CHERRY CREEK RESERVOIR

2000 ANNUAL AQUATIC BIOLOGICAL

AND NUTRIENT MONITORING STUDY

SEPTEMBER 2001

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Submitted To:

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TABLE OF CONTENTS

INTRODUCTION

An inter-governmental agreement was executed in 1985 by several local governmental entities within the Cherry Creek basin to form the Cherry Creek Basin Water Quality Authority (CCBWQA). This Authority was created for the purpose of coordinating and implementing the investigations necessary to maintain the quality of water resources of the Cherry Creek basin while allowing for further economic development. Based on a clean lakes water study (Denver Regional Council of Governments [DRCOG] 1984), the Colorado Department of Health's Water Quality Control Commission (WQCC) set standards for phosphorus, and a TMDL for phosphorus. An in-lake phosphorus standard of 35 μg/L was adopted to maintain a seasonal mean chlorophyll goal of 15 μg/L. Subsequently, a phosphorus TMDL was prepared for the reservoir allocating loads among point sources, background, and nonpoint sources within a net annual load of 14,270 lbs total phosphorus. In September 2000, following a hearing before the Colorado WQCC, the standard for Cherry Creek Reservoir was changed to a July - September value of 15 μg/L of chlorophyll to be met nine out of ten years, with an underlying total phosphorus goal of 40 μg/L, also as a July - September mean.

The Cherry Creek Basin Master Plan (DRCOG 1985), approved by the WQCC in 1985, was adopted in part as the "Regulations for Control of Water Quality in Cherry Creek Reservoir" (Section 4.2.0, 5C.C.R.3.8.11). An annual monitoring program (In-Situ, Inc. 1986, as amended, ASI 1994 a and b) was implemented at the end of April 1987 to assist in the assessment of several aspects of the Master Plan. These monitoring studies have included long-term monitoring of 1) nutrient levels within the reservoir and from tributary streams during base flows and stormwaters, 2) nutrient levels in precipitation, and 3) chlorophyll levels within the reservoir. In addition, a number of incidental studies have been conducted using such methods as benthic respirometers and limnocorrals. Note that at a May 2001 WQCC hearing, a new control regulation was adopted for the Cherry Creek Reservoir, which maintained an annual allowable total phosphorus load (TMAL) of 14,270 lbs/year.

In 1994, Chadwick Ecological Consultants, Inc. (CEC) was contracted by the CCBWQA to conduct annual aquatic biological and nutrient analyses on Cherry Creek Reservoir and selected tributaries. Results have been summarized in annual monitoring reports (CEC 1995 - 2000). Additionally, these data have been reviewed by Dr. John Jones of the University of Missouri-Columbia and presented to the Authority in his annual reports (Jones 1994 - 1999). The present study was designed to continue the characterization of the potential relationships between nutrient loading (both in-lake and external) and reservoir productivity. The specific objectives of this annual monitoring study include the following:

- Determine the concentrations of selected nutrients, primarily nitrogen and phosphorus species, in Cherry Creek Reservoir and various streams flowing into the reservoir, and the reservoir outflow.

- Determine the pounds of phosphorus entering Cherry Creek Reservoir from streams and precipitation and leaving the reservoir through its outlet.

- Determine biological productivity in Cherry Creek Reservoir, as measured by algal biomass (chlorophyll concentrations) and algal densities. In addition, determine species composition of the algal community along with the composition and abundance of zooplankton, the primary consumers of algae.

- Determine potential relationships between the nutrient levels and biological productivity in Cherry Creek Reservoir through correlation of the various measurements made during the study.

STUDY AREA

Cherry Creek Reservoir was impounded in 1950 by the U.S. Army Corps of Engineers (COE) to protect the City of Denver from flash floods that may originate in the reservoir's 995 km^2 drainage basin. The reservoir has maintained a surface area of approximately 350 ha (approximately 850 acres) since 1959. The reservoir and surrounding state park have also become an important recreational site, providing opportunities for activities which include fishing, boating, swimming, bicycling, bird watching, and hiking.

Sampling Sites

Sampling in 2000 was conducted at 14 sites, including three sites in Cherry Creek Reservoir, 10 sites on tributary streams, and one site on Cherry Creek downstream of the reservoir (Fig. 1). The sampling sites are summarized below:

Cherry Creek Reservoir

CCR-1 This site is also called the Dam site, and was established in 1987. CCR-1 corresponds to the northwest trident within the lake (Knowlton and Jones 1993). Sampling was discontinued at this site in 1996 following determination that this site exhibited similar characteristics to the other two sites in this well-mixed reservoir. Sampling recommenced in July 1998 at the request of consultants for Greenwood Village.

CCR-2 This site is also called the Swim Beach site, and was established in 1987. CCR-2 corresponds to the northeast trident within the lake (Knowlton and Jones 1993).

CCR-3 This site is also called the Inlet site and was established in 1987, corresponding to the south trident within the lake (Knowlton and Jones 1993).

Shop Creek

SC-1 This site was established in 1987 immediately east of Parker Road on Shop Creek. Originally SC-1 monitored phosphorus levels prior to its confluence with Cherry Creek. Since 1990, this site has monitored water quality upstream of the Shop Creek detention pond/wetland pollutant reduction facility (PRF).

SC-2 This site was established in 1990 west of Parker road at the outlet for the Shop Creek detention pond. SC-2 monitors the water quality as it leaves the detention pond.

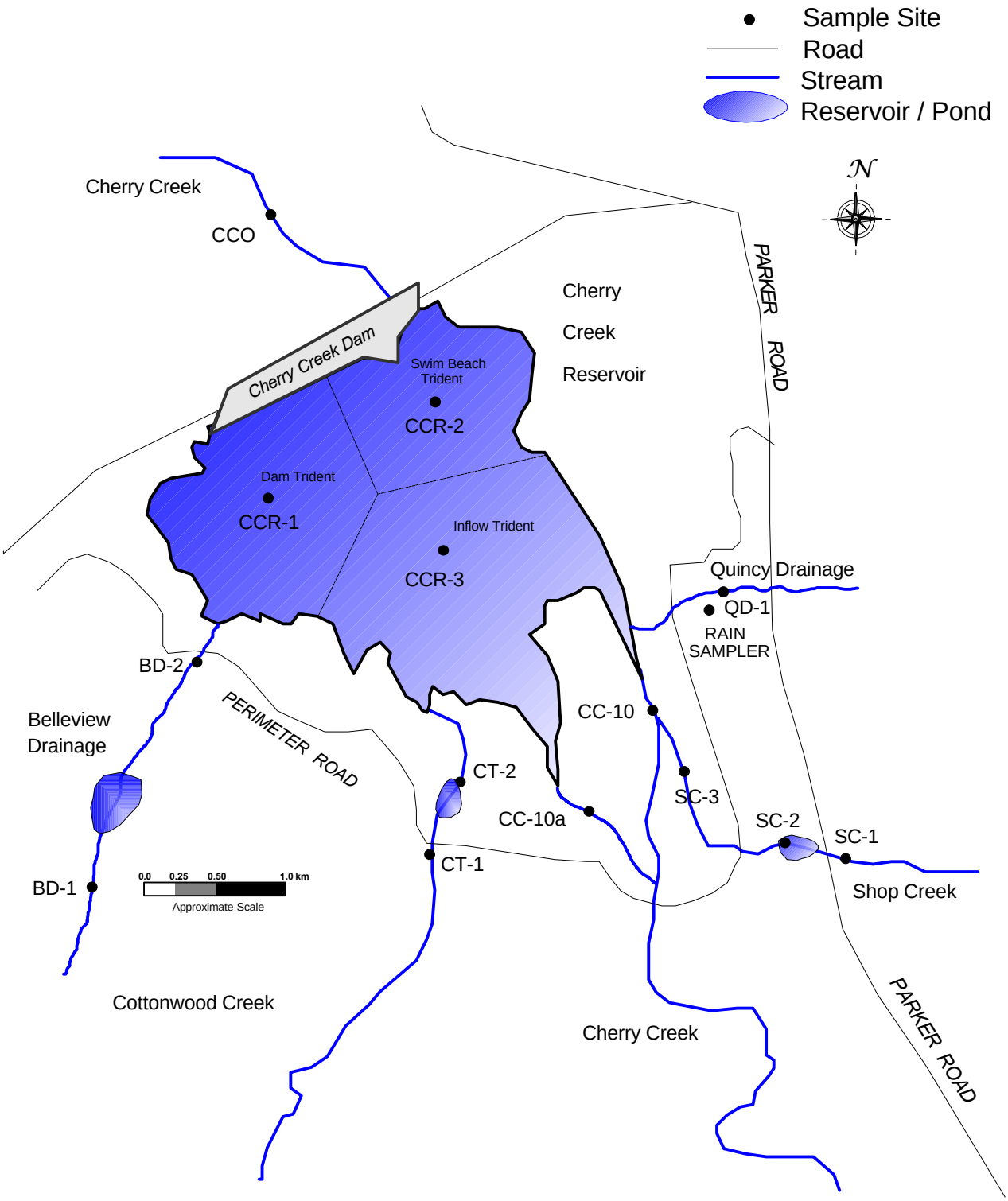

FIGURE 1: Sampling sites on Cherry Creek Reservoir and selected streams, 2000.

SC-3 This site was established on Shop Creek in 1990 upstream of the Perimeter Road and downstream of the new Shop Creek detention pond and wetland system. This site was moved just downstream of the Perimeter Road in 1994 and further downstream to a location just upstream of its confluence with Cherry Creek in 1997. This site serves to monitor the effectiveness of the pond/wetland PRF and the water quality of Shop Creek as it joins Cherry Creek.

Cherry Creek

CC-10 This site was originally established in 1987 on Cherry Creek near the historic USGS "Melvin" gage (roughly due west of the intersection of Parker Road and Orchard Road). This location is in an area of Cherry Creek that becomes dry during summer months as a result of the natural geomorphology and alluvial pumping for domestic water supply (Halepaska & Associates, Inc. 1999, 2000).

In 1995, this site was relocated further downstream between the Perimeter Road and the reservoir, approximately ½ km upstream of the reservoir. This site was moved still further downstream in 1996, just upstream of the confluence with Shop Creek and closer to the reservoir. In 1999, it was moved below the confluence with Shop Creek to eliminate the effect of a stream crossing on the CC-10 hydrograph. At these locations, Cherry Creek has perennial flow, allowing a more accurate monitoring of water quality in Cherry Creek before it enters the reservoir. This site was previously called CC-I, but was renamed CC-10 to place it in context with concurrent monitoring in Cherry Creek upstream (Halepaska & Associates, Inc. 1999, 2000).

Since 1994, monthly surface flow and water quality data have been collected at ten sites on Cherry Creek upstream of the Perimeter Road (Halepaska & Associates, Inc. 1999, 2000). These ten sites extend from the Castlewood Site in Castlewood Canyon downstream to Site CC-9, just upstream of the Perimeter Road.

CC-10A This site was established in 1999 on an intermittent channel of Cherry Creek. CC-10A is active during spring runoff and some precipitation events. Flow measurements at this site help provide additional data on total inflows to the reservoir.

CC-O This site was established in 1987 on Cherry Creek downstream of Cherry Creek Reservoir and upstream of the Hampden Avenue-Havana Street junction in the Kennedy Golf Course (near the USGS gage). CC-O monitors the water quality of Cherry Creek downstream of the reservoir outlet.

Cottonwood Creek

CT-1 This site on Cottonwood Creek was established in 1987 where the Cherry Creek Park Perimeter Road crosses the stream to monitor the water quality of Cottonwood Creek before it enters the reservoir. During the fall/winter of 1996, a PRF, consisting of a water quality/detention pond and wetland system, was constructed downstream of this site. As a result of the back-flow from this pond, this site was relocated further upstream near Belleview Avenue in 1997.

CT-2 This site was established in 1996 and is located downstream from the PRF on Cottonwood Creek. This site monitors the effectiveness of this structure on water quality and monitors the quality of Cottonwood Creek before it enters the reservoir.

Quincy Drainage

QD-1 This site was established in 1996 on Quincy Drainage, above the Perimeter Road wetlands, which were constructed in 1990 just downstream of the outlet for the Quincy Road/Parker Road stormwater drain. This site monitors water quality of the Quincy Drainage upstream of the wetlands and a new PRF, consisting of a water quality/berm system, established in late 1995 downstream of the Perimeter Road. A second site, QD-2, located at the outlet of the berm was visited but not sampled in 2000 because no outflows were observed.

Belleview Drainage

BD-1 This site was established in mid-1996 at the suggestion of State Parks personnel and monitors the inflow to an old stock pond on this drainage near Belleview Avenue.

BD-2 This site was established in mid-1996 at the suggestion of State Parks personnel and monitors this drainage as it crosses the Perimeter Road before entering the reservoir. This site monitors the nutrient removal abilities of the historic stock pond and natural wetland system.

METHODS

Sampling Methodologies

Reservoir Sampling

The general sampling schedule included regular sampling trips to the reservoir at varying frequencies over the annual sampling period, as outlined below:

Sampling Trips per Sampling Period

Sampling Period	Frequency	Trips/Period
Nov - March	Monthly	5
April & Oct	Bi-Weekly	4
May - Sept (water quality & chlorophyll *a*)	Weekly	22
April - Oct (zooplankton & phytoplankton)	Twice Monthly	--
	Total	31

During each sampling episode on the reservoir, three main tasks were conducted, including 1) determining water clarity, 2) taking depth profile measurements for temperature, dissolved oxygen, pH, conductivity, and oxygen reduction potential, and 3) collecting water samples for chemical and biological analyses.

Water Clarity

First, transparency was determined at each reservoir site using a Secchi disk. The Secchi reading was taken from the shaded side of the boat or, if this was not possible, sunglasses or other shading was used to reduce glare. The disk was lowered slowly until the white quadrants disappeared, at which point the depth was recorded to the nearest 3 cm. The disk was then lowered approximately 0.5 m further and slowly brought back up until the white quadrants reappeared and again the depth was recorded. The Secchi disk depth was recorded as the average of these two readings. The final Secchi depth is often considered to be roughly half the euphotic zone, i.e. the zone where ambient light allows photosynthetic activity (Cole 1979). In this report, however, Secchi depth is simply used as a measure of transparency and all discussion is based on Secchi depth alone without the transformation to a photic zone depth. Beginning in 1998, a second method to measure the depth of the euphotic zone was used by determining the depth at which 1% of the light penetrates the water column. This is considered the point at which, on average, light no longer can sustain photosynthesis in excess of oxygen consumption from respiration (Goldman and Horne 1983). This was accomplished by using a double-deck photometer. One photocell remained on the surface, and the other was lowered into the water on the sunny side of the boat. Both photocells were attached to a data logger, which records the amount of light in micromoles per second per square meter. The underwater photocell is lowered until the value displayed on the data logger is 1% of the value of the surface photocell, and then the depth is recorded.

Profile Measurements

The second task involved measuring dissolved oxygen, temperature, conductivity, pH, and oxidation reduction potential every meter to develop depth profiles. Readings were taken with a YSI meter, Model #600 XL multi-probe meter. This meter was calibrated monthly to ensure accurate measurements.

Water Sampling

Water samples for nutrient, phytoplankton, and chlorophyll analyses were collected with a vertical Van Dorn water sampler, which has a sample volume of approximately 3 liters. To sample, the open Van Dorn sampler was lowered to the appropriate depth. A “messenger” was sent to “trip” the sampler closed

and the water was brought to the surface and transferred to a clean plastic bucket for splitting into aliquots as described below. The sampler was rinsed thoroughly, with lake water, between samples and between sites.

Water samples were defined as a photic composite for the site, which was composed of at least three equally contributed samples collected with the Van Dorn water sampler at equally spaced increments beginning at the surface and continuing to the photic depth (based on the 1% transmissivity). Three to five aliquots were taken from this photic composite for 1) nutrient analyses (two 1 L bottles), 2) determination of chlorophyll (two 1 L bottles), and 3) determination of algal species and counts (one 250 mL bottle, preserved with 2.5 mL of 25% gluteraldehyde solution).

Zooplankton were sampled at each site with a Schindler-Patalas plankton trap. This sampler encloses 10 L of water and filters it through a bucket with a 63 mm mesh netting. The sample collected was a lake-wide composite of three samples taken from each of the three reservoir sites. Ten L of water was sampled at each site from the surface, half the photic depth, and the total photic depth, for a total of 90 L of water collected and filtered on each sample date.

Lastly, following the collection of the photic composite samples, depth profile samples for nutrient analysis were collected. At Sites CCR-1 and CCR-2, nutrient profiles were also collected during every sampling trip in 2000. Samples were collected every meter beginning at five meters (average 1% transmissivity depth) and progressing down to just above the bottom. The Van Dorn sampler was lowered to the appropriate depth and "tripped" to take the sample. As before, the van Dorn sampler was rinsed thoroughly with lake water before each sample was taken. Once collected, the sample was transferred to a 1 L container and delivered to Chadwick & Associates, Inc. (C&A) or Severn-Trent Laboratories (STL), as appropriate.

All samples were immediately placed on ice in a cooler and kept in the dark. Nutrient, chlorophyll, algal, and zooplankton samples were returned to C&A, and split samples for nutrients and chlorophyll were sent to MU via overnight mail.

In the laboratory, nutrient samples were transferred to polyethylene bottles and stored at 4EC (±1EC). Dissolved nutrient samples were filtered through Gelman A/E glass fiber filters prior to storage. Nutrient samples were analyzed using flow injection analysis methods developed by Zellweger Analytics (1999), which are similar to the proposed nutrient methods described in APHA (1998). The chlorophyll samples were filtered through Gelman A/E glass fiber filters and analyzed using the spectrophotometric method following a hot-ethanol extraction (APHA 1998). Algal samples were analyzed according to the methods described in APHA (1998).

Fish Population Data

As in the past, this monitoring study has also reviewed fish stocking and population data collected by the Colorado Division of Wildlife (CDOW). As part of their sampling schedule to reduce mortality to a walleye brood-stock population in Cherry Creek Reservoir, CDOW currently plans to sample fish populations every two to three years, with the next sampling scheduled for 2001 (Dave Nesler, CDOW, pers. comm.).

Stream Sampling

Low-Flow/Ambient Sampling. Standard sampling was conducted according to the schedule below during the regular reservoir sampling trips to Cherry Creek Reservoir. This sampling was performed in order to provide information during non-storm event periods, corresponding to the low-flow ambient samples collected in past studies.

Sampling Trips per Sampling Period

Sampling Period	Frequency	Trips/Period
Nov - April	Monthly	7
May - Oct	Twice Monthly	10
	Total	17

During these sampling episodes, water was collected from each of the 11 stream sampling sites (sites on tributary streams and on Cherry Creek downstream of the reservoir) and analyzed for nutrients. Due to low flows or lack of flow, Site BD-2 could not be sampled on a regular basis in 2000. One sample for

chemical analysis was collected from each of the stream sampling sites and consisted of a mid-stream, mid-column grab sample using one 1 L bottle. Additionally, at Sites CC-10 and CT-2, a sample was collected for coliform analysis by placing a sterile container into the stream, opening it, allowing it to fill with water, and sealing the container.

Storm Sampling. Storm events were sampled at Site CC-10 on Cherry Creek, Sites CT-1 and CT-2 on Cottonwood Creek, Sites SC-1, SC-2, and SC-3 on Shop Creek, and Site QD-1 on Quincy Drainage during the 2000 sampling season (Table 1). Storm samples were collected with ISCO automatic samplers, which collect samples when the water level reaches a pre-set level. Once the pre-set level is reached, the ISCO collects a sample every 15 minutes for approximately 2.5 hours (timed composite) at Sites CC-10, CT-2, QD-1, and SC-3. Sites SC-1 and SC-2 have a faster response time to precipitation events. Therefore, they take samples every 15 minutes for approximately 1.5 hours (timed composite). Personnel from CEC retrieved the samples collected by the automatic samplers, transferred them to water bottles, and immediately delivered the samples to the C&A laboratory for nutrient analysis. Peak storm flows generally occurred in the evening (often between 10:00 p.m. and midnight). Thus, sample retrieval was made the following morning (usually between 8:00 a.m. and 9:00 a.m.).

TABLE 1: Number of storm samples taken from tributary streams to Cherry Creek Reservoir, 2000.

	SC-1	SC-2	SC-3	CC-10	CC-10a	CC-O	CT-1	CT-2	QD-1	BD-1	BD-2
Number of Storm Samples	3	3	3	4	0	0	4	5	4	0	0

An alternative to using timed composites would be to collect stream water samples using flow-weighted composites, which are composed of subsamples collected every five minutes for two hours. The volume of each of these subsamples depends on the volume of streamflow, with larger subsamples taken during higher flows, and smaller subsamples taken during lower flows. To compare the differences between timed and flow-weighted composites in 2000, both methods were to be used to collect storm samples at CT-1. However, due to ISCO malfunctions and lack of storm events, flow-weighted composites were not collected in 2000.

Precipitation Sampling

Precipitation samples were collected during five storm events in 2000. The precipitation sampler consisted of a clean, inverted plastic trash can lid used to funnel rain into a 1-gallon container. This sampler was located at Site QD-1 on the Quincy Drainage (Fig. 1). The sampler was checked weekly to assure that any small precipitation events would not contaminate a sample collected at a later date. Between precipitation events, dryfall also accumulates in the sampler. Subsequently, it would be washed into the sample and combined with the precipitation sample. As such, precipitation samples include both wet and dry fall material. After each storm, the sample bottle was removed from the sampler and taken directly to the C&A laboratory for analysis of total phosphorus, total nitrogen, and nitrites and nitrates. If sufficient volume remained, alkalinity, conductivity, pH, and suspended solids were also measured.

Surface Hydrology

Pressure transducers attached to ISCO Series 3220, 4200, or 6700 flowmeters measured and recorded water levels (stage) at eight sites on four tributaries to Cherry Creek Reservoir (Fig. 1). These flow meters recorded water depth in 10-minute intervals year round. Streamflow (discharge) was estimated at these eight sites using stage-discharge relationships. Discharge measurements were taken throughout the year using a Marsh McBirney Model 2000 flowmeter. For a complete description of streamflow determination, see Appendix C. Additionally, water temperature was recorded every three hours with an Onset temperature probe (with internal data loggers) at Sites CC-10 and CT-2.

Sites BD-1 or BD-2 on the Belleview Drainage, Site CC-10A on Cherry Creek (after July), and the lower portion of Quincy Drainage did not have flow metering, as flows from these sites were intermittent. For these reasons, phosphorus loads were estimated for these sites based on individual flow measurement rather than continual flow metering. The Belleview Drainage has very low to intermittent flows at the perimeter road, and adds only minimal phosphorus loading to the reservoir, as noted below. Site CC-10A flows only during spring runoff and some precipitation events, so flow metering was conducted only during the first half of the year. This site adds only minimal phosphorus loading during the last half of the year. During base and storm flows, Quincy Drainage downstream of the PRF (QD-2) is dry, and efforts to locate a defined channel in the lower portion of Quincy Drainage have been unsuccessful. Therefore, it appears

that Quincy Drainage also contributes very little, if any, phosphorus to Cherry Creek Reservoir from surface flows. The assumption is that there are no measurable flows to Cherry Creek Reservoir from Quincy Drainage.

Laboratory Procedures

Nutrient Laboratory Analysis

Nutrient analyses for the water collected in the study, as described above, were conducted by the C&A laboratory in Littleton, Colorado. Split water samples were sent to Dr. Jones, MU. Table 2 lists the parameters analyzed and the methods that were used. Detailed methodologies are available from C&A.

Biological Laboratory Analysis

Biological analyses of the samples collected in the study were conducted by MU, C&A, and PhycoTech, Inc. (St. Joseph, MI). These analyses included species identifications and counts for the zooplankton and phytoplankton, and analysis of chlorophyll. The methods for these analyses, with appropriate QA/QC procedures, are available from C&A. These analyses provided cell or organism counts per unit volume (cells/mL or organisms/m^3) and chlorophyll concentrations in μg/L.

Quality Assurance/Quality Control

To ensure data quality, a number of quality assurance checks were used. During each reservoir sampling episode, a photic water sample split/duplicate was taken from each reservoir site. Additionally, during each tributary sampling episode, a split/duplicate sample was taken at Sites CC-10 and CT-2, resulting in approximately 20% of the samples having a QA split/duplicate. These samples were shipped to Dr. Jones for analysis at his laboratory at MU. This provided an independent assessment of the lake water analyses conducted by C&A and STL.

TABLE 2: Parameter list, laboratory, method number, and detection limits for chemical analyses of water collected from Cherry Creek Reservoir and tributaries, 2000. *First value is detection limit up to 6/1/00; second value is detection limit thereafter.

Parameter	Lab	Method	Detection Limit
Alkalinity	C&A	APHA 2320B	2 mg/L
Hardness	"	HACH 8266	2 mg/L
Apparent Color	"	HACH CO-1	1 Cobalt Unit
Total Phosphorus	"	QC 10-115-01-1-U	2 µg/L
Total Dissolved Phosphorus	"	QC 10-115-01-1-U	2 µg/L
Orthophosphorus	"	QC 10-115-01-1-T	3 µg/L
Total Nitrogen	"	APHA 4500-N B	4 µg/L
Total Dissolved Nitrogen	"	APHA 4500-N B	4 µg/L
Ammonia	"	QC 10-107-06-3-D	3 µg/L
Nitrate & Nitrite	"	QC 10-107-04-1-B	5 µg/L
Chlorophyll	"	APHA 10200 H	1 µg/L
Coliform	"	HACH 8001 A	2/100 mL
Fecal Coliform	"	HACH 8001 A	2/100 mL
E. coli	"	HACH 8001 A	2/100 mL
Total Suspended Solids	STL	EPA 160.2	4 mg/L
Total Volatile Suspended Solids	"	SM 18 2540E	10 mg/L
Total Aluminum	"	SW-846 6010 B	0.05, 0.10 mg/L*
Total Calcium	"	SW-846 6010 B	0.10, 0.20 mg/L*
Total Iron	"	SW-846 6010 B	0.03, 0.10 mg/L*

In addition, field sampling quality control included the use of a field blank. This field blank contained laboratory grade deionized water in a sample container identical to those used in the field collections that was carried through the entire sampling episode. The cap of this container was removed at a particular site and left open during the regular sampling effort at that site. Upon completion of sampling at that site, the cap was replaced. One field blank was used for every sampling trip. The field blanks and duplicate samples were analyzed for all the parameters, identical to a routine sample. Chain of custody procedures were observed during the field sampling and delivery of samples to C&A and STL, and for samples shipped to Dr. Jones.

Results of QA/QC checks performed on the water quality data from the reservoir for 2000, with comparison between labs, are located in Appendix E. This analysis showed that results from the analytical labs were similar. As such, values reported herein are based on all results from both laboratories.

Calculation of Phosphorus Loading

Phosphorus loading to Cherry Creek Reservoir from streams and precipitation was estimated for the 2000 calendar year using data on streamflow and precipitation, and their respective concentrations of phosphorus. Detailed discussion of the streamflow measurements and derivation of loads can be found in Appendix C.

Calculation of Long-Term Trends in Cherry Creek Reservoir

Long-term analyses for Secchi depth, total phosphorus, and chlorophyll levels were determined by averaging yearly seasonal (July to September) values from each reservoir site between 1987 and 2000. Yearly values were compared using linear regression analysis (described below). These analyses were used to determine if there were any significant increasing or decreasing trends in Secchi depth, total phosphorus, and chlorophyll levels over time.

Statistical Analysis

The statistical analyses to determine the relationship between total phosphorus concentration and flow, stage discharge relationship, QA/QC between labs, and comparisons of biological and physical parameters for each site were conducted using NCSS 2000 statistical software. In order to decrease the relationship between the variance and the mean of the data, natural log transformations were performed prior to linear regression analysis, as appropriate. In some cases, the natural log transformation did not improve the relationship and, therefore, the non-transformed values were used in the linear regression. A value of P # 0.05 was used to indicate statistical significance.

RESULTS AND DISCUSSION

Reservoir Water Quality

Alkalinity and pH

The alkalinity in Cherry Creek Reservoir was slightly lower in 2000 as compared to 1999. In 2000, the whole-reservoir photic zone mean value ranged from 150 to 185 mg/L as $CaCO_3$ (Fig. 2), whereas the mean alkalinity ranged from 154 to 212 mg/L as $CaCO_3$ in 1999. These values are similar to those observed in the Reservoir between 1994 and 1999 and continue to indicate a well-buffered system. The mean whole-reservoir photic pH value ranged between 7.85 and 9.01 and for most of the year remained between 8.0 and 8.5 (Fig. 2). A temporary increase in pH was observed on 9/5/00 when the mean whole-reservoir photic pH increased to 9.01from 8.04 on 8/29/00 and then returning to 8.05 on 9/12/00. This "spike" in pH was accompanied by a slight increase in alkalinity. The cause of this temporary increase in pH is unknown, although it may have been related to the photosynthetic activities of phytoplankton (Wetzel 2000).

Suspended Solids

The mean whole-lake concentration of total suspended solids (TSS) in the photic zone of Cherry Creek Reservoir ranged from a high of 21.0 mg/L to a low of 3.6 mg/L (Fig. 3). The annual mean concentration of TSS was 10.6 mg/L with a standard deviation of 4.45 mg/L. In general, TSS values were highest in April and May, decreased through the summer months, and were lowest in the fall. The whole reservoir mean photic concentration of TSS was significantly ($P = 0.007$) and positively related to the total inflow to the reservoir in 2000 ($R^2 = 0.26$). Additionally, the concentration of TSS in the reservoir had a significant ($P < 0.05$), but weak, negative relationships to the Secchi depth ($R^2 = 0.06$) and 1% transmittance ($R^2 = 0.07$). The concentrations of TSS observed in Cherry Creek Reservoir in 2000 were similar to those observed in 1999, which were similar to those observed in 1994 to 1998 (CEC 2000).

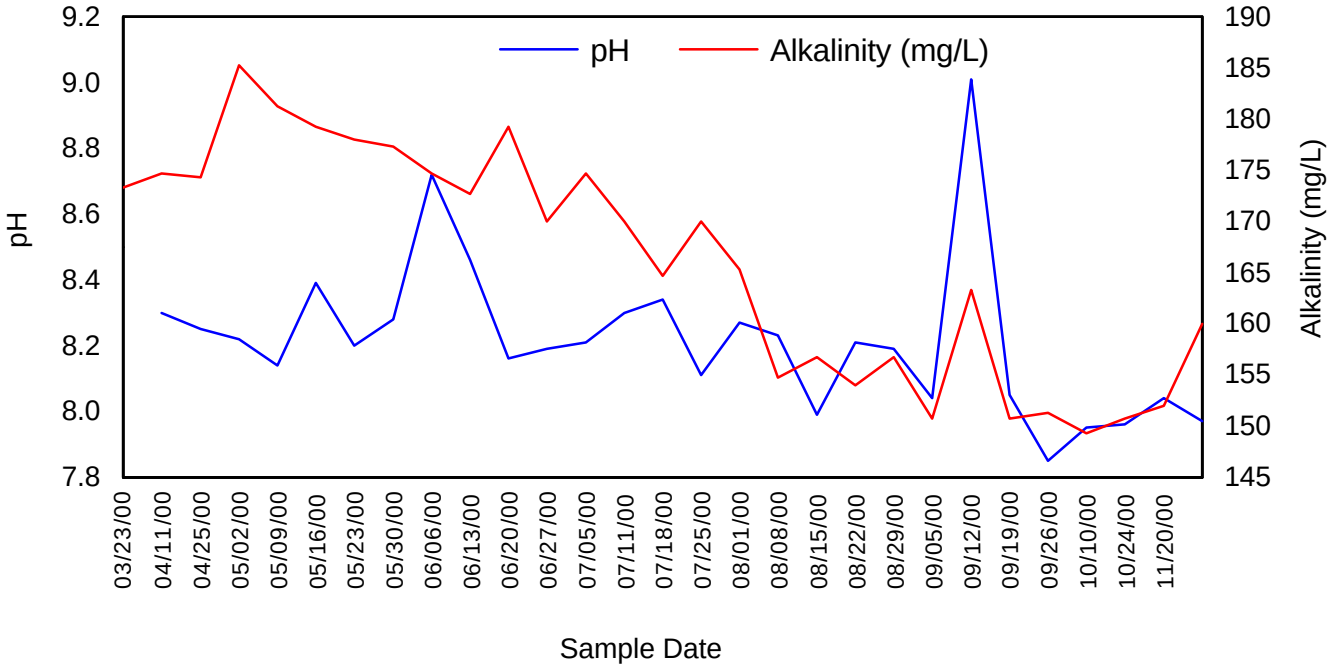

FIGURE 2: Mean whole-reservoir photic pH and alkalinity (mg/L as $CaCO_3$) concentrations in Cherry Creek Reservoir, 2000.

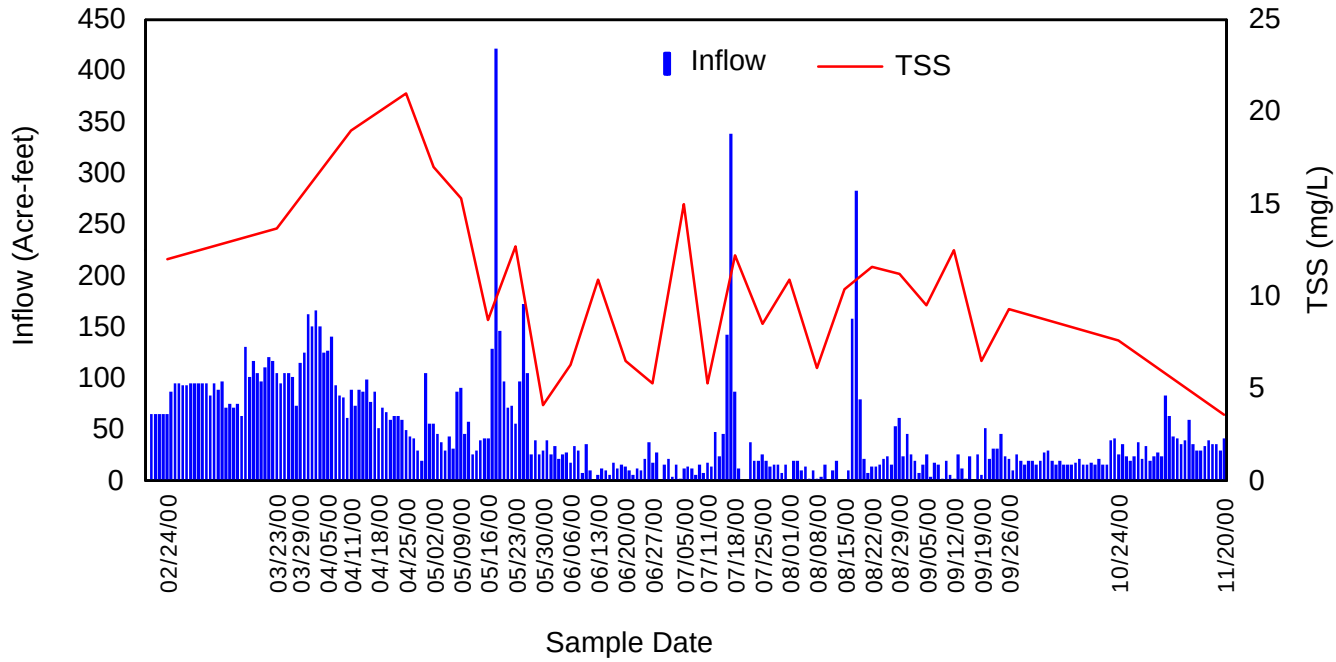

FIGURE 3: Relationship between TSS (mg/L) and inflow (acre feet [AF]) in Cherry Creek Reservoir, 2000.

Transparency

The whole-reservoir mean Secchi depth varied from a low of 0.50 m in late April to a high of 1.43 m in early July. The whole-reservoir mean was 0.96 m (standard deviation of 0.28 m) between July and September 2000. This value is similar to those observed in the reservoir since 1997 (Fig. 4). The whole-reservoir mean maximum depth of 1% light transmittance ranged from a high of 3.97 m in mid-May to a low of 1.10 m in mid-June. Although the deepest recorded 1% transmittance value was observed in mid-May, most of the measurements taken between July and September exceeded 2.5 meters.

When all of 2000 data are analyzed together, both Secchi depth and 1% transmittance were significantly ($P < 0.05$) and negatively influenced by TSS, although this was a weak regression ($R^2 = 0.06$ and 0.07, respectively) (Fig. 5). Although these relationships were significant, TSS was only able to explain six to seven percent of the variation in Secchi depth and 1% transmittance in the reservoir. TSS did not have a significant impact on the variation in either the Secchi depth or the 1% transmittance during the July to September monitoring period. During this period, the Secchi depth was significantly ($P = 0.007$), and negatively correlated with the density of phytoplankton in the reservoir ($R^2 = 0.38$). While not as strongly related, the amount of chlorophyll *a* in the reservoir also significantly ($P = 0.019$) and negatively influenced the observed Secchi depth ($R^2 = 0.14$). No significant relationships were determined to exist between phytoplankton density and chlorophyll *a* and 1% transmittance.

Long-Term Secchi Transparency Trends in Cherry Creek Reservoir

Routine monitoring data collected since 1987 indicate a generally increasing trend in summer mean chlorophyll *a* concentrations in the reservoir (Fig. 4). Also observed during this monitoring period has been considerable year-to-year variation. Overall, the increasing trend is not statistically significant ($P > 0.05$), indicating that the apparent increase may be more related to annual variation than to long-term change in the state of the reservoir.

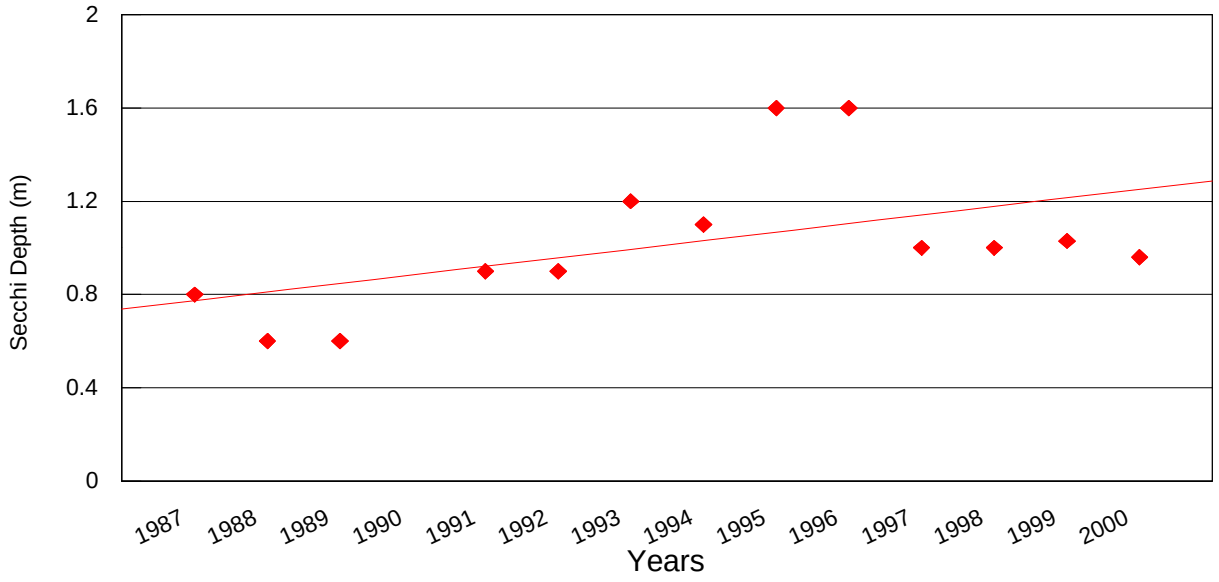

FIGURE 4: Seasonal mean (July to September) Secchi depths (m) for Cherry Creek Reservoir (1987 to 2000).

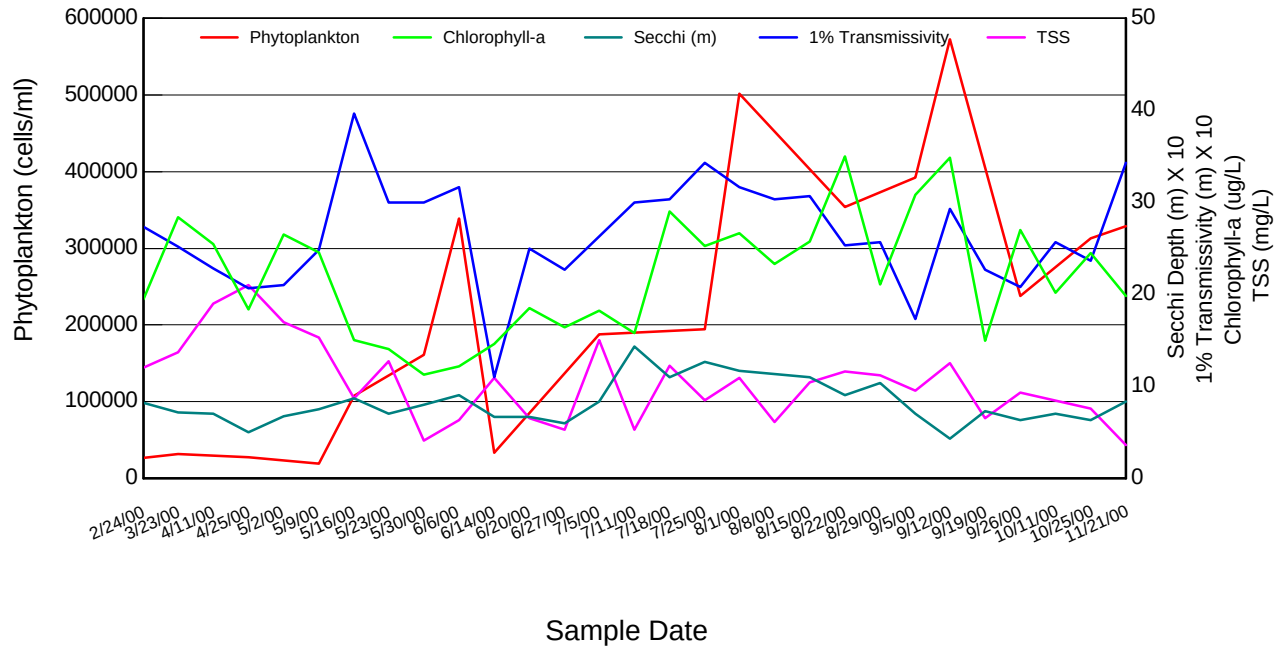

FIGURE 5: Relationship between Secchi depth (× 10), 1% transmissivity (× 10), chlorophyll, total suspended solids, and phytoplankton density in Cherry Creek Reservoir, 2000.

Dissolved Oxygen and Temperature

The temperature in Cherry Creek Reservoir ranged from a high of 26.4EC in early July to a low of 1.85EC in November. As in previous years, periods of limited thermal stratification were observed in the Reservoir. These stratification periods were most pronounced at CCR-1 and CCR-2 (Figs. 6 and 7). Relative to the stratification observed as CCR-1 and CCR-2, only minor stratification was observed at CCR-3, which is a much shallower site (Fig. 8). The first period of stratification occurred during May and June and was followed by a mixing event in late June. This brief and complete thermal mixing preceded the second stratification period that lasted for a few weeks in July. Temperature loggers were placed in Cherry Creek Reservoir in the same manner as in 1999. The buoy to which the loggers were attached was damaged (possibly by being struck by a boat, according to conversations with Cherry Creek State Park Rangers) during the summer and the loggers were lost. Therefore, no continuously monitored temperature profile data are available for the 2000 sampling season.

The concentration and depth distribution of dissolved oxygen was similar at the two deep-water sites, CCR-1 and CCR-2 (Figs. 9 and 10). The DO concentrations at CCR-3 followed the same trend as was observed at the deep-water sites, but because of the slight stratification and shallow depth at this site, the magnitude of DO change was less than that at the deep-water sites (Fig. 11).

DO concentrations were highest in the spring, fall, and winter as would be expected. A period of supersaturation in the top several meters of the reservoir occurred in July and was most likely due to the photosynthetic activities of phytoplankton in the photic zone of the reservoir. During periods of stratification, the lower layers of the reservoir experienced depressed DO concentrations. At CCR-1 the DO concentration dropped below 5.0 mg/L at levels at and below 4 meters for several weeks. This DO depression extended as shallow as 2-3 meters during late July and early August at CCR-1. Similar concentrations were observed at CCR-2, but the DO at 4 meters and above never fell below 5.0 mg/L. The DO fell below 5.0 mg/L at 3 meters and below for a short period in late July and early August at CCR-3. Extended periods of DO depletion were not observed at CCR-3, most likely because the reservoir at this site is shallow ($\sim$5 meters deep) and well mixed.

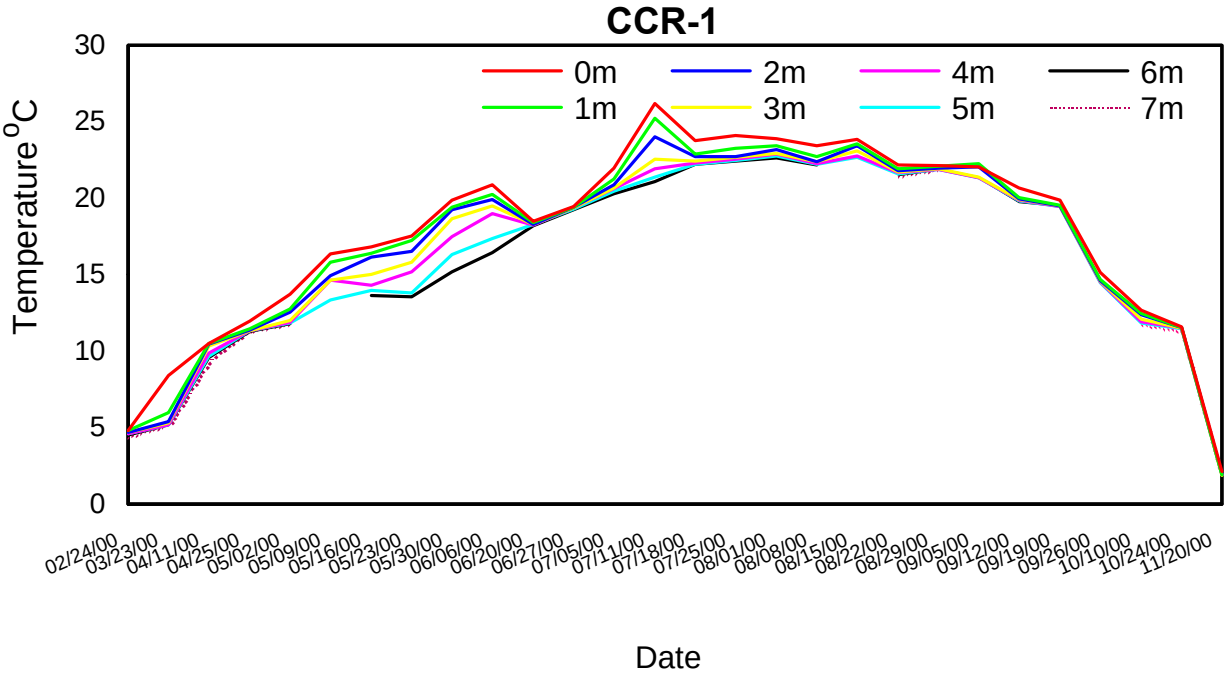

FIGURE 6: Temperature (EC) profiles recorded during routine monitoring at CCR-1 in 2000.

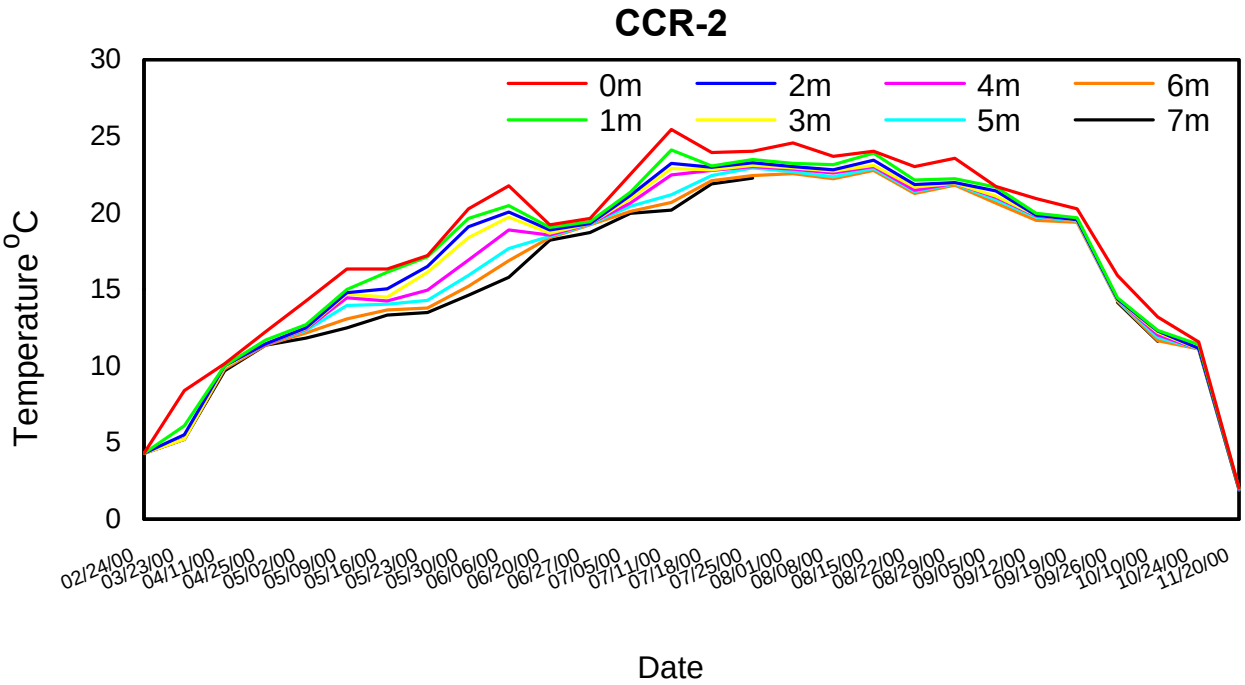

FIGURE 7: Temperature (EC) profiles recorded during routine monitoring at CCR-2 in 2000.

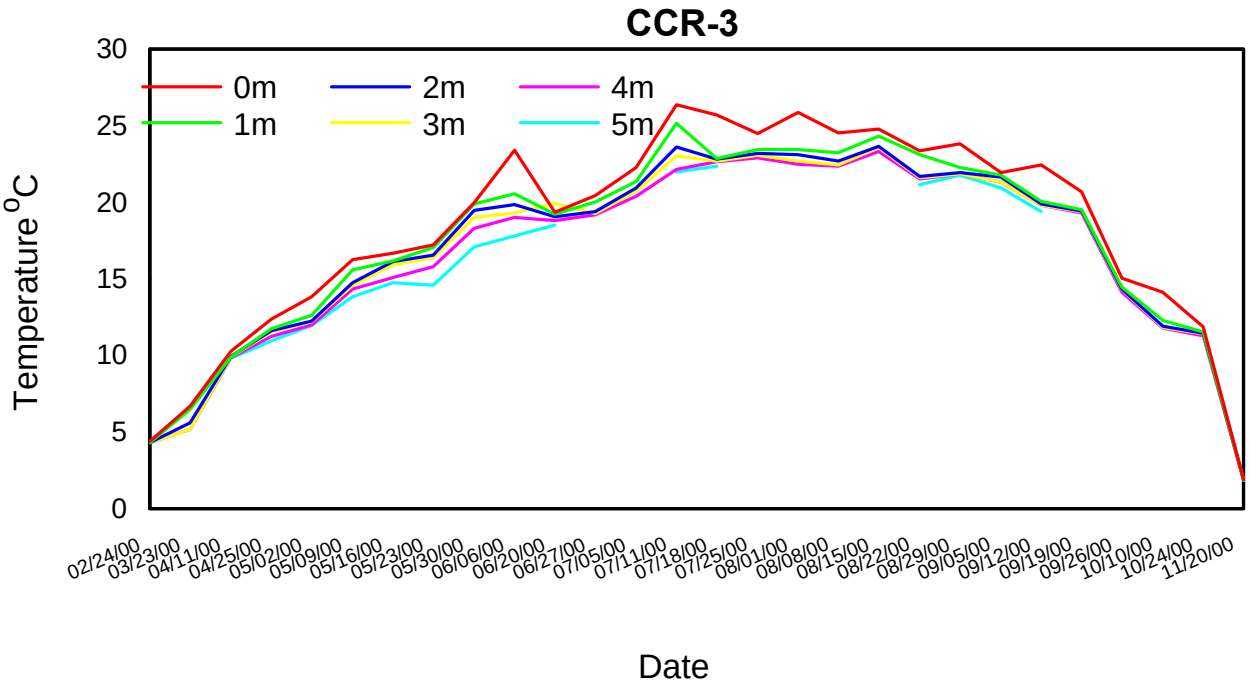

FIGURE 8: Temperature (EC) profiles recorded during routine monitoring at CCR-3 in 2000.

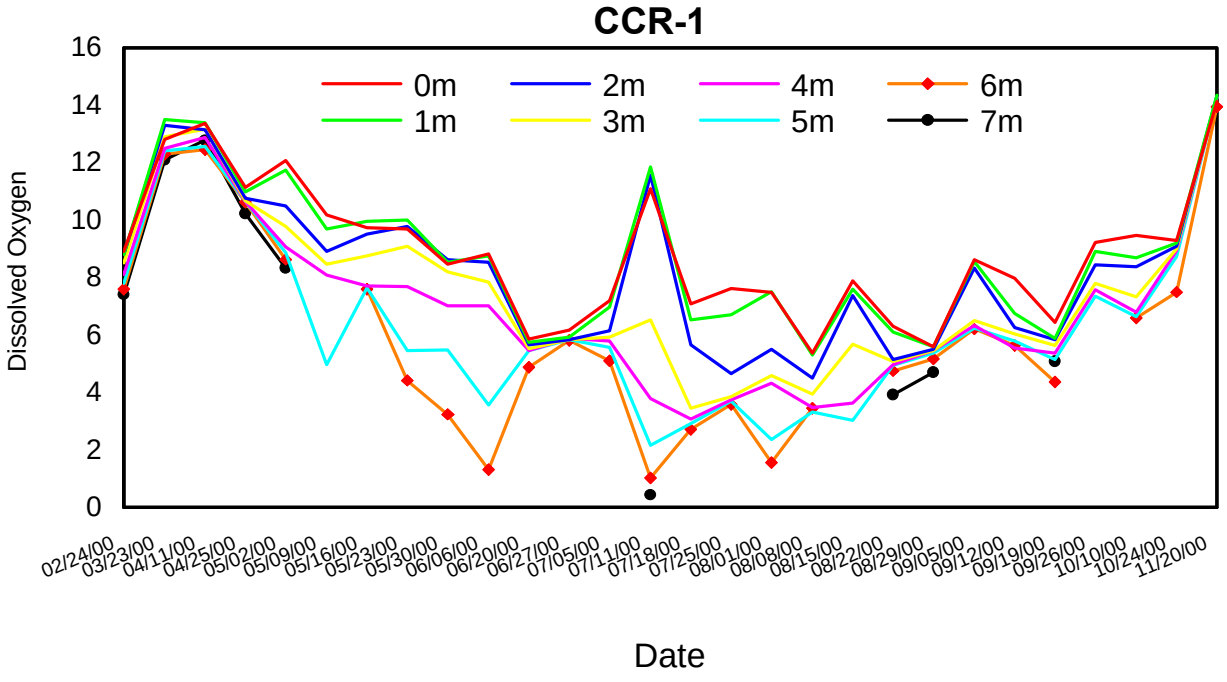

FIGURE 9: Dissolved oxygen (mg/L) profiles recorded during routine monitoring at CCR-1 in 2000.

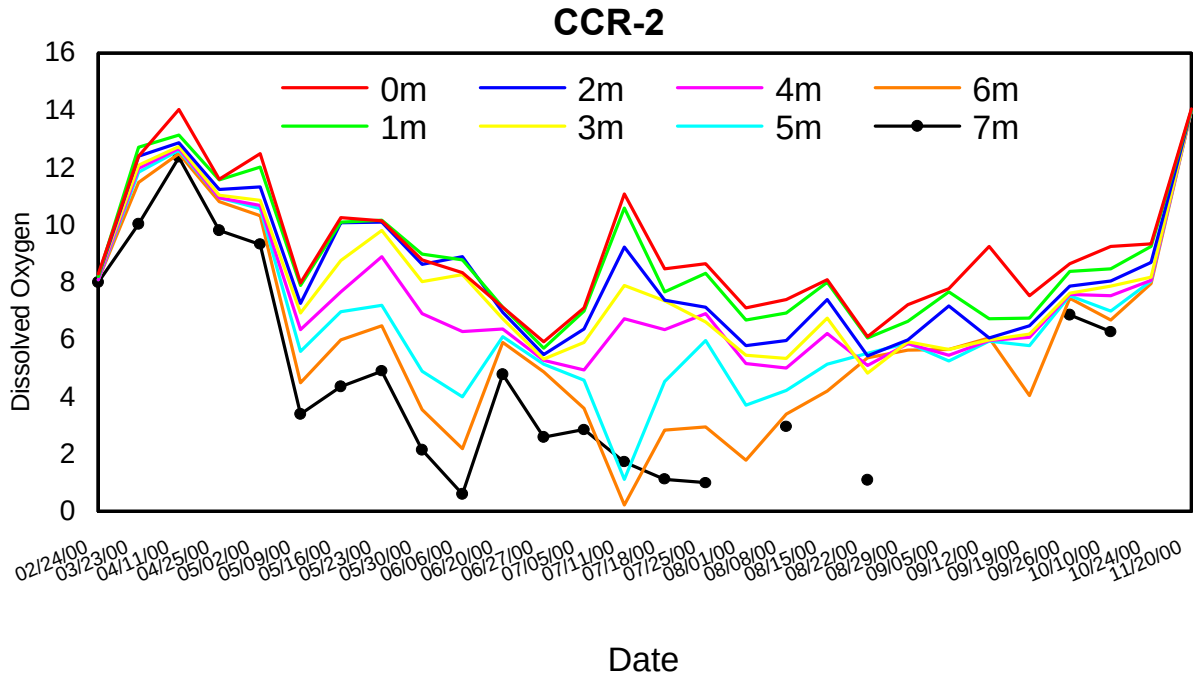

FIGURE 10: Dissolved oxygen (mg/L) profiles recorded during routine monitoring at CCR-2 in 2000.

