	9	6.7
37-FW-15	3/6/06	12:12		7			10.8	1 U	0.5
37-FW-16	1/10/06	11:00		1100 J	510 J	0	9.4	36	30

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-FW-16	1/10/06	11:00	Y	410 J	490 J	0	9.39	41	29
37-FW-16	3/6/06	12:05		8 U			20.9	2	0.9
37-FW-17	1/10/06	11:50		71			2.56	8	8.7
37-FW-17	3/6/06	11:55		1 U			3.6	1 U	0.6
37-FW-17	3/6/06	11:55	Y	1 U			3.61	1 U	0.5
37-FW-18	1/10/06	11:38		23			0.95	4	7.5
37-FW-18	3/6/06	11:45		13			3.1	1 U	1.6
37-IS-0	4/20/05	13:40		180			16	110	31
37-IS-0	7/27/05	0:00		170			17.1	21	5.3 J
37-IS-0	8/24/05	13:00		190			14.6	9	4.1
37-IS-0	8/24/05	13:00	Y	60					
37-IS-0	10/5/05	11:30		92			15.4	39	22
37-IS-1	4/20/05	0:00	Y	1700 J					
37-IS-1	4/20/05	12:50		1700 J			13.2	32	11
37-IS-1	7/27/05	9:55		1400			7.11	21	5.6
37-IS-1	8/24/05	13:45		610			9.5	54	14
37-IS-1	10/5/05	11:02		550			13.7	32	11
37-IS-1.5	4/20/05	12:55		58			3.15	4	2.3
37-IS-1.5	7/27/05	10:00		700			1.77	10	5
37-IS-1.5	8/24/05	13:40		130			1.88	5	2.8
37-IS-1.5	10/5/05	11:01		120			3.37	3	2.1
37-IS-1.5	10/5/05	11:01	Y	120					
37-IS-2	4/20/05	13:00		44			3.12	3	2.6
37-IS-2	7/27/05	9:55	Y	530					
37-IS-2	7/27/05	10:15		530 J			1.67	9	5.1
37-IS-2	8/24/05	13:25		690			1.83	7	4.7
37-IS-2	8/24/05	13:25	Y	730			1.82	7	4.8
37-IS-2	10/5/05	11:00		69			3.19	2	1.8
37-IS-3	4/20/05	0:00	Y	47					
37-IS-3	4/20/05	12:25		40 J			3.17	4	2.6
37-IS-3	7/27/05	9:40		160			1.77	4	2.7
37-IS-3	7/27/05	9:40	Y	150			1.75	4	2.8
37-IS-3	8/24/05	0:00		84			1.87	2	1.8
37-IS-3	10/5/05	11:10		47			3.44	1	1.3
37-IS-4	4/20/05	11:45		1 J			7.84	2	0.9
37-IS-4	7/27/05	9:10		85 J			2.84	5	2.3
37-IS-4	8/24/05	14:20		28			2.14	13	4.4
37-IS-4	10/5/05	10:15		250 J			7.65	3	1.4
37-IS-4	10/5/05	10:15	Y	250 J			7.62	2	1.1
37-IS-4.5	4/20/05	12:10		21 J			3.22	12	5.3
37-IS-4.5	7/27/05	9:35		64 J			2.25	12	4.8
37-IS-4.5	8/24/05	14:05		68			1.84	8	6.6
37-IS-4.5	10/5/05	11:15		250			3.81	4	1.9
37-IS-4.6	4/20/05	12:15		29 J			3.07	3	2.7
37-IS-4.6	7/27/05	9:25		310 J			1.74	42	4.6
37-IS-4.6	8/24/05	0:00		300			1.82	19	4
37-IS-4.6	10/5/05	11:17		970			3.27	209	20

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-IS-5	7/27/05	8:40		17 J			2.48	10	3.5
37-IS-5	8/24/05	0:00		11			2.64	8	4.2
37-IS-5	10/5/05	9:55		8			26.9	1 U	0.5 U
38-IS-7	4/20/05	10:33		830 J			8.19	17	6.7
38-IS-7.5	7/27/05	15:45		330			3.64	11	4.6
38-IS-7.5	7/27/05	15:45	Y	240 J					
38-IS-7.5	10/5/05	14:50		610 J			5.31	4	1.6
38-IS-7.6	7/27/05	15:25		440			1.48	5	3
38-IS-7.6	8/24/05	9:45		8			0.88	6	4.9
38-IS-7.6	8/24/05	9:45	Y	8					
38-IS-7.6	10/5/05	14:20		190 J			2.02	1 U	0.8
38-IS-8	4/20/05	0:00	Y	80 J			4.71	39	10
38-IS-8	4/20/05	10:55		63 J			4.74	36	8.2
38-IS-8	7/27/05	16:00		250			6.68	13	3.6
38-IS-8	8/24/05	10:10		630			7.84	15	5.6
38-IS-8	10/5/05	15:10		360			5.3	7	2.3
38-IS-8	10/5/05	15:10	Y	290					
38-IS-8.5	7/27/05	15:45		37			3.46	4	2.2
38-IS-8.5	8/24/05	9:55		120			8.98	1	0.9
38-IS-8.5	10/5/05	15:00		1000			5.33	3	1.3
37-IS-10	4/20/05	14:00		1 U			13.5	1 U	0.5 U
37-IS-10	7/27/05	0:00		10			14.3	1 U	0.5 U
37-IS-10	8/24/05	0:00		1 U			13.7	3	0.5 U
37-IS-10	10/5/05	12:50		1 U			13.6	1	0.5 U
37-IS-12	7/27/05	0:00		1 U			19.7	2	0.5 U
37-IS-12	8/24/05	0:00		1 U			17.9	13	0.5 U
37-IS-12	10/5/05	12:40		190 J			16.9	1 U	3.2 J
37-IS-13	7/27/05	0:00		490			20.8	1 U	0.5 U
37-IS-13	8/24/05	0:00		730			18.2	1 U	1.4
37-IS-13	8/24/05	0:00	Y	650 J			18.4	4	1.7
37-IS-13	10/5/05	12:25		370			15.6	1 U	0.5 U
37-IS-15	7/27/05	13:00		1800 J			17.7	2	1.5
37-IS-16	4/20/05	0:00	Y	480 J					
37-IS-16	4/20/05	9:40		95 J			1.23	4	2.4
37-IS-16	7/27/05	11:35		1600 J			1.65	5	3.3
37-IS-16	7/27/05	11:35	Y	1500 J			1.66	5	3.2
37-IS-16	8/24/05	10:50		140			1.69	11	2.7
37-IS-16	10/5/05	9:35		80 U			1.46	5	3.1
37-IS-16	10/5/05	9:35	Y	100			1.48	5	2.9
37-IS-17	4/20/05	11:25		130 J			8.07	2	1.7
37-IS-17	7/27/05	12:40		1000			8.42	2	1.2
37-IS-17	8/24/05	11:50		310			6.33	3	2
37-IS-17	10/5/05	11:55		23			10.3	3	4.3
37-IS-17.5	7/27/05	12:25		2200 J			4.86	60	15
37-IS-17.5	8/24/05	11:35		1900			4.94	45	13
37-IS-17.5	8/24/05	11:35	Y	2400					
37-IS-17.5	10/5/05	11:30		870			5.67	7	3.2

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-IS-18	7/27/05	12:05		130			11.3	1 U	0.7
37-IS-18	8/24/05	11:25		210			6.05	2	2.6
37-IS-18	10/5/05	10:50		410			4.4	1	0.7
37-IS-19	4/20/05	0:00	Y	17 J			1.59	6	2.5
37-IS-19	4/20/05	10:30		28 J			1.61	6	2.6
37-IS-19	7/27/05	11:55		4000 G			7.78	4	10
37-IS-19	7/27/05	11:55	Y	4000 G					
37-IS-19	8/24/05	11:15		150			1.43	8	3.3
37-IS-19	10/5/05	10:00		220			1.47	4	3.1
37-IS-19	10/5/05	10:00	Y	190					
37-SS-1	5/9/05	16:10		1700 J			4.13	520	160
37-SS-1	5/9/05	16:10	Y	9300 J			4.15	515	150
37-SS-1	5/10/05	10:15		1600 J			5.87	28	12
37-SS-1	5/10/05	10:15	Y	2000 J			5.91	28	13
37-SS-1	3/5/06	0:00	Y	22					
37-SS-1	3/5/06	11:30		29			17.2	3	1.2
37-SS-1	3/5/06	11:30	Y	26			17.2	2	1
37-SS-11	5/9/05	14:20		2400 J			3.05	90	28
37-SS-11	5/10/05	8:45		1400 J			3.75	13	7.5
37-SS-11	2/28/06	13:10		92			20.1	6	5.1
37-SS-11	3/5/06	13:10		220			17.1	4	1.5
37-SS-12	5/9/05	14:00		1900 J			2.19	58	20
37-SS-12	5/9/05	17:05		4300 J			2.97	37	38
37-SS-12	5/10/05	8:30		680 J			2.83	5	3.9
37-SS-13	5/9/05	13:45		9200 J			3.19	847	600
37-SS-13	5/10/05	6:40		8000 J			11.1	6	23
37-SS-14	5/9/05	13:30		6000 J			3.5	104	55
37-SS-14	5/9/05	14:00	Y	1200 J			2.21	80	20
37-SS-14	5/10/05	5:45		680 J			3.29	13	7.9
37-SS-14	2/28/06	12:15		29			19.5	3	1.2
37-SS-14	3/5/06	13:55		3			18.6	2	0.7
37-SS-15	5/9/05	13:25		6000 J			2.78	76	25
37-SS-15	5/10/05	5:20		1600 J			3.59	17 J	14
37-SS-16	5/9/05	13:15		2100 J			13.2	9	3.9
37-SS-16	5/9/05	16:45		4000 J			27.7	9	4.8
37-SS-16	5/10/05	5:05		1600 J			19.3	7	1.5
37-SS-16	3/5/06	14:20		2			17.6	1	0.6
37-SS-16	3/5/06	14:20	Y	2					
37-SS-17	5/10/05	5:00		2700 G			13.1	5	1.6
37-SS-18	5/9/05	16:45		8000 G			14.6	14	7.3
37-SS-2	5/9/05	16:25		400 J			11.8	11	11
37-SS-2	5/10/05	10:05		31			12.2	1	0.5 U
37-SS-2	3/5/06	11:00		130			14.8	1 U	1
37-SS-38	3/5/06	13:20		160			34.9	11	12
37-SS-4	5/9/05	12:45		110			0.01 U	7	2.5
37-SS-4	5/10/05	10:50		1600 J					
37-SS-48	3/5/06	13:25		10			47.7	18	42

