BCWA DR2014 - *BCWA Data Report*

Approved by Motion BCWA March 11, 2015

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I. BCWA Sampling Program

Data Report Purpose

The Bear Creek Watershed Association (Association) collects annual water quality data from multiple sampling locations throughout the watershed. The monitoring program has four major water quality and environmental data generating elements:

1. Bear Creek Reservoir water quality characterization including source inputs from Bear Creek and Turkey Creek and reservoir discharge consistent with the intent of the Bear Creek Reservoir Control Regulation # 74 and as defined in the **BCWA PGO14** ***Water Monitoring Program and Sample Analyses Plan Version 2014.01, BCWA February 18, 2014, and subsequent annual updates.***

2. Bear Creek Watershed surface water characterizations during selected months beginning at the headwaters of both Bear Creek and Turkey with a primary focus on nutrients and base field parameters, which is also defined in the **BCWA PGO14** ***Water Monitoring Program and Sample Analyses Plan Version 2014.01, BCWA February 18, 2014, and subsequent annual updates.***

3. Bear Creek Watershed surface water temperature characterization by major stream segments for both the cold and warm seasons, which is also defined in the **BCWA PGO14** ***Water Monitoring Program and Sample Analyses Plan Version 2014.01, BCWA February 18, 2014, and subsequent annual updates.***

4. Special water quality characterization and analyses studies on a site-specific basis.

The Association provides multiple reporting documents designed to meet the multiple functions of various groups and to specifically address elements of the Bear Creek Watershed association electronic Watershed Plan (See BCWA PGO1-Master Index List for listing of all documents that are incorporated into the Watershed Plan). The Association produces an annual report that addresses program elements identified in the control regulation and the Bear Creek Watershed Plan. The Association also produces an executive summary of the annual report to meet reporting requirements of the Water Quality Control Commission. The Association produces an annual series of technical memorandum designed to summarize the site-specific studies for any given year (Table 1).

Table 1 2014 Technical Memorandum of the Association

TM2014.01	BCR Aeration System Survey
TM2014.02	Summit Plume
TM2014.03	Kerr Swede Summary 2014
TM2014.04	Coyote Gulch Summary
TM2014.05	BCR 2014 Summary Statistics & Graphs
TM2014.06	MBCW 2014 Summary Graphs
TM2014.07	2014 Summary BCR Loading
TM2014.08	Barr Milton TMDL Summary
TM2014.09	Evergreen Lake Summary
TM2014.10	BCR Phytoplankton Summary
TM2014.11	Seasonal Nutrient Load BCW
TM2014.12	BCR Sediment Study
TM2014.13	Macroinvertebrates

This data report summaries the watershed characterization program with a primary focus on the annual temperature data record. The data report summarizes the temperature and water quality compliance record for the annual program. This data report summaries the annual report, technical memorandum, information series, fact sheets or program guidelines and operations documents.

BCWA PGO14

A generally continuous collection of surface quality data began in 1990 for the Bear Creek Watershed (Figure 1). Data collection includes specific chemical, physical and biological parameters. Data is collected monthly and bi-monthly at Bear Creek Reservoir and along Turkey Creek and Bear Creek, and at selected months in the watershed. The Association meets water quality data sampling and analyses objectives established in the Bear Creek Reservoir Control Regulation # 74. The BCWA monitoring program is contained in an annually updated Sample Analyses Plan (Association, February 18, 2014; *BCWA PGO14 Surface Water Monitoring Program and Sample Analyses Plan Version 2014.01*).

The *BCWA PGO14 Bear Creek 2014 Sample Plan Version 2014.01* is posted on the Association website monitoring page at www.bearcreekwatershed.org. The monitoring plan is reviewed annually and updated as appropriate. The Water Quality Control Division staff reviews the annual monitoring plan (generally in December) and proposes changes as appropriate. The dual review is consistent with the requirements of the *Bear Creek Control Regulation.*

The 2014 data results are contained in the MSD*2014 P1-P4 Master Spreadsheet* posted on the Association website monitoring page and a specific watershed spreadsheet for the temperature data. Monthly summary reports are provided to the Association Board and these data files are also posted to the website. Selected data and a summary of the water quality management program is presented in the BCWA PGO14 *2014 BCWA Annual Report WQCC (BCWA*, June 2015*)*, which also posted with previous Association annual reports.

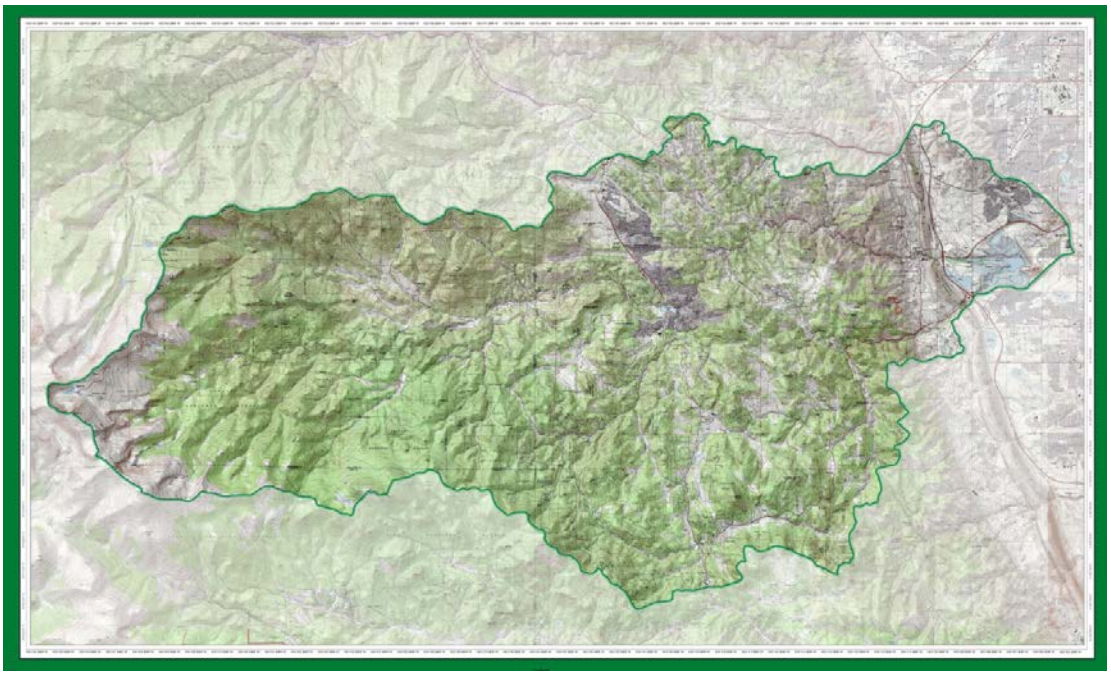

Figure 1 Bear Creek Watershed

The Association maintains five distinct types of monitoring efforts to characterize water and environmental quality within the Bear Creek Watershed*:*

P1- Routine water quality monitoring at Bear Creek Reservoir (multiple vertical stations), Turkey Creek inflow to reservoir, Bear Creek inflow to reservoir, and reservoir discharge into lower Bear Creek. The P1 sites are long-term reference monitoring sites consistent with the intent of the monitoring program outlined in the Bear Creek Reservoir Control Regulation #74.

P2- Supplemental sampling of restoration or other project specific sites (e.g., Coyote Gulch in cooperation with the City of Lakewood). These types of monitoring efforts can be either of limited duration, or long-term on a site-specific basis, and generally these programs monitor for specific parameters of interest to the project.

P3- Watershed surface water monitoring along Bear Creek and Turkey Creek drainages for site-specific characterizations (e.g., temperature trends, nutrient loading, flow studies). These are interim and long-term monitoring sites for watershed characterizations. Watershed monitoring stations include both long-term reference sites where multi-year data is desirable, and target sites that may provide only a couple years of data. The nutrient monitoring is on a watershed basis that begins near Summit Lake and extents through Bear Creek Reservoir.

P4- Supplemental environmental characterizations of Bear Creek watershed including, but not limited to macroinvertebrates, flow analysis, habitat characterizations, fishery evaluations, system productivity, or other environmental factors that potentially affect fisheries or watershed health.

P5- Wastewater treatment facility nutrient sampling consistent with regulation #85.

II. Association Data Record

Data Management

Large quantities of varied data were collected during the Program: Monthly stream monitoring and sampling, laboratory results, thirty-minute temperature measurements from dataloggers, wastewater treatment plant effluent process control and permit monitoring data (from five larger treatment plants), weather statistics and stream flows comprise raw data. All data are stored on an office computer. The majority of the data resides in and analyses occurred in Excel spreadsheet format. Data nightly backed up to a server.

Depositories

The Association data is located at two different locations. Watershed data collected with the assistance of EMD staff is maintained on computer systems at the EMD offices (Limited years). All raw watershed data electronically forwarded from EMD staff to the Manager for data summary and analyses. RNC Consulting LLC maintains all monitoring data for all Association monitoring programs. Data is kept on a computer with daily back-up to an external hard drive. Additionally, a back-up set of data is kept on data discs.

Electronic Transfers WQCD/ Depositories

1. Spreadsheet watershed QA/QC spreadsheet data only (WQCD - 4); depositories (2)
2. Spreadsheet watershed QA/QC spreadsheet with summary information and standard analyses (WQCD - 2); depositories (2)
3. Temperature record (WQCD - 2); depositories (2);
4. WQCC annual report, 2014 Data Report; (WQCD - 2), depositories (2)

Reports, Technical Memorandum and Specialized Spreadsheets

The Association produces an annual data summary of watershed data, ongoing technical memorandum, a MSD*2014 P1-P4 Master Spreadsheet (February 2015)* that includes data analyses and raw data for Bear Creek Reservoir and watershed nutrient collection program. The Association transmits this data report to the Water Quality Control Division Staff (Association website www.bearcreekwatershed.org) .

All of the Association annual reporting documents are available electronically and posted on the website. However, not all data can be posted due to size limitations. The annual temperature record is very large and kept in spreadsheets only available on request. The Association provides multiple reporting documents designed to meet the multiple functions of various groups. The reporting helps member entities with reporting to their respective boards, commissions and groups. There is also a citizen interest in the watershed and reporting helps keep the public informed. Many educational groups visit the watershed and it has become a widely used outdoor classroom. The Association supplies water quality and environmental materials for these various educational uses.

Spreadsheets in Master Data Series Updated 2014

MSD2014	P1-P4 Master Spreadsheet
MSD01	BCWA Site ID Historical Master
MSD02	Macroinvertebrate Summary
MSD03	BCW Flow & Watershed Record
MSD04	Total Phosphorus & WS Nutrient Master Record
MSD05	Evergreen Lake BCWA Data Master
MSD06	Site 45 Data Summary
MSD07	Sheridan Data Record BCWA
MSD08	TIN Watershed
MSD09	Program Master
MSD10	BCWA Master WWTF and IFS
MSD11	Coyote Gulch Data Master
MSD12	Kerr Swede Master
MSD13	Turkey Creek Flow
MSD14	WLA Working
MSD15	Master Dues Budget
MSD16	BCWA Attendance Log Master

Fact Sheets in Watershed Plan Updated 2014

Fact Sheet 1	BCWA Overview
Fact Sheet 2	BCR Sedimentation
Fact Sheet 3	BCR Sediment & Water Quality
Fact Sheet 4	Pine Beetle
Fact Sheet 5	BCR Dam Facts
Fact Sheet 6	BCR Aeration
Fact Sheet 7	BCR Sample Sites
Fact Sheet 8	Evergreen Lake
Fact Sheet 9	Signs Geocache
Fact Sheet 10	Control Regulation 74
Fact Sheet 11	Zebra Mussel Program
Fact Sheet 12	Fish Species
Fact Sheet 13	Water Quality is Better
Fact Sheet 14	Flood Recovery Tips
Fact Sheet 15	Watershed Sampling
Fact Sheet 16	September 2013 Flood
Fact Sheet 17	Health, Hydrology & Sediments
Fact Sheet 18	Flood Score Card
Fact Sheet 19	EHS Rain Garden
Fact Sheet 20	Instream Flow Rights
Fact Sheet 21	Pollutants of Concern 303d
Fact Sheet 22	Pollutants of Concern Watershed
Fact Sheet 23	Evergreen Medical Take-back Program
Fact Sheet 24	Coyote Gulch Trade Pounds
Fact Sheet 25	Major Physical Features BCW
Fact Sheet 26	BCW Watershed Demographics
Fact Sheet 27	BCW Segments
Fact Sheet 28	BCW Stream Standards
Fact Sheet 29	BCW Stream Classifications
Fact Sheet 30	BCW T&E Species

Fact Sheet 31	TMDL Status
Fact Sheet 32	BCW Macroinvertebrates
Fact Sheet 33	BCW Segment Temperature Standards
Fact Sheet 34	New Morrison WWTF
Fact Sheet 35	Recreational Use Types
Fact Sheet 36	Larger Mammals
Fact Sheet 37	Smaller Mammals
Fact Sheet 38	BCR Phytoplankton
Fact Sheet 39	BCW E. Coli
Fact Sheet 40	Genesee Dam
Fact Sheet 41	Wastewater Demographics
Fact Sheet 42	BCR Zooplankton
Fact Sheet 43	BCW Evergreen Audubon Bird Atlas
Fact Sheet 44	CCC Transfer Station 2014
Fact Sheet 45	BCW Embeddedness Estimator
Fact Sheet 46	BCW Periphyton Estimator
Fact Sheet 47	New BCR Aeration System

Policies in Watershed Plan Updated 2014

Policy 1	Trading Program
Policy 2	Site Application Review
Policy 3	4 step Review Policy
Policy 4	BC Manure Management
Policy 5	Meeting Attendance and E-Distribution
Policy 6	BCWA Weighted Vote
Policy 7	Evergreen Lake Temperature By-Pass
Policy 8	Bear Creek Reservoir Aeration
Policy 9	Aspen Park Conifer Wastewater Policy
Policy 10	Water Quality Monitoring Tiers
Policy 11	Vault & SS Disposal Systems
Policy 11s	Supplement ISDS Vault Regulations
Policy 12	Vision Mission & Targets
Policy 13	Watershed Boundary
Policy 14	Data Collection in BCW
Policy 15	Nonpoint Source Strategies and BMPs
Policy 16	Membership
Policy 17	Recycling Support
Policy 18	Illegal Material Dumping as a Pollutant in Bear Creek Watershed
Policy 19	Nutrient Trading Program Eligibility
Policy 20	Preferred Management Strategies for EGL and BCR
Policy 21	Online Management System
Policy 22	Project Evaluation Process
Policy 23	System of WWTF
Policy 24	DMR Reporting (WWTF)
Policy 25	Water Reuse and Conservation
Policy 26	Point to Point Trade Administration
Policy 27	Source Water Protection Plans
Policy 28	BCWA Watershed Plan
Policy 29	BCWA Integration with Other Planning Efforts
Policy 30	Financial Plan
Policy 31	BCWA Estimation Reporting

Policy 32	BCWA Annual Reporting
Policy 33	BCWA Shared Cost Program
Policy 34	BCWA Phosphorus WLA Purpose
Policy 35	Membership Entity Termination and Permit Closure

Map Series in Watershed Plan Updated 2014

MS01	Watershed Boundary
MS02	BCR Aeration System
MS03	BCR Sample Sites
MS04	BCR Sediment Sample Sites
MS05	Coyote Gulch Sample Sites
MS06	BCR P-1 Sample Sites
MS07	Evergreen Lake Sample Sites
MS08	Kerr-Swede Gulch Sample Sites
MS09	Composite Hazard Map
MS10	Pine Beetle Progression Map
MS11	Bear Creek 5th Order Watersheds
MS12	Wildfire Hazard Areas of Concern
MS13	Road Density Areas of Concern
MS14	Ruggedness Areas of Concern
MS15	Debris Flow & Flood Areas of Concern
MS16	Erodibility Areas of Concern
MS17	Macroinvertebrate Sites
MS18	Wastewater Treatment Plants
MS19	CDPW Fish Survey Sites
MS20	Segment 1e Sample Sites
MS21	Lower BCW Sample Sites 2014
MS22	Summit Lake Monitoring 2014
MS23	BCW Parks & Open Space
MS24	BCW Wildfire Hazards
MS25	BCW OWTS Septic System Areas
MS26	BCW Subbasin Population 2010 Census
MS27	BCW WWTF vs. OWTS areas
MS28	BCW Elevations
MS29	BCW Slope and Run-Off Potential
MS30	BCW Unpaved Roads, Pastures, Horses
MS31	BCW JeffCo Community Plan Areas

III. Bear Creek Reservoir 2014 Data

The routine monitoring program (P1) focuses on Turkey Creek drainage and Bear Creek drainage inputs, and discharge from Bear Creek Reservoir into lower Bear Creek with a central pool characterization of the reservoir near the dam (Figure 2; BCWA site 40). The outlet structure is near BCWA site 41 with Bear Creek inflow near BCWA site 44 and Turkey Creek inflow near BCWA site 43. The reservoir chemistry and biological characterization monitoring occurs at BCWA site 40. Vertical probe samples for specific conductance, temperature, dissolved oxygen, and pH measured at ½ and 1-meter intervals at all reservoir sites. The current monitoring program optimizes data generation to evaluate reservoir inflow loading, trophic state changes within the reservoir, and reservoir outflow, while minimizing monitoring cost. The aeration sites are visible in Figure 2. Figure 3 shows all monitoring stations within Bear Creek Park. The Association maintains maps of recent sampling sites and wastewater treatment plant locations on the Association web site.