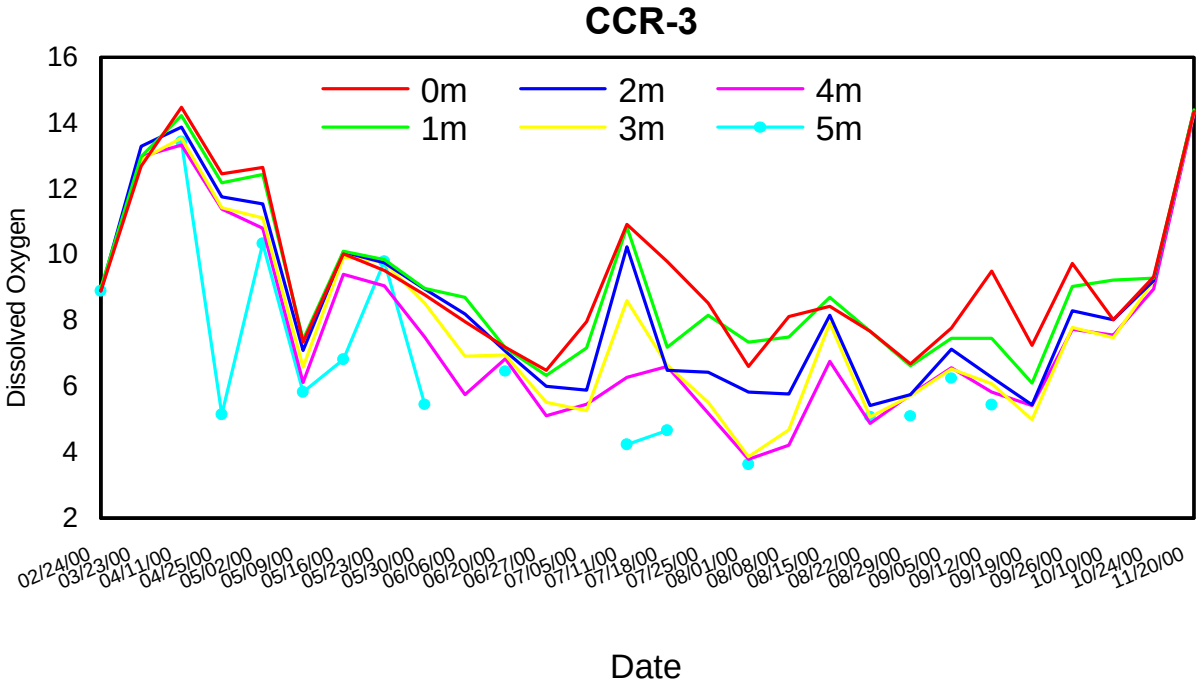

FIGURE 11: Dissolved oxygen (mg/L) profiles recorded during routine monitoring at CCR-3 in 2000.

Reservoir Nutrients

The monitoring on Cherry Creek Reservoir has focused on the concentrations of phosphorus and nitrogen. Phosphorus and nitrogen are inorganic nutrients in aquatic systems and are necessary for life. Often, these nutrients are the limiting factor in the growth of algae (Cole 1979, Goldman and Horne 1983, Wetzel 2001, Cooke *et al*. 1993). Excessive amounts of these nutrients in aquatic systems may result in algal blooms which create aesthetic problems as well as potentially hazardous conditions for aquatic life.

In 2000, the whole reservoir mean concentration of total phosphorus in the photic zone ranged from 50 to 136 μg/L with an overall mean of 81 μg/L (Fig. 12). Between July and September the concentration of total phosphorus in the photic zone ranged from 52 to 136 μg/L with a mean of 81 μg/L. These values are similar to those observed in 1997 through 1999 (Table 3).

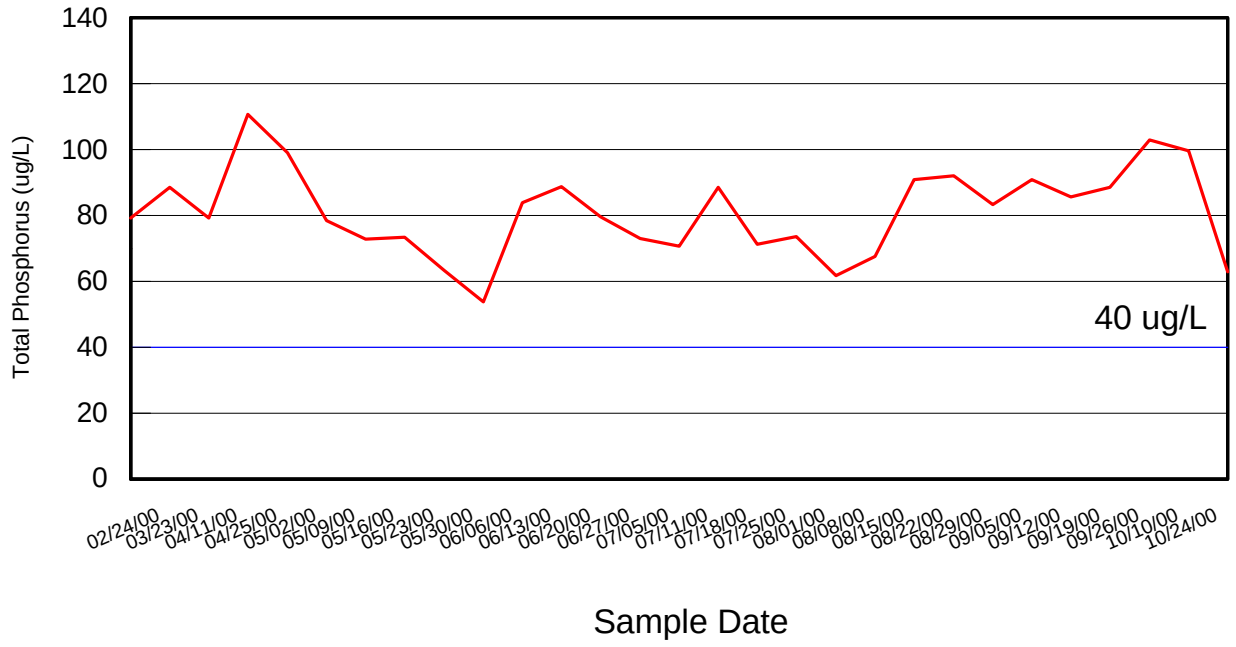

FIGURE 12: Mean whole-reservoir concentration of total phosphorus (μg/L) in Cherry Creek Reservoir, 2000. Grid line at 40 μg/L represents the total phosphorus goal for the reservoir.

TABLE 3: Comparison of annual mean (monitoring period) and July-September mean phosphorus, nitrogen, and chlorophyll levels in Cherry Creek Reservoir, 1987-2000. Values are lake-wide averages for Secchi composite samples. Annual samples in 2000 were collected from February through December.

		Total Nitrogen (µg/L)		Total Phosphorus (µg/L)		Mean Chlorophyll (µg/L)	
Year	Source of Data	Annual	July-Sept.	Annual	July-Sept.	Annual	July-Sept.
1987	In-Situ 1987	1,580	741	86	93	11.1	8.3
1988	In-Situ 1988	902	1,053	52	49	21.8	31.8
1989	ASI 1990	803	828	45	39	8.5	5.6
1990	ASI 1991a	600	--	58	55	2.3	8.6
1991	ASI 1991b	1,067	1,237	86	56	9.7	9.8
1992	ASI 1993	790	970	54	66	12.1	17.0
1993	ASI 1994a	790	826	50	62	12.5	14.4
1994	CEC 1995	1,134	1,144	86	59	8.8	10.0
1995	CEC 1996	910	913	48	48	10.2	9.4
1996	CEC 1997	889	944	54	62	16.9	20.5
1997	CEC 1998	976	1,120	75	96	16.1	22.3
1998	CEC 1999	850	880	82	89	20.4	26.5
1999	CEC 2000	715	753	80	81	20.8	28.9
2000	Present Study	784	802	81	81	22.0	25.2
Long-term average		914	940	67	67	13.8	17.0

Correlation analyses were performed to determine the relationship of total phosphorus to other parameters measured in the reservoir. The whole reservoir mean concentration of total phosphorus in the photic zone was significantly ($P < 0.05$) related to chlorophyll *a* (slope = 0.9, $R^2 = 0.16$), phytoplankton density (slope = -2.6×10^{-5}, $R^2 = 0.8$), iron (slope = 49.8, $R^2 = 0.54$), aluminum (slope = 33.7, $R^2 = 0.37$), Secchi depth (slope = -31.2, $R^2 = 0.22$), 1% transmittance (slope = -12.8, $R^2 = 0.27$), and TSS (slope = 1.0, $R^2 = 0.16$). These correlations indicate that increasing concentrations of total phosphorus are accompanied by increasing concentrations of chlorophyll a and TSS and decreasing Secchi depths and 1% transmittance depths. The significant, but weak ($R^2 = 0.08$) relationship between total phosphorus and phytoplankton density is most likely not biologically meaningful. Aluminum and iron bind with various forms of phosphorus in aquatic systems. The co-occurrence of these elements is most likely responsible for these strong positive relationships.

The whole reservoir mean concentration of total nitrogen in the photic zone ranged from 495 to 1,951 μg/L with a mean of 784 μg/L in 2000 (Table 3). During the July to September period the whole reservoir mean total nitrogen concentration ranged from 589 to 1,234 μg/L with a mean concentration of 802 μg/L (Table 3). Unlike total phosphorus, which was significantly correlated with several in-reservoir parameters, total nitrogen was only significantly ($P < 0.05$) correlated with chlorophyll *a* (slope = 7.3, $R^2 = 0.08$). As with the relationship between total phosphorus and phytoplankton density discussed above, the correlation between total nitrogen and chlorophyll *a* is weak and most likely has little biological meaning.

Long-Term Phosphorus Trends in Cherry Creek Reservoir

Both the annual mean and the July to September mean concentration of total phosphorus in the photic zone of Cherry Creek Reservoir in 2000 was 81 μg/L (Table 3). Since 1988 there has been an increasing, but statistically insignificant ($P > 0.05$) trend in the mean concentration of total phosphorus in the reservoir (Table 3 and Fig. 13). This trend has leveled in the last three years, as the concentration has remained essentially the same since 1998 (80 to 82 μg/L). The same may be said of the mean concentration of total phosphorus between July to September, which remained unchanged from levels measured in 1999. While the July to September mean concentration remained unchanged between 1999 and 2000, these values are lower than concentrations measured in either 1997 (96 μg/L) or 1998 (89 μg/L).

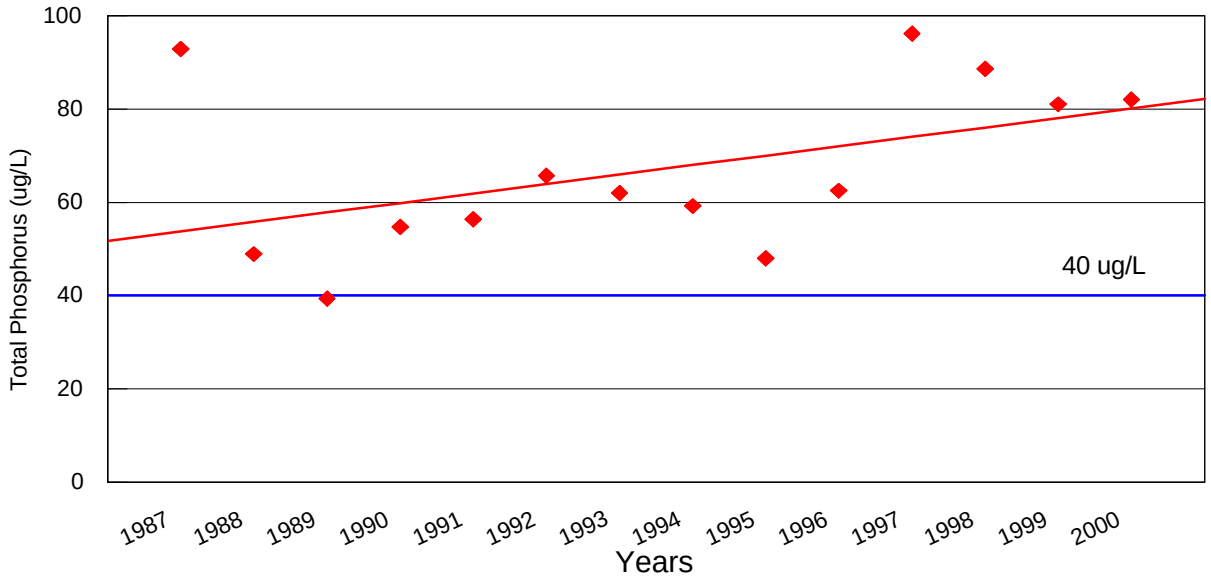

FIGURE 13: Seasonal mean (July to September) total phosphorus concentrations (μg/L) for Cherry Creek Reservoir, 1987-2000.

Reservoir Biology

Phytoplankton and Zooplankton

Modification of Taxonomic Methods

Prior to 2000, phytoplankton and zooplankton collected from Cherry Creek Reservoir were counted and identified by C&A. Beginning with the sample collected on May 2, 2000, all samples were counted and identified by PhycoTech in St. Joseph, Michigan. PhycoTech uses state of the art technology that allowed for identification and enumeration of many smaller phytoplankton that previously went unobserved or misidentified in samples from this reservoir. The resulting phytoplankton data set is of higher quality than any previously produced during the monitoring activities at Cherry Creek. However, the total abundance and number of taxa observed in the lake in 2000 is much higher than previously recorded. Thus, there is an apparent increase in phytoplankton that is most likely linked to the methodology more than any actual changes in the biology of the reservoir. The same effect has been observed to a lesser degree with zooplankton. The change in taxonomic effort has resulted in slightly higher taxa richness values than previously observed in the reservoir.

Phytoplankton Populations

The mean density of phytoplankton in Cherry Creek Reservoir ranged from 19,356 on April 25 to 572,516 on September 19 (Table 5). The number of taxa present in the reservoir ranged from a low of 12 on April 25 and reached a high of 74 on August 22. Phytoplankton abundances were lowest in the spring and early summer months, increasing to the highest levels in August and September (Fig. 14). From February through April, the community was dominated by Blue-Green Algae. The species composition shifted by early May to favor Green Algae, which dominated the community until early July. From July through November, Blue-Green Algae dominated the phytoplankton community in the reservoir (Table 5).

TABLE 5: Mean density (cells/mL) of phytoplankton and total number of taxa collected from all three sites on Cherry Creek Reservoir, 2000.

Taxa	24 Feb	23 Mar	11 Apr	25 Apr	2 May	16 May	6 Jun	20 Jun	11 Jul
Diatoms									
Centrics	261	19	116	126	3,430	2,351	986	1,005	4,485
Pennates	222	164	948	851	341	325	34	29	94
Green Algae	2,748	1,906	493	174	91,953	151,453	283,839	24,820	13,280
Blue-Green Algae	22,123	28,836	25,847	16,987	894	2,307	53,139	4,600	162,343
Golden-Brown Algae	0	0	19	0	43	107	222	275	805
Euglenoids	551	242	106	193	0	14	227	138	92
Dinoflagellates	0	0	0	0	14	63	106	141	15
Cryptomonads	300	0	0	1,025	9,024	3,218	348	1,259	3,993
Miscellaneous									
Micros, 1 Flagellum	0	0	0	0	1,765	1,302	492	1,172	2,691
Mean Density	26,205	31,167	27,529	19,356	107,464	161,140	339,393	33,439	187,798
Total Taxa	21	15	18	12	35	40	51	49	40

Taxa	25 Jul	8 Aug	22 Aug	5 Sep	19 Sep	10 Oct	24 Oct	20 Nov
Diatoms								
Centrics	4,582	136,925	11,643	6,058	6,192	4,587	3,834	10,100
Pennates	77	223	502	507	492	116	405	2,286
Green Algae	12,540	15,659	15,679	19,083	43,605	10,689	19,827	38,223
Blue-Green Algae	172,708	343,331	317,999	358,616	518,189	218,343	280,703	265,965
Golden-Brown Algae	193	685	511	270	232	261	101	2,923
Euglenoids	39	24	68	97	102	29	72	145
Dinoflagellates	65	164	319	251	0	14	159	58
Cryptomonads	395	3,328	4,563	1,910	927	2,763	5,903	3,068
Miscellaneous								
Micros, 1 Flagellum	3,560	1,563	2,431	5,729	2,778	1,042	2,257	5,903
Mean Density	194,159	501,902	353,715	392,521	572,516	237,844	313,261	328,671
Total Taxa	54	62	74	61	52	52	58	39

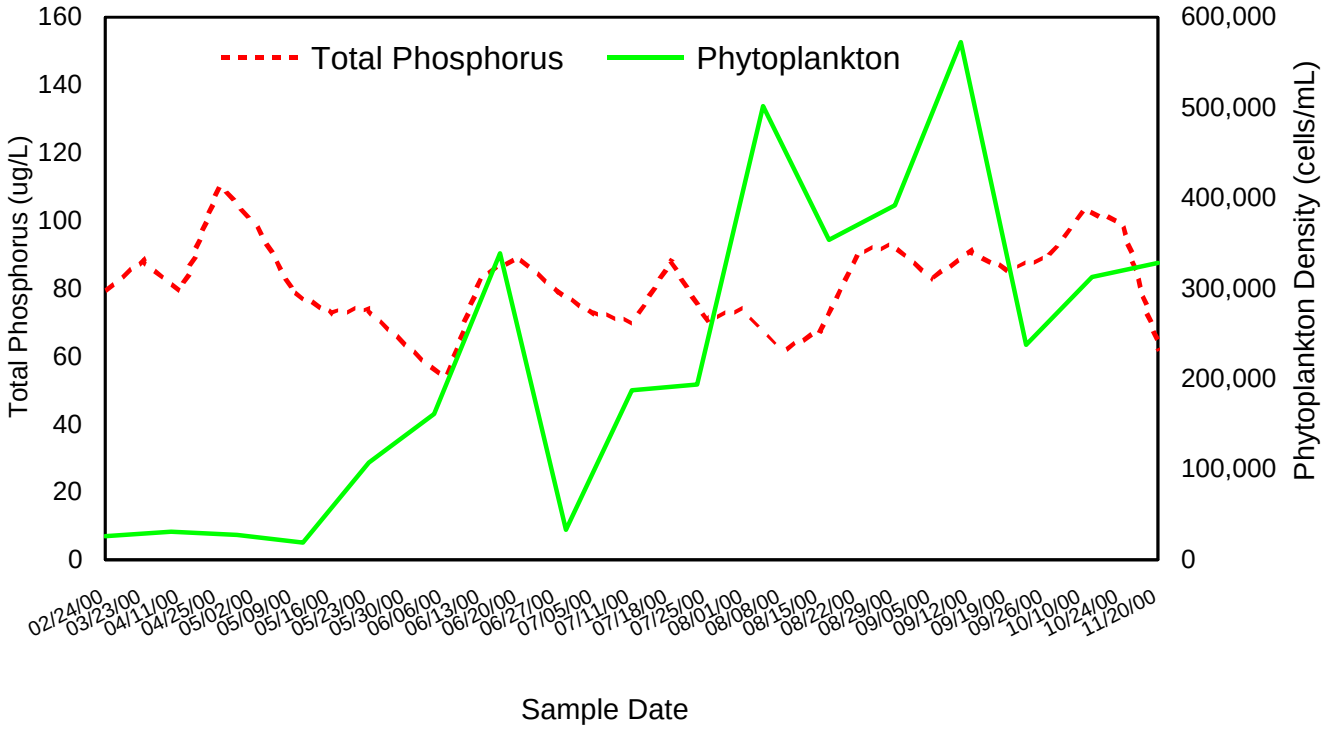

FIGURE 14: Comparison of mean phytoplankton densities from the three reservoir sampling sites to mean total phosphorus concentrations from three sites in Cherry Creek Reservoir, 2000.

Phytoplankton Historical Trends

As in previous years, the phytoplankton community was dominated by Blue-Green Algae (Table 6). The proportion of the total phytoplankton abundance accounted for by Blue-Green Algae in 2000 (73%) was similar to that observed in previous years (64 - 91%). Additionally, the proportions of the phytoplankton community comprised by diatoms, Golden-Brown Algae, euglenoids, dinoflagellates, and cryptomonads were similar to that observed in previous years. The proportion of the community made up of Green Algae (19%) was increased over that observed in recent years, but within the range of historic variation. The increase in total abundance and total taxa observed in 2000 is most likely due to the change in taxonomic methodology discussed above, and is probably not due to any dramatic shift in the actual phytoplankton community in the reservoir.

TABLE 6: Reservoir mean phytoplankton density (cells/mL) and number of taxa in Cherry Creek Reservoir, 1984 to 2000.

Density, Richness	1984	1985	1986	1987	1988	1989	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Blue-Green Algae																
Density	71,780	66,496	99,316	168,259	155,180	273,175	307,691	77,516	15,708	10,015	18,194	16,599	19,716	44,951	15,263	164,290
Taxa Richness	7	7	6	18	24	24	14	16	7	3	7	9	10	11	8	19
Green Algae																
Density	5,864	11,760	25,595	11,985	19,177	55,415	18,688	41,899	1,198	314	355	738	2,461	1,809	898	43,881
Taxa Richness	11	10	13	58	76	66	46	48	16	2	11	11	1,518	18	18	71
Diatoms																
Density	1,776	3,863	5,428	10,677	12,880	9,311	4,160	1,243	946	194	2,189	2,354	1,109	628	838	12,019
Taxa Richness	6	4	7	34	30	31	21	11	15	2	15	13	8	18	16	34
Golden-Brown Algae																
Density	--	7	125	469	56	505	821	93	158	3	63	249	227	56	--	391
Taxa Richness	--	1	1	6	4	7	5	4	1	1	2	4	2	2	--	14
Euglenoids																
Density	514	135	208	251	276	108	89	23	231	196	304	409	838	698	1,252	126
Taxa Richness	2	1	1	9	9	6	3	5	2	1	2	3	3	3	1	6
Dinoflagellates																
Density	--	13	19	19	83	28	23	54	--	31	5	21	--	18	45	80
Taxa Richness	--	1	1	2	4	3	2	2	--	1	2	4	--	2	2	8
Cryptomonads																
Density	1,513	718	1,113	1,090	2,689	1,689	628	529	332	450	919	1,104	1,487	1,393	559	2,472
Taxa Richness	2	3	3	6	4	5	2	3	1	1	1	1	1	1	1	4
Miscellaneous																
Density	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,923
Taxa Richness	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1
Total Density	81,447	82,992	131,804	192,750	190,341	340,231	329,773	121,357	18,573	11,203	22,029	21,474	25,838	49,453	18,855	225,182
Total Taxa	28	27	32	133	151	142	93	89	42	11	40	45	39	55	46	157

Chlorophyll Levels

The mean whole-reservoir concentration of chlorophyll *a* showed a general decreasing trend from February through June. This trend was reversed in July as chlorophyll *a* concentrations rapidly increased, reaching their highest concentrations in August, then decreasing through November (Fig. 15). The mean concentration ranged from a low of 2.99 µg/L on June 29 to a high of 48.02 µg/L on August 24. The annual mean chlorophyll a concentration of 22.0 µg/L in 2000 was the highest yet recorded, slightly exceeding the 1998 (20.4 µg/L) and 1999 (20.8 µg/L) values (Table 3), perhaps a result of more samples collected during winter months in 2000 compared to previous years. However, the July to September mean chlorophyll *a* concentration of 25.2 µg/L was lower than the concentrations observed in either 1998 (26.5 µg/L) or 1999 (28.9 µg/L). Both the year 2000 mean and the July to September mean exceeded the standard of 15 µg/L chlorophyll *a* for the reservoir.

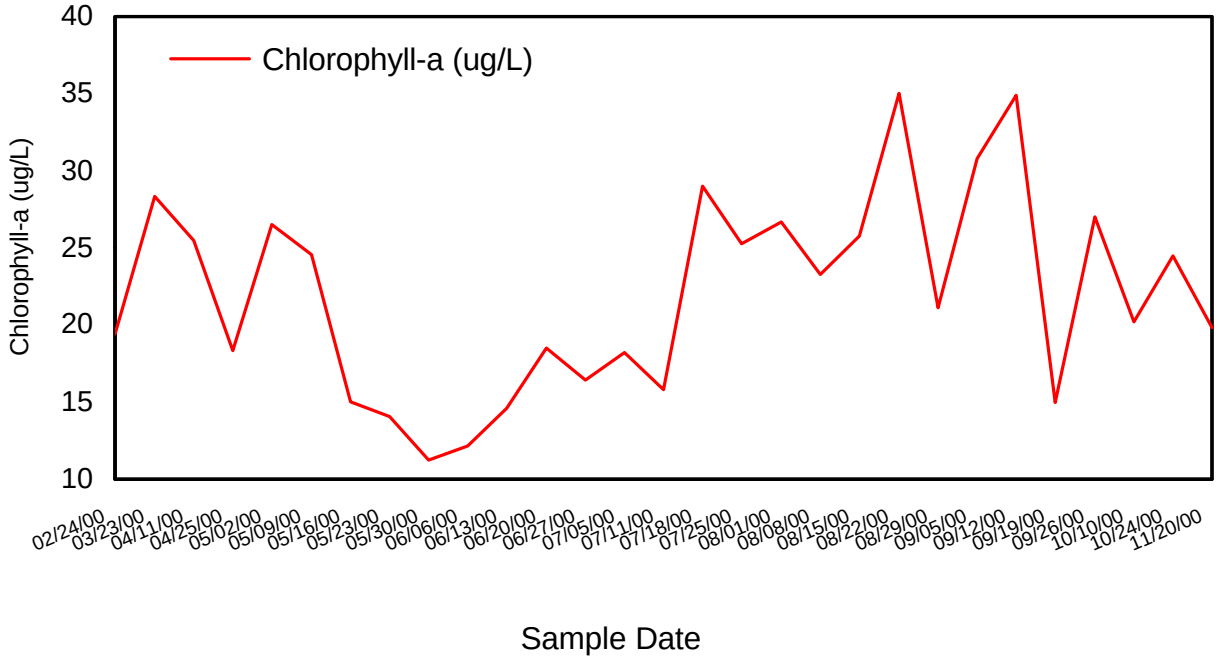

FIGURE 15: Concentration of chlorophyll (µg/L) in Cherry Creek Reservoir, 2000.

Long-Term Chlorophyll Trends in Cherry Creek Reservoir

Since 1987, there has been a general increasing trend (slope = 0.25, R^2 = 0.27) in the July to September mean concentration of chlorophyll *a* in Cherry Creek Reservoir (Fig. 16). However, this trend is not significant ($P > 0.05$), indicating that substantial year-to-year variation exists in chlorophyll *a* concentrations in the reservoir. As mentioned above, the July to September mean concentration in 2000 was lower than that observed in either of the previous two years. This variation is likely linked to several environmental factors including inflow to the reservoir, nutrient concentrations (which also exhibit strong year-to-year variation), and food web interconnections such as the density of zooplankton which consume phytoplankton.

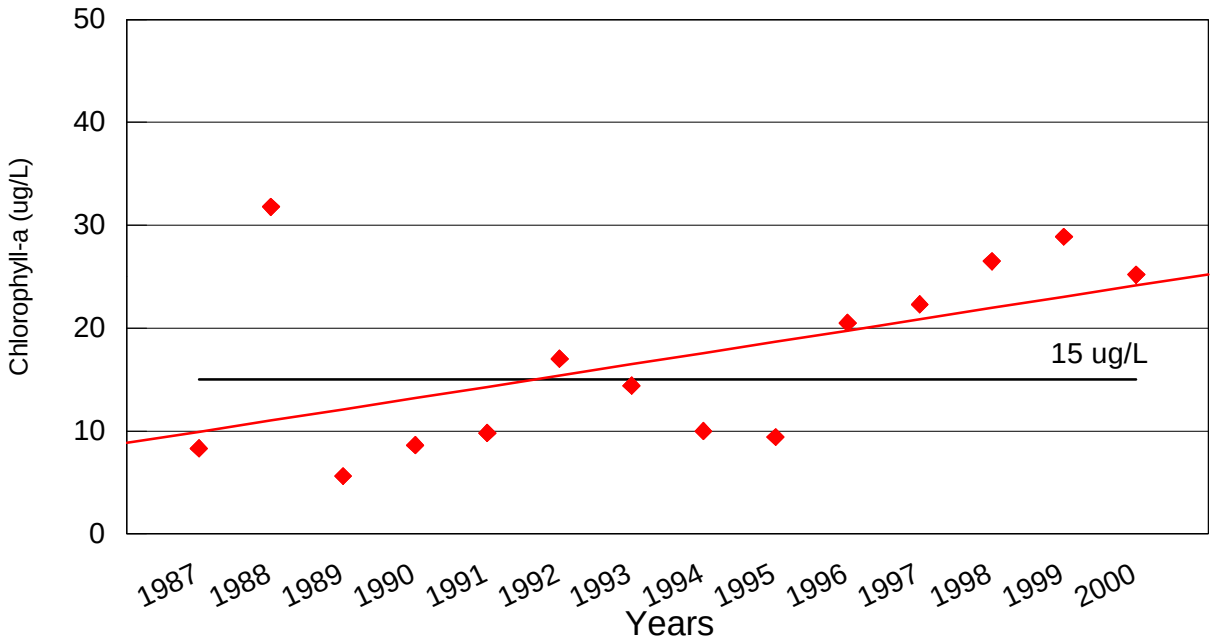

FIGURE 16: Seasonal mean (July to September) chlorophyll levels for Cherry Creek Reservoir, 1987 to 2000.

Zooplankton Populations

The mean density of zooplankton in the reservoir ranged from 65,328 to 392,221 (Table 8). Zooplankton densities were highest in the spring, trending lower in the summer and fall with periodic, temporary increases. Members of the Order Copepoda were the dominant group for most of the year. For a brief period in the spring, the dominant taxa became cladocerans, which for the rest of the year were the third most abundant group behind rotifers. Rotifers were the most abundant group during a single sampling event in July and then again during the late fall. These shifts in community dominance are typical of zooplankton as many species of zooplankton exhibit distinct seasonal preferences and trends in temperate lakes (Boersma *et al*. 1996).

The density of zooplankton in the Class Crustacea were significantly ($P < 0.05$) and negatively (slope = -1.0, $R^2 = 0.28$) related to the density of phytoplankton in the reservoir in 2000 (Fig. 17). The density of phytoplankton increased as zooplankton grazing pressures lessened due to decreasing densities. This relationship elucidates what may be an important biological control on chlorophyll *a* concentrations in the reservoir.

The mean total abundance of zooplankton observed in 2000 was similar to that observed in 1999 (Table 9). Additionally, the total abundance observed in 2000 was well within the observed range of zooplankton density measured since 1994. A greater number of taxa was observed in 2000 relative to previous years. It is likely that this apparent increase in zooplankton diversity may be due to the change in taxonomic effort employed to analyze these samples.

TABLE 8: Reservoir mean zooplankton density (No./m^3) and number of taxa collected from Cherry Creek Reservoir, 2000.

Taxa	24 Feb	23 Mar	11 Apr	25 Apr	2 May	16 May	6 Jun	20 Jun	11 Jul
PROTOZOA	0	0	0	0	0	0	0	1,944	1,388
ROTIFERA	24,000	8,889	84,443	2,581	555	4,166	20,278	27,776	120,610
CRUSTACEA									
Cladocera	60,889	60,556	120,000	291,613	91,387	31,388	6,388	27,777	29,166
Copepoda	134,222	123,333	187,778	73,549	90,277	33,610	58,611	82,221	54,721
Total Density (No./m^3)	219,111	192,778	392,221	367,743	182,219	69,164	85,277	139,718	205,885
Total Taxa	8	6	8	5	6	5	3	8	5

Taxa	25 Jul	8 Aug	22 Aug	5 Sep	19 Sep	10 Oct	24 Oct	20 Nov
PROTOZOA	7,778	37,222	5,833	18,044	833	0	0	0
ROTIFERA	14,998	27,776	15,276	25,509	43,888	27,778	43,943	97,421
CRUSTACEA								
Cladocera	10,387	83,055	49,721	6,221	28,054	35,327	17,110	19,554
Copepoda	81,110	95,277	79,999	15,554	76,388	43,331	27,220	79,288
Total Density (No./m^3)	114,273	243,330	150,829	65,328	149,163	106,436	88,273	196,263
Total Taxa	7	6	10	10	9	7	6	8

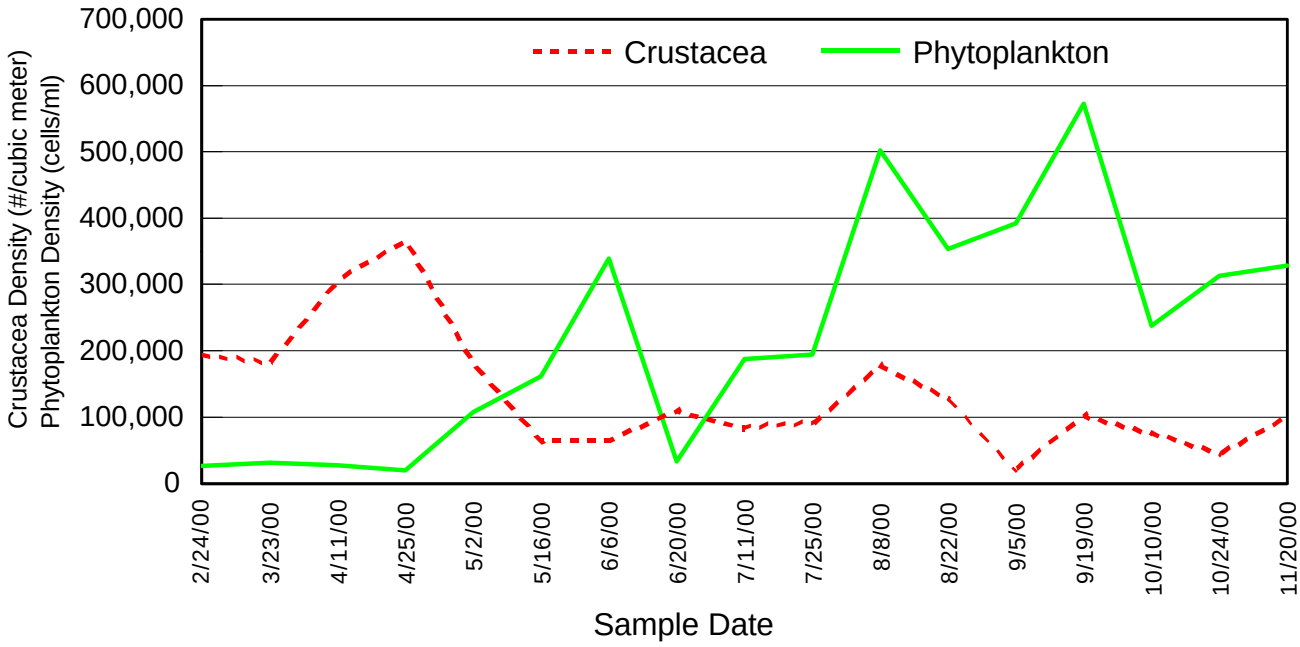

FIGURE 17: Seasonal density of phytoplankton (cells/mL) and crustacean zooplankton (no./m^3) in Cherry Creek Reservoir, 2000.

Coliforms

Coliform bacteria are used as indicator organisms that may co-occur with pathogenic bacteria. The source of coliform bacteria is the gut of warm blooded animals such as geese, cows, and humans. The State of Colorado has water quality standards for contact recreation for both fecal coliform bacteria and *Escherichia coli* (State of Colorado Natural Bathing Beach Regulations, 1998). A limit of 200 fecal coliform per 100 ml and 235 *E. coli* per 100 ml has been placed on primary contact recreation waters, such as Cherry Creek Reservoir.

TABLE 9: Reservoir mean zooplankton density (No./m^3), percent composition (% in parentheses), and number of taxa in Cherry Creek Reservoir, 1994 to 2000.

Density, Richness	1994		1995		1996		1997	
PROTOZOA								
Density	260,212	(51%)	7,250	(6%)	47,573	(19%)	192,970	(74%)
Total Taxa	1		1		1		1	
ROTIFERA								
Density	73,688	(14%)	19,956	(18%)	47,469	(19%)	17,019	(6%)
Total Taxa	7		6		10		7	
CRUSTACEA (Cladocera)								
Density	74,515	(15%)	44,750	(40%)	81,062	(32%)	19,495	(8%)
Total Taxa	3		4		3		3	
CRUSTACEA (Copepoda)								
Density	100,152	(20%)	40,438	(36%)	74,031	(30%)	31,265	(12%)
Total Taxa	4		2		3		2	
Total Density	508,567		112,394		250,135		260,749	
Total Taxa	15		13		17		13	

Density, Richness	1998		1999		2000	
PROTOZOA						
Density	37,922	(35%)	75,801	(39%)	4,297	(2%)
Total Taxa	1		1		1	
ROTIFERA						
Density	21,344	(20%)	28,913	(15%)	34,699	(20%)
Total Taxa	7		8		10	
CRUSTACEA (Cladocera)						
Density	28,222	(26%)	46,191	(24%)	56,976	(33%)
Total Taxa	3		3		5	
CRUSTACEA (Copepoda)						
Density	21,077	(19%)	43,801	(22%)	78,617	(45%)
Total Taxa	4		2		6	
Total Density	108,565		194,706		174,589	
Total Taxa	15		14		22	

At CCR-1 the concentration of fecal coliform bacteria ranged from below a detection limit of 2 cells/100 ml to a high of 23 cells/100 ml (Appendix A). The concentration at CCR-2 ranged from a low of <2 cells/100 ml to a high of 23 cells/100 ml. A range of <2 cells/100 ml to 50 cells/100 ml was observed at CCR-3. The standard for contact recreation was not exceeded during any of the monitoring events during 2000.

The allowable limit on *E. coli* for primary recreation waters in the State of Colorado is 235 cells/100 ml. The concentration of *E. coli* observed at CCR-1 ranged from below the detection limit of 2 cells/100 ml to a high of 23 cells/100 ml. A range of <2 cells/100 ml to 13 cells/100 ml was measured at CCR-2 and from <2 cells/100 ml to 30 cells/100 ml at CCR-3. The *E. coli* standard was not exceeded at any of the sampling sites during 2000.

These coliform monitoring data indicate that there were not hazardous levels of bacteria in the main body of the reservoir during 2000.

Fish Populations

Historically, the fish community in Cherry Creek Reservoir has been composed of many species, including omnivores, insectivores, zooplanktivores, and piscivores. Fish can exert a strong influence on the structure and productivity of phytoplankton and zooplankton communities through food web pathways between different levels (phytoplankton, zooplankton and fish) of the aquatic ecosystem (Carpenter *et al.* 1985). For instance, the removal of zooplanktivorous fish by trapping, natural winter kill, or the introduction of a piscivorous fish species can result in an increase in larger zooplankton and a subsequent decrease in phytoplankton (Smith 1986, Elser and Carpenter 1988, Sondergaard *et al.* 1990, Carpenter & Kitchell 1993). Changes in the zooplankton community caused by fish predation can be dramatic in eutrophic lakes, such as Cherry Creek Reservoir (Pérez-Fuentetaja *et al.* 1996). In addition, these trophic dynamics can affect the variability, distribution, and ratios of limiting nutrients, such as phosphorus and nitrogen (Vanni *et al.* 1996).

Mechanisms that may possibly result because of fish predation include decreased herbivory by zooplankton when fish are abundant, modification of nutrient recycling rates by herbivorous zooplankton as fish abundance varies, and nutrient recycling by fish (Vanni and Layne 1996).

Stocking data from the Colorado Division of Wildlife (CDOW) shows that ten species and two hybrids have been stocked in Cherry Creek Reservoir from 1985 to 2000 (Table 10). The two stocked hybrids were the wiper, a cross between the striped bass and the white bass, and the tiger musky, a cross between a northern pike and a muskellunge. Of these 12 stocked fish taxa, channel catfish, rainbow trout, and walleye have been stocked every year.

The size of stocked fish has been variable both between species and within a given species. For example, channel catfish are stocked as fingerlings, rainbow trout as juveniles and adults, and walleye as fry (Table 10). Tiger musky (juveniles) and wipers have been stocked mostly as fry, but the CDOW did stock 10-inch long wipers in 1992. Other popular gamefish species stocked in smaller quantities and less regular intervals included largemouth bass, and bluegill. In 1996, approximately 86,000 cutthroat trout were stocked, the most for this species since at least 1985.

The CDOW did not conduct any fish population sampling in Cherry Creek Reservoir in 1999 or 2000. In keeping with its schedule to sample every two to three years, the next population sampling may occur in 2001.

Fish Kill

On or about September 13, 2000, a fish kill was reported on Cherry Creek Reservoir. CEC was notified of the situation on Friday, September 15, 2000. As we understand it, the CDOW had received reports of dead fish at Cherry Creek Reservoir from one of their fish-stocking truck operators. Upon investigation, the CDOW found a number of dead fish near the dam outlet of the reservoir. In addition, CDOW staff observed a minimum dissolved oxygen (DO) value of 4.2 mg/L in the water column. While this is below the optimum range for most fish in the reservoir, it is not generally considered a lethal level.

TABLE 10: Quantity and size of fish stocked in Cherry Creek Reservoir, 1985 to 2000.

Year	Species	Size (inches)	Number
1985	Black crappie	5	7,234
	Channel catfish	2-8	116,784
	Rainbow trout	8-12	75,753
	Walleye	0.3	2,346,000
	Yellow perch	2	90,160
1986	Bluegill	1	111,968
	Channel catfish	4	25,594
	Cutthroat trout	6	52,228
	Rainbow trout	2-18	414,136
	Tiger musky	5-6	4,723
	Walleye	0.3	1,734,000
	Wiper	0.2	80,000
1987	Bluegill	0.2	70,000
	Channel catfish	4	25,600
	Largemouth bass	5	10,000
	Rainbow trout	2-26	129,715
	Tiger musky	7	4,000
	Walleye	0.2	1,760,000
1988	Channel catfish	3	16,000
	Largemouth bass	5	10,000
	Rainbow trout	9-10	293,931
	Tiger musky	8	4,500
	Walleye	0.2	1,760,000
1989	Channel catfish	2-4	10,316
	Largemouth bass	6	8,993
	Rainbow trout	8-22	79,919
	Walleye	0.2	1,352,000
	Wiper	0.2	99,000
1990	Channel catfish	3-4	25,599
	Rainbow trout	9-15	74,986
	Tiger musky	8	2,001
	Walleye	0.2	1,400,000
	Wiper	1	8,996
1991	Channel catfish	3	13,500
	Rainbow trout	9-10	79,571
	Tiger musky	5-8	6,500
	Walleye	0.2	1,300,000
	Wiper	1	9,000
1992	Blue catfish	3	9,000
	Channel catfish	4	13,500
	Rainbow trout	9-10	101,656
	Tiger musky	7	4,940
	Walleye	0.2	2,600,000
	Wiper	10	15,520

TABLE 10: Continued.

Year	Species	Size (inches)	Number
1993	Channel catfish	4	13,500
	Rainbow trout	9-10	92,601
	Tiger musky	9	4,500
	Walleye	0.2	2,600,000
	Wiper	1	9,003
1994	Blue catfish	3	21,000
	Channel catfish	4	23,625
	Cutthroat trout	9	9,089
	Flathead catfish	1	148
	Tiger musky	8	900
	Walleye	0.2	2,600,000
	Wiper	1-4	26,177
	Rainbow trout	9-18	62,615
1995	Channel catfish	4	18,900
	Rainbow trout	9-20	139,242
	Tiger musky	8	4,500
	Walleye	0.2	2,600,000
	Wiper	1	4,500
1996	Channel catfish	3	8,100
	Cutthroat trout	9-10	85,802
	Tiger musky	7	3,500
	Rainbow trout	4-22	163,007
	Walleye	0.2	3,202,940
	Wiper	1	8,938
1997	Cannel catfish	3	13,500
	Cutthroat trout	3-9	22,907
	Rainbow trout	10-24	74,525
	Tiger musky	6	4,500
	Walleye	0.2	2,600,000
	Wiper	1	9,000
1998	Channel catfish	4	7,425
	Rainbow trout	10-12	59,560
	Tiger musky	7	4,000
	Walleye	1.5	40,000
	Wiper	1.3	9,000
1999	Channel catfish	3.5	13,500
	Rainbow trout	10-19	32,729
	Tiger musky	7	3,000
	Walleye	0.2	2,400,000
	Wiper	1.3	9,000
2000	Channel catfish	4.1	13,500
	Northern pike	–	46
	Rainbow trout	4.5-20.3	180,166
	Rainbow/Cutthroat trout hybrid	–	5,600
	Tiger musky	8	4,086
	Walleye	0.23	2,400,000

At the request of State Parks and the CDOW, CEC conducted depth profiles of temperature, pH, DO, conductivity, and oxygen reduction potential (ORP) at all three reservoir sites at dusk the night of Friday, September 15, and at dawn the next morning on Saturday, September 16, to determine if there was a possible overnight DO "sag" occurring that might be responsible for the dead fish. In addition, as part of our routine weekly monitoring for the Authority, depth profile data for these parameters were collected on September 12 and September 19, bracketing the event. On the evening of September 15, we also collected a composite water sample from CCR-1 and CCR-2 and conducted an acute toxicity test using juvenile fathead minnows (*Pimephales promelas*). Fathead minnows are a common U.S. Environmental Protection Agency-approved toxicity test species native to Colorado waters, and were used to determine if toxicants were present in sufficient concentrations to cause a fish kill. A reconnaissance was conducted by CDOW to estimate the number and types of fish killed.

Affected Fish

According to a subsequent CDOW letter addressing the fish kills (CDOW 2001), on September 13, 2000, a fish kill of approximately 207 fish took place and that approximately 170 of these fish were walleye. Additionally, on September 29, 2000, another fish kill occurred involving approximately 225 fish, of which approximately 125 were walleye. Additional species listed as being killed included gizzard shad, common carp, channel catfish, wiper, largemouth bass, and white sucker.

Water Quality Profile Data

Conductivity values at all three sites, at all depths for all four sampling events, ranged between 706 and 756 μmhos/cm. Similarly, the pH at these sites varied from 7.71 to 8.52 and the oxygen reduction potential varied from 215.1 to 365.0 at all sites. All of these readings were within the range expected from Cherry Creek Reservoir samples, and do not present a cause for concern.

The temperature at CCR-1 varied between 19.31 and 21.66EC during all four sampling events surrounding reported fish kills (Table 11). These temperature values are all within the optimal range for walleye and gizzard shad. Dissolved oxygen concentrations at CCR-1 were lowest at dawn on Saturday, September 16, ranging from 5.98 mg/L at the surface to 3.11 mg/L at 5 meters (Table 11). During all other sample events, DO values were depressed below 5.0 mg/L (representing the bottom of the "optimum" DO range) only at the lower or lowest depth(s). A minimum of the top 5 meters of the reservoir had values above 5.0 mg/L representing over 90% of the lake volume. Even during the dawn sampling on September 16, values were considerably above 5.0 mg/L in the top 2 meters of the reservoir.

TABLE 11: Results of depth profiles taken at site CCR-1 in Cherry Creek Reservoir between September 12 and September 19, 2000 (Columns are labeled with date and time of profiles).

	09/12 - 1013		09/15 - 1753		09/16 - 0700		09/19 - 1009	
Depth	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)
0 m	20.66	7.96	22.23	8.35	19.84	5.98	19.86	6.44
1 m	20.05	6.74	21.97	8.38	19.88	5.94	19.53	5.88
2 m	19.95	6.25	21.66	8.33	19.86	5.81	19.49	5.82
3 m	19.90	6.03	20.15	6.95	19.62	4.18	19.48	5.62
4 m	19.88	5.54	19.77	5.71	19.49	3.30	19.47	5.36
5 m	19.85	5.79	19.66	5.13	19.36	3.11	19.47	5.15
6 m	19.69	5.62	19.57	4.68	NT	NT	19.44	4.36
6.5 m	NT	NT	19.31	1.86	NT	NT	NT	NT
7 m	19.72*	2.65*	NT	NT	NT	NT	19.44	5.08

* Probe touched bottom; may not be true water column readings.

The temperatures observed at CCR-2 were similar to those observed at CCR-1, varying from 18.72 to 20.93EC during all sampling events (Table 12). The DO values remained above 5.0 mg/L at all depths above 6 meters during all sample events and never decreased below 4.05, even at the deepest points. As with observed conditions at CCR-1, the range of temperatures and DO concentrations observed during this week-long sampling period do not indicate conditions that would have caused a fish-kill.

TABLE 12: Results of depth profiles taken at site CCR-2 in Cherry Creek Reservoir between September 12 and September 19, 2000 (columns are labeled with date and time of profiles).

	09/12 - 1253		09/15 - 1807		09/16 - 0715		09/19 - 1106	
Depth	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)
0 m	20.93	9.28	20.88	7.59	20.03	6.81	20.25	7.54
1 m	19.97	6.73	20.28	6.95	20.07	6.77	19.68	6.76
2 m	19.86	6.05	19.77	6.18	20.06	6.78	19.56	6.48
3 m	19.83	5.99	19.70	5.72	20.06	6.80	19.52	6.19
4 m	19.79	5.97	19.58	5.12	20.03	6.65	19.50	6.08
5 m	19.70	5.94	19.44	5.16	19.61	5.08	19.48	5.79
6 m	19.50	6.05	19.28	5.77	19.26	4.46	19.39	4.05
6.5 m	NT	NT	NT	NT	19.06	4.24	NT	NT
7 m	NT	NT	18.72	4.18	NT	NT	NT	NT

Temperatures were slightly higher at site CCR-3, ranging from 19.31 to 22.45EC over the course of the four sampling events (Table 13). All DO readings were above 5.0 mg/L at all sites during all four sampling events (Table 13). Again, the observed in-reservoir conditions at this site are not indicative of lethal conditions for the fish in Cherry Creek Reservoir at the times of sampling.

TABLE 13: Results of depth profiles taken at site CCR-3 in Cherry Creek Reservoir between September 12 and 19, 2000(Columns are labeled with date and time of profiles).

	09/12 - 1414		09/15 - 1825		09/16 - 0730		09/19 - 1222	
Depth	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)	Temp (C)	DO (mg/L)
0 m	22.45	9.51	21.37	7.82	19.34	5.85	20.69	7.25
1 m	20.07	7.47	20.62	7.68	19.36	5.83	19.51	6.11
2 m	19.91	6.28	19.95	7.24	19.36	5.82	19.44	5.44
3 m	19.84	6.08	19.60	6.35	19.37	5.80	19.42	4.99
4 m	19.81	5.84	19.43	5.73	19.36	5.75	19.31	5.41
5 m	19.42	5.44	NT	NT	NT	NT	NT	NT

Toxicity Testing

No acute (short-term) toxicity was detected in the water sample from Cherry Creek Reservoir on Friday evening (September 15) using juvenile fathead minnows. All minnows exposed to the water sample were alive after 96 hours of exposure. Since fish kills are generally considered an "acute" event, it appears that at least the water quality on September 15, 2000, was not acutely toxic.

Causal Factors

The CDOW feels that the fish kills were linked to increased numbers of the protozoan *Trichophyra* sp. (*Trichodina, Trichodinella, Chilodonella, Epistylis, and Ambiphrya* were also noted) causing gill damage that rendered these fish more "susceptible to mild depressions of the dissolved oxygen levels in the reservoir." *Trichophyra* is known to cause gill damage that can lead to the conditions noted by the CDOW (Heckmann and Carroll 1985).

Phosphorus Loading to Reservoir

Nutrients which can limit or enhance algal growth in a reservoir have many sources, both within the reservoir (internal loading) or from outside the reservoir (external loading). Fish and plankton excrement, direct sediment resupply, and the decay of organic matter are all internal sources of nutrients in a reservoir (Goldman and Horne 1983). Net internal phosphorus loading to Cherry Creek Reservoir has been estimated to be 4,000 lbs/year (Nürnberg and LaZerte 2000). Note that the TMAL of 14,270 lbs/year does not include these internal loads.

External source of nutrients include inflow from streams and precipitation which carry nutrients from soil erosion, agricultural runoff, treated waste water, and airborne particulates. While both phosphorus and nitrogen are potentially important, past analyses have concluded that Cherry Creek Reservoir is generally phosphorus limited (DRCOG 1985). In addition, phosphorus (unlike nitrogen) does not have a gas phase. Thus, phosphorus concentrations cannot be reduced by interactions with the atmosphere or gases within the water column. For these reasons, efforts in past years and during the present study have concentrated on the calculation of phosphorus loading. Phosphorus loading was determined for several primary sources in

2000, including the tributary streams Cottonwood Creek, Cherry Creek, Shop Creek, and Belleview Drainage, as well as from precipitation and alluvium, as summarized below.

Phosphorus Concentration in Streams

The mean annual concentration of total phosphorus ranged from a low of 69 μg/L at BD-2 to a high of 331 μg/L at CC-10a (Table 14). At most stream sites, the summer (July to September) mean concentration of total phosphorus was higher than the annual mean. The summer mean concentration of total phosphorus ranged from a low of 84 μg/L at CT-1 to a high of 506 μg/L at CC-10a. As expected, the concentration of total phosphorus measured in the storm flows in these streams was considerably higher than that observed under base flow conditions. The mean concentration of total phosphorus in storm samples ranged from a low of 360 μg/L at CT-2 to a high of 794 μg/L at CC-10.

TABLE 14: Comparison of mean baseflow and mean stormflow concentrations of total phosphorus (TP) and total suspended solids (TSS) in tributaries to Cherry Creek Reservoir, 2000.

	Baseflow				Stormflow	
	Summer		Annual		May - September	
Stream, Site	TP (μg/L)	TSS (mg/L)	TP (μg/L)	TSS (mg/L)	TP (μg/L)	TSS (mg/L)
Cherry Creek						
CC-10	323	81	290	44	794	638
CC-10a	506	4	331	5	--	--
CCO	118	22	115	18	--	--
Cottonwood Creek						
CT-1	84	24	73	25	698	397
CT-2	121	38	91	29	360	183
Shop Creek						
SC-1	107	<4	102	3	460	32
SC-2	134	15	204	14	374	665
SC-3	126	3	165	4	401	86
Quincy Drainage						
QD-1	315	7	227	10	578	413
Belleview Drainage						
BD-1	105	<4	79	5	--	--
BD-2	--	--	69	45	--	--

Phosphorus Loads from Tributary Streams

The total phosphorus contribution (lbs P) of each tributary stream to the reservoir was determined for the entire 2000 calender year (see Appendix C for detailed methods and flow/load estimates). The majority of the phosphorus load to the reservoir was contained in Cherry Creek and divided between CC-10 (9,373 lbs without Shop Creek) and CC-10a (611 lbs) for a total load from Cherry Creek of 9,984 lbs without Shop Creek (Table 17). Additional phosphorus was contributed by Cottonwood Creek (1,712 lbs) and Belleview Drainage (11 lbs). Because Cherry Creek is monitored downstream of Shop Creek, the 120 lbs contributed by Shop Creek was subtracted from the total load. The total phosphorus load to the reservoir from the tributary streams in 2000 was 11,827 lbs. A phosphorus load of 185 lbs was calculated for the upper site (QD-1) on Quincy Drain. However, this stream was dry during all sampling episodes at the lower site (QD-2) and actually makes no contribution to the total phosphorus load to the reservoir from surface flows.

TABLE 15: Phosphorus loading into Cherry Creek Reservoir from tributary streams, 1987 to 2000. Note that data for 1987 to 1991 are based on water years, while data for 1992 to present are based on calendar years.

Source of Data	Year	Total Annual Inflow (AF) from Streams	Total Annual Phosphorus (lbs) from Streams	Total Annual Phosphorus, Standardized (lbs/AF) from Streams
In-Situ 1987	1987	10,960	7,950	0.73
In-Situ 1988	1988	8,960	9,520	1.06
ASI 1990	1989	7,080	7,230	1.02
ASI 1991a	1990	6,700	3,720	0.56
ASI 1991b	1991	7,210	3,860	0.54
ASI 1993	1992	7,098	6,555	0.92
ASI 1994a	1993	4,903	3,473	0.71
C&A 1995	1994	5,851	4,099	0.70
CEC 1996	1995	9,335	8,799	0.94
CEC 1997	1996	5,858	4,468	0.76
CEC 1998	1997	8,243	5,012	0.61
CEC 1999	1998	18,605	13,716	0.74
CEC 2000	1999	27,688	18,776	0.68
Present Study	2000	16,529	11,827	0.72

Phosphorus Loads in Reservoir Outflow

The total outflow from Cherry Creek Reservoir as measured by the COE was 17,068 AF. The calculated phosphorus load leaving the reservoir in 2000 was determined to be 3,688 lbs (Appendix C). This is the value that will be subtracted from the total phosphorus input to the reservoir to calculate the net phosphorus load in the reservoir in 2000.

Phosphorus Loading from Precipitation

Five separate rain samples were collected and analyzed for total phosphorus concentration. The mean concentration of total phosphorus in the rain samples collected in 2000 was 69 μg/L. The total phosphorus load contained in the 17.8 inches of rain that fell on the reservoir was determined to be 777 lbs (Table 16, and Appendix C). The long term mean estimated total phosphorus loading from rain samples collected at the reservoir between 1987 and 2000 is 837 lbs (Table 16).

Phosphorus Loading from Alluvium

The water quality and quantity of alluvial flows into Cherry Creek Reservoir were monitored by Halepaska & Associates, Inc. (JCHA). This monitoring resulted in a estimated net alluvial addition of 449 lbs total phosphorus to the reservoir (Table 17).

Mass Balance/Net Loading of Phosphorus to the Reservoir

There are three principle sources of phosphorus loading to Cherry Creek Reservoir: tributary streams, alluvial flows, and precipitation. During 2000, the four tributary streams contributing phosphorus loads to the reservoir included Cherry Creek (9, 984 lbs without Shop Creek), Cottonwood Creek (1,712 lbs), Shop Creek (120 lbs), and Belleview Drain (11 lbs). The net load of phosphorus to the reservoir from the Cherry Creek alluvium was 449 lbs. The estimated phosphorus load to the reservoir from precipitation was 777 lbs (Table 16). The estimated total load of phosphorus entering the reservoir in 2000 was determined to be 13,053 lbs, which meets the TMAL of 14,270 lbs per year. The estimated phosphorus load

leaving the reservoir in 2000 was determined to be 3,688 lbs. Using these two values, the net load of phosphorus to Cherry Creek Reservoir in 2000 was determined to be 9,365 lbs (Fig. 18, and Table 17). This represents a slight decrease from loads observed in 1998 and 1999, but is still above the 1992 to 2000 mean load of 7,181 lbs (Table 17).

TABLE 16: Phosphorus loading into Cherry Creek Reservoir from precipitation, 1987 to 2000. Note that data from 1987-1991 are based on water years, while data for 1992 to present are based on calendar years.

Source of Data	Year	Annual Precipitation (in)	Estimated Annual Total Phosphorus (lbs)
In-Situ 1987	1987	18.1	870
In-Situ 1988	1988	23.3	1,119
ASI 1990	1989	13.0	625
ASI 1991a	1990	15.2	730
ASI 1991b	1991	16.5	793
ASI 1993	1992	18.5	877
ASI 1994a	1993	15.6	735
C&A 1995	1994	10.2	484
CEC 1996	1995	25.3	1,202
CEC 1997	1996	15.5	740
CEC 1998	1997	21.8	1,020
CEC 1999	1998	20.0	854
CEC 2000	1999	21.5	896
Present Study	2000	17.8	777
Mean		**18.0**	**837**

TABLE 17: Estimated net phosphorus loading (lbs/year) into Cherry Creek Reservoir, 1992 to 2000 (loads for Belleview Drainage were not determined prior to 1997).