Table B-1. Laboratory result data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	QA?	FCMF #/100mL	E. coli #/100mL	% KES	Chloride mg/L	TSS mg/L	Turbidity NTU
37-SS-5	5/9/05	15:55		3300 J			3.77	660	190
37-SS-5	5/10/05	10:25		1800 J			5.38	30	13
37-SS-5	2/28/06	14:40		84			18.6	8	7.1
37-SS-5	3/5/06	11:10		30			17.6	4	1.2
37-SS-6	5/9/05	15:45		8200 J			2.68	480	150
37-SS-6	5/10/05	9:50		120			22.6	1 U	0.5 U
37-SS-6	5/10/05	9:50	Y	76			22.2	1 U	0.5 U
37-SS-6	2/28/06	13:40		96			17.6	24	45
37-SS-6	3/5/06	10:35		1800 J			69.5	100	125
37-SS-6	3/5/06	12:00		270			30.6	51	74
37-SS-7	5/9/05	14:55		3200 J			3.32	417	140
37-SS-7	5/9/05	14:55	Y	3900 J					
37-SS-7	5/10/05	9:30		1200 J			3.28	20	9.3
37-SS-7	5/10/05	9:30	Y	840 J			3.25	18	8.9
37-SS-7	2/28/06	13:50	Y	120			26.4	6	5.2
37-SS-7	2/28/06	13:50		120			26.4	6	5
37-SS-7	3/5/06	12:15		29			18.3	3	1.2
37-SS-8	3/5/06	12:40		21			4.22	8	20
37-SS-9	5/9/05	14:30		1100 J			3.51	47	16
37-SS-9	5/9/05	14:35	Y	2100 J					
37-SS-9	3/5/06	12:55		200 J			29.9	165	93
37-YAK-1	12/6/04	10:30		7					
37-YAK-1	12/6/04	10:30		8					

QA – Quality assurance
FCMF – Fecal coliform - membrane filter
KES – Klebsiella, Enterobacter, and Serratia
TSS – Total suspended solids

