Phase II Addendum Project Report to the MPCA:

Clearwater River, Grass Lake to the Mississippi River DO TMDL



Prepared for

Clearwater River Watershed District

January 2008

Clearwater River Watershed District

Phase II Addendum
Project Report to the
MPCA:
Clearwater River, Grass
Lake to the Mississippi
River DO TMDL



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Acronyms

BOD Biochemical Oxygen Demand

CAFO Confined Animal Feeding Operation

Carlson TSI Carlson Trophic Status Index

CBOD Carbonaceous BOD

CBOD-5 5-Day Biochemical Oxygen Demand

CBOD-20 20-Day Biochemical Oxygen Demand

CBOD-u Ultimate Biochemical Oxygen Demand

CFR Code of Federal Regulations

cfs cubic feet per second

CFU/100 mL colony forming units per 100 milliliters

CWA Clear Water Act

CRWD Clearwater River Watershed District

DO Dissolved oxygen

EPA Environmental Protection Agency

Fecal Coliform FC

Lbs **Pounds**

MDNR Minnesota Department of Natural Resources

μg/L micrograms per liter

mg/L milligrams per liter

 mi^2 square miles

MOS Margin of Safety

MPCA Minnesota Pollution Control Agency

NCHF North Central Hardwood Forest

 NH_3 Total Ammonia-Nitrogen

NO₂/ NO₃-N Nitrate/ Nitrite- Nitrogen

NPS non-point source

QA **Quality Assurance**

Acronyms

QC Quality Control

SOD Sediment Oxygen Demand

STORET EPA's "STOrage and RETrevial" System

TKN Total Kjeldahl Nitrogen

TMDL Total Maximum Daily Load

TN Total Nitrogen

TP Total phosphorus

TSS Total Suspended Solids

USGS United States Geological Survey

WWTP Wastewater Treatment Plant

USDA United States Department of Agriculture

1.0 Executive Summary

Section 303(d) of the Federal Clean Water Act (CWA) requires the Minnesota Pollution Control Agency (MPCA) to identify water bodies that do not meet water quality standards and to develop total maximum daily pollutant loads for those water bodies. A total maximum daily load (TMDL) is the amount of a pollutant that a water body can assimilate without exceeding the established water quality standard for that pollutant. Through a TMDL, pollutant loads can be distributed or allocated to point and non-point sources within the watershed that discharge to the water body.

This report prepared by Wenck Associates, Inc. (Wenck) on behalf of the Clearwater River Watershed District (CRWD), presents Phase I and II of the TMDL process for the listed segment of the Clearwater River between Grass Lake and the Mississippi River (Segment 07010203-511). The listed segment is in the CRWD located in central Minnesota on the border of Stearns and Wright Counties. The segment is listed because monitoring data have revealed that dissolved oxygen (DO) concentrations at times fall below the 5-milligram per liter (mg/L) water quality standard, which could impact fisheries and aquatic life.

The impaired segment of the Clearwater River between Grass Lake and the Mississippi River addressed in this report was added to the impaired waters list for dissolved oxygen in 2006. Phase I and II for this reach will be addressed in this report, Phase III for this reach will be combined with Phase III for the two other listed segments for which TMDL studies are under way:

- Lake Louisa (MnDNR Lake ID 86-0282-00), and
- Clearwater River between Clear Lake and Lake Betsy in Meeker County (stream segment 07010203-549)

The TMDL studies are broken into four phases described below:

- Phase I consisted of a review of existing information to better define existing conditions, identify data gaps, and develop plans for collecting and analyzing necessary additional information in subsequent phases.
- Phase II consisted of data collection and evaluation. Phases I and II are presented herein.
- Phase III will consist of setting the TMDL. Water quality models will help the CRWD quantify the TMDL and allocate loads to point sources and non point sources. An implementation plan to meet the load reductions will also be prepared. A work plan for Phase III was submitted to the MPCA in July 2007.
- Phase IV will consist of implementation of the load reductions established in Phase III.

Historical data evaluated for this report along with data collected in 2007 show:

- Water quality in the Clearwater River between Grass Lake and the Mississippi River is quite similar to or even better than water quality observed in minimally impacted streams in the same Ecoregion. This is because the reach has a small direct watershed, and water from the remaining tributary watershed is filtered through the Clearwater Chain of Lakes.
- o There are no point sources of oxygen demand to the listed reach, all the sources are non-point in nature.
- Historically, late summer an early fall DO concentrations sometimes fall below the 5 mg/L standard in the lower reach at river mile 4.0 (at County Road 40).
 Nine of 35 measurements collected in 2002 and 2003 were below the state standard.
- Discrete DO measurements were collected in 2007 across a range of flows from 6
 cfs to 183 cfs and were consistently above the state standard of 5 mg/L.
- o In 2007, Continuous DO concentrations were recorded at two locations during the 7Q10 flow of 0 cfs, the two DO violations observed occurred during this condition. The impairment is likely limited low flow conditions, <10 cfs, where

- direct watershed runoff comprises all or most of the in stream flow, i.e. there is no discharge from Grass Lake.
- In 2007, DO and nitrogenous and biochemical oxygen demands were consistent along the reach indicating that non point sources of oxygen demand are fairly constant along the reach and the reach is generally in equilibrium.

2.0 Introduction

The Clearwater River Watershed District is a primarily agricultural 168-square mile watershed in central Minnesota (Figure 2.1). The Clearwater River and the Clearwater River Chain of Lakes are the predominant water features of the District. As specified in Minnesota Rules, Chapter 7050, the Clearwater River's Class 2B designated uses are aquatic life, recreation, industrial consumption, agriculture, wildlife, aesthetic enjoyment, and navigation.

The Clearwater River Watershed District has been proactive in the protection and improvement of water quality and has made considerable improvements in water quality throughout the District. However, historic monitoring data indicates that a 10-mile stretch of Clearwater River between Grass Lake and the Mississippi River does not meet water quality standards for dissolved oxygen (DO).

The Clean Water Act requires the State to develop TMDLs for impaired waters. A TMDL is the amount of a pollutant that a water body can assimilate without exceeding the pollutant's water quality standard. The State of Minnesota's Clean Water Act Section 303(d) list of impaired waters within the Clearwater River Watershed District is summarized in Table 2.1 and Figure 2.2.

Figure 2.1 **Clearwater River Watershed District**

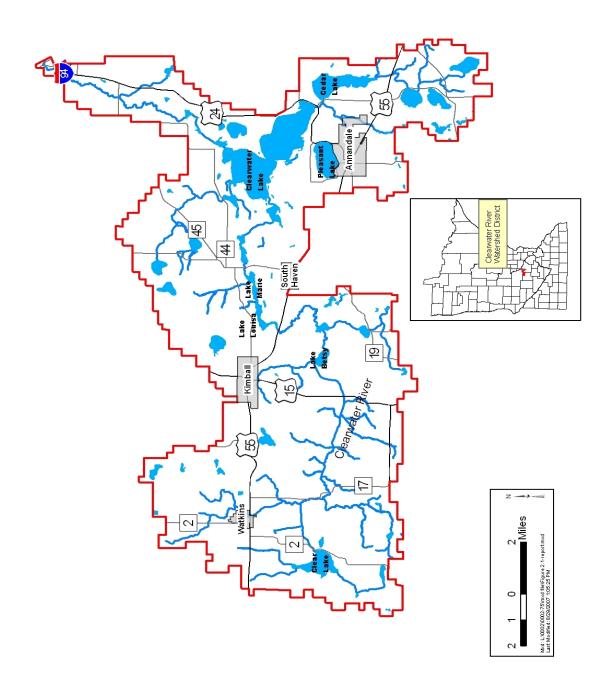
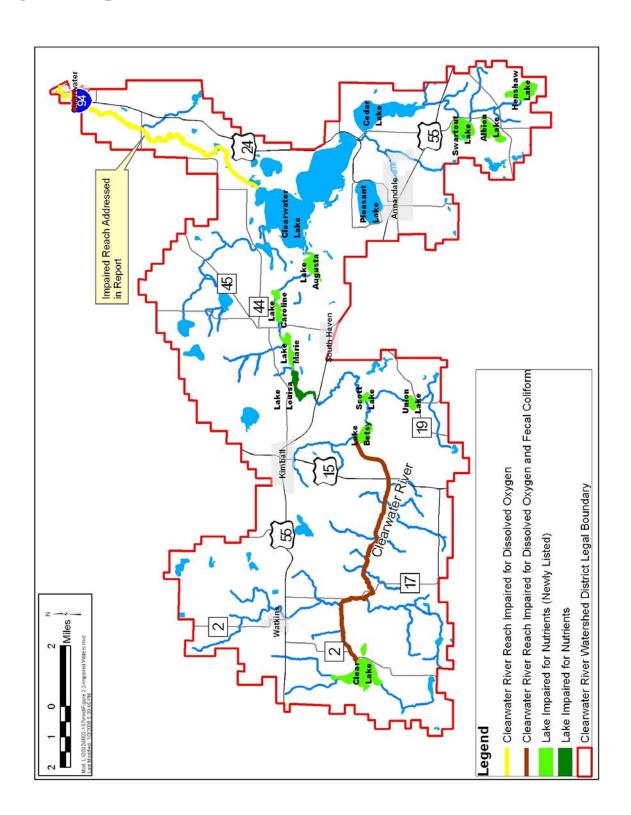


Table 2.1 Summary of 303(d) Listings in the CRWD

Water Body	Reach/ Lake ID	<u>Listing</u>	<u>Impaired</u>	Addressed in	
		<u>Parameter</u>	<u>Use</u>	this Report	
Lake Louisa	86-0282-00	Excess Nutrients	Swimming	No ^{1,2}	
Lake Betsy	47-0042-00	Excess Nutrients	Swimming	No^2	
Lake Marie	73-0014-00	Excess Nutrients	Swimming	No ²	
Scott Lake	86-0297-00	Excess Nutrients	Swimming	No ²	
Union Lake	86-0298-00	Excess Nutrients	Swimming	No ²	
Clear Lake	47-0095-00	Excess Nutrients	Swimming	No ²	
Lake Augusta	86-0284-00	Excess Nutrients	Swimming	No ³	
Lake Caroline	86-0281-00	Excess Nutrients	Swimming	No ³	
Swartout Lake	86-0208-00	Excess Nutrients	Swimming	No ³	
Albion Lake	86-0212-00	Excess Nutrients	Swimming	No ³	
Henshaw Lake	86-0213-00	Excess Nutrients	Swimming	No ³	
Clearwater River,	07010203-502	Fecal Coliform	Swimming	No ^{1,2}	
Clear Lake to Lake Betsy		Low Oxygen	Aquatic Life	No ^{1,2}	
Clearwater River,	07010203-511	Low Oxygen	Aquatic Life	Yes	
Grass Lake to the					
Mississippi River					

- 1. The Phase II Report for these impairments was submitted to the MPCA in September 2007.
- 2. A work plan to address Phase III for these impairments was submitted to the MPCA in July of 2007.
- 3. The impairments for these lakes will be addressed starting in 2009 using existing data where appropriate.

Figure 2.2 Impaired Waters in the Clearwater River Watershed District



In 2004, the CRWD partnered with the MPCA to conduct a TMDL Study for Lake Louisa and the Clearwater River between Clear Lake and Lake Betsy. The project was broken down into three phases. Existing water quality data for the Clearwater River between Clear Lake and Lake Betsy and Lake Louisa was analyzed and a work plan outlining the remaining work necessary to complete the TMDLs was prepared for Phase I. During Phase II, field data was collected to address data gaps, that work is summarized in *Phase II Project Report to the MPCA: Lake Louisa Nutrient TMDL and The Clearwater River, Clear Lake to Lake Betsy Bacteria and Dissolved Oxygen TMDL* submitted in final format December 2007.

In 2006, a second reach of the Clearwater River between Grass Lake and the Mississippi River was added to the 303(d) list for DO. This report summarizes historical data and data collected in 2007 for this reach.

In 2008, 10 additional CRWD lakes were added to the impaired waters list. The Technical Advisory Group (TAC) agreed that it was cost effective to set TMDLs for those lakes with drainage areas that overlap the drainage areas of the impaired waters for which TMDL studies were already underway. As the result, during Phase III of this project CRWD will set TMDLs for the two impaired reaches of the Clearwater River, Lake Louisa, Lake Marie, Lake Betsy, Clear Lake, Union Lake, and Scott Lake.

The TMDL process provides science-based pollutant load allocations and information that the District and other local officials can use when making decisions regarding land use, and land management that will affect water quality within the watershed. The main objectives for the Clearwater River Watershed District's TMDL Phase II Addendum are listed below:

- Define the spatial extent, persistence, severity, and causes of the DO depletion in the
 Clearwater River between Grass Lake and the Mississippi River;
- Quantify point and non-point sources of oxygen demand to the Clearwater River between Grass Lake and the Mississippi River and assess their contributions to water

- quality impairments by land use category and main-stem river and tributary subwatersheds for targeting priority areas for rehabilitation as well as protection;
- Allocate the Clearwater River assimilative capacity to both point and non-point sources of pollution and develop a margin of safety (MOS) protective of water quality standards; and
- Develop models for evaluating the impact of management practices and rehabilitation alternatives on water quality.

3.0 Historical Data

A review of the MPCA's environmental database shows that water quality samples were collected on this impaired reach of the Clearwater River at CR 0.1 near the confluence with the Mississippi River, CR 4.0 near the reaches' midpoint and at CR 10.1, Grass Lake outlet (Figure 3.1). Station CR 0.1 was sampled in 1984 and 1985. Station CR 4.0 had the most recent measurements collected between April 2002 and October 2003. Station CR 10.1 had the most complete record compiled between June 1981 and October 1995.

Figure 3.1 Historical Monitoring Locations

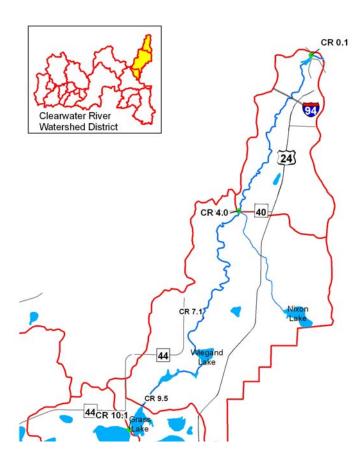


Table 3.1 compares historical water quality characteristics at CR 4.0 located approximately in the middle of the listed reach to those of minimally impacted streams in the same Ecoregion (North Central Hardwood Forest). The striking differences are that total suspended solids (TSS), total phosphorus, fecal coliform bacteria and biochemical oxygen demand (BOD) concentrations in this section of the Clearwater River are lower than those observed in minimally impacted streams of the same Ecoregion. The low concentrations in this portion of the river are due to the small direct tributary watershed area and because runoff from the much larger indirect watershed is filtered through the Clearwater Chain of Lakes where nutrients and sediments are deposited.

Table 3.1 Historical Water Quality in the Clearwater River at CR 4.0 and Minimally Impacted Streams in the North Central Hardwood Forest Ecoregion

	Water Quality of Minimally Impacted Streams				Clearwater River at CSAH 40 (CR 4.0)			
	in NCHF, Annual 1970-1992*				Historical Data Collected 2002-2003			
Parameter	Mean	SD	MAX	MIN	Mean	SD	MAX	MIN
Conductivity (µmhos/cm)	298	83	840	40	418	48	551	231
pH (SU)	8.1	0.3	8.9	7.2	7.8	0.3	8.4	7.2
TSS (mg/L)	13.7	22.5	330	0.5	4.8	5.5	29.0	1.0
NO2+NO3 (mg/L)	0.16	0.15	0.65	0.01	0.16	0.14	0.77	0.05
TP (mg/L)	0.13	0.15	1.6	0.01	0.05	0.05	0.25	0.02
Fecal Coliform (#/100mL)	920	3,277	27,000	4	40	37	114	2
BOD5 (mg/L)	2.7	2.1	17	0.3	1.6	0.8	3.8	0.5

^{*}McCollar & Heiskary, 1993

T:\0002\107\Report\[Sec 3 Tables Figs Historical.xls]Table 3.1

Dissolved oxygen was measured 35 times at CR 4.0 during 2002 and 2003. The mean DO concentration at CR 4.0 was 7 mg/L, concentrations ranged from 1.4 to 13 mg/L over the period of record. Nine of the 35 DO measurements were below the state DO standard of 5 mg/L, the violations were observed during late summer and early fall.

Dissolved oxygen was measured 119 times at CR 10.1 between June of 1981 and October 1996. The mean concentration at this station was 10.6 mg/L with standard deviation of 2.5 mg/L over the 15-year record. One of the 119 measurements was below the state standard for DO, that violation was recorded in June of 1998 (Figure 3.2).

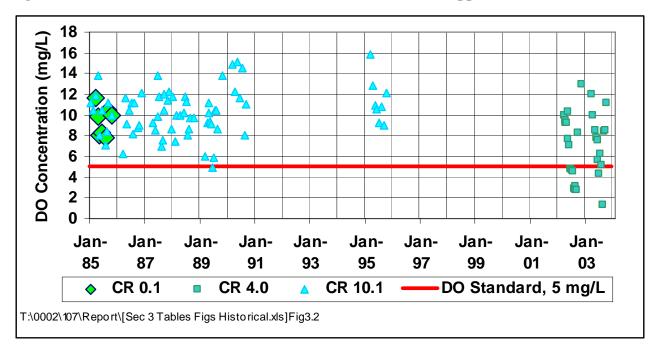


Figure 3.2 Historical DO Concentrations, Grass Lake to Mississippi River

Total Kjeldahl (TKN) concentrations at CR 4.0 ranged from 2.15 to 0.58 mg/L, with an average concentration of 0.96 mg/L, lower than those observed in the upper watershed. BOD concentrations ranged from 3.8 to 0.5, with a mean BOD concentration of 1.6 mg/L, lower than concentrations observed in minimally impacted streams of the same ecoregion.

4.0 2007 Data Collected

Field monitoring for the Clearwater River between Grass Lake and the Mississippi River was conducted between April 24 and August 22, 2007 to determine the spatial and temporal extent of the DO depletion on the Clearwater River and to quantify the sources.

Monitoring was conducted in accordance with the work plan approved for this study and is described below. There were no significant deviations from the approved Monitoring Plan.

Figure 4.1 shows the monitoring locations for the DO TMDL in the Clearwater River between Grass Lake and the Mississippi River. Table 4.1 lists monitoring station descriptions. Data collection at these locations included:

- Both low and high flow synoptic surveys of the Clearwater River between Grass Lake
 and the Mississippi River were conducted. The high flow synoptic survey was conducted
 April 24, 2007; the low flow synoptic survey was conducted August 22, 2007 (Appendix
 A).
- The Clearwater River main stem was also sampled approximately twice monthly in 2007 as flow conditions permitted between May and August. Longitudinal water quality, flow, and loading profiles from 2007 sampling are included in Appendix A.
- Box plots in Appendix B show the mean, max, min and standard deviation of water quality parameters from upstream to downstream for data collected during Phase II.
 Field and lab data sheets are in Appendix C.
- Continuous DO measurements were collected during each synoptic survey, and for an extended period between July 3 and September 4, 2007. Data are plotted in Appendix D.
- Continuous stage was measured CSAH 40 in 2007. Provisional flow records are in Appendix E along with a provisional flow record for the Fairhaven Dam.

- A time of travel dye study was conducted in the listed reach under two flow regimes April 24, 2007 (high flow) and July 17 through the 20th, 2007 (low flow). During the time of travel study, flows at the downstream end of the reach (CR 1.4) were183 cfs during the April high-flow survey and 14 cfs during the July low-flow survey, therefore satisfying the project requirements of obtaining time of travel during high and low flow. Results are shown in Appendix F.
- A field survey was conducted. Appendix G contains a digital map, photos, topography and the field survey results. The riparian corridor study included evaluation of riparian canopy and vegetation, in-stream macrophytes, stream substrate, and channel stability.
- Passive sampling for optical brighteners was conducted on the Clearwater River
 July 25 to August 8, 2007. Results are shown in Appendix H.

Figure 4.1 Phase II Addendum Monitoring Locations

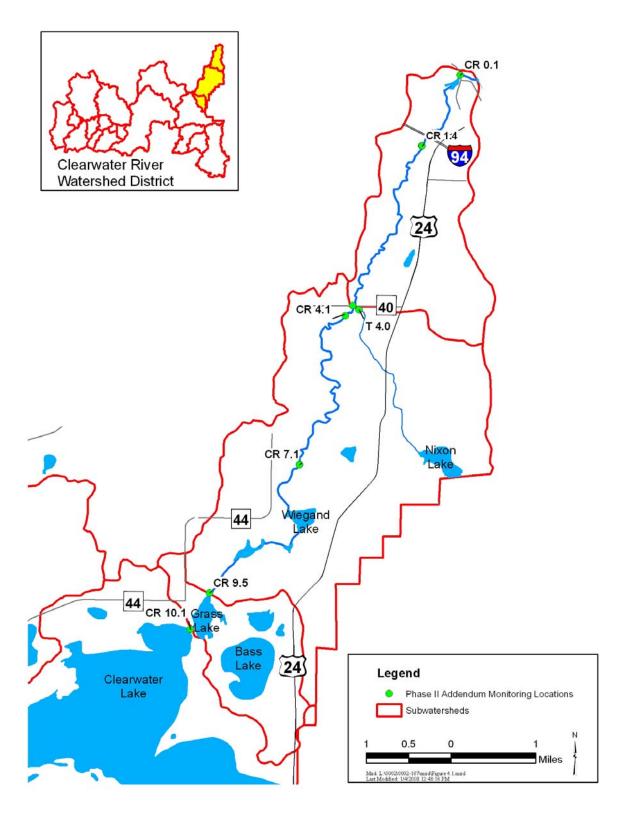


Table 4.1 Monitoring Station Descriptions

TMDL Site ID	Station Description
	CLEARWATER R AT COUNTY HIGHWAY 75, 0.1 MI
CR 0.1	N OF CLEARWATER
	CLEARWATER R AT CO RD 145, 0.1 MI SW OF
CR 1.4	CLEARWATER
	CLEARWATER R AT CSAH 40, 2.4 MI SW OF
CR 4.0	CLEARWATER
	CLEARWATER R UPSTREAM OF CSAH 40 AND
	TRIBUTARY STREAM INLET, 2.5 MI SW OF
CR 4.1	CLEARWATER
	TRIBUTARY TO CLEARWATER R NEAR CSAH 40,
T 4.0	2.5 MI SW OF CLEARWATER
	CLEARWATER R AT 140TH ST NW, 6.1 MI N OF
CR 7.1	ANNANDALE
	CLEARWATER R AT OUTLET OF GRASS LAKE, 4.4
CR 9.5	MI N OF ANNANDALE
	CLEARWATER R AT OUTLET OF CLEARWATER
CR 10.1	LAKE AT CO RD 128, 4 MI N OF ANNANDALE

T:\0002\107\Report\[Table 4.1.xls]Table

5.0 Results and Analysis

Results of the field survey, hydrologic monitoring and water quality sampling conducted in the Clearwater River and tributary watershed in 2007 are presented in this section. Water quality data is compared with that of minimally impacted streams in the North Central Forest Ecoregion. Longitudinal water quality profiles allow an evaluation of the extent of impairment. In stream and tributary loadings are calculated and evaluated. Each of these elements allows an evaluation of the sources oxygen demand in the watershed.

5.1 FIELD SURVEY

A field survey of the Clearwater River between Grass Lake, CR 10.1, at the upstream end and the Mississippi River was conducted in June 2007. This 10 mile reach of the Clearwater River can be broken into three distinct sections based on channel characteristics such as slope, morphometry and channel bed. The field team canoed from Wiegand Lake to Country Road 40 (CR 4.0) to conduct the survey and visually inspected the remainder of the channel from road access points and air photos.

Table 5.1.1 summarizes stream characterization in each reach. Photos of the stream, along with assessment of the sediments, riparian cover, topography, and DO concentrations collected during the survey are presented in Appendix G. A 2005 survey conducted by the Minnesota DNR was also reviewed (Altena 2005).

Table 5.1.1 Stream Characteristics of the Clearwater River between Grass Lake and the Mississippi River

			Stream			
River	Elevation	Slope (ft/	Width		Sedime nt	
Mile	(ft NGVD)	mile)	(ft)	Tree Canopy	Description	Description
CR 10.1	991		54	0% Mowed turf grass	gravel and cobbles, medium to coarse sand	Channel between Clearwater Lake and Grass Lake.
CR 9.5	991	0	100	5% downstream	medium to coarse sand and gravel upstream near Grass Lake Dam; sand and silt with some muck in less channelized areas through wetland	Channel starts below Grass Lake Dam and flows through large wetland area and Wiegand Lake. Channel width varies through wetland. Channel is braided with numerous backwater areas in wetland. Flow becomes channelized below Wiegand Lake. Riparian area is nearly all wetland.
CR 7.1	990	0	42	15% upstream 25% downstream	Gravel and sand, some cobble and boulders on outside bends	Meandering channel with oxbows, and cutoff channels. Narrow wetland fringe along stream, forested in some areas. Narrow floodplain.
CR 4.0	975	5	48	20% upstream, 30% downstream	sand, some gravel and cobble on	Meandering channel that is braided in some areas, with many oxbows and cutoff channels. Wetland fringe of varying width along channel. Forested riparian area, especially downstream. Some agricultural fields in riparian zone.
CR 1.4	960	6	45	75% upstream, 90% downstream	Sand and gravel, with cobble and boulders in riffle areas and outside bends	Sharply meandering channel. Steep banks along channel. Riparian area is predominantly forested. Some private residences also located adjacent to channel.
CR 0.1	950	8	60	90% upstream, 80% downstream	Sand and gravel in channel and tailwater above dam. Sand, gravel, and cobble below dam	Meandering channel through forested area flows into tailwater area above dam. Channel drops approximately 10 feet below dam before flowing into Mississippi River. Riparian area is mostly forested, with some small areas of wetland. Steep banks along channel.

T:\0002\107\Report\[Table 5.1Stream Inventory Table.xls]Table 4.1

The impaired reach can be broken down into three main sections: the Grass Lake outlet to the Wiegand Lake outlet, Wiegand Lake outlet (river mile 7.1) to river mile 3.0, and river mile 3.0 to the Mississippi at the downstream end.

The Grass Lake outlet is controlled by a MN DNR dam. The channel between Grass and Wiegand Lake is a flat (slope is zero), gently meandering channel draining large wetland complexes. The reach between the Wiegand Lake outlet and river mile 3.0 is more sinuous than the upstream section with an average slope of 5 feet per mile. The channel in this section is braided in some areas with cut off channels, and is mostly flanked by a woody riparian buffer consisting of trees and grasses. The banks of the channel between river mile 3.0 and the Mississippi River are very steep, the channel is less sinuous than the upstream section. A broad crested weir just upstream of the Rivers' confluence with the Mississippi River controls the outflow.

5.2 HYDROLOGY

Precipitation and runoff volumes were below average in 2007. Precipitation was measured in Annandale by a citizen precipitation recorder. Annual precipitation was 27.82 inches, a 1.24 inch departure from the 1971-2000 Normal at Cokato.

Continuous stage measurements were recorded in the Clearwater River at the Fairhaven Dam downstream of Lake Marie and at County Road 40 downstream of Grass Lake in the lower watershed. Flow data collected at each site is presented in Figure 5.2.1. It should be noted that this data is preliminary, the finalized flow record from HYSTRA will be used for Phase III.

250
—County Road 40
—Fairhaven Dam

100
50
Jan-07 Feb-07 Mar-07 Apr-07 May-07 Jul-07 Jul-07 Aug-07 Sep-07 Oct-07 Nov-07 Dec-07

Figure 5.2.1 2007 Continuous Stream Flow Record (Provisional)

T:\0002\106\[CR40_Fairhaven Q Records.xls]CR 40

5.3 WATER QUALITY

Synoptic surveys and bi-weekly river profile sampling of the Clearwater River between Grass Lake and the Mississippi River were over a range of flow conditions. Flow at the Grass Lake outlet at the upstream end of the reach ranged from 190 cfs to 2 cfs. Downstream flow ranged from 183 cfs in early June to 6 cfs in early August at CR 1.4.

Table 5.3.1 compares water quality in the Clearwater River in 2007 to that of minimally impacted streams in the North Central Hardwood Forest Ecoregion.

Table 5.3.1 Water Quality in the Clearwater River and Minimally Impacted Streams of the North Central Hardwood Forest Ecoregion

	Water Quality of Minimally Impacted Streams in NCHF, Annual 1970-1992*				Clearwater River Main Stem, Grass Lake to the Mississippi River (2007)			
Parameter	Mean	SD	MAX	MIN	Mean	SD	MAX	MIN
Conductivity (µmhos/cm)	298	83	840	40	415	55	571	328
pH (SU)	8.1	0.3	8.9	7.2	8.3	0.3	9.0	7.2
TSS (mg/L)	13.7	22.5	330	0.5	6.1	8.5	64.0	2.0
NO2+NO3 (mg/L)	0.16	0.15	0.65	0.01	0.22	0.04	0.33	0.20
Ammonia-N (mg/L)	0.2	0.2	1.3	0.02	0.2	0.03	0.4	0.2
TP (mg/L)	0.13	0.15	1.6	0.01	0.03	0.04	0.33	0.01
Fecal Coliform (#/100mL)	920	3,277	27,000	4	697	3,364	28,000	10
BOD5 (mg/L) *McCollar & Heiskary, 1993	2.7	2.1	17	0.3	2.3	0.6	5.0	2.0
T:\0002\107\Report\[Table 5.3.1.xls]Table 5.3.1								

By comparison, Clearwater River water quality in this reach is quite similar or even better than that observed in minimally impacted streams in the same Ecoregion. The values measured are inconsistent with a stream severely impacted by anthropogenic activities. The reason for this is likely the high water quality coming out of Clearwater Lake.