Figure 2 Bear Creek Reservoir with Sampling Stations

Figure 3 Bear Creek Park with BCWA Sampling Sites

The P1 monitoring program is contained in a spreadsheet titled MSD*2014 P1-P4 Master Spreadsheet.* The spreadsheet contains all data and analyses. Copies of the spreadsheet are distributed to Association membership, WQCD staff and interested parties in March/April 2015 after approval from the Association Board (Bear Creek Association March 2015).

The Bear Creek Reservoir data and analyses are summarized in the annual report to the Water Quality Control Commission. Table 2 summarizes the Bear Creek Reservoir monitoring data.

Table 2 Bear Creek Reservoir Data Summary

Bear Creek Reservoir 2014 - Summary Statistics

Reservoir Growing Season July to September

Reservoir Monitoring Parameters	Reservoir
Chlorophyll (Site 40)	
Average Growing Season Chlorophyll-a [ug/l (-1m)]	8.3
Average Annual Chlorophyll-a [ug/l (-1m)]	5.3
Peak Chlorophyll-a [ug/l]	18.3
Phosphorus	
Average Annual Total Phosphorus [ug/l]: Water Column	31
Average Annual Total Phosphorus [ug/l] -1m	25
Average Annual Total Phosphorus [ug/l] -10m	36
Growing Season Total Phosphorus [ug/l]: Water Column	45
Growing Season Total Phosphorus [ug/l]: -1m	33
Growing Season Total Phosphorus [ug/l]: -10m	56
Peak Annual Total Phosphorus [ug/l] Water Column	96
Average Annual Ortho Phosphorus ug/l] Water Column	11
Growing Season Average Ortho Phosphorus [ug/l] Water Column	18
Peak Annual Ortho Phosphorus [ug/l] Water Column	91.0
Nitrogen	
Average Annual Nitrate-Nitrogen [ug/l] Water Column	291
Growing Season Average Nitrate-Nitrogen [ug/l] Water Column	172
Peak Annual Nitrate-Nitrogen [ug/l] Water Column	861
Average Annual Total Nitrogen [ug/l]: Water Column	702
Average Total Nitrogen [ug/l]: -1m	677
Average Total Nitrogen [ug/l]: -10m	728
Growing Season Total Nitrogen [ug/l]: Water Column	567
Growing Season Total Nitrogen [ug/l]: -1m	543
Growing Season Total Nitrogen [ug/l]: -10m	592
Clarity (All Profiles)	
Average Annual Secchi Depth (meters)	1.98
Growing Season Average Secchi Depth (meters)	1.33
Total Suspended Sediments	
Annual Average Total Suspended Sediments [mg/l]	7.8
Growing Season Average Total Suspended Sediments [mg/l]	10.5
Peak Total Suspended Sediments [mg/l]	23
Dissolved Oxygen (site 40 Profile)	
Annual Average at -1/2m - 2m [mg/l]	9.4
Annual Minimum at -1/2m - 2m [mg/l]	6.2
Seasonal Average at -1/2 - 2m [mg/l]	7.7
Seasonal Minimum at -1/2 - 2m [mg/l]	6.2
pH	
Annual Average at -1/2m - 2m [mg/l]	7.98
Annual Maximum at -1/2m - 2m [mg/l]	8.28
Seasonal Average at -1/2 - 2m [mg/l]	7.70
Seasonal Maximum at -1/2 - 2m [mg/l]	6.20
Specific Conductance	
Annual Average at -1/2m - 2m [uS/cm]	0.373
Annual Minimum at -1/2m - 2m [us/cm]	0.638

Bear Creek Reservoir 2014 - Summary Statistics

Reservoir Growing Season July to September

Reservoir Monitoring Parameters	Reservoir
Seasonal Average at -1/2 - 2m [us/cm]	0.293
Seasonal Minimum at -1/2 - 2m [us/cm]	0.351
Phytoplankton Species (July- September)	
Anabaena flos-aquae	bluegreen
Aphanizomenon flos-aquae	
Microcystis aeruginosa	
Cryptomonas erosa	cryptophyte
Rhodomonas minuta	
Fragilaria crotonensis	diatom
Melosira ambigua	
Navicula cryptocephala	
Stephanodiscus niagarae	
Ceratium hirundinella	dinoflagellate
Ankistrodesmus falcatus	Green
Peak Phytoplankton	
Anabaena flos-aquae, Peak Biovolume (um3/mL) = 787,726	
Stephanodiscus niagarae, Peak Biovolume (um3/mL) = 593,524	
Loading - Annual Pounds	
Total Nitrogen -Total Load In to BCR	52,907
Total Nitrogen -Total Load From BCR	63,229
Total Nitrogen -Total Deposition into BCR	-10,322
Total Phosphorus -Total Load In to BCR	3,923
Total Phosphorus -Total Load From BCR	1,841
Total Phosphorus -Total Deposition into BCR	2,082
TSS -Total Load In to BCR	1,537,557
TSS -Total Load From BCR	967,137
TSS -Total Deposition into BCR	570,420

IV. P3-Summary Bear Creek Watershed 2014 Monitoring Data

Overview

Sampling and Monitoring Program Notes

Data organization reflects the Colorado Water Quality Control Division's segmentation and water quality standards to water bodies in the Bear Creek Watershed per Regulation 38. Sampling and monitoring data is presented for the calendar year, compared to applicable water quality standards. Site numbers identify exact locations, but are grouped into respective segments, with segment summary tables at the beginning of a segment group. All data collected is presented in table form, with summary analyses.

Temperature data loggers that were in stream segments since January 1, 2014 were replaced with other loggers that had already been returned from the manufacture after being recalibrated and recertified in early February ready to begin collecting data at 30-min intervals. The additional loggers were sent to the manufacturer for annual recalibration and recertification. The loggers were returned to sites and programmed to begin data collection at 30-minute intervals on the days that they were placed at the sites. All loggers were removed and data downloaded after September 30, 2014. Stream and lake sampling and monitoring data, including pH, Temperature, Dissolved Oxygen, Specific Conductance, Ammonia, Nitrate + Nitrite, Total Inorganic Nitrogen (calculated), Total Nitrogen, Dissolved Phosphorus, Total Phosphorous, and Total Suspended Solids were collected from May through October, at 39 sites. Stream and lake temperature data loggers were used at 28

sites, including the Evergreen Lake profile station, and the Bear Creek Reservoir profile station, excluding the five WWTPs.

Temperature Compliance

The Cold- and Warm-season timeframe was redefined by the adoption of Regulation 38, which assigned calendar dates by Segment for cold-season and warm season regarding water quality standards for temperature. For this reporting format, the Cold-season program is defined as approximately November to March, depending on specific stream segments (which are outlined in Appendix C of Reg. 74). Regarding temperature data loggers, Cold-season locations included sites in all segments excluding segment 1d situated in Evergreen Lake and segment 4A, in the Mount Vernon Drainage. Segment 1a (Sites 2a, 3a), Segment 1b (Site 15a), Segment 1c(Site 40A, 40B, 40C,and 40D), Segment 1e (Sites 5, 8a, 9, 12, 13a, 14a), Segment 2(Site 45), Segment 3(Site 25), Segment 5(Sites 32, 35, 50, and 64), Segment 6a (Site 18 and 16a), and Segment 16b (Site 19) comprise the Cold-season locations for temperature data loggers. It is worth mentioning that many of these sites only recorded data during the shoulder season the month before the warm season began. The program began in January of 2014 and ended in December of 2014. The data presented in this report reflects the temperature measurements collected from January 1 through December 31, 2014. (This change represents the revision of reporting data collected in a calendar year broken into cold and warm seasons).

The Warm-season program locations included twenty-eight sites in Bear Creek Segments 1a, 1b, 1c, 1d, 1e, 2, 3, 4A, 5, (including four total at the Evergreen Lake profile station, and 4 total at the Bear Creek Reservoir profile station),and three sites in Turkey Creek Segments 6a and 6b. Additionally, the five major wastewater treatment plants discharging into Segment 1e (EMD and KSWD), segment 5(WJCMD and GWSD) and 1b (Morrison) were monitored. The 2014 Warm-season program for temperature data collection began on April 1, May 1, and June 1, and concluded on September 30 and October 31 depending on the segment.

Temperature compliance, as compared to water quality standards, is presented by segment, roughly progressing from the upper reaches of the watershed to lower. Some sites only have temperature data collection during the Warm-season, while other sites have data loggers almost throughout the year.

268,032 individual temperature data points were obtained from the twenty-eight data logger sites within the watershed. The evaluating criteria used to determine potential impairment of stream temperature is detailed in the tables below, specific to segment. There were 747 weekly averages calculated for the program period. 64,279 two-hour blocks were averaged and 5,355 Daily Maximum values were calculated. 82,655 individual temperature data points were obtained from the five data loggers located in the WWTP effluents that discharge into Bear Creek Segments 1e, 5, and 1b. Recognizing that Morrison wastewater treatment facility, Evergreen Metro District, and West Jefferson County Metro District have temperature requirements, a data summary consists of number of measurements and calculations, including Weekly Average and Daily Average temperatures.

Table 3 Bear Creek Watershed 2014 Temperature Compliance by Segment

	Cold-season		Warm Season	
Segment 3	**9°C WAT**	**13°C DM**	**17°C WAT**	**21.2°C DM**
# Exceedances	0	0	0	0
% Compliance	100%	100%	100%	100%
Segment 1a	**9°C WAT**	**13°C DM**	**17°C WAT**	**21.2°C DM**
# Exceedances	0	1	0	0
% Compliance	100%	99%	100%	100%
Segment 1d	**9.0°C WAT**	**13.0°C DM**	**18.2°C WAT**	**23.8°C DM**
# Exceedances			0	0
% Compliance			100%	100%
Segment 1e	**9°C WAT**	**13°C DM**	**19.3°C WAT**	**23.8°C DM**
# Exceedances	0	0	0	0
% Compliance	100%	100%	100%	100%
Segment 1b	**9°C WAT**	**13°C DM**	**19.3°C WAT**	**23.8°C DM**

# Exceedances	6	14	0	0
% Compliance	67%	90%	100%	100%
Segment 5	**9°C WAT**	**13°C DM**	**18.2°C WAT**	**23.8°C DM**
# Exceedances	4	17	0	0
% Compliance	88%	79%	100%	100%
Segment 6a	**9°C WAT**	**13°C DM**	**18.2°C WAT**	**23.8°C DM**
# Exceedances	0	0	0	0
% Compliance	100%	100%	100%	100%
Segment 6b	**9°C WAT**	**13°C DM**	**17°C WAT**	**21.2°C DM**
# Exceedances	0	1	0	0
% Compliance	100%	99%	100%	100%
Segment 2	**13.7°C WAT**	**14.3°C DM**	**27.5°C WAT**	**28.6°C DM**
# Exceedances	0	0	0	0
% Compliance	100%	100%	100%	100%
Segment 1c	**9°C WAT**	**13°C DM**	**24.0°C WAT**	**26.0°C DM**
# Exceedances		0	0	0
% Compliance		100%	100%	100%

NA-Indicates no logger data obtained.

Table 4 Number of Temperature Measurements

2014 Total Number of Measurements (Off- and Growing seasons)				
	# 30-min. Temps.	**# Calculated WAT**	**# 2-Hr. Avgs. For DM calculation**	**# Calculated DM**
Segment 3	10872	31	2718	226
Segment 1a	20349	58	5087	424
Segment 1d	37644	112	9408	788
Segment 1e	72953	211	18236	1517
Segment 1b	12265	35	3066	256
Segment 1c	22222	66	5554	462
Segment 2	12647	37	3161	263
Segment 4a	11256	33	2814	234
Segment 5	33338	96	8333	693
Segment 6a	23375	67	5843	487
Segment 6b	11111	32	2777	231
Watershed totals	268032	747	64279	5355

Segment 8 (Site 36) and Segment 7 (Sites 37 and 38)

- No temperature loggers were placed in either of these segments in 2014.

Segment 3 (Site 25)

- All temperatures complied 100% with the standards given for this segment.

Segment 1a (Sites 1a, 2, 3a)

- 100% of the recorded temperature values complied with the 9°C Weekly Average Temperature (WAT) standard Oct 1 through May 31.
- 99% of the recorded temperature values complied with the 13°C Daily Maximum (DM) Temperature standard for Oct 1 through May 31.
- 100% of the recorded temperature values complied with the 17.0°C Weekly Average Temperature (WAT) standard June 1 through September 30.
- 100% of the recorded temperature values complied with the 21.2°C Daily Maximum (DM) temperature standard for June 1 through September 30.

Segment 1d (Sites 4b, 4c and 4d)

- 100% of the recorded temperature values complied with the 18.2°C Weekly Average Temperature (WAT) standards for CLL designation.

- 100% of the recorded temperature values complied with the 23.8°C Daily Maximum (DM) Temperature standards for CLL designation.

Segment 1e (Sites 5, 7, 8a, 9, 12, and 13a)

- All temperatures complied 100% with the temperature standards set for this segment.

Segment 1b (Sites 15a and 27b)

- All warm season temperatures complied with the standards.
- 67% of the recorded temperatures complied with the 9.0°C Weekly Average Temperature (WAT), for the cold season.
- 90% of the recorded temperatures complied with the Daily Maximum reading (DM) of 13.0°C for the cold season.

Segment 5 (Sites 26, 35 and 50)

- All warm season temperatures complied with the standards given for this segment.
- 79% of the temperatures complied with the 9.0°C MWAT standard. While 88% of the temperatures complied with the 13.0°C daily maximum standard.