Appendix C. Field Measurements

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL. All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
38-FC-1	12/14/04	13:47	4.47	273.4	8.03	12.98	12.5	0.48	2.66%
38-FC-1	1/10/05	15:20	2.77	266.1	6.13	13.58			
38-FC-1	2/7/05	14:00	3.4	207	8.04	13.80			
38-FC-1	3/7/05	14:15	10.69	211.9	8.35	11.48			
38-FC-1	4/5/05	17:45	10.52	196.3	9.41	11.53			
38-FC-1	4/19/05	17:10	13.19	220.4	9.28	9.75	10.41	0.66	4.63%
38-FC-1	5/3/05	16:20	15.67	157.2	8.81	9.68	10.1	0.42	3.00%
38-FC-1	5/24/05	16:40	15.99	143.6	8.13	9.65	9.8	0.15	1.09%
38-FC-1	6/14/05	16:55	15.98	259	8.57	9.32	9.59	0.27	2.02%
38-FC-1	6/28/05	16:15	20.52	284.3	8.5	8.1	8.8	0.7	5.86%
38-FC-1	7/12/05	17:25	22.75	300.1	8.54	6.72			
38-FC-1	7/26/05	17:00	22.05	317.2	8.51	7.39	9.1	1.71	14.67%
38-FC-1	8/9/05	16:45	21.25	382.2	8.65	9.17	9.2	0.03	0.23%
38-FC-1	8/23/05	16:50	18.27	391.1	8.53	7.12			
38-FC-1	9/13/05	18:05	17.43	399.9	8.42	9.3			
38-FC-1	9/27/05	17:00	15.69	405.8	8.2	8.92	9.65	0.73	5.56%
38-FC-1	10/18/05	16:10	13.38	385.7	8.05	9.45			
38-FC-1	11/30/05	12:38	4.02	332.9	8.01				
38-FC-1	12/7/05	13:25	2.76	327.9	8.05				
38-FC-1	12/21/05	13:05	2.73	332.8	8.07	12.45	12.88	0.43	2.40%
38-FC-1	1/11/06	15:21	3.3	122.7	7.78	12.93			
38-FC-1	3/7/06	14:40	6.73	160.5	8.47	12.65			
38-FC-1.5	12/14/04	13:13	4.36	230.6	7.99	13.13			
38-FC-1.5	1/10/05	14:40	2.78	225	8.3	14.36			
38-FC-1.5	2/7/05	13:25	3.55	178	8.46	15.40	14.43	0.97	4.60%
38-FC-1.5	3/7/05	13:40	10.57	173.8	8.73	13.22			
38-FC-1.5	4/5/05	17:20	9.99	48.7	9.31	13.29			
38-FC-1.5	4/19/05	16:50	12.46	177	9.21	11.46			
38-FC-1.5	5/3/05	15:50	14.49	133.3	8.9	10.64			
38-FC-1.5	5/24/05	16:25	14.35	120.7	8.01	10.05			
38-FC-1.5	6/14/05	16:25	15.34	215	8.45	10			
38-FC-1.5	6/28/05	15:50	21.1	257.1	8.39	8.5			
38-FC-1.5	7/12/05	17:00	23.8	398	8.65	8.95			
38-FC-1.5	7/26/05	16:30	23.35	503.9	8.06	9.33			
38-FC-1.5	8/9/05	16:30	20.21	576.9	7.61	6.95			
38-FC-1.5	8/23/05	16:25	16.67	605.7	7.61	7.54			
38-FC-1.5	9/13/05	17:30	17.88	355.6	8.24	8.67			
38-FC-1.5	9/27/05	16:30	16.64	392.4	7.99	9.14			
38-FC-1.5	10/18/05	15:50	13.76	368.5	8.37	9.42			
38-FC-1.5	11/30/05	12:11	2.95	311.7	8.06				
38-FC-1.5	12/7/05	13:00	2.89	292	8.12				
38-FC-1.5	12/21/05	12:30	3.6	300	8.17	11.2	10.95	-0.25	1.60%
38-FC-1.5	1/11/06	15:20	3.19	111.4	7.69	12.78			
38-FC-1.5	3/7/06	14:00	6.61	144.5	8.64	14			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
38-FC-2	12/14/04	10:25	3.5	135.9	7.55	12.7			
38-FC-2	1/10/05	14:00	2.13	130.5	7.71	13.42			
38-FC-2	2/7/05	12:50	2.32	112.4	7.58	14.10	13.25	0.85	4.40%
38-FC-2	3/7/05	13:10	8.77	108.4	8.18	12.41			
38-FC-2	4/5/05	16:55	9.21	114.9	8.92	12.94			
38-FC-2	4/19/05	16:15	11.78	128.3	8.88	13.51			
38-FC-2	5/3/05	15:30	13.51	98.4	8.47	10.27			
38-FC-2	5/24/05	16:05	13.5	90.5	7.97	10.64			
38-FC-2	6/14/05	16:20	13.71	131.8	7.87	9.77			
38-FC-2	6/28/05	15:30	17.44	157.2	7.88	8.76			
38-FC-2	7/12/05	16:45	18.31	206.3	7.69	8.31			
38-FC-2	7/26/05	16:10	18.51	239.6	7.63	8.2			
38-FC-2	8/9/05	16:15	18.61	228.4	7.66	7.87			
38-FC-2	8/23/05	16:10	17.24	199.9	7.83	6.81			
38-FC-2	9/13/05	17:17	15.91	264.4	7.74	8.44			
38-FC-2	9/27/05	16:15	14.85	229.1	7.65	8.74	8.7	-0.04	0.32%
38-FC-2	10/18/05	15:40	12.87	245	7.74	9.25			
38-FC-2	11/30/05	12:00	3.35	188.5	7.75				
38-FC-2	12/7/05	12:45	3	179.5	7.76				
38-FC-2	12/21/05	12:00	0.17	114	8.19	12.9			
38-FC-2	1/11/06	14:47	3.07	98.8	7.66	9.9			
38-FC-2	3/7/06	12:25	4.9	11.6	8.23	12.9			
38-FC-2.5	6/28/05	14:45	17.39	98.3	8.07	7.44			
38-FC-2.5	7/12/05	16:10	20.4	121.4	8	7.81			
38-FC-2.5	8/9/05	14:55	22.62	141.2	8.42	6.53			
38-FC-2.5	8/23/05	16:00	18.42	149.7	8.24	6.33			
38-FC-2.5	9/13/05	17:00	15.77	144.4	8.42	8.75			
38-FC-2.5	9/27/05	16:05	14.78	148.9	8.17	8.74			
38-FC-2.5	10/18/05	15:30	12.21	139.5	8.12	9.12			
38-FC-2.5	11/30/05	11:45	1.54	103.9	7.85				
38-FC-2.5	12/7/05	12:05	0.66	116.5	7.72		13.5		
38-FC-2.5	12/21/05	12:15	3.45	175.2	7.98	12.06			
38-FC-2.5	1/11/06	14:30	2.34	88.4	7.73	12.9			
38-FC-2.5	3/7/06	12:15	3.52	95.6	8.29	12.3			
38-FC-3	12/14/04	12:41	5.68	466.3	7.79	11.5			
38-FC-3	1/10/05	12:15	4.45	457.9	7.77	12.38	12.4	0.02	0.11%
38-FC-3	2/7/05	11:30	4.95	467	7.86	12.90			
38-FC-3	3/7/05	11:45	9.67	449.1	7.88	12.46			
38-FC-3	4/5/05	15:45	10.71	465.8	9	15.61	16.2	0.59	2.62%
38-FC-3	4/19/05	14:45	12.84	479	8.68	14.7			
38-FC-3	5/3/05	15:00	15.52	396.2	8.17	5.22			
38-FC-3	5/24/05	15:20	16.28	338.3	8.49	12.71			
38-FC-3	6/14/05	16:00	15.16	439	8.4	12.05			
38-FC-3	6/28/05	14:20	16.5	93.1	8.26	8.84			
38-FC-3	7/12/05	16:35	19.75	455.6	8.48	10.71			
38-FC-3	7/26/05	15:30	18.37	468.9	7.78	8.45			
38-FC-3	8/9/05	15:55	18.88	499.3	7.86	7.63			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
38-FC-3	8/23/05	14:55	16.9	509.4	7.85	7.41			
38-FC-3	9/13/05	16:20	15.17	297.4	7.84	8.93			
38-FC-3	9/27/05	15:00	13.56	262.1	7.62	9.33			
38-FC-3	10/18/05	14:40	12.37	317.4	7.57	8.7			
38-FC-3	11/30/05	10:25	4.46	455.1	7.6				
38-FC-3	12/7/05	10:40	4.59	462.5	7.27		10.6		
38-FC-3	12/21/05	11:00	5.26	439.3	7.67	9.24			
38-FC-3	1/11/06	13:37	3.06	122	7.7	12.85			
38-FC-3	3/7/06	10:35	5.71	206.3	7.9	11.7			
38-FC-4	12/14/04	9:21	1.04	101.9	7.35	13.5			
38-FC-4	1/10/05	13:00	0.12	101.9	7.53	14.11			
38-FC-4	2/7/05	12:05	0.4	91.2	7.32	14.00			
38-FC-4	3/7/05	12:25	5.94	91	7.59	12.17			
38-FC-4	4/5/05	16:20	5.64	92.1	8.36	11.81			
38-FC-4	4/19/05	15:35	10.87	96.8	8.04	10.39	11.07	0.68	4.48%
38-FC-4	5/3/05	14:30	12.05	79.2	7.85	9.41			
38-FC-4	5/24/05	14:25	11.49	75	8.17	10.66			
38-FC-4	6/14/05	15:20	13.33	88	8.27	9.98			
38-FC-4	6/28/05	15:15	19.97	385.7	8.21	6.57			
38-FC-4	7/12/05	15:45	20.9	115.6	8.3	8.09			
38-FC-4	8/9/05	14:30	22.45	123.2	8.88	8.6			
38-FC-4	8/23/05	15:30	19.03	155.1	8.47	8.67			
38-FC-4	9/13/05	16:40	15.56	143.1	8.54	8.96			
38-FC-4	9/27/05	15:45	12.94	147.1	8.26	10.15			
38-FC-4	10/18/05	15:20	10.74	138.5	8.11	9.61			
38-FC-4	11/30/05	11:15	0.58	120.6	7.87				
38-FC-4	12/7/05	11:30	0.28	114.4	7.61				
38-FC-4	12/21/05	11:45	0.14	113.2	8.1	13.4			
38-FC-4	1/11/06	14:08	2.23	86.4	7.67	8.7			
38-FC-4	3/7/06	11:45	3.43	94.7	8	12.2			
38-FC-6	9/27/05	14:40	15.05	73.1	7.66	8.5			
38-FC-6	12/21/05	10:25	2.38	74.5	7.99	12.10			
38-FC-6	1/11/06	12:58	2.66	76.4	7.73	12.81			
38-FC-6	3/7/06	11:15	4.34	82	7.8	12.86			
38-FC-7	1/11/06	12:30	3.49	79.9	7.9	12.73			
38-FC-7	3/7/06	11:08	3.1	80.4	7.8	12.00			
38-FC-WWR	2/7/05	10:55	5.63	484.9	7.25	9.38			
38-FC-WWR	3/7/05	11:10	8.94	465	7.52	11.30			
38-FC-WWR	4/5/05	14:40	9.83	526.4	7.94	11.21			
38-FC-WWR	4/19/05	14:05	10.92	497.1	7.85	9.54			
38-FC-WWR	5/3/05	13:30	12.55	470.5	7.85	9.33			
38-FC-WWR	5/24/05	13:40	12.13	402.2	7.54	8.01			
38-FC-WWR	6/14/05	14:45	14.22	250	7.45	11.45			
38-FC-WWR	6/28/05	13:40	16.73	448.9	7.73	7.1			
38-FC-WWR	7/12/05	14:40	17.23	557	7.54	6.89			
38-FC-WWR	8/9/05	15:10	17.06	484.8	7.57	7.6			
38-FC-WWR	8/23/05	14:30	15.97	520.5	7.57	7.01			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
38-FC-WWR	9/27/05	13:30	12	487.4	7.35	7.12			
38-FC-WWR	10/18/05	13:40	13.08	518.7	7.48	7.55			
38-FC-WWR	11/30/05	9:36	6.07	626.9	7.52				
38-FC-WWR	12/7/05	10:00	5.33	542	6.48				
38-FC-WWR	12/21/05	9:40	6.38	509.1	7.36	0.58			
38-FC-WWR	3/7/06	13:35	10.46	401.3	7.4	8.62			
37-FM-1	12/13/04	16:29	7.42	655	8.19	10.61			
37-FM-1	1/12/05	12:15	4.05	589.2	8.06	11.75			
37-FM-1	2/9/05	13:15	6.88	628.3	8.33	13.77	14.82	1.05	5.19%
37-FM-1	3/9/05	11:50	11.41	594.3	8.19	13.00			
37-FM-1	4/5/05	11:55	9.42	280.8	8.27	11.99	13.4	1.41	7.85%
37-FM-1	4/19/05	12:00	12.59	339.3	8.83	12.95			
37-FM-1	5/3/05	12:05	15.58	268.4	8.31	9.66	9.95	0.29	2.09%
37-FM-1	5/24/05	11:40	15.27	229.4	8.31	9.95	10.8	0.85	5.79%
37-FM-1	6/14/05	12:25	16.02	251.7	8.4	9.7			
37-FM-1	6/28/05	11:50	18.17	283.4	8.46	10.05	10.55	0.5	3.43%
37-FM-1	7/12/05	13:10	19.25	320.3	8.51	9.95			
37-FM-1	7/26/05	13:30	20.33	301.7	8.5	10.7	10.9	0.2	1.31%
37-FM-1	8/9/05	12:30	20.65	284.8	8.31	8.6	8.7	0.1	0.82%
37-FM-1	8/23/05	12:50	19.14	279.4	8.47	8.66			
37-FM-1	9/13/05	14:10	16.4	279	8.53	9.71			
37-FM-1	9/26/05	15:05	14.72	322.6	8.55	11.35			
37-FM-1	10/3/05	14:55	13.17	395	8.13	10.13			
37-FM-1	10/17/05	14:35	12.51	388.2	8.24	9.64			
37-FM-1	11/7/05	13:20	8.55	635.1	8.06	9.72			
37-FM-1	11/29/05	12:26	6.72	641.1	8.18				
37-FM-1	12/6/05	13:00	5.65	632.7	8.15		11		
37-FM-1	12/20/05	13:30	5.55	585.6	7.6	10.46			
37-FM-3	12/13/04	16:15	7.78	710	8.57	11.35			
37-FM-3	1/12/05	11:40	3.58	711.2	8.19	12.65			
37-FM-3	2/9/05	13:00	5.91	728.9	8.52	14.01			
37-FM-3	3/9/05	11:30	9.14	702.4	8.48	13.13			
37-FM-3	4/5/05	11:30	9.03	233.5	8.67	12.04			
37-FM-3	4/19/05	11:40	12.17	278.1	9.01	12.02			
37-FM-3	5/3/05	11:50	15.42	223.4	8.54	9.36			
37-FM-3	5/24/05	11:20	15.05	197.5	8.44	9.97			
37-FM-3	6/14/05	12:05	15.84	214	8.4	9.3			
37-FM-3	6/28/05	11:35	17.85	267.5	8.45	8.93			
37-FM-3	7/12/05	12:25	19.27	272.1	8.45	8.35			
37-FM-3	7/26/05	13:15	21.11	253.8	8.53	8.13			
37-FM-3	8/9/05	12:10	20.92	245.3	8.5	8.99			
37-FM-3	8/23/05	12:35	19.05	229.5	8.49	8.73			
37-FM-3	9/13/05	13:55	16.66	238.7	8.59	9.86			
37-FM-3	9/26/05	14:50	14.58	270.9	8.59	9.89			
37-FM-3	10/3/05	14:30	13.29	400.7	8.41	9.9	9.65	-0.25	1.81%
37-FM-3	10/17/05	14:00	12.5	332.1	8.56	10.91			
37-FM-3	11/7/05	13:00	9.25	736	8.48	10.66			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FM-3	11/29/05	12:08	6.66	759.6	8.41				
37-FM-3	12/6/05	12:30	6.24	749.9	8.55		13.4		
37-FM-3	12/20/05	13:05	6.21	750.9	8.56	11.6			
37-FM-3	1/11/06	10:44	7	703.1	8.29	10.69			
37-FM-3.5	7/26/05	12:30	20.58	266	8.41	8.8			
37-FM-3.6	7/26/05	12:45	21.61	251.4	8.59	8.87			
37-FM-4	5/3/05	11:25	15.01	119.2	8.52	9.41			
37-FM-4	5/24/05	10:45	14.24	128.9	8.66	10.50			
37-FM-4	6/14/05	11:45	15.73	85	9.08	10.20			
37-FM-4	6/28/05	11:20	18.75	74.5	9.22	11.34			
37-FM-4	7/12/05	12:10	19.91	89	8.21	9.1			
37-FM-4	7/26/05	11:45	20.71	83.2	8	8.72	9.4	0.68	5.31%
37-FM-4	8/9/05	11:30	21.91	85	8.04	7.88			
37-FM-4	8/23/05	12:00	19.61	89.8	8.37	9.1			
37-FM-4	9/13/05	12:15	16.59	129.4	8.52	9.41			
37-FM-4	9/26/05	14:10	15.46	130	8.92	10.55			
37-FM-4	10/3/05	13:55	13.35	129	8.7	10.62			
37-FM-4	10/17/05	13:10	12.4	150	8.79	12.9			
37-FM-5	12/13/04	14:40	10.52	608.2	8.09	10.31			
37-FM-5	1/12/05	10:45	8.03	597.6	8.19	10.51	10.5	0.01	0.07%
37-FM-5	2/9/05	12:20	8.99	613.4	8.18	10.70			
37-FM-5	3/9/05	11:00	10.06	571.9	8.05				
37-FM-5	4/5/05	11:10	9.73	508	8.26	10.54			
37-FM-5	4/19/05	9:45	9.99	518	8.29	10.28			
37-FM-5	5/3/05	11:00	12.79	491.9	8.29	9.81			
37-FM-5	5/24/05	10:30	14.19	330	8.18	9.6			
37-FM-5	6/14/05	11:20	14.65	342	8.2	8.75			
37-FM-5	6/28/05	11:05	16.02	346.5	8.09	8.48			
37-FM-5	7/12/05	11:45	17.32	246.1	8.12	8.42			
37-FM-5	7/26/05	11:30	23.42	745.2	7.54	5.5			
37-FM-5	8/9/05	11:10	19.82	316	7.89	7.04			
37-FM-5	8/23/05	11:40	16.87	455.7	8.16	8.23			
37-FM-5	9/13/05	12:00	15.27	468.8	8.32	9.00			
37-FM-5	9/26/05	13:45	14.88	497	8.44	9.40			
37-FM-5	10/3/05	13:20	14.25	574.1	8.12	9.03			
37-FM-5	10/17/05	12:50	13.89	585	8.13	8.89			
37-FM-5	11/7/05	12:10	11.52	611.6	8.16	9.48			
37-FM-5	11/29/05	11:21	9.8	629.8	8.14				
37-FM-5	12/6/05	11:45	9.44	619.3	8.24				
37-FM-5	12/20/05	12:20	9.09	618.6	8.3	10.26			
37-FM-5	1/11/06	10:25	8.25	646.7	7.95	9.81			
37-FM-7	4/5/05	10:45	8.25	118.9	8.5	11.67			
37-FM-7	4/19/05	17:45	15.62	121.4	9.31	11.1			
37-FM-7	5/3/05	10:10	13.56	124.2	8.71	10.12			
37-FM-7	5/24/05	10:05	14.05	131.9	8.39	10.22			
37-FM-7	6/14/05	11:00	15.65	90	8.37	9.02			
37-FM-7	6/28/05	10:45	17.67	81	9.14	9.07			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FM-7	7/12/05	11:10	19.15	93	8.1	9.1			
37-FM-7	7/26/05	11:10	19.74	88.5	8.24	9.31			
37-FM-7	8/9/05	11:00	21.12	91.5	8.39	8.8			
37-FM-7	8/23/05	11:20	18.75	93	8.3	8.95			
37-FM-7	9/13/05	11:35	15.64	138	8.39	9.82			
37-FM-7	9/26/05	13:20	13.86	142.9	8.75	10.14			
37-FM-7	10/3/05	12:45	11.78	154	8.1	9.9	10.9	1	6.80%
37-FM-7	10/17/05	12:35	11.45	167.1	8.35	9.93			
37-FM-8	12/13/04	15:03	7.48	759.1	8.37	12.09			
37-FM-8	1/12/05	11:10	3.77	729.3	8.29	13.40	13	0.4	2.14%
37-FM-8	2/9/05	12:00	5.59	751.6	8.4	12.70			
37-FM-8	3/9/05	10:30	9.98	724.3	8.46	16.01			
37-FM-8	4/5/05	12:50	9.96	235.6	8.69	12.39			
37-FM-8	4/19/05	11:15	12.49	360.2	9.02	13.03			
37-FM-8	5/3/05	10:00	13.78	212.8	8.4	9.95			
37-FM-8	5/24/05	9:40	14.17	197.8	8.37	9.89			
37-FM-8	6/14/05	10:45	15.26	206	8.46	9.39			
37-FM-8	6/28/05	10:20	16.92	280.1	8.36	9.16			
37-FM-8	7/12/05	11:00	18.41	265.9	8.41	9.15			
37-FM-8	7/26/05	10:40	19.11	243	8.38	9.35			
37-FM-8	8/9/05	9:40	19.27	233.8	8.42	9.15			
37-FM-8	8/23/05	9:40	17.75	219	8.39	8.79	8.95	0.16	1.28%
37-FM-8	9/13/05	11:10	15.19	226.4	8.62	9.7	9.43	-0.27	2.00%
37-FM-8	9/26/05	12:55	13.51	278.4	8.63	10.7			
37-FM-8	10/3/05	12:30	12.52	444	8.33	9.86			
37-FM-8	10/17/05	12:00	11.56	384.7	8.39	11.03	10.73	-0.3	1.95%
37-FM-8	11/7/05	11:45	8.2	763.4	8.38	11.31			
37-FM-8	11/29/05	10:55	5.7	782.8	8.38				
37-FM-8	12/6/05	11:10	5.2	770.1	8.4		12.2		
37-FM-8	12/20/05	12:00	5.37	774.1	8.46	12.5	12.68	0.18	1.01%
37-FM-8	1/11/06	10:20	6.76	767.4	8.25	11.2			
37-FM-9	12/13/04	13:53	7.82	782.7	8.09	11.44	11.2	0.24	1.50%
37-FM-9	1/12/05	10:00	4.59	751.2	8.19	11.86	11.9	0.04	0.24%
37-FM-9	2/9/05	11:30	6.24	769	8.26				
37-FM-9	3/9/05	10:00	10.42	720.8	8.1	11.27			
37-FM-9	4/5/05	8:50	8.02	238.3	8.59	12.07			
37-FM-9	4/19/05	10:45	11.25	350.5	8.84	11.45			
37-FM-9	5/3/05	9:30	13.3	198.5	8.58	10.26			
37-FM-9	5/24/05	9:10	13.57	208	8.51	10.69	9.9	0.79	5.43%
37-FM-9	6/14/05	10:15	14.72	215	8.44	9.64			
37-FM-9	6/28/05	9:20	15.49	251.7	8.24	8.92			
37-FM-9	7/12/05	9:25	16.66	262.5	8.23	8.87			
37-FM-9	7/26/05	9:30	8.21	202.1	8.23	8.67			
37-FM-9	8/9/05	9:20	19.3	211.1	8.28	8.88			
37-FM-9	8/23/05	9:15	17.83	206.2	8.4	9.71			
37-FM-9	9/13/05	9:45	15.07	230.9	8.45	9.33			
37-FM-9	9/26/05	11:50	13.11	288.2	8.57	10.16			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FM-9	10/3/05	12:05	12.52	401	8.2	9.74			
37-FM-9	10/17/05	11:40	11.67	351.7	8.48	10.8			
37-FM-9	11/7/05	11:10	8.82	766.5	8.19	10.68			
37-FM-9	11/29/05	10:30	6.16	784.2	8.13				
37-FM-9	12/6/05	10:40	5.77	780.6	8.23				
37-FM-9	12/20/05	11:30	6.11	779.1	8.33	12.3			
37-FM-9	1/11/06	10:15	7.12	791.3	8.17	11.11			
37-FM-10	12/14/04	14:35	6.31	7.91	8.06	11.59			
37-FM-10	1/12/05	9:40	2.87	763.7	8.01	12.18			
37-FM-10	2/9/05	11:05	4.64	779.6	8.12	14.36			
37-FM-10	3/9/05	9:30	9.36	755.8	7.93	12.8			
37-FM-10	4/5/05	8:00	7.5	262.2	8.12	11.67			
37-FM-10	4/19/05	10:10	11.68	587	8.39	12.72	12.86	0.14	0.77%
37-FM-10	5/3/05	9:00	12.71	208.7	8.33	10.43	12	1.57	9.90%
37-FM-10	5/24/05	8:40	13.79	209.6	8.26	10.82			
37-FM-10	6/14/05	9:30	14.82	150.8	8.42	9.78	9.65	0.13	0.95%
37-FM-10	6/28/05	9:30	14.98	162.2	7.99	8.97	9.97	1	7.47%
37-FM-10	7/12/05	8:50	17.54	171.5	8.02	8.62			
37-FM-10	7/26/05	8:55	18.95	181.4	7.97	8.63			
37-FM-10	8/9/05	8:50	19.97	191	8.1	8.35	8	0.35	3.03%
37-FM-10	8/23/05	8:50	18.3	234.9	8.3	8.31	8.45	0.14	1.18%
37-FM-10	9/13/05	9:20	14.84	300.8	8.66	9.3			
37-FM-10	9/26/05	11:10	13.14	315.6	8.63	12.34			
37-FM-10	10/3/05	11:30	12.27	790	7.97	8.73	8.64	-0.09	0.73%
37-FM-10	10/17/05	11:00	12.29	878.4	7.86	10.43	10.61	0.18	1.21%
37-FM-10	11/7/05	10:45	7.53	805	7.78	10.83			
37-FM-10	11/29/05	9:55	4.9	844.6	7.73				
37-FM-10	12/6/05	10:10	4.14	840.3	7.93		11.1		
37-FM-10	12/20/05	11:00	4.29	847.6	7.9	10.2	10.55	0.35	2.39%
37-FM-10	1/11/06	10:10	5.38	840.4	7.81	10.09			
37-FM-WWO	12/13/04	15:59	12.6	633	7.37	8.45			
37-FM-WWO	1/12/05	10:50	10.35	0	6.88	10.86			
37-FM-WWO	2/9/05	12:30	11.18	645.8	6.94	5.97			
37-FM-WWO	3/9/05	11:10	13.56	640.1	7.17	7			
37-FM-WWO	4/5/05	11:15	13.86	642.3	7.48	5.77			
37-FM-WWO	4/19/05	9:50	14.85	647.8	7.4	4.49			
37-FM-WWO	5/3/05	11:10	17.33	0	7.66	9.09			
37-FM-WWO	5/24/05	10:35	18.01	0.4	7.45	9.22			
37-FM-WWO	6/14/05	11:30	20.07	14.8	7.73	8.23			
37-FM-WWO	6/28/05	11:10	21.67	590	7.47	4.29			
37-FM-WWO	7/12/05	11:50	22.75	765	7.53	8			
37-FM-WWO	7/26/05	11:25	17.86	340.7	7.98	10.33			
37-FM-WWO	8/9/05	11:15	24.51	6	7.65	2.4			
37-FM-WWO	8/23/05	11:50	23.84	1.3	7.66	7.62			
37-FM-WWO	9/13/05	12:05	22.51	682	7.64	3.75			
37-FM-WWO	9/26/05	13:50	21.29	676.4	7.75	3.47			
37-FM-WWO	10/3/05	13:30	21.2	703	7.55	3.65			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FM-WWO	10/17/05	13:00	20.44	600.7	7.37	3.31			
37-FM-WWO	11/7/05	12:15	17.28	3.1	7.4	5.62			
37-FM-WWO	11/29/05	11:25	13.47	771.4	7.4				
37-FM-WWO	12/6/05	11:50	12.49	675	7.85				
37-FM-WWO	12/20/05	12:30	11.16	667.5	7.76	5.82			
37-FM-WWO	1/11/06	10:30	12.33	12.8	7.49	9.54			
37-FW-0	12/15/04	13:20	10.86	454	7.81	10.5			
37-FW-0	1/11/05	16:01	9.63	238.7	7.86				
37-FW-0	2/8/05	12:45	10.1	455	7.8	11.30			
37-FW-0	3/8/05	12:30	14.08	480.8	8.19	13.9			
37-FW-0	4/4/05	16:10	11.34	206.2	8.3	10.48			
37-FW-0	4/18/05	15:40	12.24	217.1	8.43	11.21	10.71	0.5	3.23%
37-FW-0	5/2/05	16:50	14.41	185.5	8.44	10.15	10.2		
37-FW-0	5/23/05	15:50	14.78	197.8	8.13	9.5	9.8	0.3	2.20%
37-FW-0	6/13/05	15:10	16.4	282	8.17	9	9.49	0.49	3.75%
37-FW-0	6/28/05	15:00	17.16	300.5	8.03	8.96	8.95	0.01	0.08%
37-FW-0	7/11/05	16:55	18.9	248	8	8.76			
37-FW-0	7/25/05	15:10	19.88	253	8.07	8.4	9.4	1	7.95%
37-FW-0	8/8/05	16:10	22.59	274.9	8.56	9.26	9.1	0.16	1.23%
37-FW-0	8/22/05	15:05	19.65	324.2	8.09	8	8.48	0.48	4.12%
37-FW-0	9/12/05	15:20	16.61	239.3	8.27	9.83	9.15	-0.68	5.07%
37-FW-0	9/27/05	12:25	15.24	253.2	7.98	9.77	9.7	-0.07	0.51%
37-FW-0	10/18/05	12:10	15.06	449	7.84	8.78	9.05	0.27	2.14%
37-FW-0	11/6/05	17:10	11.74	377	7.77	9			
37-FW-0	11/28/05	15:27	10.8	454.3	7.65				
37-FW-0	12/5/05	15:25	9.01	457.8	7.84		10.6		
37-FW-0	12/19/05	16:15	8.69	450	7.79	9.58	10.05	0.47	3.39%
37-FW-0	1/10/06	15:05	10.42	412.5	7.68	9.91			
37-FW-0	3/6/06	15:00	11.01	468.3	8.61	10.81			
37-FW-1	12/15/04	12:40	9.2	495	8.02	11.97			
37-FW-1	1/11/05	12:30	8.15	523.3	8.14	12.40			
37-FW-1	2/8/05	16:15	9.02	525	8.14	12.30			
37-FW-1	3/8/05	12:45	14.18	421.4	7.79	11.26			
37-FW-1	4/4/05	16:30	10.94	193.3	8.76	13.3			
37-FW-1	4/18/05	16:10	12.18	205.6	8.82	13.36			
37-FW-1	5/2/05	17:10	14.36	170.5	8.43	10.59			
37-FW-1	5/23/05	16:15	14.77	187.2	8.43	10.83			
37-FW-1	6/13/05	15:35	17.18	274	8.69	10.45			
37-FW-1	6/27/05	15:15	17.89	298.3	8.55	9.7			
37-FW-1	7/11/05	17:25	19.52	234.5	8.36	9.03			
37-FW-1	7/25/05	15:30	20.69	240.9	8.09	8.34			
37-FW-1	8/8/05	15:45	20.73	294.6	8.38	8.77			
37-FW-1	8/22/05	15:30	21.49	303.4	8.83	9.06			
37-FW-1	9/12/05	15:50	16.62	222.9	8.46	13.32			
37-FW-1	9/27/05	12:50	15.25	241	8.19	11.85			
37-FW-1	10/18/05	12:30	14.91	482.2	8.21	10.51			
37-FW-1	11/6/05	17:20	10.85	382.7	7.85	8.4			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FW-1	11/28/05	15:50	9.02	496.7	7.91				
37-FW-1	12/5/05	15:50	7.16	500.4	8.08				
37-FW-1	12/19/05	16:40	6.4	495.1	8.11	12.07			
37-FW-1	1/10/06	15:35	9.62	307.1	7.7	8.6			
37-FW-1	3/6/06	14:35	10.3	495.8	8.84	14.71			
37-FW-2	12/15/04	12:55	12.01	268.3	7.73	11.41			
37-FW-2	1/11/05	15:30	11.37	258.3	7.77	10.91			
37-FW-2	2/8/05	15:50	13.8	258	7.82	12.00	11.75	0.25	1.49%
37-FW-2	3/8/05	12:00	16.07	236.5	7.65	12.35			
37-FW-2	4/4/05	15:50	16.68	236.3	8.31	12.01			
37-FW-2	4/18/05	15:25	18.9	245.4	8.5	12.24			
37-FW-2	5/2/05	16:30	19.09	230.5	8.4	12.06			
37-FW-2	5/23/05	15:30	21.53	233	8.06	10.07			
37-FW-2	6/13/05	14:55	18.99	235	8.12	9.72			
37-FW-2	6/27/05	14:40	18.29	228.1	8.07	11.18			
37-FW-2	7/11/05	16:30	23.06	252.1	8.12	10.47			
37-FW-2	7/25/05	14:45	22.5	253.5	8.08	9.89			
37-FW-2	8/8/05	15:20	23.79	265.4	8.1	11.41			
37-FW-2	8/22/05	14:45	21.07	270.2	8.16	11.77			
37-FW-2	9/12/05	15:00	18.84	264.4	7.96	11.3			
37-FW-2	9/27/05	11:55	16.39	274	7.6	10.15			
37-FW-2	10/18/05	11:55	15.52	269.5	7.53	8.88			
37-FW-2	11/6/05	16:55	15.19	276.5	7.61	8.83			
37-FW-2	11/28/05	15:10	12.67	272.9	7.52				
37-FW-2	12/5/05	15:05	10.83	264	7.82				
37-FW-2	12/19/05	16:00	10.3	248.4	7.78	13			
37-FW-2	1/10/06	15:21	12.71	278.3	7.8	10.18			
37-FW-2	3/6/06	14:40	14.32	280.4	8	12.12			
37-FW-4	12/15/04	12:15	7.39	613	7.98	12.6			
37-FW-4	1/11/05	12:05	6.29	617	7.99	12.90			
37-FW-4	2/8/05	15:30	7.13	581	8.09	12.30			
37-FW-4	3/8/05	11:35	12.68	552.5	7.93	12.57			
37-FW-4	4/4/05	15:10	7.42	160.5	8.58	11.56	12.1	0.54	3.23%
37-FW-4	4/18/05	14:50	10.57	190	8.44	12.4			
37-FW-4	5/2/05	15:58	13.71	123.8	8.27	10.4			
37-FW-4	5/23/05	15:00	12.78	138.9	7.99	9.62			
37-FW-4	6/13/05	14:25	16.23	208	8.08	8.9			
37-FW-4	6/27/05	14:05	17.63	174.2	8	8.55			
37-FW-4	7/11/05	15:55	18.26	163.3	8.07	8.78			
37-FW-4	7/25/05	14:05	19.69	161.4	7.63	8.54	9.5	0.96	7.53%
37-FW-4	8/8/05	14:40	20.39	169.5	8.2	8.83	8.9	0.07	0.56%
37-FW-4	8/22/05	14:10	19.81	214	8.3	8.83	8.94	0.11	0.88%
37-FW-4	9/12/05	14:15	16.05	143.7	8.27	9.44	9.57	0.13	0.97%
37-FW-4	9/27/05	11:15	14.31	151	7.98	9.76	9.64	-0.12	0.87%
37-FW-4	10/18/05	11:05	13.69	534	7.85	9.24			
37-FW-4	11/6/05	16:25	8.67	434.2	7.7	9.62			
37-FW-4	11/28/05	14:30	7.15	678.2	7.66				