Flow measured during the June 6, 2007 sampling event showed a dramatic increase in flow from 107 cfs at CR 4.0 to 183 cfs at CR 1.4. The increase in flow is not typical of the increase in flow between the two stations. The flow measurement was verified and may be the result of lagged hydrographs following a storm event. The provisional flow record at County Road 40 (CR4.0) shows that June 6 is the rising limb of a storm hydrograph. In any case, the in stream loading profiles shown in Appendix A for June 6 indicate that stream loads increased dramatically as the result of this increased flow.

5.3.1 Dissolved Oxygen

Discrete measurements of DO along the profile of the Clearwater River in 2007 show that DO concentrations were consistently above the 5 mg/L state standard. Though DO concentrations decrease slightly from upstream to downstream, they are fairly consistent with average concentrations ranging from 9.7 to 7.6 mg/L (Figure 5.3.1.1).

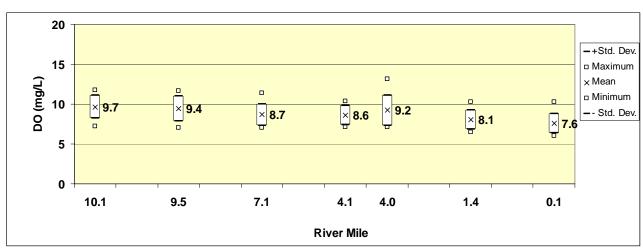


Figure 5.3.1.1 Longitudinal DO Concentrations in the Clearwater River

The consistency in DO concentrations from upstream to downstream indicate the river is generally in equilibrium. This is supported by in-stream CBOD-5 and TKN concentrations (Figures 5.3.1.2 and 5.3.1.3).

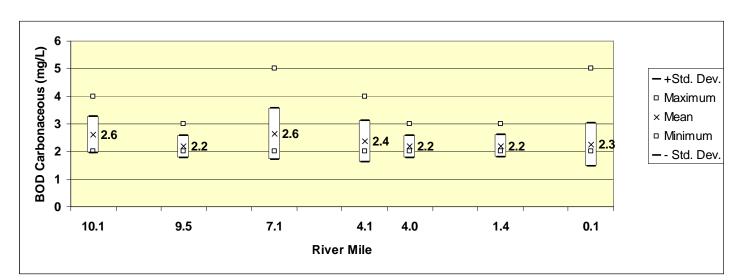
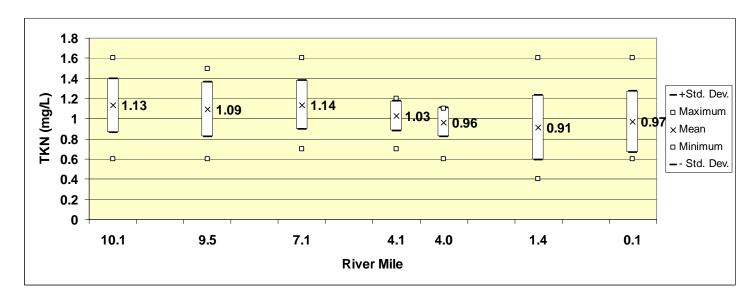


Figure 5.3.1.2 Longitudinal CBOD-5 Concentrations in the Clearwater River





Dissolved oxygen, temperature, conductivity and pH were measured continuously July 2 to September 3, 2007 at CR 7.1 at the outlet of Wiegand Lake and at CR 0.1, the downstream end of the reach. Measurements were collected upstream of the dam to avoid measuring re-aeration by the dam. Continuous measurements were also collected at CR 1.4 April 18 to April 30, 2007. Continuous measurements of dissolved oxygen showed that DO concentrations were consistently above the state DO standard of 5 mg/L except for two late summer readings. The DO

concentration at CR 0.1 in the downstream end of the reach fell to 4.8 mg/L at the low-point in the diurnal cycle on 7/26/2007. The DO concentration at CR 7.1 fell to 4.6 mg/L at the low point in the diurnal cycle on August 14, 2007. Both violations occurred during the lowest recorded flow of the season: The provisional flow record for that period at CR 40 shows that average daily flows ranged from 0 to 14 cfs, close to the 7 Q 10. Results of all continuous DO monitoring are presented in Appendix E.

5.4 SOURCE ASSESSMENT

An assessment of sources of oxygen demand in the watershed is discussed in this section. The sources are non-point source in nature, no point sources were identified. Sources may include livestock and associated land practices including feedlots and pasturing, crop farming and associated land uses including drain tiles, urban runoff from the City of Clearwater, septic systems, and natural sources such as wildlife and wetlands.

5.4.1 Livestock and Liquid Manure Application

Livestock and liquid manure application can be a source of bacteria and oxygen demand to receiving waters. Livestock are sometimes allowed to graze too closely to receiving waters, and some receiving waters lack sufficient buffer areas. Manure is primarily applied to crops in the fall prior to a corn rotation and sometimes in the spring. The absence of high bacteria and nutrient concentrations indicate that land application and livestock do not significantly contribute to the oxygen demand in this section of the Clearwater River.

5.4.2 Crop Farming

Corn and soy bean rotation are the primary row crops in the watershed tributary to the portion of the Clearwater River between Grass Lake and the Mississippi River. The in-stream nutrient and sediment concentrations indicate that crop farming is not a significant source of nutrients to the stream.

5.4.3 Urban Runoff

One urban area, the City of Clearwater, lies within the watershed tributary to the Clearwater River between Grass Lake and the Mississippi River. The City of Clearwater is located at the downstream edge of the impaired reach, its stormwater enters the Clearwater River between monitoring stations at CR 1.4 and CR 0.1 Highway 94 crosses the Clearwater River at CR 1.3 and County Road 40 crosses the river at CR 4.0, there is a slight increase in TSS at these locations indicating that urban runoff does impact the river.

5.4.4 Septic Systems and Human Waste

Few homes, and therefore few septic systems, are located close enough to the Clearwater River to be a source of oxygen demand to the Clearwater River in the impaired reach. The lack of optical brighteners observed in the reach supports this conclusion.

Wastewater from the City of Clearwater discharges to the Mississippi River downstream of the Clearwater River.

5.4.5 Wetlands

The DO concentrations are fairly consistent from upstream to downstream in the Clearwater River, though wetlands downstream of the Grass Lake may occasionally contribute to the oxygen impairment during low flow through SOD and plant/algal respiration.

6.0 Stakeholder Involvement

Six stakeholder involvement meetings have been held to date for this TMDL Project. They are summarized in the Phase II Report. One additional stakeholder meeting will be scheduled during Phase III.

7.0 References

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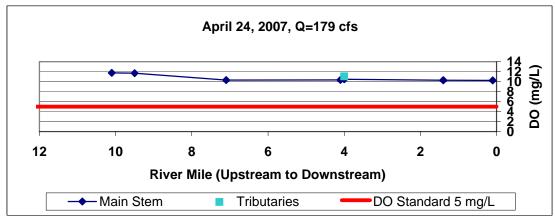
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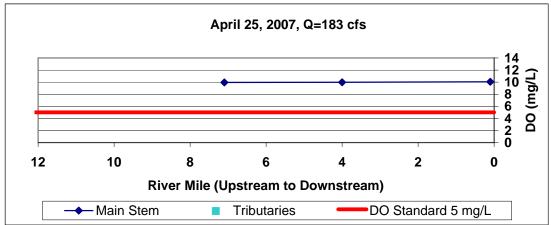
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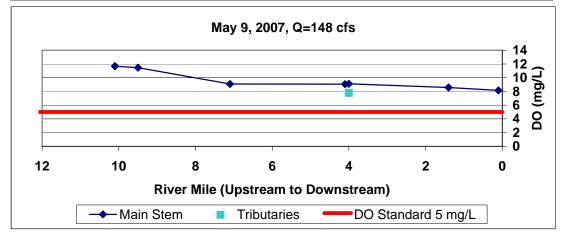
Appendix A

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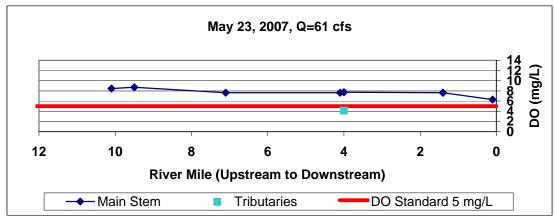
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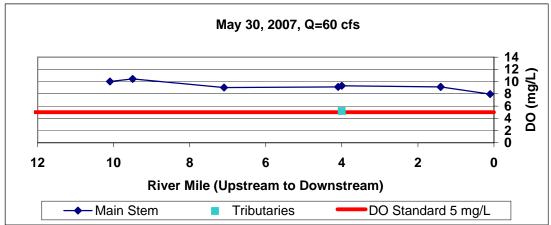


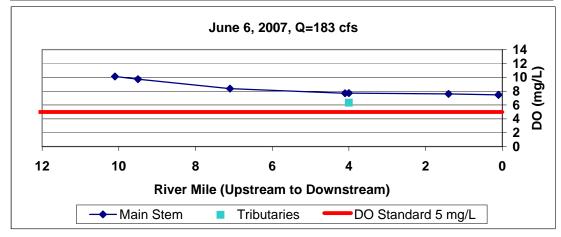




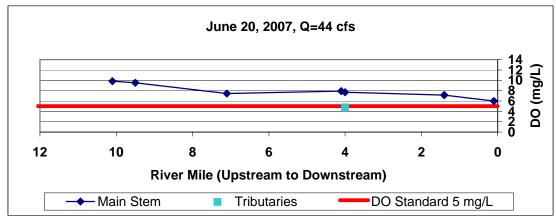
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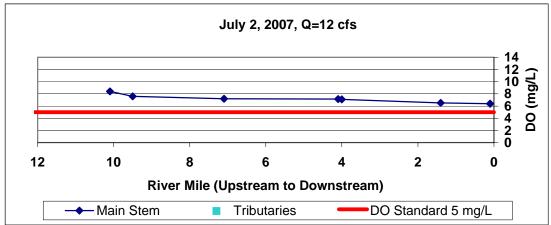


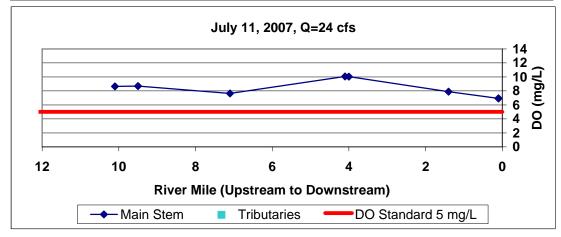




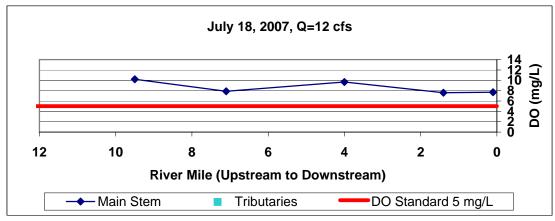
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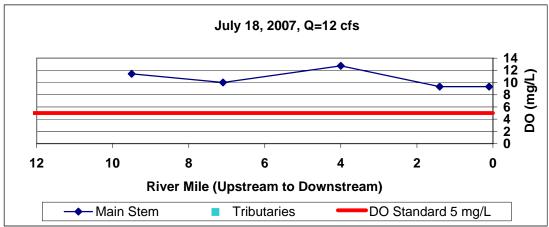


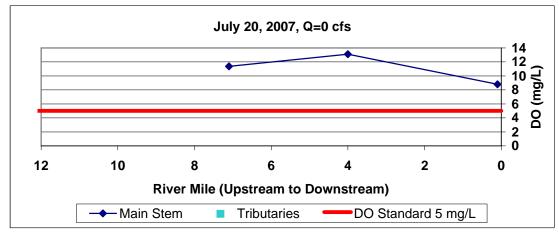




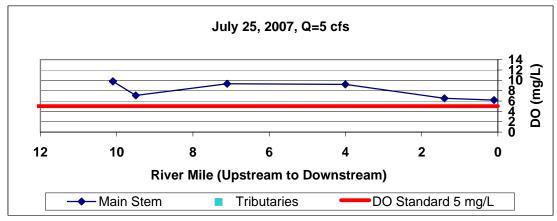
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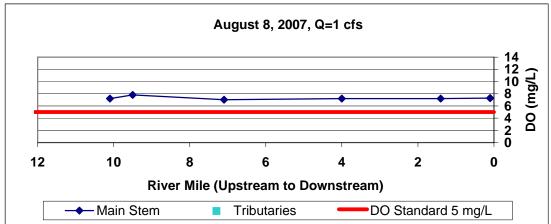


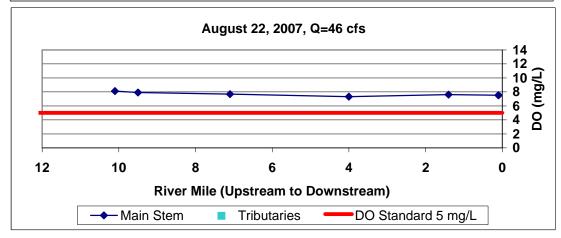




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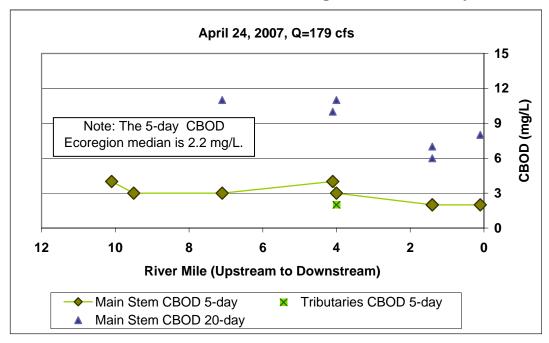


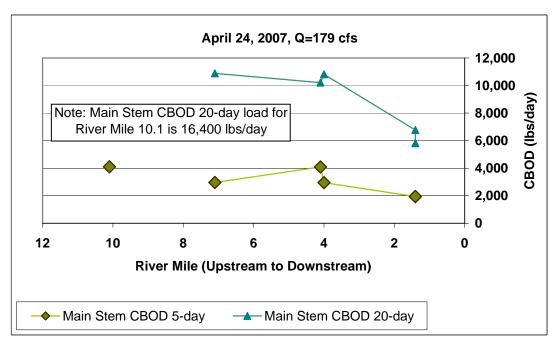




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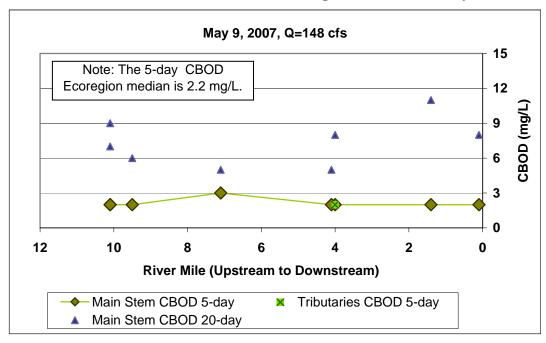
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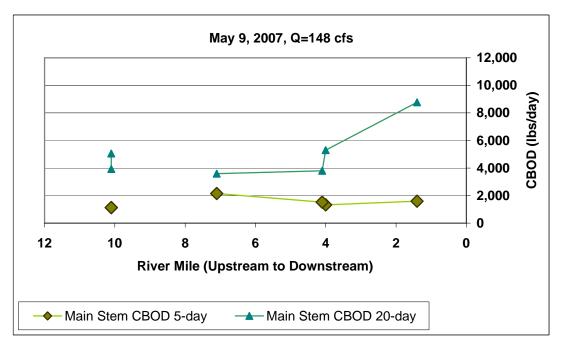




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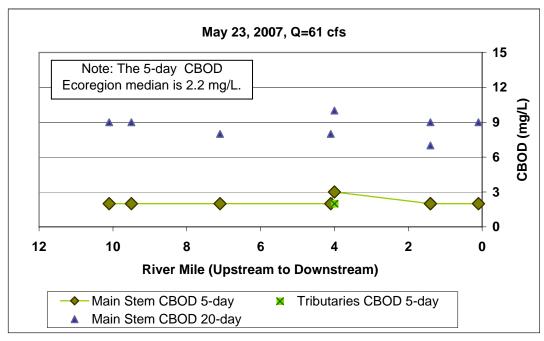
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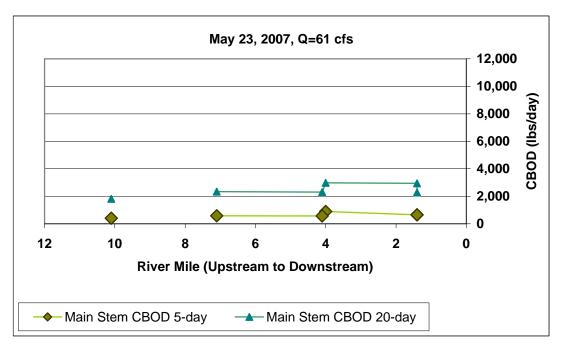




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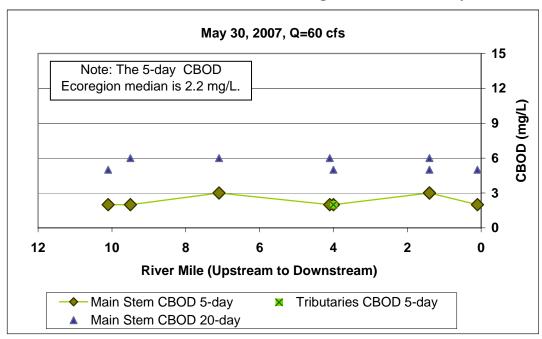
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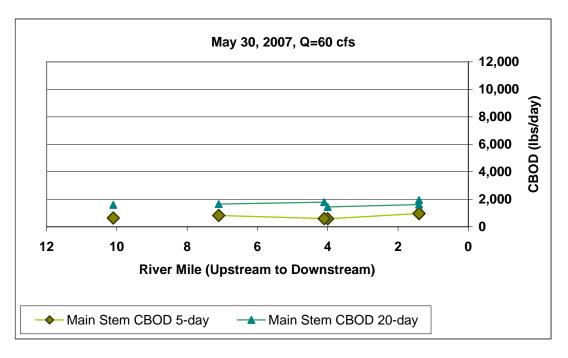




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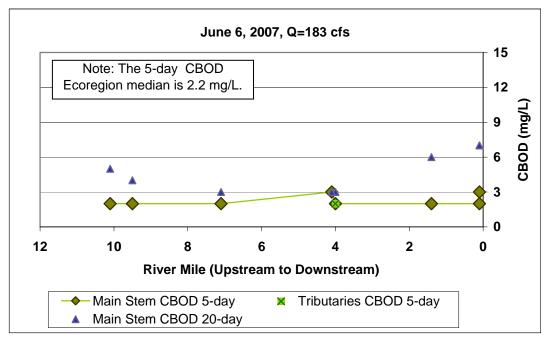
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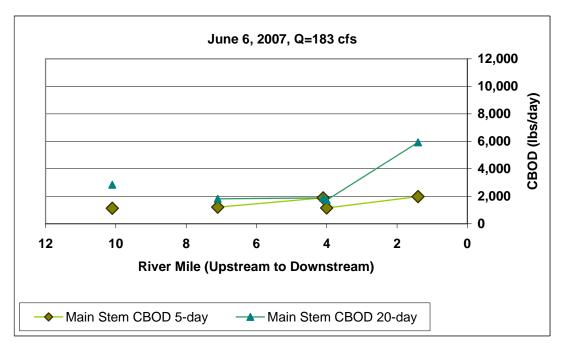




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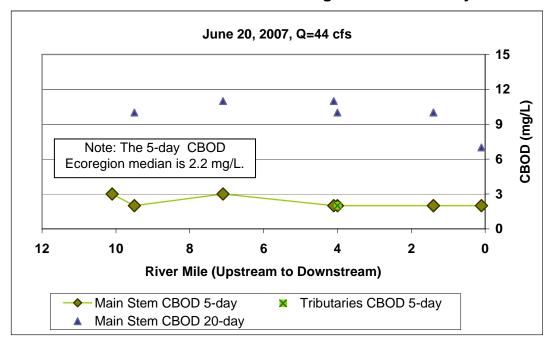
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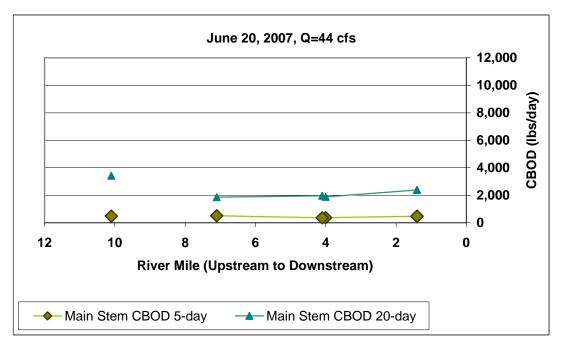




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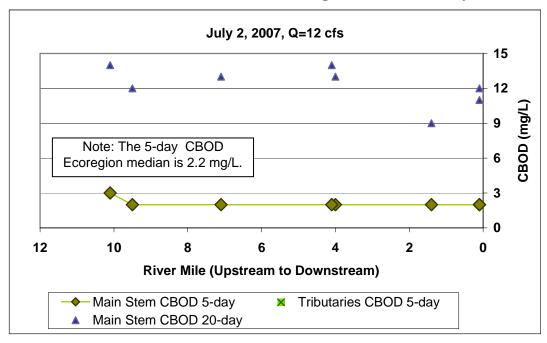
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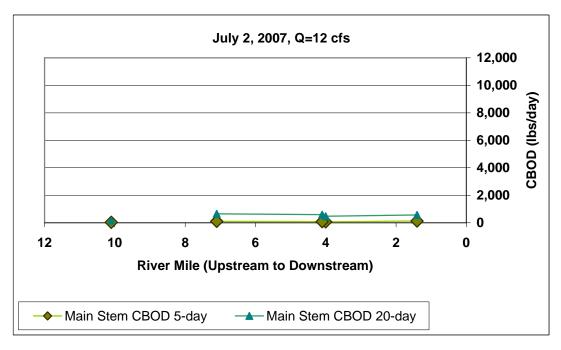




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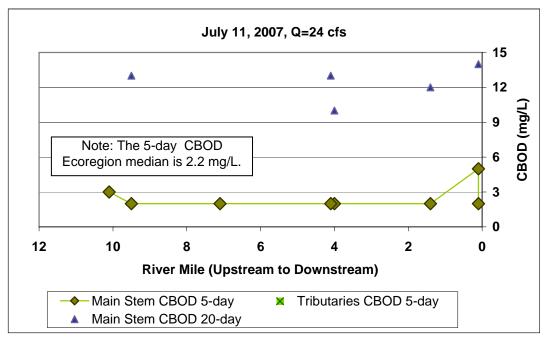
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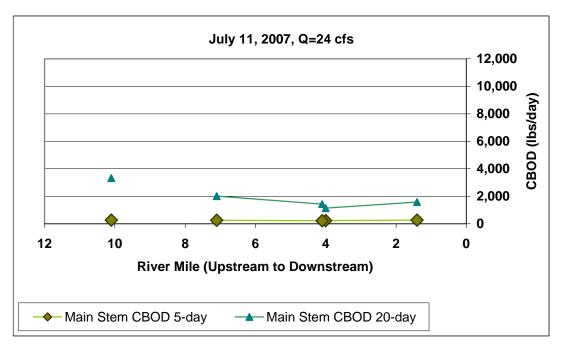




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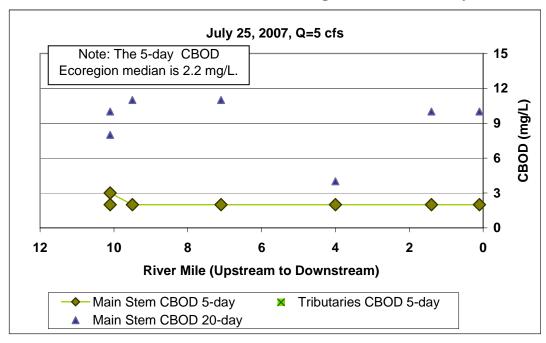
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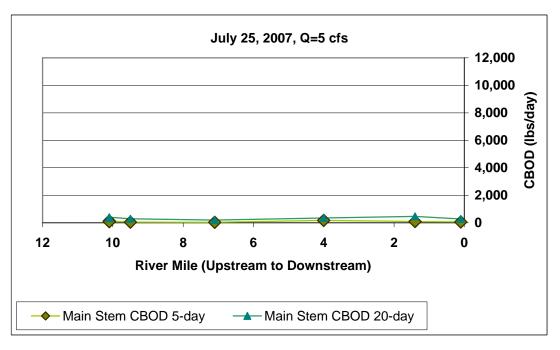




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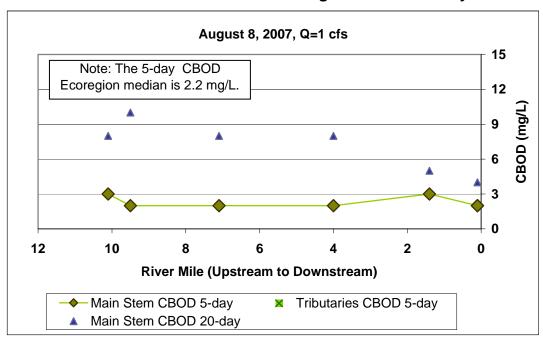
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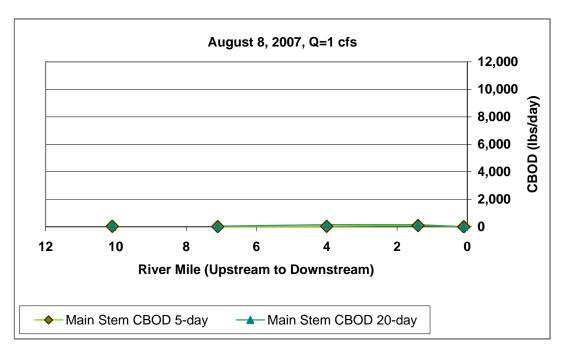




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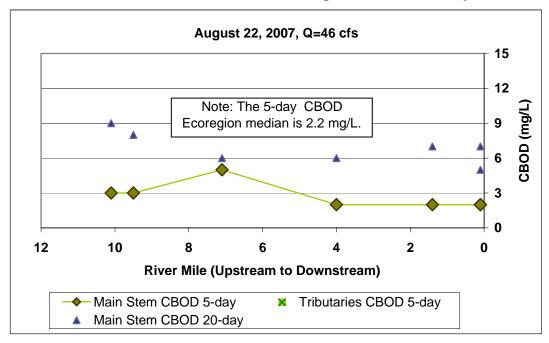
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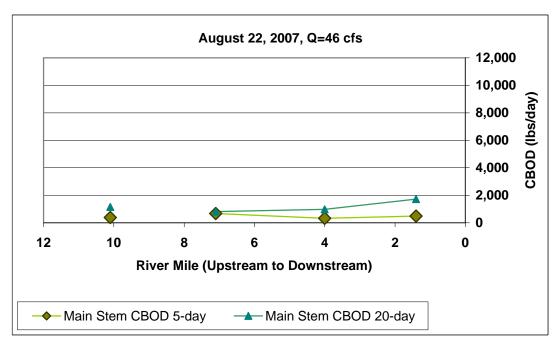




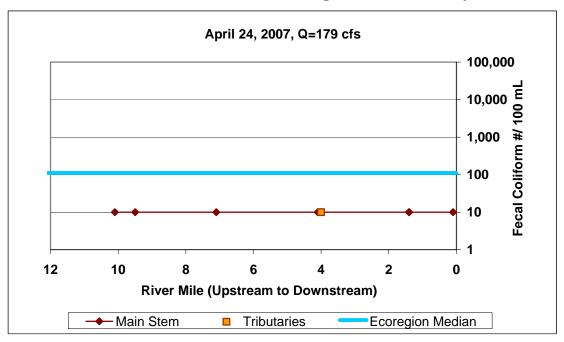
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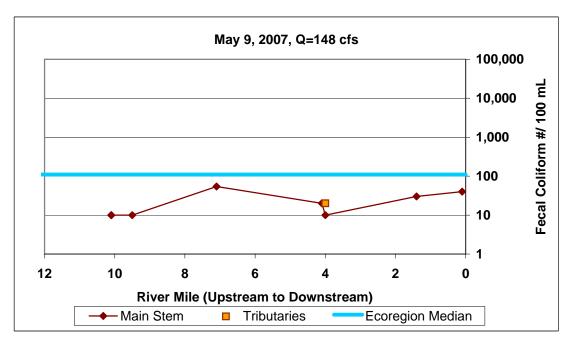
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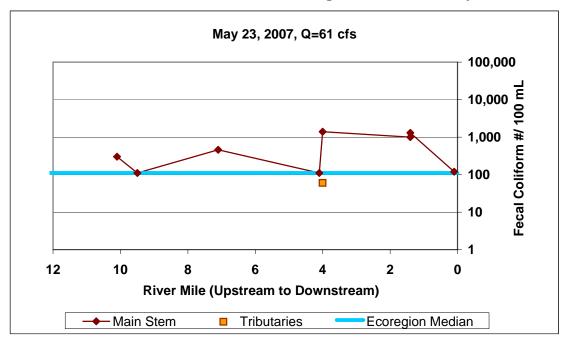