Segment 6a (Sites 16a and 18)

- All temperatures complied 100% with the standards set for this segment.

Segment 6b (Site 19)

- 99% of the temperatures complied with the cold season DM standard.
- All other temperatures complied 100% with all standards set for this segment.

Segment 2(Site 45)

- All temperatures complied 100% with the temperature standards set for this segment.

Segment 1c (Site 40 Profile)

- There were no cold season temperatures recorded.
- Warm season WAT and DM complied 100% of the time with the temperature standards.

Wastewater treatment plant effluents

Morrison WWTP, Evergreen Metro District, and West Jefferson County Metro District are the only treatment plants with a temperature requirement, all five wastewater treatment plant, datalogger measurements have been analyzed and summarized below using the representative segment standard that the wastewater treatment facility discharges into.

Table 5 WWTP Number of Temperature Measurements 2014

	# 30-min. measurements	# Calculated WAT	# Daily Max
EMD WWTP(1e)	16506	47	4126
WJCMD WWTP(5)	16506	47	4126
KSWD WWTP(1e)	16507	47	4126
GWSD WWTP(5)	16506	47	4126
Morrison WWTP(1b)	16630	47	4157
Totals (Jan 1-Dec. 31)	**82655**	**235**	**20661**

Table 6 WWTP Logger summary 2014

	Cold-season		Growing Season	
Segment 1e	**9°C WAT**	**13°C DM**	**19.3°C WAT**	**23.8°C DM**
# Exceedances	9	12	0	0
% Compliance	74%	95%	100%	100%
Segment 1b	**9°C WAT**	**13°C DM**	**19.3°C WAT**	**23.8°C DM**
# Exceedances	12	11	11	4
% Compliance	29%	92%	63%	98%
Segment 5	**9°C WAT**	**13°C DM**	**18.2°C**	**23.8°C**
# Exceedances	34	53	7	0
% Compliance	0%	80%	88%	100%

Water Quality Compliance

Water quality compliance was determined by sampling and monitoring selected sites during the Growing season timeframe. Dissolved Oxygen, pH, Ammonia, Nitrate, Nitrite, and Total phosphorous measurements were compared to water quality standards and anticipated standards to determine compliance.

Table 7 Bear Creek Watershed 2014 Water Quality Compliance by Segment

	Stream Std.	Stream Std.	Stream Std.	Stream Std.	Proposed Stream Std
	pH (6.5-9 SU)	DO (6.0 mg/L 2-meter avg.)	NH3-N ug/L (TVS)	NO3-N/NO2-N (10,000ug/L)*	Total Phosphorous (110 ug/L)
Segment 8					
# Exceedances	1	0	0	0	0
# Measurements	4	4	4	4	4
% Compliance	75%	100%	100%	100%	100%
Segment 7					
# Exceedances	4	4	0	0	3
# Measurements	12	12	12	12	12
% Compliance	67%	67%	100%	100%	75%
Segment 3					
# Exceedances	0	0	0	0	0
# Measurements	6	6	6	6	6
% Compliance	100%	100%	100%	100%	100%
Segment 1a					
# Exceedances	0	0	0	0	0
# Measurements	17	17	17	17	17
% Compliance	100%	100%	100%	100%	100%
Segment 1d					
# Exceedances	0	0	0	0	0
# Measurements	60	60	12	12	12
% Compliance	100%	100%	100%	100%	100%
Segment 1e					
# Exceedances	0	0	0	0	0
# Measurements	36	36	36	36	36
% Compliance	100%	100%	100%	100%	100%
Segment 1b					
# Exceedances	0	0	0	0	0
# Measurements	15	15	15	15	15
% Compliance	100%	100%	100%	100%	100%
Segment 5					
# Exceedances	0	0	0	0	6
# Measurements	72	72	72	72	72
% Compliance	100%	100%	100%	100%	92%
Segment 6a					
# Exceedances	0	0	0	0	0
# Measurements	21	21	21	21	21
% Compliance	100%	100%	100%	100%	100%
Segment 6b					
# Exceedances	0	0	0	0	0
# Measurements	6	6	6	6	6
% Compliance	100%	100%	100%	100%	100%
Segment 4a					
# Exceedances	0	0	0	0	0
# Measurements	6	6	6	6	6
% Compliance	100%	100%	100%	100%	100%
Segment 2					
# Exceedances	0	0	0	0	0
# Measurements	15	15	15	15	15
% Compliance	100%	100%	100%	100%	100%

*- Samples were analyzed for NO3+NO2-N but compared to the Nitrate water quality standard of 10 mg/L.

Segment 8 (Site 36)

- 75% of measured pH values complied with the adopted water quality standards, and all other parameters measured complied 100% with all water quality standards and all proposed water quality standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS).

Segment 7 (Sites 37 and 38)

- 67% of the measured pH and 67% DO values complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. 75% of Total Phosphorous complied with the 110ug/L proposed standard.

Segment 3 (Site 25)

- 100% of the measured pH values and DO values from the profile station complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. Total Phosphorous complied 100% with the anticipated standard of 110ug/L.

Segment 1a (Sites 2a and 3a)

- 100% of the measured pH values and DO values from the profile station complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. Total Phosphorous complied 100% with the anticipated standard of 110ug/L.

Segment 1d (Sites 4a, 4b, 4c, 4d and 4e)

- 100% of the measured pH values and DO values from the profile station complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. Total Phosphorous complied 100% with the anticipated standard of 110ug/L.

Segment 1e (Sites 5, 7, 8a, 9, 12, 13a and 14a)

- 100% of the measured pH values and DO values from the profile station complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. Total Phosphorous complied 100% with the anticipated standard of 110ug/L.

Segment 1b (Sites 15a)

- 100% of all parameters measured complied with all water quality standards and all proposed water quality standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS).

Segment 5 (Site 35)

- 100% of the measured pH and DO values complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. Total Phosphorous complied 92% with the anticipated standard of 110ug/L.

Segment 6a (Site 18)

- 100% of all parameters measured complied with all water quality standards and all proposed water quality standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS).

Segment 6b (Site 19)

- 100% of all parameters measured complied with all water quality standards and all proposed water quality standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS).

Segment 4a (site 34)

- 100% of all parameters measured complied with all water quality standards and all proposed water quality standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS).

Segment 2(site 45)

- 100% of the measured pH values and DO values from the profile station complied with the adopted water quality stream standards. Results for Ammonia-N are expected to comply with adopted water quality stream standards (TVS). Samples analyzed for Nitrate+Nitrite-N resulted in 100% compliance with the adopted water quality stream standards for Nitrate. Total Phosphorous complied 100% with the anticipated standard of 110ug/L.

Summary

Temperature Compliance

Segments 1a, 1b, 1c, 1d, 1e, 2, 3, 5, 7, 10, and Turkey Creek Segments 6a and 6b showed little impairment during both the Cold- and Warm Seasons. Comparisons with adopted temperature standards resulted in 99% compliance for the WAT and 99% compliance for the DM calculated for the calendar year throughout the Watershed, utilizing the 85th%-tile qualifier. Comparisons with adopted temperature standards for the Warm season resulted in 100% compliance for the calculated WAT and 100% compliance for the calculated DM. A comparison with the adopted temperature standards for the cold season resulted in 92% compliance for the calculated WAT and 97% compliance for the calculated DM, the monitored locations of the Watershed, utilizing the 85th%-tile qualifier. A comprehensive temperature data collection effort spanning January through December, summarized in 268,032 30-minute measurements at 28 in-stream/lake Sites throughout the Watershed, excluding the WWTP facilities, provided the data for analyses.

The evaluation of the entirety of temperature datalogger measurements recorded during the calendar year at 28 sites in the Watershed from Mt. Evans Wilderness to just below Bear Creek Lake in Morrison and Turkey Creek do not indicate that a problem exists, either man-induced or natural, when compared to water quality standards. Compliance exceedance issues did not occur during the warm season in any segment for either the MWAT or the Daily Maximum calculations and only occurred in segments 1a, 1b, 5, and 6b during the cold season measurements during what would be considered the “shoulder season”.

Wastewater plant discharges into Bear Creek did not cause temperature impairment. A comprehensive temperature data collection effort from January through December, summarized in 82,655 30-minute measurements in five wastewater treatment plant effluents that discharge into Bear Creek Segment 1e and 1b, and 5 showed no evidence of thermal pollution. Although only three of the five WWTPs that discharge into Segments 1e, 1b, and 5 have temperature discharge requirements, the resulted data collected and presented do not indicate evidence of impairment due to temperature when analyzing the downstream data.

Water Quality Compliance

Segments 3, 1a, 1d, 1e, 1b, 5 and Turkey Creek Segments 6a and 6b showed little water quality impairment. Sampling and monitoring was performed at 39 sites within the watershed at varying intervals ranging from samples throughout the year to sampling 6 times throughout the season. 270 measurements of pH and of DO were performed at these Sites. 98% compliance for pH and 99% compliance for Dissolved Oxygen were achieved. 222 samples were analyzed for Total Ammonia and 222 samples were analyzed for Nitrate+Nitrite. Sampling results show 100% compliance with Total Ammonia TVS and 100% compliance with Nitrate water quality standards. (Stream samples were analyzed for Nitrate+Nitrite, but compared to Nitrate water quality standards.) There are no stream standards for Total Phosphorous; however 222 samples were analyzed for Total Phosphorous and ran against the proposed standard of 110ug/L, this resulted in 93% of the samples being in compliance of the proposed standard.

Wastewater plant discharges into Bear Creek result in no evidence of water quality impairment. 100% of the wastewater plant effluent pH and 100% of effluent Ammonia values met permit limits, while 100% Total Phosphorous met permit effluent limits as well. Five of the five wastewater treatment plants met discharge limits stated in their Colorado Discharge Pollutant Elimination System (CDPES) permit for pH, Total Phosphorous and Total Ammonia during 2014. There were no permit violations reported for any of the

parameters from 5 wastewater treatment plants in 2014. Wastewater treatment plant effluents had no detrimental effect on the water quality of Segment 1e, 1b, and 5. There were no observed impairment issues or temperature issues in the Watershed due to wastewater plant effluents during the program.

Bear Creek stream flows were moderately higher to significantly higher from May through September in 2014. Bear Creek stream flows tracked during May through September, on daily average at the gage above Evergreen Lake, were somewhat to significantly higher than the historic daily average in May through September. The stream gage above Morrison followed the Evergreen gage values. The stream flows remained slightly higher to significantly higher above monthly historic averages. A surprising factor in the 2014 Program was the lack of snow pack to aid in the runoff and the wetter than average summer in terms of inches of rainfall throughout the summer.

Weather and climate in the May through September timeframe were approximately average to below average as compared to historic averages. Measurably more precipitation was noticed verses historic averages in May through September.

The Average Monthly Mean temperatures were approximately equal to historical data for May through September. The Average Monthly Maximum temperatures were approximately equal to historical averages for May through September. However, the Average Daily Minimum temperatures were slightly higher or equal to historical averages in all months. The Average Monthly temperatures were unremarkable.

Wastewater Treatment Facility Monitoring

WWTP Effluent Temperature and Water Quality

The Process Control and permit sampling and monitoring summaries in the tables below are annual summaries, from January through December. Datalogger temperature measurements of plant effluent were obtained at the identical frequency of the in-stream dataloggers (30-minute intervals) during a study period of January 1 through December 31, broken into a cold and warm season per the listing requirements. The tables are listed in a downstream direction, as the effluents enter Bear Creek, from the EMD WWTP to the Morrison WWTP. Test results for Ammonia, Nitrate, Nitrite and Phosphorous are provided by the wastewater treatment plant laboratories for EMD, WJCMD, KSWD and GWSD and are represented in ug/L. TIN was determined as the sum of Ammonia, Nitrate and Nitrite. Averaged pH values are for statistical analyses only. The town of Morrison utilizes a contract laboratory for analyses.

Table 8 Evergreen Metropolitan District (Site 20)

EMD WWTP Effluent Summary 2014									
2014 Process Control and Permit Sampling and Monitoring									
Parameter	pH, SU	Temp, °C	D. O., mg/L	Total NH3-N, ug/L	NO3-N, ug/L	NO2-N, ug/L	TIN, ug/L	Total P, ug/L	Flow, MGD
Min	6.44	6.60	3.38	68	2310	0.06	3130	20	0.30
Max	7.07	18.90	7.40	8330	10500	416	12421	950	0.66
Avg	6.70	13.01	4.66	1362.80	4900.19	57.66	6207.68	207.17	0.46
Std. Dev.	0.10	4.02	0.90	1988.37	1640.67	99.30	2171.65	181.12	0.06
Measurements	265	247	248	54	53	53	53	53	365
Exceedances	0			0				0	

Effluent Datalogger Temperature Summary: Cold Season/Warm Season 2014						
All Temperatures in °C	30-Min Temp. COLD/WARM		Daily Avg. Temp. COLD/WARM		Weekly Avg. Temp. COLD/WARM	
Min	6.46	8.9	6.52	9.0	6.98	9.1
Max	15.13	20.0	15.00	18.8	14.64	18.6
Avg	9.57	15.4	9.56	15.4	9.65	15.4
Std. Dev.	2.14	3.0	2.14	3.0	2.25	3.1
Measurements	6234	10272	130	214	17	30

[Datalogger ID: EMD5 GPS Coordinates: 39.6376°N, 105.3150°W; Sampling/monitoring site is the EMD WWTP effluent. The datalogger is in the UV channel just upstream of the outfall. Effluent flows directly from the UV building to Bear Creek.] Notes: Discharge permit limits for Total Ammonia (NH3-N), in ug/L are as follows: Jan.-**9,900**, Feb.-**9,900**, Mar.-**12,000**, Apr.-**13000**, May-**17,000** June-**16,000** July **9,400** Aug. **7,700** Sept.-**7,900**; Oct.-**5,700**; Nov.-**6,900**; Dec.-**9,200**; **pH 6.1-9.0**. New methodology for calculating DM and MWAT in accordance with the new permit is now in effect as of August 1, 2013.

Table 9 West Jefferson County Metropolitan District (Site 21)

WJCMD WWTP Effluent Summary 2014									
2014 Process Control and Permit Sampling and Monitoring									
Parameter	pH, SU	Temp, °C	D. O., mg/L	Total NH3-N, ug/L	NO3-N, ug/L	NO2-N, ug/L	TIN, ug/L	Total P, ug/L	Flow, MGD
Min	6.24	9.00	0.69	83	358	1.00	739	0.1	0.28
Max	7.26	19.10	3.64	24000	15500	175	24386	2850	0.65
Avg	6.68	13.10	1.83	6145.54	2976.79	60.06	6280.57	297.27	0.46
Std. Dev.	0.15	3.17	0.48	6747.50	2813.24	40.28	5401.01	413.58	0.05
Measurements	279	257	257	97	53	53	53	55	365
Exceedances	0			0				0	

Effluent Datalogger Temperature Summary Cold/Warm Seasons 2014						
All Temperatures in °C	30-Min Temp. COLD/WARM		Daily Avg. Temp. COLD/WARM		Weekly Avg. Temp. COLD/WARM	
Min	3.2	9.6	8.0	9.7	9.1	9.9
Max	14.8	18.4	14.6	17.9	14.5	17.7
Avg	10.6	15.0	10.6	15.0	10.7	14.9
Std. Dev.	1.6	2.53	1.6	2.5	1.7	2.6
Measurements	6236	10271	131	214	17	30

[Datalogger ID: WJ6 GPS Coordinates: 39.6621°N, 105.3351°W; Sampling/monitoring site is the WJCMD WWTP effluent. The datalogger was located in the end of the abandoned chlorine contact chamber. (Disinfection currently occurs by UV radiation.) The effluent flows into a ditch and joins Troublesome Gulch just outside the plant boundary. Troublesome Gulch flows to Kittredge and combines with Bear Creek at the west end of Kittredge.] Notes: Discharge permit limits for Total Ammonia (NH3-N), in ug/L are as follows: Jan.-**8000**, Feb.-**7400**, Mar.-**6800**, Apr.-**5400**, May-**5000** June-**4000** July-**3200** Aug.-**3500** Sept.-**3700**; Oct.-**4300**; Nov.-**5400**; Dec.-**7400**; **pH 6.4-9.0**. New methodology for calculating DM and MWAT in accordance with the new permit is now in effect.