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FW-4	12/5/05	14:25	5.45	601.3	7.78				
37-FW-4	12/19/05	15:30	4.04	554	7.93	11.75	12.5	0.75	4.37%
37-FW-4	1/10/06	14:39	7.17	386.9	7.87	11.61			
37-FW-4	3/6/06	13:55	8.9	518.7	8.8	14.85			
37-FW-5	12/15/04	11:45	6.48	615	7.86	10.34			
37-FW-5	1/11/05	11:40	5.55	592.4	7.9	11.43			
37-FW-5	2/8/05	14:40	7.02	561	7.99	11.80			
37-FW-5	3/8/05	11:00	11.38	556.7	7.89	12.37			
37-FW-5	4/4/05	14:40	9.71	155.1	8.65	12.68			
37-FW-5	4/18/05	13:55	10.42	164.3	8.48	12.05			
37-FW-5	5/2/05	15:30	13.62	118.7	8.37	10.04			
37-FW-5	5/23/05	14:10	13.44	128.2	7.67	7.42			
37-FW-5	6/13/05	14:10	16.36	207	8.16	8.6	9.38	0.78	6.14%
37-FW-5	6/27/05	13:30	18.26	176.1	7.89	6.39	7.89	1.5	14.86%
37-FW-5	7/11/05	15:20	18.27	155.3	8.12	8.4			
37-FW-5	7/25/05	13:40	19.57	151.8	7.95	5.11			
37-FW-5	8/8/05	14:10	21.79	131.3	8.2	7.05			
37-FW-5	8/22/05	13:40	19.78	205.4	8.24	7.39			
37-FW-5	9/12/05	13:35	16.1	64.5	8.21	9.18	9.1	-0.08	0.62%
37-FW-5	9/27/05	10:30	14.1	141.2	7.94	9.45			
37-FW-5	10/18/05	10:40	12.47	510.1	7.88	7.1			
37-FW-5	11/6/05	15:50	7.84	496.4	7.85	9			
37-FW-5	11/28/05	14:04	5.52	656.5	7.78				
37-FW-5	12/5/05	13:45	3.35	613.5	7.8		11.9		
37-FW-5	12/19/05	15:10	2.9	625.6	7.99	11.2			
37-FW-5	1/10/06	14:29	7.18	370	7.83	10.48			
37-FW-5	3/6/06	13:30	8.25	515.6	8.56	14.8			
37-FW-6	12/15/04	11:00	7.01	570.4	7.73	10.82			
37-FW-6	1/11/05	11:15	6.44	540.6	7.71	10.95			
37-FW-6	2/8/05	14:10	8.6	530	7.81	13.00	12.7	0.3	1.65%
37-FW-6	3/8/05	10:30	10.51	497.3	7.85	13.17			
37-FW-6	4/4/05	12:40	8.84	143.9	8.26	13.05			
37-FW-6	4/18/05	12:55	10.03	151.2	8.12	12.85	12.62	0.23	1.28%
37-FW-6	5/2/05	14:35	13.65	238	8.38	10.89	11.02	0.13	0.84%
37-FW-6	5/23/05	13:30	12.73	139.5	7.87	9.92	11.8	1.88	12.24%
37-FW-6	6/13/05	13:25	16.45	193	7.92	9.49			
37-FW-6	6/27/05	12:50	17.14	228.2	8.07	8.82			
37-FW-6	7/11/05	14:45	17.94	153.5	8.05	8.17			
37-FW-6	7/25/05	13:15	19.22	180.5	7.97	8.9			
37-FW-6	8/8/05	13:45	20.6	154.2	8.16	9.53			
37-FW-6	8/22/05	13:05	20.02	188.5	8.22	8.35	8.97	0.62	5.06%
37-FW-6	9/12/05	13:00	15.66	132.7	8.34	9.39	9.4	0.01	0.08%
37-FW-6	9/27/05	10:00	13.89	141.7	7.9	9.32	9.145	0.18	1.34%
37-FW-6	10/18/05	10:05	11.89	469	7.75	8.55	9.615		
37-FW-6	11/6/05	15:40	8.02	307.7	7.84	9.93			
37-FW-6	11/28/05	13:22	4.98	549.8	7.8				
37-FW-6	12/5/05	13:10	2.57	533	7.7				