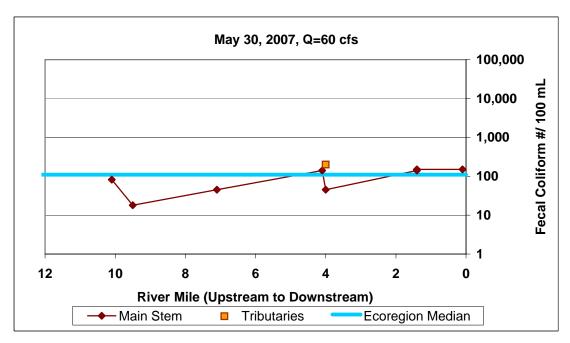
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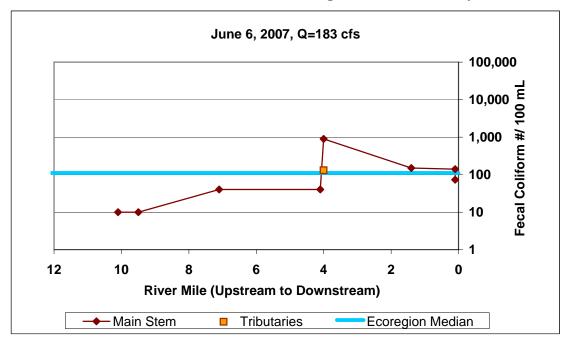


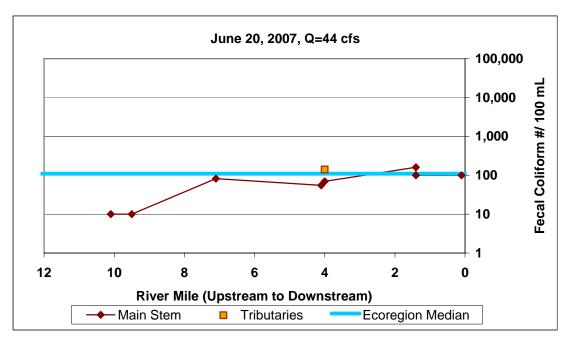
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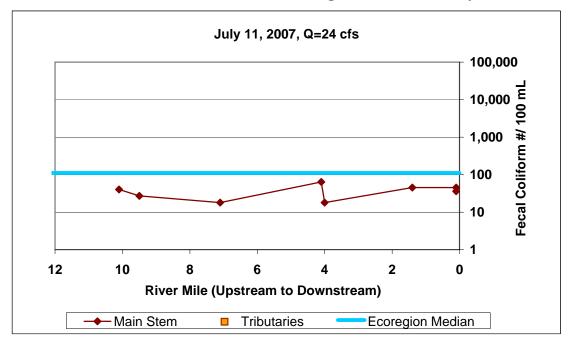


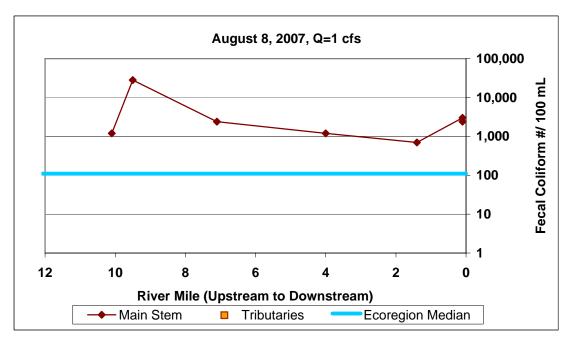
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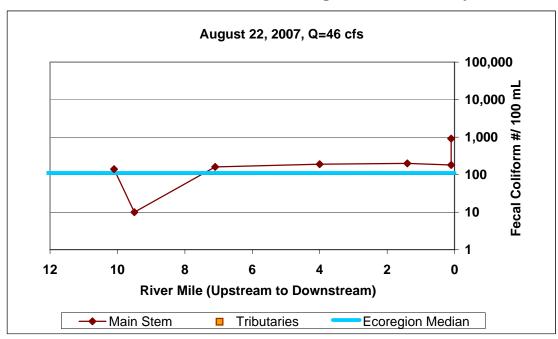


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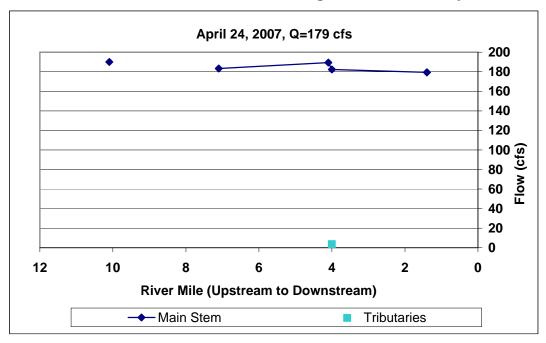


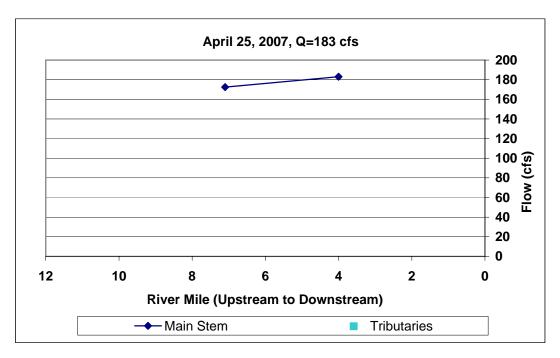


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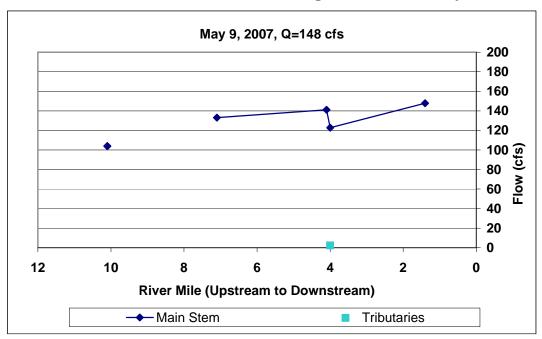


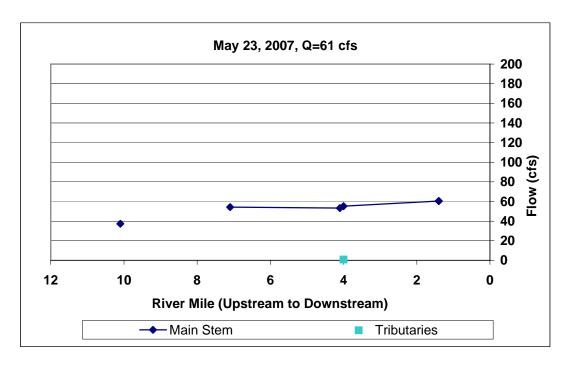
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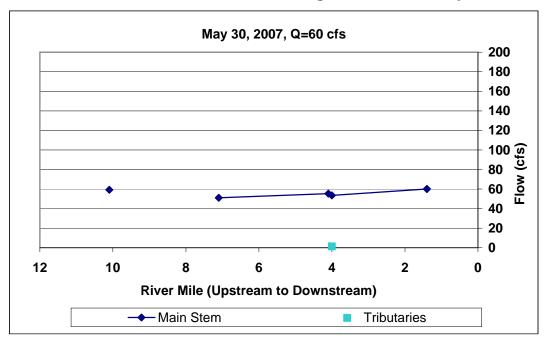


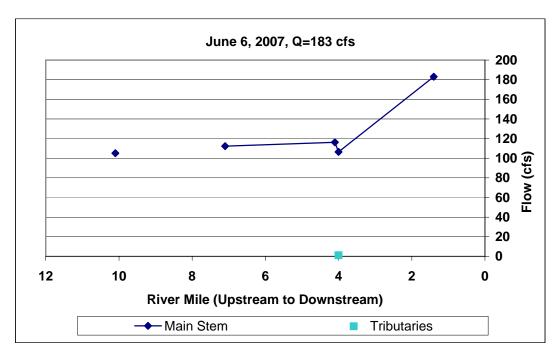
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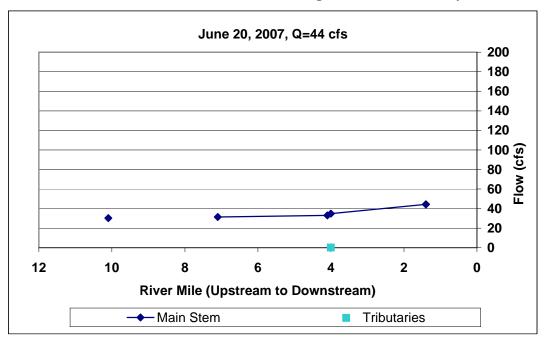


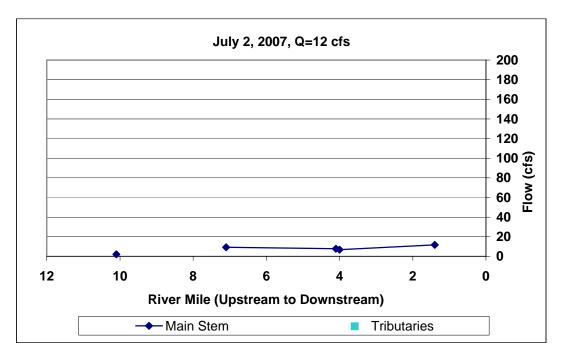
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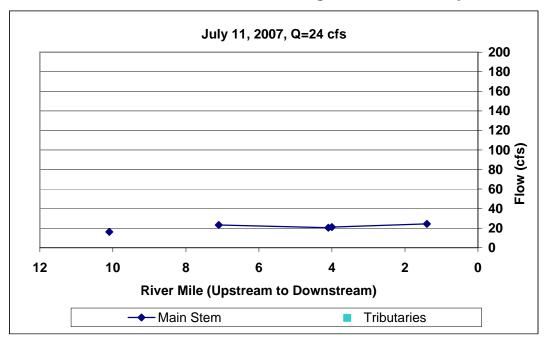


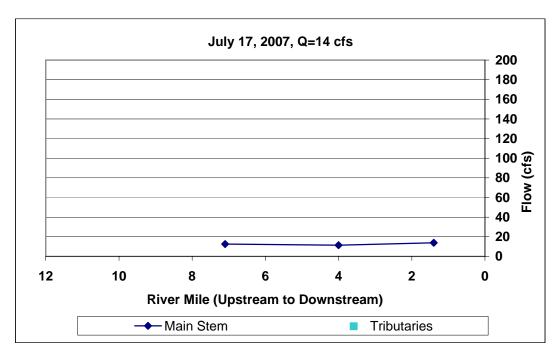
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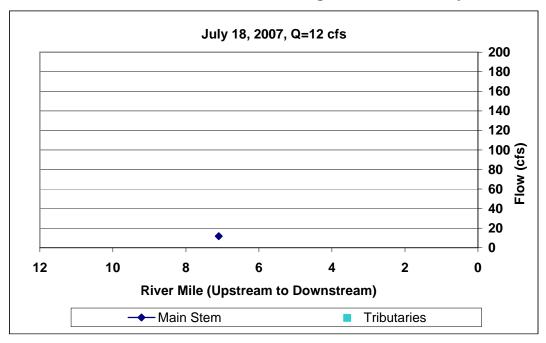


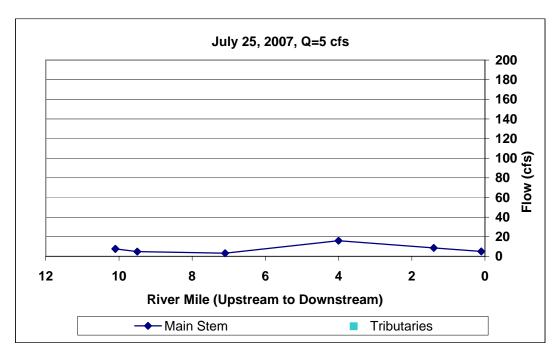
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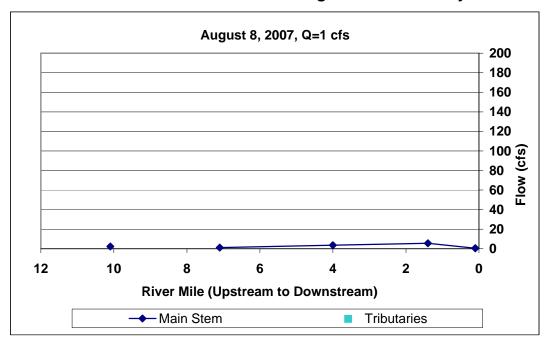


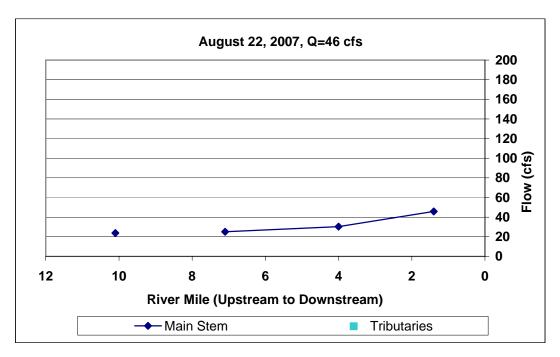
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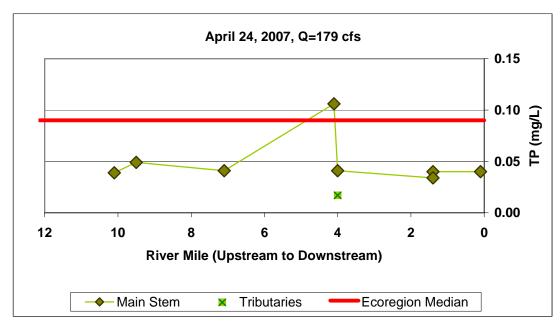


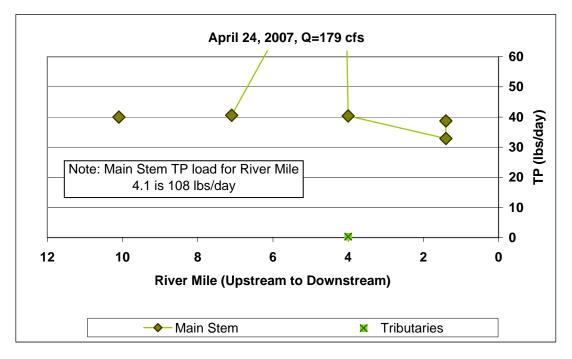
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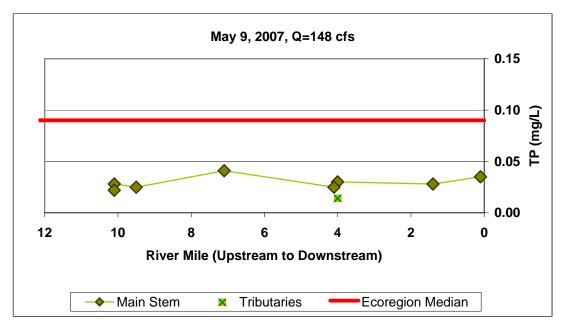


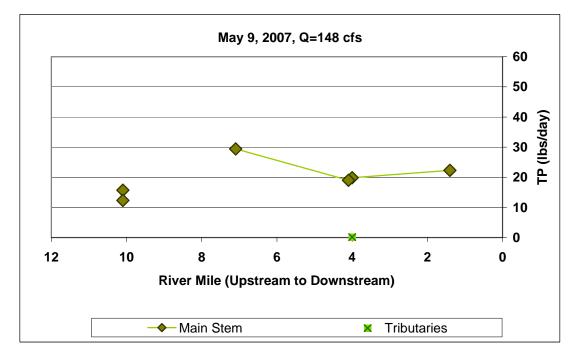
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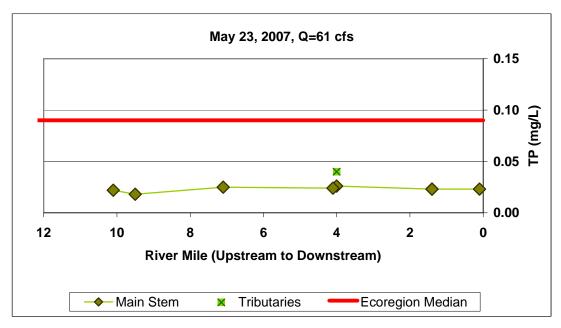


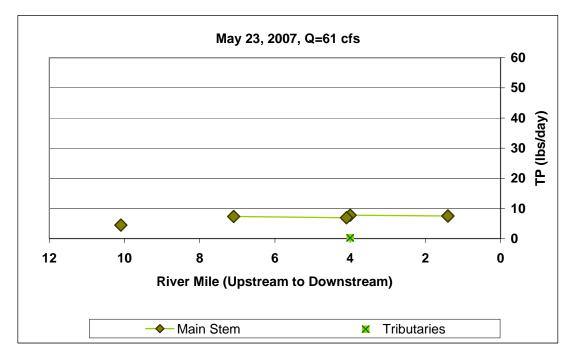
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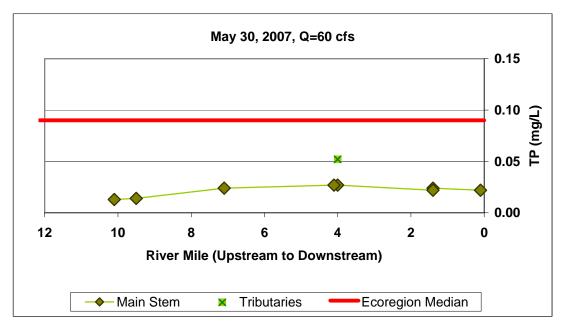


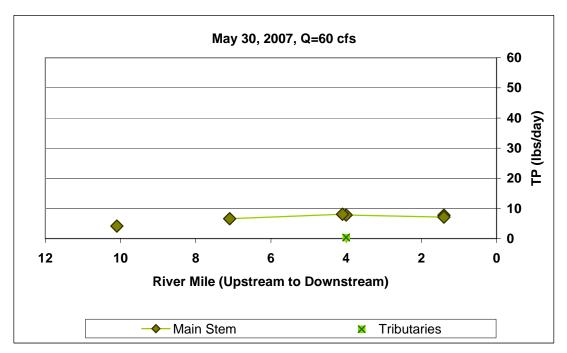
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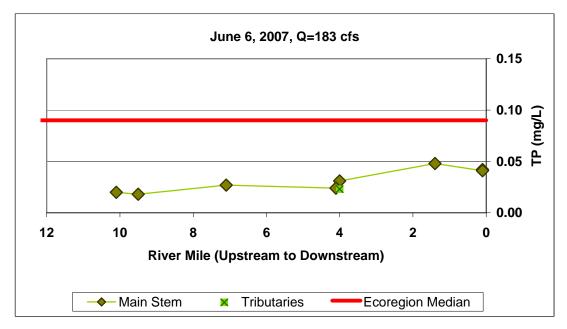


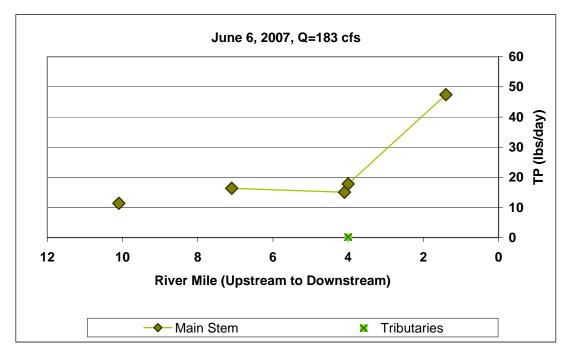
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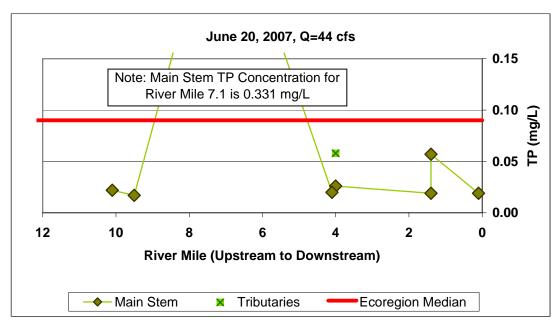


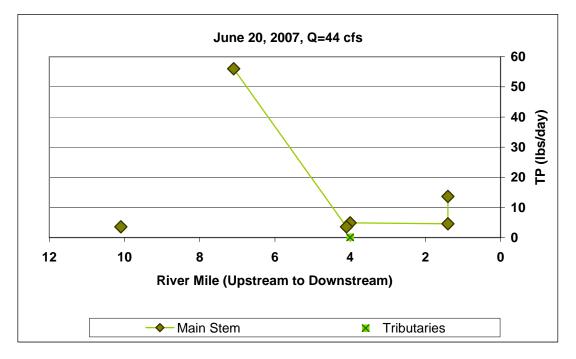
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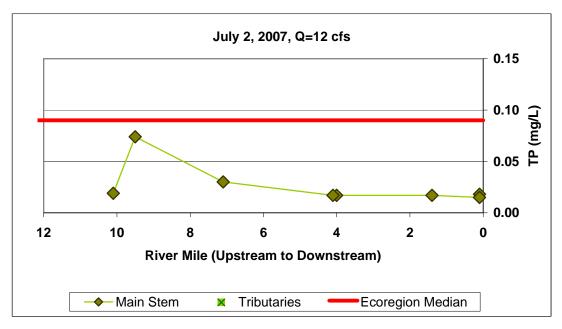


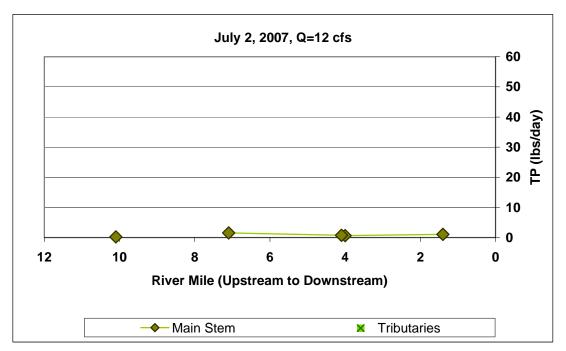
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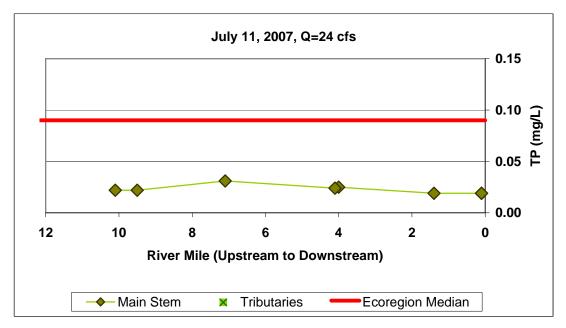


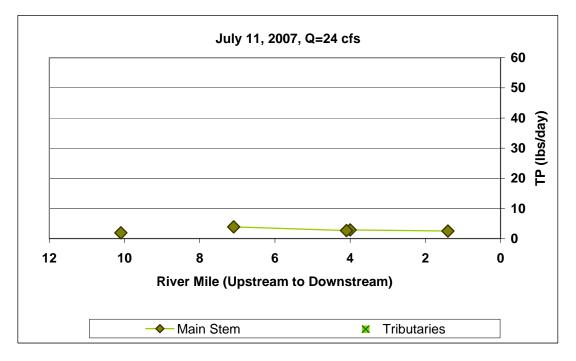
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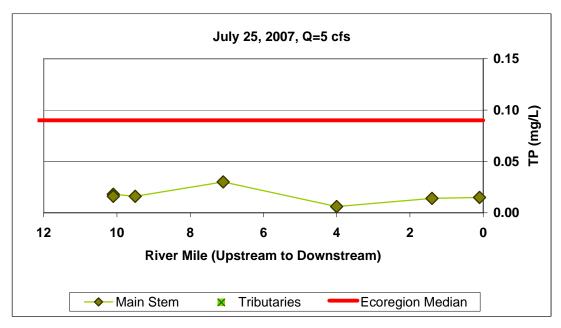


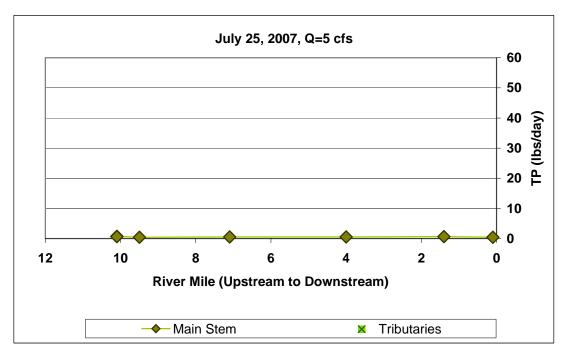
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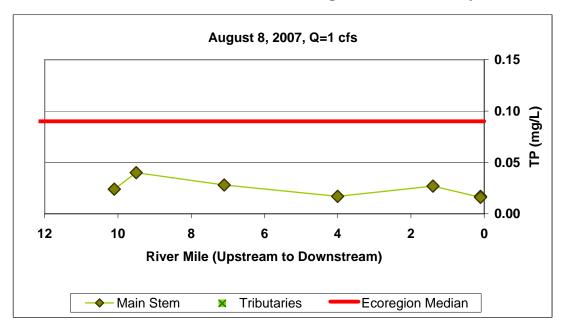


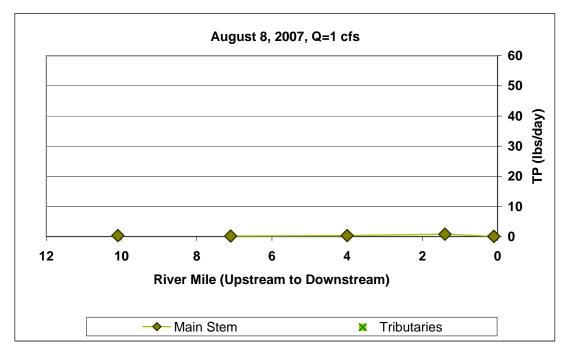
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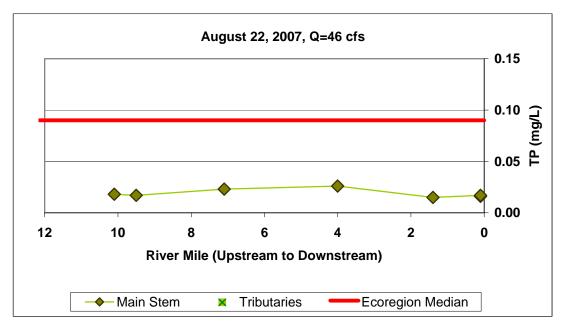


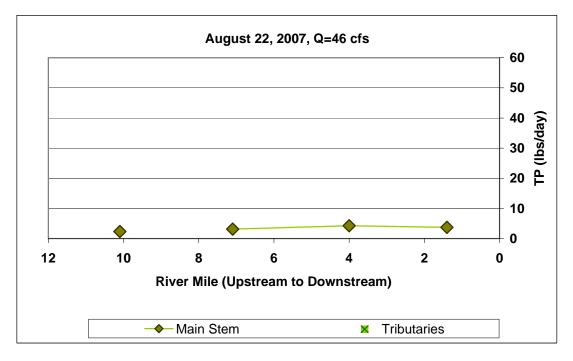
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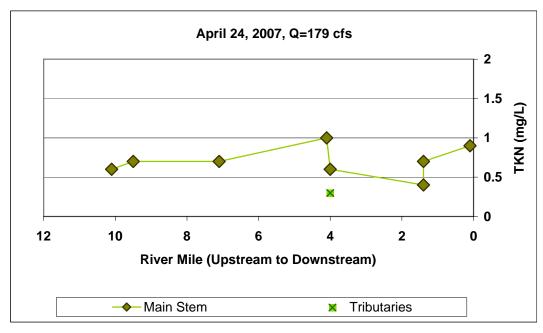