Source of Data	1992	1993	1994	1995	1996	1997	1998	1999	2000	Mean
Shop Creek	138	136	134	108	116	186	206	162	120	145
Cherry Creek	5,470	2971	3,739	5,372	3,782	3,714	11,665	14,736	9,984	6,839
Cottonwood Creek	947	366	226	3,319	570	1,103	1,830	3,868	1,712	1,549
Belleview Drainage	ND	ND	ND	ND	ND	9	15	10	11	11
Subtotal for Streamflows	**6,555**	**3,473**	**4,099**	**8,799**	**4,468**	**5,012**	**13,716**	**18,776**	**11,827**	**8,525**
Cherry Creek Alluvium	555*	555*	470	597	635	520	476	537	449	533
Direct Precipitation	877	736	484	1,202	740	1,020	854	896	777	843
Total Load	**7,987**	**4,764**	**5,053**	**10,958**	**5,843**	**6,552**	**15,313**	**20,209**	**13,053**	**9,970**
Cherry Creek Outflow	1,314	711	993	2,049	992	996	4,207	9,650	3,688	2,733
Net Load	**6,673**	**4,053**	**4,060**	**8,549**	**4,851**	**5,556**	**10,839**	**10,559**	**9,365**	**7,167**

* Based on mean of 1994-1997 alluvial inflows minus alluvial outflows, or net alluvial loads.

Effectiveness of Pollutant Reduction Facilities

Cottonwood Creek Stormwater Detention Pond

The effectiveness of the Cottonwood Creek stormwater detention pond in reducing pollutant loads to the reservoir can be gauged by comparing concentration of total phosphorus and TSS and the loads of total phosphorus upstream and downstream of the pond. During 2000 the mean concentration of total phosphorus decreased from 187 to 149 μg/L after passing through the pond (Table 19). This represents a 20% reduction in phosphorus concentration, identical to the mean reduction observed since the construction of the pond. The load of total phosphorus was reduced from 3,243 lbs upstream of the pond to 1,712 lbs downstream of the pond, representing a 47% reduction in load. This value is similar to the 49% mean reduction in load observed since the construction of the pond. Finally, the concentration of TSS was decreased by 33% from 96 mg/L upstream to 64 mg/L downstream of the pond. These data indicate that this PRF continues to be effective in reducing the loads of suspended solids and total phosphorus to Cherry Creek Reservoir.

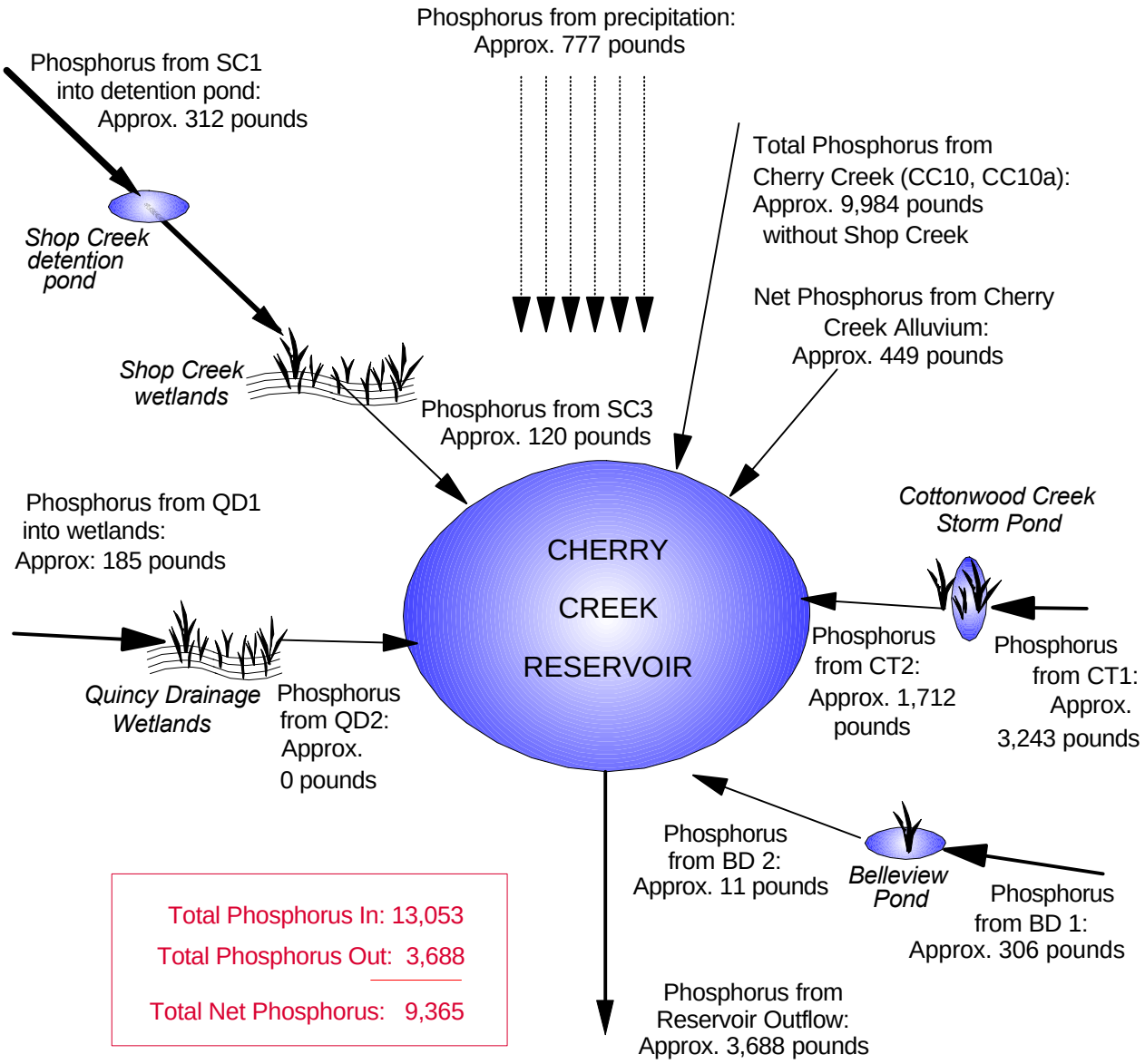

FIGURE 18: Mass Balance Diagram of Phosphorus Loading in Cherry Creek Reservoir, 2000.

TABLE 18: Annual phosphorus, flow and total suspended solids (baseflows and stormflows combined) in Cottonwood Creek stormwater detention pond and Shop Creek wetlands system, 2000. NC = not calculated.

Sampling Site	Total Water Volume (AF)	Total Phosphorus Load (lbs)	Average Total Phosphorus (µg/L)	Average Total Suspended Solids (mg/L)
Annual				
Cottonwood Creek				
CT-1	3,672	3,243	187	96
CT-2	3,884	1,712	149	64
Shop Creek				
SC-1	1,189	312	138	11
SC-2	NC	NC	228	111
SC-3	319	120	199	16

TABLE 19: Annual historical (1997 to 2000) total phosphorus and total suspended solids concentrations through the Cottonwood Creek stormwater detention pond.

Parameter	Water Year	Data Source	Sampling Sites CT-1	Sampling Sites CT-2	Difference	% Reduction
Annual Average Total Phosphorus Concentration (µg/L) (baseflow, storm samples combined)	1997	CEC	200	133	-67	34
	1998	CEC	289	210	-79	27
	1999	CEC	158	157	- 1	0
	2000	CEC	187	149	-38	20
	Mean		209	162	-46	20
Annual Average Total Suspended Solids (mg/L)	1997	CEC	207	87	-120	58
	1998	CEC	311	129	-182	59
	1999	CEC	267	68	-199	74
	2000	CEC	96	64	- 32	33
	Mean		220	87	-133	56
Annual Loading of Total Phosphorus (pounds)	1997	CEC	3,351	1,103	-2,248	67
	1998	CEC	3,209	1,930	-1,279	43
	1999	CEC	6,329	3,868	-2,461	39
	2000	CEC	3,243	1,712	-1,531	47
	Mean		4,033	2,153	-1,880	49

Shop Creek Wetlands System

As with the PRF on Cottonwood Creek, the effectiveness of the detention pond/wetland system on Shop Creek is gauged by monitoring the concentration of phosphorus and TSS and the loading of phosphorus upstream and downstream of the facility. The concentration of total phosphorus actually increased 44% from 138 μg/L at SC-1 to 199 μg/L at SC-3 (Table 20). However, the estimated load of phosphorus at below the pond/wetland system was reduced 62% from 312 lbs at SC-1 to 120 lbs at SC-3. This decrease in loads is most likely due to the reduction in flow from 1,189 AF at SC-1 to 319 AF at SC-3 (Table 18). The decrease in phosphorus load observed in 2000 (62%) is slightly higher than the mean decrease in phosphorus load of 54% attributed to this facility since 1990 (Table 20). The mean concentration of TSS increased from 11 mg/L upstream of the pond/wetland system to 16 mg/L downstream of the pond/wetland system. Although loadings were not calculated from TSS, it is likely that the reduction in flow between these two sites resulted in a decreased load of TSS downstream of the pond relative to that upstream of the facility. As with the Cottonwood Creek PRF and based on 2000 data, it is apparent that the Shop Creek facility continues to be effective in reducing the pollutant load to the reservoir.

TABLE 20: Historical total phosphorus and total suspended solids concentrations through the Shop Creek wetlands system. Note that data for 1990 to 1996 are based upon water year, while data for 1997 to 2000 are based on calendar year. NC = not calculated.

SC-3 Parameter	Water % Year	Data Source	Sampling Site SC-1	SC-2	SC-3	Difference	SC-1 to SC-3 Reduction
Average Total Phosphorus	1990	ASI	460	280	190	-270	59
Concentration (μg/L)	1991	ASI	320	210	300	-20	6
(baseflow and storm	1992	ASI	440	220	200	-240	55
samples combined)	1993	ASI	380	1,130	190	-190	50
	1994	CEC	243	191	84	-159	65
	1995	CEC	368	121	100	-268	73
	1996	CEC	236	106	98	-138	59
	1997	CEC	144	151	131	-13	9
	1998	CEC	272	211	131	-141	53
	1999	CEC	168	342	140	-28	17
	2000	CEC	138	228	199	+61	-44
	Mean		288	290	160	-128	37

TABLE 20: Continued.

SC-3 Parameter	Water % Year	Data Source	Sampling Site SC-1	SC-2	SC-3	Difference	SC-1 to SC-3 Reduction
Average Total Suspended Solids (mg/L)	1990	ASI	160	37	21	-139	87
	1991	ASI	74	21	22	-52	70
	1992	ASI	95	32	16	-79	83
	1993	ASI	492	403	14	-478	97
	1994	CEC	207	162	7	-200	97
	1995	CEC	144	26	8	-136	94
	1996	CEC	91	16	5	-86	95
	1997	CEC	103	195	28	-75	73
	1998	CEC	126	39	27	-99	79
	1999	CEC	104	78	36	-68	64
	2000	CEC	11	111	16	+5	-45
	Mean		146	102	18	-128	72
Loading of Total Phosphorus (pounds)	1990	ASI	157[1]	--	86[1]	NA[1]	45
	1991	ASI	119	--	95	-24	20
	1992	ASI	156	--	88	-68	44
	1993	ASI	62[2]	--	46[2]	NA[2]	26
	1994	CEC	665	227	113	-552	83
	1995	CEC	299	132	128	-171	57
	1996	CEC	338	237	119	-219	65
	1997	CEC	603	470	186	-417	69
	1998	CEC	564	516	206	-358	64
	1999	CEC	350	NC	162	-188	54
	2000	CEC	312	NC	120	-192	62
	Mean		330	317	123	243	54

[1] Partial years (missing Oct. to Mar.).

[2] Partial years (missing Oct. to Apr.).

[3] Does not include partial years (1990 and 1993).

SUMMARY AND CONCLUSIONS

The transparency in Cherry Creek Reservoir, as measured by Secchi depth, was most influenced by phytoplankton density. Although the correlation was much weaker than with phytoplankton density, Secchi depths were also influenced by the concentration of chlorophyll *a* in the reservoir. The highest transparency was observed in the reservoir in early July and the lowest was measured in late spring. The whole-reservoir mean Secchi depth was 0.96 during the July to September period.

Brief periods of weak thermal stratification were observed in the reservoir in 2000. Dissolved oxygen profiles indicated that anoxic conditions were rare in 2000, although oxygen concentrations were periodically reduced in lower levels of the reservoir. The temperature and oxygen profiles observed in the reservoir in 2000 were similar to those recorded in 1999 and typical of well mixed, shallow lakes.

Annual mean and summer mean concentrations of total phosphorus in the reservoir in 2000 were virtually identical to those measured in 1999 (Table 21). The goal of 40 μg/L total phosphorus was consistently exceeded in 2000, although the summer mean total phosphorus concentration was lower than that recorded in 1997 or 1998 (and identical to that recorded in 1999).

The summer mean chlorophyll *a* concentration in Cherry Creek Reservoir was 25.2 μg/L, a value in excess of the 15 μg/L standard. The summer mean concentration of chlorophyll *a* was lower than that measured in either 1998 (26.5 μg/L) or 1999 (28.9 μg/L). The long-term summer mean chlorophyll *a* concentrations since 1987 indicate a statistically insignificant increasing trend (Table 21).

As in previous years, the phytoplankton community was dominated by Blue-Green Algae. The proportion of the phytoplankton community Blue-Green Algae, diatoms, golden-brown algae, euglenoids, dinoflagellates, and cryptomonads were similar to that observed in previous years.

The density of zooplankton ranged from 65,328 to 392,221 and was highest in the spring. The zooplankton community was dominated by members of the Order Copepoda. The density of zooplankton were negatively related to the density of phytoplankton in 2000. This relationship indicates that zooplankton may have had a controlling influence on phytoplankton populations.

Two fish kills were observed in Cherry Creek Reservoir in September of 2000 involving an estimated total of 432 fish. The DO concentrations observed during the period of these fish kills were not low enough to have been responsible for the fish kills. CDOW reports suggest that the fish, particularly walleye, were sensitive to minor depressions in DO concentrations due to parasitic infestations of the gills.

The total precipitation at Cherry Creek Reservoir during 2000 was 17.8 inches. The total contribution from tributary streams was 16,529 AF which was much lower than the 27,688 AF observed in 1999. The total phosphorus loads to the reservoir were estimated to be 777 lbs from precipitation, 11,827 lbs from surface flows, and 449 lbs from Cherry Creek alluvial flow. The total external level in 2000 of 13,053 lbs met the new TMAL of 14,270 lbs/year. The outflow from the reservoir during 2000 contained 3,688 lbs. The resulting net load of phosphorus to the reservoir in 2000 was 9,365 lbs. The net phosphorus load to the reservoir in 2000 was lower than that calculated for either 1998 or 1999, but still exceeded the 7,181 lbs mean net load calculated for 1992 to 2000 (Table 21).

TABLE 21: Water quality and total phosphorus loads data for Cherry Creek Reservoir, July-September 1992-2000.

Year	Chlorophyll *a* (μg/L)	Secchi Depth (ft)	Total Phosphorus (μg/L)	Total Nitrogen (μg/L)	Annual Phosphorus Load (lbs/yr)*	Annual Inflow (ac/ft)*	Standardized Phosphorus Load (lbs/ac-ft)
1992	17.0	0.9	66	970	7,987	9,049	0.92
1993	14.4	1.2	62	826	4,764	6,643	0.71
1994	10.0	1.1	59	1,144	5,053	7,188	0.70
1995	9.4	1.6	48	913	10,598	11,786	0.94
1996	20.5	1.6	62	944	5,852	7,615	0.76
1997	22.3	1.0	96	1,120	6,552	10,447	0.61
1998	26.5	1.0	89	880	15,313	20,820	0.74
1999	28.9	1.0	81	753	20,209	30,032	0.68
2000	25.2	1.0	81	802	13,053	18,584	0.72
9-Year Mean	19.4	1.2	72	928	9,931	13,574	0.75
Median	20.5	1.0	66	913	7,987	10,447	0.72

* Stream, alluvium, and precipitation.

Pollution reduction facilities constructed on Shop and Cottonwood creeks continue to be effective in reducing the loads of phosphorus to the reservoir. In 2000, these PRFs reduced the instream load of phosphorus by 62% and 47%, respectively.

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APPENDIX A

RESERVOIR WATER QUALITY DATA

CCR-1 Composite C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Nitrate + Nitrite ug/L	Ammonia ug/L	Chlorophyll ug/L	Total Coliform MPN/100mL	Fecal Coliform MPL/100mL	E.coli MPL/100mL
Analytical Detection Limits		2	2	3	4	4	5	5				
02/24/00	CCR-1 Composite	76	25	9	822	584	68	15	16.66			
03/23/00	CCR-1 Composite	78	30	12	618	458	43	<5	19.75			
04/11/00	CCR-1 Composite	74	28	13	858	463	38	12	18.72			
04/25/00	CCR-1 Composite	108	48	21	901	478	33	32	12.68			
05/02/00	CCR-1 Composite	96	27	15	1189	538	14	15	31.55			
05/09/00	CCR-1 Composite	58	36	12	1007	415	43	<3	23.4	20	20	0
05/16/00	CCR-1 Composite	60	10	7	658	645	233	<3	13.12	20	0	0
05/23/00	CCR-1 Composite	74	22*	23*	744	408	20	<5	11.84	20	0	0
05/30/00	CCR-1 Composite	56	23	8	518	329	16	5	10.32	0	0	0
06/06/00	CCR-1 Composite	38	13	8	752	550	10	4	10.17	0	0	0
06/13/00	CCR-1 Composite	73	21	14	556	456	8	9	15.63	20	0	0
06/20/00	CCR-1 Composite	73	40	19	671	506	<5	<5	15.77	0	0	0
06/27/00	CCR-1 Composite	55	33	16	614	391	<5	<5	15.77	50	<2	<2
07/05/00	CCR-1 Composite	59	31	21	589	384	<5	16	16.51	23	2	<2
07/11/00	CCR-1 Composite	55	25	12	666	498	5	35	17.25	4	<2	0
07/18/00	CCR-1 Composite	66	25	21	584	435	<5	9	18.87	23	<2	0
07/25/00	CCR-1 Composite	56	21	13	821	528	16	56	17.84	4	<2	0
08/01/00	CCR-1 Composite	56	25	12	1084	572	8	69	25.95	2	<2	0
08/08/00	CCR-1 Composite	52	28	14	725	449	<5	4	18.28	8	<2	0
08/15/00	CCR-1 Composite	54	19	4	902	300	<5	9	26.39	8	<2	0
08/22/00	CCR-1 Composite	83	22	7	763	400	7	13	39.32	50	2	<2
08/29/00	CCR-1 Composite	88	38	10	919	200	22	43	26.66	23	2	2
09/05/00	CCR-1 Composite	99	54	16	698*	800*	<5	12	34.05	13	<2	0
09/12/00	CCR-1 Composite	93	21	18	883	200	<5	6	39.8	23	4	4
09/19/00	CCR-1 Composite	121	54	17	871	400	<5	32	14.89	7	<2	0
09/26/00	CCR-1 Composite	104	36	6	859	500	<5	6	29.48	50	8	8
10/10/00	CCR-1 Composite	116	17	12	751	464	<5	18	17.69	23	13	13
10/24/00	CCR-1 Composite	141	13	12	909	500	<5	11	18.28	23	23	23
11/20/00	CCR-1 Composite	57	19	6	842	564	<5	15	20.49			

*Data within acceptable (20 percent) difference between parameters.

CCR-1 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Nitrate + Nitrite ug/L	Ammonia ug/L
Analytical Detection Limits		2	2	3	4	4	5	5
02/24/00	CCR-1 4m	90	41	12	1577	957	408	21
02/24/00	CCR-1 5m	90	31	12	1003	589	48	16
02/24/00	CCR-1 6m	97	38	15	1940	1148	566	15
02/24/00	CCR-1 7m	76	38	11	1152	713	180	11
03/23/00	CCR-1 4m	108	30	10	666	479	23	<5
03/23/00	CCR-1 5m	88	35	12	790	471	15	9
03/23/00	CCR-1 6m	103	32	12	573	432	15	<5
03/23/00	CCR-1 7m	90	35	11	541	399	7	<5
04/11/00	CCR-1 4m	87	27	13	842	450	23	7
04/11/00	CCR-1 5m	82	29	13	851	478	38	13
04/11/00	CCR-1 6m	80	29	15	879	468	26	4
04/11/00	CCR-1 7m	104	35	17	878	472	39	10
04/25/00	CCR-1 4m	105	34	21	766	440	29	33
04/25/00	CCR-1 5m	102	52	22	754	453	22	31
04/25/00	CCR-1 6m	120	39	22	1160	432	16	29
05/02/00	CCR-1 4m	95	32	29	926	428	5	20
05/02/00	CCR-1 5m	97	33	32	812	389	17	37
05/02/00	CCR-1 6m	108	44	31	961	388	17	33
05/09/00	CCR-1 4m	80	32	15	673	402	15	<3
05/09/00	CCR-1 5m	150	23	19	675	440	20	<3
05/16/00	CCR-1 4m	82	26	21	1264	1230	677	17
05/16/00	CCR-1 5m	46	33	24	946	939	389	23
05/16/00	CCR-1 6m	154	46	27	2263*	2313*	1904	14
05/23/00	CCR-1 5m	125	27	19	460	378	<5	<5
05/23/00	CCR-1 6m	100	30*	31*	433	406	<5	<5
05/30/00	CCR-1 5m	78	38	26	515	338	6	10
05/30/00	CCR-1 6m	146	121	62	479	337	<5	15
06/06/00	CCR-1 5m	97	47	47	520	479	<5	9

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

06/06/00	CCR-1 6m	151	83*	86*	689	439	<5	5
06/13/00	CCR-1 5m	95	26	17	593	400	<5	9
06/13/00	CCR-1 6m	163	47	37	454	430	<5	28
06/20/00	CCR-1 5m	81	38	28	530	441	<5	<5
06/20/00	CCR-1 6m	94	37	31	544	450	<5	<5
06/27/00	CCR-1 5m	51	29	14	516	395	<5	<5
06/27/00	CCR-1 6m	60	29	16	545	297	<5	<5
07/05/00	CCR-1 5m	58	34	28	577	405	<5	21
07/05/00	CCR-1 6m	70	36	29	707	344	<5	33
07/11/00	CCR-1 5m	52	27**	42**	485	359	<5	9
07/11/00	CCR-1 6m	69	36**	52**	487	351	<5	19
07/11/00	CCR-1 7m	81	62	49	470	353	<5	6
07/18/00	CCR-1 5m	93	42	41	551	402	<5	5
07/18/00	CCR-1 6m	80	41*	42*	505	410	<5	6
07/25/00	CCR-1 5m	114	20	13	709	382	8	25
07/25/00	CCR-1 6m	178	21	15	738	372	<5	9
08/01/00	CCR-1 5m	59	34	18	713	459	31	29
08/01/00	CCR-1 6m	61	31	17	696	422	8	<3
08/08/00	CCR-1 5m	59	29	17	809	518	<5	24
08/08/00	CCR-1 6m	65	30	16	757	561	60	19
08/15/00	CCR-1 5m	64	33	14	747	400	<5	67
08/15/00	CCR-1 6m	79	51	16	782	300	9	72
08/22/00	CCR-1 5m	99	24	9	670	300	<5	8
08/22/00	CCR-1 6m	89	25	9	764	400	<5	16
08/22/00	CCR-1 7m	172	22	9	628	300	<5	12
08/29/00	CCR-1 5m	102	33	12	887	200	30	63
08/29/00	CCR-1 6m	77	33	11	895	200	29	65
08/29/00	CCR-1 7m	145	31	17	994	200	27	97
09/05/00	CCR-1 5m	114	24	18	729*	800*	<5	12
09/05/00	CCR-1 6m	91	19	16	1240	700	<5	3
09/12/00	CCR-1 5m	92	18	16	818	400	<5	4
09/12/00	CCR-1 6m	87	19	16	844	600	<5	4
09/19/00	CCR-1 5m	174	33	22	835	500	<5	65
09/19/00	CCR-1 6m	135	34	27	887	400	<5	103
09/19/00	CCR-1 7m	143	37	29	976	400	<5	97
09/26/00	CCR-1 5m	124	43	12	936	700	13	9
10/10/00	CCR-1 5m	126	32	22	775	580	<5	103
10/10/00	CCR-1 6m	175	32	27	825	562	<5	128
10/24/00	CCR-1 5m	218	32	13	924	495	<5	11

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

10/24/00	CCR-1 6m	260	18**	23**	1215	537	<5	46
11/20/00	CCR-1 5m	64	15	8	1179	870	5	29
11/20/00	CCR-1 6m	66	16	8	1028	629	7	19

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

CCR-2 Composite C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Nitrate + Nitrite ug/L	Ammonia ug/L	Chlorophyll ug/L	Total Coliform MPN/100mL	Fecal Coliform MPL/100mL	E.coli MPL/100mL
Analytical Detection Limits		2	2	3	4	4	5	5				
02/24/00	CCR-2 Composite	92	41	14	711	489	23	15	18.57			
03/23/00	CCR-2 Composite	84	27	11	510	392	7	<5	25.5			
04/11/00	CCR-2 Composite	88	29	14	885	486	23	19	20.49			
04/25/00	CCR-2 Composite	116	43	23	880	478	24	38	14.15			
05/02/00	CCR-2 Composite	97	29	20	1062	460	44	<3	26.68			
05/09/00	CCR-2 Composite	81	26	13	675	412	7	<3	29.48	40	0	0
05/16/00	CCR-2 Composite	98	17	11	1951	1360	998	3	15.77	20	0	0
05/23/00	CCR-2 Composite	73	19	9	577	358	<5	<5	14.74	0	0	0
05/30/00	CCR-2 Composite	56	52	7	471	328	<5	<3	12.68			
06/06/00	CCR-2 Composite	46	14	8	772	403	<5	<3	12.53	0	0	0
06/13/00	CCR-2 Composite	69	23	13	569	543	70	8	14	20	0	0
06/20/00	CCR-2 Composite	84	26	15	663	464	<5	<5	19.46	0	0	0
06/27/00	CCR-2 Composite	64	30	18	569	361	<5	<5	11.2	23	<2	<2
07/05/00	CCR-2 Composite	70	38	32	600	470	6	<3	15.92	23	<2	<2
07/11/00	CCR-2 Composite	74	22	9	807	506	5	11	18.57	8	<2	0
07/18/00	CCR-2 Composite	58	18	7	616	449	<5	8	28.16	20	2	2
07/25/00	CCR-2 Composite	60	19	11	664	394	<5	19	25.36	13	<2	0
08/01/00	CCR-2 Composite	55	29	12	868	483	6	12	24.62	4	2	2
08/08/00	CCR-2 Composite	55	21	10	875	443	<5	10	25.06	13	<2	0
08/15/00	CCR-2 Composite	55	22	4	808	300	<5	12	26.83	13	<2	0
08/22/00	CCR-2 Composite	86	25	10	808	400	<5	16	39.78	17	4	2
08/29/00	CCR-2 Composite	96	25	5	916	200	12	17	15.33	23	2	2
09/05/00	CCR-2 Composite	80	19	16	786	600	<5	12	33.02	8	2	2
09/12/00	CCR-2 Composite	70	38	18	859	200	<5	4	37	7	<2	0
09/19/00	CCR-2 Composite	88	30	13	817	500	<5	6	18.57	9	<2	0
09/26/00	CCR-2 Composite	92	34	7	763	500	5	4	25.8	22	4	4
10/10/00	CCR-2 Composite	108	19	13	741	504	<5	38	14.45	17	<2	0
10/24/00	CCR-2 Composite	86	30	13	893	522	<5	11	29.04	30	23	13
11/20/00	CCR-2 Composite	53	16	5	813	516	<5	10	19.75			

CCR-2 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Nitrate + Nitrite ug/L	Ammonia ug/L
Analytical Detection Limits		2	2	3	4	4	5	5
02/24/00	CCR-2 4m	102	30	13	865	526	43	26
02/24/00	CCR-2 5m	69	42	15	907	521	44	23
02/24/00	CCR-2 6m	70	24	16	1018	966	359	26
02/24/00	CCR-2 7m	84	37	14	920	817	345	22
03/23/00	CCR-2 4m	92	37	10	690	403	5	<5
03/23/00	CCR-2 5m	162	32	11	571	391	5	<5
03/23/00	CCR-2 6m	101	25	11	965	411	<5	<5
03/23/00	CCR-2 7m	82	32	10	775	392	<5	<5
04/11/00	CCR-2 4m	90	28	14	795	432	13	5
04/11/00	CCR-2 5m	91	29	13	826	440	6	4
04/11/00	CCR-2 6m	85	30	14	706	461	5	5
04/11/00	CCR-2 7m	90	42	17	741	412	8	4
04/25/00	CCR-2 4m	127	41	24	771	438	20	31
04/25/00	CCR-2 5m	100	29	24	725	437	19	35
04/25/00	CCR-2 6m	98	72	24	765	435	25	32
04/25/00	CCR-2 7m	142	59	25	751	439	18	40
05/02/00	CCR-2 4m	97	36	28	989	423	20	14
05/02/00	CCR-2 5m	110	46	29	1053	434	12	20
05/02/00	CCR-2 6m	94	44	30	669	425	7	22
05/02/00	CCR-2 7m	100	40	38	771	420	10	46
05/09/00	CCR-2 4m	79	26	20	595	395	10	<3
05/09/00	CCR-2 5m	93	55	31	660	449	16	9
05/09/00	CCR-2 6m	114	55	44	609	435	25	13
05/09/00	CCR-2 7m	167	86	75	912	660	176	76
05/16/00	CCR-2 4m	73	62	15	1337	1075	673	<3
05/16/00	CCR-2 5m	85	28	16	976	975	583	<3
05/16/00	CCR-2 6m	72	23	18	1038	699	302	<3
05/16/00	CCR-2 7m	74	40	28	1605*	1807*	1476	7
05/23/00	CCR-2 5m	92	29	21	575	385	5	<5
05/23/00	CCR-2 6m	69	32	21	580	348	<5	<5

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 perecnt) difference between parameters.

05/23/00	CCR-2 7m	92	28	23	700	353	<5	<5
05/30/00	CCR-2 5m	69	45	31	680	323	5	7
05/30/00	CCR-2 6m	76	46	37	426	324	<5	4
05/30/00	CCR-2 7m	71	53	35	378	336	<5	7
06/06/00	CCR-2 5m	62	30	30	661	390	11	<3
06/06/00	CCR-2 6m	88	48*	50*	448	410	<5	10
06/13/00	CCR-2 5m	67	23	13	538	434	<5	9
06/13/00	CCR-2 6m	68	20	14	630	419	<5	21
06/13/00	CCR-2 7m	70	19	16	508	427	<5	10
06/20/00	CCR-2 5m	82	36	22	719	459	9	27
06/20/00	CCR-2 6m	79	36	26	536	466	6	31
06/20/00	CCR-2 7m	91	42	34	517	460	6	63
06/27/00	CCR-2 5m	64	31	20	521	374	<5	<5
06/27/00	CCR-2 6m	59	34	21	504	378	<5	<5
06/27/00	CCR-2 7m	83	47	43	743	452	<5	54
07/05/00	CCR-2 5m	68	46	35	674	410	6	28
07/05/00	CCR-2 6m	75	46*	47*	1004	441	33	34
07/05/00	CCR-2 7m	66	29	21	856	613	6	91
07/11/00	CCR-2 5m	59	23	12	513	379	<5	17
07/11/00	CCR-2 6m	75	50	44	564	380	<5	86
07/11/00	CCR-2 7m	163	68*	78*	778	410	<5	52
07/18/00	CCR-2 5m	67	28	21	610	458	9	12
07/18/00	CCR-2 6m	77	36*	37*	522	442	<5	10
07/18/00	CCR-2 7m	98	63	55	833	486	<5	20
07/25/00	CCR-2 5m	88	17	12	610	367	10	11
07/25/00	CCR-2 6m	69	25	21	567	368	<5	7
07/25/00	CCR-2 7m	137	37	30	710	324	<5	6
08/01/00	CCR-2 5m	53	26	15	643	413	<5	<3
08/01/00	CCR-2 6m	63	27	14	660	370	<5	<3
08/01/00	CCR-2 7m	56	27	17	568	386	<5	<3
08/08/00	CCR-2 5m	52	29	15	716	452	<5	28
08/08/00	CCR-2 6m	65	41	21	809	600	<5	82
08/08/00	CCR-2 7m	83	32	20	856	543	8	94
08/15/00	CCR-2 5m	65	19	4	901	300	<5	<3
08/15/00	CCR-2 6m	60	30	9	710	500	13	23
08/22/00	CCR-2 5m	93	28	11	672	400	<5	21
08/22/00	CCR-2 6m	100	28	9	741	400	43	5
08/22/00	CCR-2 7m	135	25	10	714	400	14	19
08/29/00	CCR-2 5m	90	44	6	895	100	14	17
08/29/00	CCR-2 6m	82	39	6	847	100	82	25
08/29/00	CCR-2 7m	173	49	12	1517	300	22	20

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 perecnt) difference between parameters.

09/05/00	CCR-2 5m	78	19*	22*	728*	800*	34	42
09/05/00	CCR-2 6m	82	23	22	719	500	<5	29
09/12/00	CCR-2 5m	71	19	18	699	400	<5	4
09/12/00	CCR-2 6m	68	21	18	757	200	<5	4
09/12/00	CCR-2 7m	142	22	20	889	200	<5	4
09/19/00	CCR-2 5m	68	45	16	816	200	<5	26
09/19/00	CCR-2 6m	114	39	24	888	400	<5	97
09/26/00	CCR-2 5m	92	37	10	833	300	8	18
09/26/00	CCR-2 6m	107	34	9	865	<100	8	20
09/26/00	CCR-2 7m	205	42	14	832	<100	11	56
10/10/00	CCR-2 5m	97	32	23	688	581	<5	95
10/10/00	CCR-2 6m	167	34	28	706	623	<5	129
10/10/00	CCR-2 7m	173	30	26	846	566	<5	125
10/24/00	CCR-2 5m	116	104	15	827	542	<5	30
10/24/00	CCR-2 6m	123	94	17	745	521	<5	41
10/24/00	CCR-2 7m	132*	143*	19	860	486	<5	56
11/20/00	CCR-2 5m	63	28	6	844	566	<5	13
11/20/00	CCR-2 6m	61	20	6	862	543	<5	10

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 perecnt) difference between parameters.

CCR-3 Composite C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Nitrate + Nitrite ug/L	Ammonia ug/L	Chlorophyll ug/L	Total Coliform MPN/100mL	Fecal Coliform MPL/100mL	E.coli MPL/100mL
Analytical Detection Limits		2	2	3	4	4	5	5				
02/24/00	CCR-3 Composite	73	37	13	743	544	67	27	16.22			
03/23/00	CCR-3 Composite	102	28	13	619	436	<5	<5	30.96			
04/11/00	CCR-3 Composite	76	34	13	795	447	5	4	20.79			
04/25/00	CCR-3 Composite	128	32	19	1032	455	13	18	20.12			
05/02/00	CCR-3 Composite	122	30	22	869	409	<5	15	18.43			
05/09/00	CCR-3 Composite	74	73	13	798	468	<5	13	20.45	170	0	0
05/16/00	CCR-3 Composite	58	14	8	545	380	<5	<3	13.56	40	0	0
05/23/00	CCR-3 Composite	78	19	11	583	376	<5	<5	13.86	40	0	0
05/30/00	CCR-3 Composite	42	28	9	508	330	<5	<3	10.76			
06/06/00	CCR-3 Composite	41	14	8	440	421	<5	<3	16.81	0	0	0
06/13/00	CCR-3 Composite	78	20	11	865	420	245	6	13.86	20	0	0
06/20/00	CCR-3 Composite	84	34	10	588	429	<5	<5	19.75	20	0	0
06/27/00	CCR-3 Composite	67	32	20	601	335	<5	<5	24.77	23	<2	<2
07/05/00	CCR-3 Composite	37	30	18	641	501	<5	<3	20.2	13	<2	<2
07/11/00	CCR-3 Composite	50	20	8	612	405	<5	13	11.94	23	<2	0
07/18/00	CCR-3 Composite	119	39	26	752	466	<5	17	42.9	300	50	30
07/25/00	CCR-3 Composite	70	28	12	740	226	9	33	33.61	2	<2	0
08/01/00	CCR-3 Composite	40	33	12	580	372	<5	<3	27.71	13	<2	0
08/08/00	CCR-3 Composite	70	20	8	1132	561	<5	16	26.54	23	<2	0
08/15/00	CCR-3 Composite	57	30	4	716	500	<5	8	25.95	4	2	2
08/22/00	CCR-3 Composite	94	29	8	755	500	<5	11		23	2	2
08/29/00	CCR-3 Composite	98	27	7	1197	400	17	26	26.82	80	2	2
09/05/00	CCR-3 Composite	83	27	16	1234	900	7	21	34.35	13	2	2
09/12/00	CCR-3 Composite	90	24	19	895	200	<5	4	41.43	30	2	2
09/19/00	CCR-3 Composite	82	36	14	821	300	8	32	14.89	30	13	13
09/26/00	CCR-3 Composite	94	34	7	852	200	8	7	29.48	23	8	8
10/10/00	CCR-3 Composite	145	22	15	829	511	<5	52	15.33	13	4	2
10/20/00	CCR-3 Composite	38	11	11	688	477	<5	9		80	23	23
10/24/00	CCR-3 Composite	114	25	13	820	466	<5	7	13.86	30	30	23
11/20/00	CCR-3 Composite	56	45	12	862	550	<5	17	20.49			

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

CCR-1 Composite University of Missouri Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Ammonia ug/L	Nitrate + Nitrite ug/L	NVSS ug/L	VSS ug/L	uncCHL ug/L	CHL ug/L	Phaeo ug/L	Alkalinity mg/L
	Analytical Detection Limits	2	2	2	50	50	5	5						
02/24/00	CCR-1 Composite	76	21	9	910	490	10	<5			21.3	21.0	0.7	163
03/23/00	CCR-1 Composite	82	16	9	680	370	<5	<5			30.8	28.4	5.5	173
04/11/00	CCR-1 Composite										31.8	28.9	6.6	
04/25/00	CCR-1 Composite	96	33	26	770	580	35	6			20.1	17.8	5.5	170
05/02/00	CCR-1 Composite	99	32	20	1040	540	<5	<5			34.8	33.3	3.5	170
05/09/00	CCR-1 Composite	84	22	9	840	450	26	<5			26.8	24.3	6	172
05/16/00	CCR-1 Composite	77	19	4	970	710	<5	244	5000	4800	19.7	17.9	4.4	169
05/23/00	CCR-1 Composite	57	18	26	610	360	<5	5			16.3	14.7	4	168
05/30/00	CCR-1 Composite	75	16	7	660	360	<5	<5			10.8	9.5	3.2	165
06/06/00	CCR-1 Composite	62	17	5	510	400	<5	6			11.8	10.3	3.6	165
06/14/00	CCR-1 Composite	96	33	23	830	540	8	5	10600	4600	17.4	14.4	7.4	164
06/20/00	CCR-1 Composite	96	36	27	740	480	<5	<5			19.1	16.3	6.8	166
06/27/00	CCR-1 Composite	95	29	20	640	450*	<5	<5			12.6	10.8	4.3	167
07/05/00	CCR-1 Composite	94	28	15		400	<5	<5			24.2	20.5	8.8	162
07/11/00	CCR-1 Composite	80	22	9	680	410	<5	<5	8200	4200	18.4	16.2	5.1	162
07/18/00	CCR-1 Composite	78	23	70	680	380	<5	<5			21.7	18.7	7.1	
07/25/00	CCR-1 Composite	73	14	7	950		7	<5			20.2	17.5	6.5	152
08/01/00	CCR-1 Composite	99	20	5	830	550	16	<5	9900	5200	35.8	30.2	13.4	141
08/08/00	CCR-1 Composite										19.7	16.6	7.3	
08/15/00	CCR-1 Composite	78	18	5	800	420					28.2	25.2	7.1	142
08/22/00	CCR-1 Composite	92	20	<2	890	480					34.6	29.3	12.4	139
08/29/00	CCR-1 Composite	87	28	21	830	560					19.2	16.8	5.6	137
09/05/00	CCR-1 Composite	85	18	6	840	510					33.9	28.4	13.2	138
09/12/00	CCR-1 Composite	103	22	11	860	410	28	9			42.8	33.6	24	
09/19/00	CCR-1 Composite	69	26	17	680	480	85	14			15.4	13.6	4.7	139
09/26/00	CCR-1 Composite	86	21	12	770	490					34.8	29.5	14	
10/11/00	CCR-1 Composite	84	23	14	750	410					30.1	26.5	9.6	
10/25/00	CCR-1 Composite	89	21	7	790	480					35.6	31.2	11.4	
11/21/00	CCR-1 Composite	67	15	5							18.8	16.9	5.1	150

CCR-2 Composite University of Missouri Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Ammonia ug/L	Nitrate + Nitrite ug/L	NVSS ug/L	VSS ug/L	uncCHL ug/L	CHL ug/L	Phaeo ug/L	Alkalinity mg/L
	Analytical Detection Limits	2	2	2	50	50	5	5						
02/24/00	CCR-2 Composite	78	23	12	720	450	10	<5			22.2	22.1	0.3	162
03/23/00	CCR-2 Composite	92	17	10	720	380	<5	<5			32.2	30	4.7	168
04/11/00	CCR-2 Composite										33.4	30.8	6	
04/25/00	CCR-2 Composite	100	34	28	780	550	44	19			21.2	19.1	5	171
05/02/00	CCR-2 Composite	91	34	24	860	440	<5	<5			30.4	28.8	3.8	170
05/09/00	CCR-2 Composite	86	24	10	840	430*	<5	<5	8400	4500	27.2	24.8	5.7	171
05/16/00	CCR-2 Composite	72	18	4	1490	1240	<5	903			17.2	15.5	4.2	169
05/23/00	CCR-2 Composite	75	19	29	580	350	<5	<5			15.8	14.2	3.9	168
05/30/00	CCR-2 Composite	74	15	6	650	360	<5	<5	5900	4200	12.4	11.1	3.3	164
06/06/00	CCR-2 Composite	64	15	3	490	420	<5	<5			12.7	11.1	3.9	162
06/14/00	CCR-2 Composite	86	31	22	760	500	7	30			17.8	15	6.7	163
06/20/00	CCR-2 Composite	97	29	19	690	440	<5	<5	8400	3900	24.2	20.6	8.7	163
06/27/00	CCR-2 Composite	96	32	21	630	430	<5	<5			16.3	13.7	6.2	165
07/05/00	CCR-2 Composite	84	25	13		440	<5	<5	7400	4300	16.2	14	5.3	163
07/11/00	CCR-2 Composite	90	23	10	790	440	<5	<5			20.1	17.8	5.6	160
07/18/00	CCR-2 Composite	59	19	42	790	610	8	<5			29.8	25.5	10.2	
07/25/00	CCR-2 Composite	77	14	7	690	420	<5	<5			26.8	23.5	7.9	147
08/01/00	CCR-2 Composite	96	19	6	850	560	23	<5			31.1	26.4	11.1	141
08/08/00	CCR-2 Composite										29.3	25.6	8.8	
08/15/00	CCR-2 Composite	80	17	5	830	530					26.6	23.8	6.8	143
08/22/00	CCR-2 Composite	92	22	9	840	480			11900	4700	33.2	28.4	11.4	140
08/29/00	CCR-2 Composite	93	24	17	870	770					22.8	19.7	7.5	136
09/05/00	CCR-2 Composite	82	16	4	770	480					31.2	26	12.3	140
09/12/00	CCR-2 Composite	95	23	12	780	420	29	<5			36.4	29	19.4	
09/19/00	CCR-2 Composite	73	22	14	680	450	63	9			16.7	14.7	5.3	142
09/26/00	CCR-2 Composite	76	20	15	710	370					23.9	20.8	8.1	
10/11/00	CCR-2 Composite	81	24	15	720	380					24.7	22	7	
10/25/00	CCR-2 Composite	86	21	9	750	600					32.4	28.5	10.2	
11/21/00	CCR-2 Composite	68	16	4							23.1	21.3	4.7	152

CCR-3 Composite University of Missouri Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Diss. Phosphorus ug/L	Ortho-phosphate ug/L	Total Nitrogen ug/L	Total Diss. Nitrogen ug/L	Ammonia ug/L	Nitrate + Nitrite ug/L	NVSS ug/L	VSS ug/L	uncCHL ug/L	CHL ug/L	Phaeo ug/L	Alkalinity mg/L
	Analytical Detection Limits	2	2	2	50	50	5	5						
02/24/00	CCR-3 Composite	81	24	12	770	430	10	<5			22.4	22.0	1.1	165
03/23/00	CCR-3 Composite	94	20	14	860	450	<5	<5			38.2	35.5	6.1	167
04/11/00	CCR-3 Composite										34.4	33.2	2.8	
04/25/00	CCR-3 Composite	116	30	23	930	640	10	6			28.8	26.3	5.9	172
05/02/00	CCR-3 Composite	90	32	25	800	460	<5	<5			21.4	20.3	2.7	172
05/09/00	CCR-3 Composite	88	23	12	820	390	<5	<5			27.1	24.9	5.3	170
05/16/00	CCR-3 Composite	72	18	4	580	370	<5	<5			15.8	14.2	3.9	172
05/23/00	CCR-3 Composite	84	20	6	640	340	<5	<5	8200	4700	17.4	15.1	5.6	166
05/30/00	CCR-3 Composite	77	18	8	650	340	<5	<5			14.6	13	4.1	166
06/06/00	CCR-3 Composite	72	16	4	550	380	<5	<5	6300	4300	13.4	12.1	3.2	168
06/14/00	CCR-3 Composite	101	29	20	1020	770	9	244			17.5	14.8	6.5	163
06/20/00	CCR-3 Composite	99	30	21	740	490	<5	<5			22.8	19.2	8.7	164
06/27/00	CCR-3 Composite	101	35	26	670	420	<5	<5	9300	4000	26.6	22.2	10.4	165
07/05/00	CCR-3 Composite	94	27	15	760	440	<5	<5			25.5	22.1	8.2	163
07/11/00	CCR-3 Composite	75	21	10	690	390	<5	<5			15.1	13	4.8	160
07/18/00	CCR-3 Composite	152	43	33	1120	770	5	<5	22800	7800	46.4	39.8	15.6	
07/25/00	CCR-3 Composite	92	14	6	740		<5	<5	11400	5000	39.3	33.8	13.1	155
08/01/00	CCR-3 Composite	96	21	8	760	410	10	<5			29.9	25.2	11.2	143
08/08/00	CCR-3 Composite	87	17	4	790	690	18	<5	8000	4900	31.8	27.5	10.2	142
08/15/00	CCR-3 Composite	81	16	5	820	470			8500	5700	29.6	26.5	7.3	142
08/22/00	CCR-3 Composite	98	23	9	850	430					38.8	33.7	12	139
08/29/00	CCR-3 Composite	91	24	17	810	520			10800	5100	24.6	21.3	7.7	125
09/05/00	CCR-3 Composite	71	17	6	710	430			8300	6200	34.2	28.9	12.8	140
09/12/00	CCR-3 Composite	94	20	12	780	410	30	<5			36.4	28.5	20.7	
09/19/00	CCR-3 Composite	81	24	17	700	460	79	9			15.4	13.2	5.6	141
09/26/00	CCR-3 Composite	80	20	13	730	410					30.6	27	9.7	
10/11/00	CCR-3 Composite	84	28	18	790	480					27.4	25.2	6	
10/25/00	CCR-3 Composite	82	19	9		510					29.5	25.9	9.5	
11/21/00	CCR-3 Composite	76	16	5							22	20.1	4.9	149

CCR-1 Composite Severn Trent Labs Water Chemistry Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
Analytical Detection Limits		4	10	0.05*	0.1	0.03
02/24/00	CCR-1 Composite	10	<10	0.24	79.1	0.20
03/23/00	CCR-1 Composite	14	<10	0.62	82.5	0.47
04/11/00	CCR-1 Composite	21	<10	0.47	79.6	0.59
04/25/00	CCR-1 Composite	22	<10	1.43	75.2	0.88
05/02/00	CCR-1 Composite	19	<10	0.46	78.2	0.37
05/09/00	CCR-1 Composite	16	<10	0.68	82.0	0.55
05/16/00	CCR-1 Composite	8	<10	0.16	82.1	0.14
05/23/00	CCR-1 Composite	11	<10	0.22	75.1	0.17
05/30/00	CCR-1 Composite	<4	<10	0.17	80.5	0.15
06/06/00	CCR-1 Composite	5.2	<10	0.14	80.1	0.14
06/13/00	CCR-1 Composite	5.6	<10	0.37	78.5	0.40
06/20/00	CCR-1 Composite	7.6	<10	0.44	81.1	0.46
06/27/00	CCR-1 Composite	8.8	<10	0.30	73.2	0.35
07/05/00	CCR-1 Composite	<4	<10	0.37	77.7	0.37
07/11/00	CCR-1 Composite	7.2	<10	0.26	76.4	0.26
07/18/00	CCR-1 Composite	11.3	12	0.21	73.5	
07/25/00	CCR-1 Composite	6.4	<10	0.23	69.0	
08/01/00	CCR-1 Composite	12.4	10.8	0.11	66.5	
08/08/00	CCR-1 Composite	5.2	<10	0.16	62.0	
08/15/00	CCR-1 Composite	8.8	<10	0.11	71.5	
08/22/00	CCR-1 Composite	12	<10	0.40	64.2	

*Detection limit was changed from 0.05 to 0.1 in August.

08/29/00	CCR-1 Composite	9.6	<10	0.39	63.2
09/05/00	CCR-1 Composite	8.8	<10	0.25	68.1
09/12/00	CCR-1 Composite	14	10	0.29	59.3
09/19/00	CCR-1 Composite	<4	<10	0.20	63.6
09/26/00	CCR-1 Composite	10.8	<10	0.39	67.9
10/24/00	CCR-1 Composite	7.2	<10	0.30	72.1
11/20/00	CCR-1 Composite	4	<10	0.15	74.9

*Detection limit was changed from 0.05 to 0.1 in August.

CCR-1 Servern Trent Labs Water Chemistry Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
Analytical Detection Limits		4	10	0.05*	0.1	0.03
02/24/00	CCR-1 4m	10	<10	0.19	77.9	0.20
02/24/00	CCR-1 5m	13	<10	0.24	80.9	0.19
02/24/00	CCR-1 6m	12	<10	0.34	79.7	0.35
02/24/00	CCR-1 7m	14	<10	0.23	79.5	0.24
03/23/00	CCR-1 4m	10	<10	0.24	80.2	0.23
03/23/00	CCR-1 5m	12	<10	0.20	79.1	0.20
03/23/00	CCR-1 6m	14	10	0.25	77.8	0.19
03/23/00	CCR-1 7m	13	<10	0.24	81.7	0.23
04/11/00	CCR-1 4m	16	<10	0.48	79.5	0.50
04/11/00	CCR-1 5m	22	<10	0.65	82.0	0.77
04/11/00	CCR-1 6m	30	<10	0.67	77.5	0.79
04/11/00	CCR-1 7m	51	10	1.54	80.7	1.78
04/25/00	CCR-1 4m	24	<10	0.73	76.3	0.73
04/25/00	CCR-1 5m	10	<10	1.19	75.5	0.87
04/25/00	CCR-1 6m	11	<10	0.72	75.7	0.60
05/02/00	CCR-1 4m	14	<10	0.35	79.0	0.35
05/02/00	CCR-1 5m	20	<10	0.83	78.8	0.66
05/02/00	CCR-1 6m	22	<10	0.32	77.0	0.34
05/09/00	CCR-1 4m	16	<10	0.64	79.4	0.54
05/09/00	CCR-1 5m	16	<10	0.70	74.6	0.47
05/16/00	CCR-1 4m	16	<10	0.47	80.2	0.32

*Detection limit was changed from 0.05 to 0.1 in August.

05/16/00	CCR-1 5m	16	<10	0.52	73.5	0.38
05/16/00	CCR-1 6m	14	<10	0.36	80.0	0.41
05/23/00	CCR-1 5m	23	10	0.58	75.3	0.50
05/23/00	CCR-1 6m	14	<10	0.86	75.1	0.50
05/30/00	CCR-1 5m	<4	<10	0.34	79.8	0.33
05/30/00	CCR-1 6m	7.6	<10	0.57	80.0	0.56
06/06/00	CCR-1 5m	16.8	<10	0.56	80.9	0.57
06/06/00	CCR-1 6m	22	<10	0.69	81.7	0.70
06/13/00	CCR-1 5m	14	<10	0.52	80.6	0.53
06/13/00	CCR-1 6m	38	12.8	1.70	82.2	1.80
06/20/00	CCR-1 5m	13.6	<10	0.58	80.9	0.60
06/20/00	CCR-1 6m	12.4	<10	0.72	82.2	0.77
06/27/00	CCR-1 5m	8.4	<10	0.41	72.3	0.41
06/27/00	CCR-1 6m	15.2	10	0.73	77.2	0.69
07/05/00	CCR-1 5m	<4	<10	0.53	76.2	0.56
07/05/00	CCR-1 6m	<4	<10	0.71	76.1	0.68
07/11/00	CCR-1 5m	<4	<10	0.52	77.3	0.50
07/11/00	CCR-1 6m	8.4	<10	0.76	76.8	0.73
07/11/00	CCR-1 7m	6.4	<10	0.60	75.9	0.60
07/18/00	CCR-1 5m	6.8	<10	0.23	72.8	
07/18/00	CCR-1 6m	8.4	<10	0.24	72.9	
07/25/00	CCR-1 5m	18.4	10	0.26	66.8	
07/25/00	CCR-1 6m	18	<10	0.67	65.1	
08/01/00	CCR-1 5m	11.6	<10	0.32	59.2	
08/01/00	CCR-1 6m	12	<10	0.29	63.1	
08/08/00	CCR-1 5m	10.8	<10	0.26	64.3	
08/08/00	CCR-1 6m	15.6	<10	0.23	61.5	
08/15/00	CCR-1 5m	8.8	<10	0.28	72.0	
08/15/00	CCR-1 6m	22	10	0.47	68.8	
08/22/00	CCR-1 5m	24	10	0.75	58.2	
08/22/00	CCR-1 6m	18.8	<10	0.58	63.7	
08/22/00	CCR-1 7m	88.4	16	2.80	70.2	
08/29/00	CCR-1 5m	10.4	<10	0.27	63.9	

*Detection limit was changed from 0.05 to 0.1 in August.

08/29/00	CCR-1 6m	13.6	<10	0.51	64.4
08/29/00	CCR-1 7m	42	14.4	1.40	66.3
09/05/00	CCR-1 5m	13.6	<10	0.51	67.1
09/05/00	CCR-1 6m	11.6	<10	0.36	66.2
09/12/00	CCR-1 5m	24	11.6	0.82	60.3
09/12/00	CCR-1 6m	20	10.4	0.35	67.8
09/19/00	CCR-1 5m	6.4	<10	0.29	65.0
09/19/00	CCR-1 6m	13.6	<10	0.51	63.7
09/19/00	CCR-1 7m	22	<10	0.79	67.7
09/26/00	CCR-1 5m	13.2	<10	0.51	69.2
10/24/00	CCR-1 5m	12.8	<10	0.44	73.6
10/24/00	CCR-1 6m	68.8	18	2.90	78.6
11/20/00	CCR-1 5m	4.8	<10	0.28	76.5
11/20/00	CCR-1 6m	6.8	<10	0.33	75.0

*Detection limit was changed from 0.05 to 0.1 in August.

CCR-2 Composite Severn Trent Labs Water Chemistry Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
	Analytical Detection Limits	4	10	0.05*	0.1	0.03
02/24/00	CCR-2 Composite	14	<10	0.24	80.2	0.25
03/23/00	CCR-2 Composite	13	<10	0.26	79.9	0.20
04/11/00	CCR-2 Composite	17	<10	0.38	79.0	0.48
04/25/00	CCR-2 Composite	17	<10	1.22	76.4	0.76
05/02/00	CCR-2 Composite	16	<10	0.45	78.4	0.44
05/09/00	CCR-2 Composite	14	<10	0.48	77.3	0.35
05/16/00	CCR-2 Composite	8	<10	0.14	81.6	0.13
05/23/00	CCR-2 Composite	12	<10	0.19	75.2	0.14
05/30/00	CCR-2 Composite	4.8	<10	0.18	79.9	0.20
06/06/00	CCR-2 Composite	4.8	<10	<0.10	78.4	0.13
06/13/00	CCR-2 Composite	11.2	<10	0.33	81.5	0.34
06/20/00	CCR-2 Composite	10	<10	0.35	81.3	0.36
06/27/00	CCR-2 Composite	<4	<10	0.26	76.5	0.30
07/05/00	CCR-2 Composite	5.2	<10	0.32	78.0	0.32
07/11/00	CCR-2 Composite	6.8	<10	0.27	76.2	0.27
07/18/00	CCR-2 Composite	8	<10	0.19	71.6	
07/25/00	CCR-2 Composite	7.2	<10	<.05	60.9	
08/01/00	CCR-2 Composite	9.2	<10	0.16	67.2	
08/08/00	CCR-2 Composite	4.8	<10	0.40	68.5	
08/15/00	CCR-2 Composite	11.2	10.4	0.13	71.4	

*Detection limit was changed from 0.05 to 0.1 in August.

08/22/00	CCR-2 Composite	13.6	<10	0.42	63.6
08/29/00	CCR-2 Composite	11.6	10.4	0.40	64.5
09/05/00	CCR-2 Composite	8.4	<10	0.24	64.5
09/12/00	CCR-2 Composite	10.8	<10	0.49	57.1
09/19/00	CCR-2 Composite	4.8	<10	0.24	59.6
09/26/00	CCR-2 Composite	8	<10	0.34	67.5
10/24/00	CCR-2 Composite	8	10	0.26	72.3
11/20/00	CCR-2 Composite	4.8	<10	0.17	75.9

*Detection limit was changed from 0.05 to 0.1 in August.

CCR-2 Severn Trent Labs Water Chemistry Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
Analytical Detection Limits		4	10	0.05*	0.1	0.03
02/24/00	CCR-2 4m	12	<10	0.30	78.9	0.24
03/23/00	CCR-2 4m	13	10	0.38	83.2	0.27
04/11/00	CCR-2 4m	16	<10	0.34	79.6	0.39
04/25/00	CCR-2 4m	12	<10	1.00	76.1	0.74
05/02/00	CCR-2 4m	14	<10	0.59	78.4	0.42
05/09/00	CCR-2 4m	14	<10	0.60	71.3	0.46
05/16/00	CCR-2 4m	10	<10	0.28	78.6	0.22
02/24/00	CCR-2 5m	12	<10	0.23	79.4	0.23
03/23/00	CCR-2 5m	11	<10	0.26	78.6	0.20
04/11/00	CCR-2 5m	15	<10	0.30	79.3	0.32
04/25/00	CCR-2 5m	6	<10	1.18	75.0	0.81
05/02/00	CCR-2 5m	14	<10	0.74	76.8	0.45
05/09/00	CCR-2 5m	14	<10	0.65	77.9	0.45
05/16/00	CCR-2 5m	8	<10	0.20	80.4	0.16
05/23/00	CCR-2 5m	13	<10	0.45	74.9	0.30
05/30/00	CCR-2 5m	<4	<10	0.22	78.8	0.22
06/06/00	CCR-2 5m	9.2	<10	0.40	81.9	0.39
06/13/00	CCR-2 5m	12.4	<10	0.33	83.3	0.35
06/20/00	CCR-2 5m	9.6	<10	0.41	78.9	0.42
06/27/00	CCR-2 5m	<4	<10	0.36	77.0	0.36
07/05/00	CCR-2 5m	<4	<10	0.74	76.6	0.72

*Detection limit was changed from 0.05 to 0.1 in August.