Table 10 Kittredge Sanitation and Water District (Site 22)

KSWD WWTP Effluent Summary 2014									
2014 Process Control and Permit Sampling and Monitoring									
Parameter	pH, SU	Temp, °C	D. O., mg/L	NH3-N, ug/L	NO3-N, ug/L	NO2-N, ug/L	TIN, ug/L	Total P, ug/L	Flow, MGD
Min	6.56	3.70	0.70	177	600	39.00	1771	190	0.04
Max	8.65	25.40	21.60	14000	22600	1220	24034	1060	0.10
Avg	6.88	11.69	4.83	1918.46	7155.91	359.30	9203.34	438.15	0.05
Std. Dev.	0.28	5.30	4.54	2840.32	5652.73	286.08	5406.34	196.41	0.01
Measurements	248	202	201	57	44	44	44	27	365
Exceedances	0			0				0	

Effluent Datalogger Temperature Summary Cold/Warm Seasons 2014						
All Temperatures in °C	30-Min Temp. COLD/WARM		Daily Avg. Temp. COLD/WARM		Weekly Avg. Temp. COLD /WARM	
Min	3.4	7.5	3.5	8.7	4.0	10.5
Max	11.0	20.9	10.5	19.6	9.6	19.1
Avg	6.0	15.3	6.0	15.3	5.9	15.4
Std. Dev.	2.3	2.97	2.2	2.92	2.0	2.72
Measurements	6235	10272	131	214	17	30

[Datalogger ID: KSWD8 GPS Coordinates: 39.6585°N, 105.2868°W; Sampling/monitoring site is the KSWD WWTP effluent. The datalogger was located near the flow-measuring flume, just upstream of the outfall. Effluent flows from the datalogger location under Highway 74 to the outfall in Bear Creek.] Notes: Discharge permit limits for Total Ammonia (NH3-N), in ug/L are as follows: Jan.-**10,100**, Feb.-**4,500**, Mar.-**5,300**, Apr. **7400**, May-**10000** June-**12000** July-**5300** Aug.-**4300** Sept.-**4400**; Oct.-**5200**; Nov.-**17000**; Dec **14000**; **pH 6.0-9.0**

Table 11 Genesee Water and Sanitation District (Site 23)

GWSD WWTP Effluent Summary 2014									
2014 Process Control and Permit Sampling and Monitoring									
Parameter	pH, SU	Temp, °C	D. O., mg/L	Total NH3-N, ug/L	NO3-N, ug/L	NO2-N, ug/L	TIN, ug/L	Total P, ug/L	Flow, MGD
Min	6.51	8.60	6.75	20	200	2.00	2029	59	0.18
Max	7.59	20.40	9.03	16230	11220	512	18838	1610	0.31
Avg	7.05	14.40	7.80	1002.44	7179.61	74.26	8273.36	365.06	0.23
Std. Dev.	0.19	3.26	0.59	2882.32	2545.66	122.65	3009.02	276.55	0.02
Measurements	365	365	365	52	51	52	51	53	365
Exceedances	0			1				0	

Effluent Datalogger Temperature Summary COLD/WARM Seasons 2014						
All Temperatures in °C	30-Min Temp. COLD/WARM		Daily Avg. Temp. COLD/WARM		Weekly Avg. Temp. COLD/WARM	
Min	9.3	10.1	9.4	10.3	9.8	10.4
Max	16.2	19.1	16.0	19.0	15.8	18.8
Avg	11.7	15.9	11.7	15.9	11.8	15.8
Std. Dev.	1.9	2.7	1.9	2.7	1.9	2.8
Measurements	6234	10272	131	214	17	30

[Datalogger ID: GWSD9A GPS Coordinates: 39.6732°N, 105.2712°W; Sampling/monitoring site is the GWSD WWTP effluent. The datalogger was located in a wet well, just upstream of the outfall at the plant. Effluent flows from the datalogger location into a drainage, down to and under Highway 74 at the west end of Lair o' the Bear Park, and into Bear Creek.] Notes: Discharge permit limits for Total Ammonia (NH3-N), in ug/L are as follows: Jan.-**8,000**, Feb.-**8,100**, Mar.-**8,000**, Apr.-**6,000**, May-**6,000** June-**5,600** July-**5,000** Aug.-**4,800** Sept.-**5,100**; Oct.-**5,500**; Nov.-**6,000**; Dec.-**7,100**; pH **6.5-9.0**

Table 12 Town of Morrison (Site 24)

Morrison WWTP Effluent Summary 2014									
2014 Process Control and Permit Sampling and Monitoring									
Parameter	pH, SU	Temp, °C	D. O., mg/L	NH3-N, ug/L	NO3-N, ug/L	NO2-N, ug/L	TIN, ug/L	Total P, ug/L	Flow, MGD
Min	6.41	5.4	0						0.034
Max	7.75	24.4	8.646	3110	1710	1710	1730	390	0.846
Avg	6.99	14.83	4.92	561	802	818	1230	156.67	0.085
Std. Dev.	0.22	4.88	1.78	813	601	596	500	92.78	0.048
Measurements	365	357	209	15	6	6	2	15	
Exceedances	1	0	0						

Effluent Datalogger Temperature Summary COLD/WARM Seasons 2014						
All Temperatures in °C	30-Min Temp. COLD/WARM		Daily Avg. Temp. COLD/WARM		Weekly Avg. Temp. COLD/WARM	
Min	4.2	2.5	5.4	9.2	8.2	11.4
Max	16.4	25.1	15.4	22.3	14.6	21.8
Avg	10.0	17.8	10.0	17.8	10.2	17.8
Std. Dev.	2.0	3.5	1.9	3.3	1.6	3.3
Measurements	6358	10272	133	214	17	30

[Datalogger ID: MORR12 GPS Coordinates: 39.6541°N, 105.1796°W; Sampling/monitoring site is the GWSD WWTP effluent. The datalogger was located in a wet well, just upstream of the outfall at the plant. Effluent flows from the datalogger location into a drainage, down to and under Highway 74 at the west end of Lair o' the Bear Park, and into Bear Creek.] Notes: Discharge permit limits for Total Ammonia (NH3-N), in ug/L are as follows: Jan.-10,000, Feb.-8,600,

Mar.-10,000, Apr.-10,000, May-8,600 June-20,000 July-30,000 Aug.-28,000 Sept.-28,000; Oct.-16,000; Nov.-14,000; Dec.-10,000; pH 6.5-9.0

Other Small Treatment Facilities

Table 13 Tiny Town Effluent Summary Not Available – Hauling and No Record

Table 14 Brook Forest Inn Effluent Summary

BROOK FOREST INN WWTP Effluent Summary 2014				
2014 Process Control and Permit Sampling and Monitoring				
Parameter	pH, SU	Temp, °C	TP, ug/L	Flow, MGD
Min	6.79		0.11	0.000001
Max	7.45		0.52	0.00389
Avg	7.65		0.31	0.00
Std. Dev.	0.39		0.13	0.00
Measurements	22		11	11
Exceedances	0		0	0

Table 15 Bear Creek Cabins Effluent Summary

BEAR CREEK CABINS WWTP Effluent Summary 2014					
2014 Process Control and Permit Sampling and Monitoring					
Parameter	pH, SU	Temp, °C	NH3-N, ug/L	TP, ug/L	Flow, MGD
Min	*6.51*	*0*	*1.24*	*0.35*	*0.00014*
Max	*7.86*	*20*	*79.32*	*11.69*	*0.00043*
Avg	*7.21*	*12.87*	*34.83*	*3.72*	*0.00*
Std. Dev.	*0.44*	*7.02*	*27.29*	*3.54*	*0.00*
Measurements	*14*	*7*	*7*	*7*	*7*
Exceedances	*0*			*5*	

Bear Creek Stream Segments

Sampling and monitoring was performed by Evergreen Metropolitan District personnel and watershed associates. Laboratory analyses were performed by a contract facility. A summary table for each Segment is presented before individual Site tables in that Segment. When there is only one Site per Segment, the summary table is omitted. Sites where only Warm Season temperature data exists have Cold-season portions of the table blacked out.

The following applies to all Segment Data tables: Existing stream standards: Table Value Standard (TVS) for Total Ammonia (NH3-N), chronic; 10 mg/L (10,000 ug/L) Nitrate (NO3-N), chronic; pH 6.5-9.0 SU; DO 6.0 mg/L; TIN was determined as the sum of Ammonia and Nitrate+Nitrite. Threshold to Evaluate Potential Temperature Impairment: WAT (Weekly Average Temperature), DM (Daily Maximum Temperature), Segment-specific; 2-HR Avg. Temperature data are calculations used to evaluate against DM.

Segments 7 and 8 (Mt Evans Wilderness)

Table 16 Summit Lake Site 36 (In Summit Lake near outlet) Segment 8

4 Monthly Sampling/Monitoring Events June 1-Sept 30, 2014									
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L	TN, ug/L
Min	6.43	3.8	7.82	0.02	5	61	66	286	2
Max	8.8	8.1	10.39	0.0258	18	133	151	317	27
Avg	7.83	6.00	8.80	0.02	13.75	92.50	106.25	299.25	10.75
Std. Dev.	0.93	1.61	0.96	0.00	5.17	26.00	30.21	13.24	9.63
Measurements	4	4	4	4	4	4	4	4	4

[Monitoring station GPS Coordinates: 39.5979 °N, 105.6411 °W; Sampling /monitoring site are in Summit Lake, near outlet.]

Table 17 Summit Lake Site 37 Segment 7

4 Monthly Sampling/Monitoring Events June 1-Sept 30, 2014									
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L	TN, ug/L
Min	5.75	6.8	7.83	0.02	5	97	102	246	2
Max	7.35	8.3	9.3	0.02	17	130	147	363	27
Avg	6.91	7.50	8.37	0.02	14	111.25	125.25	308	10.75
Std. Dev.	0.67	0.53	0.58	0.00	5.20	12.07	16.07	42.76	9.83
Measurements	4	4	4	4	4	4	4	4	4

[Monitoring station GPS Coordinates: 39.5955 °N, 105.6334 °W; Sampling /monitoring site are in Bear Creek, downstream of outlet from Summit Lake.]

Table 18 Summit Lake Site 63 (Summit Lake pollution Plume fens) Segment 7

4 Monthly Sampling/Monitoring Events June 1-Sept 30, 2014									
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L	TN, ug/L
Min	5.82	4.5	0.89	0.033	12	2	14	5	73
Max	7.76	5.9	3.15	0.0506	40	7	47	892	735
Avg	6.73	5.20	1.83	0.04	24.25	3.75	28	377.25	310
Std. Dev.	0.89	0.57	0.82	0.01	10.35	2.05	12.06	335.66	252.27
Measurements	4	4	4	4	4	4	4	4	4

[Monitoring station GPS Coordinates: Sampling /monitoring site

Table 19 (Site 65) Between 2 large ponds on east side of Summit Lake outfall. Segment 7

4 Monthly Sampling/Monitoring Events June 1-Sept 30, 2014									
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TN, ug/L	TP, ug/L
Min	5.57	4.4	6.39	0.022	5	85	90	250	2
Max	7.43	8.7	10.37	0.024	20	131	151	311	11
Avg	6.73	6.00	8.38	0.02	14.50	98.75	113.25	275.75	6.25
Std. Dev.	0.74	1.78	1.43	0.00	5.68	18.79	22.85	22.13	3.49
Measurements	4	4	4	4	4	4	4	4	4

Segment 1a (Above Evergreen Lake)

Table 20 Segment 1a Summary

Segment 1a Sampling/Monitoring Summary 2014									
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN,U g/L	TN, Ug/L	TP, ug/L
Min	7.1	0.7	8.17	0.038	5	50	59	53	2
Max	8.84	13.4	14.2	0.58	38	152	157	265	65
Avg	7.89	7.85	10.93	0.11	14.41	80.76	95.18	192.06	15.47
Std. Dev.	0.43	3.65	1.66	0.16	9.74	26.17	25.38	54.74	15.20
Measurements	17	17	17	17	17	17	17	17	17

Segment 1a Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Seasons		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 Stream DM (21.2°C)
Min	0.00	2.90	1.26	0.01	0.11	6.90	3.04	6.43
Max	13.35	18.15	8.44	13.30	13.30	14.87	18.09	18.09
Avg	4.77	10.83	4.82	4.77	6.52	10.85	10.83	12.58
Measurements	8637	11719	24	2159	180	34	2929	244
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					1			
% Compliance DM					99%			
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

Table 21 Above Lost & Found, Below Mount Evans Wilderness (Site 58)

5 Monthly Sampling/Monitoring Events June 1 – October 31, 2014								
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.1	0.7	9.34	0.038	5	82	102	174
Max	8.84	9.6	13.14	0.043	20	152	157	265
Avg	7.9	7.0	10.9	0.0	10.0	113.8	123.8	211.8
Std. Dev.	0.57	3.25	1.33	0.00	6.03	23.35	20.47	39.42
Measurements	5	5	5	5	5	5	5	5

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Season		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 Stream DM (21.2°C)
Min	0.0	2.9	1.3	0.0	0.1	6.9	3.0	6.4
Max	10.5	15.3	5.4	10.4	10.4	11.5	15.2	15.2
Avg	3.6	9.2	3.7	3.6	5.3	9.2	9.2	11.1
Std. Dev.	2.2	2.1	1.3	2.1	2.3	1.4	2.1	1.7
Measurements	3528	5856	10	882	74	17	1464	122
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: L&F GPS Coordinates: 39.6234 °N, 105.4451 °W; Sampling /monitoring site is in Bear Creek, above Lost & Found (old Singin' River

Table 22 Golden Willow Rd (Site 2a)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.26	2.6	8.39	0.05	5	58	67	53
Max	8.62	12.5	14.2	0.5	38	82	105	249
Avg	7.89	7.80	11.23	0.13	17.67	67.67	85.33	180.00
Std. Dev.	0.42	3.68	1.90	0.16	10.83	8.65	16.11	64.18
Measurements	6	6	6	6	6	6	6	6
Datalogger Temperature Data 2014(Logger Lost)								

Logger Lost During 2014 Season.