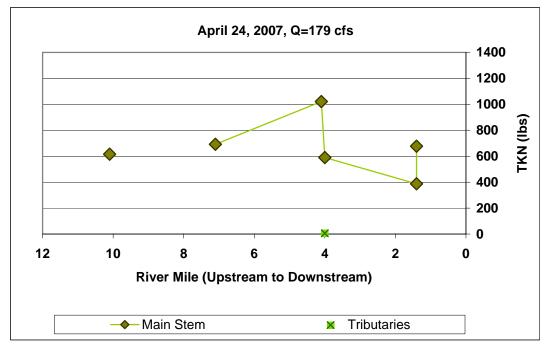
Clearwater River Watershed District



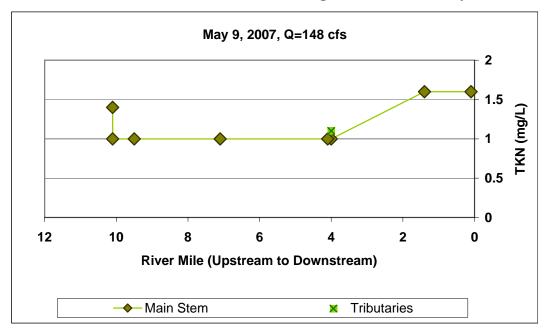


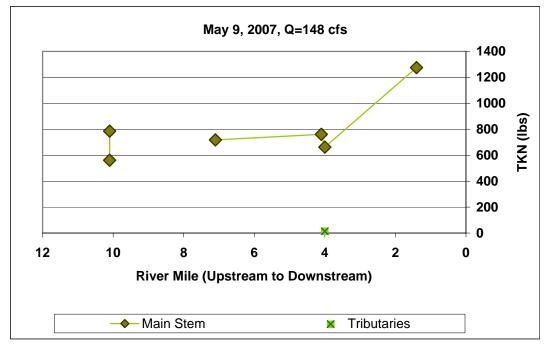
Clearwater River Watershed District



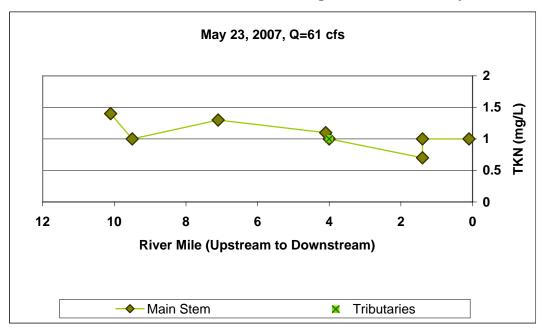


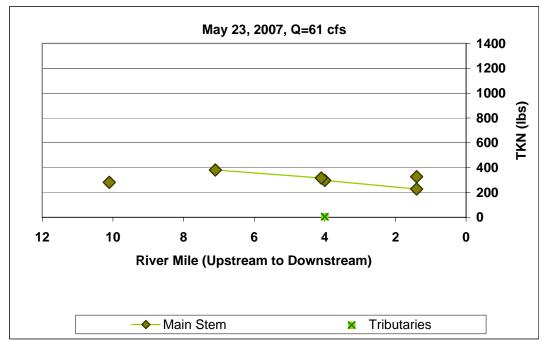
Clearwater River Watershed District



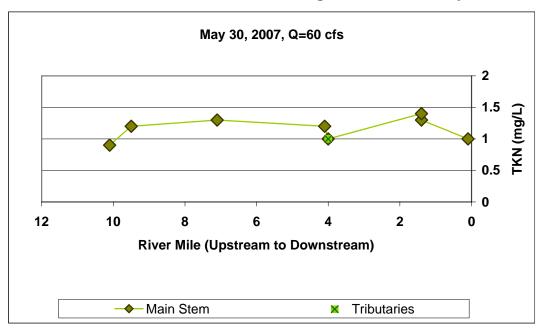


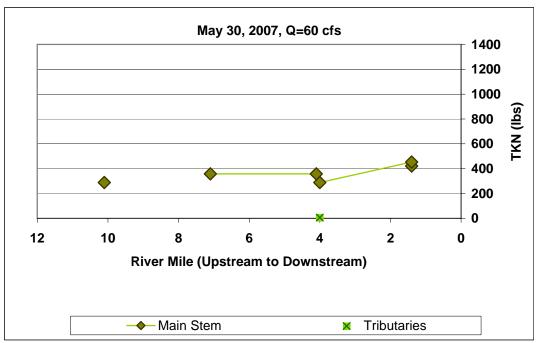
Clearwater River Watershed District



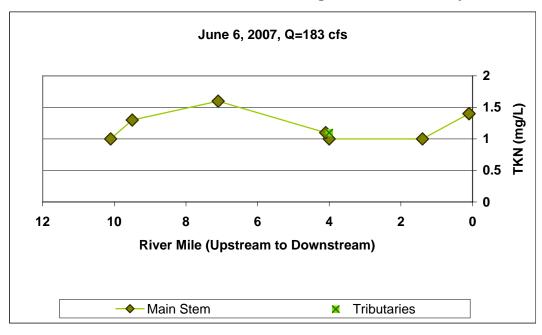


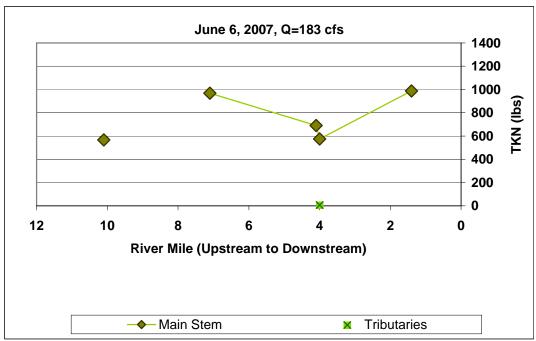
Clearwater River Watershed District



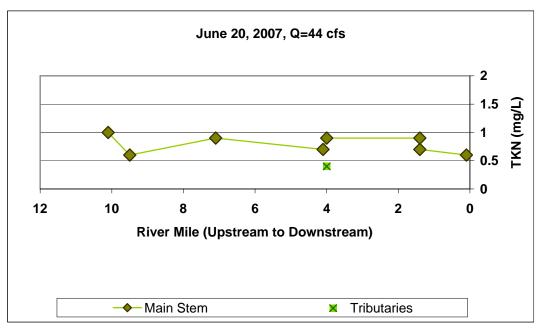


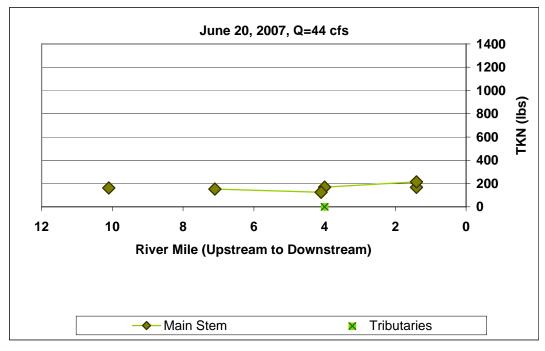
Clearwater River Watershed District



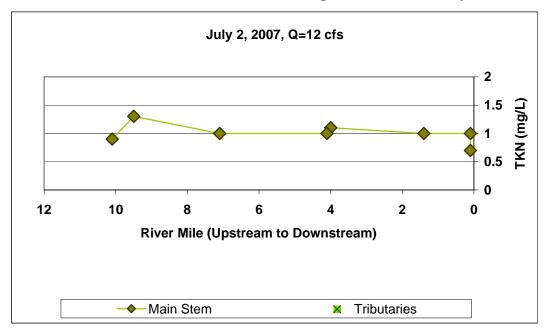


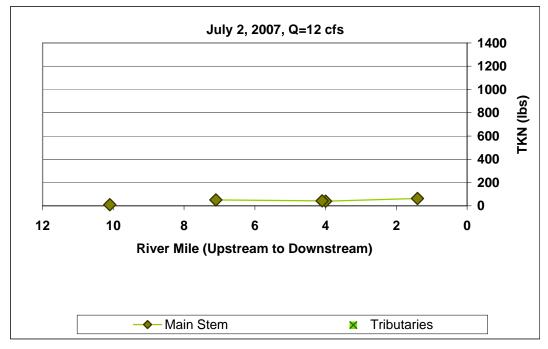
Clearwater River Watershed District



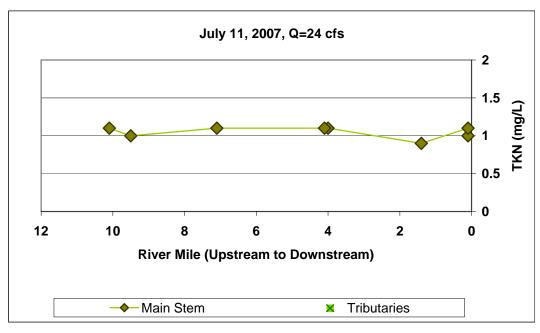


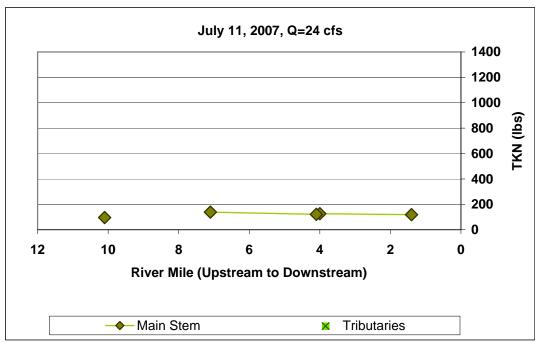
Clearwater River Watershed District



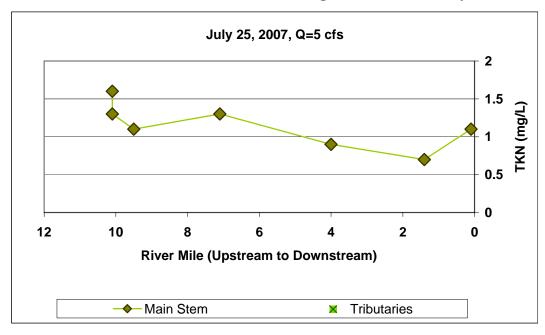


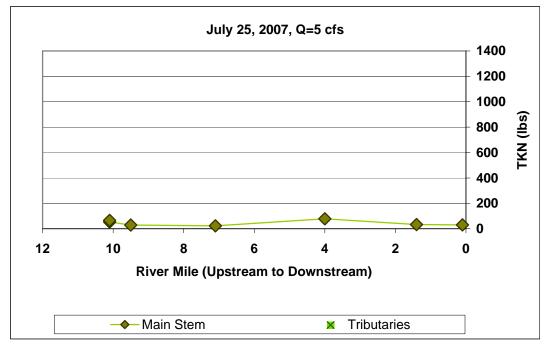
Clearwater River Watershed District



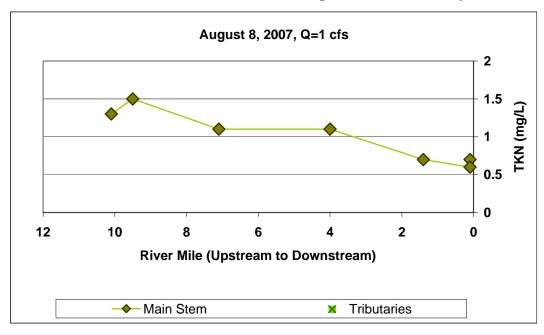


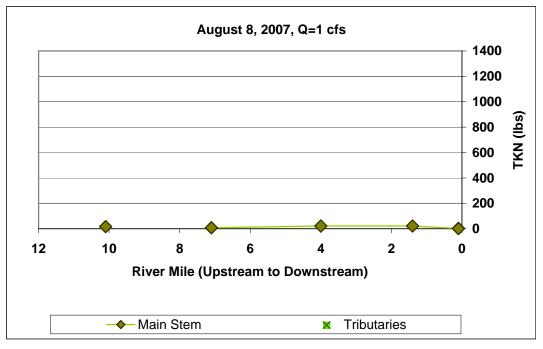
Clearwater River Watershed District



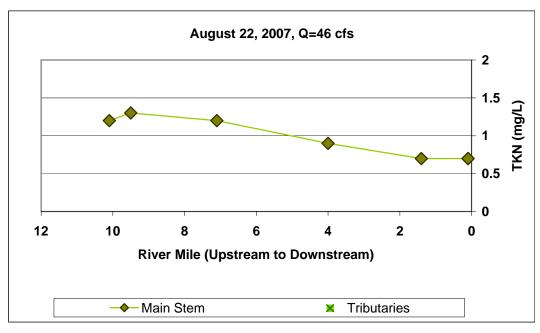


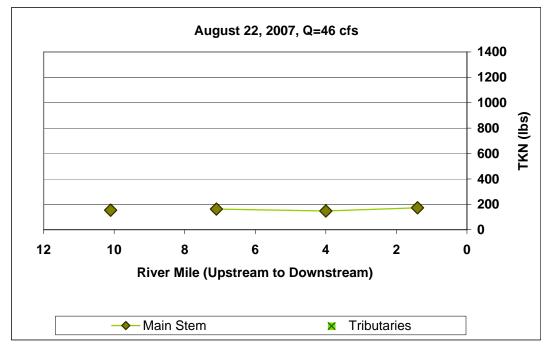
Clearwater River Watershed District



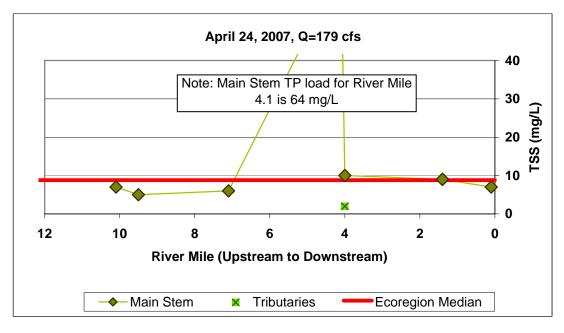


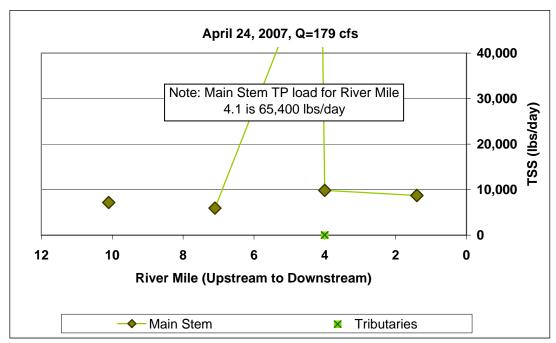
Clearwater River Watershed District



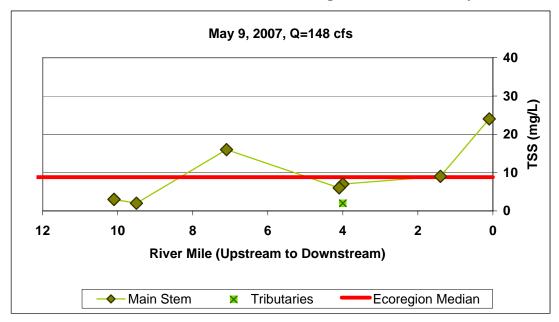


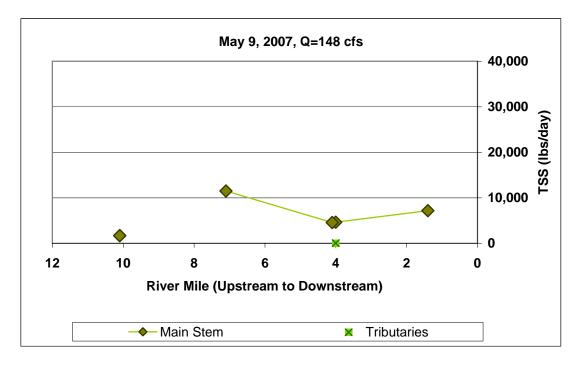
Clearwater River Watershed District



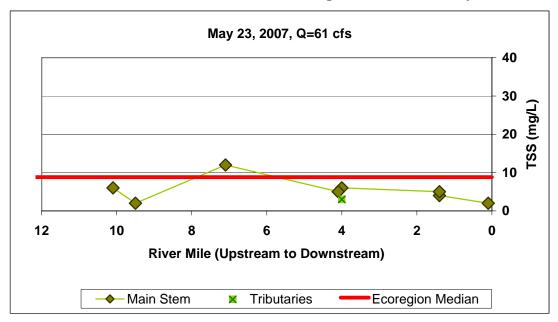


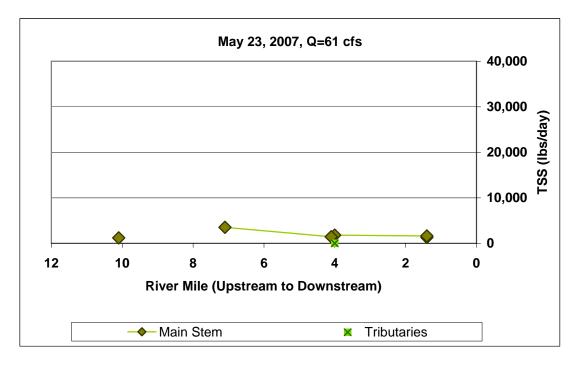
Clearwater River Watershed District



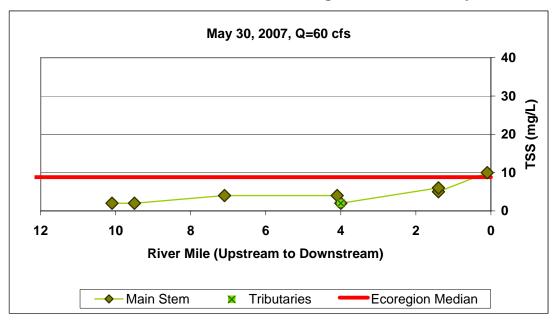


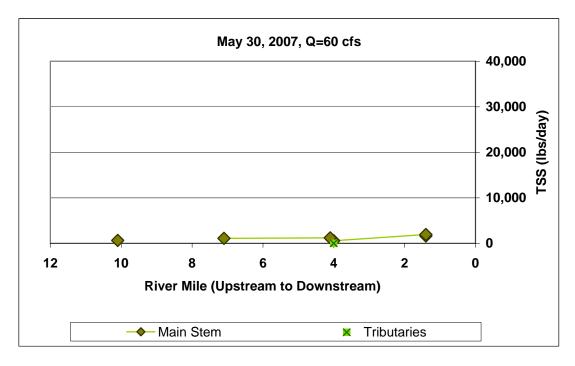
Clearwater River Watershed District



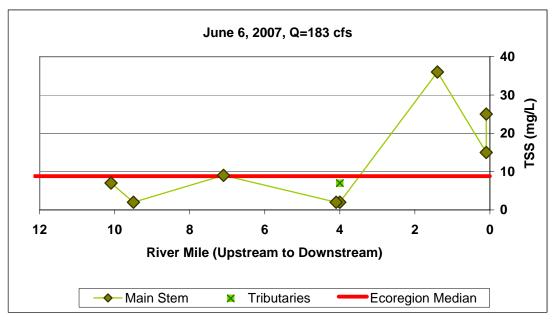


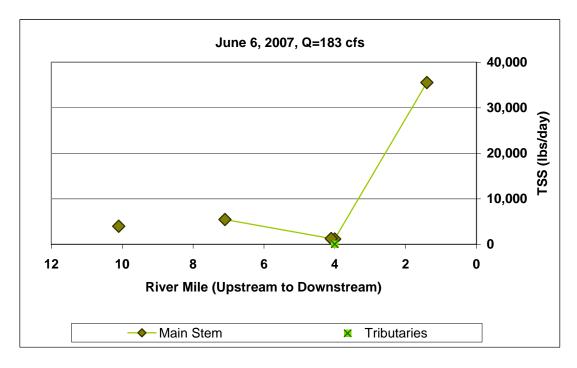
Clearwater River Watershed District



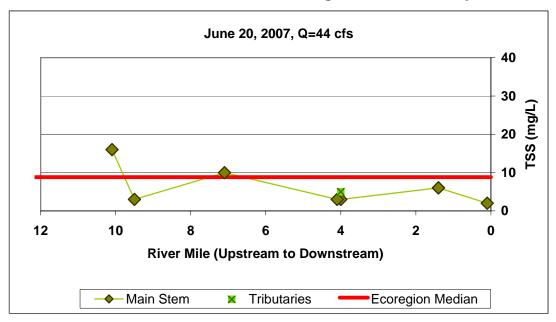


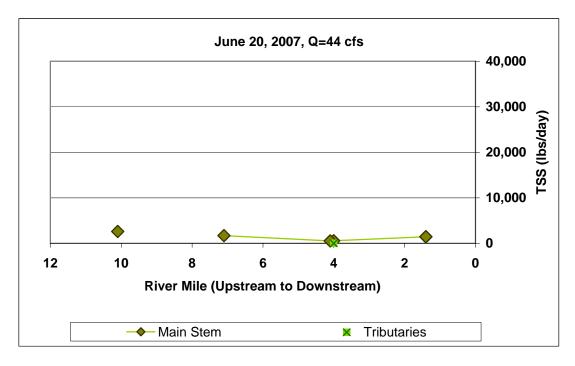
Clearwater River Watershed District



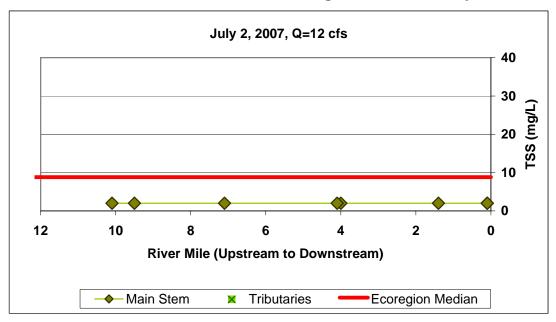


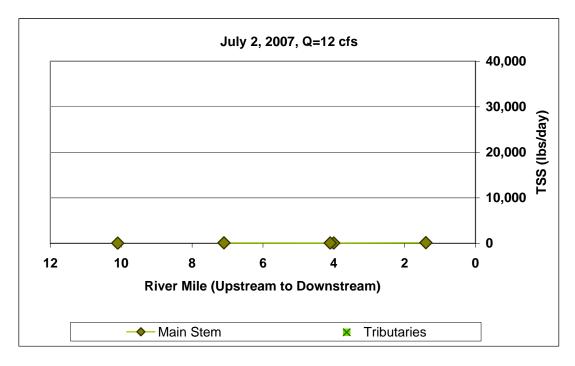
Clearwater River Watershed District



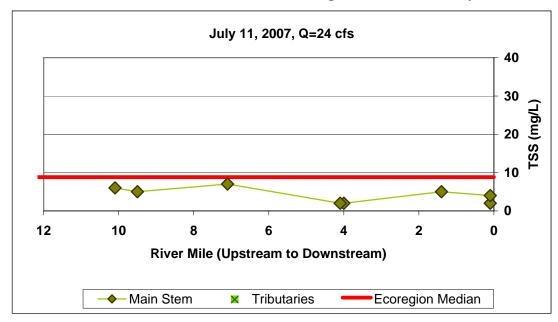


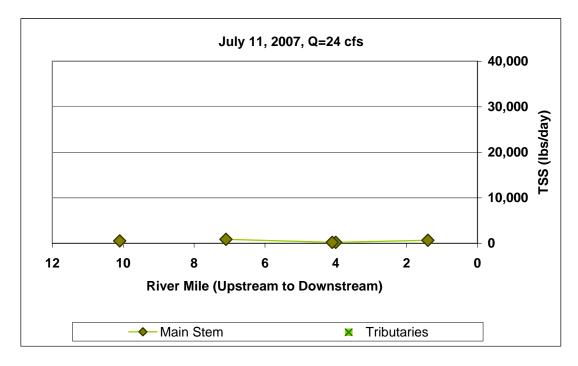
Clearwater River Watershed District



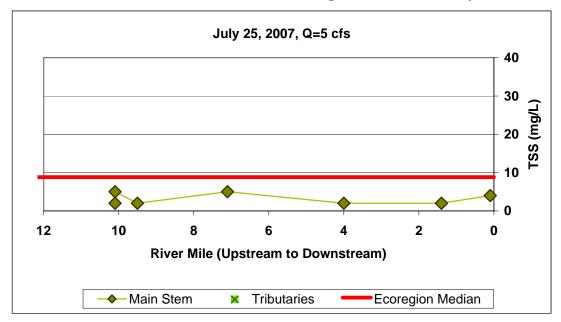


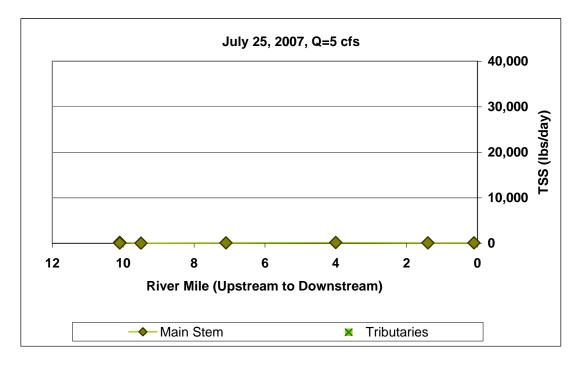
Clearwater River Watershed District



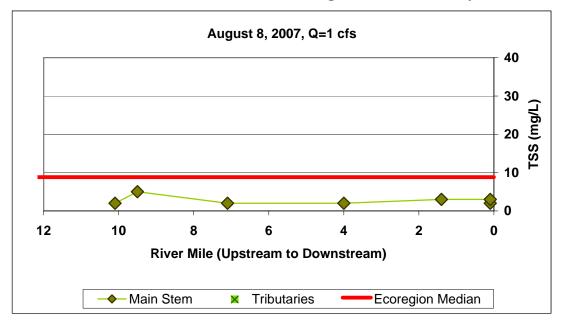


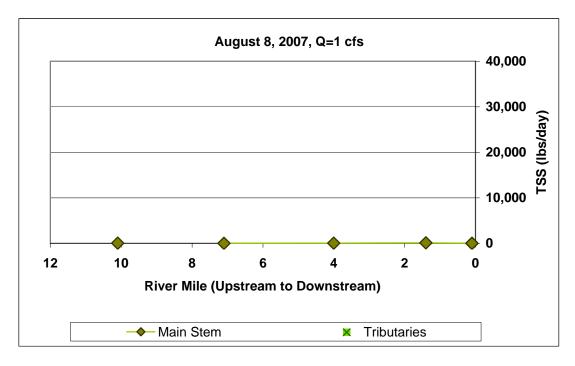
Clearwater River Watershed District



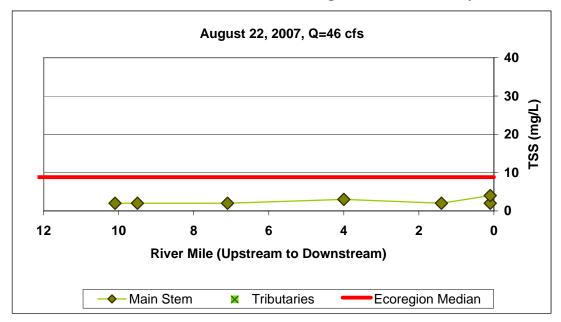


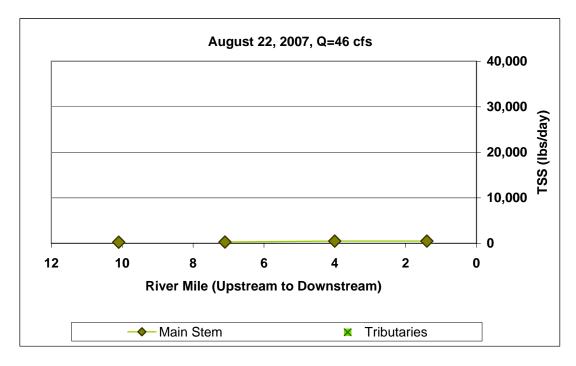
Clearwater River Watershed District





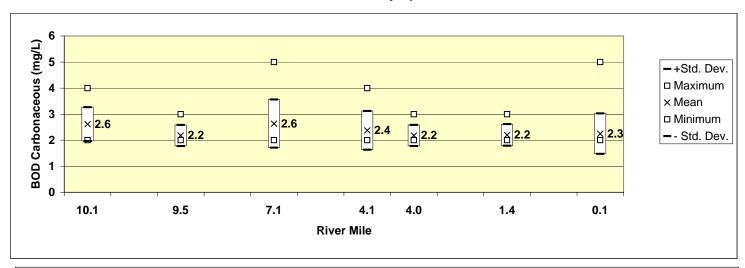
Clearwater River Watershed District

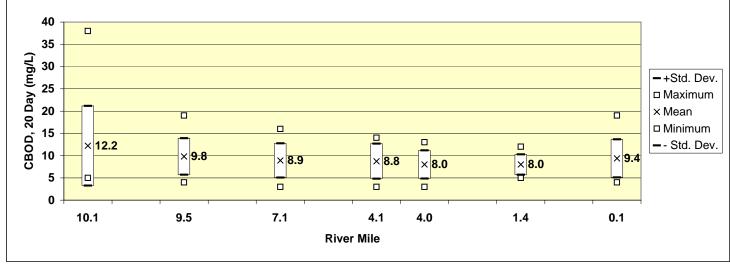


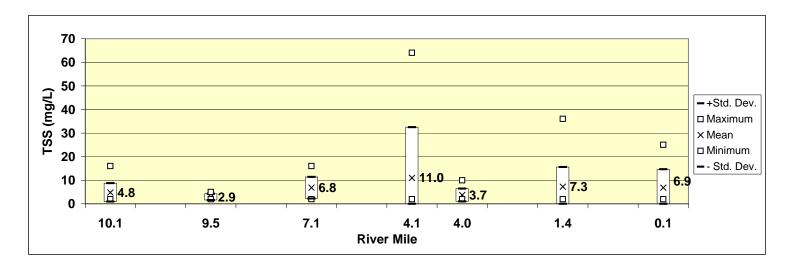


Mean Maximum and Minimum Water Quality Profiles

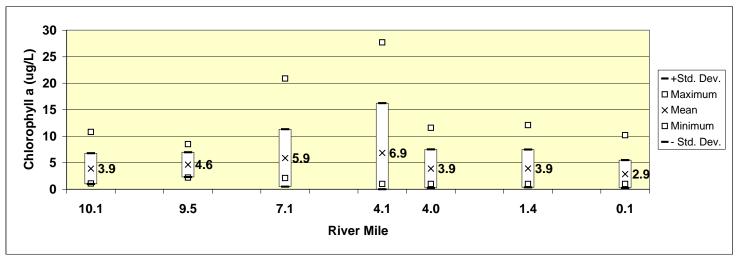
Clearwater River Watershed District

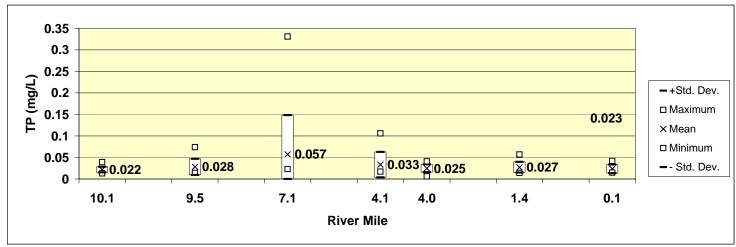


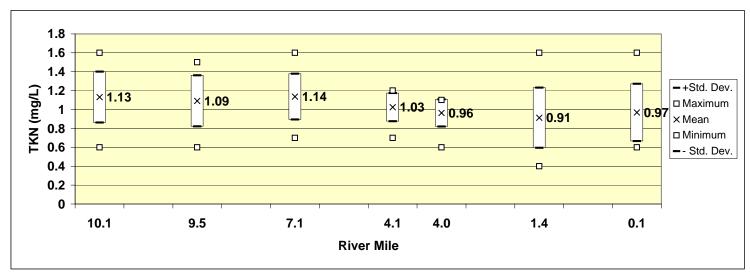




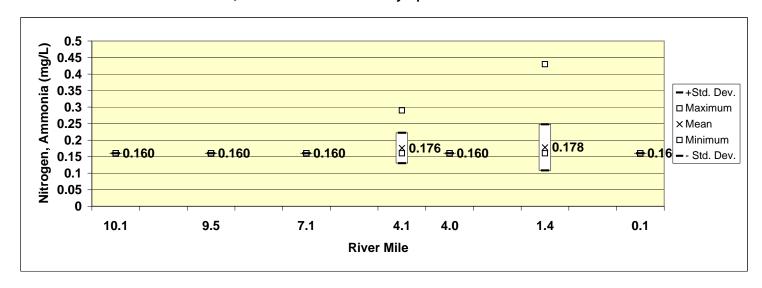
Clearwater River Watershed District

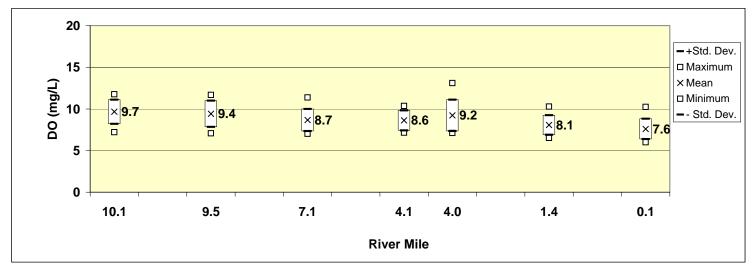


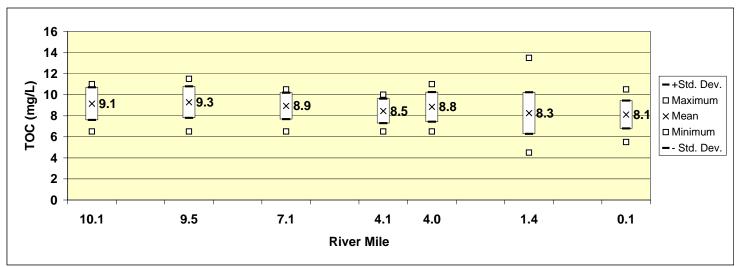




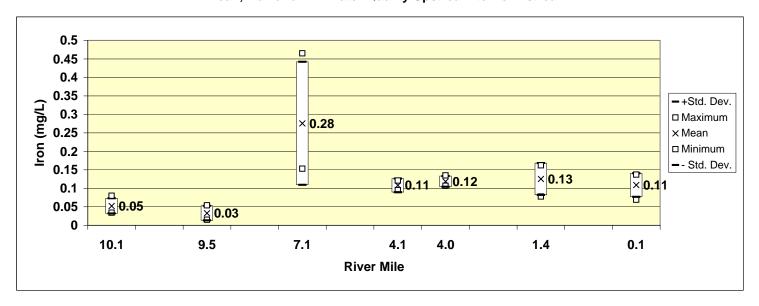
Clearwater River Watershed District

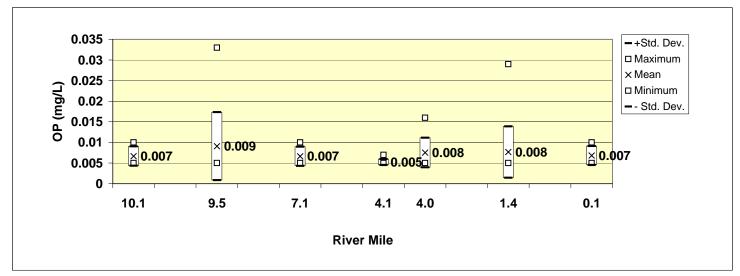


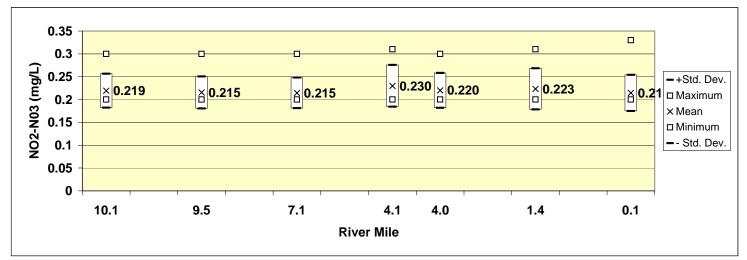




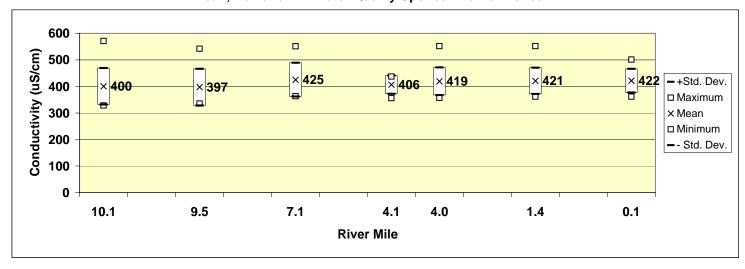
Clearwater River Watershed District







Clearwater River Watershed District



Appendix C

Field and Laboratory Data Sheets



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: B 1

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24670 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 12:00

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



1126 N. Front St. - New Ulm, MN 56073 - 800-782-3557 - Fax 507-359-2890 1411 S. 12th St. - Bismarck, ND 58502 - 800-279-6885 - Fax 701-258-9724 35 W. Lincoln Way - Nevada, IA 50201 - 800-362-0855 - Fax 515-382-3885 www.mvtl.com



WES BOLL

Sample Description: CR B

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Page: 1 of 1

Report Date: 21 Jun 07 Lab Number: 07-A23072 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 12:30

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Temp at Receipt: 1.0C

As Received Result

< 10

Method RL

Method Reference

Date Analyzed

Analyst

Fecal Coliform, MF

CFU/100 mL

10.

SM 9222D 18th Ed

30 May 07 17:10

CFU = Colony Forming Units

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND WW/DW # R-040 IA LAB #: 022 ND MICRO # 1013-M IA LAB #: 132



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CRB 01

Page: 1 of 1

Report Date: 14 Jun 07 Lab Number: 07-A21658 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 12:00

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Fecal Coliform, MF	< 10	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS

CFU = Colony Forming Units

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 51 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

MEMBER ACIL

MIVIL guarantees the accuracy of the analysis done on the sample submitted for testing, it is not possible for MIVIL to guarantee that a test result obtained on a particular sample will be the some on any other sample and conditions affecting the sample are the same, including sampling by MIVIL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or reports is reserved pending our written approval

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Page:

1 of 1

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Report Date: 8 Jun 07 Lab Number: 07-A18776 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 8:00

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

As Received

Result

Method RL

Method Reference Date Analyzed

Analyst

Fecal Coliform, MF

CFU/100 mL

10.

SM 9222D 18th Ed

9 May 07 18:05 ES

* < 10

CFU = Colony Forming Units

Project Number: 0002-107

Sample Description: CRB 0.1

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

RL = Reporting Limit

Elevated "Less Than Result" (<); θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration + = Due to extract volume

CERTIFICATION: MR LAB # 927-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 1A LAB #: 927

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 51 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

MEMBER ACIL

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Page:

1 of 1

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-107

Sample Description: CRB 0.1

Report Date: 22 May 07 Lab Number: 07-A18776 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 8:00

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

As Received Method Method Date Result RT. Reference Analyzed Analyst Fecal Coliform, MF * < 10 CFU/100 mL 10. SM 9222D 18th Ed 9 May 07 18:05 ES

CFU = Colony Forming Units

* Holding time Exceeded

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

RL = Reporting Limit

= Due to sample concentration + = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND HW/DW # R-040 IA LAB #: 132 IA LAB #: 022

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 51 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

MEMBER ACIL

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Page:

1 of 1

PRELIMINARY REPORT

WES BOLL
WENCK ASSOCIATES INC
1800 PIONEER CRK CTR
MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CRB 01 Report Date: 22 May 07 Lab Number: 07-A15441 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07

Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

As Received Result RL Reference Analyzed Analyst

Fecal Coliform, MF * < 10 CFU/100 mL 10. SM 9222D 18th Ed 24 Apr 07 19:00 ES

CFU = Colony Forming Units

* Holding time Exceeded

** No collection time supplied by the client.

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mytl.com



WES BOLL
WENCK ASSOCIATES INC
1800 PIONEER CRK CTR
MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: B 1 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27473 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 14:00

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Fecal Coliform, MF	< 10	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES

CFU = Colony Forming Units

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680

ND MICRO # 1013-M

ND WW/DW # R-040

IA LAB #: 132

IA LAB #: 022

Client:	CRWD		Site Location:	CR O	. \
Project No.:	0002-107	S	ite Description:	Dam o	at CoRA75
Date:	4/24/07		Weather:	$(a)^{\circ}$	Sunny
Sampler(s):	WB, NC		Samples Taken: _	Yes	No
Start Time:	13:10		Sample Time:	13:	30
End Time:				_	
Channel Conditions:	flowing over	dam DTW	- ⁷ Measurement: _	2.17	
COC Number:	· J		miss	Hop of Notes:	West wingwal Danger sign
	Field Parame	ters			
Sample I.D.	Temp. (°C) Cond. (mS/	/cm) D.O. (mg/l)	pH (S.U.)		
Uporream	13.56 428	10.24 8.	19		
Downson ream	13.79 476	10.45 8.0			
Stage Ht	: <u>-</u>	Rated Flow:		Gauged Flow:_	
		Stream Gauging D	ata		

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
	-col	ected sa	mple	upa	stream	n Of	tan	٦
					Data Set:.	na tali yananinin kaningan an garaman aki ki L. K. k. k	7/9/	67
) 					Entered B	y/Date: by/Date:		

					_		
Client:	(CRWD	_	Site Location:	<u>CRO</u>	<u>). \</u>	
Project No.:	0	002-107	_	Site Description:	Dan a	+ CoRd	75
Date:	21/	25/07	_	Weather:	(D),5	onno	77
Sampler(s):	NB.	νċ	_	Samples Taken:	•	No	
Start Time:	13:3	60	_	Sample Time:			, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
End Time:	·		_				,,,,,,,
Channel Conditions:	flow:	۱۵		DTW Measurement:	2.19		
COC Number:		<u> </u>	_				
					Notes:		
C-400		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			
	13.24	426	10.05	8.23			
	•		,		. <u></u>		
Stage Ht	:		Rated Flow:		Gauged Flow:		
					-		
74		S	tream Gaug	ing Data			
Distance from			Velocity	Velocity	Average	Disc	harae

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velc 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								10.
	-Proa	rammed -	$\Box SC$	O to	2 Co	105+ 5	ample	
	e Vo	rammed -	utes ?	tart)	ra (a) l	3:00		
					J .			
				Data	Set:	**************************************		
				Enter	ed By/Dai	: JT 7	19/07	
					C By/Dai	i -	erinalise a ci diamones a tirentino, ter e <u>a t</u> a	Pilitari Milatero Aroquia
1						Transmission of the state of th		· · · · · · · · · · · · · · · · · · ·

					•	G		
Client:	-	CRWD	· · · · ·	S	Site Location	: CR	0.1	
Project No.:	ž> C	0002-107		Site	Description	1: Dam	at CR	75
Date:	_5/0	ĵ ·			Weathe		Sunn	
Sampler(s):	WB.	NC	···	Sai	nples Taker		No No	•
Start Time:	8:2	15			ample Time		30	
End Time:	8:4.	5					20	
Channel Conditions:	Flow	ina		DTW M	leasuremen	2.43	2	
COC Number:		Ü		21714		·		
						Notes	:-Wate	کر ج
		Field Parameters					clea	
Sample I.D.	Temp. (°C)	Cond. (mS/cm	11	I) pH	I (S.U.)		- 5100	· ~ 'c
CRO.I	14.81	434	8.15	7.0	·		Flans	over be
						<u>-</u> 1		OVER DEP
Stage I	Ht:		Rated Flov	1 7*		Coursed Flor		
		 •	raica i iov	v		Gauged Flov	V:	
			Stream Gau	iging Data	l			
Distance from			Velocity		ocity	Average		1 2. 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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	† I							ll ll
					~			
					17			
					4			

Da a Set: ___

En ered By/Date:

Q/VQC By/Date:_

	Field For	m: 2007 Stream Samplin	for land a cess
Client:	CRWD	Site Location	
Project No.:	0002-107	Site Description	CF at NW 75
Date:	5.23.07		Cloudy 600°
Sampler(s):	NICLWB	Samples Taken:	· · · · · · · · · · · · · · · · · · ·
Start Time:	09:00	Sample Time:	030 915
End Time:	0930	_	
Channel Conditions:	flowing 1	DTW Measurement:	3.03
COC Number:	.7	_	
			Notes: -Water levels
	Field Parameters		Notes: -Water levels receding -water flowing or
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	-Water El
7,000	118.12 442	6.29 8.05	dam
		,	
Stage H	[t:	Rated Flow:	Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							-	
		1		D.	ita Soti			
						Jane: Jt.		
				9	VQC By/	And or storage and the contract and the storage and the storag	#4 conner concentration of the state of the	nd Produkt so, somoonyn-noocyt-storenspronecytop
								-

Client:	CRWD	 -	Site Location:	CRO.	
Project No.:	0002-107	_	Site Description:	clearwater e	iver C WHighway 95
Date:	5-30-07	-	Weather:	Sonny to	ear 700
Sampler(s):	Nic Jus	_	Samples Taken:	Ye	No
Start Time:	8:45	-	Sample Time:	845	
End Time:	9.02	_			
Channel Conditions:	flowing	_	DTW Measurement:	3.0 <u>0</u>	
COC Number:		_			
				Notes:	Oily Sheen in
	Field Parameters				Oily Sheen in
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	_	
	19.28 443	7.90	7.94		
				-	
Stage H	t:	Rated Flow:		Gauged Flow:	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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						, , , , ,		
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					vata Set:_	-14	***************************************	
					ntered By	/Date: 17	19/07	Till & SPANIC Frie, Nich And Internative Statement personal groups
1				(A/QC By	/Date:		Мок Пата М. учене их менезания и учений у
					-			

* Digitate

Field Form: 2007 Stream Sampling

Client:		CRWD		Site Location:	CL 0.1
Project No.:	0	002-107	_	Site Description:	Character Liver C.Co. Hwy 75.