07/11/00	CCR-2 5m	8	<10	0.57	76.2	0.55
07/18/00	CCR-2 5m	6.4	<10	0.36	71.0	
07/25/00	CCR-2 5m	10	<10	0.14	66.4	
08/01/00	CCR-2 5m	12	<10	0.32	70.2	
08/08/00	CCR-2 5m	7.6	<10	0.33	65.4	
08/15/00	CCR-2 5m	14	10	0.18	71.7	
08/22/00	CCR-2 5m	12.4	<10	0.46	61.3	
08/29/00	CCR-2 5m	14.4	<10	0.49	64.0	
09/05/00	CCR-2 5m	14	<10	0.68	62.0	
09/12/00	CCR-2 5m	15.6	<10	0.29	60.1	
09/19/00	CCR-2 5m	5.2	<10	0.24	67.6	
09/26/00	CCR-2 5m	8.8	<10	0.42	67.3	
10/24/00	CCR-2 5m	8	<10	0.30	67.4	
11/20/00	CCR-2 5m	<4	<10	0.18	76.5	
02/24/00	CCR-2 6m	12	<10	0.21	82.6	0.22
03/23/00	CCR-2 6m	14	<10	0.25	83.2	0.19
04/11/00	CCR-2 6m	16	<10	0.42	79.4	0.55
04/25/00	CCR-2 6m	18	<10	0.97	76.2	0.74
05/02/00	CCR-2 6m	10	<10	0.58	76.8	0.62
05/09/00	CCR-2 6m	11	<10	0.69	78.3	0.45
05/16/00	CCR-2 6m	8	<10	0.27	79.3	0.18
05/23/00	CCR-2 6m	15	<10	0.42	78.2	0.26
05/30/00	CCR-2 6m	<4	<10	0.12	79.4	0.17
06/06/00	CCR-2 6m	8.8	<10	0.46	81.4	0.45
06/13/00	CCR-2 6m	12	<10	0.32	78.9	0.33
06/20/00	CCR-2 6m	4	<10	0.48	80.1	0.49
06/27/00	CCR-2 6m	<4	<10	0.41	77.1	0.42
07/05/00	CCR-2 6m	6.4	<10	0.61	75.3	0.60
07/11/00	CCR-2 6m	5.6	<10	0.57	76.2	0.57
07/18/00	CCR-2 6m	7.6	<10	0.52	67.9	
07/25/00	CCR-2 6m	11.2	<10	0.19	65.5	
08/01/00	CCR-2 6m	12.4	<10	0.36	68.0	
08/08/00	CCR-2 6m	14	<10	0.59	64.6	

*Detection limit was changed from 0.05 to 0.1 in August.

08/15/00	CCR-2 6m	12.4	<10	0.28	60.9	
08/22/00	CCR-2 6m	16.8	<10	0.34	63.5	
08/29/00	CCR-2 6m	17.2	10	0.54	57.6	
09/05/00	CCR-2 6m	14	<10	0.73	65.8	
09/12/00	CCR-2 6m	14	<10	0.57	64.9	
09/19/00	CCR-2 6m	8.4	<10	0.35	64.1	
09/26/00	CCR-2 6m	9.2	<10	0.43	67.6	
10/24/00	CCR-2 6m	8	<10	0.55	75.0	
11/20/00	CCR-2 6m	<4	<10	0.17	76.3	
02/24/00	CCR-2 7m	12	<10	0.20	78.3	0.22
03/23/00	CCR-2 7m	13	<10	0.27	82.4	0.23
04/11/00	CCR-2 7m	17	<10	0.41	78.7	0.47
04/25/00	CCR-2 7m	11	<10	0.80	79.0	0.71
05/02/00	CCR-2 7m	18	<10	0.77	78.0	0.59
05/09/00	CCR-2 7m	28	<10	1.29	81.7	0.94
05/16/00	CCR-2 7m	10	<10	0.27	78.1	0.24
05/23/00	CCR-2 7m	10	<10	0.28	79.9	0.21
05/30/00	CCR-2 7m	4.8	<10	0.31	80.4	0.31
06/13/00	CCR-2 7m	24	<10	0.68	81.8	0.69
06/20/00	CCR-2 7m	11.2	<10	0.86	80.8	0.87
06/27/00	CCR-2 7m	8	<10	0.66	72.9	0.65
07/05/00	CCR-2 7m	6.8	11.6	1.00	76.6	0.99
07/11/00	CCR-2 7m	11.2	<10	0.76	77.2	0.76
07/18/00	CCR-2 7m	7.6	<10	0.37	73.3	
07/25/00	CCR-2 7m	18.8	10.8	0.45	63.7	
08/01/00	CCR-2 7m	14	<10	0.47	66.2	
08/08/00	CCR-2 7m	16	<10	0.35	64.3	
08/22/00	CCR-2 7m	40.4	11.6	1.70	67.0	
08/29/00	CCR-2 7m	65.2	16.8	1.90	67.4	
09/12/00	CCR-2 7m	38	13.2	1.50	68.8	
09/26/00	CCR-2 7m	18.4	<10	0.78	67.6	
10/24/00	CCR-2 7m	30	11.6	0.99	73.1	

*Detection limit was changed from 0.05 to 0.1 in August.

CCR-3 Composite Severn Trent Labs Water Quality Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
Analytical Detection Limits		4	10	0.05*	0.1	0.03
02/24/00	CCR-3 Composite	12	<10	0.26	80.0	0.24
03/23/00	CCR-3 Composite	14	10	0.30	82.1	0.27
04/11/00	CCR-3 Composite	19	<10	0.31	80.7	0.40
04/25/00	CCR-3 Composite	24	<10	1.97	84.0	1.27
05/02/00	CCR-3 Composite	16	<10	0.76	79.7	0.58
05/09/00	CCR-3 Composite	16	<10	0.61	77.3	0.40
05/16/00	CCR-3 Composite	10	<10	0.22	80.8	0.16
05/23/00	CCR-3 Composite	15	10	0.27	80.1	0.24
05/30/00	CCR-3 Composite	5.6	<10	0.28	80.3	0.27
06/06/00	CCR-3 Composite	8.8	<10	0.21	80.7	0.22
06/13/00	CCR-3 Composite	16	<10	0.52	80.8	0.55
06/20/00	CCR-3 Composite	<4	<10	0.39	80.0	0.45
06/27/00	CCR-3 Composite	5.2	<10	0.40	72.1	0.41
07/05/00	CCR-3 Composite	37.8	13.2	0.29	74.4	0.28
07/11/00	CCR-3 Composite	<4	<10	0.23	73.0	0.23
07/18/00	CCR-3 Composite	17.2	<10	0.85	70.3	
07/25/00	CCR-3 Composite	12	<10	0.16	66.7	
08/01/00	CCR-3 Composite	11.2	10	0.21	67.2	
08/08/00	CCR-3 Composite	8.4	<10	<.05	63.8	
08/15/00	CCR-3 Composite	11.2	10	0.14	65.3	
08/22/00	CCR-3 Composite	9.2	<10	0.37	66.1	

*Detection limit was changed from 0.05 to 0.1 in August.

08/29/00	CCR-3 Composite	12.4	10.4	0.38	62.6
09/05/00	CCR-3 Composite	11.2	<10	0.32	67.7
09/12/00	CCR-3 Composite	12.8	10	0.33	59.0
09/19/00	CCR-3 Composite	12.8	<10	0.45	66.5
09/26/00	CCR-3 Composite	9.2	<10	0.44	68.1
10/20/00	CCR-3 Composite	5.6	<10	0.23	68.3
10/24/00	CCR-3 Composite	7.6	<10	0.33	73.8
11/20/00	CCR-3 Composite	<4	<10	0.27	75.2

*Detection limit was changed from 0.05 to 0.1 in August.

CHERRY CREEK
D.O. DATA, 2000
SITE CCR1

CCR-1
02/24/00
Secchi: 0.85m
1% Trans: 3.0m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	4.80	8.90	509	8.10	292.0
1	4.80	8.80	507	8.00	296.0
2	4.70	8.80	505	7.90	296.0
3	4.70	8.50	505	7.90	297.0
4	4.60	8.10	504	7.90	298.0
5	4.60	7.80	503	7.90	299.0
6	4.50	7.60	501	7.90	299.0
7	4.30	7.40	500	7.90	299.0

CCR-1
03/23/00
Secchi: 0.7m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	8.40	12.80	570	8.10	292.0
1	6.00	13.50	527	8.00	298.0
2	5.40	13.30	518	8.00	301.0
3	5.30	12.90	516	8.00	303.0
4	5.20	12.50	515	8.00	303.0
5	5.20	12.40	515	8.00	304.0
6	5.20	12.30	515	8.00	305.0
7	5.20	12.10	516	8.00	306.0

CCR-1
04/11/00
Secchi: 0.7m
1% Trans: 2.15m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	10.49	13.37	590	7.35	310.3
1	10.48	13.38	589	7.51	309.6
2	10.44	13.15	587	7.58	308.6
3	10.35	13.17	586	7.63	308.3
4	9.88	12.88	576	7.72	309.0
5	9.66	12.57	574	7.75	309.1
6	9.57	12.45	573	7.76	309.1
7	9.49	12.78	571	7.77	309.3

CCR-1
04/25/00
Secchi: 0.45m
1% Trans: 2.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	11.94	11.15	625	6.75	370.4
1	11.45	10.99	616	6.99	364.6
2	11.36	10.76	615	7.13	361.8
3	11.34	10.68	615	7.26	359.0
4	11.33	10.64	615	7.38	356.9
5	11.32	10.64	615	7.46	355.2
6	11.30	10.63	615	7.52	353.5
6.5	11.29	10.23	615	7.60	352.2

CCR-1
05/02/00
Secchi: 0.675m
1% Trans: 2.0m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	13.73	12.07	655	7.63	303.6
1	12.76	11.73	641	7.68	302.6
2	12.53	10.49	638	7.74	303.2
3	12.01	9.77	630	7.76	304.3
4	11.89	9.06	628	7.79	305.6
5	11.84	8.87	628	7.81	305.9
6	11.78	8.63	628	7.82	305.9
6.5	11.74	8.33	628	7.84	306.5

CCR-1
05/09/00
Secchi: 0.70m
1% Trans: 2.45m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	16.36	10.19	656	7.34	283.2
1	15.81	9.69	646	7.63	281.4
2	14.93	8.90	632	7.75	282.9
3	14.64	8.46	628	7.80	284.5
4	14.63	8.09	629	7.84	285.3
5	13.33	4.97	613	7.83	293.5

CCR-1
05/16/00
Secchi: 1.0m
1% Trans: 3.9m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	16.83	9.74	667	7.90	236.0
1	16.41	9.95	661	7.79	247.0
2	16.14	9.51	655	7.69	256.0
3	15.04	8.75	640	7.70	253.6
4	14.30	7.70	631	6.80	263.9
5	13.95	7.64	619	5.57	267.9
6	13.64	7.59	622	4.27	272.8

CCR-1
05/23/00
Secchi: 0.7m
1% Trans: 3.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	17.54	9.69	667	7.62	287.1
1	17.22	10.00	663	7.73	287.8
2	16.52	9.77	653	7.85	290.2
3	15.83	9.10	643	7.88	292.4
4	15.20	7.67	631	7.90	297.0
5	13.80	5.45	612	7.89	302.6
6	13.53	4.41	603	7.86	305.1

CCR-1
05/30/00
Secchi: 0.8m
1% Trans: 2.9m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	19.88	8.47	694	8.66	262.1
1	19.43	8.54	688	8.65	263.3
2	19.24	8.63	684	8.65	265.0
3	18.67	8.19	677	8.64	266.9
4	17.50	7.00	660	8.64	269.8
5	16.33	5.48	642	8.60	274.5
6	15.20	3.23	625	8.53	280.5

CCR-1
06/06/00
Secchi: 1.0m
1% Trans: 3.5m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	20.88	8.82	712	8.08	256.0
1	20.26	8.76	702	8.15	257.7
2	19.93	8.54	698	8.19	259.3
3	19.50	7.83	692	8.21	262.0
4	19.00	7.00	684	8.21	264.9
5	17.36	3.55	662	8.17	271.9
6	16.46	1.31	645	8.14	276.6

CCR-1
06/13/00
Secchi: 0.6m
1% Trans: .9m

CCR-1
06/20/00
Secchi: 0.6m
1% Trans: 2.4m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	18.50	5.85	681
1	18.41	5.75	680
2	18.30	5.66	678
3	18.26	5.52	678
4	18.25	5.44	678
5	18.30	5.44	677
6	18.20	4.87	676

CCR-1
06/27/00
Secchi: 0.6m
1% Trans: 2.2m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	19.46	6.17	730
1	19.43	5.92	730
2	19.41	5.84	729
3	19.38	5.83	729
4	19.36	5.87	729
5	19.30	5.83	728
6	19.24	5.80	727

CCR-1
07/05/00
Secchi: 0.7m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	21.98	7.18	776
1	21.24	6.97	762
2	20.89	6.13	758
3	20.68	5.92	754
4	20.62	5.78	754
5	20.46	5.57	752
6	20.27	5.10	749

CCR-1
07/11/00
Secchi: 1.5m
1% Trans: 3.5m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	26.20	11.09	842
1	25.24	11.86	822
2	24.01	11.57	802
3	22.57	6.51	789
4	21.90	3.78	778
5	21.38	2.16	769
6	21.09	1.02	764
7	20.56	0.42	758

CCR-1
07/18/00
Secchi: 1.2m
1% Trans: 3.4m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.78	7.07	780	8.11	386.6
1	22.88	6.52	767	8.08	378.9
2	22.70	5.65	765	7.94	376.1
3	22.43	3.45	760	7.75	377.5
4	22.30	3.06	760	7.66	375.8
5	22.22	2.90	769	7.61	373.2
6	22.20	2.70	768	7.61	371.0

CCR-1
07/25/00
Secchi: 1.2m
1% Trans: 3.4m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.08	7.62	772	8.13	366.2
1	23.25	6.70	760	7.98	368.2
2	22.74	4.66	755	7.75	372.2
3	22.66	3.84	754	7.69	373.5
4	22.56	3.74	753	7.68	373.7
5	22.47	3.68	751	7.68	373.3
6	22.44	3.57	751	7.68	372.8

CCR-1
08/01/00
Secchi: 1.2m
1% Trans: 3.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.88	7.47	767	8.15	338.1
1	23.42	7.50	760	8.15	342.6
2	23.16	5.50	758	7.91	353.3
3	22.94	4.59	575	7.80	366.0
4	22.88	4.32	756	7.77	369.6
5	22.76	2.36	756	7.61	373.0
6	22.63	1.55	755	7.54	374.6

CCR-1
08/08/00
Secchi: 1.1m
1% Trans: 3.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.41	5.35	759	7.89	363.1
1	22.70	5.29	745	7.81	356.0
2	22.40	4.48	742	7.80	357.1
3	22.37	3.93	741	7.76	358.5
4	22.27	3.46	739	7.70	359.8
5	22.23	3.32	739	7.69	359.9
6	22.17	3.45	739	7.71	359.5

CCR-1
08/15/00
Secchi: 1.1m
1% Trans: 3.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.83	7.88	763	8.22	354.4
1	23.55	7.60	759	8.19	355.3
2	23.45	7.37	758	8.17	356.5
3	23.11	5.68	754	7.97	360.7
4	22.75	3.63	749	7.79	365.0
5	22.67	3.02	749	7.74	367.1

CCR-1
08/22/00
Secchi: 0.9m
1% Trans: 2.7m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	22.18	6.29	729	7.91	344.2
1	21.92	6.09	725	7.99	346.6
2	21.79	5.15	724	7.91	349.6
3	21.73	5.08	724	7.92	351.3
4	21.65	4.95	723	7.91	352.2
5	21.57	4.93	720	7.91	352.9
6	21.47	4.75	720	7.89	353.4
7	21.45	3.91	722	7.80	353.5

CCR-1
08/29/00
Secchi: 1.0m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	22.15	5.59	727	7.99	287.7
1	22.10	5.59	726	8.00	303.0
2	21.98	5.49	725	7.99	311.0
3	21.93	5.45	724	7.99	315.3
4	21.89	5.45	723	7.99	317.5
5	21.87	5.35	723	7.98	319.6
6	21.85	5.17	723	7.97	321.5
7	21.85	4.70	723	7.93	317.9

CCR-1
09/05/00
Secchi: 0.7m
1% Trans: 1.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	22.04	8.63	744	8.31	390.8
1	22.27	8.55	748	8.35	379.4
2	22.05	8.34	745	8.35	376.5
3	21.37	6.49	736	8.15	377.3
4	21.35	6.32	735	8.14	376.5
5	21.33	6.23	735	8.13	375.8
6	21.29	6.20	734	8.12	375.0

CCR-1
09/12/00
Secchi: 0.4m
1% Trans: 3.0m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	20.66	7.96	722	8.25	321.2
1	20.05	6.74	715	8.25	330.5
2	19.95	6.25	715	8.21	334.9
3	19.90	6.03	714	8.20	336.5
4	19.88	5.54	714	8.15	338.6
5	19.85	5.79	713	8.18	338.8
6	19.69	5.62	712	8.17	338.0

CCR-1
09/19/00
Secchi: 0.7m
1% Trans: 1.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	19.86	6.44	720	8.09	342.5
1	19.53	5.88	714	8.08	345.9
2	19.49	5.82	714	8.07	346.5
3	19.48	5.62	714	8.04	347.2
4	19.47	5.36	714	8.02	348.0
5	19.47	5.15	714	8.00	348.3
6	19.44	4.36	714	7.93	349.5
7	19.44	5.08	714	8.00	348.1

CCR-1
09/26/00
Secchi: 0.65m
1% Trans: 2.05m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	15.16	9.23	635	7.95	432.0
1	14.69	8.91	630	8.12	423.6
2	14.61	8.43	629	8.19	417.6
3	14.54	7.78	628	8.18	413.1
4	14.52	7.58	628	8.19	410.6
5	14.49	7.35	628	8.16	409.6

CCR-1
10/10/00
Secchi: 0.7m
1% Trans: 2.7m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	12.65	9.46	615	8.12	414.0
1	12.47	8.69	614	8.28	396.5
2	12.39	8.37	613	8.28	390.4
3	12.09	7.32	610	8.18	389.1
4	11.90	6.80	609	8.13	386.9
5	11.83	6.63	608	8.11	383.4
6	11.82	6.59	608	8.10	381.8

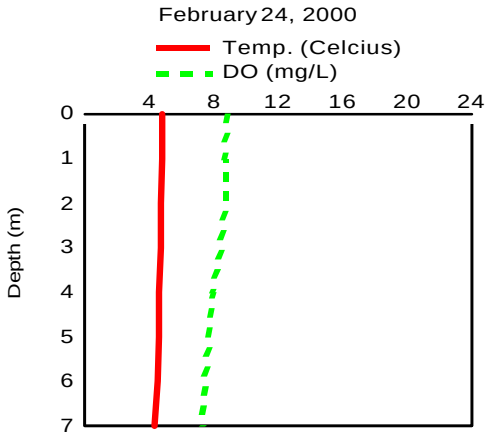
CCR-1
10/24/00
Secchi: 0.6m
1% Trans: 2.5m

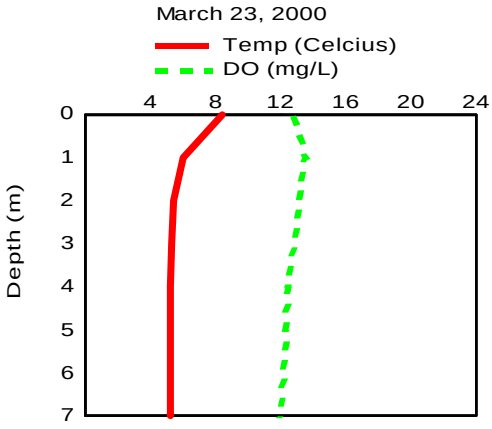
DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	11.58	9.28	611	8.34	407.6
1	11.55	9.20	610	8.33	398.0
2	11.52	9.08	611	8.31	392.0
3	11.51	9.01	611	8.27	387.7
4	11.50	8.94	611	8.26	383.4
5	11.47	8.73	611	8.27	382.0
6	11.46	7.49	612	8.20	381.5

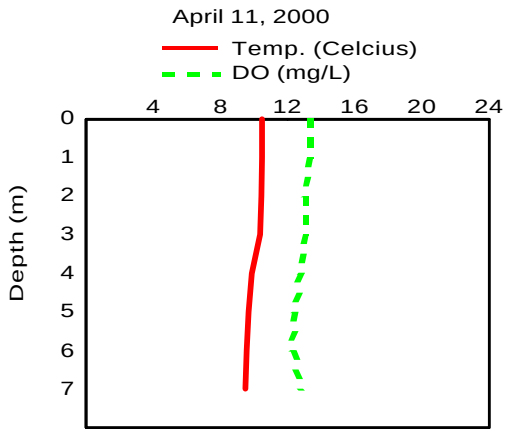
CCR-1
11/20/00
Secchi: 0.9m
1% Trans: 3.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	2.13	14.12	486	7.95	359.1
1	1.92	14.34	477	8.27	357.8
2	1.96	14.33	477	8.38	356.6
3	1.89	14.29	477	8.42	356.3
4	1.90	14.29	476	8.45	355.5
5	1.92	14.28	477	8.47	355.1
6	2.10	13.94	480	8.46	355.2

CCR - 1


February 24, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


March 23, 2000
Temp (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


April 11, 2000
Temp. (Celcius)
DO (mg/L)
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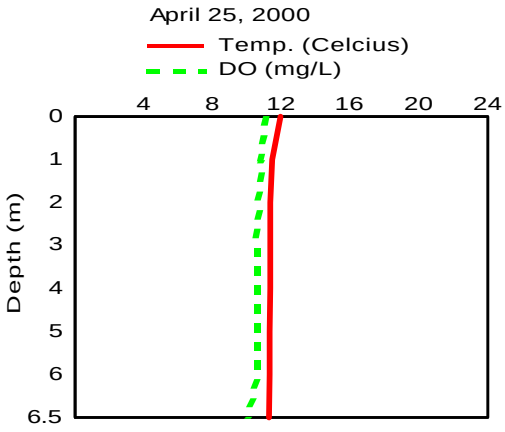
0 1 2 3 4 5 6 7
Depth (m)


April 25, 2000
Temp. (Celcius)
DO (mg/L)
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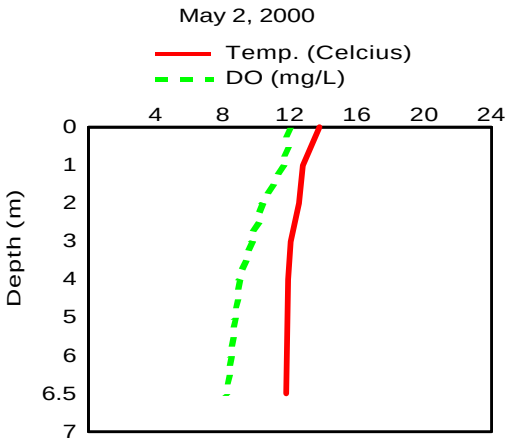
0 1 2 3 4 5 6 6.5
Depth (m)


May 2, 2000
Temp. (Celcius)
DO (mg/L)
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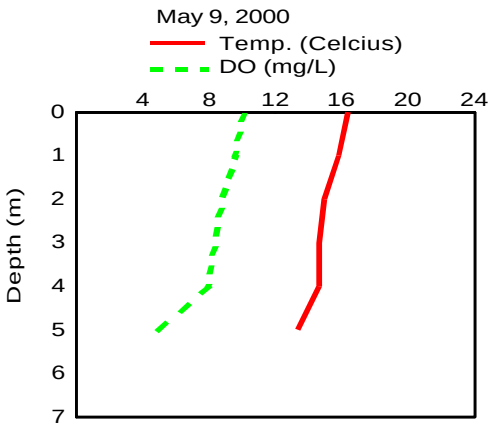
0 1 2 3 4 5 6 6.5 7
Depth (m)


May 9, 2000
Temp. (Celcius)
DO (mg/L)
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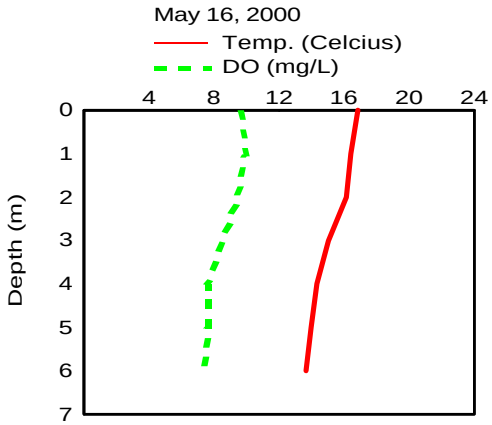
0 1 2 3 4 5 6 7
Depth (m)


May 16, 2000
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DO (mg/L)
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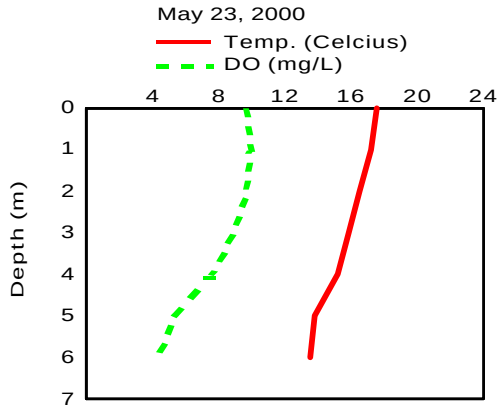
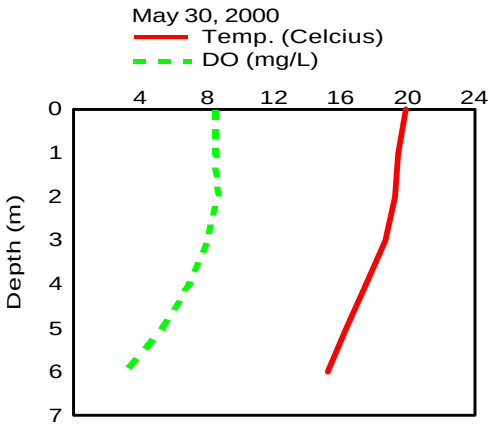
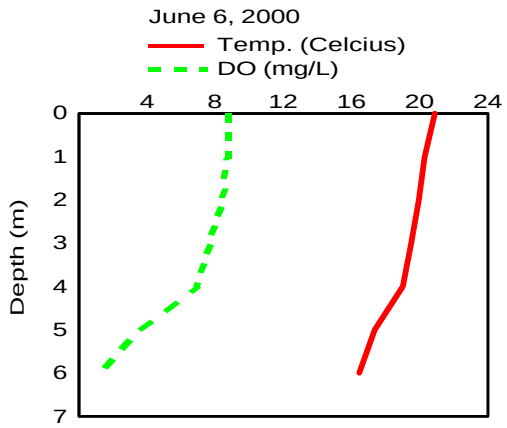
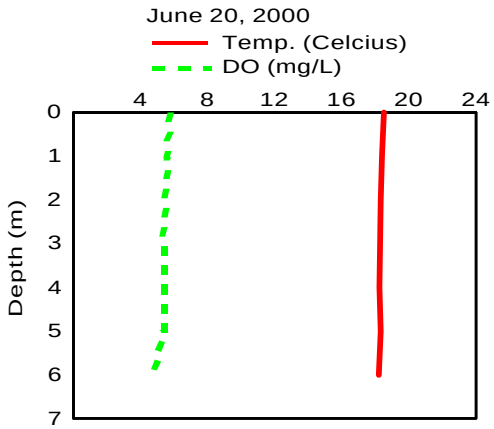
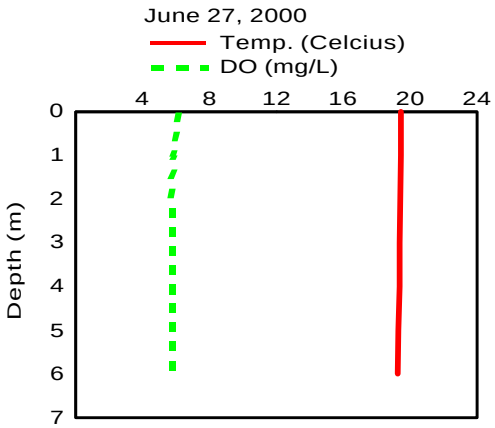
0 1 2 3 4 5 6 7
Depth (m)

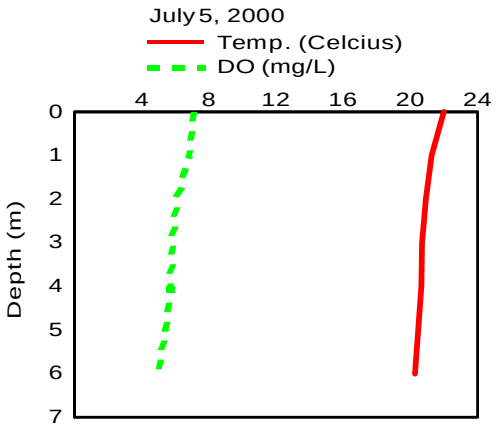

May 23, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

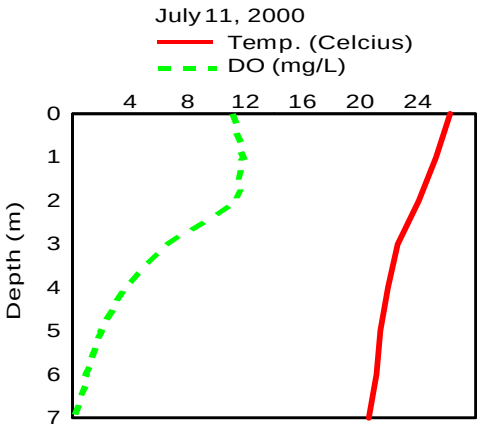

May 30, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

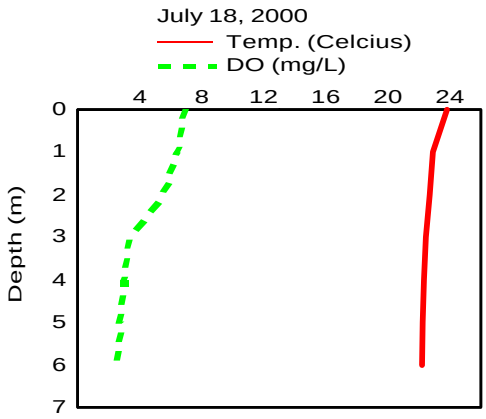

June 6, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

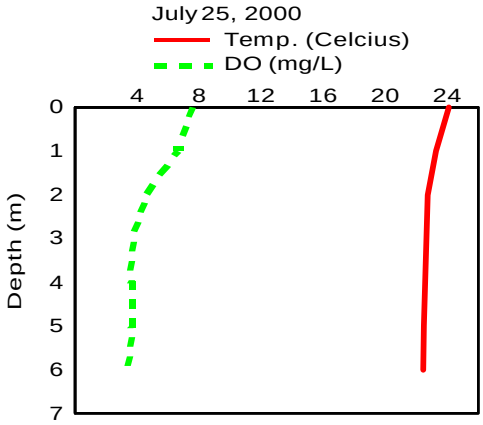

June 20, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

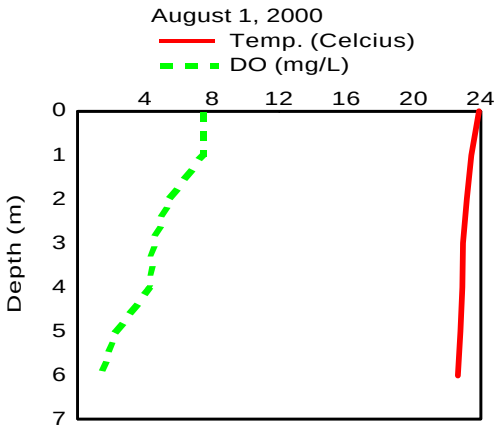

June 27, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

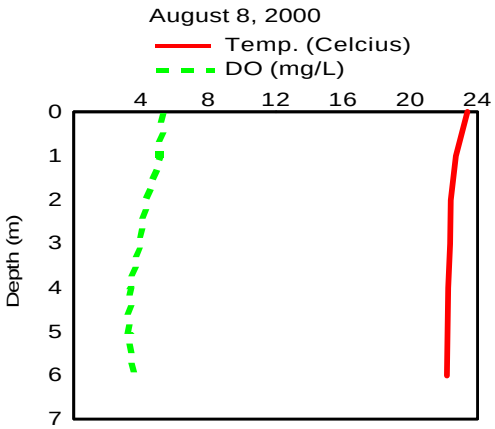

July 5, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

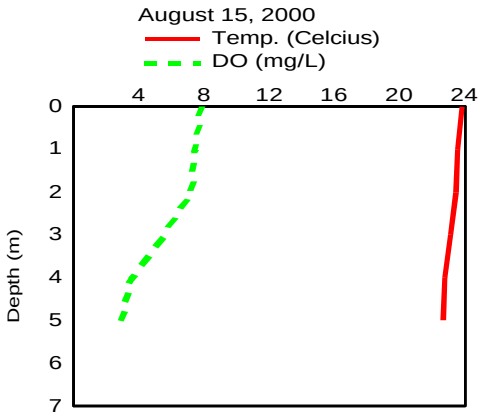

July 11, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

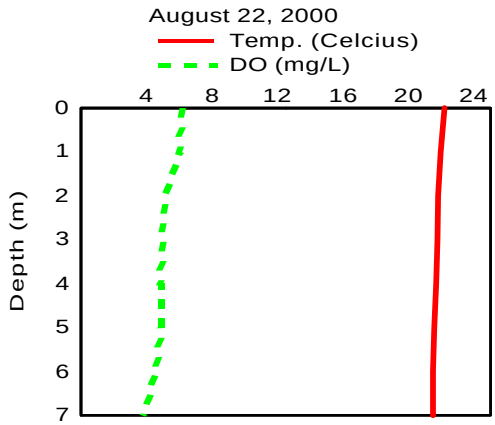

July 18, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

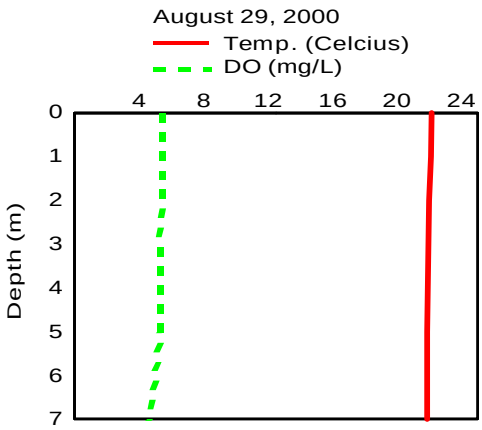

July 25, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

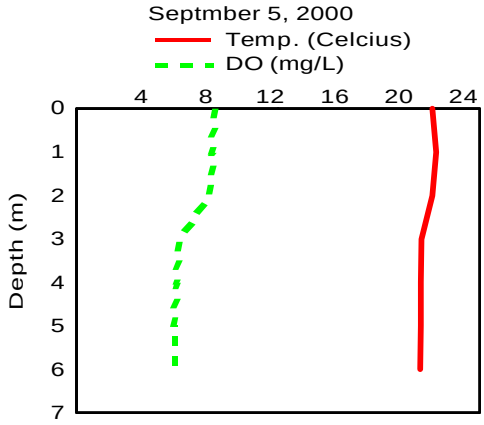

August 1, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

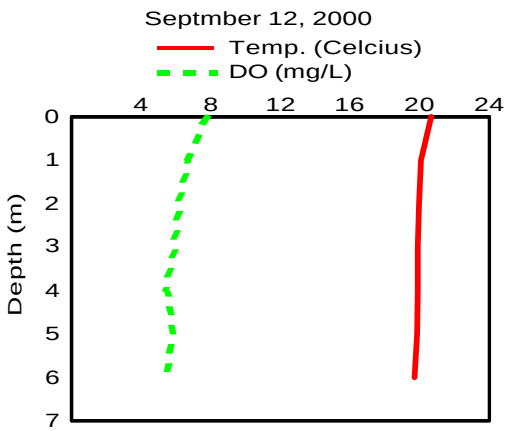

August 8, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

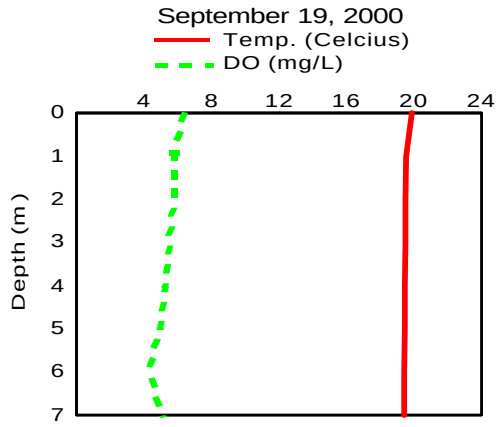

August 15, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

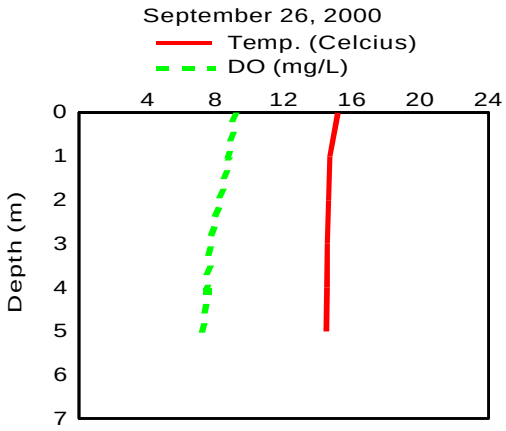

August 22, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

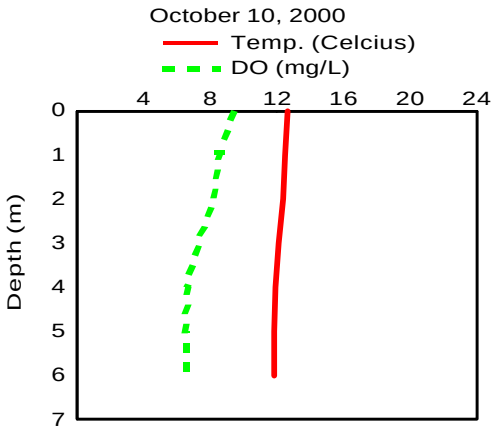

August 29, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

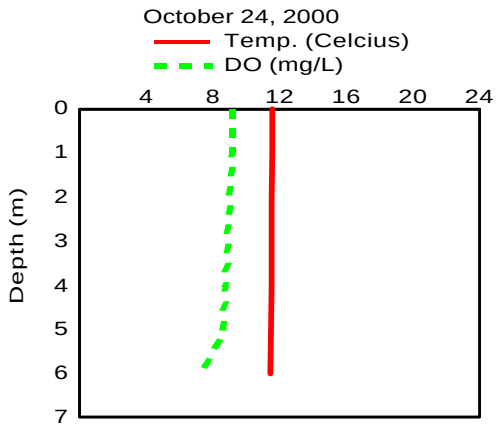

Septmber 5, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

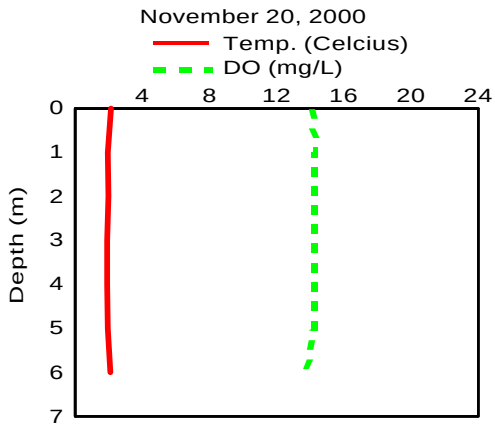

Septmber 12, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


September 19, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


September 26, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


October 10, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


October 24, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


November 20, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

CHERRY CREEK
D.O. DATA, 2000
SITE CCR2

CCR-2
02/24/00
Secchi: 0.8m
1% Trans: 2.4m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	4.30	8.30	497	8.40	299.0
1	4.30	8.20	496	8.30	301.0
2	4.30	8.20	494	8.30	302.0
3	4.30	8.20	494	8.30	303.0
4	4.30	8.10	495	8.30	303.0
5	4.30	8.10	494	8.20	303.0
6	4.30	8.10	495	8.20	304.0
7	4.30	8.00	494	8.20	304.0

CCR-2
03/23/00
Secchi: 0.7m
1% Trans: 2.45m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	8.40	12.40	564	8.20	295.5
1	6.12	12.72	525	8.20	296.6
2	5.50	12.41	518	8.20	297.8
3	5.20	12.09	514	8.20	296.8
4	5.20	11.98	514	8.20	296.5
5	5.20	11.84	514	8.20	296.2
6	5.20	11.49	513	8.40	295.8
7	5.20	10.03	514	8.40	293.5

CCR-2
04/11/00
Secchi: 0.7m
1% Trans: 2.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	10.15	14.03	584	8.17	246.5
1	10.04	13.13	582	8.08	255.4
2	10.01	12.86	582	8.05	258.6
3	9.95	12.73	581	8.04	262.0
4	9.95	12.67	581	8.04	264.0
5	9.96	12.60	581	8.04	266.5
6	9.81	12.50	580	8.05	268.4
7	9.70	12.37	578	8.05	269.5

CCR-2
04/25/00
Secchi: 0.5m
1% Trans: 1.9m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	12.25	11.60	629	7.63	299.0
1	11.71	11.57	620	7.64	299.5
2	11.44	11.23	616	7.67	301.0
3	11.42	11.04	616	7.71	301.6
4	11.40	10.96	616	7.72	302.0
5	11.39	10.95	616	7.75	302.1
6	11.37	10.82	616	7.77	302.5
7	11.37	9.81	616	7.79	303.3

CCR-2
05/02/00
Secchi: 0.65m
1% Trans: 2.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	14.25	12.48	664	8.05	194.9
1	12.71	12.03	640	8.04	204.9
2	12.49	11.32	637	8.04	215.2
3	12.46	10.86	637	8.05	218.5
4	12.42	10.68	636	8.06	222.4
5	12.31	10.57	635	8.07	225.9
6	12.13	10.33	632	8.09	228.4
7	11.83	9.33	628	8.09	228.1

CCR-2
05/09/00
Secchi: 0.75m
1% Trans: 2.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	16.35	7.98	653	8.19	261.8
1	14.99	7.89	633	8.24	266.2
2	14.78	7.26	632	8.23	269.5
3	14.71	6.93	630	8.24	271.8
4	14.44	6.35	627	8.22	274.7
5	13.96	5.58	621	8.21	278.0
6	13.08	4.50	609	8.17	282.8
7	12.48	3.39	600	8.14	285.9

CCR-2
05/16/00
Secchi: 0.8m
1% Trans: 4m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	16.33	10.26	658	7.96	263.3
1	16.13	10.10	657	7.95	270.0
2	15.04	10.08	639	7.96	274.0
3	14.50	8.76	632	7.95	279.7
4	14.23	7.67	629	7.93	283.1
5	14.05	6.97	627	7.91	286.2
6	13.64	6.00	622	7.89	289.4
7	13.34	4.36	619	7.85	293.5

CCR-2
05/23/00
Secchi: 0.8m
1% Trans: 3m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	17.23	10.14	663	8.22	275.4
1	17.14	10.17	662	8.14	279.3
2	16.50	10.10	653	8.17	281.5
3	16.14	9.82	646	8.19	283.8
4	14.96	8.89	629	8.17	288.5
5	14.30	7.19	619	8.16	291.7
6	13.80	6.48	610	8.14	294.1
7	13.50	4.90	600	8.11	299.0

CCR-2
05/30/00
Secchi: 0.9m
1% Trans: 3.3m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	20.25	8.78	700	8.67	271.2
1	19.65	8.98	690	8.65	273.8
2	19.10	8.63	683	8.64	275.8
3	18.40	8.03	675	8.63	279.1
4	16.90	6.91	651	8.62	282.2
5	15.90	4.90	636	8.57	287.5
6	15.23	3.55	626	8.53	291.5
7	14.60	2.14	613	6.49	295.9

CCR-2
06/06/00
Secchi: 1.0m
1% Trans: 2.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	21.75	8.34	726	8.54	246.7
1	20.49	8.78	706	8.48	250.0
2	20.06	8.90	698	8.52	255.7
3	19.70	8.27	693	8.52	259.6
4	18.90	6.28	684	8.49	265.7
5	17.66	4.00	665	8.46	270.4
6	16.89	2.20	652	8.42	274.5
6.5	15.78	0.60	634	8.38	275.4

CCR-2
06/13/00
Secchi: 0.7m
1% Trans: 1.2m

CCR-2
06/20/00
Secchi: 0.7m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	19.20	7.12	690
1	19.07	7.12	688
2	18.87	6.95	685
3	18.69	6.73	682
4	18.54	6.36	681
5	18.48	6.10	681
6	18.37	5.91	678
7	18.20	4.78	675

CCR-2
06/27/00
Secchi: 0.7m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	19.64	5.93	732
1	19.43	5.70	729
2	19.32	5.48	727
3	19.29	5.32	726
4	19.28	5.27	726
5	19.25	5.13	726
6	19.20	4.88	726
7	18.71	2.59	721

CCR-2
07/05/00
Secchi: 0.9m
1% Trans: 2.9m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	22.52	7.10	785
1	21.33	6.99	763
2	21.15	6.37	762
3	20.94	5.89	759
4	20.65	4.94	755
5	20.41	4.59	737
6	20.08	3.60	747
7	19.98	2.85	746

CCR-2
07/11/00
Secchi: 1.3m
1% Trans: 2.9m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	25.42	11.09	831
1	24.12	10.60	811
2	23.24	9.22	795
3	22.89	7.89	793
4	22.46	6.72	787
5	21.16	1.12	766
6	20.67	0.22	758
7	20.18	1.73	757

CCR-2
07/18/00
Secchi: 1.2m
1% Trans: 3.4m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.95	8.47	777	8.22	337.9
1	23.05	7.66	767	8.17	342.4
2	22.96	7.37	765	8.14	344.2
3	22.83	7.35	763	8.07	346.2
4	22.76	6.35	759	8.04	347.4
5	22.45	4.54	744	7.86	351.6
6	22.10	2.83	751	7.63	356.7
7	21.88	1.13	751	7.55	356.6

CCR-2
07/25/00
Secchi: 1.4m
1% Trans: 3.7m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.00	8.66	768	8.28	350.5
1	23.46	8.31	762	8.21	355.4
2	23.25	7.13	759	8.07	361.3
3	23.12	6.61	757	8.05	362.5
4	23.03	6.90	755	8.02	363.4
5	22.92	5.97	755	7.92	365.6
6	22.45	2.95	754	7.52	372.9
7	22.26	1.00	752	7.45	312.2

CCR-2
08/01/00
Secchi: 1.1m
1% Trans: 2.7m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.55	7.10	779	8.05	284.3
1	23.23	6.67	761	7.99	300.8
2	23.03	5.78	758	7.90	309.7
3	22.95	5.45	756	7.86	316.8
4	22.85	5.16	756	7.84	320.7
5	22.67	3.72	755	7.70	325.8
6	22.54	1.78	756	7.54	330.2

CCR-2
08/08/00
Secchi: 1.2m
1% Trans: 3.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.67	7.40	759	8.14	229.9
1	23.15	6.93	750	8.08	242.8
2	22.82	5.97	746	7.96	253.8
3	22.71	5.34	745	7.90	265.9
4	22.59	5.00	744	7.86	273.0
5	22.36	4.22	742	7.77	277.6
6	22.23	3.39	741	7.70	280.9
7	22.17	2.96	741	7.67	282.8

CCR-2
08/15/00
Secchi: 1.0m
1% Trans: 3.0m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.01	8.08	765	8.24	344.5
1	23.91	8.01	764	8.23	347.1
2	23.44	7.40	756	8.17	350.5
3	23.12	6.74	752	8.10	355.9
4	23.02	6.20	752	8.05	358.6
5	22.90	5.14	751	7.94	361.7
6	22.77	4.21	749	7.84	364.3

CCR-2
08/22/00
Secchi: 0.9m
1% Trans: 1.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.02	6.10	743	8.05	236.7
1	22.15	6.06	729	8.05	244.7
2	21.86	5.44	726	7.96	252.9
3	21.68	4.82	722	7.89	259.1
4	21.49	5.09	718	7.93	266.1
5	21.39	5.52	717	7.99	274.5
6	21.25	5.36	716	7.96	278.9
7	21.04	1.10	715	7.59	195.2

* the probe membrane was checked and the readings were also double checked for the DO values at 3&4m.

CCR-2
08/29/00
Secchi: 1.0m
1% Trans: 2.5m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.54	7.21	754	8.06	340.8
1	22.24	6.64	729	8.11	342.5
2	21.97	5.99	726	8.04	344.7
3	21.94	5.93	725	8.03	345.4
4	21.92	5.86	725	8.03	345.7
5	21.90	5.87	724	8.04	345.9
6	21.80	5.62	724	8.02	345.6

CCR-2
09/05/00
Secchi: 0.7m
1% Trans: 2.3m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	21.74	7.77	739	8.28	331.7
1	21.68	7.65	738	8.28	332.7
2	21.45	7.17	735	8.22	334.4
3	21.08	5.64	731	7.98	339.9
4	21.02	5.45	732	8.02	339.5
5	20.83	5.24	729	8.03	341.4
6	20.64	5.66	726	8.07	341.8

CCR-2
09/12/00
Secchi: 0.5m
1% Trans: 3.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	20.93	9.25	726	8.45	260.4
1	19.97	6.73	714	8.20	276.9
2	19.86	6.05	714	8.15	283.2
3	19.83	5.99	713	8.15	287.1
4	19.79	5.97	713	8.16	290.2
5	19.70	5.94	712	8.17	293.4
6	19.50	6.05	711	8.21	294.6

CCR-2
09/19/00
Secchi: 0.8m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	20.25	7.54	728	8.20	337.1
1	19.68	6.76	718	8.13	341.5
2	19.56	6.48	716	8.12	343.4
3	19.52	6.19	715	8.11	344.6
4	19.50	6.08	715	8.10	345.2
5	19.48	5.79	715	8.07	346.3
6	19.39	4.05	715	7.91	349.4

CCR-2
09/26/00
Secchi: 0.6m
1% Trans: 2.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	15.91	8.66	655	8.27	386.6
1	14.45	8.39	630	8.27	384.4
2	14.36	7.86	628	8.23	384.1
3	14.33	7.62	627	8.22	383.3
4	14.31	7.58	627	8.22	382.6
5	14.29	7.54	627	8.21	382.0
6	14.25	7.43	627	8.20	381.7
7	14.17	6.86	626	8.13	382.0

CCR-2
10/10/00
Secchi: 0.7m
1% Trans: 2.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	13.18	9.25	626	8.37	354.0
1	12.32	8.46	613	8.28	355.9
2	12.27	8.05	613	8.25	356.9
3	12.19	7.86	612	8.23	357.3
4	12.02	7.53	610	8.21	357.9
5	11.87	7.00	608	8.15	358.7
6	11.64	6.69	605	8.11	359.2
7	11.60	6.27	605	8.06	358.2

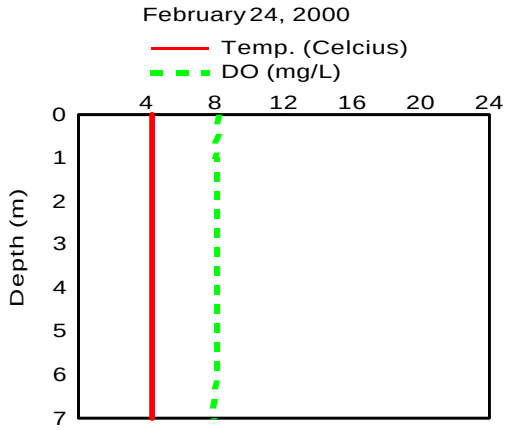
CCR-2
10/24/00
Secchi: 0.6m
1% Trans: 2.9m

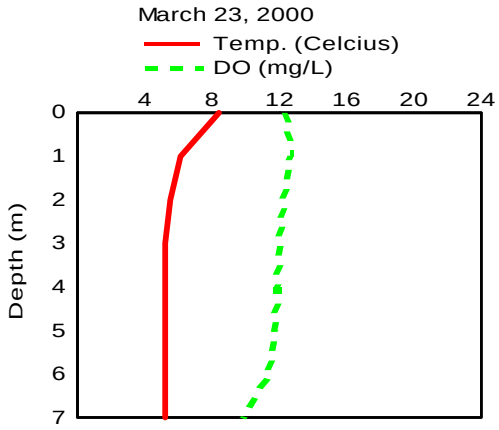
DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	11.58	9.34	611	8.39	291.3
1	11.38	9.25	609	8.38	295.8
2	11.16	8.70	606	8.31	299.4
3	11.11	8.17	606	8.28	303.0
4	11.09	8.07	606	8.27	305.3
5	11.09	8.05	606	8.27	307.3
6	11.09	7.96	606	8.26	309.9

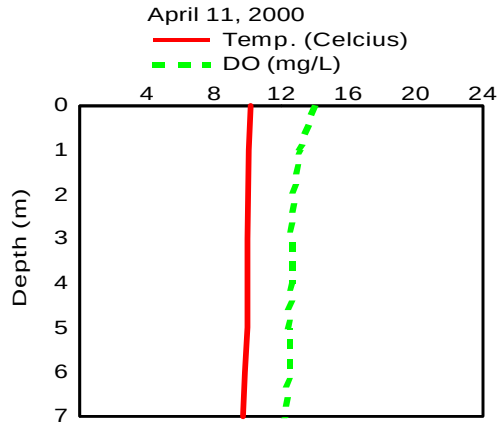
CCR-2
11/20/00
Secchi: 0.8m
1% Trans: 3.4m

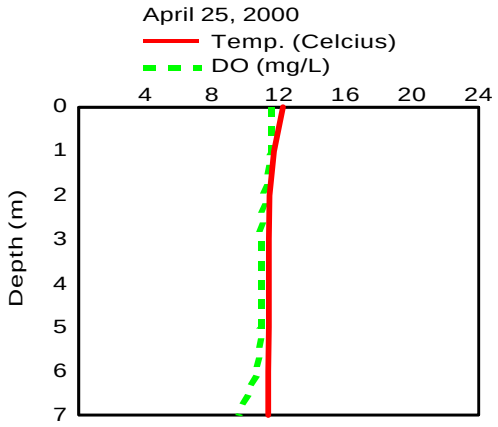
DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	2.04	14.05	478	8.54	343.4
1	1.99	14.01	475	8.55	344.2
2	1.96	14.01	475	8.56	344.8
3	1.95	14.00	475	8.56	345.2
4	1.95	14.00	475	8.56	345.7
5	1.92	14.00	475	8.56	346.0
6	1.91	13.99	475	8.56	346.2

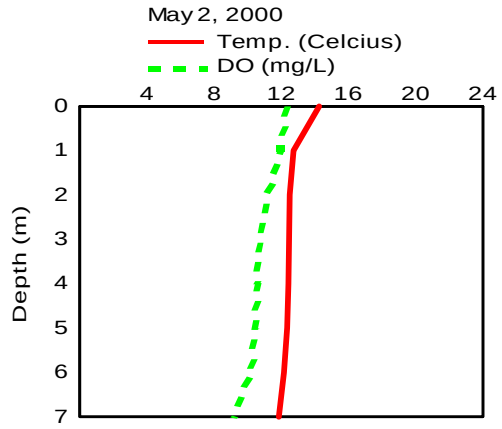
CCR-2

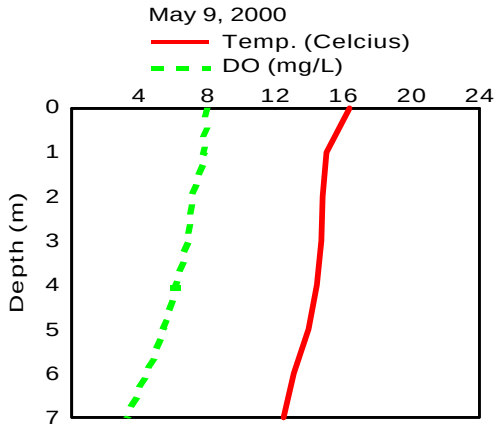

February 24, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

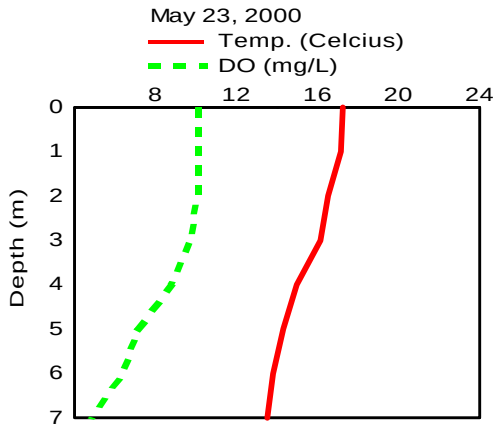

March 23, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

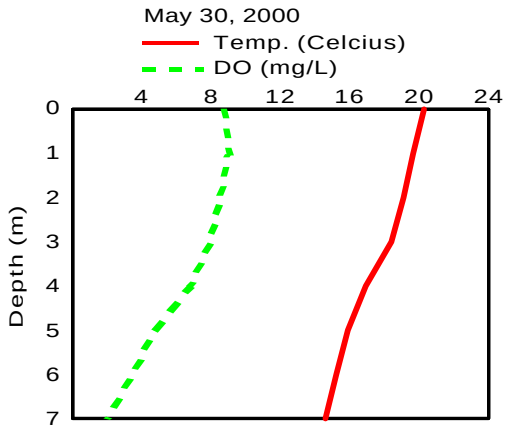

April 11, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

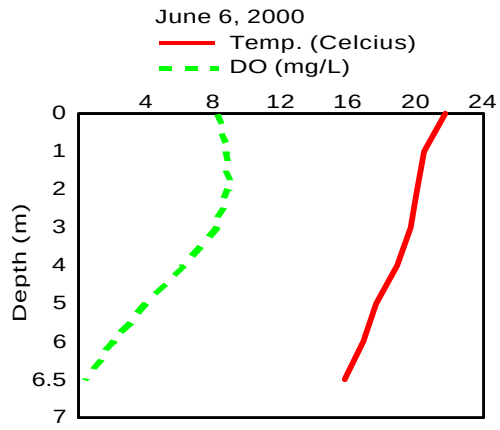

April 25, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

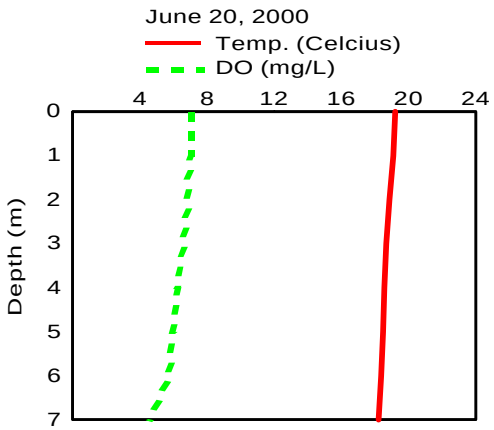

May 2, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

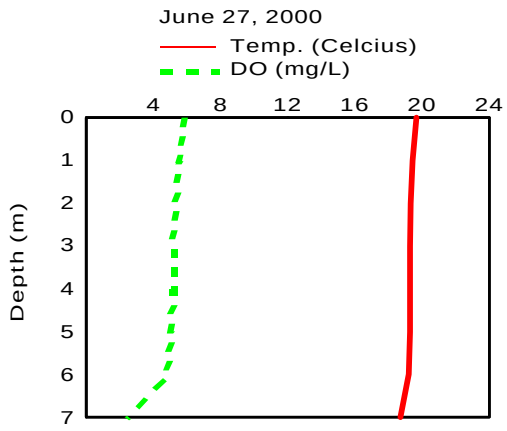

May 9, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

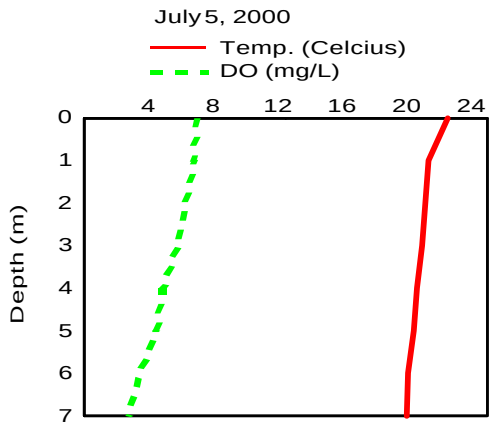

May 23, 2000
Temp. (Celcius)
DO (mg/L)
8
12
16
20
24
Depth (m)
0
1
2
3
4
5
6
7

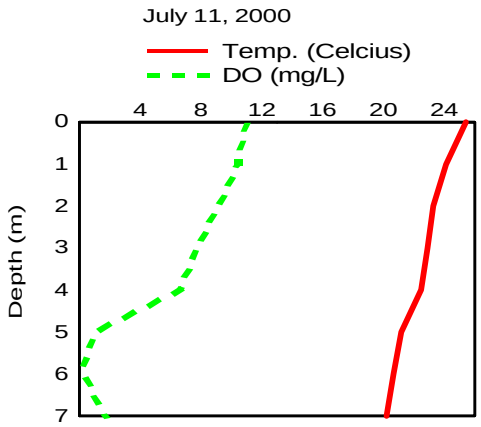

May 30, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
Depth (m)
0
1
2
3
4
5
6
7