Table 23 Above Evergreen Lake, at CDOW site (Site 3a)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU		Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	T P, ug/L
Min	7.53		3	8.17	0.06	6	50	59	93
Max	8.44		13.4	13.07	0.58	34	80	97	245
Avg.	7.88		8.62	10.64	0.16	14.83	66.33	81.17	187.67
Std. Dev.	0.29		3.76	1.61	0.19	9.72	11.03	15.53	50.86
Measurements	6		6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Seasons		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 Stream DM (21.2°C)
Min	0.0	5.9	2.9	0.0	2.7	10.1	6.0	9.7
Max	13.4	18.2	8.4	13.3	13.3	14.9	18.1	18.1
Avg	5.6	12.4	5.6	5.6	7.4	12.5	12.4	14.1
Std. Dev.	2.6	2.2	1.7	2.6	2.3	1.5	2.1	1.8
Measurements	5109	5856	14	1277	106	17	1464	122
# 9°C WAT exceeded			0					
% Compliance WAT			100%					

# 13°C DM exceeded				1			
% Compliance DM				99%			
# 17°C WAT exceeded					0		
% Compliance WAT					100%		
# 21.2°C DM exceeded							0
% Compliance DM							100%

[Monitoring station/Datalogger ID: ALKDOW GPS Coordinates: 39.6331 °N, 105.3372 °W; Sampling /monitoring site in Bear Creek above Evergreen Lake, at the CDOW fish survey site.]

Segment 1d (Evergreen Lake)

Sites 4a-4j comprises a profile monitoring station in Evergreen Lake. During the study period, sampling and monitoring were performed monthly at the individual Site locations at this profile station. This data is presented below. Also during the study period, temperature data collected with dataloggers at the individual Site locations were analyzed and compared to state water quality standards.

Segment 1d Summary

Segment 1d Sampling/Monitoring Summary 2014									
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, Ug/L	TN Ug/L	TP, ug/L
Min	7.27	5.9	6.44	0.065	5	23	28	187	9
Max	8.56	17.4	11.09	0.142	43	68	96	333	30
Avg	7.81	11.85	9.08	0.08	29.08	42.67	71.75	264.67	19.25
Std. Dev.	0.28	3.21	1.35	0.01	10.56	12.68	19.09	43.91	5.89
Measurements	60	60	60	60	12	12	12	12	12

Segment 1d Datalogger Temperature Summary 2014							
All Temperatures in °C	30-Min Temp. Warm Seasons	Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 Stream DM (21.2°C)
Min	4.53				5.33	4.55	4.79
Max	19.15				16.89	18.94	18.94
Avg	12.08				12.11	12.08	12.79
Measurements	37644				112	9408	788
# 9°C WAT exceeded							
% Compliance WAT							
# 13°C DM exceeded							
% Compliance DM							
# 18.2°C WAT exceeded					0		
% Compliance WAT					100%		
# 23.8°C DM exceeded							0
% Compliance DM							100%

Table 21 Evergreen Lake Profile station 0.5 meters (Site 4A)

6 Monthly Sampling/6 Monitoring Events May 1-Oct. 31, 2014										
Monthly Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TN ug/L	TP, Ug/L	TDP Ug/L
Min	7.9	7	7.31	0.07	5	23	28	191	9	2
Max	8.56	17.4	11.09	0.10	37	68	91	321	25	9
Avg	8.25	12.55	9.59	0.07	24.50	42.33	66.83	272.83	16.50	5.33
Std. Dev.	0.28	3.50	1.32	0.01	9.76	14.00	19.95	39.89	4.89	2.69
Measurements	6	6	6	6	6	6	6	6	6	6

Datalogger Temperature Summary 2014							
All Temperatures in °C	30-Min Temp. Warm Season	Jan 1-Mar 31 Stream Std. WAT (9°C)	Jan 1-Mar 31 2-Hr Avg. Temp.	Jan 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Dec. 31 Stream Std. WAT (19.3°C)	Apr 1-Dec 31 2-HR Avg. Temp.	Apr 1-Dec 31 Stream DM (23.8°C)
Min	4.5				5.4	4.5	5.1
Max	19.2				16.9	18.9	18.9
Avg	12.2				12.2	12.2	13.1

Std. Dev.	3.6				3.5	3.6	3.8
Measurements	9411				28	2352	197
# 18.2°C WAT exceeded					0		
% Compliance WAT					100%		
# 23.8°C DM exceeded							0
% Compliance DM							100%

[Monitoring station/Datalogger ID: EMD2A GPS Coordinates: 39.6314 °N, 105.3231 °W; Sampling /monitoring site in Evergreen Lake near the dam, on the surface, near the EMD WTP intake.] N/A* indicates temp. readings not taken. N/A** Indicates no sampling at this location.

Table 24 Evergreen Lake, 1.0m below surface, near dam (Site 4b)

6 Monthly Monitoring Events May 1-Oct. 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO 2-N, ug/L	TIN, ug/L	TN ug/L	TP, ug/L	TD P Ug/L
Min	7.8	7	7.03	0.067						
Max	8.39	17.2	11.09	0.1						
Avg	8.01	12.30	9.53	0.07						
Std. Dev.	0.21	3.40	1.44	0.01						
Measurements	6	6	6	6						

Datalogger Temperature Summary 2014							
All Temperatures in °C	30-Min Temp. WARM SEASON	Jan 1-Mar 31 Stream Std. WAT (9°C)	Jan 1-Mar 31 2-Hr Avg. Temp.	Jan 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Dec. 31 Stream Std. WAT (19.3°C)	Apr 1-Dec 31 2-HR Avg. Temp.	Apr 1-Dec 31 Stream DM (23.8°C)
Min	4.6				5.4	4.6	5.0
Max	19.1				16.8	18.8	18.8
Avg	12.1				12.2	12.1	12.9
Std. Dev.	3.5				3.5	3.5	3.7
Measurements	9411				28	2352	197
# 18.2°C WAT exceeded					0		
% Compliance WAT					100%		
# 23.8°C DM exceeded							0
% Compliance DM							100%

[Monitoring station/Datalogger ID: EMD2B GPS Coordinates: 39.6314 °N, 105.3231 °W; Sampling /monitoring site in Evergreen Lake near the dam, 1.5m below surface, near the EMD WTP intake.]

Table 25 Evergreen Lake, 1.5m below surface, near dam (Site 4c)

6 Monthly Monitoring Events May 1-Oct. 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.67	7	6.92	0.067				
Max	8.3	17	10.63	0.1				
Avg	7.95	12.20	9.11	0.07				
Std. Dev.	0.21	3.34	1.23	0.01				
Measurements	6	6	6	6				

Datalogger Temperature Summary 2014							
All Temperatures in °C	30-Min Temp. Warm Season	Jan 1-Mar 31 Stream Std. WAT (9°C)	Jan 1-Mar 31 2-Hr Avg. Temp.	Jan 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Dec. 31 Stream Std. WAT (19.3°C)	Apr 1-Dec 31 2-HR Avg. Temp.	Apr 1-Dec 31 Stream DM (23.8°C)
Min	4.6				5.3	4.6	4.8
Max	18.9				16.6	18.5	18.5
Avg	12.0				12.0	12.0	12.7
Std. Dev.	3.5				3.4	3.5	3.6
Measurements	9411				28	2352	197
# 18.2°C WAT exceeded					0		
% Compliance WAT					100%		
# 23.8°C DM exceeded							0
% Compliance DM							100%

[Monitoring station/Datalogger ID: EMD2C GPS Coordinates: 39.6314 °N, 105.3231 °W; Sampling /monitoring site in Evergreen Lake near the dam, 2.5m below the surface, near the EMD WTP intake.]

Table 26 Evergreen Lake, 2.0m below surface, near dam (Site 4d)

6 Monthly Monitoring Events May 1-Oct. 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO 2-N, ug/L	TIN, ug/L	TN ug/L	TP, ug/L	TDP Ug/L
Min	7.62	6.9	6.94	0.066						
Max	8.17	16.9	10.97	0.1						
Avg	7.87	12.15	9.03	0.07						
Std. Dev.	0.19	3.33	1.24	0.01						
Measurements	6	6	6	6						

Datalogger Temperature Summary 2014							
All Temperatures in °C	30-Min Temp. WARM SEASON	Jan 1-Mar 31 Stream Std. WAT (9°C)	Jan 1-Mar 31 2-Hr Avg. Temp.	Jan 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Dec. 31 Stream Std. WAT (19.3°C)	Apr 1-Dec 31 2-HR Avg. Temp.	Apr 1-Dec 31 Stream DM (23.8°C)
Min	4.6				5.4	4.6	4.8
Max	18.5				16.6	18.2	18.2
Avg	12.0				12.0	12.0	12.5
Std. Dev.	3.5				3.4	3.5	3.5
Measurements	9411				28	2352	197
# 18.2°C WAT exceeded					0		
% Compliance WAT					100%		
# 23.8°C DM exceeded							0
% Compliance DM							100%

[Monitoring station/Datalogger ID: EMD2D GPS Coordinates: 39.6314 °N, 105.3231 °W; Sampling /monitoring site in Evergreen Lake near the dam, 3.5m below the surface, near the EMD WTP intake.]

Table 27 Evergreen Lake, 2.5m below surface, near dam (Site 4e)

6 Monthly Monitoring Events May 1-Oct. 31, 2014				
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm
Min	7.49	6.9	6.94	0.067
Max	8.02	15.7	10.69	0.1
Avg	7.81	11.93	8.99	0.07
Std. Dev.	0.18	3.06	1.22	0.01
Measurements	6	6	6	6

[Monitoring station/Datalogger ID: EMD4E GPS Coordinates: 39.6314 °N, 105.3231 °W; Sampling /monitoring site in Evergreen Lake near the dam, 2.5m below the surface, near the EMD WTP intake.]

Table 28 Evergreen Lake, 3.0m below surface, near dam (Site 4f)

6 Monthly Monitoring Events May 1-Oct. 31, 2014				
Monthly Parameter Results	**pH, SU**	**Temp, °C**	**D. O., mg/L**	**Sp. Cd., mS/cm**
Min	7.36	6.9	6.51	0.067
Max	7.97	15.6	10.64	0.1
Avg	7.75	11.70	8.80	0.07
Std. Dev.	0.20	3.01	1.37	0.01
Measurements	6	6	6	6

[Monitoring station/Datalogger ID: EMD4f GPS Coordinates: 39.6314 °N, 105.3231 °W; Sampling /monitoring site in Evergreen Lake near the dam, 3.0m below the surface, near the EMD WTP intake.]

Table 29 Evergreen Lake, 3.5m below surface, near dam (Site 4g)

6 Monthly Monitoring Events May 1-Oct. 31, 2014				
Monthly Parameter Results	**pH, SU**	**Temp, °C**	**D. O., mg/L**	**Sp. Cd., mS/cm**
Min	7.35	6.5	6.65	0.07
Max	7.85	15.4	10.68	0.1
Avg	7.69	11.58	8.89	0.07
Std. Dev.	0.17	3.08	1.37	0.01
Measurements	6	6	6	6

Monitoring station/Datalogger ID: EMD4g GPS Coordinates: 39.6314 N, 105.3231 W; Sampling /monitoring site in Evergreen Lake near the dam, 3.5m below the surface, near the EMD WTP intake.]

Table 30 Evergreen Lake, 4.0m below surface, near dam (Site 4h)

6 Monthly Monitoring Events May 1-Oct. 31, 2014				
Monthly Parameter Results	**pH, SU**	**Temp, °C**	**D. O., mg/L**	**Sp. Cd., mS/cm**
Min	7.36	6.5	6.61	0.07
Max	7.81	15.2	10.92	0.10
Avg	7.66	11.50	8.91	0.07
Std. Dev.	0.14	3.02	1.40	0.01
Measurements	6	6	6	6

Monitoring station/Datalogger ID: EMD4h GPS Coordinates: 39.6314 N, 105.3231 W; Sampling /monitoring site in Evergreen Lake near the dam, 4.0m below the surface, near the EMD WTP intake.]

Table 31 Evergreen Lake, 5.0m below surface, near dam (Site 4i)

6 Monthly Sampling/6 Monitoring Monthly Monitoring Events May 1-Oct. 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TN ug/L	TP, Ug/L	TDP Ug/L
Min	7.38	6.2	7.04	0.065	15	28	43	187	12	2
Max	7.76	15	10.78	0.1	43	65	96	333	30	7
Avg	7.62	11.30	9.05	0.07	33.67	43.0	76.67	256.5	22.0	3.5
Std. Dev.	0.12	3.01	1.25	0.01	9.27	11.21	16.81	46.17	5.51	2.14
Measurements	6	6	6	6	6	6	6	6	6	6

Monitoring station/Datalogger ID: EMD4i GPS Coordinates: 39.6314 N, 105.3231 W; Sampling /monitoring site in Evergreen Lake near the dam, 5.0m below the surface, near the EMD WTP intake.]

Table 32 Evergreen Lake, 6.0m below surface, near dam (Site 4j)

6 Monthly Monitoring Events May 1-Oct. 31, 2014				
Monthly Parameter Results	**pH, SU**	**Temp, °C**	**D. O., mg/L**	**Sp. Cd., mS/cm**
Min	7.27	5.9	6.44	0.07
Max	7.72	14.8	10.74	0.14
Avg	7.52	11.27	8.87	0.09
Std. Dev.	0.17	3.02	1.36	0.03
Measurements	6	6	6	6

Monitoring station/Datalogger ID: EMD4j GPS Coordinates: 39.6314 N, 105.3231 W; Sampling /monitoring site in Evergreen Lake near the dam, 6.0m below the surface, near the EMD WTP intake.]

Segment 1e (Mainstem below Evergreen Lake and Above Harriman Diversion)

Table 33 Segment 1e Summary

Segment 1e Sampling/Monitoring Summary 2014									
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2 -N, ug/L	TIN, ug/L	TN Ug/L	TP, ug/L
Min	7.45	6.4	7.51	0.0772	6	48	68	140	6
Max	8.78	16.9	12.82	0.9	144	250	302	579	182
Avg	7.95	11.44	9.93	0.15	38.78	150.47	189.25	357.94	43.72
Std. Dev.	0.28	3.69	1.50	0.13	38.31	55.27	66.65	95.82	49.30
Measurements	36	36	36	36	36	36	36	36	36

Segment 1e Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASON		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	-0.03	0.08	0.02	-0.03	-0.03	3.95	0.24	3.93
Max	9.73	20.72	5.09	9.63	9.63	17.58	20.67	20.67
Avg	2.48	11.76	2.30	2.48	3.55	11.83	11.76	13.47
Measurements	11321	61632	31	2828	233	180	15408	1284
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

Table 27 Downtown Evergreen, at CDOW site (Site 5)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014									
	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2 -N, ug/L	TIN, ug/L	TN Ug/L	TP, ug/L
Min	7.45	6.4	7.51	0.081	14	48	68	140	6
Max	8.33	15.6	11.43	0.129	104	141	232	404	136
Avg	7.82	11.00	9.86	0.10	33.17	91.83	125.00	280.7	38.50
Std. Dev.	0.28	3.52	1.43	0.02	31.79	33.40	56.54	88.04	44.07
Measurements	6	6	6	6	6	6	6	6	6

Site 5 Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Season		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	2.90	3.0	4.91	2.94	4.51	4.0	3.0	3.9
Max	6.61	18.8	5.00	6.54	6.54	16.6	18.6	18.6
Avg	4.57	11.5	4.95	4.57	5.45	11.5	11.5	12.5
Measurements	742	10272	2	185	15	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

Monitoring station/Datalogger ID: LTLBAR GPS Coordinates: 39.6327 °N, 105.3183 °W; Sampling /monitoring site in Bear Creek near the west end of public parking lot, across from the Little Bear, CDOW fish survey site.]