Date:	0-0	0-07	_	Weather:	for Sathred closes sporeum
Sampler(s):	Nic/	(255)	_	Samples Taken:	
Start Time:	6:4	2_	_	Sample Time:	K: 50
End Time:	9:00	>	_		J
Channel Conditions:	Flowi	\sim	_	DTW Measurement:	2.71
COC Number:			-	C-90+	
					Notes:
		Field Parameters			
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	18.0	•	7.47		
-					
Stage Ht	*		Rated Flow:		Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ocity~ 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							-	
				Data	Serman		***********************	~ «communication» / 1/2004/2002 / 1/2
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			i			E To the transmission and transmiss defined		
				14, - 24		 За в принципанти по принципанти водина 	TOTO COMMONDA MANAGERA TOTO CARE OF THE MANAGEMENT	3000.000-0-0-0-000000000000000000000000

Client: CRWD Site Location: CR D										•	
Date:	Client:		CRWD	_	S	ite Locatior	i: CR (Ð. 			
Date:	Project No.:	0	002-107		Site	Description	:Clo. c	0. HW 7'	50 (OS) .) to	- Stre	
Sampler (s): Ni	Date:	(0-2	10-04						j		
Start Time: End Time: Channel Conditions: COC Number: Field Parameters Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Stage Ht: Rated Flow: Stream Gauging Data Distance from Initial Point (ft) Depth (ft) Depth (ft) Velocity Velocity Velocity Velocity Velocity Depth Dep	Sampler(s):	Nich	Jess		San						
End Time: Channel Conditions: COC Number: DTW Measurement: 3.23 COC Number: Notes: much lower, Nylly Field Parameters Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Stage Ht: Rated Flow: Gauged Flow: Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) (60% 20% 80% Velocity Velocity Velocity Velocity Velocity Velocity Velocity Velocity Depth	Start Time:	6.9	50			-			<u>, , , , , , , , , , , , , , , , , , , </u>	- ;	
Notes: much lower, 3/4/4 Field Parameters Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Stage Ht: Rated Flow: Gauged Flow: Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Depth	End Time:	a'.c	5	_						-	
Notes: much lower, Notes: much lower, Notes: much lower, Notes Notes: much lower, Notes	Channel Conditions:	Flour	ind	_	DTW M	easurement	: 3,23		·		
Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Sincl Scir Uiscs (quadratic product of Sheam Stage Ht: Rated Flow: Gauged Flow: Conduct of Sheam Conduc	COC Number:		J		(2-915+				-	
Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Sincl Scir Uiscs (quadratic product of Sheam Stage Ht: Rated Flow: Gauged Flow: Conduct of Sheam Conduc							Notes	: much lo	was 31, 64		
Stage Ht: Rated Flow: Gauged Flow: Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Cond. (ms/cm) Depth			Field Parameters						•		
Stage Ht: Rated Flow: Gauged Flow: Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Uelocity Velocity Velocity Velocity Velocity Velocity Area (ft²) (Q, ft³/sec)	Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pН	(S.U.)		Sand be	r 1118686	•.	
Stage Ht: Rated Flow: Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Conty Depth Dept		20.07	367	5.99	8.2	,O					
Distance from Initial Point (ft) Width (ft) Depth (ft) Velocity Velocity Depth							13			•	
Distance from Initial Point (ft) Width (ft) Depth (ft) Velocity Velocity Velocity Average Velocity Velocity Velocity Velocity Area (ft²) (Q, ft³/sec)	Stage H	t:		Rated Flow	;		Gauged Flov	V:			
Distance from Initial Point (ft) Width (ft) Depth (ft) Velocity Velocity Average Velocity Velocity Depth Depth Depth Depth Depth Velocity Area (ft²) (Q, ft³/sec)							-				
Initial Point (ft) Width (ft) Depth (ft) Cook Solution (60% 20% 80% Velocity Area (ft²) Discharge Velocity Area (ft²) (Q, ft³/sec)	Stream Gauging Data										
	#	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	- 11		

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
								7.1
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					SCC sales beneferrenties		**************************************	**************************************
				Enter	ed By/Dar	ST.	19/01	None and the language of
				QA/(C By/Da	* simultanizak keli e tilena di simultanisi masamin e		

* Do ready at wayside

Field Form: 2007 Stream Sampling

Dlient:	C	RWD	-	Site Location:	CR 0.1
Project No.:	00	02-107	-	Site Description:	
Date:	7.2.07		-	Weather:	overcast, 68°
Sampler(s):	NIC		-	Samples Taken:	No No
Start Time:	845		.	Sample Time:	0900
End Time:	905		_		
Channel Conditions:	flowing		•	DTW Measurement:	3.66
COC Number:	14.		<u>-</u>		
					Notes: -Sandbars visible
	I	Field Parameters		,	Notes: -Sandbars visible 4PStream of dem -water is low -water not flowing over east section of dam
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	-water is low
Opertream of dam	B0021.34	422	6.38	8.12	-water not flowing
Downstream of dem	21.05		7.68	8.17	OVER EAST SECTION OF
Stage H		416	Rated Flow:		Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	eity 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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				-Dair C	or & R MANNE PER PER PER PER PER PER PER PER PER PE			
		\$ <u>*</u>				MCC (MAG) A A A STATEMENT PROCESSION OF PROCEEDINGS	a delaterated deletions, NV y/ 1786/2010/01/1/12/2004/5/2-499	Standard Cons
				Entere(By/Date	\$ WE	бинглед финанский фарамерия, ин местра	nuli serreccentos espej
				QA/QC	By/Date	M-Allen & Care & D-Anna Deposition & Secure April 1997	2000-0-00-00-00-00-00-0-0-0-0-0-0-0-0-0	PP-P-TP-NICOVANIA;

* puplicat

Client:	CRWD	Site Location:	CR 0.1
Project No.:	0002-107	Site Description:	
Date:	7.11.07	Weather:	sun 700
Sampler(s):	NIC	Samples Taken:	√e No
Start Time:	830	Sample Time:	845
End Time:	910		
Channel Conditions:	flowing	DTW Measurement:	3.49
COC Number:		_	
			Notes: Water is
	Field Parameters		very clear
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	- Vegetation abundans
CRO.1	20.13 365	6,93 8.19	very clear - Vegetation abundans upstream of Sam
)ownstream of Dar Lest Stop	119.97 365	7.7 8.31	
Le 57 510P Stage H	19.86 370	7.68 8.34 Rated Flow:	Gauged Flow:

			ging Data				
		Velocity			Average		Discharge
Width (ft)	Depth (ft)	(60%	20% Depth	80% Depth	Velocity	Area (ft ²)	(Q, ft ³ /sec)
			<u></u>		(***********		
						-	
				E			
		Data S	01/ ×+2/22/2000	Movement at 1-2 surveys was			
		A second	ri Bv/Dat	: 11/B	7/12	107	

				· · · d servenera jeń rejdero z rossowowa	The state of the s	> 1/4/00/04/20/20/20/20/20/20/20/20/20/20/20/20/20/	
		:03	` .		•		
	: %*_ \$_		1			4	
			24,44			*_x **	
		Width (ft) Depth (ft)	Width (ft) Depth (ft) Velocity (60% Depth) Depth) Deta 5	Width (ft) Depth (ft) Velocity (60% Depth) Depth Depth Data Serr Lintere i By/Data	Width (ft) Depth (ft) Depth (ft) Depth Dep	Width (ft) Depth (ft) Velocity (60% Depth) Depth Depth Velocity (ft/sec) Deta Ser. Later i By/Date: W 7/12	Width (ft) Depth

lient:	CRWD	Site L	ocation: _	al o.
Project No.:	0002-107	Site Desc	cription:	Clearwatere co. Hwy 75
Date:	7.25.07		Weather: _	80° Sonny
Sampler(s):	Nic/505	Samples	s Taken: _	Yes No
Start Time:	4:45	Sampl	le Time:_	8:55
End Time:	<u>9:06</u>	_		
Channel Conditions:	Flowing	DTW Measu	urement: _	440
COC Number:		_		
				Notes: Out altergent
	Field Parameters			sumply in.
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.1	U.)	
	25.07.412	4.17 8.2		
				- 104
Stage H	t:	Rated Flow:	(Gauged Flow: 5.1
Stage H	t:	Rated Flow:	(Gauged Flow: 5.1

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
		By/Date: W	7/2	107				
	QW0E	By/Date:	Talana d Contraction of Contraction	Promising over a concension	10			
4								



lient:	. (CRWD	_	Site Location:	CR O.
Project No.:	0(002-107	_	Site Description:	1. /
Date:	8.8.07	2.	_	Weather:	sm 70°
Sampler(s):	NIC		_	Samples Taken:	
Start Time:	930		_	Sample Time:	0945
End Time:	1000	····	_		
Channel Conditions:	flowy	<u>~</u>	_	DTW Measurement:	4.39
COC Number:			_		
		i . i . ii			Notes: along + Dy,
]	Field Parameters			Notes: along tong
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	channel
	21.75	407	7.30	9.55	
Stage H	t:		Rated Flow:		Gauged Flow: 0.513

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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		— Data St						
			By/Date:,	WB	10/08/	(1		
		QA/QC	By/Date:_	Warning NOT 20. While Supplemental Solution		W. Strandson and Marketine		
							-	
]								
1		,						
			3					

Client:		CRWD	_	Site Location:	CROI
Project No.:	00	002-107	_	Site Description:	
Date:	A 8.22	.07	-	Weather:	overcast
Sampler(s):	NIC		_	Samples Taken:	No No
Start Time:	0845		_	Sample Time:	0900
End Time:	0920	шин	-		
Channel Conditions:	flowing	•	-	DTW Measurement:	3.81
COC Number:	<u> </u>		<u>-</u>		
					Notes: Floury more due
		Field Parameters			Notes: Floury more due to recent rains
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	21.21	50l	7.52	8.42	
Stage H	t:		Rated Flow:		Gauged Flow:

Distance from			Velocity	Velo	ocity	A		TV1
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)			11.37					
							-	
		Ŋ	ata Set:		7004000C500000093549V2dballer4003480004535			
		Ŀ	itered By/	Date: W	B 10/0	3/07		
		Q	4/QC B _y /1	Jate:	**************************************	***************************************		
							-	
<u> </u>								

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 51 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

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AN EQUAL OPPORTUNITY EMPLOYER

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 0.1 Page: 1 of 1

Report Date: 22 May 07 Lab Number: 07-A15440 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 13:30 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					2 May 07	DAP
BOD, Carbonaceous	2	mg/L	2	SM 5210B	25 Apr 07 14:41	JED
CBOD, 40 Day	Not Entered		2	SM 5210B		
CBOD, 20 Day	8	mg/L	2	SM 5210B	25 Apr 07 17:39	AKF
Solids, Total Suspended	7	mg/L	2	USGS I-3765-85	25 Apr 07 11:50	JED
Carbon, Total Organic	8.8	mg/L	0.5	415.1	27 Apr 07 10:30	Bis
Chlorophyll a	5.9	mg/cubic m	1.0	10200H	2 May 07 7:05	JD
Fecal Coliform, MF	< 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Apr 07 19:00	ES
Chloride	18.3	mg/L	3.0	325.2	30 Apr 07 15:48	DAP
Nitrate+Nitrite	0.30	mg/L as N	0,20	353.2	25 Apr 07 15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	2 May 07 10:45	TAM
Phosphorus, Total	0.040	mg/L	0.005	EPA 365.1	2 May 07 9:36	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Apr 07 7:20	DAP
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	2 May 07 6:30	MAT

CFU = Colony Forming Units

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/07

MVTL

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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 0.1 Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18767 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 8:30

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Receiv Result	ed	Method RL	Method Reference	Da An	te alyz	ed		Analyst
Phosphorus Water Digest					14	May	07		RMV
BOD, Carbonaceous	2	mg/L	2	SM 5210B	10	May	07	14:16	JED
CBOD, 20 Day	8	mg/L	2	SM 5210B	10	May	07	13:11	AKF
Solids, Total Suspended	24	mg/L	2	USGS I-3765-85	10	May	07	10:50	CJL
Carbon, Total Organic	0.0	mg/L	0.5	415.1	5	Jun	07	16:30	Bis
Chlorophyll a	2.8	mg/cubic m	1.0	10200H	11	May	07	8:31	JD
Fecal Coliform, MF	* 40	CFU/100 mL	10.	SM 9222D 18th Ed	9	May	07	18:05	ES
Chloride	22.5	mg/L	3.0	325.2	1.6	May	07	15:57	DΑP
Nitrate+Nitrite	0.33	mg/L as N	0.20	353.2	14	May	07	7:22	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15	May	07	7:20	TAM
Phosphorus, Total	0.035	mg/L	0.005	EPA 365.1	17	May	07	7:59	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10	May	07	10:06	PAG
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	16	May	07	6:55	MAT

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

Data Set: Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/07



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 0.1

1 of 1 Page:

Report Date: 14 Jun 07 Lab Number: 07-A21656 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 9:15

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	9	mg/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	7.0	mg/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 120	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	19.9	mg/L	3.0	325.2	25 May 07 13:13	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.023	mq/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	30 May 07 8:45	EJP

TTU = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/01

Chlor-A - Not tested for

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Page: 1 of 1

Report Date: 21 Jun 07 Lab Number: 07-A23070 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 8:45

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		······································	···		4 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	5	mg/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	10	mg/L	2	USGS I-3765-85	31 May 07 10:10	JED
Carbon, Total Organic	7.0	mg/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	10.2	mg/cubic m	1.0	10200Н	1 Jun 07 13:07	JD
Fecal Coliform, MF	* 150	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	21.1	mg/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	4 Jun 07 9:14	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	4 Jun 07 9:25	TAM
Phosphorus, Total	0.022	mq/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