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL.
All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FW-6	12/19/05	14:40	2.36	535.1	8.02	11.22			
37-FW-6	1/10/06	14:21	6.4	313.6	7.63	11.6			
37-FW-6	3/6/06	13:06	8.72	479.2	8.48	14.8			
37-FW-8	12/15/04	9:50	3.68	429.6	7.85	11.3			
37-FW-8	1/11/05	10:51	3.12	399.1	7.99	11.90			
37-FW-8	2/8/05	10:15	4.63	393	7.98				
37-FW-8	3/8/05	10:00	9.65	375	7.86	10.79			
37-FW-8	4/4/05	12:00	8.5	117.4	8.88	13.02			
37-FW-8	4/18/05	11:30	8.91	120.9	8.8	12.72			
37-FW-8	5/2/05	13:30	13.8	121.1	8.78	11.55			
37-FW-8	5/23/05	12:45	12.68	111.2	8.19	10.26			
37-FW-8	6/13/05	12:35	15.87	151	8.01	9.09	9.2	0.11	0.85%
37-FW-8	6/27/05	12:15	17.23	156.5	7.96	8.72			
37-FW-8	7/11/05	14:10	18.46	160.2	7.87	8.02			
37-FW-8	7/25/05	12:25	18.83	154.6	7.96	9.71	9	0.71	5.37%
37-FW-8	8/8/05	12:55	19.69	171.8	8.03	8.57	8.5	0.07	0.58%
37-FW-8	8/22/05	12:25	18.87	146.5	8.23	8.49	8.48	-0.01	0.08%
37-FW-8	9/12/05	12:20	15.75	137.7	8.41	9.36			
37-FW-8	9/27/05	9:15	13.44	145.9	7.8	9.5	9.18	-0.32	2.42%
37-FW-8	10/18/05	9:40	11.76	426.4	7.79	7.94	8.28	0.34	2.96%
37-FW-8	11/6/05	15:10	7.14	425.4	7.97	10.24			
37-FW-8	11/28/05	12:45	3.77	447.7	7.79				
37-FW-8	12/5/05	12:30	1.75	443	7.78		13.2		
37-FW-8	12/19/05	14:10	1.63	426	8.01	12.86	13.06		
37-FW-8	1/10/06	13:37	5.53	213	7.64	11.81			
37-FW-8	3/6/06	12:36	6.48	426.5	9.07	16.2			
37-FW-8.5	4/18/05	11:40	8.99	121.3	8.74	12.99			
37-FW-8.5	5/2/05	13:20	13.61	120.4	8.65	11.21			
37-FW-8.5	5/23/05	12:30	12.94	111.4	8.22	9.40			
37-FW-8.5	6/13/05	12:25	15.93	150	7.97	8.92			
37-FW-8.5	6/27/05	12:05	17.26	152.5	7.85	7.3			
37-FW-8.5	7/11/05	13:45	18.29	160.4	7.79	8.12			
37-FW-8.5	7/25/05	12:20	18.91	153.9	7.99	8.2			
37-FW-8.5	8/8/05	12:50	19.7	169.3	7.94	8.1			
37-FW-8.5	8/22/05	12:15	18.82	145.1	8.01	8.28			
37-FW-8.5	9/12/05	12:10	15.67	137.5	8.43	9.16			
37-FW-8.5	9/27/05	9:10	13.42	145	7.83	9.12			
37-FW-8.5	1/10/06	13:26	5.47	215	7.64	11.57			
37-FW-12	12/15/04	9:10	3.3	513	7.75	11.34			
37-FW-12	1/11/05	10:06	3.74	469.2	7.87	11.58			
37-FW-12	2/8/05	9:20	2.56	469.3	7.64	11.89			
37-FW-12	3/8/05	9:00	6.77	435	7.6	12.63			
37-FW-12	4/4/05	11:20	8.73	443.8	8.37	14.14			
37-FW-12	4/18/05	11:10	10.43	481.8	8.42	13.21			
37-FW-12	5/2/05	12:50	16.72	437.1	8.74	12.32			
37-FW-12	5/23/05	12:05	14.99	463.7	8.25	9.21			
37-FW-12	6/13/05	12:05	16.4	466	7.94	7.79			

Table C-1. Field measurements for the Yakima Area Creeks Fecal Coliform TMDL. All data, except Winkler dissolved oxygen (DO), were collected using a Hydrolab® (HL).