Table 34 Bear Creek Cabins (Site 8a)

9 Monthly Sampling/Monitoring Events March - November, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO 2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.55	6.8	7.57	0.08	22	68	110	246
Max	8.78	16.1	11.19	0.9	144	167	281	460
Avg	7.93	11.40	9.68	0.24	64.67	117.83	182.50	361
Std. Dev.	0.41	3.54	1.31	0.30	41.73	39.80	55.61	77.1
Measurements	6	6	6	6	6	6	6	6

Site 8a Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Season		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	2.40	1.8	4.90	2.41	6.10	4.1	1.8	5.3
Max	7.95	19.3	5.09	7.81	7.81	16.6	19.0	19.0
Avg	4.79	11.5	4.99	4.79	6.78	11.6	11.5	12.8
Std. Dev.	1.23	3.8	0.10	1.21	0.51	3.6	3.8	3.6
Measurements	694	10272	2	173	14	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: BCCDOW GPS Coordinates: 39.6425°N, 105.3084°W; Sampling/ monitoring site at bridge above the Bear Creek Cabins WWTP effluent discharge, at the CDOW fish survey site.]

Table 35 O'Fallon Park (Site 9)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.72	7	8.13	0.103	17	87	114	253
Max	8.47	16.4	11.63	0.178	123	216	274	477
Avg	8.10	11.42	9.96	0.12	39.83	139.83	179.67	354.33
Std. Dev.	0.24	3.65	1.31	0.03	37.63	48.24	66.19	89.94
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Seasons		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 DM (23.8°C)
Min	1.40	0.6	5.04	1.48	6.45	4.1	0.7	6.2
Max	9.73	20.2	5.04	9.63	9.63	16.8	20.1	20.1
Avg	4.85	11.7	5.04	4.85	7.70	11.7	11.7	13.6
Std. Dev.	1.70	4.0	0.00	1.68	0.87	3.7	4.0	3.6
Measurements	693	10272	1	173	14	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: OFPDOW GPS Coordinates: 39.6564°N, 105.2917°W; Sampling/ monitoring site north side of the creek above ETU restoration site, at the CDOW fish survey site.]

Table 36 Lair o' the Bear (Site 12)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.78	6.5	7.59	0.1089	7	130	152	245
Max	8.26	16.3	12.82	0.199	113	236	297	462
Avg	7.95	11.35	10.13	0.14	31.83	172.33	204.17	362.83
Std. Dev.	0.16	3.81	1.79	0.03	36.65	39.19	56.45	74.70
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASON		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	0.0	0.4	0.0	0.0	0.0	4.2	0.4	3.2
Max	7.7	20.4	4.9	7.6	7.6	17.0	20.2	17.6
Avg	1.4	11.8	1.2	1.4	2.1	11.9	11.8	11.8
Std. Dev.	1.8	4.1	1.3	1.7	2.2	3.7	4.1	3.8
Measurements	7703	10272	22	1925	160	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: LOBDOW GPS Coordinates: 39.6672°N, 105.2687°W; Sampling/ monitoring site in Bear Creek at the end of main path to Bear Creek from the parking lot, at the CDOW fish survey site.]

Table 37 Idledale (Shady Lane-Site 13a)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.74	6.7	7.89	0.113	6	142	160	263
Max	8.34	16.5	12.18	0.205	105	250	301	579
Avg	7.93	11.60	9.98	0.14	30.67	197.00	227.67	407.50
Std. Dev.	0.20	3.71	1.52	0.03	33.72	37.93	50.53	106.14
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASONS		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31. 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	1.0	0.1	4.7	1.1	4.8	4.2	0.2	5.0
Max	8.1	20.7	4.9	8.0	8.0	17.1	20.7	20.7
Avg	4.8	11.9	4.8	4.8	6.6	11.9	11.9	13.9
Std. Dev.	1.5	4.1	0.1	1.5	0.9	3.7	4.1	3.9
Measurements	744	10272	2	186	15	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: IDLE GPS Coordinates: 39.6621°N, 105.2406°W; Sampling/ monitoring site in Bear Creek at the CDOW fish survey site.]

Table 38 West End of Morrison (Site 14a)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.68	6.6	7.65	0.116	11	114	125	261
Max	8.3	16.9	12.45	0.207	113	240	302	498
Avg	7.99	11.88	9.99	0.14	32.50	184	216.5	380.83
Std. Dev.	0.25	3.82	1.56	0.03	36.10	44.05	59.47	86.26
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASONS		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	1.89	0.52	5.09	1.95	4.50	4.50	0.68	4.64
Max	7.90	20.53	5.09	7.83	7.83	17.58	20.45	20.45
Avg	5.14	12.27	5.09	5.14	6.67	12.35	12.27	14.07
Std. Dev.	1.34	4.12	0.00	1.33	0.93	3.70	4.12	3.89
Measurements	745	10272	2	186	15	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: MORR10 GPS Coordinates: 39.6529°N, 105.2003°W; Sampling/ monitoring site west end of Morrison, at the gated bridge to Denver Mountain parks Headquarters, at the CDOW fish survey site.]

Segment 1b (Below Harriman Diversion Summary) (Site 15a)

Table 39 Segment 1b Site 15a

Segment 1b Sampling/Monitoring Summary 2014									
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2 -N, ug/L	TIN, ug/L	TN Ug/L	TP, ug/L
Min	7.81	0.00	8.36	0.16	8	198	219	358.00	7
Max	8.49	16.10	14.41	0.42	111	944	1055	1408	87
Avg	8.09	8.31	11.21	0.24	36.67	383.73	420.40	644.53	26.00
Std. Dev.	0.20	5.93	1.84	0.08	26.49	199.43	215.66	257.06	20.93
Measurements	15	15	15	15	15	15	15	15	15

Segment 1b Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASONS		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	0.0	8.4	1.8	0.0	0.1	13.1	8.5	10.8
Max	15.0	20.6	11.5	14.9	14.9	17.6	20.5	20.5
Avg	7.2	15.4	7.2	7.2	8.9	15.4	15.4	17.0
Measurements	6409	5856	18	1602	134	17	1464	122
# 9°C WAT exceeded			6					
% Compliance WAT			67%					
# 13°C DM exceeded					14			
% Compliance DM					90%			
# 19.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: MORR11 GPS Coordinates: 39.6522 °N, 105.1731 °W; Monitoring site in Bear Creek near USGS gage in Bear Creek Park.]

Segment 3 (Vance Creek)

Table 40 Mt. Evans Wilderness Drainage, Vance Creek (Site 25)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.6	1.3	9.31	0.05	5	29	44	101
Max	8.53	11.5	13.05	0.101	27	56	69	165
Avg	7.92	6.95	11.01	0.08	14.00	42.67	56.67	139.83
Std. Dev.	0.32	3.93	1.38	0.02	7.19	9.12	9.81	24.65
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASON		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (21.2°C)
Min	-5.9	3.5	1.9	-5.6	1.6	8.3	3.8	8.4
Max	12.8	18.8	6.7	12.7	12.7	13.2	18.3	18.3
Avg	4.5	10.9	4.5	4.5	7.8	10.9	10.9	14.1
Std. Dev.	3.05	2.8	1.57	3.03	2.59	1.5	2.8	2.0
Measurements	5016	5856	14	1254	104	17	1464	122
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: ALKMEL GPS Coordinates: 39.6322°N, 105.4558°W; Sampling/ monitoring site in Vance Creek.]

Segment 5 Swede, Kerr, Sawmill, Troublesome and Cold Springs

Table 41 Segment 5 Summary

Segment 5 Sampling/Monitoring Summary 2014									
Monthly Parameter Results	pH, SU		Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.26		-0.2	6.38	0.064	5	3	11	147
Max	8.39		18.6	14.28	4.8	154	809	842	1345
Avg	8.00		9.61	9.87	0.86	24.00	267.35	291.35	547.56
Std. Dev.	0.21		5.97	1.80	0.58	28.61	211.30	216.62	314.52
Measurements	72		72	72	72	72	72	72	72
Segment 5 Datalogger Temperature Summary 2014									
All Temperatures in °C	30-Min Temp. Cold/Warm Season		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (18.2°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 DM (23.8°C)	
Min	-0.09	-0.06	0.83	-0.06	0.44	1.18	-0.04	0.36	
Max	18.39	22.25	11.67	18.21	18.21	16.37	22.01	22.01	
Avg	6.49	11.09	6.60	6.48	9.47	11.13	11.09	13.70	
Measurements	6938	26400	19	1733	143	77	6600	550	
# 18.2°C WAT exceeded						0			
% Compliance WAT						100%			
# 23.8°C DM exceeded								0	
% Compliance DM								100%	
# 9 C WAT exceeded				4					
% Compliance WAT				79%					
# 13 C DM exceeded					17				
% Compliance DM					88%				

Table 42 Little Cub Creek above Brook Forest Inn (Site 35)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.72	3.1	7.51	0.06	8	146	162	169
Max	8.36	13.2	12.78	0.11	137	442	498	781
Avg	7.86	8.68	10.20	0.09	34.17	258.67	292.83	392
Std. Dev.	0.23	3.44	1.65	0.01	46.17	109.01	137.19	205.36
Measurements	6	6	6	6	6	6	6	6
Datalogger Temperature Data 2014 LOGGER LOST DUE TO FLOOD								

[Monitoring station/Datalogger ID: (ABFI) GPS Coordinates: 39.5795°N, 105.3817°W; Sampling/ monitoring site in Little Cub Creek above Brook Forest Inn WWTP discharge.] **LOGGER LOST DUE TO FLOOD**

Table 43 Cub Creek Park on Little Cub Creek (site 50)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.47	5.7	7.4	0.124	11	202	219	253
Max	8.18	15.8	12	0.179	154	569	587	914
Avg	7.79	10.65	9.85	0.15	37.83	322	359.83	525.83
Std. Dev.	0.25	3.68	1.56	0.02	52.02	129.34	150.45	233.56
Measurements	6	6	6	6	6	6	6	6
Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. Cold/Warm Season		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (21.2°C)
Min	-0.1	-0.1	0.8	0.0	0.4	1.2	0.0	0.4
Max	7.3	18.1	5.2	7.3	7.3	13.7	18.0	18.0
Avg	2.7	9.3	3.0	2.7	4.4	9.4	9.3	11.0
Std. Dev.	2.3	3.8	2.2	2.3	1.9	3.5	3.8	3.7
Measurements	837	10272	2	209	17	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			

% Compliance DM				100%			
# 17°C WAT exceeded					0		
% Compliance WAT					100%		
# 21.2°C DM exceeded							0
% Compliance DM							100%

Table 44 Upper Troublesome Creek (site 64)

6 Monthly Sampling/Monitoring Events May 1- October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.39	5.7	7.46	0.61	5	107	136	538
Max	8.39	14.8	11.36	0.731	44	602	607	1315
Avg	7.96	11.05	9.64	0.68	21.17	312	333.17	949.83
Std. Dev.	0.34	3.43	1.28	0.04	13.20	173.58	173.73	268.30
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/ WARM SEASON		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (21.2°C)
Min	-0.1	0.0	3.5	-0.1	2.6	4.1	0.0	5.8
Max	11.7	22.3	5.3	11.4	11.4	16.4	22.0	22.0
Avg	4.4	11.4	4.4	4.4	8.6	11.5	11.4	14.9
Std. Dev.	2.6	4.0	0.9	2.6	1.9	3.2	4.0	3.8
Measurements	842	10272	2	210	17	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

Table 45 Lower Troublesome Creek (Site 32)

6 Monthly Sampling/Monitoring Events May 1- October 31, 2014								
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TP, ug/L
Min	7.84	6.8	7.71	0.59	10	272	282	608
Max	8.2	15.3	12.43	0.66	80	809	842	1345
Avg	8.0	11.1	10.0	0.64	29.3	608.3	637.7	1108.5
Std. Dev.	0.1	3.2	1.7	0.03	23.9	175.8	184.02	279.9
Measurements	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/ WARM SEASON		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (21.2°C)
Min	-0.1	7.1	3.3	0.0	3.2	11.8	7.2	9.7
Max	18.4	19.9	11.7	18.2	18.2	15.1	19.4	19.4
Avg	7.4	13.5	7.4	7.4	10.4	13.6	13.5	16.3
Std. Dev.	3.3	2.3	2.3	3.2	2.8	1.0	2.2	1.6
Measurements	5259	5856	15	1314	109	17	1464	122
# 9°C WAT exceeded			4					
% Compliance WAT								
# 13°C DM exceeded					17			
% Compliance DM								
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

Table 46 Kerr Gulch at Mouth (Site 52)

12 Monthly Sampling/Monitoring Events January 1- December 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2 -N, ug/L	TIN ug/L,	TN Ug/L	TP, ug/L	E.coli
Min	7.84	0.6	7.89	0.94	5	163	180	407	2	1
Max	8.33	17.8	12.66	1.07	101	739	744	947	27	25
Avg	8.12	8.42	10.61	1.01	19.42	383.58	403.00	598.92	12.92	6.92
Std. Dev.	0.12	6.40	1.59	0.03	25.17	157.93	156.49	157.28	7.17	7.82
Measurements	12	12	12	12	12	12	12	12	12	12

Table 47 Kerr Gulch @ Riefenburg Property (Site 53)

12 Monthly Sampling/Monitoring Events January 1- December 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	Total NH3-N, ug/L	NO3+NO 2-N, ug/L	TIN ug/L,	TN Ug/L	TP, ug/L	E.coli
Min	8	0.5	7.14	0.92	5	38	58	207	5	1
Max	8.25	17.9	14.28	1.16	82	552	557	787	39	7
Avg	8.10	9.27	10.27	1.02	18.67	174.83	193.50	370.67	15.08	2.58
Std. Dev.	0.07	6.41	2.00	0.06	20.56	146.42	143.15	157.35	10.30	2.43
Measurements	12	12	12	12	12	12	12	12	12	12

Table 48 Kerr Gulch Top End (Site 54)

12 Monthly Sampling/Monitoring Events January 1- December 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2- N, ug/L	TIN ug/L,	TN Ug/L	TP, ug/L	E.coli
Min	7.82	0	6.38	0.9	5	47	64	252	26	1
Max	8.25	18.6	12.19	0.988	90	451	456	734	312	50
Avg	8.00	9.59	9.15	0.95	24.17	204.58	228.75	455.67	82.25	17.00
Std. Dev.	0.12	7.25	1.72	0.03	21.70	136.96	138.73	155.61	72.42	17.14
Measurements	12	12	12	12	12	12	12	12	12	12

Table 49 Swede Gulch (Site 55)

12 Monthly Sampling/Monitoring Events January 1- December 31, 2014										
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	Total NH3-N, ug/L	NO3+NO2- N, ug/L	TIN ug/L,	TN Ug/L	TP, ug/L	E.coli
Min	7.26	-0.2	7.1	1	5	3	11	147	2	1
Max	8.23	17.9	11.89	4.8	73	712	759	1216	73	80
Avg	7.95	9.67	9.31	1.43	20.50	90.58	111.08	372.00	34.75	14.92
Std. Dev.	0.24	7.13	1.91	1.02	19.15	200.00	207.18	269.28	21.41	21.62
Measurements	12	12	12	12	12	12	12	12	12	12

Turkey Creek Stream Segments

(Segment 6a South Turkey Creek)

Table 50 Segment 6a Summary

Segment 6a Sampling/Monitoring Summary 2014									
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	NH3-N, ug/L	NO3+NO2- N, ug/L	TIN, ug/L	TN Ug/L	TP, ug/L
Min	7.46	0.10	6.28	0.09		2	22	301	2
Max	8.56	16.80	13.26	1.72	62	667	723	896	53
Avg	8.11	9.53	10.52	0.90	22.57	235.05	257.62	581.90	21.48
Std. Dev.	0.24	5.43	2.05	0.36	12.73	226.32	230.03	168.54	12.28
Measurements	21	21	21	21	21	21	21	21	21

Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASONS		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (18.2°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 DM (23.8°C)
Min	-0.12	-0.14	0.55	-0.10	0.15	0.61	-0.14	0.11
Max	10.61	22.39	6.04	10.47	10.47	17.86	21.92	21.92
Avg	4.21	11.12	4.09	4.21	6.30	11.18	11.12	13.30
Measurements	2831	20544	7	707	59	60	5136	428
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			

% Compliance DM				100%			
# 18.2°C WAT exceeded					0		
% Compliance WAT					100%		
# 23.8°C DM exceeded							0
% Compliance DM							100%

Table 51 South Turkey Creek in Bear Creek Lake Park (Site 16a)

15 Monthly Sampling/Monitoring Events January 1-December 31, 2014									
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	Total NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TN Ug/L	TP, ug/L
Min	7.91	0.1	8.57	0.482	7	43	55	301	2
Max	8.56	15.1	13.26	1.72	62	667	723	896	42
Avg	8.20	8.21	11.43	0.98	23.33	318.00	341.33	593.8	19.87
Std. Dev.	0.17	5.32	1.43	0.36	14.56	217.68	222.17	189.4	11.87
Measurements	15	15	15	15	15	15	15	15	15

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASONS		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (18.2°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 DM (23.8°C)
Min	0.4	0.6	4.1	0.4	3.1	5.8	0.6	4.0
Max	10.6	20.4	6.0	10.5	10.5	17.9	20.3	20.3
Avg	5.4	12.0	5.1	5.4	7.5	12.0	12.0	13.7
Std. Dev.	2.0	4.0	0.7	2.0	1.6	3.6	4.0	3.7
Measurements	1992	10272	5	498	42	30	2568	214
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 18.2°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: TURK2 GPS Coordinates: 39.6394°N, 105.161°W; Sampling/ monitoring site in Turkey Creek, inside Bear Creek Lake Park, at the maintenance shop site.]