'U = Colony Forming Units

Sample Description: CR 0.1

* Holding time Exceeded

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<); @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND WW/DW # R-040 ND MICRO # 1013-M IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 0.1

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24666 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 8:50

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	<i>r</i> ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Jun 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	7 Jun 07 11:43] JED
CBOD, 20 Day	7	mg/L	2	SM 5210B	7 Jun 07 11:2:	} JED
Solids, Total Suspended	25	mg/L	2	USGS I-3765-85	7 Jun 07 9:1	CJL
Carbon, Total Organic	9.0	mg/L	0.5	415.1	13 Jun 07 8:0) Bis
Chlorophyll a	3.7	mg/cubic m	1.0	10200H	12 Jun 07 9:4	5 AJK
Fecal Coliform, MF	* 73	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:5	ES
Chloride	21.9	mg/L	3.0	325.2	11 Jun 07 10:3	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	11 Jun 07 9:1	TAM
Phosphorus, Total	0.042	mg/L	0.005	EPA 365.1	12 Jun 07 11:50) RMV
Phosphorus, Ortho	0.007	mg/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:0) EJP

U = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): $\theta = Due$ to sample matrix $\theta = Due$ to sample quantity

= Due to sample concentration

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: FD 1

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24669 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 6 Jun 07 Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	7 Jun 07 11:43	JED
CBOD, 20 Day	7	mg/L	2	SM 5210B	7 Jun 07 11:29	JED
Solids, Total Suspended	15	mg/L	2	USGS I-3765-85	7 Jun 07 9:15	CJL
Carbon, Total Organic	9.0	mg/L	0.5	415.1	13 Jun 07 8:00	Bis
Chlorophyll a	5.7	mg/cubic m	1.0	10200Н	12 Jun 07 9:45	AJK
Fecal Coliform, MF	* 140	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES
Chloride	21.6	mg/L	3.0	325.2	11 Jun 07 10:37	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0,2	353,2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	11 Jun 07 9:15	TAM
Phosphorus, Total	0.041	mg/L	0.005	EPA 365.1	12 Jun 07 11:51	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:00	EJP

 \Im = Colony Forming Units

* Holding time Exceeded

** No collection time supplied by the client.

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" {<}: 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND WW/DW # R-040

IA LAB #: 132

IA LAB #: 022

ND MICRO # 1013-M



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WES BOLL
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1800 PIONEER CRK CTR
MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 0.1 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27470 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 8:55

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		•			22 Jun 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	21 Jun 07 14:34	JED
CBOD, 20 Day	7	mg/L	2	SM 5210B	21 Jun 07 14:05	JED
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	21 Jun 07 11:45	CJL
Carbon, Total Organic	8.5	mg/L	0.5	415.1	27 Jun 07 8:00	Bis
Chlorophyll a	1.4	mg/cubic m	1.0	10200Н	26 Jun 07 15:02	JD
Fecal Coliform, MF	* 100	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES
Chloride	20.9	mq/L	3.0	325.2	25 Jun 07 13:14	DAP
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	27 Jun 07 14:52	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 Jun 07 8:25	EJP
Phosphorus, Total	0.019	mq/L	0.005	EPA 365.1	26 Jun 07 14:00	DAP
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	21 Jun 07 7:40	RMV
Nitrogen, Total Kjeldahl	0.6	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

U = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

+ = Due to extract volume

IA LAB #: 132 IA

IA LAB #: 022

Ent WB 7/25/07 QA

ND MICRO # 1013-M ND WW/DW # R-040



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: CR 0.1 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29581 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 2 Jul 07 9:00

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					9 Jul 07	AKW
Water Digestions					9 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	3 Jul 07 14:14	JED
CBOD, 20 Day	12	mg/L	2	SM 5210B	3 Jul 07 14:27	' JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	3 Jul 07 11:30) CJL
Carbon, Total Organic	7.5	mg/L	0.5	415.1	12 Jul 07 8:00) Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	10 Jul 07 7:35	JD
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	20 Jul 07 11:43	Calculated
Chloride	24.0	mg/L	3.0	325.2	9 Jul 07 15:20) AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	20 Jul 07 11:43	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	5 Jul 07 7:15	TAM
Phosphorus, Total	0.018	mg/L	0.005	EPA 365.1	10 Jul 07 11:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	3 Jul 07 18:57	DAP
trogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	9 Jul 07 5:40	TAM
on	0.133	mg/L	0,015	6010	9 Jul 07 15:44	CJR

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447600

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Ent WB 7/26/07



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: FD-1 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29587 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 2 Jul 07

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions					9 Jul 07 9 Jul 07		AKW JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	3 Jul 07	15:52	JED
CBOD, 20 Day	11	mg/L	2	SM 5210B	3 Jul 07	14:27	JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	3 Jul 07	11:30	CJL
Carbon, Total Organic	8.0	mg/L	0.5	415.1	12 Jul 07	8:00	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200Н	10 Jul 07	7:35	JD
Nitrogen Total, Calculat	1.0	mg/L	NA	Calc	20 Jul 07	12:00	Calculated
Chloride	25.1	mg/L	3.0	325.2	9 Jul 07	15:20	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	20 Jul 07	12:00	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	5 Jul 07	7:15	TAM
Phosphorus, Total	0.015	mg/L	0.005	EPA 365.1	10 Jul 07	11:14	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	3 Jul 07	10:57	DAP
trogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	9 Jul 07	5:40	TAM
on	0.125	mg/L	0.015	6010	9 Jul 07	15:44	CJR

** No collection time supplied by the client.

Ent WE 7/26/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix : = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 0.1

1 of 1 Page:

Report Date: 2 Aug 07 Lab Number: 07-A31296 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 8:45

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Receiv Result	/ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride Nitrate+Nitrite	< 2 14 2 9.50 1.3 * 36 1.0 22.0 < 0.2	mg/L mg/L mg/L mg/L mg/Cubic m CFU/100 mL mg/L mg/L mg/L	2 2 2 0.50 1.0 10. NA 3.0	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed Calc 325.2 353.2	13 Jul 07 17 Jul 07 12 Jul 07 11:11 12 Jul 07 11:24 12 Jul 07 11:24 12 Jul 07 9:30 19 Jul 07 11:00 17 Jul 07 9:43 11 Jul 07 19:00 21 Jul 07 13:15 23 Jul 07 14:11 21 Jul 07 13:15	AKW JMS CJL CJL JED Bis JC Calculated AKW JGS
Nitrogen, Ammonia Tosphorus, Total Ssphorus, Ortho Litrogen, Total Kjeldahl Iron	< 0.16 0.019 0.006 1.0 0.080	mg/L mg/L mg/L mg/L	0.16 0.005 0.005 0.2 0.015	4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	16 Jul 07 11:45 18 Jul 07 11:10 12 Jul 07 8:18 16 Jul 07 15:00 18 Jul 07 11:37	EJP DAP DAP EJP CJR

Batch matrix spike and spike duplicate recoveries for Nitrate+Nitrite were outside MVTL 85-115% limit at 126% and 126%. Data reported based on acceptable spike duplication and known recovery.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/09/01

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680



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WES BOLL

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

WENCK ASSOCIATES INC

Project Number: 0002-107 Sample Description: FD 1

Page: 1 of 1

Report Date: 2 Aug 07 Lab Number: 07-A31303 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 11 Jul 07

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride Nitrate+Nitrite	5 17 4 8.50 < 1 * 45 1.1 22.3 < 0.2	mg/L mg/L mg/L mg/L mg/cubic m CFU/100 mL mg/L mg/L mg/L	2 2 2 0.50 1.0 10. NA 3.0 0.2	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed Calc 325.2 353.2	13 Jul 07 17 Jul 07 12 Jul 07 13:36 12 Jul 07 11:24 12 Jul 07 10:30 19 Jul 07 11:00 17 Jul 07 9:43 11 Jul 07 19:00 21 Jul 07 13:32 23 Jul 07 14:11 21 Jul 07 13:32	AKW JMS CJL CJL JED Bis JD ES Calculated AKW JGS
Nitrogen, Ammonia Phosphorus, Total Sphorus, Ortho Ltrogen, Total Kjeldahl Iron	< 0.16 0.019 0.006 1.1 0.069	mg/L mg/L mg/L mg/L mg/L	0.16 0.005 0.005 0.2 0.2	4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	16 Jul 07 11:45 18 Jul 07 11:23 12 Jul 07 8:32 20 Jul 07 13:45 18 Jul 07 11:37	EJP DAP DAP EJP CJR

CFU = Colony Forming Units

Data Set: Entered By/Duio: WB 10/08/07
QA/QC By/Date: WB 10/09/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity = Due to sample concentration

+ = Due to extract volume

ND WW/DW # R-040 ND MICRO # 1013-M IA LAB #: 132 IA LAB #: 022

^{*} Holding time Exceeded

^{**} No collection time supplied by the client.



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: CR 0.1

Page: 1 of 1

Report Date: 16 Aug 07 Lab Number: 07-A33998 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 25 Jul 07 8:55

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					28 Jul 07	AKW «
Water Digestions					27 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	26 Jul 07 11:34	CJL
CBOD, 20 Day	10	mg/L	2	SM 5210B	26 Jul 07 12:00	CJL
Solids, Total Suspended	4	mg/L	2	USGS I-3765-85	26 Jul 07 9:45	JED
Carbon, Total Organic	7.50	mg/L	0.50	415.1	6 Aug 07 8:00	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	31 Jul 07 9:09	JD
Nitrogen Total, Calculat	1.1	mg/L	NA	Calc	6 Aug 07 11:50	Calculated
Chloride	22.5	mg/L	3.0	325.2	3 Aug 07 10:59	AKW
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	6 Aug 07 11:50	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	1 Aug 07 11:50	EJP
Phosphorus, Total	0.015	mg/L	0.005	EPA 365.1	1 Aug 07 10:41	DAP
Thosphorus, Ortho	< 0.01	mq/L	0.005	EPA 365.1	26 Jul 07 8:41	DAP
trogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	26 Jul 07 9:50	EJP
on	0.137	mg/L	0.015	6010	30 Jul 07 12:37	CJR

Entered By/Date: WB 10/08/07
QA/OC By/Date: WB (0/09/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix θ = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125



1126 N. Front St. ~ New Ulm, MN $56073 \sim 800-782-3557 \sim$ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND $58502 \sim 800-279-6885 \sim$ Fax 701-258-972451 L Avenue ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 0.1

1 of 1 Page:

Report Date: 24 Sep 07 Lab Number: 07-A36434 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07 9:45

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv Result	/ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 07	KAD
BOD, Carbonaceous	2	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 40 Day	< 60	mg/L	2	SM 5210B	9 Aug 07 11:53	JED
CBOD, 20 Day	19	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	6.00	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	1.2	mg/cubic m	1.0	10200H	10 Aug 07 12:54	JD
Fecal Coliform, MF	* 2400	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	13 Aug 07 14:28	Calculated
Chloride	24.7	mg/L	3.0	325.2	14 Aug 07 9:50	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	13 Aug 07 14:28	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	10 Aug 07 8:35	EJP
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
esphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	9 Aug 07 8:31	DAP
crogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 07 15:00	EJP

RL for Ortho Phosphorus elevated to 0.01 mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/09/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

IA LAB #: 132

ND MICRO # 1613-M ND WW/DW # R-040



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: FD-1

Page: 1 of 1

Report Date: 24 Sep 07 Lab Number: 07-A36440 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest			···		10 Aug 07	KAD
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 20 Day	4	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	5.50	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	10 Aug 07 12:54	JD
Fecal Coliform, MF	* 3000	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	0.6	mg/L	NA	Calc	14 Aug 07 8:15	Calculated
Chloride	24.3	mg/L	3.0	325.2	14 Aug 07 10:04	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	13 Aug 07 14:44	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	14 Aug 07 9:15	EJP
Phosphorus, Total	0.016	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
Phosphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	9 Aug 07 8:31	DAP
trogen, Total Kjeldahl	0.6	mg/L	0.2	SM 4500NorgB/NH3 E	14 Aug 07 8:15	EJP

RL for Ortho Phosphorus elevated to 0.01 mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

** No collection time supplied by the client.

Entered By/Date: WB 10/08/0

QA/QC By/Date: WB 10/09/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration + = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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Page: 1 of 1

SEP 17 2007

Report Date: 13 Sep 07 Lab Number: 07-A39071 Work Order #:12-9964 WENCK ASSOCIATES, INC.

Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 22 Aug 07 9:00

Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Project Name: CRWD TMDL

WES BOLL

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Sample Description: CR 0.1

Temp at Receipt: 3.0C

	As Receiv Result	ved .	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Aug 07	KAD
BOD, Carbonaceous	2	mg/L	2	SM 5210B	23 Aug 07 13:56	CJL
CBOD, 20 Day	7	mg/L	2	SM 5210B	23 Aug 07 14:10	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	23 Aug 07 10:30	JED
Carbon, Total Organic	10.50	mg/L	0.50	415.1	29 Aug 07 8:00	Bis
Chlorophyll a	3.2	mg/cubic m	1.0	10200Н	24 Aug 07 9:14	JD
Fecal Coliform, MF	910	CFU/100 mL	10.	SM 9222D 20th Ed	22 Aug 07 18:55	MKG
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	28 Aug 07 14:45	Calculated
Chloride	22.5	mg/L	3.0	325.2	27 Aug 07 14:27	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	28 Aug 07 12:47	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	29 Aug 07 9:45	TAM
Phosphorus, Total	0.016	mg/L	0.005	EPA 365.1	31 Aug 07 12:14	DAP
osphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	23 Aug 07 8:56	DAP
crogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	28 Aug 07 14:45	TAM

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07

QA/QC By/Date: W& 10/09/107

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

2.421 3003043

slevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132

je kaa j



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: FD-1

Page: 1 of 1

Report Date: 13 Sep 07 Lab Number: 07-A39077 Work Order #:12-9964 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 22 Aug 07 Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv	red .	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Aug 07	KAD
BOD, Carbonaceous	2	mg/L	2	SM 5210B	23 Aug 07 13:56	CJL
CBOD, 20 Day	5	mg/L	2	SM 5210B	23 Aug 07 14:10	CJL
Solids, Total Suspended	4	mg/L	2	USGS I-3765-85	23 Aug 07 12:00	JED
Carbon, Total Organic	9.50	mg/L	0.50	415.1	29 Aug 07 8:00	Bis
Chlorophyll a	2.8	mg/cubic m	1.0	10200Н	24 Aug 07 9:14	JD
Fecal Coliform, MF	* 180	CFU/100 mL	10.	SM 9222D 20th Ed	22 Aug 07 18:55	MKG
Nitrogen:Total, Calculat	0.7	mg/L	NA	Calc	28 Aug 07 14:45	Calculated
Chloride	22.1	mg/L	3.0	325.2	27 Aug 07 14:27	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	28 Aug 07 12:47	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	29 Aug 07 9:45	TAM
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	29 Aug 07 13:11	DAP
esphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	23 Aug 07 8:56	DAP
trogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	28 Aug 07 14:45	TAM

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

** No collection time supplied by the client.

Entered Sylvate: W8 10/08/87
QAME By Late: W8 10/09/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

*Puplicate

Client:	CRWD	Site Location	: CR 1.4
Project No.:	0002-107	_ Site Description	:
Date:	4/24/07	_ Weather	: 60° Pt. Cloudy
Sampler(s):	WB/NC		: Ves No
Start Time:	1240	_ Sample Time	:_12:55
End Time:		_	
Channel Conditions:	flowing	DTW Measurement	: 10.14
COC Number:		_	-top middle of downstre
			Notes: Duplicate Sample
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Field Parameters		taken at this
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	zite.
	13.50 427	10.27 8.18	
Stage H	t:	Rated Flow:	Gauged Flow: 179,364)

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
		-water -gauged	13 +1/0	Wing	Very	fast		
		-ganged	Towns	tream	n of	culu	11	
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				D	ata Set:			
						Date: J1	7/9/	Market manage of the common temperatures of
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				* * * * * * * * * * * * * * * * * * *	WILL BY	and his a to Foresteenage comes you	T L L	1-101
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4/25/07 13:30 0.135/2083,0.012

Name	Date	Time	Concentration	Sample Type	Notes
1.4	4125107	2:50	0.07/0039,0.039	Gnab	No. red dye
	1	3:05	0.056,0024,0.171		A .
			0.011,0.029,0.034		
		3:35	-0.054,-0.167,-0.19	7	
		3:50	0.535-0.645,-0.	537	
		4:05	0.0681.01.0.030		
		4:20	0.0 <u>69.011,0.03</u> 0 3.795,3.949,3.86	3	
			11.68,11.71,11.72		
			15.81,15.77, 15.80		
		5:05	13.50,13.58,13.5		
		5:20	11.59, 11.54, 11.74		
		5:35	6.942,6.973,6.	80	·
		E	011/0111/01		1
1		5:50	5.295,5.220,5	201	
		2.00	10:010,000,0		
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				11.4.14.40.00011.000	
· ·					
					17-17
					<u> </u>

Client:		CRWD	<u></u>	Site Location	CR 1.4		
?roject No.:	0	002-107	_	Site Description	CR at CR	2,45	
Date:	5/9/07				SURMY 60		
Sampler(s):	NK/W	5	Samples Taken: Yes No				
Start Time:	8:40		Sample Time: 8.55				
End Time:	9:05		-			·	
Channel Conditions:	Flowing		DTW Measurement: 10.56				
COC Number:	U		_				
70.	- The state of the				Notes:		
		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	-		
	15.05	433	E. 58	7.96			
Stage H			Rated Flow:		Gauged Flow:_/	47.737ds	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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)								

* puplicate

Chent:	C	RWD	_	Site Location	: CR 1.4	
Project No.:	00	02-107	_	Site Description		650
Date:	5.23.0	}-	_			n of I-99 at CR 145
Sampler(s):	NICLWB		_	Samples Taken		
Start Time:	9:35			Sample Time		1,0
End Time:	1000		_	•		
Channel Conditions:	flowing		-	DTW Measurement	: 11.411	
COC Number:	V		_			,
<u> </u>					Notes:	-Water laval
	F	ield Parameters				receding
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	рН (S.U.)		· oceany
	18.12	442	7.65	8.10	-	
				-	╝ .	
Stage H	t:		Rated Flow:		Gauged Flow:	60.548

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)						(10300)		
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				En 201	ered By/I	Pate: 5†	117/0	10 10 10 2 2 10 00 00 00 00 00 00 00 00 00 00 00 00
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Client:		CRWD	_	Site Location:	CR 1.4	
Project No.:	00	002-107	_	Site Description:	Clear Nator Liver upgream of	<u>I</u> -9
Date:	5.30	0.07	_	Weather:	Sunny 7501 C	Col
Sampler(s):	Nic (Je55	_	Samples Taken:	Yes No	
Start Time:	9:17		_	Sample Time:	9:34 450	
End Time:	9:5	3	_			
Channel Conditions:	flowing		_	DTW Measurement:	4.50	
COC Number:		<u> </u>	_		•	
					Notes:	
		Field Parameters		·		
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		-
	19.20	440	FE	8.01		
			9.12		2	_
Stage Ht	::		Rated Flow:		Gauged Flow: 60.56	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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		:						
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				A-115-11	C By/Dai	1/1/2-1	0/00/n	SOUTH ACTUAL ACT
				ŲA/U	L By/Dati		<u> </u>	M CA
		·						

Client:		CRWD		Site Location:	Ce 1.4		
Project No.:	0	002-107	-	Site Description:	Clearwater Ri	ver vortream	n of I-9
Date:	6-4 NIC/	-07		Weather:	B OVUCO	ust "	CODE
Sampler(s):	NICK	Suss	_	Samples Taken:	5/	No	14
Start Time:	9:00		_	Sample Time:	9:12		,
End Time:	9:2	25	_				
Channel Conditions:	Flowin	<u> </u>	_	DTW Measurement:	10.82		
COC Number:		<u>ل</u>	_				
					Notes: Ve	m strong	
		Field Parameters			ይሄና	rent, high	
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	Wa	ten.	 -
	1.6.7		7.60	-	 		<u></u>
	,						, , , , , , , , , , , , , , , , , , ,
Stage Ht	***************************************		Rated Flow:		Gauged Flow: <u>∤⊀</u>	3.043	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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							- 11 -	
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				Ē	ntered By	Date: JI	7/9/	H
					A/OC By	Date	8 to/	9/67
							/	• /

Deficato

Field Form: 2007 Stream Sampling

Client:		CRWD		Site Location	: <u>CR</u> 1	.4
Project No.:	0	002-107	_	Site Description	CROUP	stream of 1-9400
Date:	6-20	0-07	_	Weather		700
Sampler(s):	Nich	Ses	_	Samples Taken:	Yes	No
Start Time:	9:10	2	_	Sample Time:	<u>a:2</u>	<i>x</i> 0
End Time:	9:2	5	-			
Channel Conditions:	£100	\sim	-	DTW Measurement:	11.58	
COC Number:		<u> </u>	_	C 9cx		
	· · · · · · · · · · · · · · · · · · ·				Notes: _	
]	Field Parameters				
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
	19.52	345	7.16	6.11		
Stage Ht	•		Rated Flow:		Gauged Flow:_	MM 44.315

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
		- Produces					-	

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			·	Find a	iterad Dyl	Date: 31	7/9/	4
ft.		· · · · · · · · · · · · · · · · · · ·		Q	4/QC By/	Daisia M	2014	
			····					

Client:	C	RWD		Site Location:	CR 1.4	,
Project No.:	00	02-107		Site Description:		
Date:	7.2.0	7-		Weather:	00-c-45+	650
Sampler(s):	7.2.6 ylc		_	Samples Taken:	@	No
Start Time:	B 920			Sample Time:	930	
End Time:	0940					
Channel Conditions:	0940 Flowing			DTW Measurement:	11.96	, , , , , , , , , , , , , , , , , , , ,
COC Number:			•			
					Notes:	
]	Field Parameters			_	
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	_	
	21.05	398	6.51	D.23	_	
						11.709
Stage H	t:	·	Rated Flow:		Gauged Flow:	11.708 WARE cts

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)						,		
				Data	S.21 ×			
				UA/	UU By/Da	C appropriate the control of the con	IV/CUO	A APPRICATION COMPANIES CO. C. C. C.

Ulient:		RWD		Site Location:	CR 1.4	
Project No.:	00	02-107	_	Site Description:		
Date:	7.11.07		.	Weather:	sump	70°
Sampler(s):	NIC			Samples Taken:		No
Start Time:	920		<u>-</u>	Sample Time:	०९३०	
End Time:			-	,		
Channel Conditions:	flowing			DTW Measurement:	11.74	
COC Number:			-			
					Notes:	
		Field Parameters			-	
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
	19.58	378	7.89	8.25	_	
Stage H	t:		Rated Flow	•	Gauged Flow:	24.439

Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
						_	
							·
	Data Set:	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
	Entered By/	Dates W	B 71	12107			
	OA/OC B.//	na. W	T T	the same and the same and	***Native		
	,	Provincement 2 person and po-					
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	Width (ft)	Data Set: Entered By/	Width (ft) Depth (ft) (60% Depth) Data Set: Entered By/ Date: W	Width (ft) Depth (ft) (60% Depth) Depth Data Set: Entered By/ Date: WB 7/	Width (ft) Depth (ft) (60% Depth) Depth Depth Data Set: Entered By/ Date: WB 7/12/07	Width (ft) Depth (ft) (60% Depth Depth Depth Velocity (ft/sec) Data Set: Entered By/ Date: WB 7/121/7	Width (ft) Depth (ft) (60% Depth Depth Depth Velocity (ft/sec) Area (ft²) Depth Depth Depth Depth Depth Depth Velocity (ft/sec) Data Set:

llient:	CRWD	Site Location:	CL 1.4
Project No.:	0002-107	Site Description:	clearwriter liver stream @
Date:	7.25.07	Weather:	850 Sonny OF-94 CO.
Sampler(s):	Juss Nic	Samples Taken:	(Yes No
Start Time:	9:23	Sample Time:	9:35
End Time:	9:45		
Channel Conditions:	MowiM_	DTW Measurement:	11.89
COC Number:			i
			Notes: detaget pad
	Field Parameters		placed clear, slow
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	water B
	24.06 .414	6.51 8.22	
			
Stage H	t:	Rated Flow:	Gauged Flow: 8. 43645

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
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			ıta Set:	w.c-erco-opposite to the state of the Fr.	enamenteramentes y es impassis s'entri es le della distribution della della della della della della della della	2015 (A01005), MINING 18400 (17 (1850) (1860) (1860) (1860) (1860)		
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		0	itered By/I 4/OC By/I)ale:_\Y	り 10	109/00		

lient:		CRWD	_	S	ite Location	: CR 1.	4	
Project No.:	0	002-107	_	Site	Description	: <u> </u>	,	
Date:	8.8,0	74	_	Weather: Say 750				
Sampler(s):	NIC		_	Samples Taken:				
Start Time:	1030		_	Sa	imple Time	: 1045	<u></u>	
End Time:	11/0		_					
Channel Conditions:	- Slow		_	DTW M	easurement	11.97		
COC Number:			_			\		
						Notes	Ver c	den
		Field Parameters			. , ,		water	clen , colch
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	рH	(S.U.)		inater	
	21.36	478	7.21	8.4	D D			
Stage H	:		Rated Flow tream Gau			Gauged Flow	: <u>/5.</u>	<u>55</u> 9
Distance from			Velocity	Velo		Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	Velocity (ft/sec)	Area (ft ²)	(Q, ft ³ /sec)
0, (left side)								
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		Data ^t		Contraction of the Contraction o	10/08/0			
			iet: ——— ed By/Dai	3- NB	10/08/0	2 /09/07		

Client:		CRWD	_	Site Location:	CR 1.4	
Project No.:	00	002-107	-	Site Description:	***************************************	
Date:	8.22.07		_	Weather:	overcast	706
Sampler(s):	NIC_	,	-	Samples Taken:	<u></u>	No
Start Time:	0915		-	Sample Time:	0930	
End Time:	0945		_			
Channel Conditions:	floury		_	DTW Measurement:	M. 11.11	
COC Number:			_			
					Notes:	Broke Gauge headle
]	Field Parameters				Broke Gauge headle at this site replace
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	р Н (S.U.)		840!
	21.00	552	7.62	801		
					-	
Stage H	t:		Rated Flow:	·	Gauged Flow:	45.749

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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				100 C C C C C C C C C C C C C C C C C C	or comments you make the state of the state of	Contraction of the Contraction o		
		Data Set: Entered I QAIQC	AND THE PROPERTY OF THE PROPER	NB 1	0000			
		Entered I	sy/Date:	CHI	10/08	<u>U</u>		
		OMOC	By/Date:-	12				
		Q, *						
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PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 1.4 Page: 1 of 1

Report Date: 22 May 07 Lab Number: 07-A15438 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 12:55 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analy	zed	Analyst
Phosphorus Water Digest					2 Ma	7 07	DAP
BOD, Carbonaceous	2	mg/L	2	SM 5210B	25 Ap	c 07 14:26	JED
CBOD, 20 Day	6	mg/L	2	SM 5210B	25 Ap	07 17:39	AKF
Solids, Total Suspended	9	mg/L	2	USGS I-3765-85	25 Ap	r 07 11:50	JED
Carbon, Total Organic	9.2	mg/L	0.5	415.1	27 Ap	r 07 10:30	Bis
Chlorophyll a	6.1	mg/cubic m	1.0	10200H	2 Ma	7 07 7:05	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Ap	07 19:00	ES
Chloride	18.2	mg/L	3.0	325.2	30 Ap	07 15:47	DAP
Nitrate+Nitrite	0.31	mg/L as N	0.20	353.2	25 Ap	07 15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	2 Ma	07 10:45	TAM
Phosphorus, Total	0.040	mq/L	0.005	EPA 365.1	2 Ma	07 9:36	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Ap	07 7:20	DAP
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	2 Ma	7 07 6:30	T'AM

CFU = Colony Forming Units

* Holding time Exceeded

Data Se	To the state of th
	By/Date: JT 7/9/67
QWQC	5,/Date: WB 10/9/67

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

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Page: 1 of 1

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: FD 1 Report Date: 22 May 07 Lab Number: 07-A15439 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 24 Apr 07 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

Method Method Date

	Result		RL	Reference	Anal	yzed		Analyst
Phosphorus Water Digest					2 M	ay 07	,	DAP
BOD, Carbonaceous	2	mq/L	2	SM 5210B	25 A	pr 07	14:41	JED
CBOD, 20 Day	7	mg/L	2	SM 5210B	25 A	pr 07	17:39	AKF
Solids, Total Suspended	9	mg/L	2	USGS I-3765-85	25 A	pr 07	11:50	JED
Carbon, Total Organic	8.2	mg/L	0.5	415.1	27 A	pr 07	10:30	Bis
Chlorophyll a	5.4	mg/cubic m	1.0	10200H	2 M	ay 07	7:05	JD
Fecal Coliform, MF	* 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 A	pr 07	19:00	ES
Chloride	18.9	mg/L	3.0	325.2	30 A	pr 07	15:48	DAP
Nitrate+Nitrite	0.31	mg/L as N	0.20	353.2	25 A	pr 07	15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0,16	4500 NH3 B, E	2 M	ay 07	10:45	TAM
Phosphorus, Total	0.034	mg/L	0.005	EPA 365,1	2 M	ay 07	9:36	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 A	pr 07	7:20	DAP
Nitrogen, Total Kjeldahl	0.4	mg/L	0.2	SM 4500NorgB/NH3 E	2 M	ay 07	6:30	TAM

CFU = Colony Forming Units

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/07

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

^{*} Holding time Exceeded

^{**} No collection time supplied by the client.