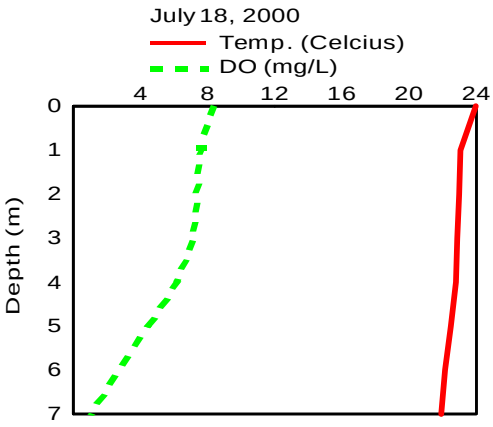

June 6, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
Depth (m)
0
1
2
3
4
5
6
6.5
7

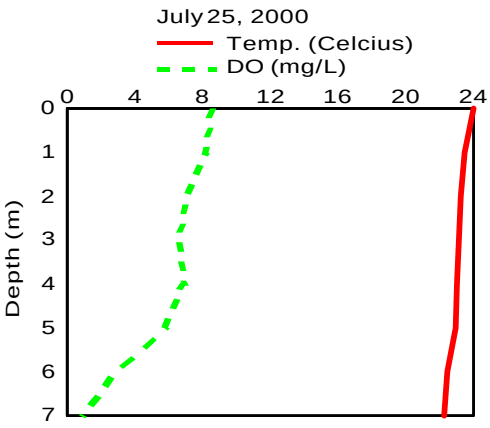

June 20, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
Depth (m)
0
1
2
3
4
5
6
7

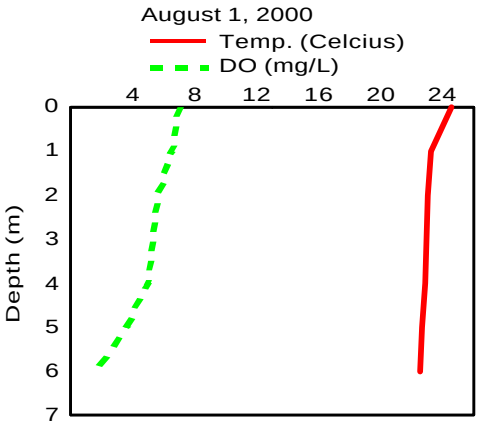

June 27, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
Depth (m)
0
1
2
3
4
5
6
7

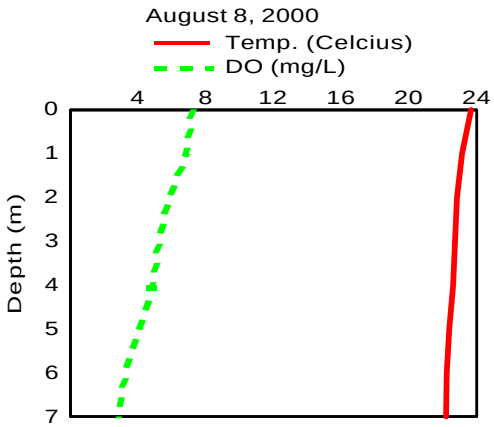

July 5, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
Depth (m)
0
1
2
3
4
5
6
7

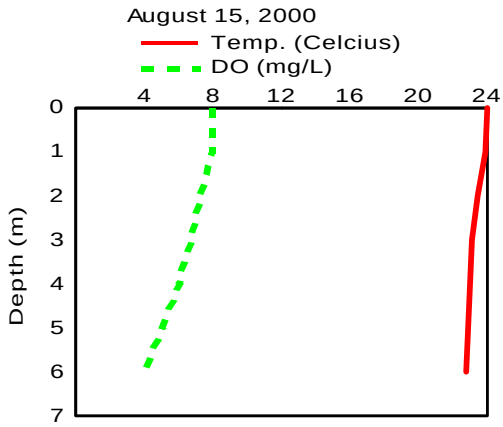

July 11, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

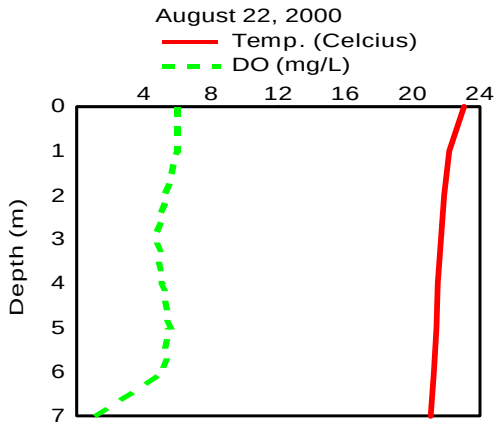

July 18, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

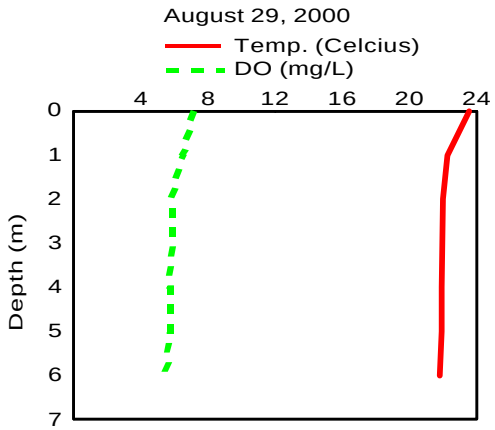

July 25, 2000
Temp. (Celcius)
DO (mg/L)
0 4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

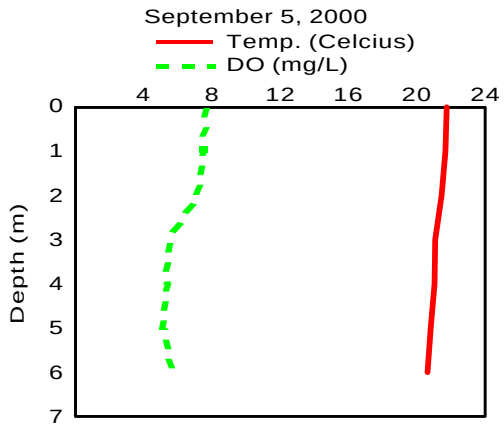

August 1, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

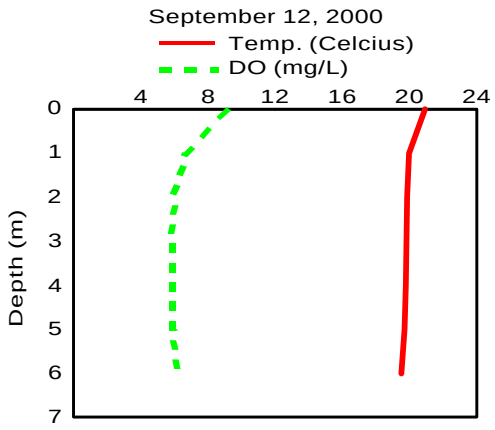

August 8, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

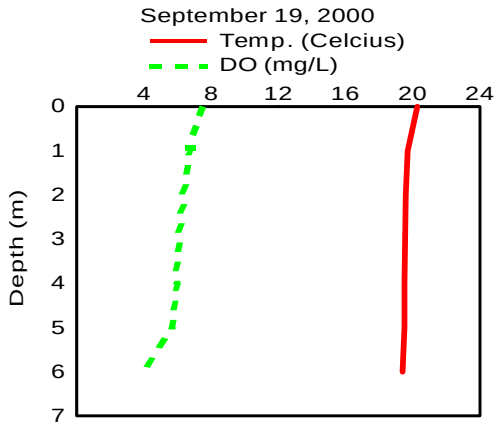

August 15, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

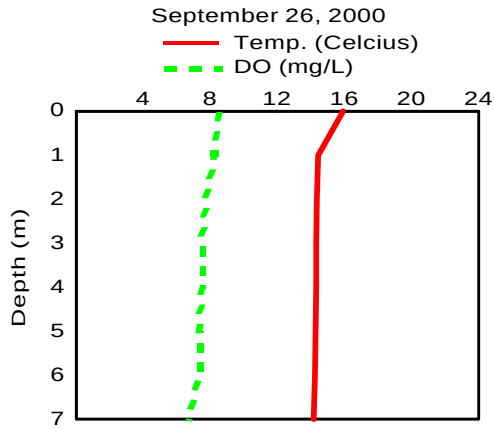

August 22, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

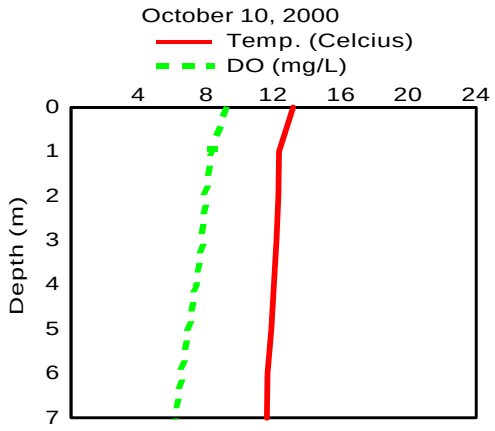

August 29, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

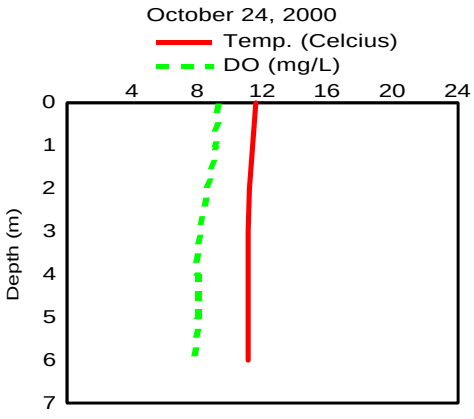

September 5, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

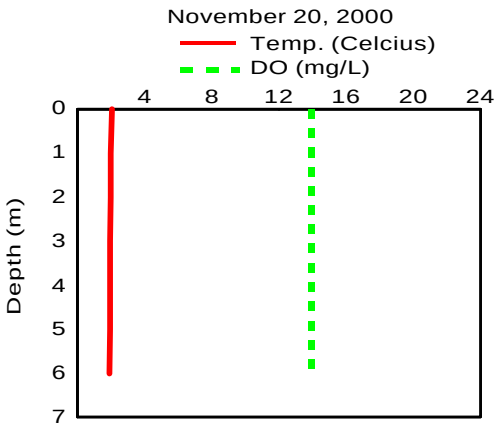

September 12, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


September 19, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


September 26, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


October 10, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
0
1
2
3
4
5
6
7
Depth (m)


October 24, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
0
1
2
3
4
5
6
7
Depth (m)


November 20, 2000
Temp. (Celcius)
DO (mg/L)
4
8
12
16
20
24
0
1
2
3
4
5
6
7
Depth (m)

CHERRY CREEK
D.O. DATA, 2000
SITE CCR3

CCR-3
02/24/00
Secchi: 0.8m
1% Trans: 2.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	4.40	8.90	497	8.70	288.0
1	4.30	9.00	495	8.60	292.0
2	4.30	8.90	494	8.50	293.0
3	4.30	8.90	495	8.40	295.0
4	4.30	8.90	495	8.40	295.0
4.5	4.30	8.90	495	8.30	296.0

CCR-3
03/23/00
Secchi: 0.75m
1% Trans: 2.5m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	6.70	12.70	536	8.80	280.0
1	6.50	13.00	534	8.60	285.0
2	5.60	13.30	520	8.50	288.0
3	5.20	12.90	513	8.40	290.0
4	5.20	13.00	524	8.40	293.0

CCR-3
04/11/00
Secchi: 0.7m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	10.28	14.49	582	8.28	233.2
1	9.91	14.23	581	8.21	241.3
2	9.93	13.89	581	8.17	246.6
3	9.90	13.55	581	8.14	250.4
4	9.85	13.34	580	8.17	253.6
5	9.81	13.45	579	8.14	255.9

CCR-3
04/25/00
Secchi: 0.55m
1% Trans: 1.5m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	12.38	12.46	639	8.00	302.3
1	11.74	12.19	624	7.98	302.5
2	11.61	11.76	620	7.97	303.5
3	11.53	11.44	619	7.97	304.2
4	11.24	11.39	618	7.98	304.7
5	10.97	5.15	615	7.97	310.1

CCR-3
05/02/00
Secchi: 0.7m
1% Trans: 2.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	13.84	12.67	658	8.12	195.1
1	12.63	12.45	638	8.13	201.9
2	12.25	11.55	634	8.12	209.6
3	12.21	11.12	640	8.12	214.2
4	12.00	10.81	635	8.12	218.9
4.5	11.97	10.34	636	8.12	221.6

CCR-3
05/09/00
Secchi: 0.8m
1% Trans: 2.9m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	16.28	7.34	653	8.29	275.4
1	15.60	7.43	643	8.29	274.4
2	14.74	7.09	630	8.28	276.4
3	14.60	6.59	629	8.27	278.4
4	14.33	6.12	626	8.26	280.5
5	13.84	5.83	620	8.23	281.6

CCR-3
05/16/00
Secchi: 0.8m
1% Trans: 4m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	16.70	10.04	663	8.05	283.4
1	16.20	10.11	658	8.04	286.2
2	16.13	10.09	656	8.04	287.4
3	15.93	9.93	653	8.03	289.0
4	15.08	9.42	642	8.02	291.5
4.5	14.74	6.82	635	7.99	300.8

CCR-3
05/23/00
Secchi: 0.6m
1% Trans: 2.9m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	17.23	9.54	663	8.41	278.4
1	17.07	9.86	660	8.40	280.7
2	16.54	9.77	652	8.38	283.6
3	16.40	9.79	649	8.38	283.8
4	15.80	9.07	640	8.35	286.7
5	14.60	9.80	623	8.34	291.2

CCR-3
05/30/00
Secchi: 0.7m
1% Trans: 2.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	19.99	8.78	696	8.74	262.7
1	19.89	8.97	695	8.72	265.2
2	19.48	8.96	689	8.70	267.8
3	19.03	8.53	682	8.70	270.7
4	18.34	7.50	674	8.68	274.8
4.5	17.12	5.45	657	8.65	280.0

CCR-3
06/06/00
Secchi: 0.7m
1% Trans: 3.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.43	7.96	755	8.11	235.6
1	20.56	8.70	708	8.21	251.1
2	19.86	8.20	697	8.26	257.7
3	19.33	6.93	690	8.29	265.9
4	19.04	5.76	687	8.31	272.8

CCR-3
06/13/00
Secchi: 0.7m
1% Trans: 1.2m

CCR-3
06/20/00
Secchi: 0.7m
1% Trans: 2.5m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	19.36	7.19	693
1	19.24	7.18	691
2	19.08	7.07	689
3	19.95	6.96	687
4	18.83	6.84	684
5	18.54	6.46	682

CCR-3
06/27/00
Secchi: 0.5m
1% Trans: 2.0m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	20.47	6.49	747
1	20.04	6.34	738
2	19.40	6.00	729
3	19.26	5.53	728
4	19.21	5.10	734

CCR-3
07/05/00
Secchi: 0.9m
1% Trans: 2.4m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	22.31	7.97	780
1	21.36	7.17	764
2	20.95	5.89	759
3	20.74	5.27	757
4	20.40	5.45	757

CCR-3
07/11/00
Secchi: 1.5m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.
0	26.38	10.94	849
1	25.18	10.85	827
2	23.64	10.26	801
3	23.04	8.61	797
4	22.18	6.28	785
4.5	22.01	4.24	769

CCR-3
07/18/00
Secchi: 0.9m
1% Trans: 2.3m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	25.70	9.81	766	8.40	318.0
1	22.88	7.20	737	8.08	332.7
2	22.83	6.49	746	8.06	335.6
3	22.72	6.65	753	8.04	336.7
4	22.65	6.60	648	7.99	338.2
5	22.39	4.66	736	7.76	341.8

CCR-3
07/25/00
Secchi: 1.2m
1% Trans: 3.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.52	8.53	779	8.27	333.1
1	23.47	8.17	762	8.22	333.7
2	23.20	6.43	761	7.98	344.6
3	23.07	5.53	759	7.83	348.1
4	22.91	5.18	764	7.83	349.0

CCR-3
08/01/00
Secchi: 1.2m
1% Trans: 3.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	25.89	6.61	808	8.07	267.6
1	23.48	7.35	765	8.13	284.8
2	23.12	5.83	763	7.82	295.3
3	22.71	3.87	756	7.69	298.3
4	22.49	3.79	754	7.72	298.8
4.5	22.41	3.63	754	7.71	261.6

CCR-3
08/08/00
Secchi: 1.1m
1% Trans: 2.8m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.55	8.13	774	8.22	275.8
1	23.25	7.51	753	8.15	286.9
2	22.69	5.78	746	7.88	297.9
3	22.47	4.68	744	7.82	303.6
4	22.37	4.21	743	7.75	307.7

CCR-3
08/15/00
Secchi: 1.2m
1% Trans: 3.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	24.80	8.44	778	8.29	349.1
1	24.36	8.71	771	8.32	350.7
2	23.66	8.17	762	8.26	353.2
3	23.61	7.92	761	8.24	354.6
4	23.34	6.77	759	8.15	356.6

CCR-3
08/22/00
Secchi: 0.9m
1% Trans: 3.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.37	7.67	748	8.15	308.7
1	23.11	7.67	740	8.15	315.2
2	21.72	5.42	723	7.90	323.9
3	21.61	5.06	721	7.87	326.3
4	21.54	4.88	720	7.86	328.1
5	21.17	5.08	717	7.89	328.7

CCR-3
08/29/00
Secchi: 1.1m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	23.84	6.69	755	8.08	352.2
1	22.30	6.62	731	8.07	354.5
2	21.96	5.75	726	7.98	357.2
3	21.88	5.72	724	7.98	358.6
4	21.87	5.76	724	7.99	358.7
5	21.78	5.10	724	7.94	358.5

CCR-3
09/05/00
Secchi: 0.7m
1% Trans: 1.1m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	21.95	7.78	742	8.32	329.9
1	21.77	7.47	740	8.30	333.0
2	21.66	7.13	738	8.26	335.5
3	21.33	6.53	734	8.18	338.1
4	21.34	6.56	734	8.20	338.2
5	20.97	6.25	730	8.14	339.3

CCR-3
09/12/00
Secchi: 0.4m
1% Trans: 2.7m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	22.45	9.51	756	8.52	319.3
1	20.07	7.47	715	8.28	329.0
2	19.91	6.28	715	8.19	331.9
3	19.84	6.08	715	8.17	333.0
4	19.81	5.84	715	8.16	332.8
5	19.42	5.44	729	8.12	332.0

CCR-3
09/19/00
Secchi: 0.7m
1% Trans: 2.6m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	20.69	7.25	735	8.16	354.3
1	19.51	6.11	715	8.07	360.3
2	19.44	5.44	715	8.01	362.9
3	19.42	4.99	715	7.99	365.0
4	19.31	5.41	715	8.02	364.6

CCR-3
09/26/00
Secchi: 0.65m
1% Trans: 2.0m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	15.06	9.74	638	8.39	367.1
1	14.47	9.04	628	8.30	367.5
2	14.36	8.30	629	8.23	368.5
3	14.30	7.79	628	8.19	369.0
4	14.14	7.74	628	8.19	369.1

CCR-3
10/10/00
Secchi: 0.7m
1% Trans: 2.2m

DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	14.11	8.03	642	8.24	329.4
1	12.30	9.23	612	8.36	330.5
2	11.92	8.03	608	8.23	334.2
3	11.82	7.48	608	8.17	336.8
4	11.77	7.56	620	8.16	338.0

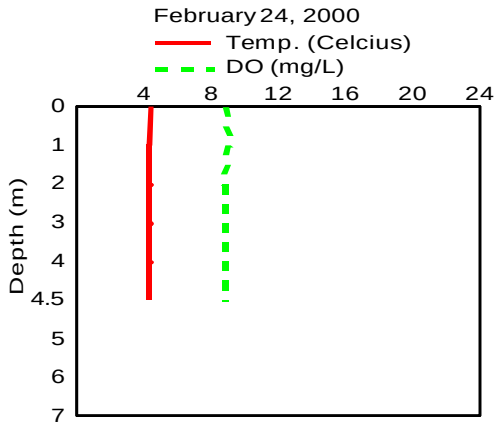
CCR-3
10/24/00
Secchi: 0.7m
1% Trans: 1.7m

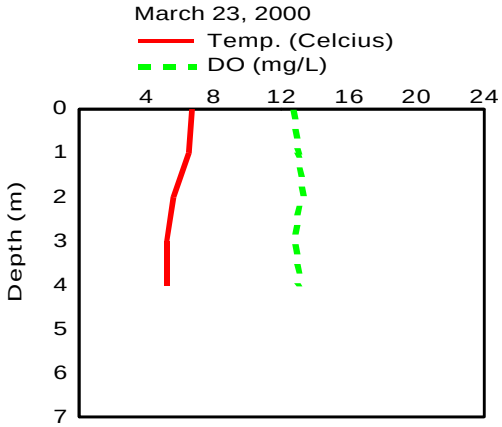
DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	11.87	9.33	618	8.39	299.5
1	11.55	9.29	613	8.39	303.5
2	11.43	9.22	612	8.38	307.1
3	11.40	9.22	612	8.38	310.4
4	11.26	8.96	622	8.34	312.9

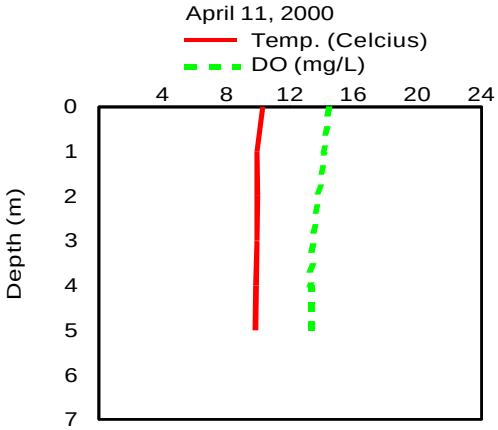
CCR-3
11/20/00
Secchi: 0.8m
1% Trans: 3.3m

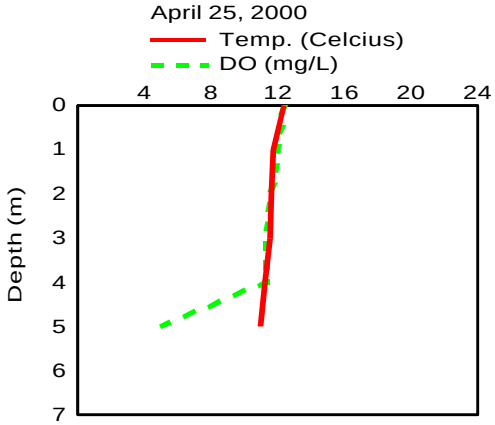
DEPTH (m)	TEMP (C)	D.O.	COND.	pH	ORP
0	1.93	14.36	477	8.60	347.2
1	1.90	14.41	475	8.59	348.4
2	1.87	14.39	475	8.58	349.3
3	1.85	14.33	476	8.57	350.1
4	1.89	14.27	477	8.56	350.6

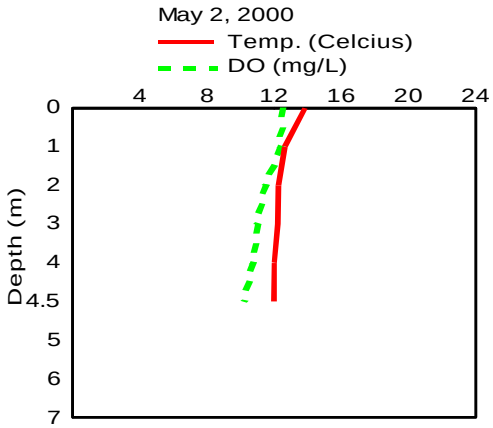
CCR-3

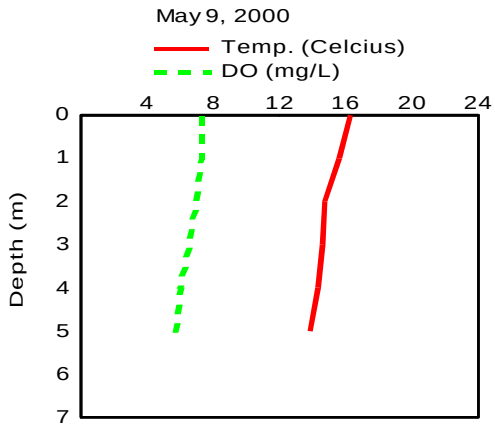

February 24, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 4.5 5 6 7
Depth (m)

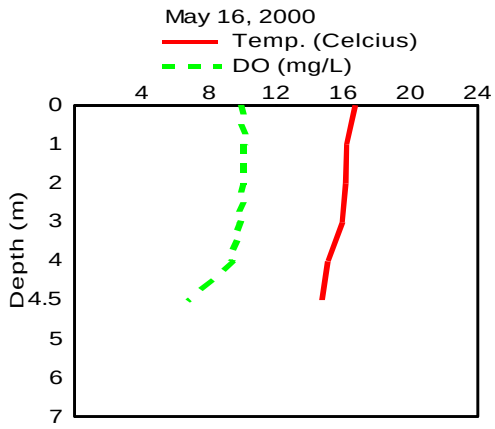

March 23, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

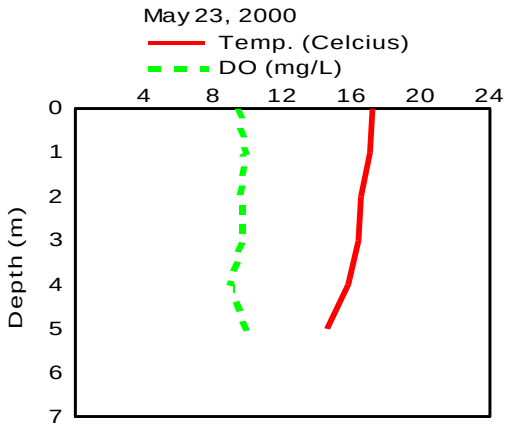

April 11, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

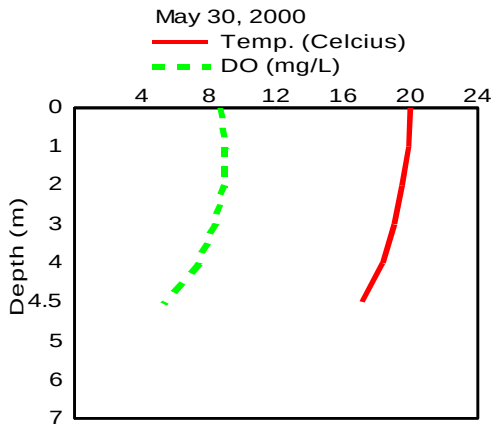

April 25, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

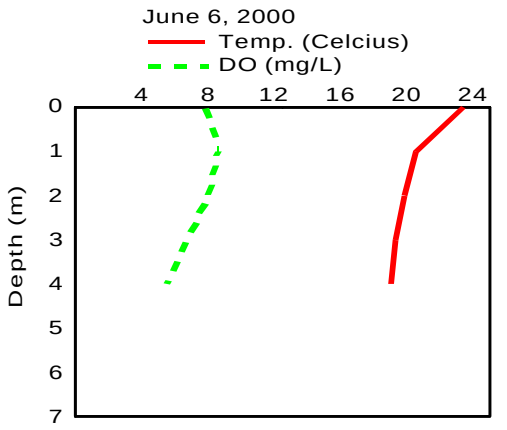

May 2, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 4.5 5 6 7
Depth (m)

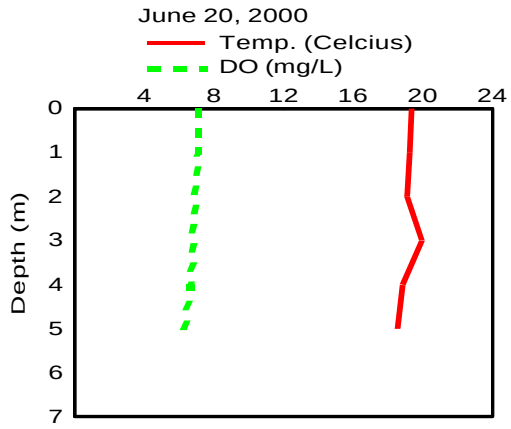

May 9, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

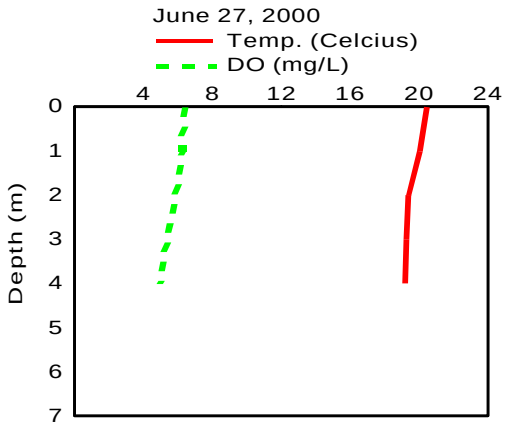

May 16, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
Depth (m)
0 1 2 3 4 4.5 5 6 7

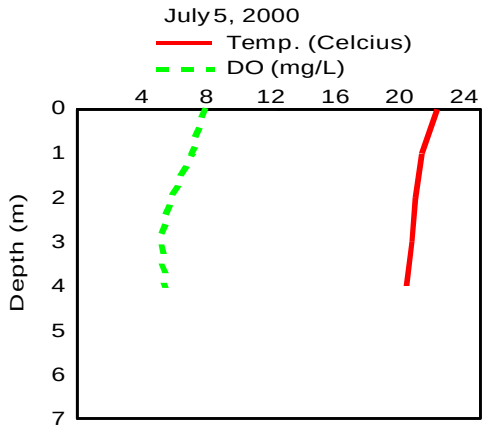

May 23, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
Depth (m)
0 1 2 3 4 5 6 7

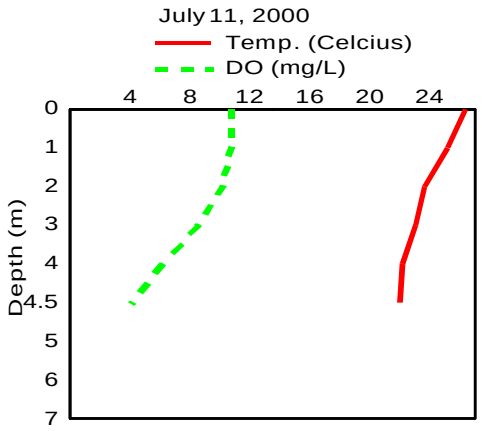

May 30, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
Depth (m)
0 1 2 3 4 4.5 5 6 7

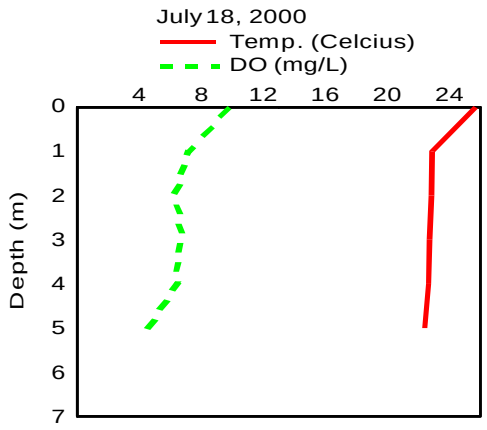

June 6, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
Depth (m)
0 1 2 3 4 5 6 7

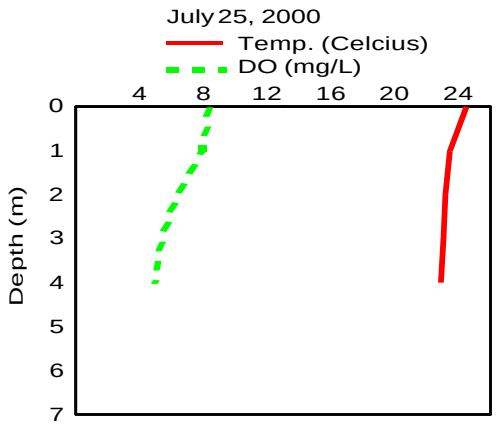

June 20, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
Depth (m)
0 1 2 3 4 5 6 7

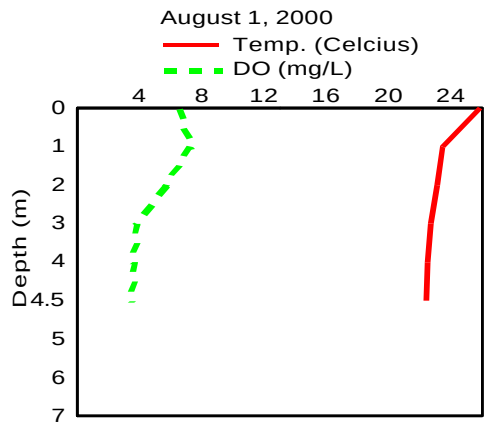

June 27, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
Depth (m)
0 1 2 3 4 5 6 7

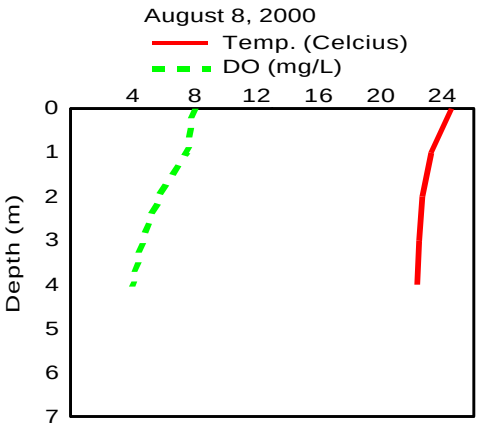

July 5, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

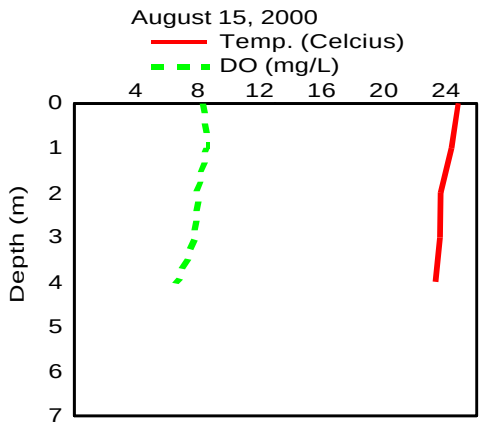

July 11, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 4.5 5 6 7
Depth (m)

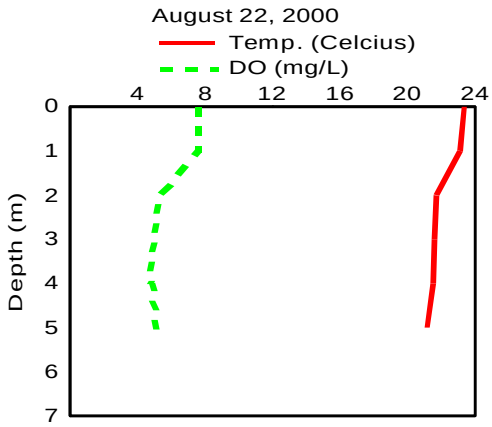

July 18, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

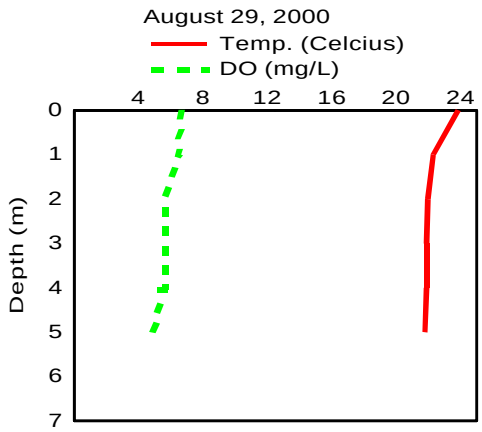

July 25, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

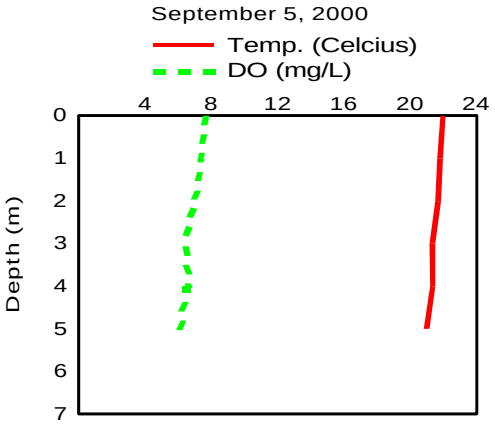

August 1, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 4.5 5 6 7
Depth (m)

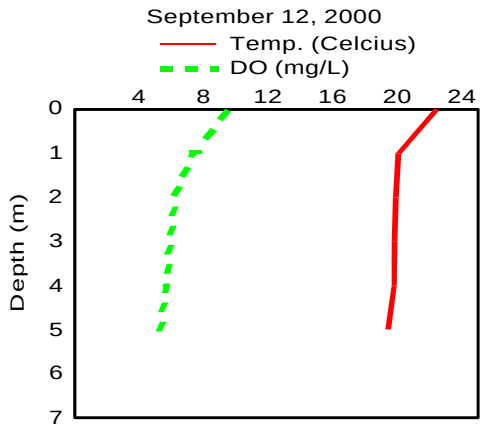

August 8, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

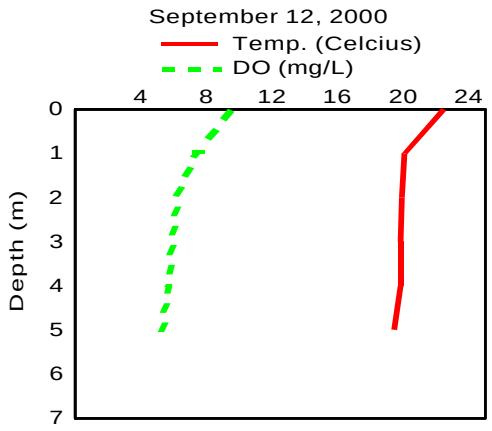

August 15, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

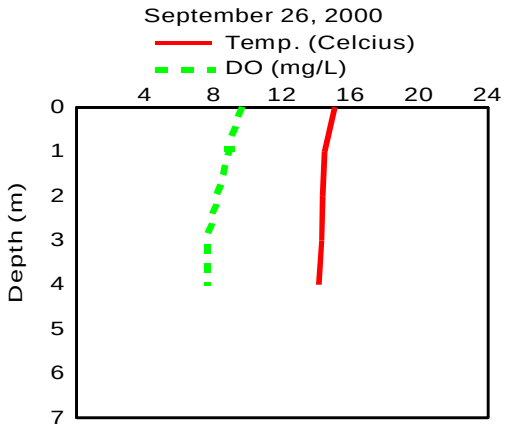

August 22, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

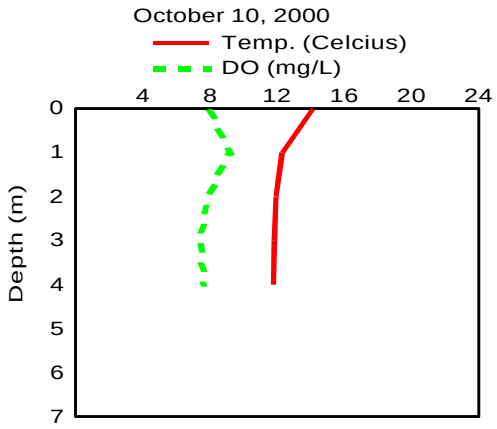

August 29, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

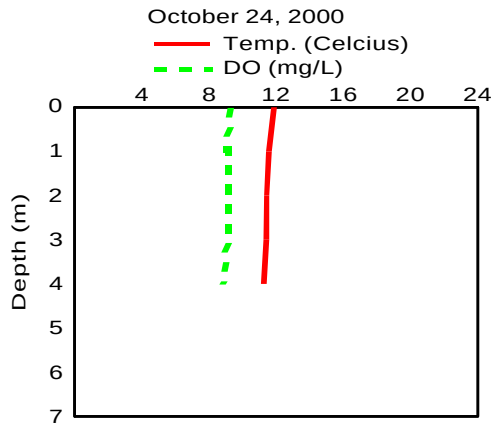

September 5, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

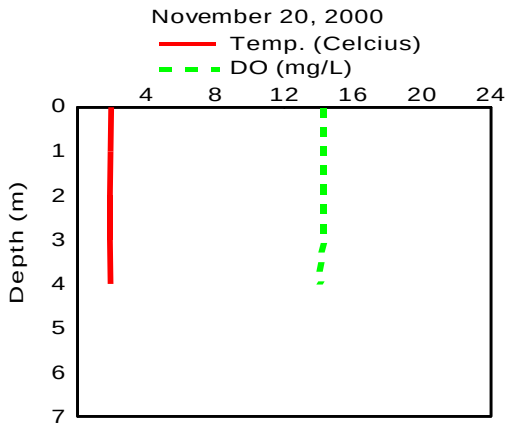

September 12, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


September 12, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


September 26, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


October 10, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


October 24, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)


November 20, 2000
Temp. (Celcius)
DO (mg/L)
4 8 12 16 20 24
0 1 2 3 4 5 6 7
Depth (m)

Cherry Creek Reservoir Secchi and 1% Transmissivity Depths for 2000

	CCR-1			CCR-2			CCR-3			Lake Average		
Date	Secchi (m)	1% Trans	Ratio	Secchi (m)	1% Trans	Ratio	Secchi (m)	1% Trans	Ratio	Secchi (m)	1% Trans	Ratio
2/24/00	0.85	3.00	3.53	0.80	2.40	3.00	0.80	2.80	3.50	0.82	2.73	3.35
3/23/00	0.70	2.60	3.71	0.70	2.45	3.50	0.75	2.50	3.33	0.72	2.52	3.51
4/11/00	0.70	2.15	3.07	0.70	2.10	3.00	0.70	2.60	3.71	0.70	2.28	3.26
4/25/00	0.45	2.80	6.22	0.50	1.90	3.80	0.55	1.50	2.73	0.50	2.07	4.13
5/2/00	0.68	2.00	2.96	0.65	2.10	3.23	0.70	2.20	3.14	0.68	2.10	3.11
5/9/00	0.70	2.45	3.50	0.75	2.10	2.80	0.80	2.90	3.63	0.75	2.48	3.31
5/16/00	1.00	3.90	3.90	0.80	4.00	5.00	0.80	4.00	5.00	0.87	3.97	4.58
5/23/00	0.70	3.10	4.43	0.80	3.00	3.75	0.60	2.90	4.83	0.70	3.00	4.29
5/30/00	0.80	2.90	3.63	0.90	3.30	3.67	0.70	2.80	4.00	0.80	3.00	3.75
6/6/00	1.00	3.50	3.50	1.00	2.80	2.80	0.70	3.20	4.57	0.90	3.17	3.52
6/13/00	0.60	0.90	1.50	0.70	1.20	1.71	0.70	1.20	1.71	0.67	1.10	1.65
6/20/00	0.60	2.40	4.00	0.70	2.60	3.71	0.70	2.50	3.57	0.67	2.50	3.75
6/27/00	0.60	2.20	3.67	0.70	2.60	3.71	0.50	2.00	4.00	0.60	2.27	3.78
7/5/00	0.70	2.60	3.71	0.90	2.90	3.22	0.90	2.40	2.67	0.83	2.63	3.16
7/11/00	1.50	3.50	2.33	1.30	2.90	2.23	1.50	2.60	1.73	1.43	3.00	2.09
7/18/00	1.20	3.40	2.83	1.20	3.40	2.83	0.90	2.30	2.56	1.10	3.03	2.76
7/25/00	1.20	3.40	2.83	1.40	3.70	2.64	1.20	3.20	2.67	1.27	3.43	2.71
8/1/00	1.20	3.60	3.00	1.10	2.70	2.45	1.20	3.20	2.67	1.17	3.17	2.71
8/8/00	1.10	3.10	2.82	1.20	3.20	2.67	1.10	2.80	2.55	1.13	3.03	2.68
8/15/00	1.10	3.10	2.82	1.00	3.00	3.00	1.20	3.10	2.58	1.10	3.07	2.79
8/22/00	0.90	2.70	3.00	0.90	1.80	2.00	0.90	3.10	3.44	0.90	2.53	2.81
8/29/00	1.00	2.60	2.60	1.00	2.50	2.50	1.10	2.60	2.36	1.03	2.57	2.48
9/5/00	0.70	1.80	2.57	0.70	2.30	3.29	0.70	1.10	1.57	0.70	1.73	2.48
9/12/00	0.40	3.00	7.50	0.50	3.10	6.20	0.40	2.70	6.75	0.43	2.93	6.77
9/19/00	0.70	1.60	2.29	0.80	2.60	3.25	0.70	2.60	3.71	0.73	2.27	3.09
9/26/00	0.65	2.05	3.15	0.60	2.20	3.67	0.65	2.00	3.08	0.63	2.08	3.29
10/10/00	0.70	2.70	3.86	0.70	2.80	4.00	0.70	2.20	3.14	0.70	2.57	3.67
10/24/00	0.60	2.50	4.17	0.60	2.90	4.83	0.70	1.70	2.43	0.63	2.37	3.74
11/20/00	0.90	3.60	4.00	0.80	3.40	4.25	0.80	3.30	4.13	0.83	3.43	4.12
Average	0.83	2.73	3.49	0.84	2.69	3.34	0.82	2.55	3.30	0.83	2.66	3.36
Median	0.70	2.70	3.50	0.80	2.70	3.23	0.70	2.60	3.14	0.75	2.57	3.29

2000 Cherry Creek Reservoir Color Results

Site	Date	Color (cobalt units)
CCR-1 P	02/25/00	25
CCR-1 4m	02/25/00	25
CCR-1 5m	02/25/00	20
CCR-1 6m	02/25/00	20
CCR-1 7m	02/25/00	20
CCR-2 P	02/25/00	25
CCR-2 4m	02/25/00	25
CCR-2 5m	02/25/00	25
CCR-2 6m	02/25/00	20
CCR-2 7m	02/25/00	20
CCR-3 P	02/25/00	15
CCR-1 P	03/23/00	29
CCR-1 4m	03/23/00	26
CCR-1 5m	03/23/00	28
CCR-1 6m	03/23/00	27
CCR-1 7m	03/23/00	29
CCR-2 P	03/23/00	28
CCR-2 4m	03/23/00	28
CCR-2 5m	03/23/00	26
CCR-2 6m	03/23/00	28
CCR-2 7m	03/23/00	29
CCR-3 P	03/23/00	28
CCR-1 P	04/11/00	19
CCR-1 4m	04/11/00	18
CCR-1 5m	04/11/00	24
CCR-1 6m	04/11/00	24
CCR-1 7m	04/11/00	25
CCR-2 P	04/11/00	21
CCR-2 4m	04/11/00	21
CCR-2 5m	04/11/00	18
CCR-2 6m	04/11/00	19
CCR-2 7m	04/11/00	20
CCR-3 P	04/11/00	16
CCR-1 P	04/25/00	26
CCR-1 4m	04/25/00	26
CCR-1 5m	04/25/00	27
CCR-1 6m	04/25/00	27
CCR-2 P	04/25/00	27
CCR-2 4m	04/25/00	29
CCR-2 5m	04/25/00	30
CCR-2 6m	04/25/00	32
CCR-2 7m	04/25/00	32
CCR-3 P	04/25/00	36
CCR-1 P	05/02/00	24
CCR-1 4m	05/02/00	18
CCR-1 5m	05/02/00	20
CCR-1 6m	05/02/00	21

Site	Date	Color (cobalt units)
CCR-2 P	05/02/00	24
CCR-2 4m	05/02/00	18
CCR-2 5m	05/02/00	21
CCR-2 6m	05/02/00	21
CCR-2 7m	05/02/00	20
CCR-3 P	05/02/00	24
CCR-1 P	05/09/00	20
CCR-1 4m	05/09/00	20
CCR-1 5m	05/09/00	21
CCR-2 P	05/09/00	20
CCR-2 4m	05/09/00	20
CCR-2 5m	05/09/00	19
CCR-2 6m	05/09/00	17
CCR-2 7m	05/09/00	24
CCR-3 P	05/09/00	19
CCR-1 P	05/16/00	18
CCR-1 4m	05/16/00	20
CCR-1 5m	05/16/00	20
CCR-1 6m	05/16/00	20
CCR-2 P	05/16/00	20
CCR-2 4m	05/16/00	19
CCR-2 5m	05/16/00	20
CCR-2 6m	05/16/00	19
CCR-2 7m	05/16/00	19
CCR-3 P	05/16/00	19
CCR-1 P	05/23/00	20
CCR-1 5m	05/23/00	25
CCR-1 6m	05/23/00	22
CCR-2 P	05/23/00	20
CCR-2 5m	05/23/00	21
CCR-2 6m	05/23/00	22
CCR-2 7m	05/23/00	22
CCR-3 P	05/23/00	19
CCR-1 P	05/30/00	14
CCR-1 5m	05/30/00	15
CCR-1 6m	05/30/00	14
CCR-2 P	05/30/00	17
CCR-2 5m	05/30/00	15
CCR-2 6m	05/30/00	17
CCR-2 7m	05/30/00	18
CCR-3 P	05/30/00	21
CCR-1 P	06/06/00	20
CCR-1 5m	06/06/00	20
CCR-1 6m	06/06/00	20
CCR-2 P	06/06/00	15
CCR-2 5m	06/06/00	15
CCR-2 6m	06/06/00	15
CCR-3 P	06/06/00	15
CCR-1 P	06/13/00	20
CCR-1 5m	06/13/00	17

Site	Date	Color (cobalt units)
CCR-1 6m	06/13/00	16
CCR-2 P	06/13/00	15
CCR-2 5m	06/13/00	16
CCR-2 6m	06/13/00	17
CCR-2 7m	06/13/00	18
CCR-3 P	06/13/00	19
CCR-1 P	06/20/00	17
CCR-1 5m	06/20/00	21
CCR-1 6m	06/20/00	22
CCR-2 P	06/20/00	16
CCR-2 5m	06/20/00	20
CCR-2 6m	06/20/00	19
CCR-2 7m	06/20/00	18
CCR-3 P	06/20/00	20
CCR-1 P	06/27/00	19
CCR-1 5m	06/27/00	17
CCR-1 6m	06/27/00	16
CCR-2 P	06/27/00	15
CCR-2 5m	06/27/00	15
CCR-2 6m	06/27/00	13
CCR-2 7m	06/27/00	14
CCR-3 P	06/27/00	17
CCR-1 P	07/05/00	20
CCR-1 5m	07/05/00	19
CCR-1 6m	07/05/00	23
CCR-2 P	07/05/00	17
CCR-2 5m	07/05/00	22
CCR-2 6m	07/05/00	23
CCR-2 7m	07/05/00	23
CCR-3 P	07/05/00	22
CCR-1 P	07/11/00	15
CCR-1 5m	07/11/00	20
CCR-1 6m	07/11/00	20
CCR-1 7m	07/11/00	20
CCR-2 P	07/11/00	10
CCR-2 5m	07/11/00	15
CCR-2 6m	07/11/00	15
CCR-2 7m	07/11/00	20
CCR-3 P	07/11/00	15
CCR-1 P	07/18/00	15
CCR-1 5m	07/18/00	15
CCR-1 6m	07/18/00	20
CCR-1 7m	07/18/00	20
CCR-2 P	07/18/00	20
CCR-2 5m	07/18/00	20
CCR-2 6m	07/18/00	20
CCR-2 7m	07/18/00	15
CCR-3 P	07/18/00	25
CCR-1 P	07/25/00	15
CCR-1 5m	07/25/00	15

Site	Date	Color (cobalt units)
CCR-1 6m	07/25/00	20
CCR-2 P	07/25/00	15
CCR-2 5m	07/25/00	15
CCR-2 6m	07/25/00	20
CCR-2 7m	07/25/00	25
CCR-3 P	07/25/00	20
CCR-1 P	08/01/00	15
CCR-1 5m	08/01/00	20
CCR-1 6m	08/01/00	20
CCR-2 P	08/01/00	15
CCR-2 5m	08/01/00	15
CCR-2 6m	08/01/00	20
CCR-2 7m	08/01/00	20
CCR-3 P	08/01/00	15
CCR-1 P	08/08/00	15
CCR-1 5m	08/08/00	20
CCR-1 6m	08/08/00	20
CCR-2 P	08/08/00	20
CCR-2 5m	08/08/00	15
CCR-2 6m	08/08/00	20
CCR-2 7m	08/08/00	25
CCR-3 P	08/08/00	20
CCR-1 P	08/15/00	15
CCR-1 5m	08/15/00	15
CCR-1 6m	08/15/00	20
CCR-2 P	08/15/00	15
CCR-2 5m	08/15/00	20
CCR-2 6m	08/15/00	20
CCR-3 P	08/15/00	20
CCR-1 P	08/22/00	20
CCR-1 5m	08/22/00	25
CCR-1 6m	08/22/00	25
CCR-1 7m	08/22/00	30
CCR-2 P	08/22/00	20
CCR-2 5m	08/22/00	25
CCR-2 6m	08/22/00	25
CCR-2 7m	08/22/00	35
CCR-3 P	08/22/00	20
CCR-1 P	08/29/00	15
CCR-1 5m	08/29/00	15
CCR-1 6m	08/29/00	20
CCR-1 7m	08/29/00	25
CCR-2 P	08/29/00	20
CCR-2 5m	08/29/00	25
CCR-2 6m	08/29/00	25
CCR-2 7m	08/29/00	30
CCR-3 P	08/29/00	20
CCR-1 P	09/05/00	17
CCR-1 5m	09/05/00	20
CCR-1 6m	09/05/00	25

Site	Date	Color (cobalt units)
CCR-2 P	09/05/00	15
CCR-2 5m	09/05/00	20
CCR-2 6m	09/05/00	20
CCR-3 P	09/05/00	20
CCR-1 P	09/12/00	20
CCR-1 5m	09/12/00	25
CCR-1 6m	09/12/00	30
CCR-2 P	09/12/00	25
CCR-2 5m	09/12/00	25
CCR-2 6m	09/12/00	25
CCR-2 7m	09/12/00	30
CCR-3 P	09/12/00	20
CCR-1 P	09/19/00	15
CCR-1 5m	09/19/00	20
CCR-1 6m	09/19/00	15
CCR-1 7m	09/19/00	15
CCR-2 P	09/19/00	20
CCR-2 5m	09/19/00	15
CCR-2 6m	09/19/00	15
CCR-3 P	09/19/00	15
CCR-1 P	09/26/00	25
CCR-1 5m	09/26/00	20
CCR-2 P	09/26/00	30
CCR-2 5m	09/26/00	25
CCR-2 6m	09/26/00	25
CCR-2 7m	09/26/00	30
CCR-3 P	09/26/00	30
CCR-1 P	10/10/00	20
CCR-1 5m	10/10/00	25
CCR-1 6m	10/10/00	30
CCR-2 P	10/10/00	20
CCR-2 5m	10/10/00	25
CCR-2 6m	10/10/00	25
CCR-2 7m	10/10/00	25
CCR-3 P	10/10/00	20
CCR-1 P	10/24/00	20
CCR-1 5m	10/24/00	20
CCR-1 6m	10/24/00	30
CCR-2 P	10/24/00	25
CCR-2 5m	10/24/00	25
CCR-2 6m	10/24/00	20
CCR-2 7m	10/24/00	30
CCR-3 P	10/24/00	20
CCR-1 P	11/20/00	15
CCR-1 5m	11/20/00	20
CCR-1 6m	11/20/00	20
CCR-2 P	11/20/00	20
CCR-2 5m	11/20/00	20
CCR-2 6m	11/20/00	20
CCR-3 P	11/20/00	25

APPENDIX B

STREAMWATER QUALITY AND PRECIPITATION DATA

BD-1 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
1/19/00	BD-1	31	14	13	10661	9689*	10232*	<5
2/24/00	BD-1	44	23	11	6603	6235	4604	<5
3/23/00	BD-1	42	24	16	4592	4567	4065	14
4/11/00	BD-1	33	17	12	8097	5843	4194	1114
5/2/00	BD-1	38	10	9	4469	4165	3416	43
5/16/00	BD-1	43	33	22	6628	6472	6454	49
6/6/00	BD-1	90	69	61	7821	6949	6412	66
6/20/00	BD-1	59	38	14	4892*	5964*	5292*	25
7/11/00	BD-1	62	45	28	4382*	4768*	4141	65
7/25/00	BD-1	107	86	77	4914*	5452*	4929*	97
8/8/00	BD-1	62	53	41	6297*	6173*	6382*	73
8/22/00	BD-1	120	90	76	5381	4700*	4853*	57
9/5/00	BD-1	147	87	82	5943*	6300*	4954	88
9/19/00	BD-1	130	89	58	6598*	6800*	5481	200
10/10/00	BD-1	123	69	55	6710	6228	6146	119
10/24/00	BD-1	97	24	24	7652	7359	7071	5
11/20/00	BD-1	124	16	10	7526	6937	6042	5
12/12/00	BD-1	62	8*	15*	9833*	9810*	9983*	11

*Data within acceptable (20 percent) different between parameters.

BD-2 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
02/24/00	BD-2	95	81	63	1428	1020	559	63
03/23/00	BD-2	59	43	34	941	451	148	<5
04/11/00	BD-2	63*	70*	52	426	331	<5	4
05/02/00	BD-2	57	48	47	541	355	<5	<3
05/16/00	BD-2	74	57	53	377	339	14	<3
06/06/00	BD-2	64	52*	58*	420	419	5	3

*Data within acceptable (20 percent) difference between parameters.