Station ID	Date	Time	Temp (˚C)	Cond µS/cm)	pH	Hydrolab DO (mg/L)	Winkler DO (mg/L)	HL and Winkler DO Difference	HL and Winkler DO RSD%
37-FW-12	6/27/05	11:40	16.09	446.3	7.5	5.56			
37-FW-12	12/19/05	13:30	4.34	474	7.67	7.99			
37-FW-12	1/10/06	13:08	5.8	264.1	7.59	11.27			
37-FW-12	3/6/06	12:17	5.36	407	8.51	16.75			
37-FW-13	12/15/04	9:20	6.53	404	7.35	8.26			
37-FW-13	1/11/05	9:40	4.87	348.2	7.24	9.41			
37-FW-13	2/8/05	9:35	4.04	346.8	7.16				
37-FW-13	3/8/05	9:10	7.48	330	6.87	10.1			
37-FW-13	4/4/05	11:05	8.14	343.6	7.28	8.93			
37-FW-13	4/18/05	10:54	8.46	368.2	7.44	9.4			
37-FW-13	5/2/05	11:20	11.16	275	7.49	6.53			
37-FW-13	5/23/05	11:50	10.88	357	7.44	6.24			
37-FW-13	6/13/05	11:30	13.01	370	7.33	5.12			
37-FW-13	6/27/05	11:10	14.78	374.7	7.34	5.08	4.96	0.12	1.69%
37-FW-13	7/11/05	12:45	16.08	418.2	7.15	5.41			
37-FW-13	7/25/05	12:00	17.53	383.7	7.31	5.26			
37-FW-13	12/5/05	11:50	6.15	416	6.62				
37-FW-13	12/19/05	13:40	5.78	402	7.45	8.95			
37-FW-13	1/10/06	12:51	5.34	132.1	7.52	11.40			
37-FW-13	3/6/06	12:22	5.81	440	7.86	11.35			
37-FW-14	12/15/04	8:45	3.52	360.8	7.01	9.07			
37-FW-14	1/11/05	9:05	2.73	346.5	7.03	10.55			
37-FW-14	2/8/05	9:00	7.9	357.1	7.01	10.78			
37-FW-14	3/8/05	8:30	7.22	335.3	6.92	9.41			
37-FW-14	4/4/05	10:40	7.49	340	7.46	10.3			
37-FW-14	4/18/05	10:25	7.8	375.2	7.53	9.82	10.4	0.58	4.06%
37-FW-14	5/2/05	10:35	12.75	294	7.7	8.05	8.26	0.21	1.82%
37-FW-14	5/23/05	11:30	11.98	319.7	7.33	6	6.7	0.7	7.79%
37-FW-14	1/10/06	12:30	5.12	105.3	7.56	12.36			
37-FW-14	3/6/06	11:28	5.16	356.6	7.96	13.14			
37-FW-15	1/10/06	12:15	5.56	226.5	7.69	11.73			
37-FW-15	3/6/06	12:12	4.57	326.1	8.36	13.80			
37-FW-16	1/10/06	11:00	5.05	393.2	7.69	10.82			
37-FW-16	3/6/06	12:05	4.29	619	8.12	13.20			
37-FW-17	1/10/06	11:50	5.37	141.4	7.49	11.83			
37-FW-17	3/6/06	11:55	2.04	165.5	8.01	11.50			
37-FW-18	1/10/06	11:38	4.08	90.5	7.79	12.35			
37-FW-18	3/6/06	11:45	2.15	167	8.4	12.60			

Cond – conductivity
RSD – relative standard deviation

Appendix D. Flow Monitoring

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
38-FC-1	11/30/05	12:38	7.39	
38-FC-1.5	12/14/04	13:10	10.10	
38-FC-1.5	1/10/05	13:10	9.99	
38-FC-1.5	2/7/05	13:25	17.01	
38-FC-1.5	3/7/05	13:40	12.51	
38-FC-1.5	4/5/05	17:20	14.65	
38-FC-1.5	4/19/05	16:50	13.36	
38-FC-1.5	5/3/05	15:50	22.35	
38-FC-1.5	5/24/05	16:25	30.18	
38-FC-1.5	6/14/05	16:25	4.87	
38-FC-1.5	7/12/05	17:00	2.92	
38-FC-1.5	7/26/05	16:30	0.80	
38-FC-1.5	8/9/05	16:30	0.17	
38-FC-1.5	8/23/05	16:25	0.24	
38-FC-1.5	9/13/05	17:30	4.46	
38-FC-1.5	9/27/05	16:30	2.87	
38-FC-1.5	10/4/05	16:40	10.50	
38-FC-1.5	10/18/05	15:50	4.63	
38-FC-1.5	11/30/05	12:11	5.98	
38-FC-1.5	12/7/05	13:00	6.12	
38-FC-1.5	12/21/05	12:30	6.03	
38-FC-1.5	3/7/06	14:00	23.35	
38-FC-2	12/14/04	10:25	7.31	
38-FC-2	1/10/05	10:25	5.53	
38-FC-2	2/7/05	12:50	10.98	
38-FC-2	3/7/05	13:10	9.69	
38-FC-2	4/5/05	16:55	12.63	
38-FC-2	4/19/05	16:15	13.09	
38-FC-2	5/3/05	15:30	18.17	
38-FC-3	12/14/04	12:45	2.78	
38-FC-3	1/10/05	12:45	2.06	
38-FC-3	2/7/05	11:30	2.34	
38-FC-3	3/7/05	11:45	2.59	
38-FC-3	4/5/05	15:45	1.62	
38-FC-3	4/19/05	14:45	1.31	
38-FC-3	5/3/05	15:00	0.84	
38-FC-3	5/24/05	15:20	1.75	
38-FC-3	6/14/05	16:00	1.04	
38-FC-3	6/28/05	15:15	0.73	
38-FC-3	7/26/05	15:30	0.39	
38-FC-3	8/9/05	15:55	0.62	
38-FC-3	8/23/05	14:55	0.37	
38-FC-3	9/13/05	16:20	0.97	
38-FC-3	9/27/05	15:00	0.83	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
38-FC-3	10/4/05	15:05	4.89	
38-FC-3	10/18/05	14:40	1.31	
38-FC-3	11/30/05	10:25	0.79	
38-FC-3	12/7/05	10:40	0.94	
38-FC-3	12/21/05	11:00	0.89	
38-FC-3	1/11/06	13:37	13.97	
38-FC-3	3/7/06	10:35	5.38	
38-FC-4	12/14/04	9:21	7.92	
38-FC-4	1/10/05	9:21	4.85	
38-FC-4	2/7/05	12:05	13.49	
38-FC-4	3/7/05	12:25	10.97	
38-FC-4	4/5/05	16:20	13.37	
38-FC-4	4/19/05	15:35	14.25	
38-FC-4	5/3/05	14:30	21.26	
38-FC-4	5/24/05	14:25	19.93	
38-FC-4	6/14/05	15:20	8.74	
38-FC-4	6/28/05	14:20	8.37	
38-FC-4	7/12/05	15:45	3.64	
38-FC-4	8/9/05	14:30	1.05	
38-FC-4	8/23/05	15:30	0.97	
38-FC-4	9/13/05	16:40	0.20	
38-FC-4	9/27/05	15:45	0.20	
38-FC-4	10/4/05	15:45	2.81	
38-FC-4	10/18/05	15:20	2.43	
38-FC-4	11/30/05	11:15	2.73	
38-FC-4	12/7/05	11:30	4.39	
38-FC-4	1/11/06	14:08	81.48	
38-FC-4	3/7/06	11:45	30.01	
38-FC-6	8/24/05	9:20	2.20	
38-FC-6	9/27/05	14:40	0.04	
38-FC-6	10/4/05	14:30	0.65	
38-FC-6	12/21/05	10:25	1.08	
38-FC-6	1/11/06	12:58	25.13	
38-FC-6	3/7/06	9:55	4.26	
38-FC-7	1/11/06	12:30	50.51	
38-FC-7	3/7/06	9:25	9.37	
37-FM-1	1/12/05	16:29	13.00	
37-FM-1	2/9/05	13:15	11.45	
37-FM-1	3/9/05	11:50	12.31	
37-FM-1	4/5/05	11:55	37.32	
37-FM-1	4/19/05	12:00	29.84	
37-FM-1	5/3/05	12:05	44.68	
37-FM-1	5/24/05	11:40	77.29	
37-FM-1	6/14/05	12:25	21.25	
37-FM-1	6/28/05	11:50	29.63	
37-FM-1	7/12/05	13:10	29.32	Flow collected using analogue Marsh McBirney meter
37-FM-1	7/26/05	13:30	26.00	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)		Comments
37-FM-1	8/9/05	12:30	28.17		
37-FM-1	8/23/05	12:50	42.52		
37-FM-1	9/13/05	14:10	66.13		Used rating curve to calculate flow
37-FM-1	9/26/05	15:05	50.02		Used rating curve to calculate flow
37-FM-1	10/3/05	14:55	38.84		
37-FM-1	10/17/05	14:35	37.67		
37-FM-1	11/7/05	13:20	14.67		
37-FM-1	11/29/05	12:26	16.30		
37-FM-1	12/6/05	13:00	12.77		Used rating curve to calculate flow
37-FM-1	12/20/05	13:30	14.38		
37-FM-3	1/12/05	16:15	12.00		Source: US Bureau of Reclamation stream gage
37-FM-3	2/9/05	13:00	11.50		Source: US Bureau of Reclamation stream gage
37-FM-3	3/9/05	11:30	10.50		Source: US Bureau of Reclamation stream gage
37-FM-3	4/5/05	11:30	34.50		Source: US Bureau of Reclamation stream gage
37-FM-3	4/19/05	11:40	23.70		Source: US Bureau of Reclamation stream gage
37-FM-3	5/3/05	11:50	34.50		Source: US Bureau of Reclamation stream gage
37-FM-3	5/24/05	11:15	60.70		Source: US Bureau of Reclamation stream gage
37-FM-3	6/14/05	12:05	20.28		
37-FM-3	6/28/05	11:35	22.50		Source: US Bureau of Reclamation stream gage
37-FM-3	7/12/05	12:25	27.20		Source: US Bureau of Reclamation stream gage
37-FM-3	7/26/05	13:15	24.50		Source: US Bureau of Reclamation stream gage
37-FM-3	8/9/05	12:10	29.55		Source: US Bureau of Reclamation stream gage
37-FM-3	8/23/05	12:35	36.45		Source: US Bureau of Reclamation stream gage
37-FM-3	9/13/05	13:55	53.75		Source: US Bureau of Reclamation stream gage
37-FM-3	9/26/05	14:50	38.46		
37-FM-3	9/26/05	14:45	41.00		Source: US Bureau of Reclamation stream gage
37-FM-3	10/3/05	14:30	24.30		
37-FM-3	10/3/05	14:30	26.75		Source: US Bureau of Reclamation stream gage
37-FM-3	10/17/05	14:00	30.15		
37-FM-3	10/17/05	14:00	29.00		Source: US Bureau of Reclamation stream gage
37-FM-3	11/7/05	13:00	13.00		Source: US Bureau of Reclamation stream gage
37-FM-3	11/29/05	12:08	12.00		Source: US Bureau of Reclamation stream gage
37-FM-3	12/6/05	12:30	11.50		Source: US Bureau of Reclamation stream gage
37-FM-3	12/20/05	13:05	11.10		Source: US Bureau of Reclamation stream gage
37-FM-3	1/11/06	10:44	13.50		Source: US Bureau of Reclamation stream gage
37-FM-3.5	8/9/05	11:55	29.20	E	Estimated from combined input flows
37-FM-3.5	8/23/05	12:25	35.88	E	Estimated from combined input flows
37-FM-3.5	9/13/05	12:45	43.67	E	Estimated from combined input flows
37-FM-3.5	9/26/05	14:35	37.23	E	Estimated from combined input flows
37-FM-3.5	10/3/05	14:10	25.72	E	Estimated from combined input flows
37-FM-3.5	10/17/05	13:50	24.67	E	Estimated from combined input flows
37-FM-3.5	11/7/05	12:35	7.90	E	Estimated from combined input flows
37-FM-3.5	11/29/05	11:55	7.18	E	Estimated from combined input flows
37-FM-3.5	12/6/05	12:10	5.18	E	Estimated from combined input flows
37-FM-3.5	12/20/05	12:45	5.70	E	Estimated from combined input flows
37-FM-3.5	1/11/06	10:38	8.57	E	Estimated from combined input flows
37-FM-3.6	8/9/05	12:00	12.41	E	Estimated from combined input flows