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WES BOLL

Project Number: 0002-107

Sample Description: CR 1.4

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18768 Work Order #:12-5557

Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 8:55

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Receiv Result	ed	Method RL	Method Reference	Dat Ana	e 1yza	ed		Analyst
Phosphorus Water Digest					14	May	07		RMV
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	10	May	07	14:16	JED
CBOD, 20 Day	11	mg/L	2	SM 5210B	10	May	0.7	13:11	AKF
Solids, Total Suspended	9	mq/L	2	USGS 1-3765-85	10	May	07	10:50	CdI.
Carbon, Total Organic	7.4	mg/L	0.5	415.1	5	Jun	07	16:30	Bls
Chlorophyll a	2.8	mg/cubic m	1.0	10200H	11	May	5.7	8 (3.1	JD
Fecal Coliform, MF	* 30	CFU/100 ml	10.	SM 9222D 18th Ed	9	Мау	07	18:05	ES
Chloride	21.0	mq/L	3.0	325.2	16	May	97	15:57	DAP
Nitrate+Nitrite	0.31	mg/L as N	0.20	353.2	1.4	May	07	7:22	RMV
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	15	May	07	10:35	MAT
Phosphorus, Total	0.028	mq/L	0.005	EPA 365.1	17	May	07	8:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10	May	07	10:06	DAP
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	16	May	07	6:55	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

RL = Reporting Limit

Blevated "Less Than Result" (<): @ = Due to sample matrix | # Due to sample quantity

* Due to sample concentration

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND HICRO # 1813-M ND WW/DW # R-040 IA LAB #: 132

IA LAH #: 022

Therest By/Date: JT 7/9/07
000 By Date: WB 10/9/07



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 1.4

Page: 1 of 1

Report Date: 14 Jun 07 Lab Number: 07-A21655 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 9:45

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	7	mg/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	4	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	8.2	mg/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 1300	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	19.2	mg/L	3.0	325.2	25 May 07 13:13	AKW
Nitrate+Nitrite	0.21	mg/L as N	0.20	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.023	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	30 May 07 8:45	EJP

TU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: JT 7/9/07

QA/QC By/Date: WB 10/9/07 Chlor-A -7 Not tested for

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

Due to sample concentration + = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 CERTIFICATION: MN LAB # 027-015-125 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: FD 1

1 of 1 Page:

Report Date: 14 Jun 07 Lab Number: 07-A21657 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	9	mq/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	5	mq/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	7.8	mq/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 1000	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	19.5	mq/L	3.0	325.2	25 May 07 13:13	AKW
Nitrate+Nitrite	0.21	mg/L as N	0.20	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.023	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	24 May 07 7:27	JGS
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	30 May 07 8:45	EJP

[&]quot;J = Colony Forming Units

QNOC By/Date: WB 10/09/0

Entered 8 / Date: WB 10/09/07

chlor-A: Not tested

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<); θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132

^{*} Holding time Exceeded

^{**} No collection time supplied by the client.



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WES BOLL

Sample Description: CR 1.4

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Page: 1 of 1

Report Date: 21 Jun 07 Lab Number: 07-A23069 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 9:34

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					4 Jun 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	6	mg/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	31 May 07 10:10	JED
Carbon, Total Organic	6.5	mg/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	9.7	mg/cubic m	1.0	10200Н	1 Jun 07 13:07	JD
Fecal Coliform, MF	* 150	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	20.7	mq/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	4 Jun 07 8:14	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	4 Jun 07 9:25	TAM
Phosphorus, Total	0.024	mg/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

U = Colony Forming Units

* Holding time Exceeded

Entered By/Date: JT 7/9/07

QA/QC By/Date: WB 10/1/67

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

1 of 1 Page:

Report Date: 21 Jun 07 Lab Number: 07-A23071 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Sample Description: FD 1 CRIH

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					4 Jun 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	31 May 07 11:39	CJL
CBOD, 20 Day	5	mg/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	6	mg/L	2	USGS I-3765-85	31 May 07 10:10	JED
Carbon, Total Organic	6.5	mg/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	12.1	mg/cubic m	1.0	10200Н	1 Jun 07 13:07	JD
Fecal Coliform, MF	* 140	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	20.5	mg/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	4 Jun 07 8:14	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	4 Jun 07 9:25	TAM
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	5 Jun 07 8:08	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

U = Colony Forming Units

** No collection time supplied by the client.

Data 26	The second state of the se
Entered	34/12012 WB 10/08/07
	10/09/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

E.evated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

^{*} Holding time Exceeded



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 1.4

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24665 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 9:12

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	7 Jun 07 11:43	JED
CBOD, 20 Day	6	mg/L	2	SM 5210B	7 Jun 07 11:29	JED
Solids, Total Suspended	36	mg/L	2	USGS I-3765-85	7 Jun 07 9:15	CJL
Carbon, Total Organic	8.5	mg/L	0.5	415.1	13 Jun 07 8:00	Bis
Chlorophyll a	3.6	mg/cubic m	1.0	10200Н	12 Jun 07 9:45	AJK
Fecal Coliform, MF	* 150	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES
Chloride	21.4	mg/L	3.0	325.2	11 Jun 07 10:22	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	0.43	mq/L	0.16	4500 NH3 B, E	7 Jun 07 11:20	EJP
Phosphorus, Total	0.048	mq/L	0.005	EPA 365.1	12 Jun 07 11:50	RMV
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:00	EJP

J = Colony Forming Units

* Holding time Exceeded

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" {<}: θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration + = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Data Set; ___

Entered By/Date: JT 7/9/07



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 1.4 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27469 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 9:20

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					22 Jun 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	21 Jun 07 14:34	JED
CBOD, 20 Day	10	mg/L	2	SM 5210B	21 Jun 07 14:05	JED
Solids, Total Suspended	6	mg/L	2	USGS I-3765-85	21 Jun 07 11:45	CJL
Carbon, Total Organic	10.0	mg/L	0.5	415.1	27 Jun 07 8:00	Bis
Chlorophyll a	3.0	mg/cubic m	1.0	10200Н	26 Jun 07 15:02	JD
Fecal Coliform, MF	* 160	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES
Chloride	20.6	mg/L	3.0	325.2	25 Jun 07 13:13	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	27 Jun 07 14:52	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 Jun 07 8:25	EJP
Phosphorus, Total	0,019	mg/La	0.005	EPA 365.1	26 Jun 07 14:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	21 Jun 07 7:40	RMV
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

J = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

ND WW/DW # R-040

+ = Due to extract volume

IA LAB #: 132

IA LAB #: 022

ND MICRO # 1013-M



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: FD 1 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27471 Work Order #:12-7478

Account #: 013173 Sample Matrix: SURFACE WATER

Date Sampled: 20 Jun 07 Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	2			GW 5210D	22 Jun 07	AKW JED
BOD, Carbonaceous CBOD, 20 Day	10	mg/L	2 2	SM 5210B SM 5210B	21 Jun 07 14:50 21 Jun 07 14:05	JED
Solids, Total Suspended Carbon, Total Organic	6 13.5	mg/L mg/L	2 0.5	USGS I-3765-85 415.1	21 Jun 07 11:45 27 Jun 07 8:00	CJL Bis
Chlorophyll a Fecal Coliform, MF	< 1 * 100	mg/cubic m CFU/100 mL	1.0 10.	10200H SM 9222D 20th Ed	26 Jun 07 15:02 20 Jun 07 18:25	JD ES
Chloride Nitrate+Nitrite	6.3	mg/L mg/L as N	3.0	325.2 353.2	25 Jun 07 13:14 27 Jun 07 14:52	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 Jun 07 8:25	EJP
Phosphorus, Total Phosphorus, Ortho	0.057 0.029	mg/L	0.005 0.005	EPA 365.1 EPA 365.1	26 Jun 07 14:00 21 Jun 07 7:40	DAP RMV
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

J = Colony Forming Units

ENT WB 7/25/07

Approved by: _

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040

IA LAB #: 132 IA LAB #: 0

^{*} Holding time Exceeded

^{**} No collection time supplied by the client.



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: CR 1.4 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29582 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 2 Jul 07 9:15

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

Ent-WB 7/26/07 QA NS

IA LAB #: 022

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					9 Jul 07	AKW
Water Digestions					9 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	3 Jul 07 14	14 JED
CBOD, 20 Day	9	mg/L	2	SM 5210B	3 Jul 07 14	
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	3 Jul 07 11	30 CJL
Carbon, Total Organic	8.0	mg/L	0.5	415.1	12 Jul 07 8	00 Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	10 Jul 07 7	35 JD
Nitrogen Total, Calculat	1.0	mg/L	NA	Calc	20 Jul 07 11	43 Calculated
Chloride	22.7	mg/L	3.0	325.2	9 Jul 07 15	20 AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	20 Jul 07 11	43 DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	5 Jul 07 7	15 TAM
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	10 Jul 07 11	00 DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	3 Jul 07 18	57 DAP
trogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	9 Jul 07 5	40 TAM
on	0.162	mg/L	0.015	6010	9 Jul 07 15	44 CJR

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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WES BOLL

Project Number: 0002-107

Sample Description: CR 1.4

MAPLE PLAIN MN 55359-9000

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

1 of 1 Page:

Report Date: 2 Aug 07 Lab Number: 07-A31297 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 9:30

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	·····		······································		13 Jul 07	AKW
Water Digestions					17 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	12 Jul 07 11:11	CJL
CBOD, 20 Day	12	mg/L	2	SM 5210B	12 Jul 07 11:24	CJL
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	12 Jul 07 10:30	JED
Carbon, Total Organic	8.00	mg/L	0.50	415.1	19 Jul 07 11:00	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	17 Jul 07 9:43	JD
Fecal Coliform, MF	* 45	CFU/100 mL	10.	SM 9222D 20th Ed	11 Jul 07 19:00	ES
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	21 Jul 07 13:15	Calculated
Chloride	21.2	mg/L	3.0	325.2	23 Jul 07 14:11	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	21 Jul 07 13:15	JGS
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	16 Jul 07 11:45	EJP
Thosphorus, Total	0.019	mg/L	0.005	EPA 365.1	18 Jul 07 11:10	DAP
osphorus, Ortho	0.006	mg/L	0.005	EPA 365.1	12 Jul 07 8:18	DAP
.trogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	16 Jul 07 15:00	EJP
Iron	0.078	mg/L	0.015	6010	18 Jul 07 11:37	CJR

Batch matrix spike and spike duplicate recoveries for Nitrate+Nitrite were outside MVTL 85-115% limit at 126% and 126%. Data reported based on acceptable spike duplication and known recovery.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/09/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: CR 1.4

1 of 1 Page:

Report Date: 16 Aug 07 Lab Number: 07-A33997 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 25 Jul 07 9:35

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Receit Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					28 Jul 07	AKW
Water Digestions					27 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	26 Jul 07 11:34	CJL
CBOD, 20 Day	10	mg/L	2	SM 5210B	26 Jul 07 12:00	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	26 Jul 07 9:45	JED
Carbon, Total Organic	8.00	mg/L	0.50	415.1	6 Aug 07 8:00	Bis
Chlorophyll a	< 1	mq/cubic m	1.0	10200Н	31 Jul 07 9:09	JD
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	6 Aug 07 11:33	Calculated
Chloride	21.0	mg/L	3.0	325.2	3 Aug 07 10:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	6 Aug 07 11:33	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	1 Aug 07 11:50	EJP
Phosphorus, Total	0.014	mg/L	0.005	EPA 365.1	1 Aug 07 10:41	DAP
rosphorus, Ortho	< 0.01	mq/L	0.005	EPA 365.1	26 Jul 07 8:27	DAP
trogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	26 Jul 07 9:50	EJP
ron	0.136	mg/L	0.015	6010	30 Jul 07 12:37	CJR

Entered By/Date: WB 10/08/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" {<}: θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125 IA LAB #: 132 IA LAB #: 022



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 1.4

Page: 1 of 1

Report Date: 24 Sep 07 Lab Number: 07-A36435 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07 10:45

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receir Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 07	KAD
BOD, Carbonaceous	3	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 20 Day	5	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	4.50	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200Н	10 Aug 07 12:54	JD
Fecal Coliform, MF	700	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	0.7	mg/L	AN	Calc	13 Aug 07 14:28	Calculated
Chloride	19.5	mg/L	3.0	325.2	14 Aug 07 9:50	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	13 Aug 07 14:28	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	10 Aug 07 8:35	EJP
Phosphorus, Total	0.027	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
Phosphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	9 Aug 07 8:31	DAP
trogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 07 15:00	EJP

RL for Ortho Phosphorus elevated to 0.01 mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

Entered By/Date: WB 10/08/67

QA/QC By/Date: WB 10/09/07

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

Reporting Limit Elevated "Less Than Result" (<); @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

IA LAB #: 132 IA LAB #: 022

CERTIFICATION: MN LAB # 027-015-125

WI LAB # 999447680

ND MICRO # 1013-M ND WW/DN # R-040 MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 1.4

Page: 1 of 1

Report Date: 13 Sep 07 Lab Number: 07-A39072 Work Order #:12-9964 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 22 Aug 07 9:30

Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receir Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest				***************************************	24 Aug 07	KAD
BOD, Carbonaceous	2	mg/L	2	SM 5210B	23 Aug 07 13:56	CJL
CBOD, 20 Day	7	mg/L	2	SM 5210B	23 Aug 07 14:10	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	23 Aug 07 10:30	JED
Carbon, Total Organic	9.50	mg/L	0.50	415.1	29 Aug 07 8:00	Bis
Chlorophyll a	3.3	mg/cubic m	1.0	10200Н	24 Aug 07 9:14	JD
Fecal Coliform, MF	* 200	CFU/100 mL	10.	SM 9222D 20th Ed	22 Aug 07 18:55	MKG
Nitrogen Total, Calculat	0.7	mg/L	NА	Calc	28 Aug 07 14:45	Calculated
Chloride	22.4	mg/L	3.0	325.2	27 Aug 07 14:27	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	28 Aug 07 12:47	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	29 Aug 07 9:45	TAM
Phosphorus, Total	0.015	mq/L	0.005	EPA 365.1	29 Aug 07 13:11	DAP
osphorus, Ortho	< 0.01	mq/L	0.005	EPA 365.1	23 Aug 07 8:56	DAP
trogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	28 Aug 07 14:45	TAM

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/09/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 IA LAB #: 022

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oject No.:	0(002-107	_					at-CoRd 40
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Sampler(s):	MR	NC	_	Sa	Yes) No			
Start Time:	-vv-/,	y C	-		mples Taken: Sample Time:		12:15	
End Time:				•	oumpie Time.		10.10	
Channel Conditions:	flow	ing	-	DTWA	Measurement:	# 7	70	
COC Number:		J	- '	D1 11 11	rousur ennome.		ream o	center pos
			-			OF Notes:	bridg	center post e(E of senso
		Field Parameters				Notes.	~ 4~ 5	utary from
Sample I.D.	Temp. (°C)		D.O. (mg/l)	n.F	ł (S.U.)		1310	on NW
	13.42	426	10.46	8.1			CIA	1 1 1 -
			10.70	<u> </u>	•	j	7/ac of	britge
Stage H	t:		Rated Flow			Gauged Flow	180	2,369
		S	tream Gaug	ging Dat	a			
Distance from			Velocity		locity	Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	; (\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20% Depth	80% Depth	Velocity	Area (ft²)	(Q, ft ³ /sec)
0 (1-6 -: 1)			, , , , , , , , , , , , , , , , , , ,	·····	•	(ft/sec)		
0, (left side)								
	20-				1 - 1 - 0			
	Gau	ged downs	tream	04	priage	<u> </u>	-	
								A. A

Data Set:___

QA/(CBy/Dal

Entered By/Date: JT 7/9/07

	Client:	(CRWD	_	Site Location	1: <u>CR 4.0</u>	
	Project No.:	00	002-107		Site Description	: County	, Rd 40
	Date:	4/25	107		Weather		
	Sampler(s):	WB,	NC.	_	Samples Taker		(No)
	Start Time:	12:20)		Sample Time	:	
	End Time:			_			
	Channel Conditions:	flowing	19		DTW Measurement	7.78	
	COC Number:			_			
					***************************************	Notes:	
			Field Parameters				
	Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
12:3	0	13,32	424	997	8.21		
					The state of the s	<u></u>	
	Stage H		···	Rated Flow:_	- 1500 d	Gauged Flow:	83.114

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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		arab						
	-Co(/1	ected square	npks	ever	v 15	minute	25	
	Sta	sting at	12:	30				
0626-	13:50) looking	down st.	ram (tye v	isible		
					/			
					Data Set:	aragy ayannarannanin'i devenu namer A.j. R., d		
					Entered A	sy/Date: 3	7/9/	4
}					QA/QC I	y/Date:_i/	<u> B</u> it	19/07
					1			

Client:		CRWD	_	Site Location:	CK L	1.0
roject No.:	0(002-107	_	Site Description:	CR 40	of bridge
Date:	5.9.0	7-	_		Sunny	//
Sampler(s):	OLLIW	B	_	Samples Taken:	Yes	No
Start Time:	10:00	<u> </u>	<u>.</u>	Sample Time:	10:15	_
End Time:	10:25		-			
Channel Conditions:	Flows	1		DTW Measurement:	827	
COC Number:			-		•	
					Notes:	
		Field Parameters				
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	-	
The state of the s	16.8	430	9.11	7.96		
						
Stage Hi	.:		Rated Flow:		Gauged Flow:	122.931

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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					ntered By	/Date: 🎞	7/9/	F.
	·					/Date: W		
:					1 x 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	I had the by the promise a since a many by		And the state of t
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Client:		CRWD		Site Location	: CR 4.0
Project No.:	00	002-107		Site Description	brulge at CH 40
Date:	5.23.0	7	_		clark 650
Sampler(s):	Mr (WP		_	Samples Taken	: No
Start Time:	WED		-	Sample Time:	100
End Time:	W10		<u></u>		
Channel Conditions:	flown	10	_	DTW Measurement:	9.24
COC Number:	4 · · · · · · · · · · · · · · · · · · ·	0	_		
		-			Notes: water level
		Field Parameters			Notes: water level
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	19.16	439	考验	8.25	
	,		7.75		
Stage H	::		Rated Flow:		Gauged Flow: 55.198045

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
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					ara Set:	and the second of the second o		Service distance of the service of t
					itered By	Date: J	7/9/	4
					AQC By.	Date	5 10/9/	5-7
						:		
			1					

Client:		CRWD	_	Site Location:	CL 4.0	2	
Project No.:	00	002-107	_	Site Description:	Clearwater	River (W)	CO. 21)40
Date:	5.00	0.07	_	Weather:	Sonay	170	CVDESIV
Sampler(s):	Jess	Nic	_	Samples Taken:	Yes	No	
Start Time:	10:50	<u>.</u>	_	Sample Time:	10:55		
End Time:	11:11		_				
Channel Conditions:	Plavi	DTW Measurement:					***************************************
COC Number:		<u></u>	_				
					Notes:		
]	Field Parameters					
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			
	21.60	437	9.32	8.19			
Stage H	t:		Rated Flow:		Gauged Flow: <u>≤</u>	3.456c	fs

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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					144			
				-^	Ana Sec.			
						Service Control of Con		
						/Daic:	7/9/	
1				(A/QC By	Date: WÈ	10/9/	6.7

Client:		CRWD	_	Site Location	: c+4.0
Project No.:	0	002-107		Site Description	Clearwater Rivere ca Ed 40
Date:	6-6	,- OF	-	Weather	
Sampler(s):	Nic/	Jess		Samples Takens	Yes No
Start Time:	10:28		_	Sample Time:	10:30
End Time:	10:43				:
Channel Conditions:	Flowin	24	-	DTW Measurement:	6.67
COC Number:	1	<u> </u>		C:	: etf %
		Field Parameters			Notes: <u>Cloudy Snowner</u>
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	water very high,
	19.7		7.7		J.
Stage H	t:	·	Rated Flow:_		Gauged Flow: Was 505

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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					aia Seti	nes service de la companya del companya de la companya del companya de la company	Andrewson and the second of th	rand Lite Cale (1)
				<u> </u>	ntered By	الك: Date: علا	7/9/	of
				0	A MOC Po	Date: 1	80	ala
				W. Colonia	ant by	1.1 s.1 S. a surrendam come an	mas kaftara e e e e e kaftar (

					_	_			
Client:	(CRWD ~	_	Si	te Location	<u>C</u>	4.0		_
Project No.:	0	002-107	_	Site 1	Description	CLEC	oed de	O crossin	4
Date:	0-20	0-07	_		Weather	Song	4 71	50	J
Sampler(s):	Nic (Te55		Sam	ples Taken:	Ye	s) No	·	_
Start Time:	10:5	5	<u>-</u>	Sa	mple Time:	11:00)		_
End Time:	1);(0							
Channel Conditions:	Pasi	00		DTW M	easurement:	934	5Pt_		-
COC Number:						1	·		
						Notes:	Vey c	lear, 10t	ڗ
	·	Field Parameters	Ъ			The Assessment of the State of	of ago	iche veg, te	chan
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pН	(S.U.)	obs the state of t	90000	y thrusc	シノナ
	22.36	357	17.71	B.	35]	Stretc'	y thrugo W. Some of Smiller ESL	Alger
							17+5 of	Smaller Figh	vsent
Stage H	t:	···	Rated Flow	:		Gauged Flow	" BAAN		
:							34.98	3]	
		S	stream Gau	ging Data					
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	city- 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)	
0, (left side)									
						•	-		ĺ

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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				į.	ala Setti		-101	4-
				E	ntered By	الد: Date: علا	, graphic William (Security Security Se	gyvelphilip, MR Shudher regulivelet/Viereter****
				(A/QC By	Date: Wi	21019/I	har har a source of the source

						,,			
Client:	C	RWD	-	Sit	e Location:	CP 4.)		
Project No.:	00	02-107		Site D	Description:	· · · · · · · · · · · · · · · · · · ·			•
Date:	7.2.0	7	-		Weather:	OVE FCES	4650		
Sampler(s):	NIC		_	Samj	ples Taken:	X es) No		
Start Time:	1005		_	Sai	mple Time:	1015			
End Time:	1030		.						
Channel Conditions:	Slowing		-	DTW Me	asurement:	9.81			.«
COC Number:			_						
						Notes:	- filar	nontous a rege tati ring flow	algae
	I	Field Parameters	1				and 1	rge Fati	on
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)) pH	(S.U.)	·	alte.	ing Flow	<i>)</i>
	21.01	397	7.10	8.	16			V	
Stage H	t:		Rated Flow			Gauged Flow	: <u>6.</u>	<u>8</u> 3c4,	
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)	
0, (left side)									
							-		
								\$	
								,	
				-					

Client:		CRWD	.	Site Location:	CR 4.0
Project No.:	00	002-107	•	Site Description:	
Date:	7.11.	o7-	<u>.</u>	Weather:	Sunny 70°
Sampler(s):	NIC		_	Samples Taken:	(Pes) No
Start Time:	1025		_	Sample Time:	1030
End Time:	***				
Channel Conditions:	Flow	1	-	DTW Measurement.	042 9.42
COC Number:		y	_		,
					Notes: - Chanelis
		Field Parameters			Notes: - Channel is heavily vegetated on west side
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	on west side
	Zl.18	364	10.05	B.59	-vegetation affectant Some readings Gauged Flow: 21-139
					Some Velocity V
Stage H	t:		Rated Flow	<u> </u>	Gauged Flow: 21.139
_					
:					

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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		<u> </u>		ļ				
				Company of the second			- /- #100/07# 2000 C *100 P *200 Q P *C *13.0	
			Entere	I By/Dat	WB	7/12/	27	
			O A IO	TRU/Dai	WB	10/9/0	1	
				,				
						urus, u, .		

lient:	(CRWD	_	Site Location:	<u> </u>
Project No.:	0	002-107	-	Site Description:	CH 40 at Shdge
Date:	7.25.0	>7	_	Weather:	SUNNY 85°
Sampler(s):	5055 T.		<u>.</u>	Samples Taken:	Ves No
Start Time:	9:52		_	Sample Time:	10:00
End Time:	1600	1 10:10	<u>-</u>		
Channel Conditions:	flowing	3	_	DTW Measurement:	9.75
COC Number:			_		
					Notes: 64 of equete
		Field Parameters			plant like of enely
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	a agues lots of
	26.20	, 400	9.20	4.57	# peregent pare set out
					# pelegent pase set out
Stage H	-• •• <u> </u>		Rated Flow:		Gauged Flow: 15983

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
0, (left side)								
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		, , , , , , , , , , , , , , , , , , ,						
		Data S	II was an a second	ANTERIOR CONTRACTOR CO	125/07			
		Entere	et:d By/Date C By/Date	14/	5 vol32	107		
		<u> </u>	C By/Date	A gametra-grade expression	- Compagning control of Control o			
1 0000								
, , , , , , , , , , , , , , , , , , ,								
		, , , , , , , , , , , , , , , , , , , ,						
	100							

lient:		CRWD	_	Site Location:	CR 41.0	>	
Project No.:	00	002-107	_	Site Description:	Way III.		
Date:	8.8.0	}	_	Weather:	Sung E	}ුට ^ව	
Sampler(s):	8.8.07 NIC		-	Weather: Samples Taken:	₹ des		No
Start Time:	1100		_	Sample Time:	1115		
End Time:	1130						
Channel Conditions:			-	DTW Measurement:	9.96		
COC Number:	•						
					Notes:		
		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			
-	22.48	491	7-81	8.12			
						2/	25
Stage Ht	:		Rated Flow:	<u> </u>	Gauged Flow:		

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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			Data Se	N N North College	MANAGEMENT N. P. & STEEL VORTERS AND AND AND MANAGEMENT AND		and photos and the first over	
				By/Date	I LAM	5 10/22	Jeo	
			- 6 w.de	Dy/Date	S ANNOUNCE; SITE SALVES THE COMMENT OF THE	2 10100	<u>', , , , , , , , , , , , , , , , , , , </u>	
-								

Client:	CRWD	Site Location: CR 4.0					
Project No.:	00	002-107	_	Site Description:			
Date:	8.22.0	ન	-	Weather:	overest	7 0°	
Sampler(s):	NIC	n 11 , Imministrative	-	Samples Taken:		No	
Start Time:	0950			Sample Time:	1000		
End Time:	1020		_				
Channel Conditions:	floury		_	DTW Measurement:	9,03		
COC Number:			-				
<u></u>		<u></u>			Notes: _[luts of	quatic
]	Field Parameters			<u>\</u>	luts of egitation,	MINN BUS,
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	р Н (S.U.)			•
	22.12	<i>5</i> 52_	7.31	7.89			
					_		
Stage F	[t:	NAMA.	Rated Flow		Gauged Flow:_	20,340	_

Distance from	Width (ft)	Depth (ft)	1 (00)0	Velocity		Average		Discharge
Initial Point (ft)				20% Depth	80% Depth	Velocity (ft/sec)	Area (ft²)	(Q, ft ³ /sec)
0, (left side)								
							=	
		D	ata Set:					
			ntered By/	Jata:	NB 10	108/07	alt.	
		1	MQC By/ i	•	and ic	162kg		
		×	wege 11377	/a101	24 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -	100/0/	24	

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Page: 1 of 1

PRELIMINARY REPORT

WES BOLL
WENCK ASSOCIATES INC
1800 PIONEER CRK CTR
MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 4.0 Report Date: 22 May 07 Lab Number: 07-A15437 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER
Date Sampled: 24 Apr 07 12:15
Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					2 May 07	DAP
BOD, Carbonaceous	3	mg/L	2	SM 5210B	25 Apr 07 14:26	JED
CBOD, 20 Day	11	mg/L	2	SM 5210B	25 Apr 07 17:39	AKF
Solids, Total Suspended	10	mg/L	2	USGS I-3765-85	25 Apr 07 11:50	JED
Carbon, Total Organic	9.4	mg/L	0.5	415.1	27 Apr 07 10:30	Bis
Chlorophyll a	5.9	mg/cubic m	1.0	10200H	2 May 07 7:05	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Apr 07 19:00	ES
Chloride	18.6	mg/L	3.0	325.2	30 Apr 07 15:47	DAP
Nitrate+Nitrite	0.30	mg/L as N	0.20	353.2	25 Apr 07 15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	2 May 07 10:45	TAM
Phosphorus, Total	0.041	mg/L	0.005	EPA 365.1	2 May 07 9:36	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Apr 07 7:20	DAP
Nitrogen, Total Kjeldahl	0.6	mg/L	0.2	SM 4500NorgB/NH3 E	2 May 07 6:30	TAM

CFU = Colony Forming Units

* Holding time Exceeded

1. Merca By/Date: JT 7/9/07
1. MC by/Date: WB 10/23/02

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 4.0 Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18771 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 10:15