CC-10 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	CC-10	225	197	176	1124	1052	865	29
02/24/00	CC-10	211	173	173	1321	966	616	<5
03/23/00	CC-10	183	165	160	1121	932	646	8
04/11/00	CC-10	241	192	191	1076	923	574	26
05/02/00	CC-10	285	243	242	1222	945	651	39
05/16/00	CC-10	282	244	234	1086	1013	780	43
06/06/00	CC-10	370	233*	262*	900	757	443	82
06/20/00	CC-10	360	245	228	743*	769*	521	51
07/11/00	CC-10	379	176*	210*	1021	696	422	72
07/25/00	CC-10	216	226	218	922	631	503	<3
08/08/00	CC-10	338	200*	212*	1043	626	344	62
08/22/00	CC-10	405	180*	195*	774	700	466	66
09/05/00	CC-10	323	159*	185*	933	500	473	29
09/19/00	CC-10	249	216	204	871	500	426	<3
10/10/00	CC-10	203	165*	168*	902	868	686	10
10/24/00	CC-10	435	198	167	931	838	612	9
11/20/00	CC-10	332	160*	165*	1453	1348	1092	34
12/12/00	CC-10	187	157*	175*	1219*	1222*	969	68
05/09/00	CC-10 storm	413	315	274	1421	1179	709	<3
05/18/00	CC-10 storm	673	204	202	2884	1633	1095	176
07/17/00	CC-10 storm	794	329*	354*	1837	1272	577	30
08/18/00	CC-10 storm	1234	410	368	2963	900	462	29

*Data within acceptable (20 percent) difference between parameters.

CC-10a C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	CC-10a	141	126	113	425	379	87	29
02/24/00	CC-10a	183	161	157	729	449	64	14
03/23/00	CC-10a	187	150	149	375	339	32	12
04/11/00	CC-10a	389	224	181	1129	338	17	4
05/02/00	CC-10a	234	207*	215*	673	328	<5	<3
05/16/00	CC-10a	237	236	233	328	279	27	<3
06/06/00	CC-10a	343	211**	307**	304*	344*	21	38
06/20/00	CC-10a	471	409	395	359*	371*	8	<5
07/11/00	CC-10a	926	420	320	773	462	17	ND
07/25/00	CC-10a	244**	361**	356**	415	302	13	4
08/08/00	CC-10a	407**	746**	434**	627	600	8	25
08/22/00	CC-10a	373	174**	275**	497	300	13	9
09/05/00	CC-10a	418	333	327	437**	600**	<5	6
09/19/00	CC-10a	667	421*	437*	629	200	<5	9
10/10/00	CC-10a	242	213	204	320**	415**	<5	<3
10/24/00	CC-10a	222	190	190	369	310	<5	4
11/20/00	CC-10a	157	139*	145*	356*	418*	64	6
12/12/00	CC-10a	110	92*	106*	473	394	129	10

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

CC-O C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	CC-O	82	32	16	639	426	10	19
02/24/00	CC-O	65	27	13	765	456	22	<5
03/23/00	CC-O	100	29	13	690	401	<5	<5
04/11/00	CC-O	81	43	15	769	434	8	5
05/02/00	CC-O	93	42	29	871	415	13	<3
05/16/00	CC-O	95	31*	36*	412	408	11	<3
06/06/00	CC-O	132	79*	82*	430	388	<5	7
06/20/00	CC-O	224	35	<5	987	740	<5	<5
07/11/00	CC-O	160	79	50	959	720	37	117
07/25/00	CC-O	153	58	41	590	413	<5	<3
08/08/00	CC-O	76	25	9	926	528	<5	8
08/22/00	CC-O	76	23	4	651	200	<5	<3
09/05/00	CC-O	112	31	23	702	300	7	4
09/19/00	CC-O	131	25	5	1087	500	<5	5
10/10/00	CC-O	175	19	17	884	507	7	52
10/24/00	CC-O	209	26	16	761	506	5	17
11/20/00	CC-O	54	30	5	752	477	<5	4
12/12/00	CC-O	60	9	7	807	476	<5	10

*Data within acceptable (20 percent) difference between parameters.

CT-1 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	CT-1	49	39	36	1167	1140	924	15
02/24/00	CT-1	65	41	39	1515	1281	947	34
03/23/00	CT-1	130	35	23	1919	1886	1563	8
04/11/00	CT-1	42	39	26	2524	2256	2079	9
05/02/00	CT-1	95	45	32	1991	1637	1213	31
05/16/00	CT-1	59	33	27	1505	1466	1208	12
06/06/00	CT-1	24	23	19	1051	929	645	<3
06/20/00	CT-1	45	36	13	1255	575**	1026**	<5
07/11/00	CT-1	53	53	40	1093*	1096*	659	13
07/25/00	CT-1	75	33	30	957	705	430	<3
08/08/00	CT-1	32	8	7	985	600	333	14
08/22/00	CT-1	161	65	56	3829	1200	978	15
09/05/00	CT-1	89	9**	38**	1802	1200	1159	<3
09/19/00	CT-1	92**	201**	12	1762	1400	1140	3
10/10/00	CT-1	137	11*	13*	2282	2100	1907	<3
10/24/00	CT-1	47	30	27	2127	1988	1675	<3
11/20/00	CT-1	44	40	25	3103	3002	2445	97
12/12/00	CT-1	81	25	22	3199	3001	2363	329
05/18/00	CT-1 storm	431	98	91	2070	1566	908	298
07/17/00	CT-1 storm	1176	173	124	2195	2074	1422	380
08/18/00	CT-1 storm	727	174	147	2217	1000	582	36
08/29/00	CT-1 storm	456	48	27	2461	1200	858	110

*Data within acceptable (20 percent) difference between parameters.

**Data outside acceptable (20 percent) difference between parameters.

CT-2 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	CT-2	56	42	39	1255	1142	930	53
02/24/00	CT-2	105	44	41	1546	1267	943	49
03/23/00	CT-2	64	27	14	1942	1573	1290	<5
04/11/00	CT-2	51	34	20	2259	1897	1667	20
05/02/00	CT-2	113	26	13	1918	1352	902	<3
05/16/00	CT-2	77	37	26	1406	995	682	16
06/06/00	CT-2	45	22	20	881*	916*	443	173
06/20/00	CT-2	71	36	4	1245*	1420*	830	82
07/11/00	CT-2	108	30	24	1091	976	485	ND
07/25/00	CT-2	121	40	38	1583	1150	991	<3
08/08/00	CT-2	88	15	10	1116	600	246	32
08/22/00	CT-2	164	72	56	1418	1000	830	6
09/05/00	CT-2	108	49	39	1783	1400	1077	35
09/19/00	CT-2	136	43	16	1923	1700	1326	19
10/10/00	CT-2	103	8**	25**	2232	2129	1898	<3
10/24/00	CT-2	69	25	21	2122	1897	1532	<3
11/20/00	CT-2	41	33	28	3386	3384	2684	152
12/12/00	CT-2	91	24*	25*	3094	3071	2358	333
05/09/00	CT-2 storm	295	123	92	1554	1177	529	76
05/18/00	CT-2 storm	110	87	71	2079	1582	985	145
07/17/00	CT-2 storm	617	175	162	1416	968	548	36
08/18/00	CT-2 storm	540	215	197	1852	1000	570	24
08/29/00	CT-2 storm	258	46	32	1704	700	552	19

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

SC-1 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	SC-1	114	113	90	6825	6823	6749	52
02/24/00	SC-1	72	64*	68*	6529*	6633*	5181	13
03/23/00	SC-1	73	71	63	7287	6816	6749	11
04/11/00	SC-1	61	61	45	7453	7098	6882	20
05/02/00	SC-1	92	78	78	5477	5360	4331	81
05/16/00	SC-1	126	120	109	5828*	6137*	5887*	48
06/06/00	SC-1	64	42	37	5790*	5904*	5642	<3
06/20/00	SC-1	95	77	59	4233**	5725**	5353**	55
07/11/00	SC-1	105	74**	97**	19514	4810	4429	56
07/25/00	SC-1	72	68	67	4221**	5130**	5750**	<3
08/08/00	SC-1	96	76	75	5460*	5000*	5714*	41
08/22/00	SC-1	94	14**	77**	5903	5100	ND	17
09/05/00	SC-1	187	157	139	10217	7900	6245	120
09/19/00	SC-1	86	70	66	6044	5800	5408	5
10/10/00	SC-1	198	48*	53*	7904	6047	5730	11
10/24/00	SC-1	67	71*	52	6360	6069*	6083*	<3
11/20/00	SC-1	116	75	70	5731*	5968*	4952	133
12/12/00	SC-1	127	59	55	6065	5666*	5836*	132
05/18/00	SC-1 storm	ND	245	214	ND	5658	3523	651
07/17/00	SC-1 storm	283	269	173	2356*	2534*	1746	311
08/18/00	SC-1 storm	637	286	253	4870	2800	2274	269

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

SC-2 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	SC-2	226	28	15	6249	4775	4685	<5
02/24/00	SC-2	866	392	233	6565	3881	2291	149
03/23/00	SC-2	335	189	160	4503	4112	3266	363
04/11/00	SC-2	133	65	19	4405	3424	3035	92
05/02/00	SC-2	228	43	12	2996	2213	1644	31
05/16/00	SC-2	144	45	17	2925	2816	2140	230
06/06/00	SC-2	87	36	16	3205	3084	2478	149
06/20/00	SC-2	79	78	26	2298	1673*	1857*	184
07/11/00	SC-2	85	25	<3	383**	2167**	1563**	100
07/25/00	SC-2	93	73	57	2949	2900	2759	183
08/08/00	SC-2	37	25	9	2383	1900	1459	83
08/22/00	SC-2	208	57*	63*	2883	1400	1253	103
09/05/00	SC-2	139	95	86	2825	2400	2033	191
09/19/00	SC-2	239	50	8	4474	4056	2830	53
10/10/00	SC-2	77	56	45	4268	3950	3795	24
10/24/00	SC-2	130	58	41	4604	3975	3641	9
11/20/00	SC-2	210	146	124	5342	4963	3679	238
12/12/00	SC-2	359	71	26	6037	4105	3592	56
05/18/00	SC-2 storm	755	66	48	1243**	10081**	138	672
07/17/00	SC-2 storm	101	72	54	3144**	3449*	2906	79
08/18/00	SC-2 storm	265	208	179	2209	1500	808	334

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

SC-3 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	SC-3	155	79	60	3483	3268	3190	40
02/24/00	SC-3	317	181	146	2572	1564	429	194
03/23/00	SC-3	228	138	124	2089	1308	909	26
04/11/00	SC-3	171	157	147	567	380	85	4
05/02/00	SC-3	263	221	208	939	838	295	64
05/16/00	SC-3	249*	262*	241*	570	536	237	17
06/06/00	SC-3	275	236*	241*	664*	683*	359	14
06/20/00	SC-3	154*	169*	134	689	680	367	<5
07/11/00	SC-3	129*	191*	187*	2454	498	164	ND
07/25/00	SC-3	167	164	156	723	676	504	<3
08/08/00	SC-3	89	70*	74*	937	800	482	8
08/22/00	SC-3	156	130	125	952	600	557	22
09/05/00	SC-3	116	98*	104*	1225**	1500**	606	8
09/19/00	SC-3	97	53	52	1535	1400	1029	4
10/10/00	SC-3	69	39	41	2085	1983	1932	<3
10/24/00	SC-3	47	42	35	1391	1275	1062	<3
11/20/00	SC-3	107	87*	90*	3619	3463	2681	177
12/12/00	SC-3	182	50	50	3884	3114	2980	9
05/18/00	SC-3 storm	193	137	131	1891	1323	806	164
07/17/00	SC-3 storm	407	187	166	1954	1639	1131	131
08/18/00	SC-3 storm	603	199	169	3835	1800	1363	242

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

QD-1 C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
01/19/00	QD-1	348	194	164	5516	4943	4731	159
02/24/00	QD-1	200	176	135	3810	3248	2776	115
03/23/00	QD-1	133	91	77	2777	2676	2274	74
04/11/00	QD-1	128	127	96	3399	3022	2934	74
05/02/00	QD-1	187	136	121	2590	2476	1999	52
05/16/00	QD-1	229	23	9	2421	2390	1842	41
06/06/00	QD-1	157	44	17	1931	1649	838	29
06/20/00	QD-1	262	30	<3	2176	1287	938	53
07/11/00	QD-1	220	191	165	1225**	2005**	1022	95
07/25/00	QD-1	920*	993*	295	2122	1963	1389	37
08/08/00	QD-1	122	104	74	3052	2500	1793	180
08/22/00	QD-1	209	72	47	2635	1700	1526	<3
09/05/00	QD-1	224	66	54	3855	1700*	1985*	6
09/19/00	QD-1	193	100	42	3877	3200	2045	197
10/10/00	QD-1	190	89	65	3289	2900	2753	<3
10/24/00	QD-1	129	120	75	3434	2936	2417	5
11/20/00	QD-1	145	55	46	5120	4839	3669	102
12/12/00	QD-1	98	68	59	4808	4274*	4341*	90
05/09/00	QD-1 storm	527	85	60	1314*	1350*	721	42
05/18/00	QD-1 storm	677	65	60	3151	1877	900	395
07/17/00	QD-1 storm	543	124	90	2015	1365	552	64
08/18/00	QD-1 storm	563	97	62	3177	1300	1010	100
10/20/00	QD-1sewage leak	138	82	71	1594	1285	870	74

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

CC-10 University of Missouri Water Chemistry

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	2	4	20	5	5
01/19/00	CC-10	218	181	171	1060	1030	795	26
02/24/00	CC-10	217	171	153	940	860	622	16
03/23/00	CC-10	189	157	164	930	870	612	<5
04/11/00	CC-10	226	202	207	950	890	538	26
05/02/00	CC-10	283	219	221	1210	1020	612	46
05/16/00	CC-10	326	46	216	990	870	632	21
06/06/00	CC-10	613	275	278	790	640	456	75
06/20/00	CC-10	372	227	233	1070	950	465	<5
07/11/00	CC-10	407	209	201	740	670	352	62
07/25/00	CC-10	345	203	210	980	820	428	52
08/08/00	CC-10	317	197	195	850	800	343	58
08/08/00	CC-10	325	194	195	1110	890	345	74
08/22/00	CC-10	342	189	180	850	820		
09/05/00	CC-10	308	170	170	1030	820		
09/19/00	CC-10	247	194	194	690	650	430	58
10/24/00	CC-10	199	164	168		760		
11/20/00	CC-10	205	144	143				
12/12/00	CC-10	201	168	173				
05/09/00	CC-10 Storm	539	271	261	1980	1260	603	<5

CT-2 University of Missouri Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	2	4	20	5	5
01/19/00	CT-2	98	36	37	1150	1040	843	46
02/24/00	CT-2	123	42	39	1420	1200	966	70
03/23/00	CT-2	95	21	18	1670	1550	1190	<5
04/11/00	CT-2	51	26	17	1940	1840	1563	15
05/02/00	CT-2	104	33	24	1780	1440	858	<5
05/16/00	CT-2	19	8	22	1230	1000	614	19
06/06/00	CT-2	63	22	14	930	790	451	140
06/20/00	CT-2	83	21	2	1520		751	21
07/11/00	CT-2	135	39	27	970	970	375	117
07/25/00	CT-2	163	34	79	1650	1240	815	40
08/08/00	CT-2	83	13	5	830	680	186	24
08/08/00	CT-2	76	10	4	870	710	180	20
08/22/00	CT-2	178	61	27	1430	1070		
09/05/00	CT-2	104	35	30	1640	1290		
09/19/00	CT-2	68	20	18	1600	1600		75
10/24/00	CT-2	72	29	22		1630		
11/20/00	CT-2	53	34	25				
12/12/00	CT-2	85	32	27				
05/09/00	CT-2 Storm	250	117	93	1920	1520	767	82

BD-1 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	BD-1	6	<10	<0.05	337.0	0.05
02/24/00	BD-1	<4	<10	0.08	266.0	0.10
03/23/00	BD-1	10	<10	0.19	227.0	0.25
04/11/00	BD-1	<4	<10	<0.05	195.0	<0.03
05/02/00	BD-1	<4	<10	<0.05	181.0	0.04
05/16/00	BD-1	4	<10	0.08	247.0	0.12
06/06/00	BD-1	<4	<10	<0.10	296.0	0.18
06/20/00	BD-1	8.4	<10	<0.10	276.0	0.13
07/11/00	BD-1	<4	<10	<0.05	254.0	0.16
07/25/00	BD-1	<4	<10	<.05	250.0	
08/08/00	BD-1	<4	<10	<.05	268.0	
08/22/00	BD-1	<4	<10	<.05	242.0	
09/05/00	BD-1	<4	<10	<.1	213.0	
09/19/00	BD-1	<4	<10	<.1	268.0	
10/10/00	BD-1	<4	<10	<.1	294.0	
11/20/00	BD-1	39.2	13.2	1.50	307.0	
12/12/00	BD-1	<4	<10	<0.1	322.0	

BD-2 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
02/24/00	BD-2	4	<10	0.10	311.0	0.08
03/23/00	BD-2	<4	<10	<0.05	290.0	<0.03
04/11/00	BD-2	<4	<10	<0.05	326.0	<0.03
05/02/00	BD-2	<4	<10	0.05	305.0	<0.03
05/16/00	BD-2	28	<10	0.86	332.0	0.75
06/06/00	BD-2	234	33	0.39	348.0	0.32

CC-10 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	CC-10	24	<10	1.05	75.6	0.81
02/24/00	CC-10	30	<10	0.82	74.4	0.78
03/23/00	CC-10	10	<10	0.39	74.6	0.42
04/11/00	CC-10	16	<10	0.41	68.2	0.60
05/02/00	CC-10	36	<10	1.11	79.9	0.86
05/16/00	CC-10	30	<10	1.53	101.0	1.21
06/06/00	CC-10	60.4	10	2.20	103.0	2.40
06/20/00	CC-10	10	52.4	2.10	101.0	2.20
07/11/00	CC-10	91.2	18.4	3.30	91.9	3.30
07/25/00	CC-10	64	11.6	3.10	91.2	
08/08/00	CC-10	58.8	12	2.00	82.5	
08/22/00	CC-10	150	18.8	2.40	97.8	
09/05/00	CC-10	98.8	16.4	2.40	95.9	
09/19/00	CC-10	21.2	<10	0.79	88.6	
10/10/00	CC-10	7.6	<10	0.34	106.0	
11/20/00	CC-10	25.6	<10	1.20	95.9	
12/12/00	CC-10	8	<10	0.34	106.0	
05/09/00	CC-10 Storm	116	20	4.52	61.5	4.43
05/18/00	CC-10 Storm	208	30	6.47	67.0	5.70
07/17/00	CC-10 Storm	796	128	28.6	49.1	
08/18/00	CC-10 Storm	1430	310	48.70	60.9	

CC-10a Severn Trent Labs Water Chemistry Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
Analytical Detection Limits		4	10	0.05	0.1	0.03
01/19/00	CC-10a	6	<10	0.06	109.0	0.14
02/24/00	CC-10a	<4	<10	0.11	119.0	0.21
03/23/00	CC-10a	<4	<10	<0.05	107.0	0.18
04/11/00	CC-10a	38	<10	0.72	104.0	1.69
05/02/00	CC-10a	<4	<10	<0.05	109.0	0.13
05/16/00	CC-10a	<4	<10	<.05	122.0	0.17
06/06/00	CC-10a	<4	<10	<0.10	147.0	0.29
06/20/00	CC-10a	<4	<10	<0.10	153.0	0.33
07/11/00	CC-10a	4.7	<10	0.36	143.0	1.10
07/25/00	CC-10a	<4	<10	<.05	157.0	
08/08/00	CC-10a	<4	<10	<.05	129.0	
08/22/00	CC-10a	<4	<10	<.05	193.0	
09/05/00	CC-10a	<4	<10	<.1	178.0	
09/19/00	CC-10a	12.4	<10	0.20	161.0	
10/10/00	CC-10a	<4	<10	<.1	171.0	
11/20/00	CC-10a	<4	<10	0.18	144.0	
12/12/00	CC-10a	<4	<10	<.01	134.0	

CC-O Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
02/24/00	CC-O	12	<10	0.23	76.1	0.24
03/23/00	CC-O	12	<10	0.39	84.3	0.33
04/11/00	CC-O	21	10	0.42	79.2	0.54
05/02/00	CC-O	17	<10	0.84	77.2	0.61
05/16/00	CC-O	31	<10	0.85	81.1	0.75
06/06/00	CC-O	13.2	<10	0.67	79.3	0.65
06/20/00	CC-O	21.6	16.8	0.56	69.2	0.66
07/11/00	CC-O	10.4	<10	1.00	68.0	0.96
07/25/00	CC-O	22	10.8	0.61	65.9	
08/08/00	CC-O	19.2	10.8	0.43	62.0	
08/22/00	CC-O	28.4	11.2	0.99	55.4	
09/05/00	CC-O	22	<10	0.83	65	
09/19/00	CC-O	27.6	12	1.10	65.0	
10/10/00	CC-O	10.8	<10	0.46	70.0	
11/20/00	CC-O	4	<10	70.90	4.0	
12/12/00	CC-O	13.2	10.4	0.33	76.7	

CT-1 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	CT-1	21	<10	0.52	190.0	0.57
02/24/00	CT-1	86	<10	1.18	154.0	1.17
03/23/00	CT-1	40	<10	0.86	122.0	0.87
04/11/00	CT-1	18	<10	0.56	130.0	0.60
05/02/00	CT-1	36	<10	0.74	108.0	0.74
05/16/00	CT-1	14	<10	0.50	140.0	0.43
06/06/00	CT-1	<4	<10	0.17	160.0	0.16
06/20/00	CT-1	6.4	<10	0.36	141.0	0.34
07/11/00	CT-1	22	<10	0.82	135.0	0.75
07/25/00	CT-1	12	<10	0.67	115.0	
08/08/00	CT-1	5.6	<10	0.14	131.0	
08/22/00	CT-1	47.6	10.4	1.70	117.0	
09/05/00	CT-1	31.2	<10	1.20	112.0	
09/19/00	CT-1	22.8	10.4	0.71	139.0	
10/10/00	CT-1	8	<10	0.36	146.0	
11/20/00	CT-1	8.4	<10	0.78	146.0	
12/12/00	CT-1	51.2	10.8	2.30	140.0	
05/18/00	CT-1 Storm	266	20	7.36	54.9	7.07
07/17/00	CT-1 Storm	698	110	44.6	62.9	
08/18/00	CT-1 Storm	441	63	15.90	51.5	
08/29/00	CT-1 Storm	182	38	6.00	66.0	

CT-2 Severn Trent Labs Water Chemistry Data

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
Analytical Detection Limits		4	10	0.05	0.1	0.03
01/19/00	CT-2	50	<10	0.68	206.0	0.73
02/24/00	CT-2	53	<10	1.36	160.0	1.29
03/23/00	CT-2	26	<10	0.88	119.0	0.68
04/11/00	CT-2	16	<10	0.48	121.0	0.50
05/02/00	CT-2	20	<10	0.91	109.0	0.56
05/16/00	CT-2	23	<10	0.74	141.0	0.71
06/06/00	CT-2	23.6	<10	0.75	162.0	0.71
06/20/00	CT-2	8.4	<10	0.88	144.0	0.84
07/11/00	CT-2	24.4	34	1.50	77.2	0.76
07/25/00	CT-2	58.4	13.2	3.00	115.0	
08/08/00	CT-2	30	<10	0.84	129.0	
08/22/00	CT-2	44	11.2	1.70	114.0	
09/05/00	CT-2	45.2	<10	2.20	132.0	
09/19/00	CT-2	23.2	<10	1.30	140.0	
10/10/00	CT-2	8.8	<10	0.56	150.0	
11/20/00	CT-2	<4	<10	0.46	144.0	
12/12/00	CT-2	43.2	<10	2.00	140.0	
05/09/00	CT-2 Storm	57	<10	3.68	86.3	2.63
05/18/00	CT-2 Storm	122	10	7.68	60.1	5.07
07/17/00	CT-2 Storm	472	78	23.9	37.8	
08/18/00	CT-2 Storm	197	39	10.30	35.9	
08/29/00	CT-2 Storm	67	26	3.60	67.7	

SC-1 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	SC-1	<4	<10	<0.05	121.0	<0.03
02/24/00	SC-1	<4	<10	0.05	126.0	0.05
03/23/00	SC-1	<4	<10	0.05	120.0	0.08
04/11/00	SC-1	<4	<10	<0.05	107.0	0.05
05/02/00	SC-1	<4	<10	0.08	87.3	0.15
05/16/00	SC-1	7	<10	0.09	99.2	0.12
06/06/00	SC-1	<4	<10	<0.10	103.0	NA
06/20/00	SC-1	<4	<10	<0.10	104.0	0.10
07/11/00	SC-1	<4	10.8	0.11	88.3	0.15
07/25/00	SC-1	<4	<10	0.16	60.5	
08/08/00	SC-1	<4	<10	<.05	92.8	
08/22/00	SC-1	<4	<10	<.05	102.0	
09/05/00	SC-1	<4	<10	<.1	109.0	
09/19/00	SC-1	<4	<10	<.1	103.0	
10/10/00	SC-1	<4	<10	<.1	103.0	
11/20/00	SC-1	<4	<10	0.14	100.0	
12/12/00	SC-1	14	10.4	0.38	106.0	
05/18/00	SC-1 Storm	48	20	0.68	37.5	0.87
07/17/00	SC-1 Storm	17	16	0.67	19.3	
08/18/00	SC-1 Storm	93	37	2.70	27.4	

SC-2 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	SC-2	16	10	0.05	104.0	0.10
02/24/00	SC-2	26	20	0.35	86.3	0.50
03/23/00	SC-2	16	<10	0.42	74.6	0.56
04/11/00	SC-2	18	10	0.08	71.0	0.20
05/02/00	SC-2	19	<10	0.39	42.0	0.43
05/16/00	SC-2	14	<10	0.09	71.3	0.16
06/06/00	SC-2	5.6	<10	<0.10	78.2	0.16
06/20/00	SC-2	5.2	<10	<0.10	63.1	0.18
07/11/00	SC-2	10.4	12.4	0.15	48.4	0.18
07/25/00	SC-2	<4	<10	<.05	59.6	
08/08/00	SC-2	<4	<10	<.05	46.1	
08/22/00	SC-2	20.8	18.8	0.21	69.4	
09/05/00	SC-2	<4	<10	<.1	79.1	
09/19/00	SC-2	55.2	31.2	0.22	78.9	
10/10/00	SC-2	<4	<10	<.1	89.9	
11/20/00	SC-2	4.8	<10	0.16	109.0	
12/12/00	SC-2	12.4	15.6	0.17	113.0	
05/18/00	SC-2 Storm	1980	380	32.40	207.0	37.80
07/17/00	SC-2 Storm	8.8	<10	0.3	65.3	
08/18/00	SC-2 Storm	7.6	<10	0.43	16.8	

SC-3 Severn Trent Labs Water Chemistry Data

Analytical Detection Limits	4	10	0.05	0.1	0.03

Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	SC-3	6	<10	<0.05	109.0	0.03
02/24/00	SC-3	4	<10	0.10	78.9	0.08
03/23/00	SC-3	<4	<10	<0.05	76.3	0.03
04/11/00	SC-3	<4	<10	<0.05	77.4	0.05
05/02/00	SC-3	5	<10	0.05	64.8	0.07
05/16/00	SC-3	<4	<10	<.05	76.9	0.04
06/06/00	SC-3	5.6	<10	0.29	78.7	0.29
06/20/00	SC-3	<4	<10	<0.10	78.4	<0.10
07/11/00	SC-3	<4	<10	<0.05	79.7	0.10
07/25/00	SC-3	<4	<10	<.05	77.6	
08/08/00	SC-3	<4	<10	<.05	67.4	
08/22/00	SC-3	<4	<10	0.11	68.2	
09/05/00	SC-3	<4	<10	<.1	71.1	
09/19/00	SC-3	9.2	<10	0.14	80.5	
10/10/00	SC-3	<4	<10	<.1	88.5	
11/20/00	SC-3	<4	<10	0.50	102.0	
12/12/00	SC-3	8.8	10.4	0.17	117.0	
05/18/00	SC-3 Storm	12	<10	0.49	24.4	0.53
07/17/00	SC-3 Storm	76	60	2.8	38.9	
08/18/00	SC-3 Storm	169	53	3.50	35.2	

QD-1 Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
01/19/00	QD-1	6	<10	0.17	82.9	0.20
02/24/00	QD-1	5	<10	0.21	62.8	0.25
03/23/00	QD-1	10	<10	0.51	47.0	0.49
04/11/00	QD-1	<4	<10	0.23	58.3	0.32
05/02/00	QD-1	20	<10	1.64	47.2	1.06
05/16/00	QD-1	47	10	2.03	53.7	1.54
06/06/00	QD-1	12.8	<10	0.45	50.0	0.42
06/20/00	QD-1	12	10	0.31	49.9	0.37
07/11/00	QD-1	<4	<10	0.11	54.9	0.14
07/25/00	QD-1	5.6	<10	3.10	91.2	
08/08/00	QD-1	<4	<10	<.05	53.7	
08/22/00	QD-1	14.4	12.8	0.33	61.3	
09/05/00	QD-1	7.2	10.8	0.25	55.7	
09/19/00	QD-1	8.8	<10	0.25	51.3	
10/10/00	QD-1	6.8	<10	0.15	71.4	
11/20/00	QD-1	4.8	<10	0.36	93.5	
12/12/00	QD-1	<4	<10	<0.1	94.5	
05/09/00	QD-1 Storm	107	30	3.61	17.2	3.95
05/18/00	QD-1 Storm	342	70	8.41	20.1	9.41
07/17/00	QD-1 Storm	844	140	6.8	32.2	
08/18/00	QD-1 Storm	358	73	11.60	24.3	

Precipitation C&A Water Chemistry Data

Sample Date	Sample Name/ Location	Total Phosphorus ug/L	Total Dissolved Phosphorus ug/L	Ortho Phosphate ug/L	Total Nitrogen ug/L	Total Dissolved Nitrogen ug/L	NO3+NO2-N ug/L	NH4-N ug/L
Analytical Detection Limits		2	2	3	4	4	5	3
05/09/00	Rain Gauge	94	92	68	922*	1033*	366	220
05/18/00	Rain Gauge	109	56	48	10042	1053	379	381
07/17/00	Rain Gauge	10**	60**	<3	259*	277*	138	47
08/18/00	Rain Gauge	61**	96**	25	1236	900	458	367
08/29/00	Rain Gauge	72	18	<3	2466	1900	838	860

*Data within acceptable (20 percent) difference between parameters.
**Data outside acceptable (20 percent) difference between parameters.

Precipitation Severn Trent Labs Water Chemistry Data

	Analytical Detection Limits	4	10	0.05	0.1	0.03
Sample Date	Sample Name/ Location	TSS mg/L	TVSS mg/L	T. Al mg/L	T. Ca mg/L	T. Fe mg/L
05/09/00	Rain Gauge	22	<10	0.68	1.6	0.72
05/18/00	Rain Gauge	40	10	0.53	1.6	0.52
07/17/00	Rain Gauge	220	72	0.16	0.2	
08/18/00	Rain Gauge	<4	<10	0.11	0.8	
08/29/00	Rain Gauge	<4	<10	<.1	0.9	

CC-10 C&A Coliform Data

Sample Date	Sample Name/ Location	Total Coliform #/100 ml	Fecal Coliform #/100 ml	E.coli #/100 ml
5/16/00	CC-10	300	0	0
6/6/00	CC-10	130	20	20
6/20/00	CC-10	230	0	0
7/11/00**	CC-10	23	<2	0
7/25/00	CC-10	240	50	50
8/1/00	CC-10	not tested	not tested	not tested
8/22/00	CC-10	80	40	20
9/5/00	CC-10	300	130	130
9/19/00	CC-10	130	130	130
10/10/00	CC-10	130	23	23
10/24/00	CC-10	240	30	30
5/9/00	CC-10 Storm	1100	230	80
5/18/00	CC-10 Storm	1700	170	80
7/17/00	CC-10 Storm	1300	300	300
8/18/00	CC-10 Storm	800	300	300

**Fecal coliform and/or E.coli not tested.

CT-2 C&A Coliform Data

Sample Date	Sample Name/ Location	Total Coliform #/100 ml	Fecal Coliform #/100 ml	E.coli #/100 ml
5/16/00	CT-2	800	80	40
6/6/00	CT-2	130	80	20
6/20/00	CT-2	230	130	130
7/11/00	CT-2	130	130	130
7/25/00	CT-2	240	80	50
8/18/00	CT-2	2400	300	300
8/22/00	CT-2	300	20	20
9/19/00	CT-2	130	23	23
10/10/00	CT-2	50	13	13
10/24/00	CT-2	900	50	50
8/8/00**	CT-2	40	<20	
9/5/00**	CT-2	<20		
5/18/00	CT-2 Storm	1300	230	230
5/9/00	CT-2 Storm	300	130	20
7/17/00	CT-2 Storm	2400	230	230
8/29/00	CT-2 Storm	1300	230	230

**Fecal coliform and/or E.coli not tested.

APPENDIX C

STREAMFLOW, RAINFALL, PHOSPHORUS LOADING CALCULATIONS, AND NORMALIZED U.S. ARMY CORPS OF ENGINEERS INFLOW DATA

Streamflow Determination

Stream discharge for Cherry Creek, Cottonwood Creek, Shop Creek, and Quincy Drainage were determined by developing a stage discharge relationship for each site (Table C-1). Water levels (stage) were monitored using ISCO Model 3220, 4220, and 6700 flowmeters. Flows were monitored daily on Cottonwood Creek, Shop Creek, Quincy Drainage, and Cherry Creek with some dates estimated due to icing or flowmeter malfunctions. Rating curves were developed for each sampling site by measuring stream discharge (ft^3/sec) with a Marsh McBirney Model 2000 flowmeter, and recording the water level at the staff gage (ft) and ISCO flowmeter (ft). Data from 1999 and 2000 were used in calculating rating curves. In 1999 a minimum of three measurements over a range of discharges were taken at the following sampling sites: CC-10, CT-1, CT-2, QD-1, and SC-3. In 2000, three measurements were taken at each of the following sites: CC-10, CT-1, CT-2, and SC-3. Two measurements were taken at QD-1, and one measurement at CC-10a. Stream discharges at the remaining sites were determined using a variety of methods:

1) SC-1: The ISCO pressure transducer is located in an artificial pool formed by a two-stage Cipolletti weir. Thus, the Cipolletti weir equation was used to determine flow.

2) BD-1 and BD-2: No ISCO flowmeters were established at these sites. Instantaneous discharges were recorded at the time of water quality sampling. Using the instantaneous discharges, relationships between Sites BD-1 and CT-1, and between Sites BD-2 and CT-2 were developed to estimate daily flows. These relationships do not provide the exact amount of flow on phosphorus loads at Sites BD-1 and BD-2. However, they do provide a reasonable estimate.

TABLE C-1: Stage (H, ft) discharge (Q, cfs) relationships for Sites CC-10, CC-10a, CT-1, CT-2, QD-1, SC-3, and discharge equations for Site SC-1.

Site	Equation	R^2
BD-1	$Q = H^{2.72} \times 0.643$	0.41
BD-2	$Q = H \times 1.044 - 0.442$	0.92
CC-10	$Q = H^3 \times 3.42 + 1.50$	0.79
CC-10a	$Q = H^3 \times 3.35 + 0.128$	0.99
CT-1	$Q = H^{3.176} \times 1.486 + 0.1$	0.89
CT-2	$Q = H^3 \times 2.792 - 1.152$	0.93
QD-1	$Q = H^{3.154} \times 0.351$	0.10
SC-3	$Q = H^3 \times 3.554 + 0.156$	0.59

SC-1 (Stage > 1.0 ft) L_1 = length of weir at stage $\leq$ 1.0 ft = 4.0 ft
K = correction factor, amount of water flow under or through weir . 0.5 cfs

$$Q = (3.367 (L_1 ((H-14.2)^{1.5} + K)$$

L_2 = length of weir at stage >1.0 ft = 11.0 ft

Phosphorus loading was not determined for SC-2 in 2000. Because this site is monitored at a detention pond, flows and loads have always been difficult to measure and calculate accurately. Further, a considerable record of phosphorus load determinations already exists for this site. In terms of measuring the performance of the entire Shop Creek pond and wetland system, the monitoring goals on Shop Creek are satisfied by calculation of flows and loads entering the Shop Creek Pollution Reduction Facility (at SC-1) and exiting this system, and prior to the confluence of the stream with Cherry Creek (monitored at SC-3).

At times during the sampling period, when data collection was interrupted, regressions were developed to estimate streamflow. Regressions in Table C-2 were used to fill in missing values.

TABLE C-2: Regression equations relating stream levels between sampling sites.

Site	Equation	R^2
BD-1 vs. CT-1	BD-1 = (0.228 x CT-1) + 0.234	0.69
BD-2 vs. CT-2	BD-2 = 0.111 (CT-2 + 0.367	0.66

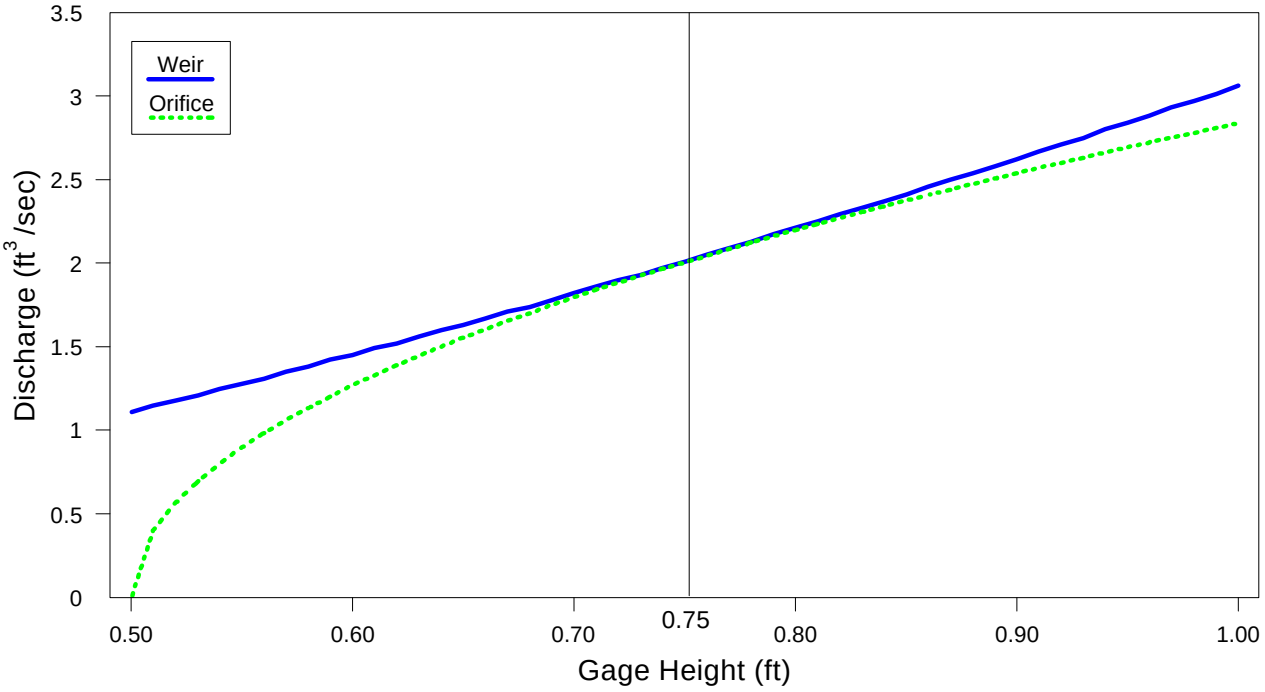


FIGURE C-1: Convergence point of rectangular weir and submerged orifice equations.

Phosphorus Loading from Tributary Streams

For all streams, water chemistry, including concentration of total phosphorus was measured from stream samples taken at regular intervals and after storms during the months of January through December 2000 (Appendix B). In 1999 and 2000, all estimates of loading to Cherry Creek Reservoir were based upon calendar year (January to December). In previous years, loading had been estimated on a water year (October to September).

The concentration of total phosphorus in the samples and corresponding flows, measured at sampling time, were paired in regression relationships (Table C-3). Regressions using data from previous reports (ASI 1994a, Chadwick Ecological Consultants, Inc. 1995, 1996, 1997, 1998, 1999 and 2000), combined with data from 2000, were developed to predict phosphorus concentrations from flow measurements for 2000. Note that for some sites, there was no significant relationship between flow values and phosphorus concentrations (e.g., the Cherry Creek inflow and outflow). In those cases, the phosphorus concentrations was based on the median value from the long-term data base.

TABLE C-3: Regression equations relating streamflow (Q, ft^3/sec) to concentration of total phosphorus (P_{con}) in Cherry Creek, Cottonwood Creek, Shop Creek, Quincy Drainage, and Belleview Drainage for 2000.

Site	Equation	R^2
BD-1	In P_{con} (mg/L) = 2.606 x In Q + 4.359	0.18
BD-2	P_{con} (mg/L) = 0.313 (Q + 0.021	0.25
CC-10	P_{con} (mg/L) = 0.303	--
CC-10a	P_{con} (mg/L) = 0.302	
CC-O	P_{con} (mg/L) = 0.103	--
CT-1	P_{con} (mg/L) = 0.025 (Q + 0.054	0.57
CT-2	In P_{con} (mg/L) = 0.38 (In Q - 2.519	0.24
QD-1	P_{con} (mg/L) = 0.205	--
SC-1	P_{con} (mg/L) = 0.038 (Q + 0.055	0.96
SC-3	P_{con} (mg/L) = 0.121 (Q + 0.061	0.79

Using these relationships, the average daily phosphorus (P_{con}) was calculated for each known average daily flow for each tributary stream. Daily loadings in pounds/day (L_{day}) into the reservoir were calculated using the equation below (Eq. 1), with L_{day} then summed over 2000 to obtain total annual phosphorus loading.

EQUATION 1:

$$L_{day} = mg/L \left(Q_{in} \left(\frac{86400 \text{ sec}}{\text{day}} \left(\frac{28.3169 \text{ L}}{\text{cf}} \left(\frac{2.205 \times 10^{-6} \text{ lbs}}{\text{mg}}$$

where:

L_{day} = pounds per day phosphorus loading,

mg/L = concentration of total phosphorus for a particular daily flow (based on the equation in Table C-3)

Q_{in} = mean daily flow in ft^3/sec.

Phosphorus Loading from Precipitation

Precipitation data are collected at the Cherry Creek dam by the U.S. Army Corps of Engineers (COE). To estimate phosphorus loading into the reservoir due to precipitation, COE data from 2000 were used, based on the assumption that precipitation generally fell evenly across the reservoir (Appendix B), although rain showers in the Cherry Creek Reservoir area can be localized. Calculation of phosphorus loading into Cherry Creek reservoir from precipitation was based on the median phosphorus concentration and Equation 2.

EQUATION 2:

$$L_{precip} = PR / 12 \left(A_{res} \left(43650\ ft^2/acre \left(mg/L \left(\frac{28.31692}{cf} \left(\frac{2.206 \times 10^{-6}\ lbs}{mg} \right. \right. \right. \right.$$

where:

L_{precip} = pounds of phosphorus from precipitation,

PR = rainfall precipitation in inches,

A_{res} = surface area of the reservoir (852 ac), and

mg/L = median concentration of phosphorus.

Cherry Creek Reservoir Outflow

Streamflow out of Cherry Creek Reservoir is monitored by a COE flow station throughout the year. Water samples were taken once a month in Cherry Creek downstream at the dam from January to April and from November to December 2000, and twice a month from May to October 2000. These samples were assessed for water quality, and a regression relationship between the concentration of total phosphorus and the measured flow in the stream was attempted. However, this regression was not significant. Using the relationship in Equation 1, flows leaving the reservoir were calculated to have a median total phosphorus concentration of 0.103 mg/L in 2000 (Table C-3).

Normalization with U.S. Corps of Engineers (COE) Inflow Data

The COE monitors inflow to Cherry Creek Reservoir as a function of change in storage, reservoir level, outflow, and evaporation. Daily and monthly inflow (AF) are calculated by accounting for outflow and evaporation in the change in reservoir level. As presented above, CEC monitors inflow to the reservoir using gaging stations on Cherry Creek, Cottonwood Creek, and Shop Creek (the three main surface inflows), along with estimates of direct precipitation and net alluvial inflow (provided by JCHA). From these data, CEC calculates an estimated total inflow (AF) and phosphorus loading (lbs) to the reservoir.

Given differences in the two methods for determining inflow, combined with the potential for unmonitored multiple Cherry Creek channels in the wetlands adjacent to the reservoir, an exact match between COE and CEC calculated inflows is not expected. Thus, an adjustment was conducted by first subtracting monthly estimates of direct precipitation and net alluvial inflow from the COE values, then determining the proportion each stream contributed to the remaining monthly inflows using CEC streamflows values. For example, if Cherry Creek, Cottonwood Creek, and Shop Creek contributed 300 AF, 200 AF, and 100 AF, respectively, the percentage each stream contributed to COE "streamflow" would be 50%, 33%, and 17%. The percentages were then multiplied by the inflow measured by COE (minus precipitation and alluvial inflow) to adjust the estimate of monthly load from each stream's inflow to Cherry Creek Reservoir. These values were then combined with the direct precipitation and net alluvial inflow to re-estimate monthly and then annual total phosphorus loading to the reservoir.

Values for CT-1 and SC-1 were normalized based on the percent difference between CEC and COE inflows at CT-2 and SC-3. For instance, if CT-2 and SC-3 values increased by 1.5% after normalization with COE values, then CT-1 and SC-1 (CEC values) were then multiplied by 1.5%.

Cottonwood Creek 1

	CEC af	CEC lbsP	lbs/af	normalized af	normalized lbsP
Jan	111.93	30.90	0.28	192.52	53.91
Feb	117.02	37.10	0.32	204.79	65.53
Mar	213.84	109.83	0.51	504.66	257.38
Apr	314.81	208.78	0.66	585.55	386.46
May	270.56	197.99	0.73	522.18	381.19
Jun	94.84	25.92	0.27	152.69	41.23
Jul	275.21	321.61	1.17	459.6	537.73
Aug	273.92	838.46	3.06	438.27	1341.11
Sep	121.42	39.51	0.33	214.91	70.92
Oct	78.36	20.18	0.26	111.27	28.93
Nov	101.62	28.96	0.28	135.15	37.84
Dec	108.13	29.33	0.27	150.3	40.58
Total	2081.66	1888.57		3671.89	3242.81

Shop Creek 1

	CEC af	CEC lbsP	lbs/af	normalized af	normalized lbsP
Jan	54.48	13.07	0.24	93.71	22.49
Feb	51.08	12.31	0.24	89.39	21.45
Mar	63.81	17.32	0.27	150.59	40.66
Apr	52.52	12.87	0.25	97.69	24.42
May	68.15	20.85	0.31	131.53	40.77
Jun	56.83	14.15	0.25	91.5	22.88
Jul	66.08	17.66	0.27	110.35	29.79
Aug	63.08	18.17	0.29	100.93	29.27
Sep	57.98	15.08	0.26	102.62	26.68
Oct	49.54	11.56	0.23	70.35	16.18
Nov	53.60	13.25	0.25	71.29	17.82
Dec	57.03	14.40	0.25	79.27	19.82
Total	694.18	180.69		1189.22	312.23

Belleview Drainage 1

	CEC af	CEC lbsP	lbs/af	normalized af	normalized lbsP
Jan	5.13	1.78	0.35	8.82	3.09
Feb	5.07	2.27	0.45	8.87	3.99
Mar	6.75	7.60	1.13	15.93	18
Apr	8.15	15.43	1.89	15.16	28.65
May	7.44	15.29	2.06	14.36	29.58
Jun	4.64	1.47	0.32	7.47	2.39
Jul	6.57	27.10	4.12	10.97	45.2
Aug	5.84	102.85	17.61	9.34	164.48
Sep	5.10	2.38	0.47	9.03	4.24
Oct	4.19	1.11	0.26	5.95	1.55
Nov	4.77	1.67	0.35	6.34	2.22
Dec	5.05	1.66	0.33	7.02	2.32
Total	68.70	180.61		119.26	305.71

Quincy Drainage 1

	CEC af	CEC lbsP	lbs/af	normalized af	normalized lbsP
Jan	19.81	27.49	1.39	11.06	15.35
Feb	18.93	25.19	1.33	10.57	14.07
Mar	21.8	16.02	0.73	12.18	8.95
Apr	22.01	25.64	1.16	12.29	14.32
May	23.24	24.95	1.07	12.98	13.94
Jun	18.26	29.9	1.64	10.2	16.7
Jul	19.73	29.29	1.48	11.02	16.36
Aug	17.53	29.28	1.67	9.79	16.35
Sep	15.54	20.23	1.3	8.68	11.3
Oct	14.93	35.52	2.38	8.34	19.84
Nov	12.16	36.6	3.01	6.79	20.44
Dec	11.96	30.9	2.58	6.68	17.26
Total	215.9	331.01		120.58	184.88

2000	Total Af CEC	Total AF COE
January	1547.15	2146.71
February	1617.92	2153.24
March	3746.11	2752.08
April	2032.66	2367.65
May	1861.33	1998.57
June	250.33	409.96
July	552.87	820.64
August	445.84	744.61
September	319.99	416.49
October	264.59	629.44
November	349.99	1053.40
December	385.68	996.46
Annual Total	13,374.46	16,489.25

CC-10	Af CEC	Af COE	P lbs CEC	lbs COE
January	1336.62	1854.59	1103.45	1531.06
February	1385.54	1843.97	1143.84	1522.30
March	3376.75	2480.73	2787.69	2047.98
April	1720.81	2004.41	1420.62	1654.75
May	1463.87	1571.80	1208.51	1297.61
June	105.07	172.07	86.74	142.05
July	184.69	274.14	152.47	226.32
August	143.15	239.08	118.18	197.38
September	89.32	116.26	73.74	95.98
October	92.32	219.62	76.21	181.30
November	102.09	307.27	84.28	253.67
December	160.64	415.04	132.62	342.65
Annual Total	10,160.87	11,498.98	8388.35	9493.05

CT-2	Af CEC	Af COE	P lbs CEC	lbs COE
January	103.29	143.32	27.98	38.82
February	100.36	133.57	29.60	39.39
March	228.51	167.87	109.06	80.12
April	191.58	223.15	81.18	94.56
May	277.50	297.96	135.93	145.95
June	123.94	202.97	38.93	63.75
July	347.10	515.21	212.75	315.79
August	294.80	492.35	160.41	267.90
September	204.68	266.41	83.98	109.31
October	143.56	341.52	64.15	152.61
November	209.48	630.49	82.32	247.77
December	181.74	469.55	60.43	156.13
Annual Total	2,406.54	3,884.37	1086.72	1712.10

CC-10a	Af CEC	Af COE	P lbs CEC	lbs COE
January	90.84	126.04	74.75	103.72
February	117.14	155.90	96.38	128.27
March	120.84	88.78	99.43	73.05
April	103.02	120.00	84.77	98.74
May	71.79	77.08	59.07	63.42
June	5.29	8.66	4.35	7.12
July	0.65	0.96	0.54	0.80
August	12.10	20.21	9.95	16.62
September	7.82	10.18	6.44	8.38
October	13.50	32.12	11.11	26.43
November	18.53	55.77	15.25	45.90
December	18.04	46.61	14.84	38.34
Annual Total	579.56	742.31	476.88	610.79

SC-3	Af CEC	Af COE	P lbs CEC	lbs COE
January	12.89	17.89	3.07	4.26
February	11.60	15.44	2.77	3.69
March	15.53	11.42	4.67	3.43
April	13.10	15.26	3.73	4.35
May	43.29	46.48	36.23	38.90
June	12.39	20.29	2.99	4.90
July	15.47	22.96	6.07	9.01
August	14.73	24.60	4.42	7.38
September	13.83	18.00	3.80	4.95
October	11.19	26.62	2.55	6.07
November	15.37	46.27	4.30	12.94
December	20.79	53.71	7.87	20.33
Annual Total	200.18	318.94	82.47	120.21

BD-2	Af CEC	Af COE	P lbs CEC	lbs COE
January	3.51	4.87	0.37	0.51
February	3.28	4.37	0.35	0.47
March	4.48	3.29	0.58	0.43
April	4.15	4.83	0.52	0.61
May	4.88	5.24	0.67	0.72
June	3.64	5.96	0.41	0.67
July	4.96	7.36	0.74	1.10
August	4.62	7.72	0.66	1.10
September	4.34	5.65	0.55	0.72
October	4.02	9.56	0.46	1.09
November	4.52	13.6	0.57	1.72
December	4.47	11.55	0.53	1.37
Annual Total	50.87	84.00	6.41	10.51

	Precip (af)	Alluvium (af)	Outflow (af)	Precip (lbs)	Alluvium (lbs)	Outflow (lbs)
January	29.11	67.52	1801.80	17.94	38.03	389.30
February	17.04	63.16	2611.62	10.50	35.58	564.27
March	261.28	67.52	2698.74	161.01	38.03	583.09
April	71.71	65.34	2722.50	44.19	36.80	588.23
May	220.81	67.52	1813.68	136.07	38.03	391.87
June	45.44	65.34	388.08	28.00	36.80	83.85
July	143.42	67.52	491.04	88.38	38.03	106.09
August	164.01	67.52	396.00	101.07	38.03	85.56
September	74.55	65.34	609.84	45.94	36.80	131.76
October	0.00	67.52	1433.52	0.00	38.03	309.73
November	130.64	65.34	938.52	80.50	36.80	202.78
December	102.24	67.52	1162.26	63.00	38.03	251.12
total	1,260.25	797.16	17,067.60	776.60	448.99	3687.65

2000
Bellview Drainage 1
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.07	0.09	0.04	1.45	0.77	0.04	0.03	0.00	0.22	0.04	0.02	0.04
2	0.05	0.06	0.04	1.31	0.40	0.04	0.03	0.00	0.09	0.06	0.02	0.04
3	0.05	0.06	0.14	1.37	0.26	0.04	0.03	0.00	0.08	0.08	0.04	0.04
4	0.11	0.06	0.04	0.37	0.24	0.04	0.02	0.00	0.08	0.09	0.03	0.04
5	0.05	0.12	0.04	0.21	0.12	0.04	0.02	0.00	0.07	0.08	0.25	0.04
6	0.05	0.08	0.04	0.15	0.05	0.04	0.02	0.00	0.07	0.03	0.21	0.07
7	0.05	0.06	0.04	0.11	0.05	0.04	0.02	0.00	0.07	0.00	0.06	0.05
8	0.04	0.05	0.38	0.10	0.93	0.04	0.02	0.00	0.07	0.00	0.05	0.04
9	0.04	0.05	0.08	0.10	0.67	0.03	0.02	0.01	0.07	0.01	0.04	0.05
10	0.04	0.05	0.06	0.09	0.10	0.03	0.03	0.04	0.06	0.01	0.04	0.03
11	0.05	0.05	0.05	0.17	0.09	0.04	0.03	0.03	0.07	0.03	0.05	0.04
12	0.05	0.05	0.05	0.22	0.05	0.03	0.28	0.04	0.06	0.03	0.06	0.08
13	0.04	0.05	0.05	0.23	0.05	0.03	0.75	0.03	0.06	0.04	0.11	0.08
14	0.05	0.05	0.05	0.23	0.05	0.03	0.10	0.03	0.06	0.04	0.08	0.04
15	0.05	0.05	0.13	0.31	0.07	0.03	0.10	0.03	0.07	0.04	0.04	0.04
16	0.05	0.05	0.89	0.49	0.05	0.03	0.12	0.03	0.07	0.05	0.03	0.05
17	0.05	0.04	0.45	0.32	0.14	0.09	0.10	3.97	0.06	0.05	0.05	0.04
18	0.05	0.10	0.29	0.26	7.48	0.05	7.61	95.96	0.07	0.04	0.05	0.07
19	0.05	0.09	0.11	0.24	1.57	0.03	6.59	0.01	0.02	0.05	0.04	0.11
20	0.05	0.07	0.13	0.26	0.32	0.04	5.69	0.02	0.21	0.05	0.04	0.06
21	0.06	0.08	0.42	0.25	0.14	0.03	4.22	0.03	0.02	0.05	0.04	0.10
22	0.05	0.09	0.34	0.24	0.11	0.03	0.97	0.06	0.03	0.07	0.04	0.06
23	0.04	0.52	0.23	0.25	0.09	0.03	0.17	0.14	0.22	0.03	0.04	0.05
24	0.05	0.08	0.15	0.25	0.08	0.03	0.04	0.10	0.35	0.04	0.04	0.04
25	0.05	0.04	0.11	0.24	0.41	0.04	0.03	0.09	0.04	0.05	0.04	0.04
26	0.05	0.06	0.10	0.23	0.54	0.21	0.03	0.14	0.02	0.02	0.03	0.06
27	0.12	0.04	0.09	0.27	0.17	0.19	0.03	0.14	0.00	0.00	0.04	0.05
28	0.07	0.04	0.09	0.25	0.09	0.05	0.00	0.12	0.01	0.00	0.04	0.05
29	0.08		0.20	0.22	0.08	0.04	0.00	1.68	0.01	0.00	0.03	0.05
30	0.10		0.21	5.23	0.07	0.03	0.00	0.18	0.03	0.00	0.04	0.05
31	0.08		2.53		0.05		0.00	0.20		0.01		0.05
Total	1.78	2.27	7.60	15.43	15.29	1.47	27.10	102.85	2.38	1.11	1.67	1.66
Mean	0.06	0.08	0.25	0.51	0.49	0.05	0.87	3.43	0.08	0.04	0.06	0.05
Max	0.12	0.52	2.53	5.23	7.48	0.21	7.61	95.96	0.35	0.09	0.25	0.11
Min	0.04	0.04	0.04	0.09	0.05	0.03	0.00	0.00	0.00	0.00	0.02	0.03