Table 52 Aspen Park Metropolitan District, South Turkey Creek (Site 18)

6 Monthly Sampling/Monitoring Events May 1 – October 31, 2014									
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	Total NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TN Ug/L	Total P, ug/L
Min	7.46	6.1	6.28	0.09	13	2	22	462	19
Max	8.27	16.8	10.65	1.00	31	65	78	730	53
Avg	7.87	12.83	8.26	0.71	20.67	27.67	48.33	552.17	25.50
Std. Dev.	0.23	4.13	1.55	0.30	5.68	24.60	21.98	92.04	12.38
Measurements	6	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASONS		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (18.2°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 DM (23.8°C)
Min	-0.1	-0.1	0.5	-0.1	0.1	0.6	-0.1	0.1
Max	6.3	22.4	2.4	6.3	6.3	15.5	21.9	21.9
Avg	1.5	10.3	1.5	1.5	3.4	10.3	10.3	12.9
Std. Dev.	1.7	4.95	0.9	1.7	1.7	4.33	4.94	4.92
Measurements	839	10272	2	209	17	30	2568	214
# 9 C WAT exceeded			0					
% Compliance WAT			100%					
# 13 C DM exceeded					0			
% Compliance DM					100%			
# 18.2 C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8 C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: APMD1 GPS Coordinates: 39.5461°N, 105.2708°W; Sampling/ monitoring site in South Turkey Creek downstream of the APMD WWTP.]

Segment 6b (North Turkey Creek)

Table 53 Conifer Metropolitan District, North Turkey Creek (Site19)

9 Monthly Sampling/Monitoring Events March 1-November 30, 2014									
Monthly Parameter Results	pH, SU	Temp, °C	D. O., mg/L	Sp. Cd., mS/cm	Total NH3-N, ug/L	NO3+NO2 -N, ug/L	TIN, ug/L	TN Ug/L	TP, ug/L
Min	7.54	5.5	7.44	0.28	6	149	178	428	15
Max	8.29	14.9	12.19	0.37	54	424	438	646	104
Avg	7.94	10.97	9.64	0.32	21.33	242	263.33	543	38.83
Std. Dev.	0.26	3.79	1.59	0.04	16.20	93.75	89.59	71.62	31.07
Measurements	6	6	6	6	6	6	6	6	6

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. Cold/ Warm Seasons		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (21.2°C)
Min	-0.1	4.6	0.4	-0.1	0.0	9.7	4.8	8.0
Max	13.6	19.6	8.0	13.5	13.5	14.1	19.1	19.1
Avg	4.0	11.9	3.9	4.0	6.1	11.9	11.9	14.6
Std. Dev.	3.0	2.4	2.4	3.0	2.9	1.2	2.4	1.9
Measurements	5255	5856	15	1313	109	17	1464	122
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					1			
% Compliance DM					99%			
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

V. P1 Segments

Segment 1c: Bear Creek Reservoir Temperature Summary 2014

Table 54 BCR Temperature

Segment 1c Datalogger Temperature Summary 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASON		Nov 1-Mar 31 Stream Std. WAT (9°C)	Nov 1-Mar 31 2-Hr Avg. Temp.	Nov 1-Mar 31 Stream Std. DM (13°C)	Apr 1-Oct 31 Stream Std. WAT (19.3°C)	Apr 1-Oct 31 2-HR Avg. Temp.	Apr 1-Oct 31 Stream DM (23.8°C)
Min	6.36	2.53		6.42	6.94	6.01	2.84	3.88
Max	8.22	21.72		8.10	8.10	20.75	21.49	21.49
Avg	7.12	15.00		7.12	7.51	15.03	15.00	15.40
Measurements	480	22222		120	10	66	5554	462
# 9°C WAT exceeded								
% Compliance WAT								
# 13°C DM exceeded				0				
% Compliance DM				100%				
# 23.3°C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

Bear Creek Reservoir profile Station (Site 40T 0.5) LOGGER LOST, Bear Creek Reservoir profile Station Site 40T (2.0) NO LOGGER LOST ,[Monitoring station/Datalogger ID: 40T (0.5) GPS Coordinates: 39° 39’06.27”N 105°08’30.60”W; Sampling/ monitoring site in Bear Creek Reservoir by dam at profile station.]

Table 55 Bear Creek Reservoir profile Station (Site 40T 1.0)

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM Seasons		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (23.3°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (23.8°C)
Min	6.4	2.5		6.5	7.0	6.0	2.8	3.9
Max	8.2	21.7		8.1	8.1	20.8	21.5	21.5
Avg	7.1	15.1		7.1	7.6	15.1	15.1	15.5
Std. Dev.	0.4	4.3		0.4	0.5	4.1	4.3	4.2
Measurements	240	11111		60	5	33	2777	231
# 9°C WAT exceeded								
% Compliance WAT								
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 23.3C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: 40T (1.0) GPS Coordinates: 39° 39'06.27"N 105°08'30.60"W; Sampling/ monitoring site in Bear Creek Reservoir by dam at profile station.]

Table 56 Bear Creek Reservoir profile Station Site 40T (1.5)

Datalogger Temperature Data 2014								
All Temperatures in °C	30-Min Temp. COLD/WARM SEASON		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (23.3°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (23.8°C)
Min	6.4	3.0		6.4	6.9	6.0	3.0	3.9
Max	8.1	21.4		8.0	8.0	20.7	21.3	21.3
Avg	7.1	14.9		7.1	7.5	15.0	14.9	15.3
Std. Dev.	0.4	4.30		0.4	0.4	4.15	4.29	4.23
Measurements	240	11111		60	5	33	2777	231
# 9°C WAT exceeded								
% Compliance WAT								
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 23.3C WAT exceeded						0		
% Compliance WAT						100%		
# 23.8°C DM exceeded								0
% Compliance DM								100%

[Monitoring station/Datalogger ID: 40T (1.5) GPS Coordinates: 39° 39'06.27"N 105°08'30.60"W; Sampling/ monitoring site in Bear Creek Reservoir by dam at profile station.] [Monitoring station/Datalogger ID: 40T (2.0) GPS Coordinates: 39° 39'06.27"N 105°08'30.60"W; Sampling/ monitoring site in Bear Creek Reservoir by dam at profile station.]

Segment 2 Below BCR

Table 57 Below Bear Creek Reservoir Trace weir in Bear Creek (Site 45)

15 Monthly Sampling/Monitoring Events January 1-December 31, 2014										
Monthly Parameter Results	pH, SU	Temp, □C	D.O mg/L	Sp. Cd.,	NH3-N, ug/L	NO3+NO2-N, ug/L	TIN, ug/L	TN Ug/L	Total P, ug/L	ECOLI Colonies
Min	7.87	3	7.11	0.25	24	153	230	409	2	1
Max	8.53	21.3	13.22	0.638	259	754	837	1134	50	35
Avg	8.20	12.79	10.01	0.38	82.67	302.40	385.07	646.13	25.00	8.17
Std. Dev.	0.20	6.85	1.90	0.11	54.47	176.80	198.10	234.98	14.09	11.75
Measurements	15	15	15	15	15	15	15	15	15	12

Datalogger Temperature Data 2013								
All Temperatures in °C	30-Min Temp. Cold/ Warm Seasons		Oct 1-May 31 Stream Std. WAT (9°C)	Oct 1-May 31 2-Hr Avg. Temp.	Oct 1-May 31 Stream Std. DM (13°C)	June 1-Sept 30 Stream Std. WAT (17°C)	June 1-Sept 30 2-HR Avg. Temp.	June 1-Sept 30 DM (21.2°C)
Min	3.3	2.7	5.0	3.4	5.4	5.8	2.8	4.3
Max	9.6	25.3	6.3	9.5	9.5	20.9	24.7	24.7
Avg	5.8	15.1	5.5	5.8	6.9	15.1	15.1	15.9

Std. Dev.	1.1	4.4	0.5	1.1	1.2	4.3	4.4	4.3
Measurements	1536	11111	4	384	32	33	2777	231
# 9°C WAT exceeded			0					
% Compliance WAT			100%					
# 13°C DM exceeded					0			
% Compliance DM					100%			
# 17°C WAT exceeded						0		
% Compliance WAT						100%		
# 21.2°C DM exceeded								0
% Compliance DM								100%

VI. USGS Stream Flow Data Tables

During the Program, stream flows for Bear Creek were tracked using three gaging stations. The stations are the USGS station above Evergreen Lake (Segment 1a), the DWR/U.S. Army COE station above Morrison (Segment 1e) and the USGS station within Bear Creek Lake Park (Segment 1b). Weekly downloads of flow graphs were printed to document flows. Downloads were obtained at www.waterdata.usgs.gov. The available historic record for the gage above Evergreen Lake is 25 years. The available historic record for the gage above Morrison is 90 years (1899-2006— however, permanent reliable data was recorded from 1919). The available historic record for the USGS gage in Bear Creek Lake Park is 25 years. NOTE: Operation of this gage was discontinued on September 30, 2009. For the 2009 Program period, historical Minimum, Maximum and Average were calculated. A Deviation from Historic averages was also calculated; however, when both the Minimum and Maximum values for Deviation from Historic were negative, these values are interchanged to reflect the desired interpretation.

Table 58 2014 May Bear Creek Evergreen vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) May 2014	Historic Daily Mean Flow (cfs) 25 Years for May	Deviation from Historic Flow (cfs)
1	38	25	13
2	38	31	7
3	41	29	12
4	39	27	12
5	44	24	20
6	40	25	15
7	42	26	16
8	42	29	13
9	40	38	2
10	39	44	-5
11	49	42	7
12	42	36	6
13	42	37	5
14	44	44	0
15	49	44	5
16	52	54	-2
17	57	50	7
18	70	50	20
19	84	62	22
20	91	62	29
21	93	62	31
22	107	60	47
23	116	63	53
24	129	64	65
25	163	60	103
26	147	59	88
27	145	56	89
28	161	55	106
29	173	57	116
30	179	59	120
31	172	63	109

Date	Daily Mean Flow (cfs) May 2014	Historic Daily Mean Flow (cfs) 25 Years for May	Deviation from Historic Flow (cfs)
MIN	38	31	-5
MAX	179	24	120
AVG	83	64	36

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W

Table 59 2014 June Bear Creek Evergreen vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) June 2014	Historic Daily Mean Flow (cfs) 25 Years for June	Deviation from Historic Flow (cfs)
1	161	83	78
2	149	72	77
3	143	72	71
4	137	75	62
5	136	76	60
6	137	75	62
7	128	70	58
8	126	68	58
9	112	71	41
10	102	72	30
11	100	68	32
12	100	74	26
13	96	89	7
14	95	81	14
15	86	77	9
16	80	78	2
17	78	78	0
18	76	72	4
19	76	71	5
20	72	70	2
21	70	71	-1
22	66	77	-11
23	67	82	-15
24	64	83	-19
25	62	78	-16
26	61	73	-12
27	60	70	-10
28	59	68	-9
29	56	71	-15
30	54	70	-16
MIN	**54**	**68**	**-19**
MAX	**161**	**89**	**78**
AVG	**94**	**75**	**19**

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W

Table 60 2014 July Bear Creek Evergreen vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) July 2014	Historic Daily Mean Flow (cfs) 25 Years for July	Deviation from Historic Flow (cfs)
1	54	65	-11
2	53	62	-9
3	52	61	-9
4	57	60	-3
5	63	59	4
6	53	58	-5
7	50	55	-5
8	55	52	3
9	52	49	3
10	50	48	2
11	48	52	-4
12	53	62	-9
13	87	72	15
14	59	61	-2

Date	Daily Mean Flow (cfs) July 2014	Historic Daily Mean Flow (cfs) 25 Years for July	Deviation from Historic Flow (cfs)
15	54	57	-3
16	60	53	7
17	74	48	26
18	56	46	10
19	50	45	5
20	48	43	5
21	47	42	5
22	44	42	2
23	43	40	3
24	41	39	2
25	40	56	-16
26	54	48	6
27	54	44	10
28	50	48	2
29	49	52	-3
30	71	83	-12
31	108	62	46
MIN	**40**	**39**	**-16**
MAX	**108**	**83**	**46**
AVG	**56**	**54**	**2**

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W

Table 61 2013 August Bear Creek Evergreen vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) August 2013	Historic Daily Mean Flow (cfs) 25 Years for August	Deviation from Historic Flow (cfs)
1	79	56	23
2	68	59	9
3	61	54	7
4	58	47	11
5	63	46	17
6	62	51	11
7	58	50	8
8	58	45	13
9	53	43	10
10	52	45	7
11	55	44	11
12	50	55	-5
13	47	70	-23
14	54	57	-3
15	55	56	-1
16	47	49	-2
17	43	48	-5
18	42	46	-4
19	45	43	2
20	46	42	4
21	46	41	5
22	44	38	6
23	48	38	10
24	41	36	5
25	39	35	4
26	51	34	17
27	61	35	26
28	49	33	16
29	44	31	13
30	46	31	15
31	42	29	13
MIN	39	29	-23
MAX	79	70	26
AVG	52	45	7

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W

Table 62 2014 September Bear Creek Evergreen vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) September 2014	Historic Daily Mean Flow (cfs) 25 Years for September	Deviation from Historic Flow (cfs)
1	40	29	11
2	37	31	6
3	35	28	7
4	34	27	7
5	54	28	26
6	50	26	24
7	45	26	19
8	40	30	10
9	41	33	8
10	40	31	9
11	37	35	2
12	37	37	0
13	37	39	-2
14	34	39	-5
15	33	35	-2
16	36	32	4
17	33	29	4
18	32	27	5
19	32	27	5
20	32	30	2
21	35	33	2
22	50	33	17
23	39	28	11
24	35	26	9
25	34	25	9
26	33	25	8
27	32	24	8
28	32	24	8
29	41	24	17
30	45	23	22
MIN	32	23	-5
MAX	54	39	26
AVG	38	29	8