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)		Comments
37-FM-3.6	8/23/05	12:15	11.77	E	Estimated from combined input flows
37-FM-3.6	9/13/05	13:00	11.70	E	Estimated from combined input flows
37-FM-3.6	9/26/05	14:30	11.42	E	Estimated from combined input flows
37-FM-3.6	10/3/05	14:05	11.18	E	Estimated from combined input flows
37-FM-3.6	10/17/05	13:40	11.30	E	Estimated from combined input flows
37-FM-3.6	11/7/05	12:30	2.64	E	Estimated from combined input flows
37-FM-3.6	11/29/05	11:50	2.38	E	Estimated from combined input flows
37-FM-3.6	12/6/05	12:05	0.78	E	Estimated from combined input flows
37-FM-3.6	12/20/05	12:50	1.55	E	Estimated from combined input flows
37-FM-3.6	1/11/06	10:33	3.90	E	Estimated from combined input flows
37-FM-4	5/3/05	11:25	2.84		
37-FM-4	6/14/05	11:45	0.87		
37-FM-4	6/28/05	11:20	0.53		
37-FM-4	7/12/05	12:10	2.12		Flow collected using analogue Marsh McBirney meter
37-FM-4	7/26/05	11:45	2.15		
37-FM-4	8/9/05	11:30	1.82		
37-FM-4	8/23/05	12:00	4.62		
37-FM-4	9/13/05	12:15	3.24		
37-FM-4	9/26/05	14:10	4.13		
37-FM-4	10/3/05	13:55	5.19		
37-FM-4	10/17/05	13:10	4.45		
37-FM-5	1/12/05	14:40	2.30		
37-FM-5	2/9/05	12:20	2.03		
37-FM-5	3/9/05	11:00	1.72		
37-FM-5	4/5/05	11:10	3.22		
37-FM-5	4/19/05	9:45	3.00		
37-FM-5	5/3/05	11:00	3.31		
37-FM-5	5/24/05	10:30	6.48		
37-FM-5	6/14/05	11:20	5.04		
37-FM-5	6/28/05	11:05	6.96		
37-FM-5	7/12/05	11:45	3.83		Flow collected using analogue Marsh McBirney meter
37-FM-5	7/26/05	11:25	1.95		
37-FM-5	8/9/05	11:10	9.09		
37-FM-5	8/23/05	11:40	4.93		
37-FM-5	9/13/05	12:00	5.28		
37-FM-5	9/26/05	13:45	4.88		
37-FM-5	10/3/05	13:20	4.69		
37-FM-5	10/17/05	12:50	3.63		
37-FM-5	11/7/05	12:10	2.64		
37-FM-5	11/29/05	11:21	2.38		
37-FM-5	12/6/05	11:45	0.78		
37-FM-5	12/20/05	12:20	1.55		
37-FM-5	1/11/06	10:25	3.90		
37-FM-7	4/5/05	10:45	0.29		
37-FM-7	4/20/05	12:25	3.18		
37-FM-7	5/3/05	10:10	2.23		
37-FM-7	6/14/05	11:00	1.90		