2000
Site BD-1
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.08	0.09	0.08	0.21	0.17	0.08	0.07	0.01	0.12	0.08	0.06	0.08
2	0.08	0.08	0.08	0.20	0.15	0.08	0.07	0.01	0.10	0.08	0.06	0.08
3	0.08	0.09	0.11	0.20	0.13	0.08	0.07	0.01	0.09	0.09	0.07	0.08
4	0.10	0.08	0.08	0.14	0.13	0.08	0.07	0.02	0.09	0.10	0.07	0.08
5	0.08	0.10	0.08	0.12	0.10	0.08	0.07	0.01	0.09	0.09	0.13	0.08
6	0.08	0.09	0.08	0.11	0.08	0.08	0.07	0.01	0.09	0.07	0.12	0.09
7	0.08	0.08	0.08	0.10	0.08	0.08	0.06	0.02	0.09	0.04	0.08	0.08
8	0.08	0.08	0.14	0.10	0.18	0.08	0.07	0.02	0.09	0.04	0.08	0.08
9	0.08	0.08	0.09	0.10	0.17	0.07	0.07	0.05	0.09	0.05	0.08	0.08
10	0.08	0.08	0.09	0.10	0.10	0.07	0.07	0.08	0.09	0.06	0.08	0.07
11	0.08	0.08	0.08	0.12	0.10	0.07	0.07	0.07	0.09	0.07	0.08	0.08
12	0.08	0.08	0.08	0.12	0.08	0.07	0.13	0.07	0.09	0.07	0.09	0.09
13	0.08	0.08	0.08	0.12	0.08	0.07	0.17	0.07	0.09	0.07	0.10	0.09
14	0.08	0.08	0.08	0.12	0.08	0.07	0.10	0.07	0.09	0.08	0.09	0.08
15	0.08	0.08	0.11	0.14	0.09	0.07	0.10	0.07	0.09	0.08	0.08	0.08
16	0.08	0.08	0.18	0.15	0.08	0.07	0.10	0.07	0.09	0.08	0.07	0.08
17	0.08	0.08	0.15	0.14	0.11	0.10	0.10	0.27	0.09	0.08	0.08	0.08
18	0.08	0.10	0.13	0.13	0.33	0.08	0.33	0.66	0.09	0.08	0.08	0.09
19	0.08	0.10	0.10	0.13	0.21	0.07	0.32	0.05	0.06	0.08	0.07	0.10
20	0.08	0.09	0.11	0.13	0.14	0.08	0.30	0.06	0.12	0.08	0.08	0.09
21	0.08	0.09	0.15	0.13	0.11	0.07	0.28	0.07	0.06	0.08	0.08	0.10
22	0.08	0.10	0.14	0.13	0.10	0.07	0.19	0.09	0.07	0.09	0.08	0.08
23	0.08	0.16	0.12	0.13	0.10	0.07	0.11	0.11	0.12	0.07	0.08	0.08
24	0.08	0.09	0.11	0.13	0.09	0.07	0.08	0.10	0.14	0.08	0.07	0.08
25	0.08	0.08	0.10	0.13	0.15	0.08	0.07	0.10	0.08	0.08	0.07	0.08
26	0.08	0.08	0.10	0.12	0.16	0.12	0.07	0.11	0.06	0.06	0.07	0.08
27	0.10	0.08	0.10	0.13	0.11	0.12	0.07	0.11	0.04	0.02	0.08	0.08
28	0.09	0.08	0.09	0.13	0.10	0.08	0.02	0.10	0.04	0.03	0.07	0.08
29	0.09	0.08	0.12	0.12	0.09	0.08	0.02	0.22	0.06	0.04	0.07	0.08
30	0.10		0.12	0.30	0.09	0.07	0.02	0.12	0.07	0.04	0.08	0.08
31	0.09		0.24		0.08		0.02	0.12		0.05		0.08
Total	2.59	2.56	3.41	4.11	3.76	2.34	3.32	2.95	2.57	2.12	2.41	2.55
Max	0.10	0.16	0.24	0.30	0.33	0.12	0.33	0.66	0.14	0.10	0.13	0.10
Min	0.08	0.08	0.08	0.10	0.08	0.07	0.02	0.01	0.04	0.02	0.06	0.07
Ac-ft	5.13	5.07	6.75	8.15	7.44	4.64	6.57	5.84	5.10	4.19	4.77	5.05

2000
Bellview Drainage 2
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.01	0.01	0.01	0.06	0.03	0.01	0.01	0.01	0.04	0.01	0.01	0.02
2	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.02
3	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.02
4	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
5	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
6	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.06	0.02
7	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.02
8	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02
9	0.01	0.01	0.02	0.01	0.06	0.01	0.01	0.01	0.01	0.02	0.02	0.02
10	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.02	0.02
11	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02
12	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02
13	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.01	0.01	0.01	0.02	0.02
14	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.02	0.02
15	0.01	0.01	0.01	0.01	0.01	0.01	0.09	0.01	0.01	0.01	0.02	0.02
16	0.01	0.01	0.03	0.02	0.01	0.01	0.04	0.01	0.01	0.01	0.02	0.02
17	0.01	0.01	0.03	0.02	0.01	0.02	0.10	0.02	0.01	0.01	0.02	0.02
18	0.01	0.02	0.03	0.01	0.07	0.02	0.08	0.10	0.01	0.01	0.02	0.02
19	0.01	0.02	0.02	0.01	0.04	0.02	0.04	0.08	0.01	0.01	0.02	0.02
20	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.04	0.03	0.01	0.02	0.02
21	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.01	0.02	0.02
22	0.01	0.01	0.03	0.01	0.01	0.01	0.02	0.02	0.03	0.01	0.02	0.02
23	0.01	0.03	0.02	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.02
24	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.05	0.02	0.02	0.02
25	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.04	0.02	0.02	0.02
26	0.01	0.01	0.01	0.01	0.06	0.02	0.01	0.01	0.02	0.02	0.02	0.02
27	0.02	0.01	0.01	0.01	0.03	0.03	0.01	0.02	0.02	0.01	0.02	0.02
28	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02
29	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.05	0.01	0.01	0.02	0.02
30	0.01		0.02	0.04	0.01	0.01	0.01	0.04	0.01	0.02	0.02	0.02
31	0.01		0.09		0.01		0.01	0.04		0.01		0.02
Total	0.37	0.35	0.58	0.52	0.67	0.41	0.74	0.66	0.55	0.46	0.57	0.53
Mean	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02
Max	0.02	0.03	0.09	0.06	0.07	0.03	0.10	0.10	0.05	0.02	0.06	0.02
Min	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02

2000
Site BD-2
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.06	0.05	0.05	0.16	0.11	0.06	0.06	0.05	0.11	0.06	0.07	0.07
2	0.06	0.06	0.04	0.10	0.08	0.06	0.06	0.05	0.09	0.06	0.07	0.07
3	0.06	0.06	0.06	0.08	0.07	0.06	0.05	0.05	0.07	0.06	0.07	0.07
4	0.06	0.05	0.05	0.14	0.06	0.05	0.05	0.06	0.06	0.06	0.07	0.07
5	0.06	0.08	0.05	0.09	0.05	0.06	0.05	0.06	0.06	0.06	0.07	0.07
6	0.06	0.06	0.05	0.07	0.05	0.06	0.05	0.05	0.06	0.07	0.16	0.07
7	0.06	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.06	0.08	0.10	0.08
8	0.06	0.05	0.09	0.06	0.08	0.05	0.05	0.05	0.06	0.07	0.08	0.08
9	0.06	0.05	0.08	0.06	0.16	0.05	0.05	0.04	0.06	0.07	0.08	0.08
10	0.06	0.05	0.06	0.06	0.10	0.05	0.06	0.05	0.05	0.06	0.08	0.08
11	0.06	0.05	0.06	0.06	0.08	0.05	0.05	0.04	0.06	0.06	0.08	0.07
12	0.05	0.05	0.05	0.06	0.07	0.05	0.06	0.05	0.06	0.06	0.08	0.07
13	0.05	0.05	0.05	0.05	0.06	0.05	0.16	0.05	0.05	0.06	0.07	0.07
14	0.05	0.05	0.05	0.05	0.06	0.05	0.11	0.04	0.05	0.06	0.08	0.07
15	0.05	0.05	0.05	0.06	0.06	0.05	0.19	0.04	0.05	0.06	0.08	0.08
16	0.05	0.05	0.10	0.07	0.06	0.05	0.13	0.04	0.05	0.06	0.07	0.07
17	0.05	0.05	0.11	0.07	0.06	0.07	0.21	0.08	0.05	0.06	0.07	0.07
18	0.05	0.07	0.10	0.06	0.17	0.08	0.18	0.21	0.05	0.06	0.07	0.07
19	0.05	0.07	0.08	0.06	0.11	0.07	0.12	0.19	0.05	0.06	0.07	0.07
20	0.05	0.06	0.07	0.06	0.07	0.06	0.09	0.12	0.10	0.06	0.07	0.07
21	0.06	0.06	0.09	0.06	0.08	0.06	0.08	0.09	0.10	0.06	0.07	0.07
22	0.05	0.06	0.10	0.05	0.06	0.05	0.07	0.07	0.10	0.06	0.07	0.07
23	0.05	0.11	0.09	0.05	0.06	0.05	0.07	0.08	0.10	0.09	0.07	0.07
24	0.05	0.06	0.08	0.06	0.06	0.05	0.06	0.07	0.15	0.07	0.07	0.07
25	0.06	0.05	0.06	0.05	0.09	0.05	0.06	0.06	0.12	0.07	0.07	0.07
26	0.06	0.05	0.06	0.05	0.16	0.08	0.05	0.06	0.09	0.07	0.07	0.07
27	0.08	0.05	0.06	0.05	0.11	0.11	0.05	0.08	0.07	0.06	0.07	0.07
28	0.07	0.05	0.06	0.06	0.09	0.09	0.05	0.07	0.07	0.06	0.07	0.07
29	0.06	0.05	0.09	0.05	0.06	0.07	0.05	0.14	0.06	0.06	0.07	0.07
30	0.06		0.07	0.12	0.06	0.07	0.05	0.13	0.06	0.07	0.07	0.07
31	0.05		0.20		0.06		0.05	0.12		0.07		0.07
Total	1.78	1.65	2.26	2.10	2.46	1.84	2.50	2.34	2.19	2.03	2.28	2.26
Max	0.08	0.11	0.20	0.16	0.17	0.11	0.21	0.21	0.15	0.09	0.16	0.08
Min	0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.04	0.05	0.06	0.07	0.07
Ac-ft	3.51	3.28	4.48	4.15	4.88	3.64	4.96	4.62	4.34	4.02	4.52	4.47

2000
Cherry Creek 10
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	31.90	30.90	35.05	101.85	24.09	5.31	2.54	2.48	2.46	2.46	2.46	3.19
2	31.90	34.51	37.85	102.99	19.85	4.81	2.53	2.48	2.46	2.46	2.46	3.66
3	29.92	39.01	42.02	113.71	15.90	4.37	2.52	2.48	2.46	2.46	2.46	3.66
4	22.47	36.71	39.60	86.69	12.36	3.66	2.50	2.48	2.46	2.46	2.46	3.66
5	30.90	37.85	40.19	87.72	9.30	3.15	2.49	2.48	2.46	2.46	2.53	3.66
6	24.50	37.28	39.60	94.06	7.71	2.81	2.48	2.48	2.46	2.46	3.11	3.66
7	22.08	37.85	40.19	85.67	7.10	2.67	2.48	2.48	2.46	2.46	2.64	3.66
8	28.02	39.01	62.79	73.17	10.95	2.64	2.48	2.47	2.46	2.46	2.57	3.66
9	31.90	43.90	110.06	63.62	24.50	2.59	2.48	2.46	2.46	2.46	2.57	3.66
10	29.92	42.64	118.71	56.47	12.36	2.57	2.48	2.46	2.46	2.46	2.55	3.66
11	31.90	39.01	118.71	48.53	10.73	2.57	2.48	2.46	2.46	2.46	2.55	6.53
12	35.05	39.60	118.71	45.85	8.92	2.54	2.50	2.46	2.46	2.46	2.53	3.66
13	32.41	39.60	118.71	44.54	7.55	2.52	3.43	2.46	2.46	2.46	3.00	3.99
14	31.90	37.85	118.71	42.02	7.10	2.51	2.50	2.46	2.46	2.46	2.55	4.37
15	32.93	36.15	118.71	41.40	6.66	2.50	2.52	2.46	2.46	2.46	2.53	4.72
16	33.98	36.71	446.92	39.60	6.13	2.53	2.49	2.46	2.46	2.46	2.56	3.78
17	36.15	40.19	222.17	33.45	13.90	2.67	73.17	2.53	2.46	2.46	2.55	4.21
18	38.42	39.01	89.80	29.44	404.91	2.62	5.89	43.90	2.46	2.46	2.51	3.78
19	43.27	40.80	79.73	25.78	203.35	2.57	2.69	2.74	2.46	2.46	2.54	3.78
20	48.53	38.42	70.47	22.08	89.80	2.56	2.49	2.46	2.46	2.46	5.31	3.78
21	49.91	39.01	66.13	18.80	25.35	2.54	2.48	2.46	2.46	2.46	2.54	3.38
22	48.53	38.42	61.98	17.14	9.89	2.53	2.48	2.46	2.46	2.46	2.56	4.13
23	45.85	54.97	58.01	15.90	6.53	2.52	2.48	2.46	2.46	2.46	2.60	4.91
24	41.40	46.51	66.13	15.60	6.53	2.51	2.48	2.46	2.46	2.46	2.69	4.29
25	41.40	45.19	72.26	13.63	17.79	2.53	2.48	2.46	2.46	2.46	2.81	4.37
26	45.85	41.40	73.17	12.85	138.79	2.69	2.48	2.46	2.46	2.46	2.96	4.45
27	46.51	39.01	66.98	11.41	66.13	3.15	2.48	2.46	2.46	2.46	3.15	4.45
28	42.02	37.28	56.47	9.89	14.73	2.84	2.48	2.46	2.46	2.46	3.38	4.91
29	34.51	35.05	53.49	9.49	6.53	2.69	2.48	2.46	2.46	2.46	3.60	4.81
30	28.49		53.49	57.24	6.53	2.56	2.48	2.46	2.46	2.46	3.54	4.29
31	30.90		90.85		6.53		2.48	2.45		2.46		9.89
Total	1103.45	1143.84	2787.69	1420.62	1208.51	86.74	152.47	118.18	73.74	76.21	84.28	132.62
Mean	35.60	39.44	89.93	47.35	38.98	2.89	4.92	3.81	2.46	2.46	2.81	4.28
Max	49.91	54.97	446.92	113.71	404.91	5.31	73.17	43.90	2.46	2.46	5.31	9.89
Min	22.08	30.90	35.05	9.49	6.13	2.50	2.48	2.45	2.46	2.46	2.46	3.19

2000
Site CC-10
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	19.52	18.90	21.45	62.31	14.74	3.25	1.55	1.52	1.50	1.50	1.50	1.95
2	19.52	21.11	23.15	63.01	12.14	2.94	1.55	1.52	1.50	1.50	1.50	2.24
3	18.30	23.86	25.71	69.57	9.73	2.67	1.54	1.52	1.50	1.50	1.50	2.24
4	13.75	22.46	24.22	53.04	7.56	2.24	1.53	1.52	1.50	1.50	1.50	2.24
5	18.90	23.15	24.59	53.67	5.69	1.93	1.52	1.52	1.50	1.50	1.55	2.24
6	14.99	22.80	24.22	57.54	4.72	1.72	1.52	1.52	1.50	1.51	1.90	2.24
7	13.51	23.15	24.59	52.41	4.34	1.63	1.52	1.52	1.50	1.51	1.61	2.24
8	17.14	23.86	38.42	44.76	6.70	1.61	1.52	1.51	1.50	1.50	1.58	2.24
9	19.52	26.86	67.33	38.92	14.99	1.58	1.52	1.51	1.50	1.50	1.58	2.24
10	18.30	26.09	72.63	34.55	7.56	1.58	1.52	1.50	1.50	1.50	1.56	2.24
11	19.52	23.86	72.63	29.69	6.57	1.58	1.52	1.51	1.50	1.50	1.56	3.99
12	21.45	24.22	72.63	28.05	5.46	1.55	1.53	1.51	1.50	1.50	1.55	2.24
13	19.83	24.22	72.63	27.25	4.62	1.54	2.10	1.50	1.50	1.50	1.83	2.44
14	19.52	23.15	72.63	25.71	4.34	1.54	1.53	1.50	1.50	1.50	1.56	2.67
15	20.15	22.12	72.63	25.33	4.08	1.53	1.54	1.50	1.50	1.50	1.55	2.89
16	20.79	22.46	273.41	24.22	3.75	1.55	1.52	1.50	1.50	1.50	1.57	2.32
17	22.12	24.59	135.92	20.46	8.51	1.63	44.76	1.55	1.50	1.50	1.56	2.58
18	23.51	23.86	54.94	18.01	247.71	1.60	3.60	26.86	1.50	1.50	1.54	2.32
19	26.47	24.96	48.78	15.77	124.40	1.58	1.65	1.67	1.50	1.50	1.55	2.32
20	29.69	23.51	43.11	13.51	54.94	1.57	1.52	1.50	1.50	1.50	3.25	2.32
21	30.53	23.86	40.46	11.50	15.51	1.55	1.52	1.50	1.50	1.50	1.55	2.07
22	29.69	23.51	37.92	10.49	6.05	1.55	1.52	1.50	1.50	1.50	1.57	2.53
23	28.05	33.63	35.49	9.73	3.99	1.54	1.52	1.50	1.51	1.50	1.59	3.00
24	25.33	28.45	40.46	9.55	3.99	1.54	1.52	1.50	1.51	1.50	1.65	2.62
25	25.33	27.65	44.21	8.34	10.88	1.55	1.52	1.50	1.50	1.50	1.72	2.67
26	28.05	25.33	44.76	7.86	84.91	1.65	1.52	1.50	1.50	1.50	1.81	2.72
27	28.45	23.86	40.98	6.98	40.46	1.93	1.52	1.50	1.50	1.50	1.93	2.72
28	25.71	22.80	34.55	6.05	9.01	1.74	1.52	1.50	1.50	1.50	2.07	3.00
29	21.11	21.45	32.72	5.81	3.99	1.65	1.52	1.50	1.50	1.50	2.20	2.94
30	17.43		32.72	35.02	3.99	1.57	1.52	1.50	1.50	1.50	2.17	2.62
31	18.90		55.58		3.99		1.52	1.50		1.50		6.05
Total	675.06	699.77	1705.43	869.10	739.33	53.07	93.28	72.30	45.11	46.63	51.56	81.13
Mean	21.78	24.13	55.01	28.97	23.85	1.77	3.01	2.33	1.50	1.50	1.72	2.62
Max	30.53	33.63	273.41	69.57	247.71	3.25	44.76	26.86	1.51	1.51	3.25	6.05
Min	13.51	18.90	21.45	5.81	3.75	1.53	1.52	1.50	1.50	1.50	1.50	1.95
Ac-ft	1336.62	1385.54	3376.75	1720.81	1463.87	105.07	184.69	143.15	89.32	92.32	102.09	160.64

2000
Cherry Creek 10-A
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	11.51	16.66	14.80	13.69	16.29	3.23	0.00	0.00	0.69	1.20	1.20	1.20
2	11.51	16.66	14.80	13.69	14.80	2.47	0.00	0.00	0.69	1.20	1.20	1.20
3	11.51	16.66	14.80	13.69	12.60	2.11	0.00	0.00	0.69	1.20	1.20	1.20
4	11.51	16.66	14.80	13.69	10.61	1.40	0.00	0.00	0.69	1.20	1.20	1.20
5	11.51	16.66	14.80	13.69	8.85	1.07	0.00	0.00	0.69	1.20	1.20	1.20
6	11.51	16.66	14.80	13.69	8.59	1.13	0.00	0.00	0.63	1.20	1.20	1.20
7	11.51	16.66	14.80	13.69	8.16	0.75	0.00	0.00	0.63	1.20	1.20	1.20
8	11.51	16.66	14.80	13.69	7.30	0.45	0.00	0.00	0.63	1.20	1.20	1.20
9	11.51	16.66	14.80	13.69	10.79	0.63	0.00	0.00	0.63	1.20	1.20	1.20
10	11.51	16.66	14.80	13.69	9.46	0.45	0.00	0.00	0.63	1.20	1.20	1.20
11	11.51	16.66	14.80	13.69	7.30	0.63	0.00	0.00	0.63	1.20	4.01	1.20
12	11.51	16.66	14.80	13.69	7.30	0.45	0.00	0.00	0.63	1.20	1.20	1.20
13	11.51	16.66	14.80	13.69	7.30	0.18	0.00	0.00	0.63	1.20	1.20	1.20
14	11.51	16.66	14.80	13.69	7.30	0.00	0.00	0.00	0.63	1.20	1.20	1.20
15	11.51	16.66	14.80	13.69	7.30	0.00	0.00	0.00	0.63	1.20	1.20	1.20
16	11.51	16.66	19.12	13.69	7.38	0.00	0.00	0.45	0.63	1.20	1.20	1.20
17	11.51	16.66	18.65	13.69	7.30	0.00	0.00	0.45	0.63	1.20	1.20	1.20
18	11.51	16.66	18.17	13.69	13.51	0.00	0.00	11.69	0.63	1.20	1.20	1.20
19	11.51	16.66	17.70	13.69	11.24	0.00	0.00	9.03	0.63	1.20	1.20	1.20
20	11.51	16.66	17.23	13.69	9.03	0.00	0.00	4.80	0.63	1.20	13.69	1.20
21	11.51	16.66	16.76	13.69	7.30	0.00	0.00	2.47	0.63	1.20	8.16	1.20
22	11.51	16.66	18.65	13.69	7.30	0.00	0.00	1.00	0.63	1.20	1.20	1.20
23	11.51	16.66	23.37	13.69	7.30	0.00	0.00	1.00	0.63	1.20	1.20	1.20
24	11.51	16.66	18.65	13.69	7.30	0.00	0.00	1.00	0.63	1.20	1.20	1.20
25	11.51	16.66	17.23	13.69	7.30	0.00	0.00	1.00	0.63	1.20	1.20	1.20
26	11.51	16.66	14.80	13.69	11.69	0.00	0.00	1.00	0.63	1.20	1.20	12.60
27	11.51	16.66	14.80	13.69	9.46	0.00	0.63	1.00	0.63	1.20	1.20	6.04
28	11.51	16.66	14.80	13.69	8.16	0.00	0.45	1.00	0.63	1.20	1.20	1.20
29	11.51	16.66	14.80	13.69	5.62	0.00	0.18	2.47	0.63	1.20	1.20	1.20
30	11.51		14.80	17.70	5.21	0.00	0.18	1.00	0.63	1.20	1.20	3.23
31	11.51		14.80		4.01	0.00		1.00		1.20		1.20
						0.00						
Total	356.81	483.24	496.28	414.76	273.05	14.94	1.44	40.38	19.07	37.19	58.25	55.45
Mean	11.51	16.66	16.01	13.83	8.81	0.48	0.05	1.30	0.64	1.20	1.94	1.79
Max	11.51	16.66	23.37	17.70	16.29	3.23	0.63	11.69	0.69	1.20	13.69	12.60
Min	11.51	16.66	14.80	13.69	4.01	0.00	0.00	0.00	0.63	1.20	1.20	1.20

2000
Site CC-10a
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	1.48	2.04	1.84	1.72	2.00	0.50	0.00	0.00	0.14	0.22	0.22	0.22
2	1.48	2.04	1.84	1.72	1.84	0.40	0.00	0.00	0.14	0.22	0.22	0.22
3	1.48	2.04	1.84	1.72	1.60	0.35	0.00	0.00	0.14	0.22	0.22	0.22
4	1.48	2.04	1.84	1.72	1.38	0.25	0.00	0.00	0.14	0.22	0.22	0.22
5	1.48	2.04	1.84	1.72	1.18	0.20	0.00	0.00	0.14	0.22	0.22	0.22
6	1.48	2.04	1.84	1.72	1.15	0.21	0.00	0.00	0.13	0.22	0.22	0.22
7	1.48	2.04	1.84	1.72	1.10	0.15	0.00	0.00	0.13	0.22	0.22	0.22
8	1.48	2.04	1.84	1.72	1.00	0.10	0.00	0.00	0.13	0.22	0.22	0.22
9	1.48	2.04	1.84	1.72	1.40	0.13	0.00	0.00	0.13	0.22	0.22	0.22
10	1.48	2.04	1.84	1.72	1.25	0.10	0.00	0.00	0.13	0.22	0.22	0.22
11	1.48	2.04	1.84	1.72	1.00	0.13	0.00	0.00	0.13	0.22	0.60	0.22
12	1.48	2.04	1.84	1.72	1.00	0.10	0.00	0.00	0.13	0.22	0.22	0.22
13	1.48	2.04	1.84	1.72	1.00	0.05	0.00	0.00	0.13	0.22	0.22	0.22
14	1.48	2.04	1.84	1.72	1.00	0.00	0.00	0.00	0.13	0.22	0.22	0.22
15	1.48	2.04	1.84	1.72	1.00	0.00	0.00	0.00	0.13	0.22	0.22	0.22
16	1.48	2.04	2.30	1.72	1.01	0.00	0.00	0.10	0.13	0.22	0.22	0.22
17	1.48	2.04	2.25	1.72	1.00	0.00	0.00	0.10	0.13	0.22	0.22	0.22
18	1.48	2.04	2.20	1.72	1.70	0.00	0.00	1.50	0.13	0.22	0.22	0.22
19	1.48	2.04	2.15	1.72	1.45	0.00	0.00	1.20	0.13	0.22	0.22	0.22
20	1.48	2.04	2.10	1.72	1.20	0.00	0.00	0.70	0.13	0.22	1.72	0.22
21	1.48	2.04	2.05	1.72	1.00	0.00	0.00	0.40	0.13	0.22	1.10	0.22
22	1.48	2.04	2.25	1.72	1.00	0.00	0.00	0.19	0.13	0.22	0.22	0.22
23	1.48	2.04	2.74	1.72	1.00	0.00	0.00	0.19	0.13	0.22	0.22	0.22
24	1.48	2.04	2.25	1.72	1.00	0.00	0.00	0.19	0.13	0.22	0.22	0.22
25	1.48	2.04	2.10	1.72	1.00	0.00	0.00	0.19	0.13	0.22	0.22	0.22
26	1.48	2.04	1.84	1.72	1.50	0.00	0.00	0.19	0.13	0.22	0.22	1.60
27	1.48	2.04	1.84	1.72	1.25	0.00	0.13	0.19	0.13	0.22	0.22	0.85
28	1.48	2.04	1.84	1.72	1.10	0.00	0.10	0.19	0.13	0.22	0.22	0.22
29	1.48	2.04	1.84	1.72	0.80	0.00	0.05	0.40	0.13	0.22	0.22	0.22
30	1.48		1.84	2.15	0.75	0.00	0.05	0.19	0.13	0.22	0.22	0.50
31	1.48		1.84		0.60		0.00	0.19		0.22		0.22
Total	45.88	59.16	61.03	52.03	36.26	2.67	0.33	6.11	3.95	6.82	9.36	9.11
Mean	1.48	2.04	1.97	1.73	1.17	0.09	0.01	0.20	0.13	0.22	0.31	0.29
Max	1.48	2.04	2.74	2.15	2.00	0.50	0.13	1.50	0.14	0.22	1.72	1.60
Min	1.48	2.04	1.84	1.72	0.60	0.00	0.00	0.00	0.13	0.22	0.22	0.22
Ac-ft	90.84	117.14	120.84	103.02	71.79	5.29	0.65	12.10	7.82	13.50	18.53	18.04

2000
Cherry Creek Outflow
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	15.56	20.56	33.34	33.34	7.78	13.34	0.00	7.22	11.11	12.22	5.56	12.22
2	15.56	20.56	33.34	33.34	7.78	13.34	0.00	7.22	11.11	12.22	5.56	12.22
3	15.56	20.56	33.34	33.34	7.78	13.34	0.00	3.89	11.11	12.22	5.56	12.22
4	15.56	20.56	33.34	33.34	8.33	13.34	0.00	1.11	11.11	11.67	5.56	12.22
5	15.56	20.56	32.78	33.34	8.33	13.34	0.00	1.11	11.11	11.67	5.56	12.22
6	15.56	20.56	32.78	33.34	8.33	11.11	0.00	1.11	11.11	11.67	5.56	12.22
7	15.56	20.56	22.23	40.56	8.33	8.33	0.00	1.11	11.11	11.67	5.56	12.22
8	15.56	22.78	16.67	43.34	8.33	7.78	0.00	1.11	8.33	11.67	5.56	12.22
9	15.56	25.56	16.67	43.34	8.33	5.56	0.00	2.22	2.78	11.67	6.67	12.22
10	15.56	25.56	17.23	43.34	8.33	3.89	0.00	1.67	2.78	11.67	8.33	12.22
11	15.56	25.56	17.23	31.67	8.33	3.89	0.00	0.00	2.78	11.67	8.33	12.22
12	15.56	25.56	17.23	22.23	8.33	1.67	0.00	0.00	2.78	11.67	8.33	12.22
13	15.56	25.00	17.23	22.23	8.33	0.00	0.00	0.00	2.78	11.67	10.56	12.22
14	15.56	25.00	17.23	22.23	8.33	0.00	0.00	0.00	2.78	11.67	11.67	12.22
15	15.56	25.00	17.23	22.23	8.33	0.00	0.00	0.00	1.67	11.67	12.22	10.00
16	15.56	25.00	21.67	22.23	8.33	0.00	0.00	0.00	1.11	11.67	12.22	8.33
17	15.56	25.00	25.00	22.23	8.33	0.00	0.00	0.00	1.11	11.67	12.22	8.33
18	15.56	25.00	25.00	22.23	8.33	0.00	0.00	0.00	1.11	11.67	12.22	8.33
19	15.56	25.00	25.00	22.23	15.00	0.00	0.00	0.00	1.11	11.67	12.22	8.33
20	15.56	25.00	25.00	22.23	20.56	0.00	0.00	0.00	1.11	11.67	10.56	8.33
21	15.56	25.00	25.00	22.23	20.56	0.00	12.78	0.00	1.11	11.67	8.33	8.33
22	15.56	25.00	25.00	22.23	20.56	0.00	20.56	0.00	1.11	11.67	8.33	8.33
23	15.56	25.00	25.00	22.23	20.56	0.00	20.56	0.00	1.11	15.56	8.33	8.33
24	15.56	25.00	25.00	22.23	24.45	0.00	20.56	5.56	1.11	18.89	8.33	8.33
25	15.56	30.56	25.00	19.45	37.78	0.00	13.34	11.11	1.11	18.89	8.33	8.33
26	16.11	33.34	25.00	16.67	35.01	0.00	8.33	11.11	7.22	18.89	8.33	8.33
27	18.34	33.34	25.00	11.67	42.23	0.00	8.33	11.11	12.22	18.34	8.33	10.56
28	20.56	33.34	25.00	8.33	42.23	0.00	8.33	11.11	12.22	18.34	10.56	10.56
29	20.56	33.34	25.00	8.33	42.23	0.00	8.33	11.11	12.22	18.34	12.22	10.56
30	20.56		25.00	8.33	26.12	0.00	8.33	11.11	11.67	11.11	12.22	10.56
31	20.56		27.78		13.34		8.33	11.11		5.56		11.11
Total	505.65	732.91	757.36	764.03	508.98	108.91	137.80	111.13	171.14	402.29	263.38	326.17
Mean	16.31	25.27	24.43	25.47	16.42	3.63	4.45	3.58	5.70	12.98	8.78	10.52
Max	20.56	33.34	33.34	43.34	42.23	13.34	20.56	11.11	12.22	18.89	12.22	12.22
Min	15.56	20.56	16.67	8.33	7.78	0.00	0.00	0.00	1.11	5.56	5.56	8.33

Cherry Creek Out
Discharge (cfs)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	28	37	60	60	14	24	0	13	20	22	10	22
2	28	37	60	60	14	24	0	13	20	22	10	22
3	28	37	60	60	14	24	0	7	20	22	10	22
4	28	37	60	60	15	24	0	2	20	21	10	22
5	28	37	59	60	15	24	0	2	20	21	10	22
6	28	37	59	60	15	20	0	2	20	21	10	22
7	28	37	40	73	15	15	0	2	20	21	10	22
8	28	41	30	78	15	14	0	2	15	21	10	22
9	28	46	30	78	15	10	0	4	5	21	12	22
10	28	46	31	78	15	7	0	3	5	21	15	22
11	28	46	31	57	15	7	0	0	5	21	15	22
12	28	46	31	40	15	3	0	0	5	21	15	22
13	28	45	31	40	15	0	0	0	5	21	19	22
14	28	45	31	40	15	0	0	0	5	21	21	22
15	28	45	31	40	15	0	0	0	3	21	22	18
16	28	45	39	40	15	0	0	0	2	21	22	15
17	28	45	45	40	15	0	0	0	2	21	22	15
18	28	45	45	40	15	0	0	0	2	21	22	15
19	28	45	45	40	27	0	0	0	2	21	22	15
20	28	45	45	40	37	0	0	0	2	21	19	15
21	28	45	45	40	37	0	23	0	2	21	15	15
22	28	45	45	40	37	0	37	0	2	21	15	15
23	28	45	45	40	37	0	37	0	2	28	15	15
24	28	45	45	40	44	0	37	10	2	34	15	15
25	28	55	45	35	68	0	24	20	2	34	15	15
26	29	60	45	30	63	0	15	20	13	34	15	15
27	33	60	45	21	76	0	15	20	22	33	15	19
28	37	60	45	15	76	0	15	20	22	33	19	19
29	37	60	45	15	76	0	15	20	22	33	22	19
30	37		45	15	47	0	15	20	21	20	22	19
31	37		50		24		15	20		10		20
Total	910	1319	1363	1375	916	196	248	200	308	724	474	587
Mean	29.35	45.48	43.97	45.83	29.55	6.53	8.00	6.45	10.27	23.35	15.80	18.94
Max	37	60	60	78	76	24	37	20	22	34	22	22
Min	28	37	30	15	14	0	0	0	2	10	10	15
Ac-ft	1801.80	2611.62	2698.74	2722.50	1813.68	388.08	491.04	396.00	609.84	1433.52	938.52	1162.26

2000
Cottonwood Creek 1
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.87	1.44	0.80	19.12	10.70	0.77	0.52	0.03	3.39	0.77	0.34	0.74
2	0.83	1.00	0.80	17.47	5.95	0.71	0.52	0.03	1.55	0.99	0.35	0.71
3	0.83	1.03	2.22	18.25	4.02	0.71	0.50	0.03	1.38	1.43	0.68	0.77
4	1.82	0.99	0.80	5.52	3.73	0.71	0.48	0.03	1.38	1.49	0.65	0.74
5	0.84	1.95	0.80	3.20	1.95	0.80	0.46	0.03	1.27	1.43	3.79	0.77
6	0.97	1.33	0.80	2.45	0.92	0.77	0.46	0.03	1.22	0.57	3.26	1.22
7	0.88	0.99	0.80	1.84	0.91	0.74	0.44	0.03	1.22	0.11	0.99	0.95
8	0.81	0.91	5.66	1.71	12.82	0.71	0.46	0.04	1.22	0.12	0.84	0.80
9	0.81	0.88	1.38	1.62	9.46	0.65	0.48	0.17	1.17	0.19	0.80	0.84
10	0.80	0.94	1.08	1.58	1.65	0.59	0.65	0.71	1.12	0.31	0.77	0.65
11	0.83	0.95	0.97	2.74	1.49	0.68	0.50	0.57	1.17	0.50	0.84	0.80
12	0.85	0.84	0.94	3.42	0.95	0.65	4.23	0.68	1.12	0.65	1.07	1.38
13	0.81	0.86	0.92	3.54	0.85	0.59	10.52	0.59	1.12	0.68	1.75	1.38
14	0.85	0.86	0.92	3.50	0.85	0.57	1.62	0.57	1.12	0.71	1.32	0.77
15	0.86	0.87	2.14	4.71	1.14	0.57	1.62	0.50	1.17	0.80	0.74	0.71
16	0.85	0.84	12.33	7.11	0.90	0.54	1.90	0.54	1.17	0.87	0.65	0.87
17	0.89	0.78	6.50	4.79	2.22	1.55	1.62	47.71	1.12	0.84	0.87	0.80
18	0.90	1.65	4.31	3.90	83.83	0.87	85.11	744.41	1.17	0.80	0.95	1.22
19	0.89	1.55	1.87	3.69	20.59	0.65	74.92	0.20	0.37	0.91	0.68	1.75
20	0.85	1.16	2.05	3.98	4.79	0.71	65.80	0.32	3.26	0.84	0.71	1.07
21	0.98	1.41	6.14	3.79	2.30	0.62	50.38	0.59	0.32	0.87	0.71	1.68
22	0.83	1.55	5.04	3.72	1.74	0.59	13.24	1.07	0.65	1.22	0.80	0.99
23	0.80	7.47	3.53	3.87	1.52	0.57	2.70	2.22	3.39	0.62	0.71	0.87
24	0.83	1.43	2.35	3.76	1.33	0.54	0.80	1.62	5.27	0.77	0.68	0.80
25	0.89	0.03	1.84	3.64	6.05	0.71	0.52	1.49	0.74	0.84	0.68	0.77
26	0.85	0.99	1.66	3.54	7.81	3.26	0.52	2.22	0.44	0.38	0.65	0.99
27	1.95	0.80	1.57	4.05	2.65	2.91	0.52	2.22	0.11	0.04	0.71	0.91
28	1.25	0.80	1.44	3.89	1.49	0.91	0.03	1.97	0.15	0.04	0.68	0.91
29	1.43	0.80	3.06	3.41	1.28	0.71	0.03	21.88	0.27	0.09	0.65	0.84
30	1.62		3.29	60.96	1.14	0.59	0.03	2.80	0.52	0.12	0.71	0.84
31	1.43		31.80		0.97		0.03	3.13		0.20		0.84
Total	30.90	37.10	109.83	208.78	197.99	25.92	321.61	838.46	39.51	20.18	28.96	29.33
Mean	1.00	1.28	3.54	6.96	6.39	0.86	10.37	27.05	1.32	0.65	0.97	0.95
Max	1.95	7.47	31.80	60.96	83.83	3.26	85.11	744.41	5.27	1.49	3.79	1.75
Min	0.80	0.03	0.80	1.58	0.85	0.54	0.03	0.03	0.11	0.04	0.34	0.65

2000
Site CT-1
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	1.68	2.37	1.59	10.88	7.89	1.54	1.16	0.10	4.05	1.54	0.83	1.49
2	1.62	1.85	1.59	10.35	5.65	1.45	1.16	0.10	2.48	1.84	0.86	1.45
3	1.62	1.88	3.12	10.60	4.49	1.45	1.13	0.10	2.29	2.35	1.41	1.54
4	2.74	1.84	1.59	5.41	4.29	1.45	1.09	0.10	2.29	2.42	1.36	1.49
5	1.64	2.87	1.59	3.91	2.87	1.59	1.05	0.10	2.17	2.35	4.33	1.54
6	1.81	2.24	1.59	3.31	1.74	1.54	1.05	0.10	2.11	1.24	3.95	2.11
7	1.69	1.84	1.59	2.77	1.74	1.49	1.02	0.11	2.11	0.34	1.84	1.78
8	1.60	1.73	5.49	2.64	8.73	1.45	1.05	0.13	2.11	0.36	1.63	1.59
9	1.60	1.69	2.29	2.55	7.36	1.36	1.09	0.48	2.05	0.52	1.59	1.63
10	1.59	1.77	1.95	2.51	2.58	1.28	1.36	1.45	2.00	0.78	1.54	1.36
11	1.63	1.78	1.81	3.55	2.41	1.41	1.13	1.24	2.05	1.13	1.63	1.59
12	1.66	1.64	1.77	4.07	1.78	1.36	4.63	1.41	2.00	1.36	1.94	2.29
13	1.60	1.66	1.74	4.16	1.66	1.28	7.82	1.28	2.00	1.41	2.68	2.29
14	1.65	1.67	1.75	4.13	1.65	1.24	2.55	1.24	2.00	1.45	2.23	1.54
15	1.67	1.68	3.05	4.93	2.02	1.24	2.55	1.13	2.05	1.59	1.49	1.45
16	1.66	1.64	8.54	6.26	1.72	1.20	2.82	1.20	2.05	1.68	1.36	1.68
17	1.70	1.56	5.94	4.98	3.12	2.48	2.55	17.76	2.00	1.63	1.68	1.59
18	1.72	2.58	4.68	4.41	23.87	1.68	24.06	73.22	2.05	1.59	1.78	2.11
19	1.71	2.47	2.80	4.26	11.32	1.36	22.51	0.56	0.89	1.73	1.41	2.68
20	1.65	2.05	2.97	4.46	4.98	1.45	21.03	0.80	3.95	1.63	1.45	1.94
21	1.82	2.33	5.75	4.33	3.19	1.32	18.28	1.28	0.80	1.68	1.45	2.61
22	1.63	2.48	5.13	4.28	2.67	1.28	8.89	1.94	1.36	2.11	1.59	1.84
23	1.58	6.44	4.15	4.39	2.44	1.24	3.52	3.12	4.05	1.32	1.45	1.68
24	1.62	2.35	3.24	4.31	2.24	1.20	1.59	2.55	5.26	1.54	1.41	1.59
25	1.70	0.10	2.77	4.22	5.71	1.45	1.16	2.42	1.49	1.63	1.41	1.54
26	1.65	1.84	2.59	4.16	6.61	3.95	1.16	3.12	1.02	0.92	1.36	1.84
27	2.87	1.59	2.50	4.51	3.49	3.69	1.16	3.12	0.34	0.12	1.45	1.73
28	2.15	1.59	2.37	4.40	2.42	1.73	0.10	2.89	0.43	0.14	1.41	1.73
29	2.35	1.59	3.80	4.06	2.19	1.45	0.10	11.70	0.70	0.29	1.36	1.63
30	2.55		3.97	20.21	2.02	1.28	0.10	3.60	1.16	0.36	1.45	1.63
31	2.35		14.31		1.81		0.10	3.86		0.54		1.63
Total	56.53	59.10	108.00	159.00	136.65	47.90	138.99	142.20	61.32	39.58	51.32	54.61
Max	2.87	6.44	14.31	20.21	23.87	3.95	24.06	73.22	5.26	2.42	4.33	2.68
Min	1.58	0.10	1.59	2.51	1.65	1.20	0.10	0.10	0.34	0.12	0.83	1.36
Ac-ft	111.93	117.02	213.84	314.81	270.56	94.84	275.21	281.56	121.42	78.36	101.62	108.13

2000
Cottonwood Creek 2
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	1.05	0.74	0.49	20.85	6.83	0.99	0.86	0.45	8.02	1.31	1.43	1.68
2	0.99	0.86	0.26	4.82	2.74	0.92	0.80	0.41	3.39	1.34	1.51	1.68
3	1.05	0.80	1.05	2.62	1.51	0.80	0.74	0.41	1.68	1.42	1.59	1.68
4	1.05	0.74	0.74	16.27	1.12	0.74	0.69	0.92	1.35	1.45	1.59	1.68
5	1.05	2.17	0.54	3.25	0.74	0.92	0.59	0.80	1.19	1.50	1.59	1.77
6	0.92	1.19	0.41	1.59	0.49	0.86	0.59	0.49	0.99	11.35	23.45	1.96
7	0.92	0.69	0.45	1.19	0.49	0.74	0.54	0.37	0.92	4.64	5.76	3.12
8	0.92	0.59	3.83	1.19	2.28	0.69	0.59	0.37	0.92	2.31	2.50	2.74
9	0.92	0.54	2.17	1.19	22.38	0.64	0.64	0.33	0.80	2.06	2.28	2.28
10	0.92	0.59	1.35	1.19	5.37	0.64	1.05	0.49	0.74	1.97	2.28	2.28
11	0.80	0.74	0.80	1.05	2.17	0.74	0.69	0.33	0.80	1.91	2.28	2.07
12	0.74	0.59	0.49	0.86	1.51	0.74	1.19	0.45	0.80	1.78	2.17	1.87
13	0.74	0.49	0.45	0.69	1.19	0.64	24.00	0.45	0.74	1.72	2.07	1.87
14	0.74	0.49	0.45	0.69	0.80	0.59	7.53	0.29	0.74	1.87	2.28	1.96
15	0.74	0.49	0.74	0.92	0.92	0.64	43.53	0.23	0.69	1.94	2.28	2.28
16	0.74	0.45	4.82	1.96	0.99	0.74	10.52	0.26	0.69	1.74	1.96	1.96
17	0.69	0.59	6.39	1.59	0.86	1.77	59.99	2.62	0.59	1.71	1.87	1.87
18	0.74	1.68	4.82	1.19	29.37	2.17	34.11	57.85	0.64	1.68	1.87	1.77
19	0.69	1.51	2.99	1.05	8.02	1.51	8.80	41.01	0.59	1.59	1.77	1.87
20	0.64	1.05	1.87	0.99	1.59	1.12	3.53	9.35	5.76	1.62	1.87	1.96
21	0.86	1.19	3.68	0.80	2.62	0.86	2.39	3.39	5.18	1.59	1.87	1.87
22	0.64	1.12	5.37	0.74	0.86	0.69	1.77	2.07	5.00	1.74	1.96	1.96
23	0.64	6.60	3.68	0.74	0.86	0.64	1.43	2.86	5.37	2.34	2.07	1.87
24	0.69	0.99	2.17	0.80	0.86	0.64	1.19	1.77	17.56	1.85	1.77	1.77
25	0.86	0.59	1.35	0.69	3.25	0.74	0.99	1.35	9.35	1.71	1.68	1.77
26	0.80	0.59	1.12	0.69	23.45	2.74	0.74	1.27	3.53	1.63	1.68	1.68
27	2.39	0.64	1.19	0.69	6.83	7.29	0.74	2.74	1.96	1.56	1.68	1.96
28	1.51	0.49	1.19	0.80	3.25	3.25	0.74	1.68	1.51	1.56	1.77	1.87
29	0.99	0.41	3.25	0.69	0.86	2.07	0.74	14.28	1.27	1.58	1.68	1.87
30	0.80		2.07	9.35	0.86	1.43	0.54	11.15	1.19	1.70	1.77	1.77
31	0.74		48.90		0.86		0.49			0.00		1.68
Total	27.98	29.60	109.06	81.18	135.93	38.93	212.75	160.41	83.98	64.15	82.32	60.43
Mean	0.90	1.02	3.52	2.71	4.38	1.30	6.86	5.35	2.80	2.07	2.74	1.95
Max	2.39	6.60	48.90	20.85	29.37	7.29	59.99	57.85	17.56	11.35	23.45	3.12
Min	0.64	0.41	0.26	0.69	0.49	0.59	0.49	0.23	0.59	0.00	1.43	1.68

2000
Site CT-2
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	1.90	1.48	1.09	16.53	7.36	1.81	1.64	1.02	8.27	1.90	2.37	2.67
2	1.81	1.64	0.69	5.72	3.79	1.72	1.56	0.95	4.43	1.81	2.46	2.67
3	1.90	1.56	1.90	3.67	2.46	1.56	1.48	0.95	2.67	1.90	2.56	2.67
4	1.90	1.48	1.48	13.81	1.99	1.48	1.40	1.72	2.27	1.99	2.56	2.67
5	1.90	3.21	1.17	4.30	1.48	1.72	1.24	1.56	2.08	2.17	2.56	2.77
6	1.72	2.08	0.95	2.56	1.09	1.64	1.24	1.09	1.81	2.67	18.00	2.98
7	1.72	1.40	1.02	2.08	1.09	1.48	1.17	0.88	1.72	3.67	6.51	4.17
8	1.72	1.24	4.84	2.08	3.32	1.40	1.24	0.88	1.72	2.88	3.55	3.79
9	1.72	1.17	3.21	2.08	17.40	1.32	1.32	0.82	1.56	2.56	3.32	3.32
10	1.72	1.24	2.27	2.08	6.19	1.32	1.90	1.09	1.48	2.27	3.32	3.32
11	1.56	1.48	1.56	1.90	3.21	1.48	1.40	0.82	1.56	2.08	3.32	3.09
12	1.48	1.24	1.09	1.64	2.46	1.48	2.08	1.02	1.56	1.90	3.21	2.88
13	1.48	1.09	1.02	1.40	2.08	1.32	18.30	1.02	1.48	1.90	3.09	2.88
14	1.48	1.09	1.02	1.40	1.56	1.24	7.90	0.75	1.48	1.99	3.32	2.98
15	1.48	1.09	1.48	1.72	1.72	1.32	28.17	0.62	1.40	2.17	3.32	3.32
16	1.48	1.02	5.72	2.98	1.81	1.48	10.07	0.69	1.40	2.17	2.98	2.98
17	1.40	1.24	7.01	2.56	1.64	2.77	35.55	3.67	1.24	2.27	2.88	2.88
18	1.48	2.67	5.72	2.08	21.18	3.21	23.61	34.62	1.32	2.17	2.88	2.77
19	1.40	2.46	4.04	1.90	8.27	2.46	8.85	26.98	1.24	2.08	2.77	2.88
20	1.32	1.90	2.88	1.81	2.56	1.99	4.57	9.25	6.51	1.99	2.88	2.98
21	1.64	2.08	4.70	1.56	3.67	1.64	3.44	4.43	6.03	1.90	2.88	2.88
22	1.32	1.99	6.19	1.48	1.64	1.40	2.77	3.09	5.87	2.17	2.98	2.98
23	1.32	7.18	4.70	1.48	1.64	1.32	2.37	3.92	6.19	4.30	3.09	2.88
24	1.40	1.81	3.21	1.56	1.64	1.32	2.08	2.77	14.59	3.09	2.77	2.77
25	1.64	1.24	2.27	1.40	4.30	1.48	1.81	2.27	9.25	2.77	2.67	2.77
26	1.56	1.24	1.99	1.40	18.00	3.79	1.48	2.17	4.57	2.46	2.67	2.67
27	3.44	1.32	2.08	1.40	7.36	7.72	1.48	3.79	2.98	2.17	2.67	2.98
28	2.46	1.09	2.08	1.56	4.30	4.30	1.48	2.67	2.46	1.99	2.77	2.88
29	1.81	0.95	4.30	1.40	1.64	3.09	1.48	12.57	2.17	2.27	2.67	2.88
30	1.56		3.09	9.25	1.64	2.37	1.17	10.50	2.08	2.46	2.77	2.77
31	1.48		30.65		1.64		1.09	10.28		2.37		2.67
Total	52.16	50.69	115.41	96.76	140.15	62.60	175.30	148.89	103.37	72.50	105.80	91.79
Max	3.44	7.18	30.65	16.53	21.18	7.72	35.55	34.62	14.59	4.30	18.00	4.17
Min	1.32	0.95	0.69	1.40	1.09	1.24	1.09	0.62	1.24	1.81	2.37	2.67
Ac-ft	103.29	100.36	228.51	191.58	277.50	123.94	347.10	294.80	204.68	143.56	209.48	181.74

2000
Shop Creek 1
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.40	0.40	0.37	0.59	0.37	0.40	0.49	0.45	0.45	0.37	0.40	0.37
2	0.40	0.45	0.59	1.09	0.37	0.40	0.49	0.45	0.40	0.37	0.37	0.40
3	0.45	0.45	0.33	0.37	0.33	0.40	0.54	0.40	0.37	0.40	0.40	0.37
4	0.45	0.45	0.33	0.33	0.37	0.40	0.54	0.45	0.40	0.37	0.37	0.37
5	0.40	0.40	0.37	0.33	0.33	0.40	0.54	0.49	0.45	0.40	1.61	0.37
6	0.40	0.40	0.40	0.33	0.37	0.37	0.49	0.45	0.45	0.54	0.49	0.49
7	0.40	0.40	0.92	0.37	0.37	0.37	0.49	0.45	0.45	0.40	0.40	0.37
8	0.45	0.40	0.45	0.33	1.87	0.37	0.49	0.45	0.49	0.40	0.37	0.30
9	0.40	0.40	0.37	0.37	0.33	0.40	0.49	0.37	0.49	0.40	0.37	0.28
10	0.40	0.40	0.45	0.33	0.30	0.40	0.45	0.40	0.49	0.40	0.37	0.30
11	0.40	0.40	0.37	0.33	0.37	0.45	0.45	0.40	0.30	0.37	0.40	0.37
12	0.45	0.40	0.37	0.33	0.37	0.40	0.92	0.40	0.33	0.33	0.45	0.40
13	0.45	0.40	0.37	0.30	0.33	0.40	0.49	0.40	0.33	0.33	0.45	0.37
14	0.45	0.40	0.37	0.33	0.37	0.45	0.54	0.40	0.30	0.33	0.45	0.33
15	0.45	0.40	0.85	0.49	0.37	0.45	0.49	0.54	0.33	0.30	0.40	0.37
16	0.40	0.40	1.50	0.37	0.37	0.45	1.39	0.92	0.33	0.30	0.40	0.45
17	0.37	0.40	0.71	0.37	4.27	0.92	1.74	3.38	0.33	0.30	0.40	0.45
18	0.37	0.78	0.40	0.40	1.74	0.45	0.49	0.85	0.40	0.30	0.40	0.45
19	0.40	0.40	0.40	0.40	0.49	0.45	0.45	0.54	0.49	0.33	0.40	0.45
20	0.40	0.37	0.65	0.37	0.59	0.45	0.45	0.49	1.39	0.30	0.40	0.45
21	0.40	0.37	1.09	0.37	0.45	0.45	0.45	0.49	0.59	0.30	0.40	0.45
22	0.40	0.71	0.40	0.37	0.54	0.49	0.49	0.59	0.54	0.85	0.40	0.45
23	0.40	0.40	0.40	0.33	0.49	0.49	0.49	0.49	1.61	0.40	0.40	0.45
24	0.37	0.37	0.40	0.45	0.78	0.49	0.49	0.40	0.92	0.37	0.40	0.45
25	0.37	0.37	0.40	0.40	1.87	0.54	0.49	0.54	0.45	0.37	0.40	0.45
26	0.45	0.37	0.40	0.37	0.45	0.85	0.49	0.30	0.40	0.33	0.40	1.61
27	0.71	0.40	0.40	0.37	0.40	0.54	0.49	0.28	0.40	0.30	0.40	0.45
28	0.40	0.40	0.28	0.37	0.40	0.54	0.49	0.33	0.37	0.30	0.37	0.45
29	0.45	0.37	0.22	0.85	0.40	0.49	0.49	1.09	0.40	0.33	0.37	0.45
30	0.40		1.01	0.85	0.40	0.49	0.45	0.49	0.40	0.30	0.37	1.09
31	0.40		1.74		0.40		0.45	0.49		0.40		0.45
Total	13.07	12.31	17.32	12.87	20.85	14.15	17.66	18.17	15.08	11.56	13.25	14.40
Mean	0.42	0.42	0.56	0.43	0.67	0.47	0.57	0.59	0.50	0.37	0.44	0.46
Max	0.71	0.78	1.74	1.09	4.27	0.92	1.74	3.38	1.61	0.85	1.61	1.61
Min	0.37	0.37	0.22	0.30	0.30	0.37	0.45	0.28	0.30	0.30	0.37	0.28

2000
Site SC-1
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.86	0.86	0.80	1.13	0.80	0.86	0.99	0.93	0.93	0.80	0.86	0.80
2	0.86	0.93	1.13	1.70	0.80	0.86	0.99	0.93	0.86	0.80	0.80	0.86
3	0.93	0.93	0.75	0.80	0.75	0.86	1.06	0.86	0.80	0.86	0.86	0.80
4	0.93	0.93	0.75	0.75	0.80	0.86	1.06	0.93	0.86	0.80	0.80	0.80
5	0.86	0.86	0.80	0.75	0.75	0.86	1.06	0.99	0.93	0.86	2.18	0.80
6	0.86	0.86	0.86	0.75	0.80	0.80	0.99	0.93	0.93	1.06	0.99	0.99
7	0.86	0.86	1.53	0.80	0.80	0.80	0.99	0.93	0.93	0.86	0.86	0.80
8	0.93	0.86	0.93	0.75	2.39	0.80	0.99	0.93	0.99	0.86	0.80	0.70
9	0.86	0.86	0.80	0.80	0.75	0.86	0.99	0.80	0.99	0.86	0.80	0.65
10	0.86	0.86	0.93	0.75	0.70	0.86	0.93	0.86	0.99	0.86	0.80	0.70
11	0.86	0.86	0.80	0.75	0.80	0.93	0.93	0.86	0.70	0.80	0.86	0.80
12	0.93	0.86	0.80	0.75	0.80	0.86	1.53	0.86	0.75	0.75	0.93	0.86
13	0.93	0.86	0.80	0.70	0.75	0.86	0.99	0.86	0.75	0.75	0.93	0.80
14	0.93	0.86	0.80	0.75	0.80	0.93	1.06	0.86	0.70	0.75	0.93	0.75
15	0.93	0.86	1.44	0.99	0.80	0.93	0.99	1.06	0.75	0.70	0.86	0.80
16	0.86	0.86	2.08	0.80	0.80	0.93	1.99	1.53	0.75	0.70	0.86	0.93
17	0.80	0.86	1.28	0.80	3.91	1.53	2.29	3.41	0.75	0.70	0.86	0.93
18	0.80	1.36	0.86	0.86	2.29	0.93	0.99	1.44	0.86	0.70	0.86	0.93
19	0.86	0.86	0.86	0.86	0.99	0.93	0.93	1.06	0.99	0.75	0.86	0.93
20	0.86	0.80	1.21	0.80	1.13	0.93	0.93	0.99	1.99	0.70	0.86	0.93
21	0.86	0.80	1.70	0.80	0.93	0.93	0.93	0.99	1.13	0.70	0.86	0.93
22	0.86	1.28	0.86	0.80	1.06	0.99	0.99	1.13	1.06	1.44	0.86	0.93
23	0.86	0.86	0.86	0.75	0.99	0.99	0.99	0.99	2.18	0.86	0.86	0.93
24	0.80	0.80	0.86	0.93	1.36	0.99	0.99	0.86	1.53	0.80	0.86	0.93
25	0.80	0.80	0.86	0.86	2.39	1.06	0.99	1.06	0.93	0.80	0.86	0.93
26	0.93	0.80	0.86	0.80	0.93	1.44	0.99	0.70	0.86	0.75	0.86	2.18
27	1.28	0.86	0.86	0.80	0.86	1.06	0.99	0.65	0.86	0.70	0.86	0.93
28	0.86	0.86	0.65	0.80	0.86	1.06	0.99	0.75	0.80	0.70	0.80	0.93
29	0.93	0.80	0.54	1.44	0.86	0.99	0.99	1.70	0.86	0.75	0.80	0.93
30	0.86		1.62	1.44	0.86	0.99	0.93	0.99	0.86	0.70	0.80	1.70
31	0.86		2.29		0.86		0.93	0.99		0.86		0.93
Total	27.52	25.80	32.23	26.53	34.42	28.70	33.37	32.85	29.28	25.02	27.07	28.80
Max	1.28	1.36	2.29	1.70	3.91	1.53	2.29	3.41	2.18	1.44	2.18	2.18
Min	0.80	0.80	0.54	0.70	0.70	0.80	0.93	0.65	0.70	0.70	0.80	0.65
Ac-ft	54.48	51.08	63.81	52.52	68.15	56.83	66.08	65.04	57.98	49.54	53.60	57.03