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W

Table 63 2014 May Bear Creek Morrison vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) May 2014	Historic Daily Mean Flow (cfs) 25Years for May	Deviation from Historic Flow (cfs)
1	54.2	35.1	-19.1
2	58.2	49.1	-9.1
3	56.4	45.2	-11.2
4	54.4	38.7	-15.7
5	57	36.1	-20.9
6	53.7	36.1	-17.6
7	54.9	36.9	-18
8	59.8	36.6	-23.2
9	58.4	44.7	-13.7
10	52.5	52.6	0.1
11	74.3	50.2	-24.1
12	69.3	46.8	-22.5
13	61.9	42.4	-19.5
14	63.8	53.5	-10.3
15	74.5	55.7	-18.8
16	78	69.3	-8.7

Date	Daily Mean Flow (cfs) May 2014	Historic Daily Mean Flow (cfs) 25Years for May	Deviation from Historic Flow (cfs)
17	80.2	65.3	-14.9
18	93.2	63.2	-30
19	103	70.1	-32.9
20	111	70.3	-40.7
21	113	69.2	-43.8
22	122	67	-55
23	138	67.6	-70.4
24	143	69.1	-73.9
25	176	64.6	-111.4
26	168	65	-103
27	157	64.4	-92.6
28	172	61.5	-110.5
29	187	61.5	-125.5
30	193		-193
31	187	35.1	
MIN	52.5	35.1	-0.1
MAX	193	70.3	193
AVG	101	55	50

USGS 06710500 GPS Coordinates: 39.6530°N, 105.1950°W

Table 64 2014 June Bear Creek Morrison vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) June 2014	Historic Daily Mean Flow (cfs) 25 Years for June	Deviation from Historic Flow (cfs)
1	175	69.6	-105.4
2	161	68.1	-92.9
3	152	66	-86
4	146	66	-80
5	143	66	-77
6	146	66	-80
7	136	66	-70
8	136	66	-70
9	129	66	-63
10	114	66	-48
11	109	66	-43
12	113	66	-47
13	107	83.2	-23.8
14	103	95.1	-7.9
15	96.8		
16	90.2	90.7	0.5
17	84.9	84.7	-0.2
18	82.5	81.1	-1.4
19	84.2	86	1.8
20	79.4	82.6	3.2
21	77.1	79.4	2.3
22	74.3	88.5	14.2
23	74.8	92.5	17.7
24	73.7	92.4	18.7
25	70.5	88.5	18
26	68.6		
27	66.4		
28	67.2		
29	63.4		
30	60.6	69.6	-105.4
MIN	60.6	66	-18.7
MAX	175	95.1	105.4
AVG	103	77	34

USGS 06710500 GPS Coordinates: 39.6530°N, 105.1950°W

Table 65 2014 July Bear Creek Morrison vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) July 2014	Historic Daily Mean Flow (cfs) 25 Years for July	Deviation from Historic Flow (cfs)
1	58.4	69.8	11.4
2	60.1	66	5.9
3	57.1	63.2	6.1
4	63.4	62	-1.4
5	72.8	59.7	-13.1
6	60.8	58.3	-2.5
7	56.2	56.2	0
8	65	53	-12
9	59.2	51.5	-7.7
10	57.1	47.1	-10
11	59.4	51.9	-7.5
12	62.6	62.5	-0.1
13	102	73.4	-28.6
14	71.5	61.1	-10.4
15	63.6	54.3	-9.3
16	72	52.7	-19.3
17	95.1	45.3	-49.8
18	76.2	41.8	-34.4
19	66.2	42	-24.2
20	62.7	40.4	-22.3
21	60.7	38.8	-21.9
22	55.9	38.2	-17.7
23	55.2	37.8	-17.4
24	53.7	36.9	-16.8
25	50.5	48.8	-1.7
26	62.3	45.2	-17.1
27	71.3	40.4	-30.9
28	61.7	42.4	-19.3
29	60.4	53.5	-6.9
30	90.7	95.7	5
31	134	68.5	-65.5
MIN	50.5	36.9	-11.4
MAX	134	95.7	65.5
AVG	68	53	14

USGS 06710500 GPS Coordinates: 39.6530°N, 105.1950°W

Table 66 2014 August Bear Creek Morrison vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) August 2014	Historic Daily Mean Flow (cfs) 25 Years for August	Deviation from Historic Flow (cfs)
1	104	53.6	-50.4
2	93.2	57.6	-35.6
3	83.6	52	-31.6
4	77.6	44.6	-33
5	80.7		
6	84.6		
7	75.9		
8	78		
9	70.1	41.3	-28.8
10	68.5	42.6	-25.9
11	71.1	39.6	-31.5
12	65.2	54.5	-10.7
13	62.2	69.6	7.4
14	70.6	56.5	-14.1
15	79.2	53.1	-26.1
16	67.9	47.6	-20.3
17	62.4	11.9	-50.5
18	59.5	0	-59.5
19	59.6	0	-59.6

20	59.8	0	-59.8
21	65.9	0	-65.9
22	57.6	0	-57.6
23	61.4	24.4	-37
24	54.8	39.8	-15
25	50.3	38.7	-11.6
26	64.7	39.6	-25.1
27	71.6	40.5	-31.1
28	65.7	37.4	-28.3
29	55.2	33.5	-21.7
30	54.4	35	-19.4
31	51.4	31.4	-20
MIN	50.3	0	-7.4
MAX	104	69.6	65.9
AVG	69	35	32

USGS 06710500 GPS Coordinates: 39.6530°N, 105.1950°W

Table 67 2014 September Bear Creek Morrison vs. Historic Bear Creek Flow

Date	Daily Mean Flow (cfs) September 2014	Historic Daily Mean Flow (cfs) 25 Years for August	Deviation from Historic Flow (cfs)
1	47.1	31.4	-15.7
2	43.3	33.9	-9.4
3	41.2	30.4	-10.8
4	38.6	28.6	-10
5	60.2	29.8	
6	62.5	29.3	
7	54.2	29.3	
8	46.8	37.4	
9	45.9	39.1	
10	48.8	35.4	
11	44.6	45.6	1
12	44.4	51.3	6.9
13	44	53	9
14	40	54.4	14.4
15	38.3	45	6.7
16	38.8	42	3.2
17	37.9	39.6	1.7
18	35.1	37.1	2
19	34	35.4	1.4
20	34.4	36.8	2.4
21	37	40.7	3.7
22	58.5	43.8	-14.7
23	49	40.5	-8.5
24	41.5	37.4	-4.1
25	39.4	32.1	-7.3
26	38.3	29	-9.3
27	35.1	29	-6.1
28	35.5	27.9	-7.6
29	46.4	27.9	-18.5
30	60	27.8	-32.2
MIN	34	27.8	-14.4
MAX	62.5	54.4	33.2
AVG	44	37	7

USGS 06710500 GPS Coordinates: 39.6530°N, 105.1950°W

VII. Weather Data

Local weather data was documented at the Evergreen Metropolitan District's WWTP. The plant has been operating the National Weather Service reporting station since EMD assumed operations of the plant in 1974. Online historical records however, are available from 1961 through 2006. Historical weather data obtained from the National Oceanographic and Atmospheric Administration/National Weather Service, High Plains

Climate Center. Maximum and minimum air temperature values along with precipitation measurements recorded each morning. Daily readings entered into a NWS software program. Local weather statistics are summarized, comparing 2014 monthly maximum, minimum and mean air temperatures and monthly precipitation to 53-year (1961-2014) historical data.

Table 68 Weather Data May-September 2014 Summary

Monthly Weather Data	May 2014	June 2014	July 2014	August 2014	September 2014
Air Temp Low Max (°F)	32	61	56	66	48
Air Temp High Max (°F)	81	89	92	83	87
Air Temp High Avg (°F)	62.71	75.07	79.63	76.13	72.40
Total Precip (in.)	3.27	1.15	3.78	2.84	2.03
Days of Precip.	16	8	11	17	12

Table 69 2014 Weather Data vs. Historical Weather Data (53 years 1961-2014)

	Avg Daily Max (°F)	Avg Daily Min (°F)	Avg Mon. (°F)	Precip (in.)
May 2014	62.71	34.52	48.61	3.27
May Hist	65.2	33.9	49.6	2.57
% Deviation	96%	102%	98%	127%
June 2014	75.07	41.27	58.17	1.15
June Hist	75.3	41.1	58.2	2.14
% Deviation	100%	100%	100%	54%
July 2014	79.63	48.93	64.28	3.78
July Hist	81.6	46.8	64.2	2.23
% Deviation	98%	105%	100%	170%
August 2014	76.13	50.39	63.26	2.84
August Hist	79.3	45.3	62.4	2.31
% Deviation	96%	111%	101%	123%
Sept. 2014	72.40	41.03	56.72	2.03
Sept. Hist	72.1	37.1	54.6	1.47
% Deviation	100%	111%	104%	138%

Stream Flow vs. Local Weather

Stream flows, as measured at the USGS gage above Evergreen Lake, were compared to local weather observations obtained from the NWS reporting station located at the EMD WWTP. The following tables illustrate the relationship between high air temperatures and measured precipitation, and their effect on stream flows measured above Evergreen Lake.

Table 70 2014 May Bear Creek Evergreen vs. Weather Data

Date	May 2014 Daily Mean Flow (cfs)	May 2014 Daily Air Max Temp (°F)	May 2014 Precip. (in.)
1	38	44	
2	38	54	
3	41	69	
4	39	75	
5	44	78	
6	40	74	
7	42	68	
8	42	58	0.3
9	40	49	0.1
10	39	60	0.05
11	49	59	0.57
12	42	32	0.88
13	42	32	0.04
14	44	42	
15	49	54	0.01

Date	May 2014 Daily Mean Flow (cfs)	May 2014 Daily Air Max Temp (°F)	May 2014 Precip. (in.)
16	52	57	
17	57	65	
18	70	63	
19	84	77	
20	91	78	
21	93	65	0.1
22	107	65	0.05
23	116	69	0.13
24	129	63	0.28
25	163	63	0.18
26	147	61	0.12
27	145	68	0.02
28	161	77	
29	173	81	
30	179	80	0.04
31	172	64	0.4
MIN	38	32	0.01
MAX	179	81	0.88
AVG	83	62.71	0.20
TOTAL			3.27

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W Daily Mean flows were obtained from the USGS gaging station above Evergreen Lake. Weather data obtained from the NWS reporting station located at the EMD WWTP.

Table 71 **2014 June Bear Creek Evergreen vs. Weather Data**

Date	June 2014 Daily Mean Flow (cfs)	June 2014 Daily Max Air Temp (°F)	June 2014 Precip (in.)
1	161	75	0.1
2	149	78	
3	143	77	
4	137	84	
5	136	77	
6	137	70	0.18
7	128	73	0.02
8	126	63	
9	112	61	0.39
10	102	62	
11	100	79	
12	100	76	0.22
13	96	68	
14	95	84	
15	86	70	
16	80	68	
17	78	80	
18	76	82	
19	76	73	0.08
20	72	75	
21	70	79	
22	66	79	
23	67	73	
24	64	69	0.13
25	62	71	
26	61	80	
27	60	84	
28	59	72	0.03

Date	June 2014 Daily Mean Flow (cfs)	June 2014 Daily Max Air Temp (°F)	June 2014 Precip (in.)
29	56	81	
30	54	89	
MIN	54	61	0.02
MAX	161	89	0.39
AVG	94	75.07	0.14
TOTAL			1.15

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W Daily Mean flows were obtained from the USGS gaging station above Evergreen Lake. Weather data obtained from the NWS reporting station located at the EMD WWTP.

Table 72 2014 July Bear Creek Evergreen vs. Weather Data

Date	July 2014 Daily Mean Flow (cfs)	July 2014 Daily Max Air Temp (°F)	July 2014 Precip (in.)
1	54	89	
2	53	69	
3	52	74	
4	57	83	0.01
5	63	83	0.46
6	53	85	
7	50	86	
8	55	92	0.07
9	52	73	
10	50	86	0.08
11	48	86	
12	53	81	0.68
13	87		
14	59	76	0.02
15	54	76	
16	60	75	0.14
17	74	72	0.15
18	56	71	
19	50	80	
20	48	85	
21	47	87	0.03
22	44	87	
23	43	85	
24	41	80	0.03
25	40	88	0.01
26	54	85	0.16
27	54	81	0.18
28	50	73	0.03
29	49	74	
30	71	71	0.88
31	108	56	0.85
MIN	40	56	0.01
MAX	108	92	0.88
AVG	56	79.63	0.24
TOTAL			3.78

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W Daily Mean flows were obtained from the USGS gaging station above Evergreen Lake. Weather data obtained from the NWS reporting station located at the EMD WWTP.

- Data Missing Not Recorded

Table 73 **2014 August Bear Creek Evergreen vs. Weather Data**

Date	August 2014 Daily Mean Flow (cfs)	August 2014 Daily Max Air Temp (ºF)	August 2014 Precip (in.)
1	79	66	0.03
2	68	71	
3	61	77	
4	58	81	
5	63	78	
6	62	74	0.08
7	58	81	T
8	58	72	0.08
9	53	79	
10	52	77	0.09
11	55	67	T
12	50	77	
13	47	83	
14	54	82	0.16
15	55	77	0.15
16	47	82	0.21
17	43	83	
18	42	83	
19	45	83	0.05
20	46	82	0.04
21	46	77	0.51
22	44	76	0.02
23	48	67	
24	41	72	0.07
25	39	79	0.02
26	51	72	0.08
27	61	71	0.84
28	49	69	0.34
29	44	67	
30	46	76	0.07
31	42	79	
MIN	39	66	0.02
MAX	79	83	0.84
AVG	52	76.13	0.17
TOTAL			2.84

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W Daily Mean flows were obtained from the USGS gaging station above Evergreen Lake. Weather data obtained from the NWS reporting station located at the EMD WWTP.

Table 74 **2014 September Bear Creek Evergreen vs. Weather Data**

Date	September 2014 Daily Mean Flow (cfs)	September 2014 Daily Max Air Temp (ºF)	September 2014 Precip (in.)
1	40	76	0.01
2	37	78	
3	35	84	
4	34	87	
5	54	68	0.6
6	50	55	0.13
7	45	64	
8	40	77	
9	41	75	0.02
10	40	70	0.09
11	37	70	
12	37	48	0.13

Date	September 2014 Daily Mean Flow (cfs)	September 2014 Daily Max Air Temp (ºF)	September 2014 Precip (in.)
13	37	48	
14	34	73	
15	33	80	
16	36	69	
17	33	79	
18	32	81	
19	32	82	
20	32	80	0.01
21	35	74	0.02
22	50	66	0.36
23	39	73	0.02
24	35	74	
25	34	77	
26	33	82	
27	32	81	
28	32	79	
29	41	65	0.18
30	45	57	0.46
MIN	32	48	0.01
MAX	54	87	0.6
AVG	38	72.40	0.17
TOTAL			2.03

USGS 06710385 GPS Coordinates: 39.6228°N, 105.3361°W Daily Mean flows were obtained from the USGS gaging station above Evergreen Lake. Weather data obtained from the NWS reporting station located at the EMD WWTP.