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-FM-7	6/28/05	10:45	3.35	
37-FM-7	7/12/05	11:10	1.70	Flow collected using analogue Marsh McBirney meter
37-FM-7	7/26/05	11:10	1.80	
37-FM-7	8/9/05	11:00	1.50	
37-FM-7	8/23/05	11:20	2.22	
37-FM-7	9/13/05	11:35	3.18	
37-FM-7	9/26/05	13:20	2.41	
37-FM-7	10/3/05	12:45	1.30	
37-FM-7	10/17/05	12:35	3.22	
37-FM-8	1/12/05	15:03	5.18	
37-FM-8	2/9/05	12:00	4.46	
37-FM-8	3/9/05	10:30	4.27	
37-FM-8	4/5/05	12:50	20.80	
37-FM-8	4/19/05	11:15	8.67	
37-FM-8	5/3/05	9:50	15.29	
37-FM-8	5/24/05	9:40	36.78	
37-FM-8	6/14/05	10:45	14.67	
37-FM-8	6/28/05	10:20	8.75	
37-FM-8	7/12/05	11:00	15.45	Flow collected using analogue Marsh McBirney meter
37-FM-8	7/26/05	10:40	11.42	
37-FM-8	8/9/05	9:40	16.79	
37-FM-8	8/23/05	9:40	24.11	
37-FM-8	9/13/05	11:10	31.96	
37-FM-8	9/26/05	12:55	25.81	
37-FM-8	10/3/05	12:30	14.54	
37-FM-8	10/17/05	12:00	13.37	
37-FM-8	11/7/05	11:45	5.26	
37-FM-8	11/29/05	10:55	4.80	
37-FM-8	12/6/05	11:10	4.40	
37-FM-8	12/20/05	12:00	4.15	
37-FM-8	1/11/06	10:20	4.67	
37-FM-9	1/12/05	13:53	3.16	
37-FM-9	2/9/05	11:30	2.82	
37-FM-9	3/9/05	10:00	2.42	
37-FM-9	4/5/05	8:50	16.64	
37-FM-9	4/19/05	10:45	5.25	
37-FM-9	5/3/05	9:30	17.81	
37-FM-9	5/24/05	9:10	34.51	
37-FM-9	6/14/05	10:15	13.76	
37-FM-9	6/28/05	9:20	8.53	
37-FM-9	7/12/05	9:25	11.90	Flow collected using analogue Marsh McBirney meter
37-FM-9	7/26/05	9:30	7.11	
37-FM-9	8/9/05	9:20	8.31	
37-FM-9	8/23/05	9:15	20.72	
37-FM-9	9/13/05	9:45	25.03	
37-FM-9	9/26/05	11:50	15.65	
37-FM-9	10/3/05	12:05	8.65	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-FM-9	10/17/05	11:40	13.49	
37-FM-9	11/7/05	11:10	2.88	
37-FM-9	11/29/05	10:30	2.64	
37-FM-9	12/6/05	10:40	2.50	
37-FM-9	12/20/05	11:30	2.48	
37-FM-9	1/11/06	10:15	3.37	
37-FM-10	1/12/05	14:35	1.07	
37-FM-10	2/9/05	11:05	0.94	
37-FM-10	3/9/05	9:30	0.55	
37-FM-10	4/5/05	8:00	2.67	
37-FM-10	4/19/05	10:10	0.21	
37-FM-10	5/3/05	9:00	2.24	
37-FM-10	5/24/05	8:40	2.13	
37-FM-10	6/14/05	9:30	2.13	
37-FM-10	6/28/05	9:00	2.88	
37-FM-10	7/12/05	8:50	2.47	Flow collected using analogue Marsh McBirney meter
37-FM-10	7/26/05	8:55	2.30	
37-FM-10	8/9/05	8:50	2.76	
37-FM-10	8/23/05	8:50	2.92	
37-FM-10	9/13/05	9:20	2.89	
37-FM-10	9/26/05	11:10	3.03	
37-FM-10	10/3/05	11:30	0.75	
37-FM-10	10/17/05	11:00	0.43	
37-FM-10	11/7/05	10:45	0.36	
37-FM-10	11/29/05	9:55	0.62	
37-FM-10	12/6/05	10:10	0.51	
37-FM-10	12/20/05	11:00	0.48	
37-FM-10	1/11/06	10:10	0.89	
37-FM-WWO	2/9/05	12:30	0.14	
37-FW-0	12/15/04	13:20	10.17	
37-FW-0	2/8/05	12:45	9.31	
37-FW-0	3/8/05	12:30	8.58	
37-FW-0	4/18/05	15:40	31.84	
37-FW-0	5/2/05	16:50	30.30	
37-FW-0	5/23/05	15:50	28.23	
37-FW-0	6/13/05	15:10	17.55	
37-FW-0	6/27/05	15:00	15.39	
37-FW-0	7/11/05	16:55	27.05	
37-FW-0	7/25/05	15:10	22.54	
37-FW-0	8/8/05	16:10	12.14	
37-FW-0	8/22/05	15:05	8.91	
37-FW-0	9/12/05	15:50	20.00	
37-FW-0	9/27/05	12:25	26.76	
37-FW-0	10/4/05	12:45	32.28	
37-FW-0	10/18/05	12:10	11.69	
37-FW-0	11/6/05	17:20	13.67	
37-FW-0	11/28/05	15:27	11.63	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-FW-0	12/5/05	15:25	10.20	
37-FW-0	12/19/05	16:15	7.30	
37-FW-0	1/10/06	15:05	13.73	
37-FW-0	3/6/06	15:00	14.44	
37-FW-1.5	1/11/05	16:01	10.48	
37-FW-1.5	4/4/05	16:10	26.87	
37-FW-2	12/15/04	12:55	6.24	
37-FW-2	1/11/05	12:30	5.26	
37-FW-2	2/8/05	15:50	4.43	
37-FW-2	3/8/05	12:45	5.53	
37-FW-2	4/4/05	15:50	4.29	
37-FW-2	4/18/05	15:25	4.34	
37-FW-2	5/2/05	16:30	4.55	
37-FW-2	5/23/05	15:30	5.11	
37-FW-2	6/13/05	14:55	8.62	
37-FW-2	6/27/05	14:40	4.54	
37-FW-2	7/11/05	16:30	5.01	
37-FW-2	7/25/05	14:45	6.78	
37-FW-2	8/8/05	15:20	6.09	
37-FW-2	8/22/05	15:30	6.11	
37-FW-2	9/12/05	15:00	6.54	
37-FW-2	9/27/05	11:55	7.85	
37-FW-2	10/4/05	12:25	7.81	
37-FW-2	10/18/05	11:55	4.78	
37-FW-2	11/6/05	16:55	4.61	
37-FW-2	11/28/05	15:10	2.17	
37-FW-2	12/5/05	15:05	3.67	
37-FW-2	12/19/05	16:00	3.14	
37-FW-2	1/10/06	15:21	7.09	
37-FW-2	3/6/06	14:40	5.86	
37-FW-4	12/15/04	12:15	2.90	
37-FW-4	1/11/05	12:05	3.21	
37-FW-4	2/8/05	15:30	7.41	
37-FW-4	3/8/05	11:35	2.57	
37-FW-4	4/4/05	15:10	25.24	
37-FW-4	4/18/05	14:50	24.61	
37-FW-4	5/2/05	15:58	26.22	
37-FW-4	5/23/05	15:00	25.65	
37-FW-4	6/13/05	14:25	17.12	
37-FW-4	6/27/05	14:05	8.88	
37-FW-4	7/11/05	15:55	21.97	
37-FW-4	7/25/05	14:05	16.30	
37-FW-4	8/8/05	14:40	8.88	
37-FW-4	8/22/05	14:10	9.85	
37-FW-4	9/12/05	14:15	22.66	
37-FW-4	9/27/05	11:15	21.88	
37-FW-4	10/4/05	11:40	25.14	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-FW-4	10/18/05	11:05	2.65	
37-FW-4	11/6/05	16:25	3.41	
37-FW-4	11/28/05	14:30	2.91	
37-FW-4	12/5/05	14:25	7.69	
37-FW-4	12/19/05	15:30	0.95	
37-FW-4	1/10/06	14:39	21.34	
37-FW-4	3/6/06	13:55	6.73	
37-FW-5	12/15/04	11:45	2.23	
37-FW-5	1/11/05	11:40	1.21	
37-FW-5	2/8/05	14:40	5.86	
37-FW-5	3/8/05	11:00	3.03	
37-FW-5	4/4/05	14:40	21.81	
37-FW-5	4/18/05	13:55	23.53	
37-FW-5	5/2/05	15:30	25.53	
37-FW-5	5/23/05	14:10	25.66	
37-FW-5	6/13/05	14:10	24.43	
37-FW-5	6/27/05	13:30	9.40	
37-FW-5	7/11/05	15:20	9.69	
37-FW-5	7/25/05	13:40	14.73	
37-FW-5	8/8/05	14:10	10.82	
37-FW-5	8/22/05	13:40	10.47	
37-FW-5	9/12/05	13:35	21.68	
37-FW-5	9/27/05	10:30	22.52	
37-FW-5	10/4/05	11:05	26.92	
37-FW-5	10/18/05	10:40	2.44	
37-FW-5	11/6/05	15:50	2.65	
37-FW-5	11/28/05	14:04	2.06	
37-FW-5	12/5/05	13:45	2.59	
37-FW-5	12/19/05	15:10	1.30	
37-FW-5	1/10/06	14:29	27.20	Used rating curve to calculate flow
37-FW-5	3/6/06	13:30	6.64	
37-FW-6	12/15/04	11:00	2.51	
37-FW-6	1/11/05	11:15	1.79	
37-FW-6	4/4/05	12:40	21.50	
37-FW-6	5/2/05	14:35	21.35	
37-FW-6	5/23/05	13:30	17.57	
37-FW-6	6/13/05	13:25	19.07	
37-FW-6	6/27/05	12:50	8.48	
37-FW-6	7/11/05	14:45	16.33	
37-FW-6	7/25/05	13:15	13.12	
37-FW-6	8/8/05	13:45	6.91	
37-FW-6	8/22/05	13:05	7.45	
37-FW-6	9/12/05	13:00	18.27	
37-FW-6	9/27/05	10:00	17.59	
37-FW-6	10/4/05	10:30	21.84	
37-FW-6	10/18/05	10:05	1.96	
37-FW-6	11/6/05	15:40	1.53	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-FW-6	11/28/05	13:22	1.41	
37-FW-6	12/5/05	13:10	1.53	
37-FW-6	12/19/05	14:40	0.69	
37-FW-6	1/10/06	14:21	23.40	
37-FW-8	12/15/04	9:50	0.28	
37-FW-8	1/11/05	10:51	0.50	
37-FW-8	2/8/05	10:15	0.77	
37-FW-8	3/8/05	10:00	0.91	
37-FW-8	4/18/05	11:30	4.81	
37-FW-8	5/2/05	13:30	5.03	
37-FW-8	5/23/05	12:45	8.39	
37-FW-8	6/13/05	12:35	5.50	
37-FW-8	6/27/05	12:15	4.23	
37-FW-8	7/11/05	14:10	7.28	
37-FW-8	7/25/05	12:25	13.97	
37-FW-8	8/8/05	12:55	3.01	
37-FW-8	8/22/05	12:25	5.72	
37-FW-8	9/12/05	12:20	7.38	
37-FW-8	9/27/05	9:15	8.13	
37-FW-8	10/4/05	9:45	7.76	
37-FW-8	10/18/05	9:40	0.31	
37-FW-8	11/6/05	15:10	0.36	
37-FW-8	11/28/05	12:45	0.39	
37-FW-8	12/5/05	12:30	0.30	
37-FW-8	12/19/05	14:10	0.22	
37-FW-8	1/10/06	13:37	41.27	
37-FW-8	3/6/06	12:36	3.46	
37-FW-8.5	4/18/05	11:30	1.76	
37-FW-8.5	5/2/05	13:20	0.05	
37-FW-8.5	1/10/06	13:37	7.22	
37-FW-12	12/15/04	9:10	0.07	
37-FW-12	2/8/05	9:20	0.09	
37-FW-12	3/8/05	9:00	0.09	
37-FW-12	4/4/05	11:20	0.11	
37-FW-12	4/18/05	11:10	0.06	
37-FW-12	5/2/05	12:50	0.18	
37-FW-12	5/23/05	12:05	0.06	
37-FW-12	6/13/05	12:05	0.18	
37-FW-12	6/27/05	11:40	0.04	
37-FW-12	12/19/05	13:30	0.02	
37-FW-12	1/10/06	13:08	27.59	
37-FW-12	3/6/06	10:55	2.47	
37-FW-13	12/15/04	9:20	0.07	
37-FW-13	1/11/05	9:40	0.36	
37-FW-13	2/8/05	9:35	0.34	
37-FW-13	3/8/05	9:10	0.24	
37-FW-13	4/4/05	11:05	0.22	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-FW-13	4/18/05	10:54	0.13	
37-FW-13	5/2/05	11:20	0.17	
37-FW-13	5/23/05	11:50	0.18	
37-FW-13	6/13/05	11:30	0.32	
37-FW-13	6/27/05	11:10	0.19	
37-FW-13	7/25/05	12:00	0.02	
37-FW-13	12/5/05	11:50	0.10	
37-FW-13	12/19/05	13:40	0.12	
37-FW-13	1/10/06	12:51	40.90	
37-FW-13	3/6/06	11:12	0.74	
37-FW-14	12/15/04	8:45	0.01	
37-FW-14	1/11/05	9:05	0.02	
37-FW-14	2/8/05	9:00	0.05	
37-FW-14	3/8/05	8:30	0.06	
37-FW-14	4/4/05	10:40	0.06	
37-FW-14	4/18/05	10:25	0.06	
37-FW-14	5/2/05	10:35	0.09	
37-FW-14	5/23/05	11:30	0.04	
37-FW-14	1/10/06	12:30	44.86	
37-FW-14	3/6/06	11:28	0.09	
37-FW-15	1/10/06	12:15	29.65	
37-FW-15	3/6/06	10:16	2.02	
37-FW-16	1/10/06	11:00	1.05	
37-FW-17	1/10/06	11:50	20.94	
37-FW-17	3/6/06	9:50	0.89	
37-FW-18	1/10/06	11:38	10.85	
37-FW-18	3/6/06	9:25	0.07	
37-IS-0	4/20/05	13:40	0.83	
37-IS-0	8/24/05	13:00	1.09	
37-IS-0	10/5/06	11:30	1.23	
37-IS-1	4/20/05	12:50	4.36	
37-IS-1	7/27/05	9:55	6.76	
37-IS-1	8/24/05	13:45	5.21	
37-IS-1	10/5/06	11:02	4.32	
37-IS-1.5	4/20/05	12:55	0.10	
37-IS-1.5	7/27/05	10:00	3.31	
37-IS-1.5	8/24/05	13:40	0.53	
37-IS-1.5	10/5/06	11:01	0.90	
37-IS-2	4/20/05	13:00	0.61	
37-IS-2	7/27/05	10:15	2.46	
37-IS-2	8/24/05	13:25	5.85	
37-IS-2	10/5/06	11:00	4.21	
37-IS-3	4/20/05	12:25	3.18	
37-IS-3	7/27/05	9:40	1.79	
37-IS-3	8/24/05	13:55	1.46	
37-IS-3	10/5/06	11:10	2.66	
37-IS-4	4/20/05	11:45	0.24	

Table D-1. Instantaneous streamflow data for the Yakima Area Creeks Fecal Coliform TMDL.

Station ID	Date	Time	Flow (cfs)	Comments
37-IS-4	8/24/05	14:20	1.58	
37-IS-4	10/5/06	10:15	0.52	
37-IS-4.	7/27/05	9:10	0.30	
37-IS-4.5	4/20/05	12:10	0.04	
37-IS-4.5	7/27/05	9:35	0.13	
37-IS-4.5	8/24/05	14:05	0.20	
37-IS-4.5	10/5/06	11:15	0.09	
37-IS-4.6	10/5/06	11:17	0.37	
37-IS-5	7/27/05	8:40	1.74	
37-IS-5	10/5/06	9:55	0.16	
38-IS-7	4/20/05	10:33	0.03	
38-IS-7.5	7/27/05	15:25	0.18	
38-IS-7.5	10/5/06	14:50	0.86	
38-IS-7.6	7/27/05	15:45	0.45	
38-IS-7.6	8/24/05	9:45	0.10	
38-IS-7.6	10/5/06	14:20	0.35	
38-IS-8	4/20/05	10:55	1.21	
38-IS-8	7/27/05	15:55	0.72	
38-IS-8	8/24/05	10:10	1.03	
38-IS-8	10/5/06	15:10	0.65	
38-IS-8.5	8/24/05	9:55	0.05	
37-IS-16	4/20/05	9:40	21.18	
37-IS-16	7/27/05	12:05	0.31	
37-IS-16	8/24/05	10:50	14.62	
37-IS-17	7/27/05	12:40	0.89	
37-IS-17	8/24/05	11:50	1.00	
37-IS-17.5	7/27/05	12:25	0.03	
37-IS-17.5	8/24/05	11:35	0.27	
37-IS-18	8/24/05	11:25	0.58	
37-IS-19	4/20/05	10:30	2.58	
37-IS-19	8/24/05	11:15	2.18	
37-SS-1	3/5/06	13:55	14.13	
37-SS-2	3/5/06	11:00	6.07	
37-SS-6	3/5/06	10:35	0.19	
37-SS-6	3/5/06	12:00	0.11	
37-SS-7	5/10/05	9:30	29.33	
37-SS-7	3/5/06	12:15	6.95	
37-SS-8	3/5/06	12:40	0.00	
37-SS-9	3/5/06	12:55	0.08	
37-SS-12	5/10/05	8:30	13.16	
37-SS-13	5/10/05	6:40	0.15	
37-SS-14	5/10/05	5:45	10.83	
37-SS-14	3/5/06	11:30	3.16	
37-SS-16	3/5/06	14:20	2.11	
37-SS-38	3/5/06	13:20	0.13	
37-SS-48	3/5/06	13:25	0.01	