2000
Shop Creek 3
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.08	0.13	0.07	0.43	0.09	0.11	0.08	0.07	0.86	0.07	0.09	0.07
2	0.08	0.16	0.08	0.15	0.08	0.11	0.08	0.07	0.22	0.07	0.08	0.08
3	0.08	0.10	0.12	0.31	0.07	0.10	0.08	0.07	0.12	0.07	0.08	0.10
4	0.10	0.08	0.08	0.09	0.07	0.08	0.08	0.07	0.08	0.07	0.08	0.06
5	0.09	0.08	0.07	0.07	0.07	0.08	0.08	0.07	0.08	0.08	0.15	0.06
6	0.09	0.08	0.07	0.07	0.09	0.08	0.08	0.08	0.08	0.12	0.21	0.06
7	0.13	0.08	0.08	0.07	0.21	0.08	0.08	0.07	0.08	0.11	0.09	0.06
8	0.13	0.08	0.43	0.07	0.61	0.08	0.08	0.07	0.08	0.08	0.09	0.06
9	0.11	0.08	0.09	0.07	2.19	0.08	0.08	0.07	0.08	0.08	0.10	0.08
10	0.16	0.08	0.08	0.07	0.40	0.08	0.08	0.07	0.08	0.08	0.08	0.07
11	0.16	0.08	0.08	0.07	0.27	0.08	0.08	0.07	0.08	0.08	0.08	0.07
12	0.11	0.08	0.07	0.07	0.12	0.08	0.08	0.07	0.08	0.08	0.09	0.09
13	0.13	0.08	0.07	0.07	0.07	0.08	0.16	0.07	0.08	0.08	0.12	0.12
14	0.13	0.08	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.08	0.15	0.18
15	0.08	0.08	0.08	0.07	0.07	0.08	0.11	0.07	0.08	0.08	0.12	0.33
16	0.08	0.08	0.57	0.09	0.07	0.08	0.07	0.09	0.08	0.08	0.63	0.09
17	0.08	0.08	0.15	0.07	4.09	0.22	3.40	0.65	0.07	0.08	0.12	0.09
18	0.07	0.17	0.15	0.07	16.35	0.08	0.25	1.21	0.07	0.08	0.61	0.10
19	0.08	0.20	0.08	0.07	0.99	0.08	0.09	0.14	0.07	0.08	0.33	0.24
20	0.07	0.09	0.08	0.07	0.33	0.08	0.08	0.08	0.25	0.08	0.12	0.16
21	0.07	0.08	0.24	0.07	0.29	0.08	0.08	0.08	0.09	0.08	0.12	0.40
22	0.08	0.08	0.16	0.07	0.22	0.08	0.08	0.08	0.10	0.12	0.12	0.61
23	0.08	0.22	0.08	0.07	0.21	0.08	0.08	0.11	0.10	0.13	0.08	0.22
24	0.08	0.08	0.07	0.07	0.21	0.08	0.08	0.08	0.31	0.08	0.08	0.08
25	0.07	0.07	0.07	0.07	4.89	0.08	0.07	0.07	0.10	0.07	0.08	0.08
26	0.08	0.07	0.07	0.07	3.20	0.12	0.07	0.12	0.09	0.07	0.08	2.33
27	0.12	0.07	0.07	0.07	0.35	0.31	0.07	0.09	0.08	0.07	0.08	1.21
28	0.15	0.07	0.07	0.07	0.17	0.12	0.08	0.08	0.07	0.07	0.08	0.12
29	0.10	0.07	0.07	0.07	0.13	0.08	0.08	0.24	0.07	0.07	0.08	0.08
30	0.09		0.09	0.99	0.13	0.08	0.08	0.13	0.07	0.07	0.08	0.08
31	0.11		1.13		0.12		0.07	0.10		0.07		0.43
Total	3.07	2.77	4.67	3.73	36.23	2.99	6.07	4.42	3.80	2.55	4.30	7.87
Mean	0.10	0.10	0.15	0.12	1.17	0.10	0.20	0.14	0.13	0.08	0.14	0.25
Max	0.16	0.22	1.13	0.99	16.35	0.31	3.40	1.21	0.86	0.13	0.63	2.33
Min	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.08	0.06

2000
Site SC-3
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.18	0.26	0.17	0.60	0.21	0.23	0.18	0.17	0.92	0.16	0.19	0.17
2	0.18	0.31	0.18	0.28	0.17	0.23	0.18	0.16	0.38	0.16	0.18	0.18
3	0.18	0.22	0.24	0.48	0.16	0.22	0.18	0.16	0.25	0.16	0.18	0.22
4	0.21	0.18	0.17	0.19	0.16	0.18	0.18	0.16	0.18	0.17	0.18	0.15
5	0.20	0.18	0.17	0.17	0.16	0.18	0.18	0.17	0.18	0.18	0.28	0.15
6	0.20	0.18	0.16	0.16	0.19	0.18	0.18	0.18	0.18	0.25	0.37	0.15
7	0.26	0.18	0.17	0.16	0.37	0.18	0.18	0.16	0.18	0.23	0.20	0.15
8	0.26	0.17	0.60	0.16	0.75	0.17	0.18	0.16	0.18	0.18	0.21	0.15
9	0.23	0.17	0.19	0.16	1.60	0.18	0.18	0.16	0.18	0.18	0.21	0.17
10	0.31	0.17	0.17	0.16	0.57	0.18	0.18	0.16	0.18	0.18	0.18	0.16
11	0.31	0.17	0.17	0.16	0.44	0.18	0.18	0.16	0.18	0.17	0.18	0.16
12	0.23	0.18	0.16	0.16	0.25	0.18	0.18	0.16	0.18	0.17	0.21	0.19
13	0.26	0.17	0.16	0.16	0.17	0.18	0.31	0.16	0.18	0.18	0.24	0.24
14	0.26	0.17	0.16	0.16	0.16	0.18	0.17	0.16	0.16	0.18	0.30	0.34
15	0.17	0.17	0.18	0.17	0.16	0.18	0.23	0.16	0.17	0.18	0.24	0.50
16	0.17	0.17	0.72	0.19	0.16	0.18	0.17	0.21	0.17	0.18	0.76	0.21
17	0.17	0.18	0.30	0.16	2.26	0.38	2.04	0.78	0.16	0.18	0.25	0.20
18	0.17	0.32	0.30	0.16	4.76	0.18	0.42	1.13	0.16	0.18	0.75	0.22
19	0.17	0.35	0.17	0.16	1.00	0.18	0.20	0.27	0.16	0.18	0.50	0.40
20	0.17	0.19	0.17	0.16	0.50	0.18	0.18	0.18	0.42	0.18	0.25	0.31
21	0.17	0.18	0.40	0.16	0.46	0.18	0.18	0.18	0.20	0.18	0.25	0.57
22	0.17	0.17	0.31	0.16	0.38	0.18	0.18	0.18	0.22	0.24	0.25	0.75
23	0.17	0.38	0.18	0.17	0.37	0.18	0.17	0.23	0.22	0.26	0.18	0.38
24	0.17	0.17	0.16	0.16	0.37	0.18	0.17	0.18	0.48	0.18	0.18	0.18
25	0.17	0.17	0.16	0.16	2.50	0.18	0.17	0.17	0.22	0.16	0.18	0.18
26	0.17	0.17	0.16	0.16	1.98	0.25	0.17	0.25	0.19	0.16	0.18	1.66
27	0.24	0.17	0.16	0.16	0.52	0.48	0.17	0.20	0.18	0.16	0.18	1.13
28	0.30	0.17	0.16	0.16	0.32	0.25	0.17	0.17	0.16	0.16	0.18	0.25
29	0.21	0.17	0.17	0.16	0.26	0.18	0.17	0.40	0.16	0.16	0.17	0.18
30	0.19		0.19	1.00	0.26	0.18	0.17	0.26	0.16	0.16	0.17	0.18
31	0.23		1.09		0.24		0.17	0.21		0.16		0.60
Total	6.51	5.86	7.84	6.62	21.86	6.26	7.81	7.44	6.99	5.65	7.76	10.50
Max	0.31	0.38	1.09	1.00	4.76	0.48	2.04	1.13	0.92	0.26	0.76	1.66
Min	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.17	0.15
Ac-ft	12.89	11.60	15.53	13.10	43.29	12.39	15.47	14.73	13.83	11.19	15.37	20.79

2000
Quincy Drainage 1
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.36	0.34	0.35	0.45	0.36	0.30	0.33	0.28	0.33	0.28	0.24	0.22
2	0.35	0.36	0.43	0.52	0.36	0.30	0.38	0.28	0.28	0.28	0.22	0.22
3	0.38	0.35	0.35	0.39	0.37	0.32	0.34	0.28	0.28	0.28	0.23	0.23
4	0.36	0.35	0.33	0.38	0.37	0.31	0.34	0.28	0.28	0.28	0.23	0.23
5	0.34	0.35	0.33	0.37	0.35	0.31	0.33	0.28	0.28	0.28	0.39	0.21
6	0.33	0.35	0.33	0.40	0.32	0.32	0.34	0.28	0.28	0.28	0.26	0.25
7	0.36	0.35	0.33	0.41	0.32	0.32	0.34	0.28	0.28	0.28	0.22	0.23
8	0.35	0.35	0.52	0.38	0.51	0.32	0.34	0.28	0.28	0.28	0.22	0.22
9	0.35	0.37	0.33	0.36	0.33	0.32	0.36	0.28	0.28	0.28	0.22	0.22
10	0.36	0.36	0.33	0.35	0.31	0.32	0.34	0.28	0.28	0.28	0.21	0.20
11	0.37	0.38	0.34	0.36	0.32	0.33	0.33	0.28	0.28	0.25	0.21	0.20
12	0.36	0.48	0.34	0.37	0.30	0.34	0.58	0.28	0.28	0.26	0.21	0.19
13	0.35	0.34	0.35	0.37	0.31	0.31	0.32	0.28	0.28	0.25	0.23	0.19
14	0.36	0.34	0.34	0.37	0.31	0.32	0.31	0.28	0.28	0.25	0.23	0.19
15	0.36	0.34	0.48	0.45	0.32	0.34	0.33	0.28	0.28	0.25	0.22	0.22
16	0.35	0.34	0.55	0.37	0.32	0.32	0.28	0.28	0.28	0.26	0.21	0.25
17	0.37	0.33	0.49	0.37	1.16	0.43	0.52	0.39	0.28	0.26	0.21	0.22
18	0.36	0.46	0.37	0.37	0.52	0.34	0.69	0.69	0.28	0.27	0.21	0.21
19	0.36	0.36	0.35	0.39	0.31	0.33	0.78	0.52	0.08	0.25	0.21	0.22
20	0.36	0.36	0.41	0.38	0.39	0.33	0.39	0.28	0.49	0.25	0.21	0.22
21	0.36	0.35	0.54	0.38	0.31	0.33	0.28	0.28	0.35	0.25	0.22	0.20
22	0.35	0.49	0.37	0.56	0.31	0.33	0.28	0.28	0.26	0.34	0.23	0.22
23	0.35	0.41	0.35	0.36	0.31	0.32	0.28	0.39	0.40	0.31	0.22	0.22
24	0.35	0.35	0.35	0.36	0.69	0.33	0.28	0.28	0.36	0.25	0.22	0.21
25	0.34	0.34	0.34	0.36	1.61	0.43	0.28	0.28	0.28	0.25	0.22	0.20
26	0.39	0.34	0.35	0.38	0.32	0.46	0.28	0.39	0.28	0.25	0.22	0.23
27	0.44	0.35	0.36	0.37	0.31	0.35	0.28	0.28	0.28	0.25	0.22	0.22
28	0.35	0.35	0.38	0.37	0.31	0.45	0.28	0.28	0.28	0.25	0.22	0.22
29	0.34	0.35	0.45	0.69	0.31	0.33	0.28	0.45	0.28	0.29	0.21	0.21
30	0.32		0.49	0.65	0.30	0.33	0.28	0.28	0.28	0.24	0.22	0.21
31	0.33		0.55		0.31		0.28	0.28		0.29		0.21
Total	11.06	10.57	12.18	12.29	12.98	10.20	11.02	9.79	8.68	8.34	6.79	6.68
Mean	0.36	0.36	0.39	0.41	0.42	0.34	0.36	0.32	0.29	0.27	0.23	0.22
Max	0.44	0.49	0.55	0.69	1.61	0.46	0.78	0.69	0.49	0.34	0.39	0.25
Min	0.32	0.33	0.33	0.35	0.30	0.30	0.28	0.28	0.08	0.24	0.21	0.19

2000
Site QD-1
Average Discharge (cfs)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	0.32	0.30	0.31	0.41	0.33	0.27	0.30	0.25	0.30	0.25	0.21	0.20
2	0.32	0.33	0.39	0.47	0.32	0.27	0.34	0.25	0.25	0.25	0.20	0.20
3	0.34	0.31	0.31	0.35	0.33	0.29	0.30	0.25	0.25	0.25	0.21	0.21
4	0.32	0.31	0.30	0.34	0.33	0.28	0.30	0.25	0.25	0.25	0.21	0.21
5	0.30	0.31	0.30	0.33	0.32	0.28	0.30	0.25	0.25	0.25	0.35	0.19
6	0.30	0.32	0.30	0.36	0.29	0.29	0.31	0.25	0.25	0.25	0.23	0.23
7	0.33	0.32	0.30	0.37	0.29	0.29	0.30	0.25	0.25	0.25	0.20	0.21
8	0.32	0.32	0.47	0.34	0.46	0.29	0.30	0.25	0.25	0.25	0.20	0.20
9	0.32	0.33	0.30	0.33	0.30	0.29	0.32	0.25	0.25	0.25	0.20	0.20
10	0.32	0.32	0.30	0.32	0.28	0.29	0.30	0.25	0.25	0.25	0.19	0.18
11	0.33	0.34	0.30	0.33	0.29	0.30	0.30	0.25	0.25	0.23	0.19	0.18
12	0.33	0.43	0.31	0.33	0.27	0.30	0.52	0.25	0.25	0.24	0.19	0.17
13	0.32	0.31	0.31	0.33	0.28	0.28	0.29	0.25	0.25	0.23	0.21	0.17
14	0.33	0.31	0.31	0.33	0.28	0.29	0.28	0.25	0.25	0.23	0.21	0.17
15	0.33	0.31	0.43	0.41	0.29	0.30	0.30	0.25	0.25	0.23	0.20	0.20
16	0.32	0.31	0.49	0.33	0.29	0.29	0.25	0.25	0.25	0.23	0.19	0.22
17	0.33	0.30	0.45	0.33	1.05	0.39	0.47	0.35	0.25	0.23	0.19	0.20
18	0.33	0.42	0.33	0.33	0.47	0.30	0.62	0.62	0.25	0.25	0.19	0.19
19	0.32	0.32	0.31	0.35	0.28	0.30	0.71	0.47	0.07	0.23	0.19	0.20
20	0.33	0.32	0.37	0.34	0.36	0.30	0.35	0.25	0.45	0.23	0.19	0.20
21	0.32	0.31	0.49	0.34	0.28	0.30	0.25	0.25	0.32	0.22	0.20	0.18
22	0.31	0.44	0.33	0.51	0.28	0.30	0.25	0.25	0.24	0.31	0.21	0.20
23	0.31	0.37	0.32	0.32	0.28	0.29	0.25	0.35	0.36	0.28	0.20	0.20
24	0.31	0.31	0.31	0.32	0.62	0.30	0.25	0.25	0.32	0.23	0.20	0.19
25	0.30	0.31	0.31	0.33	1.46	0.39	0.25	0.25	0.25	0.22	0.20	0.18
26	0.35	0.31	0.31	0.34	0.29	0.42	0.25	0.35	0.25	0.22	0.20	0.21
27	0.40	0.31	0.33	0.33	0.28	0.31	0.25	0.25	0.25	0.23	0.20	0.20
28	0.31	0.32	0.34	0.33	0.28	0.40	0.25	0.25	0.25	0.23	0.20	0.20
29	0.30	0.31	0.41	0.62	0.28	0.30	0.25	0.41	0.25	0.27	0.19	0.19
30	0.29		0.44	0.59	0.27	0.30	0.25	0.25	0.25	0.21	0.20	0.19
31	0.30		0.50		0.28		0.25	0.25		0.26		0.19
Total	10.00	9.56	11.01	11.12	11.74	9.22	9.97	8.85	7.85	7.54	6.14	6.04
Max	0.40	0.44	0.50	0.62	1.46	0.42	0.71	0.62	0.45	0.31	0.35	0.23
Min	0.29	0.30	0.30	0.32	0.27	0.27	0.25	0.25	0.07	0.21	0.19	0.17
Ac-ft	19.81	18.93	21.80	22.01	23.24	18.26	19.73	17.53	15.54	14.93	12.16	11.96

2000
Precipitation
Phosphorus Loading (lbs/day)

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	16.19	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00
3	6.13	0.00	6.56	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	26.25	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	13.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	22.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.44	0.00	0.00	0.00	1.31	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	2.19	0.00	0.00	0.00	0.00	10.06	5.25
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	11.38	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.44	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.44	0.00	0.00	6.13	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	38.94	0.44	0.00	0.00	0.00	3.06	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	10.06	59.50	5.25	0.00	0.00	0.00	0.00
18	0.00	2.19	7.00	0.00	59.94	0.00	4.81	61.25	0.00	0.00	43.75	0.00
19	0.00	0.00	0.00	0.00	0.44	0.00	4.38	2.63	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	16.63	0.00	0.00	0.88
21	0.00	0.00	22.75	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	2.19
22	0.00	7.88	0.00	0.00	0.00	0.00	0.00	0.44	6.13	0.00	0.00	0.00
23	0.00	0.44	0.00	0.44	0.00	0.00	0.00	3.50	4.81	0.00	0.00	0.00
24	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	8.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	42.00	7.00	0.00	5.25	0.00	0.00	0.00	41.13
27	11.38	0.00	0.00	0.00	0.00	8.31	0.00	3.06	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.44	0.00	4.38	0.44	0.00	0.00	0.44	14.00	0.00	0.00	0.00	0.00
30	0.00		0.00	27.56	0.00	0.00	0.00	1.31	0.00	0.00	0.00	0.00
31	0.00		67.82		0.00		0.00	0.00		0.00		13.56
Total	17.94	10.50	161.01	44.19	136.07	28.00	88.38	101.07	45.94	0.00	80.50	63.00
Mean	0.58	0.36	5.19	1.47	4.39	0.93	2.85	3.26	1.53	0.00	2.68	2.03
Max	11.38	7.88	67.82	27.56	59.94	10.06	59.50	61.25	16.63	0.00	43.75	41.13
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2000
Precipitation (in.)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	0	0.01	0	0	0	0	0.37	0	0	0
2	0	0	0	0	0	0	0	0	0.01	0	0	0
3	0.14	0	0.15	0.32	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0.01	0	0	0	0
6	0	0	0	0	0	0	0	0.01	0	0	0.6	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0.3	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0.51	0	0	0	0	0	0	0
10	0	0	0.01	0	0	0	0.03	0	0	0	0	0
11	0	0	0	0	0	0.05	0	0	0	0	0.23	0.12
12	0	0	0	0	0	0	0	0	0	0	0.01	0
13	0	0	0	0	0	0	0.26	0	0	0	0	0
14	0	0	0	0	0	0	0.01	0.01	0	0	0	0
15	0	0	0	0.01	0	0	0.14	0	0	0	0	0
16	0	0	0.89	0.01	0	0	0	0.07	0	0	0	0
17	0	0	0	0	0	0.23	1.36	0.12	0	0	0	0
18	0	0.05	0.16	0	1.37	0	0.11	1.4	0	0	1	0
19	0	0	0	0	0.01	0	0.1	0.06	0	0	0	0
20	0	0	0	0	0	0.01	0	0	0.38	0	0	0.02
21	0	0	0.52	0	0.06	0	0	0	0	0	0	0.05
22	0	0.18	0	0	0	0	0	0.01	0.14	0	0	0
23	0	0.01	0	0.01	0	0	0	0.08	0.11	0	0	0
24	0	0	0	0.01	0	0	0	0	0.04	0	0	0
25	0	0	0	0	0.2	0	0	0	0	0	0	0
26	0	0	0	0	0.96	0.16	0	0.12	0	0	0	0.94
27	0.26	0	0	0	0	0.19	0	0.07	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0.01	0	0.1	0.01	0	0	0.01	0.32	0	0	0	0
30	0		0	0.63	0	0	0	0.03	0	0	0	0
31	0		1.55		0		0	0		0		0.31
Total	0.41	0.24	3.68	1.01	3.11	0.64	2.02	2.31	1.05	0	1.84	1.44
Mean	0.01	0.01	0.12	0.03	0.10	0.02	0.07	0.07	0.04	0	0.06	0.05
Max	0.26	0.18	1.55	0.63	1.37	0.23	1.36	1.40	0.38	0	1.00	0.94
Min	0	0	0	0	0	0	0	0	0	0	0	0
Ac-ft	29.11	17.04	261.28	71.71	220.81	45.44	143.42	164.01	74.55	0	130.64	102.24

APPENDIX D

BIOLOGICAL DATA

CHERRY CREEK PHYTOPLANKTON
Location CCR-1

GENUS/SPECIES	02/24/00	03/23/00	04/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
BACILLARIOPHYTA																	
Order Centrales																	
Cyclotella meneghiniana						11		43									
Cyclotella pseudostelligera										29							
Cyclotella sp. 1					5,079	2,865	424	868	1,852	4,167	380,000	13,456	7,408	6,250	4,427	3,125	8,855
Melosira cf. distans														174	521	434	174
Melosira italica											44				88		88
Stephanodiscus astraea	232	58	116	145													
Stephanodiscus hantzschii 8-11um								43	1,360		145	347	58			347	87
Stephanodiscus medius						43	58									43	
Stephanodiscus minutulus						43											
Stephanodiscus niagarae						22	58										260
Order Pennales																	
Anomoeoneis vitrea					22												
Asterionella formosa					347	33											
Asterionella formosa v. formosa	34	58	1,045	696													
Fragilaria crotonensis												174	637	174		87	
Fragilaria crotonensis v. crotonensis	16		139														
Fragilaria virescens									58								
Navicula bacillum													44				
Navicula cryptocephala						43											
Navicula sp.	4		139							29	29						
Nitzschia acicularis							58		29	58	29			174	43	521	1,823
Nitzschia fonticola																43	
Nitzschia gracilis					43						29		58		22		
Nitzschia palea								87									
Nitzschia palea v. palea	2																
Synedra tenera										29							
Synedra ulna v. ulna	2		70										88				
CHLOROPHYTA																	
Actinastrum hantzschii												695				175	
Ankistrodesmus falcatus	2,293	813	261	116		87	926	87	608	723	2,604	955	1,100	9,636	1,432	434	5,730
Carteria sp.							116				463	260		87		87	
Chlamydomonas globosa					130	217	232	130		58		347	174	87	217	521	
Chlamydomonas incerta								43									
Chlamydomonas platystigma												87	58				174
Chlamydomonas sp.	755	638	116	29										87	43		
Closterium moniliferum							58	174		58	58	174	44		22	22	
Coelastrum astroideum												347		695			
Cosmarium sp.			29														
Crucigenia crucifera															304		
Crucigenia quadrata							926		463	810	926	1,389		347	351		
Crucigenia tetrapedia			116					174		695				2,778	5,643	1,649	1,389
Dictyosphaerium pulchellum					55,108	93,756	250,000	25,597	7,774	3,310	2,069		1,389	17,362	3,328	6,250	31,947
Elakatothrix gelatinosa		58															
Lobomonas sp.																	87
Monomastix astigmata						43											
Monoraphidium capricornutum					130	217	88	260	376	29	29	434	116	1,042	87	521	521
Nephroselmis olivacea										58			7,003				
Non-motile Chlorococcales-spherical						304	365	174	260	87	405	781	289	1,129	130	43	781
Oocystis parva					260	521	926	1,094	232	521	2,144	2,656	347	4,861	521	703	87
Oocystis sp.		29															
Pediastrum duplex											463	695	307				
Pediastrum tetras								347			203	347	174				
Phacotus sp.							521	521	2,373	5,296	550	347	810	87	43	130	260
Pyramichlamys dissecta									87	145	174	955	1,563	174	955	304	44
Quadrigula lacustris								87									
Scenedesmus acuminatus	29																
Scenedesmus baculiformis										232							
Scenedesmus bijuga		29			781	521					58				87		
Scenedesmus dimorphus							116					347	232	174		174	347
Scenedesmus dispar											116		463	1,389			
Scenedesmus intermedius						347		868									
Scenedesmus opoliensis	58	87	87	203													
Scenedesmus quadricauda					174	260	59	260				347	232	695	434	608	347
Scenedesmus quadricauda v. quadrispina						174						695					
Scenedesmus serratus								868				174	232	174	174	174	174

CHERRY CREEK PHYTOPLANKTON
Location CCR-1

GENUS/SPECIES	02/24/00	03/23/00	04/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
Schroederia judayi												87					
Selenastrum minutum							58			116	145	347	232	347	87	87	
Selenastrum Westii		174															
Spermatozopsis exsultans													58				
Sphaerellopsis sp.												87					
Staurastrum natator								22									
Tetraedron caudatum							15				29			87			
Tetraedron minimum							289		29	29	58	87	58	87			87
Tetrastrum glabrum								347									
Tetrastrum punctatum	87																
Tetrastrum staurogeniaeforme							463	174			116	347	232	1,736	695	2,539	4,514
CYANOPHYTA																	
Anabaena circinalis									964	6,389	608						
Anabaena flos-aquae										260	318	307	877			521	
Aphanizomenon flos-aquae	290	1,016								492		608				285	
Aphanizomenon sp.											658						
Aphanocapsa delicatissima	13,349	1,161	1,161	1,161		1,563	8,681	8,102	12,539	6,685	31,831	30,471	59,310	230,000	91,152	26,738	59,379
Aphanocapsa elachista	6,965	29,020	31,922	21,475	260		232		1,158	116							
Aphanocapsa koordersi												347					
Chroococcus minutus												174					
Merismopedia punctata							234										
Merismopedia tennuissima	464	1,161		464	2,292		701					695		1,389	174		
Non-motile blue-greens (<1.1 um)							42,912		52,299	28,161	52,299	110,000	88,505	88,505	60,345	76,436	96,551
Non-motile blue-greens (>1 um)					130				58	29		1,042		1,042	87		347
Oscillatoria amphibia										232	1,360	1,302					
Oscillatoria chlorina												1,649			2,915		
Oscillatoria limnetica							541			2,749	2,026	1,736		1,534	130	40,512	87
Oscillatoria sp.	871																
Synechococcus sp. 1							8,046		40,230	16,092	88,505	48,276	140,000	96,551	92,528	80,459	120,000
CHRYSOPHYTA																	
Chrysococcus sp.								87									
Cyst (Chrysophyte)									29								
Dinobryon divergens (single)							58										
Dinobryon sertularia (single)							58										
Dinobryon sociale													58				
Dinobryon sp.								87									
Erkenia subaequiciliata								87	1,823	29	29	868		174	217		3,907
Kephyrion gracilis												87	58				
Mallomonas sp.			29		43	43					29						
EUGLENOPHYTA																	
Euglena acus									22								
Euglena gracilis							44										
Euglena sp.						43		87	29		22		58			43	
Phacus sp.							15				22						
Trachelomonas sp.	522	116	87	203				87					58				
Trachelomonas volvocina									29							43	174
PYRRHOPHYTA																	
Ceratium hirundinella											58						
Gymnodinium sp. 2							58			58		174	58				
Gymnodinium sp. 3					43		58			29			116			130	87
Peridinium polonicum										22							
Peridinium sp.											29						
Peridinium umbonatum								87				260				87	
CRYPTOPHYTA																	
Cryptomonas erosa	377			696	1,563	174	29	43	29		29	521	347	521	998	781	174
Rhodomonas minuta v. nannoplanctica					9,245	3,907	44	1,129	3,183	145	1,649	3,212	868	695	1,910	5,079	1,910
MISCELLANEOUS																	
Misc. micros, 1 flagellum					1,823	1,042		2,604	2,084	3,386	1,563	3,646	6,250	3,125	1,042	1,563	1,042
Total Density (Cells/ml)	26,350	34,418	35,317	25,188	77,473	106,279	317,467	44,668	129,977	81,353	571,921	232,339	319,969	473,369	271,152	251,698	341,434
Total # of Taxa	18	14	14	10	18	24	35	32	27	36	41	46	40	35	34	37	32

CHERRY CREEK PHYTOPLANKTON
LOCATION: CCR-2

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
BACILLARIOPHYTA																	
Order Centrales																	
Cyclotella meneghiniana						52		43									
Cyclotella sp. 1					2,952	573	1,259	998	3,516	4,427	7,668	8,855	5,209	5,556	4,341	3,125	7,292
Melosira cf. distans														347	347	434	521
Melosira italica											174				88		
Stephanodiscus astraea	290		174	29													
Stephanodiscus hantzschii 8-11 um									1,476	29	58	405		260	43	43	87
Stephanodiscus medius								43								43	174
Stephanodiscus niagarae						104									43	43	87
Order Pennales																	
Asterionella formosa					232	156											
Asterionella formosa v. formosa	60	87	709	871													
Cymbella minuta						9											
Epithemia sorex v. sorex													58				
Fragilaria capucina					88												
Fragilaria crotonensis													116	174			
Fragilaria crotonensis v. crotonensis	196		89														
Fragilaria elliptica												58					
Fragilaria virescens											116						
Navicula cryptocephala									22								
Navicula sp.	91		44							29					43		
Nitzschia acicularis							43		43		87	58		521	87	564	2,604
Nitzschia gracilis						52			43			58					
Nitzschia palea						52											
Nitzschia palea v. palea	15																
Synedra tenera										29		174					
Synedra ulna v. ulna	15											58	58				
CHLOROPHYTA																	
Actinastrum hantzschii														347		175	
Ankistrodesmus falcatus	2,177	464	290				781	130	347	839	4,514	926	1,273	6,511	1,606	391	3,559
Carteria sp.							87				87	347					
Chlamydomonas globosa					145	260	217	87		29		926	174	608	130		521
Chlamydomonas incerta													232				
Chlamydomonas platystigma												289	58				
Chlamydomonas sp.	1,016	842	29	29											87		
Closterium moniliferum							43			116	29	174		87		43	
Coelastrum astroideum											232		463				
Coelastrum microporum															347		
Cosmarium sp.														44			
Crucigenia crucifera											463						
Crucigenia quadrata							695		695	1,389	1,042	2,778			695		
Crucigenia tetrapedia			58				174				463	1,158	1,852	701	434	2,431	701
Dictyosphaerium pulchellum					140,000	190,000	210,000	12,501	4,232	1,891	463	1,736	9,260	21,095	2,387	8,334	14,584
Elakatothrix gelatinosa		29															
Lobomonas sp.									43	29	29						
Micractinium pusillum								1,215		351		347					
Monoraphidium capricornutum					116	52	304	174	87	58	87	289	695	1,042	260	912	781
Nephroselmis olivacea												116	6,077				
Non-motile Chlorococcales-spherical					29	313	998	217	43	145	347	521	289	1,563	174	304	260
Oocystis parva					232	260	1,302	564	608	463	1,204	1,759	289	1,042	564	781	608
Oocystis pusilla													116				
Oocystis sp.		29															
Pediastrum duplex					926	351		175					482	701	738	43	
Pediastrum tetras														347	304		263
Phacotus sp.							1,476	1,519	3,386	3,501	1,678	579	174	87		130	
Pyramichlamys dissecta								174		1,013	232	926	637		608	651	

CHERRY CREEK PHYTOPLANKTON
LOCATION: CCR-2

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
Scenedesmus abundans												116	289				
Scenedesmus acuminatus	29																
Scenedesmus bijuga		29		29	695	521								695	87	174	
Scenedesmus dimorphus							87				116	405	463			347	
Scenedesmus dispar							174				116		695	1,389			
Scenedesmus intermedius					58	208		87									
Scenedesmus opoliensis	29	203															
Scenedesmus quadricauda					463		87	781	87		58	347	347	521	174	174	695
Scenedesmus quadricauda v. quadrispina						625											
Scenedesmus semipulcher													232				
Scenedesmus serratus								1,042			58			174		130	174
Scenedesmus sp.													58		174		
Schroederia sp.									43								
Selenastrum minutum						52	43		130	87	29	289	58	174	43		174
Selenastrum Westii		58															
Sphaerocystis schroeteri							217			232							
Staurastrum cingulum								11									
Staurastrum natator								11								87	
Staurastrum paradoxum						9											
Tetraedron caudatum											58	58		44		43	
Tetraedron minimum						52		43	43	29	58			174	43		
Tetraedron trigonum														87			
Tetrastrum glabrum					116		130										
Tetrastrum heteracanthum														347			
Tetrastrum punctatum	29		29														
Tetrastrum staurogeniaeforme					116		174			116	116	232	463	608	174	478	4,514
CYANOPHYTA																	
Anabaena circinalis										13,273	7,379	1,910		2,192	868		
Anabaena flos-aquae										1,910						1,823	
Aphanizomenon flos-aquae	290	435								463							
Aphanocapsa delicatissima	15,671	580	2,322			1,667	781	521	9,405	11,459	130,000	56,671	120,000	210,000	98,477	9,698	44,447
Aphanocapsa elachista	5,804	26,698	19,153	16,832					5,209								
Chroococcus limneticus	116	232															
Merismopedia punctata								175									
Merismopedia tennuissima		290	464								232	1,621		2,778	521	347	
Non-motile blue-greens (<1.1 um)							28,161		72,413	84,482	76,436	170,000	170,000	120,000	60,345	130,000	120,000
Non-motile blue-greens (>1 um)							87					289		1,042	43	43	260
Oscillatoria chlorina											5,643	1,754	7,813				
Oscillatoria limnetica							1,953	651		2,662	4,775	5,672	2,604	10,417	4,919	27,085	2,952
Oscillatoria sp.	726																
Synechococcus sp. 1							8,046		88,505	110,000	100,000	64,368	110,000	160,000	60,345	140,000	48,276
CHRYSOPHYTA																	
Chrysococcus sp.								87									
Chrysolykos sp.							43										
Dinobryon sertularia (colonial)											897		116				
Dinobryon sertularia (single)											29						
Dinobryon sp.								43									
Erkenia subaequiciliata									434	174	29	347	347	347	174	87	2,952
Kephyrion gracilis										29							
Kephyrion sp.							43										
Mallomonas sp.			29		58	104										43	
EUGLENOPHYTA																	
Euglena gracilis							87										
Euglena sp.									22				116	87			
Phacus sp.	29						43		43								
Trachelomonas sp.	726	261	87	232			43							87			87
Trachelomonas volvocina								87	43		29			87		43	87

CHERRY CREEK PHYTOPLANKTON
LOCATION: CCR-2

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
PYRRHOPHYTA																	
Ceratium hirundinella										29							
Dinoflagellate cyst											29						
Gymnodinium sp. 2							43	43			29	58					
Gymnodinium sp. 3						52					58	174	58			130	87
Peridinium polonicum									22								
Peridinium sp.							43										
Peridinium umbonatum						52		33		58		58	58			43	
CRYPTOPHYTA																	
Cryptomonas erosa	435			813	897	677	44	130	130	29	87	579	637	174	868	912	347
Cryptomonas ovata														174			
Cryptomonas rostratiformis															87	87	
Rhodomonas minuta v. nannoplanctica					9,028	2,552	695	1,172	7,943	260	4,167	3,299	1,273	347	1,693	4,948	3,299
MISCELLANEOUS																	
Misc. micros, 1 flagellum					2,604	781	1,302	391	3,386	2,084	1,042	2,084	3,125	2,604	1,302	1,563	13,543
Total Density (Cells/ml)	27,744	30,237	23,477	18,835	158,755	199,586	259,705	23,148	202,399	241,714	350,443	332,868	446,264	555,582	243,663	336,732	273,936
Total # of Taxa	19	14	13	7	18	26	35	30	29	34	44	43	40	43	38	40	30

CHERRY CREEK PHYTOPLANKTON
LOCATION: CCR-3

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
BACILLARIOPHYTA																	
Order Centrales																	
Cyclotella meneghiniana						43											
Cyclotella sp. 1					2,084	3,255	1,158	955	3,255	4,804	22,397	11,691	4,977	4,948	3,342	3,125	11,980
Melosira cf. distans														347	347	391	521
Melosira italica												116	175	174		87	
Stephanodiscus astraea	261		58	203													
Stephanodiscus cf. hantzschii						43											
Stephanodiscus hantzschii 8-11 um					58			22	1,997	289	289		347	521	174	217	87
Stephanodiscus medius					58												
Stephanodiscus minutulus					58												
Stephanodiscus niagarae												58				44	87
Order Pennales																	
Asterionella formosa					232	521											
Asterionella formosa v. formosa	58	348	513	987													
Diatoma tenue					29												
Fragilaria capucina												232					
Fragilaria construens						110											
Fragilaria crotonensis											232	116	405	260	87		
Fragilaria crotonensis v. crotonensis	135		64														
Gomphonema sp.					29												
Navicula sp.	10																
Nitzschia acicularis									87		58			87	43		2,431
Nitzschia palea											88	405					
Nitzschia palea v. palea	19																
Synedra tenera										58		116			22		
Synedra ulna v. ulna	10		32									58	58	87			
CHLOROPHYTA																	
Actinastrum hantzschii														175		88	
Ankistrodesmus falcatus	1,277	871	174		58	43	810	347	608	1,100	16,147	926	521	10,938	1,910	521	6,771
Carteria sp.							174		87		174			87			
Chlamydomonas globosa					29	478	174	260			174	695	232	434	260	391	608
Chlamydomonas incerta													232				
Chlamydomonas platystigma										116		116	58			130	87
Chlamydomonas sp.	406	958	29								58	58	58				
Closterium moniliferum						43	29				174	58	58	87		43	
Coelastrum astroideum									263			232	232				
Cosmarium sp.			29									44		87			
Crucigenia quadrata							2,084		351	926	2,778	926				174	
Crucigenia tetrapedia			116		463		232					463	463	2,952	2,604	1,563	1,649
Crucigenia truncata										926							
Cyst (Chlorophyte)					58												
Deasonia gigantica												58					
Dictyosphaerium pulchellum					74,410	160,000	370,000	16,928	12,892	1,852	1,389	6,945	4,861	22,397	1,042	19,446	27,284
Elakatothrix gelatinosa	29																
Kirchneriella subsolitaria																174	
Lagerheimia quadriseta								87									
Lobomonas sp.																87	
Micractinium pusillum													116				
Monoraphidium capricornutum					29	87	405	608	217	174		174	752	1,042	87	781	434
Nephroselmis olivacea												58	5,961				
Non-motile Chlorococcales-spherical					58	217	463	87		116	463	405	174	347	391	43	
Oocystis lacustris								87									
Oocystis opoliensis			58														
Oocystis parva					347	608	1,640	955	482	1,042	2,431	2,474	1,019	1,875		217	781
Oocystis sp.				29													
Pediastrum duplex						695	405					658		1,389		43	
Pediastrum tetras								608						175	110	351	
Phacotus sp.							1,331	1,302	2,648	6,482		1,563	232	174	87	174	174

CHERRY CREEK PHYTOPLANKTON
LOCATION: CCR-3

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
Pyramichlamys dissecta							58		43	1,794	174	1,158	637	174	260	217	
Pyramichlamys sp.								22									
Quadrigula lacustris																43	
Scenedesmus abundans					116					116							
Scenedesmus acutus												232					
Scenedesmus bijuga					203	1,215	347							174	260		
Scenedesmus dimorphus							232	347				116		347	217	260	347
Scenedesmus dispar									174			926	232	868	174	174	
Scenedesmus intermedius						998											
Scenedesmus opoliensis	29	290		87													
Scenedesmus quadricauda					232		116	1,042		232	116	347	579	1,389	521	174	868
Scenedesmus quadricauda v. quadrispina						608											
Scenedesmus serratus								1,042		116			116	347	43	260	521
Schroederia judayi													58			43	
Selenastrum minutum						43	116	87		116			405	608			174
Selenastrum Westii		116															
Sphaerocystis schroeteri					232		232					984	463	347			
Staurastrum natator								87									
Tetraedron caudatum										58	116				43		
Tetraedron caudatum v. longispinum			29														
Tetraedron gracile									43								
Tetraedron minimum					29		521	260	87		463	116		521	130	43	
Tetrastrum glabrum					116	174											
Tetrastrum punctatum			29														
Tetrastrum staurogeniaeforme								347			232			2,431	347	3,993	1,649
CYANOPHYTA																	
Anabaena circinalis									1,129	17,652	5,247	6,308		2,604			
Anabaena flos-aquae										405							
Aphanizomenon flos-aquae															1,476		
Aphanocapsa delicatissima	13,349	580	1,741			2,127	695	3,473	10,707	9,260	170,000	210,000	35,002	370,000	65,572	100,000	72,922
Aphanocapsa elachista		22,636	20,314	11,028								5,787					
Aphanothece nidulans						1,563											
Chroococcus limneticus	696																
Merismopedia tennuissima	232	1,393	464									695		695			695
Non-motile blue-greens (<1.1 um)							32,184		120,000	140,000	180,000	110,000	180,000	130,000	40,230	92,528	140,000
Non-motile blue-greens (>1 um)												174		1,042			
Oscillatoria chlorina										984	6,598						
Oscillatoria limnetica							2,026	877			6,077	2,141	1,736	4,775	6,511	27,129	3,473
Oscillatoria sp.	7,545	1,306															
Synechococcus sp. 1							24,138		72,413	64,368	160,000	120,000	160,000	120,000	68,390	88,505	88,505
CHRYSOPHYTA																	
Chrysococcus sp.								87									
Dinobryon sertularia (colonial)											637						
Dinobryon sertularia (single)											58						
Dinobryon sociale								87									
Dinobryon sp.								260									
Erkenia subaequiciliata									130	289	289	58	116	174	391	174	1,823
Kephyrion gracilis											58						87
Kephyrion sp.							58										
Mallomonas sp.					29	130	405			58		58					
Ochromonas sp.												116	116				
Polygoniochloris sp.						43											
EUGLENOPHYTA																	
Euglena gracilis							29										
Euglena sp.							58	22		58		116		44			
Phacus sp.							15	87		58		88					
Trachelomonas sp.	377	348	145	145			58								87		87
Trachelomonas volvocina							289	44	87				58			87	

CHERRY CREEK PHYTOPLANKTON
LOCATION: CCR-3

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/06/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
PYRRHOPHYTA																	
Ceratium hirundinella									22				58				
Gymnodinium sp. 2							58	260			174	116				43	
Gymnodinium sp. 3						43	58				116	58	405		43	43	
Peridinium cinctum						43											
Peridinium umbonatum												58					
CRYPTOPHYTA																	
Cryptomonas erosa	87			1,567	608	304	58	87			116	463	1,215	174	1,085	1,172	521
Cryptomonas rostratiformis															130	43	
Rhodomonas minuta v. nannoplanctica					5,730	2,040	174	1,215	695	752	3,936	5,614	1,389	695	1,519	4,688	2,952
MISCELLANEOUS																	
Misc. micros, 1 flagellum					868	2,084	174	521	2,604	5,209	2,084	1,563	7,813	2,604	781	3,646	3,125
Total Density (Cells/ml)	24,520	28,846	23,795	14,046	86,163	177,558	441,004	32,500	231,021	259,410	583,343	495,937	411,329	688,596	198,716	351,355	370,643
Total # of Taxa	16	10	15	7	25	27	36	32	24	30	34	51	39	43	35	42	29

2000 CHERRY CREEK ZOOPLANKTON
COMPOSITE

GENUS/SPECIES	2/24/00	3/23/00	4/11/00	04/25/00	05/02/00	05/16/00	06/13/00	06/20/00	07/11/00	07/25/00	08/08/00	08/22/00	09/05/00	09/19/00	10/10/00	10/24/00	11/20/00
PROTOZOA																	
Ceratium hirundinella								1,944	1,388	7,778	37,222	5,833	18,044	833			
ROTIFERA																	
Asplanchna priodonta	16,000	5,000	13,333														
Asplanchna sp.								277			555						
Brachionus angularis								11,944	86,166	4,166	278	8,611	7,155	2,778		2,333	1,422
Brachionus havanaensis												1,944					
Filinia longiseta			1,111														
Keratella cochlearis	7,111	3,889	2,222	2,581	555	4,166	20,278	15,555	32,500	4,166	3,888	3,055	5,288	4,166	10,000	35,777	93,866
Keratella quadrata													622				
Polyarthra sp.	889		3,333														
Polyarthra vulgaris									1,944	6,666	23,055	1,666	12,444	36,944	17,778	5,833	2,133
Tichocerca cylindrica			64,444														
CRUSTACEA																	
CLADOCERA																	
Bosmina longirostris	60,000	60,000	117,778	290,323	88,055	29,166	6,388	24,722	29,166	7,611	83,055	44,166	933	23,611	28,611	15,555	16,355
Daphnia ambigua					1,111	1,111				1,388		2,222	2,800	1,388	2,222		1,066
Daphnia pulex					555			1,111		1,388		833	1,866	1,944	1,111		1,422
Daphnia schoedleri	889	556	2,222	1,290													
Daphnia sp.					1,666	1,111		1,944				2,500	622	1,111	3,383	1,555	711
Immature																	
COPEPODA																	
Calanoid copepodid					36,944	7,222	10,000	11,111	5,555	10,555	13,333	10,000	5,288	9,166	6,388	8,555	12,800
Cyclopoid copepodid					278			1,944		278		278	311	278		777	
Diacyclops bicuspidatus thomasi	61,333	80,556	160,000	58,065													
Diaptomus sp.	2,667	4,444															
Leptodiaptomus					2,500	555	2,500	3,611				833	622	833	1,388	3,888	2,488
Mesocyclops edax	4,000			3,871													
Nauplii	66,222	38,333	27,778	11,613	50,555	25,833	46,111	65,555	49,166	70,277	81,944	68,888	9,333	66,111	35,555	14,000	64,000
Total (#/cubic meter)	219,111	192,778	392,221	367,743	182,219	69,164	85,277	139,718	205,885	114,273	243,330	150,829	65,328	149,163	106,436	88,273	196,263
Total # of Taxa*	8	6	8	5	6	5	3	8	5	7	6	10	10	9	7	6	8

* Does not include Copepodids or Nauplii if present

APPENDIX E

QUALITY ASSURANCE/QUALITY CONTROL

QA/QC Analysis

A number of steps are taken to assure the quality of water quality and chlorophyll data being collected. First, field blanks are taken into the field during water quality sampling. Secondly, Chadwick & Associates, Inc. (C&A) laboratory and Severn-Trent Laboratories (STL) perform internal QA/QC for each set of samples for each sampling period. Lastly, duplicate aliquots are sent to an independent laboratory (University of Missouri-Columbia [MU]) for analysis. Chlorophyll analysis is conducted by C&A aquatic biological laboratory. As with the water quality samples, a split chlorophyll sample is sent to MU for analysis. In previous years, Metro Wastewater Reclamation District (MWRD) conducted portions of the analyses. Poor agreement between results from MWRD and MU resulted in changing to C&A in 1999. Comparison between C&A and MU are discussed in the following figures and tables.

Data quality for total phosphorus (TP), total dissolved phosphorus (TDP), soluble reactive phosphorus (SRP, measured as orthophosphate), total nitrogen (TN), nitrate-nitrite, and chlorophyll for C&A and MU laboratories were compared using a simple, least squares regression analysis. To determine if the laboratories are in agreement on the data, the regression must meet the following criteria:

1. The linear regression must represent a significant relationship (p # 0.05),
2. The regressions should have a slope at or near 1, and
3. The regression should explain the majority of the observed variance (i.e., R^2 $ 0.50).

When these three criteria are met, the values reported by C&A and MU are averaged. In cases when one or more of the criteria are not met, the data do not meet the independent QA/QC and only the MU data are used.

2000

Comparison of data collected during the 2000 field season shows good agreement between C&A and MU for TP, TDP, SRP, TN, and nitrate-nitrite (Table E-1). Regression slopes were all significantly different (p = 0.00) from zero, with slope values ranging from 0.86 to 1.1. Values for R^2 ranged from0.77

to 0.99. Because of the close correlation between the results from the two labs, values from both labs were averaged. As with the nutrient data, the chlorophyll data generated by the two labs were highly correlated and averaged together.

TABLE E-1: Summary statistics from comparison between Chadwick & Associates, Inc. laboratories and University of Missouri-Columbia laboratories for phosphorus and nitrogen species, and chlorophyll for 2000.

	p	Slope	R^2	Lab Used
Total Phosphorus	0.00	0.86	0.77	Both
Total Dissolved Phosphorus	0.00	0.99	0.96	Both
Soluble Reactive Phosphorus	0.00	0.92	0.80	Both
Total Nitrogen	0.00	1.10	0.77	Both
Total Dissolved Nitrogen	0.00	0.99	0.85	Both
Nitrate-Nitrite	0.00	1.10	0.99	Both
Chlorophyll	0.00	0.90	0.60	Both

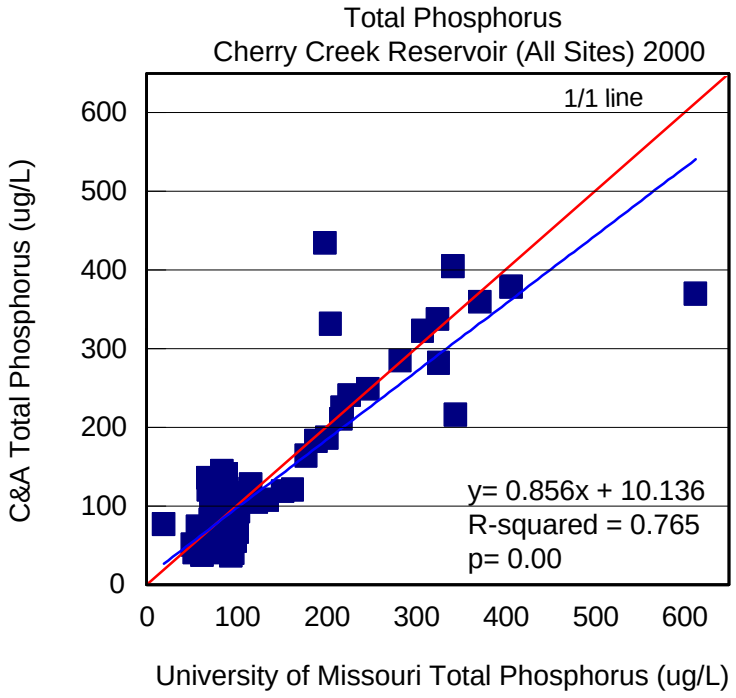


FIGURE E-1: Relationship between Chadwick & Associates, Inc. laboratory total phosphorus and University of Missouri-Columbia total phosphorus for 2000.

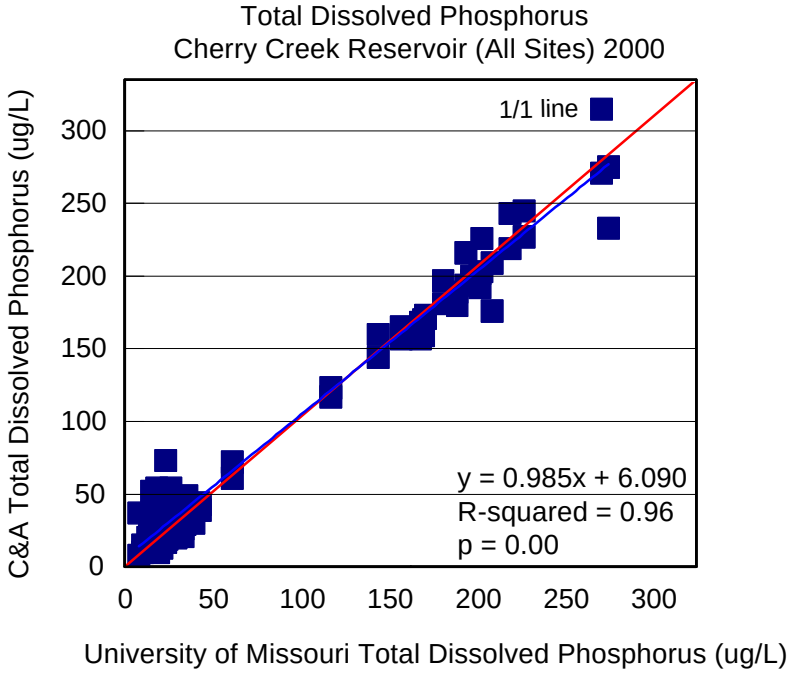


FIGURE E-2: Relationship between Chadwick & Associates, Inc. laboratory total dissolved phosphorus and University of Missouri-Columbia total dissolved phosphorus for 2000.

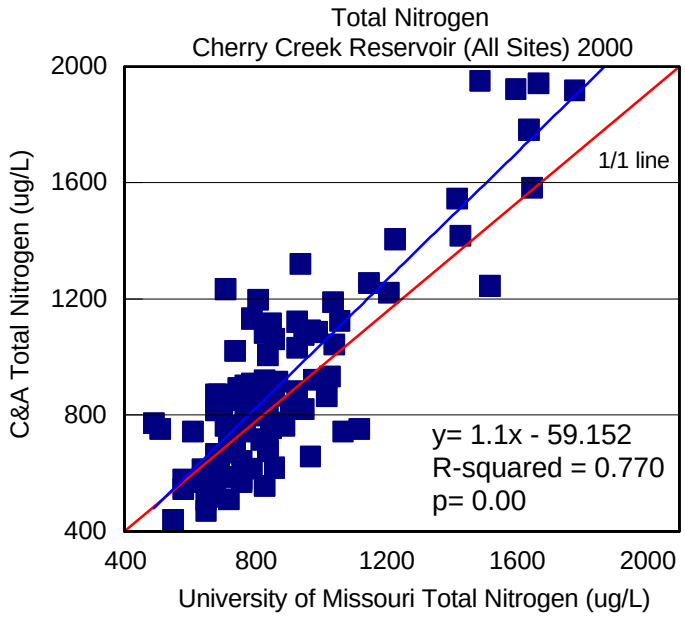


FIGURE E-3: Relationship between Chadwick & Associates, Inc. laboratory total nitrogen and University of Missouri-Columbia total nitrogen for 2000.

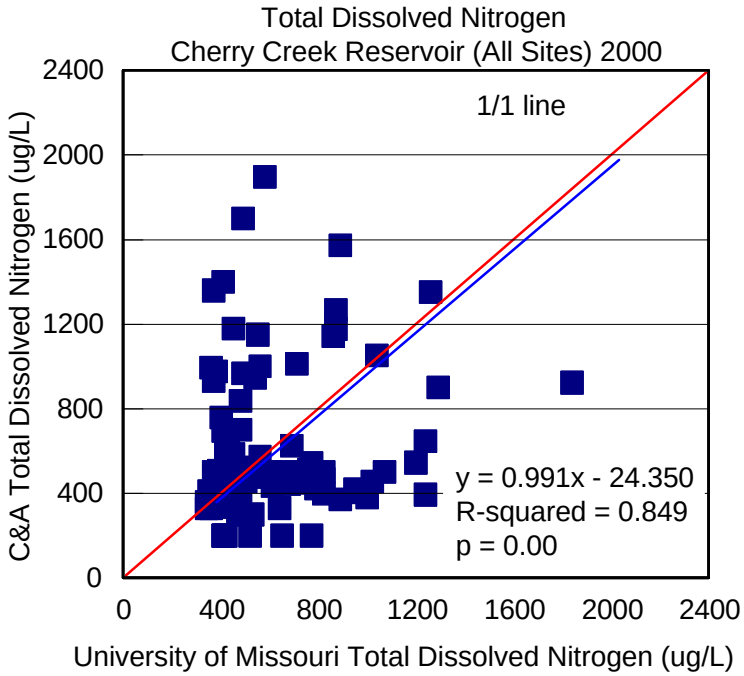


FIGURE E-4: Relationship between Chadwick & Associates, Inc. laboratory total dissolved nitrogen and University of Missouri-Columbia total dissolved nitrogen for 2000.

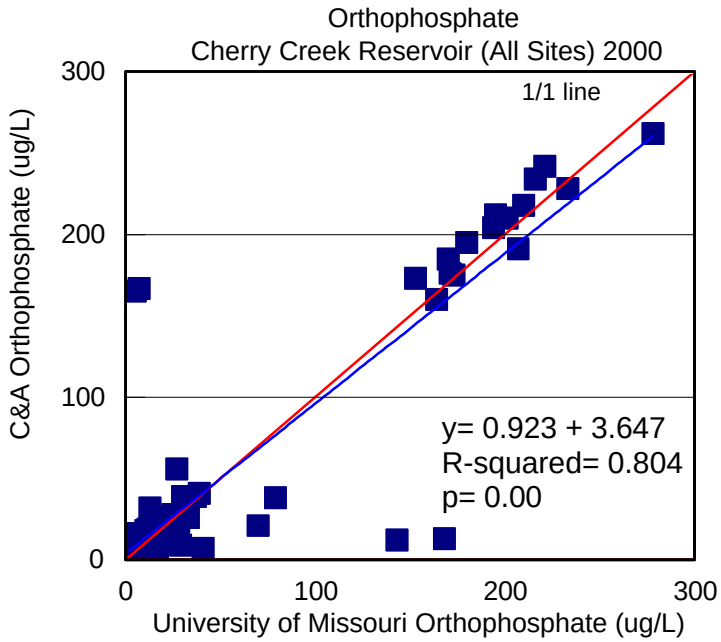


FIGURE E-5: Relationship between Chadwick & Associates, Inc. laboratory orthophosphate and University of Missouri-Columbia orthophosphate for 2000.

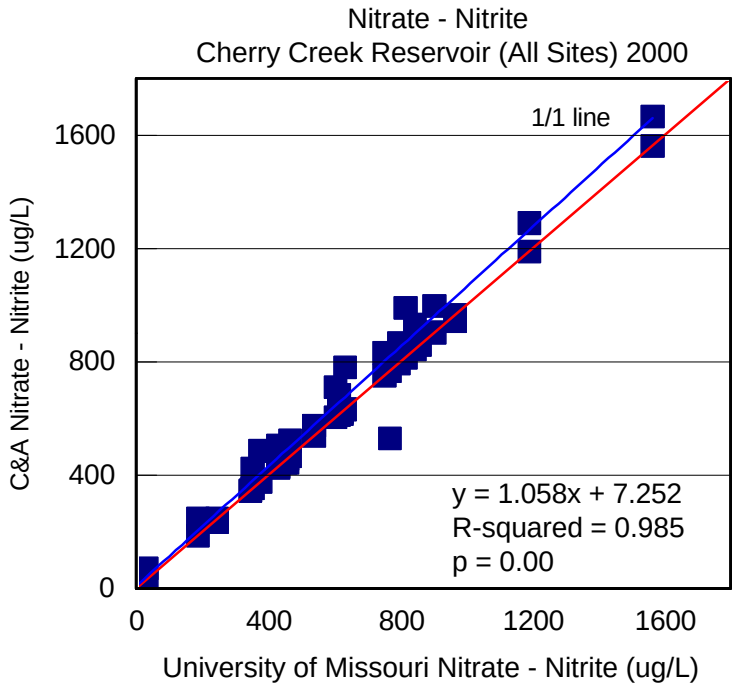


FIGURE E-6: Relationship between Chadwick & Associates, Inc. laboratory nitrate-nitrite and University of Missouri-Columbia nitrate-nitrite for 2000.

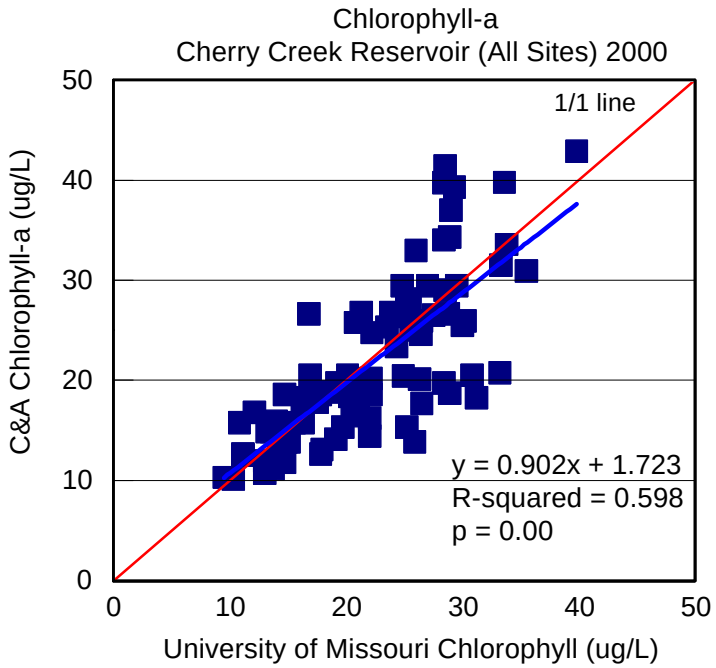


FIGURE E-7: Relationship between Chadwick & Associates, Inc. laboratory chlorophyll and University of Missouri-Columbia chlorophyll for 2000.