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Received Result		Method RL	Method Reference	Date Analyze	đ	Analyst
Phosphorus Water Digest					14 May	07	RMV
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	10 May	07 14:16	JED
CBOD, 20 Day	8	mg/L	2	SM 5210B	10 May	07 13:11	AKF
Solids, Total Suspended	7	mg/L	2	USGS I-3765-85	10 May	07 12:05	CJL
Carbon, Total Organic	8.2	mg/L	0.5	415.1	5 Jun	07 16:30	Bis
Chlorophyll a	2.5	mg/cubic m	1.0	10200H	11 May	07 8:31	JD
Fecal Coliform, MF	* 10	CFU/100 mL	10.	SM 9222D 18th Ed	9 May	07 18:05	ES
Chloride	21.6	mg/L	3.0	325.2	16 May	07 15:57	DAP
Nitrate+Nitrite	0.29	mg/L as N	0.20	353.2	14 May	07 7:22	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15 May	07 10:35	TAM
Phosphorus, Total	0.030	mg/L	0.005	EPA 365.1	17 May	07 8:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May	07 10:06	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	16 May	07 6:55	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

= Due to sample concentration
- = Due to extract volume

RL « Reporting Limit

Contract By/Date: JT 7/9/07
11/1/19 By/Date: WB 10/23/07



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 4.0

1 of 1 Page:

Report Date: 14 Jun 07 Lab Number: 07-A21652 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 11:00

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	10	mg/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	6	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	8.6	mg/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 1400	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	19.8	mg/L	3.0	325.2	25 May 07 13:13	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.026	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	29 May 07 14:10	EJP

TFU = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: JT 7/9/07

QNOC By/Date: WB 10/33/07

CMOT-A - TNOT Tested

SW

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

AREPORTING Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration + = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

Sample Description: CR 4.0

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

1 of 1 Page:

Report Date: 21 Jun 07 Lab Number: 07-A23066 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 10:55

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					4 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	5	mg/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	31 May 07 8:00	JED
Carbon, Total Organic	6.5	mg/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	8.6	mg/cubic m	1.0	10200Н	1 Jun 07 13:07	JD
Fecal Coliform, MF	* 45	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	20.8	mq/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	4 Jun 07 8:15	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	4 Jun 07 9:25	TAM
Phosphorus, Total	0.027	mg/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

U = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

rated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

Entered By/Date: JL

+ = Due to extract volume

ND WW/DW # R-040 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M TA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 4.0

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24647 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 10:30

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	l	Analyst
Phosphorus Water Digest BOD, Carbonaceous	< 2	mg/L	2	SM 5210B SM 5210B		7 7 11:43 7 11:29	AKW JED JED
CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic	3 < 2 10.0	mg/L mg/L mg/L	2 0.5	USGS I-3765-85 415.1	7 Jun (13 Jun (7 9:15	CJL Bis
Chlorophyll a Fecal Coliform, MF	1.0 * 900	mg/cubic m CFU/100 mL	1.0	10200H SM 9222D 18th Ed	12 Jun (AJK ES
Chloride Nitrate+Nitrite	4.6 < 0.2	mg/L mg/L as N	3.0 0.2	325.2 353.2		7 12:23	AKW DAP
Nitrogen, Ammonia Phosphorus, Total Phosphorus, Ortho	< 0.16 0.031 0.016	mg/L mg/L	0.16 0.005 0.005	4500 NH3 B, E EPA 365.1 EPA 365.1	12 Jun (7 Jun (7:23	EJP RMV RMV
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun (7 13:00	EJP

J = Colony Forming Units

* Holding time Exceeded

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! \approx Due to sample quantity

= Due to sample concentration

Data Set: ___

+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 4.0 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27466 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 11:00

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					22 Jun 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	21 Jun 07 14:34	JED
CBOD, 20 Day	10	mg/L	2	SM 5210B	21 Jun 07 14:05	JED
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	21 Jun 07 10:00	CJL
Carbon, Total Organic	10.0	mq/L	0.5	415.1	27 Jun 07 8:00	Bis
Chlorophyll a	2.6	mg/cubic m	1.0	10200Н	26 Jun 07 15:02	JD
Fecal Coliform, MF	* 70	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES
Chloride	20.8	mq/L	3.0	325.2	25 Jun 07 13:13	DAP
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	27 Jun 07 14:51	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	21 Jun 07 9:40	EJP
Phosphorus, Total	0.026	mg/L	0.005	EPA 365.1	26 Jun 07 14:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	21 Jun 07 7:39	RMV
Mitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

.U = Colony Forming Units

* Holding time Exceeded

Approved by

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Ent WB 7/25/07 QA WB (0/23/07



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Project Number: 0002-107 Sample Description: CR-4-1 CR 4.0 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29586 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 2 Jul 07 11:10

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					9 Jul 07	AKW
Water Digestions					9 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	3 Jul 07 15:52	JED
CBOD, 20 Day	13	mg/L	2	SM 5210B	3 Jul 07 14:27	JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	3 Jul 07 11:30	CJL
Carbon, Total Organic	8.5	mq/L	0.5	415.1	12 Jul 07 8:00	Bis
Chlorophyll a	1.2	mg/cubic m	1.0	10200Н	10 Jul 07 7:35	JD
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	20 Jul 07 12:00	Calculated
Chloride	22.9	mq/L	3.0	325.2	9 Jul 07 15:20	AKW
Nitrate+Nitrite	0.23	mg/L as N	0.20	353.2	20 Jul 07 12:00	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	5 Jul 07 7:15	TAM
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	10 Jul 07 11:14	DAP
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	3 Jul 07 18:57	DAP
trogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	9 Jul 07 5:40	TAM
on	0.135	mg/L	0.015	6010	9 Jul 07 15:44	CJR

Ent-WB 7/26/07 Of WB 10/23/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 # = Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 4.0 Page: 1 of 1

Report Date: 2 Aug 07 Lab Number: 07-A31299 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 10:30

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride Nitrate+Nitrite Nitrogen, Ammonia Thosphorus, Total Disphorus, Ortho Litrogen, Total Kjeldahl	<pre></pre>	mg/L mg/L mg/L mg/L mg/cubic m CFU/100 mL mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg	2 2 2 0.50 1.0 10. NA 3.0 0.2 0.16 0.005 0.005	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed Calc 325.2 353.2 4500 NH3 B, E EPA 365.1 SM 4500NorgB/NH3 E	13 Jul 07 17 Jul 07 12 Jul 07 11:11 12 Jul 07 11:24 12 Jul 07 11:00 17 Jul 07 11:00 17 Jul 07 19:00 21 Jul 07 13:15 23 Jul 07 13:15 23 Jul 07 13:15 16 Jul 07 11:45 18 Jul 07 11:45 18 Jul 07 11:40 12 Jul 07 18:18 16 Jul 07 15:00	AKW JMS CJL CJL JED Bis JD ES Calculated AKW JGS EJP DAP DAP EJP
Iron	0.107	mg/L	0.015	6010	18 Jul 07 11:37	CJR

Batch matrix spike and spike duplicate recoveries for Nitrate+Nitrite were outside MVTL 85-115% limit at 126% and 126%. Data reported based on acceptable spike duplication and known recovery.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/03/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm. MN

WI LAB # 999447680

- Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! \approx Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

IA LAB #: 132 IA LAB #: 022

ND MICRO # 1013-M ND WW/DW # R-040



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: CR 4.0

Page: 1 of 1

Report Date: 16 Aug 07 Lab Number: 07-A33999 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 25 Jul 07 10:00

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Receiv Result	<i>r</i> ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest				-1-11-1-1-1-1	28 Jul 07	AKW
Water Digestions					27 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	26 Jul 07 11:34	
CBOD, 20 Day	4	mg/L	2	SM 5210B	26 Jul 07 12:00	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	26 Jul 07 9:45	JED
Carbon, Total Organic	9.00	mg/L	0.50	415.1	6 Aug 07 8:00	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	31 Jul 07 9:09	JD
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	6 Aug 07 11:50	Calculated
Chloride	21.0	mq/L	3.0	325.2	3 Aug 07 10:59	AKW
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	6 Aug 07 11:50	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	1 Aug 07 11:50	EJP
Phosphorus, Total	0.006	mg/L	0.005	EPA 365.1	1 Aug 07 10:41	DAP
hosphorus, Ortho	< 0.01	mq/L	0.005	EPA 365.1	26 Jul 07 8:41	DAP
trogen, Total Kjeldahl	0.9	mq/L	0.2	SM 4500NorgB/NH3 E	26 Jul 07 9:50	EJP
_ron	0.114	mg/L	0.015	6010	30 Jul 07 12:37	CJR

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/33/17

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

/ Reporting Limit

Elevated "Less Than Result" $\{<\}$: 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 4.0

1 of 1 Page:

Report Date: 24 Sep 07 Lab Number: 07-A36436 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07 11:15

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 07	KAD
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 20 Day	8	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	6.50	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	1.9	mg/cubic m	1.0	10200Н	10 Aug 07 12:54	JD
Fecal Coliform, MF	1200	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	1.1	mg/L	NA	Calc	13 Aug 07 14:28	Calculated
Chloride	19.8	mg/L	3.0	325.2	14 Aug 07 9:50	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	13 Aug 07 14:28	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	10 Aug 07 8:35	EJP
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
Phosphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	9 Aug 07 8:31	DAP
trogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 07 15:00	EJP

RL for Ortho Phosphorus elevated to 0.01 mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

Data Set:

Entered By/Date: WB 10/08/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): $\theta = Due$ to sample matrix $\theta = Due$ to sample quantity

= Due to sample concentration

+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 4.0

1 of 1 Page:

Report Date: 13 Sep 07 Lab Number: 07-A39073 Work Order #:12-9964 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 22 Aug 07 10:00

Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv Result	<i>r</i> ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Aug 07	KAD
BOD, Carbonaceous	2	mg/L	2	SM 5210B	23 Aug 07 13:56	CJL
CBOD, 20 Day	б	mg/L	2	SM 5210B	23 Aug 07 14:10	CJL
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	- 23 Aug 07 10:30	JED
Carbon, Total Organic	11.00	mq/L	0.50	415.1	29 Aug 07 8:00	Bis
Chlorophyll a	11.6	mg/cubic m	1.0	10200Н	24 Aug 07 9:14	JD
Fecal Coliform, MF	* 190	CFU/100 mL	10.	SM 9222D 20th Ed	22 Aug 07 18:55	MKG
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	28 Aug 07 14:45	Calculated
Chloride	22.6	mq/L	3.0	325.2	27 Aug 07 14:27	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	28 Aug 07 12:47	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	29 Aug 07 9:45	TAM
Phosphorus, Total	0.026	mq/L	0.005	EPA 365.1	29 Aug 07 13:11	DAP
osphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	23 Aug 07 8:56	DAP
crogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	28 Aug 07 14:45	MAT

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/03/07

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

Reporting Limit

Lievated "Less Than Result" (<): @ * Due to sample matrix ! - Due to sample quantity # = Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-048 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125

Client:	(CRWD		Site Location:	CR 4.1
Project No.:	00	002-107		Site Description:	
Date:	1/24/	07	_	Weather:	55° Pt. cloudy
Sampler(s):	WB/N		-	Samples Taken:	
Start Time:	1140		_	Sample Time:	11:50
End Time:			_		
Channel Conditions:	flowi	ng	_	DTW Measurement:	
COC Number:			_		
					Notes: Water 3
		Field Parameters			Notes: Water is flowing fast
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	13.19	428	10.36	8.19	
Stage H	t:		Rated Flow:		Gauged Flow: 189.329

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
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Client:	(CRWD	-	Site Location:	CR 4	1.		
Project No.:	0(002-107	-	Site Description:	CP yasde	- 04 3	-r.b f (CR 40
Date:	5.9.0	7	<u></u>		SUMMY			
Sampler(s):	NIC/WI	3	_	Samples Taken:		es ·	No	
Start Time:	9:30		_	Sample Time:	9:45			
End Time:	9:55		_					
Channel Conditions:	flowing	29	_	DTW Measurement:	1.4	2		
COC Number:			_			1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
				180	Note	es:- W	ter,	<i>'</i> 5
		Field Parameters				es: <u>- W</u> Ge	ar	
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)				,,,
	16.48	431	9.05	7.96		· · · · · · · · · · · · · · · · · · ·		
Stage H	t:		Rated Flow:	The state of the s	Gauged Flo	ow:_/46	1.05	\mathcal{E}

Distance from [7] Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
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	- Str	bar on 1	within	loan k	CAGAA	76(
					Dara Set:	er om var energieren er er eiler er e	ngan ay karang apada sagaran Jan Lonnarassassas and Policians - Alb	55%-80000-80000-154000-154000-154000-154000-154000-154000-154000-154000-154000-154000-154000-154000-154000-154
					Entered E	y/Date: J y/Date: M	7/9/	07
			*		QA/QC II	y/Date: M	619/23	101
		*						

Client:	(CRWD		Site Location:	CR 41	
Project No.:	0(002-107	_			cryo, the st. med
Date:	5.23.07	L .	_	Weather:	cloudy (65°
Sampler(s):	NILINB		_	Samples Taken:		
Start Time:	10 25			Sample Time:		
End Time: Channel Conditions:	1045			-		
Channel Conditions:	floury			DTW Measurement:	2.32	
COC Number:	v					
					Notes:	
		Field Parameters				
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
	19.20	437	7.64	8.24		
Stage H			Rated Flow:		Gauged Flow	\$\$\$\$c65 53.332
			Stream Gaug	ing Data		

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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					Intered 3 _V	/Date:_J	7/9	of many many many many many many many many
					AMMOR.	/Date: J /Date: W	B 10/	3/07
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Client:		RWD .	-	Site Location:	CR 4.	J	
Project No.:	00	02-107	_	Site Description:	Clearwater	Piver Upe	tream co. F
Date:	5.30	07		Weather:	Sonny	75°	++1. wtw.
Sampler(s):	Jess/	Nic	_	Samples Taken:	Yes) No	
Start Time:	10:2	Ð	_	Sample Time:	10:26	-	
End Time:			_		•		·
Channel Conditions:	flowin	α	_	DTW Measurement:	2.36	5	
COC Number:		J	-				
					Notes:		
		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	_		
	21.20	432	9.13	8.18		•	
Stage H	<u>.</u>		Rated Flow:		Gauged Flow:	#4/16 55 371	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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				i i i	MAGE Dy/I	1010:	· 10/25/	0.1

Client:		CRWD -	_	Site Location:	CR4.		
Project No.:	0	002-107	-	Site Description:	Lexwater	liver yetream	of COR
Date:	6-6	-OF	_		409 de	,	40
Sampler(s):	10-6 Nic/	Jess	_	Samples Taken:	Yes) No No	tribul
Start Time:	9:6		_	Sample Time:	10:00		
End Time:	10.12	•	_				:
Channel Conditions:	Flowing	101	_	DTW Measurement:	1.63		
COC Number:				C	.90+		
					Notes:		
]	Field Parameters					
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	р Н (S.U.)	_	•	
	19.6		7.69				
Stage Ht	: <u> </u>	····	Rated Flow:	(Gauged Flow:_	para 16	2.252

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ecity- 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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Client:		CRWD "		Site Location:	CR4		
Project No.:	00	002-107		Site Description:	(Lupst	ream of co	26 40 P
Date:	Ce-20	-07	<u></u>	Weather:	Sonhu	780	Strangulet
Sampler(s):	Nich	Sess-	_	Samples Taken:	Yes	No	
Start Time:	10'	0	_	Sample Time:	10:	20	
End Time:	10:	25	_			<u> </u>	
Channel Conditions:	£100	100\	_	DTW Measurement:	(23.1	5)	<u> </u>
COC Number:		<u> </u>	_	C.got		J.35 -	
					Notes:		
	ĵ	Field Parameters			-		
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			
	21.45	354	7.90	8.26			
					·		
Stage H	t:		Rated Flow:	**************************************	Gauged Flow:	33.140	2

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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				Q.	MOC By/	Date: 7/ 4 Date: WB	10/25/6	Colon 100 6000 Designation of the depth of the colon of t

Elient:	C	RWD		Site Location:	CP 4.1	
Project No.:	00	02-107		Site Description:		
Date:	7.2.2	>7		Weather:	ovecast	650
Sampler(s):	945			Samples Taken:	<u>ক্ট</u>	No
Start Time:	945			Sample Time:	950	
End Time:	1605					
Channel Conditions:	flowy.			DTW Measurement:	Dryat	measury point
COC Number:					2.62	00.
					Notes:	Sand bars emply
		Field Parameters			_	throughout Stream.
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		abundant wegetate
	21.04	396	7.14	8.19	<u> </u>	Sand bars empy thoughout Stream. abundant reget of to ind folamentous al
Stage H	t:		Rated Flow:		Gauged Flow:	7.842

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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Client:	C	RWD		Site Location:	CB A	100 7.
Project No.:	00	02-107		Site Description:		
Date:	7.41.0	7		Weather:	Sunuy	700
Sampler(s):	yıc_			Samples Taken:	<u></u>	No No
	955			Sample Time:	1000	
End Time:						
Channel Conditions:	flow/w		•	DTW Measurement:	29 inch	es (2.42')
COC Number:			-			
					Notes	: - vegetation
		Field Parameters				-vegetation in channel
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	рН (S.U.)		
	2076	365	15.07	8.56		
Stage H	it:		Rated Flow	•	Gauged Flov	w: 20.474

			Velocity	Velo		Average		Discharge
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	Velocity (ft/sec)	Area (ft²)	(Q, ft ³ /sec)
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Page: 1 of 1

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 4.1

Report Date: 22 May 07 Lab Number: 07-A15436 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 11:50 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					2 May 07	DAP
BOD, Carbonaceous	4	mg/L	2	SM 5210B	25 Apr 07 14:26	JED
CBOD, 20 Day	10	mg/L	2	SM 5210B	25 Apr 07 17:39	AKF
Solids, Total Suspended	64	mg/L	2	USGS I-3765-85	25 Apr 07 11:50	JED
Carbon, Total Organic	9.2	mg/L	0.5	415.1	27 Apr 07 10:30	Bis
Chlorophyll a	27.7	mg/cubic m	1.0	10200H	2 May 07 7:05	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Apr 07 19:00	ES
Chloride	18.3	mq/L	3.0	325.2	30 Apr 07 15:47	DAP
Nitrate+Nitrite	0.31	mg/L as N	0.20	353.2	25 Apr 07 15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	30 Apr 07 10:45	TAM
Phosphorus, Total	0.106	mg/L	0.005	EPA 365.1	2 May 07 9:35	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Apr 07 7:20	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	2 May 07 6:30	MAT

CFU = Colony Forming Units

* Holding time Exceeded

January By/Daie: JT 7/9/07 10/25/Daves WB 10/25/07

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

RL = Reporting Limit

Elevated "Less Than Result" (<): @ ... Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

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WES BOLL

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 4.1 Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18769 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 9:45

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest					14 May 0	7	RMV
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	10 May 0	7 14:16	JED
CBOD, 20 Day	5	mg/L	2	SM 5210B	10 May 0	7 13:11	AKF
Solids, Total Suspended	6	mg/L	2	USGS I-3765-85	10 May 0	7 10:50	CJL
Carbon, Total Organic	6.5	mg/L	0.5	415,1	5 Jun 0	7 16:30	Bis
Chlorophyll a	3.5	mg/cubic m	1.0	10200H	11 May 0	7 8:33	JD
Fecal Coliform, MF	* 20	CFU/100 mL	10.	SM 9222D 18th Ed	9 May 0	7 18:05	ES
Chloride	21.4	mg/L	3.0	325.2	16 May 0	7 15:57	DAP
Nitrate+Nitrite	0.29	mg/L as N	0.20	353.2	14 May 0	7 7:22	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15 May 0	7 10:35	TAM
Phosphorus, Total	0.025	mg/L	0.005	EPA 365.1	17 May 0	7 8:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May 0	7 10:06	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	16 May 0	7 6:55	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/25/07

RL = Reporting Limit

= Due to sample concentration + = Due to extract volume



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 4.1

Page: 1 of 1

Report Date: 14 Jun 07 Lab Number: 07-A21653 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 10:30

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Receivéd Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	2	mq/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	8	mq/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	8.4	mq/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 110	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	20.3	mg/L	3.0	325.2	25 May 07 13:13	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.024	mq/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	29 May 07 14:10	EJP

"TU = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: JJ 7/9/07
QA/QC By/Date: WB 10/05/07

Chlor-A-7 Not tested

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity # = Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

1 of 1 Page:

Report Date: 21 Jun 07 Lab Number: 07-A23067 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 10:25

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Sample Description: CR 4.1

Temp at Receipt: 1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		100			4 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	6	mq/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	4	mg/L	2	USGS I-3765-85	31 May 07 8:00	JED
Carbon, Total Organic	7.0	mg/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	7.2	mg/cubic m	1.0	10200Н	1 Jun 07 13:07	JD
Fecal Coliform, MF	* 140	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	21.2	mq/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	0.20	mg/L as N	0.20	353.2	4 Jun 07 8:14	RMV
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	4 Jun 07 9:25	TAM
Phosphorus, Total	0.027	mq/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.2	mg/L	0,2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

U = Colony Forming Units

* Holding time Exceeded

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration + = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/05/07



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 4.1

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24668 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 10:00

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Jun 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	7 Jun 07 11:43	JED
CBOD, 20 Day	3	mg/L	2	SM 5210B	7 Jun 07 11:29	JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	7 Jun 07 9:15	CJL
Carbon, Total Organic	8,5	mg/L	0.5	415.1	13 Jun 07 8:00	Bis
Chlorophyll a	3.0	mg/cubic m	1.0	10200H	12 Jun 07 9:45	AJK
Fecal Coliform, MF	* 40	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES
Chloride	22.4	mg/L	3.0	325.2	11 Jun 07 10:37	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	0.29	mq/L	0.16	4500 NH3 B, E	11 Jun 07 9:15	TAM
Phosphorus, Total	0.024	mg/L	0.005	EPA 365.1	12 Jun 07 11:50	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:00	EJP

U = Colony Forming Units

* Holding time Exceeded

Entered By/Date: **JT 7/9/07**QA/QC By/Date: **WB 10/95/07**

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<); § = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 4.1 Page:

1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27467 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 10:20

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					22 Jun 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	21 Jun 07 14:34	JED
CBOD, 20 Day	11	mg/L	2	SM 5210B	21 Jun 07 14:05	JED
Solids, Total Suspended	3	mq/L	2	USGS I-3765-85	21 Jun 07 11:45	CJL
Carbon, Total Organic	10.0	mg/L	0.5	415.1	27 Jun 07 8:00	Bis
Chlorophyll a	2.8	mg/cubic m	1.0	10200Н	26 Jun 07 15:02	JD
Fecal Coliform, MF	* 55	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES
Chloride	20.6	mg/L	3.0	325.2	25 Jun 07 13:13	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	27 Jun 07 14:51	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	21 Jun 07 9:40	EJP
Phosphorus, Total	0.020	mg/L	0.005	EPA 365.1	26 Jun 07 14:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	21 Jun 07 7:40	RMV
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

U = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" $\{<\}$: @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 0

Ent WB 7/25/07 OA WB 10/25/07



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: CR 4.1 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29583 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 2 Jul 07 9:50

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Nitrogen Total, Calculat Chloride Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total Phosphorus, Ortho Trogen, Total Kjeldahl	< 2 14 < 2 9.0 < 1 1.2 23.2 0.24 < 0.16 0.017 < 0.005 1.0	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2 2 2 0.5 1.0 NA 3.0 0.20 0.16 0.005 0.005	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H Calc 325.2 353.2 4500 NH3 B, E EPA 365.1 EPA 365.1	9 Jul 07 9 Jul 07 3 Jul 07 3 Jul 07 3 Jul 07 12 Jul 07 10 Jul 07 20 Jul 07 20 Jul 07 5 Jul 07 3 Jul 07 3 Jul 07	7 14:14 7 14:27 7 11:30 7 8:00 7 7:35 7 11:43 7 15:20 7 11:43 7 11:14 7 11:14 7 18:57 7 5:40	AKW JMS JED JED CJL Bis JD Calculated AKW DAP TAM DAP DAP TAM
on	0.121	mg/L	0.015	6010	9 Jul 07	15:44	CJR

En+ WB 7/26/07

> QA WB (0/05/17

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" {<}: @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 4.1 Page: 1 of 1

Report Date: 2 Aug 07 Lab Number: 07-A31298 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 10:00

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride Nitrate+Nitrite Nitrogen, Ammonia "osphorus, Total	< 2 13 2 9.00 2.8 * 64 1.1 21.2 < 0.2 < 0.16 0.024 0.007 1.1 0.095	mg/L mg/L mg/L mg/L mg/cubic m CFU/100 mL mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg	2 2 2 0.50 1.0 10. NA 3.0 0.2 0.16 0.005 0.005	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed Calc 325.2 353.2 4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	13 Jul 07 17 Jul 07 12 Jul 07 11:11 12 Jul 07 11:24 12 Jul 07 10:30 19 Jul 07 11:00 17 Jul 07 9:43 11 Jul 07 19:00 21 Jul 07 13:15 23 Jul 07 14:11 21 Jul 07 13:15 16 Jul 07 11:45 18 Jul 07 11:45 18 Jul 07 11:10 12 Jul 07 8:18 16 Jul 07 15:00 18 Jul 07 11:37	AKW JMS CJL CJL JED Bis JD ES Calculated AKW JGS EJP DAP DAP EJP CJR

Batch matrix spike and spike duplicate recoveries for Nitrate+Nitrite were outside MVTL 85-115% limit at 126% and 126%. Data reported based on acceptable spike duplication and known recovery.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/25/07

WI LAB # 999447680

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #; 132 IA LAB #: 022

Client:	CRWD	<u> </u>	Site Location:	CR 7.1
Project No.:	0002-107		Site Description:	Clearwater River @ 161st St
Date:	4/24/07		Weather:	
Sampler(s):	WB,NC	-	Samples Taken:	
Start Time:	10:30		Sample Time:	10:45
End Time:	11:00			
Channel Conditions:	flowing		DTW Measurement:	15.09
COC Number:		_	-	contert top of bridge,
				Notes: Water is Flowing
	Field Parameters			very fast
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	12.94 426	10.30	8.22	
Stage H	t:	Rated Flow	:	Gauged Flow: <u>/83.386</u>

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
					zum Sei			
						magas personalitari visaristys partinianis i ik ().	esse energia i a summinimi de la compania de la co	e e e e e e e e e e e e e e e e e e e
					Determi	3y/Dale:	JT 7/9	10:T
					15.70(/1)0:01	WB 10	130/07
	-samo	led on	downs	ream	cente	- of	brida	0
	- Stren	oled on	er han	kc is	ostoca	r of	bridge	
	- egang	ed ups	tream	OF 1	or dae	60000x	MA	
Department of the second of th	J	1	1	<u>v </u>	1.119(2)	THE PORT	100 17	

425707 Stage F		· 	Rated Flow:		Gauged Flow:	W88 (1884) 172!
2hu et 12:30	16.61		9.43 0%		_	
	13.12	423	9.96	8.25		
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	_	
		Field Parameters	1		_	
					Notes:	
COG Number:	The state of the s		_			
Channel Conditions:	· · ·		-	DTW Measurement	15.16	
End Time:			-		10 11	
Start Time:	12:00	<u> </u>	-	Sample Time		***************************************
Sampler(s):	WE)		Samples Taken	:Yes_	(No)
Date:	4/2	<i>5/07</i>		Weather	550, 8	Punny
Project No.:	00	002-107		Site Description		
Client:		RWD	-	Site Location	: <u>CR 7. 1</u>	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)				•	,			
				,			_	
	-Progra	immed I	5C0 +	o co,	lect	Samples/	15 min	@ 12:00
	-Dump		of I	ve a	+ 11:	00 (
					-	l"		
Photos		_						
0619-G	cass L	ake Dar	1 fac	ng F				
0620-6		Lake						
0621-062	A- Due	hs of da	m					
		V			Data Set:	edatat speedestische eskettikation en zweikte 201. A.Z. 1944		
0623-0	R7.1	Downs	tream)	Entered E	y/Date:	J 7/9/	07
0674 0	R7.1	Downs Upstrea	~			y/Date: 1/	///\	30/07
					10/10/10/10	, , , , , , , , , , , , , , , , , , , ,		

Client:		CRWD		S	Site Location	: <u> </u>	t	
Project No.:	0	002-107			Description		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Date:	6.9.0	1					750	- <u> </u>
Sampler(s):	NIC/WE	3		Sar	nples Taken	: Sunny : (Ye	No	
Start Time:	•			S	ample Time	10:48	5	
End Time:	10:50)	<u></u>		-			
Channel Conditions:	flowing	·		DTW M	Ieasurement	15.4	A	
COC Number:	Ų.						<u> </u>	
70				•		Notes:	-Wlate	20 15
		Field Parameters					clear	ream is
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)) D.O. (mg/l) pH	I (S.U.)	Award,	- 51	ream is
	17.12	428	9.09	7.90	9		With	in land
						귀		III DUNK
Stage H	t:		Rated Flow	/:	<u> </u>	Gauged Flow	.133	. <i>0</i> 82
		;	Stream Gau	ging Data	ı			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	ocity 80% Depth	Average Velocity	Area (ft ²)	Discharge (Q, ft ³ /sec)
Initial Point (ft)	Width (ft)	Depth (ft)		20%	ocity 80%	1 -	Area (ft ²)	- 1
i	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80%	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80% Depth	Velocity	Area (ft²)	- 1
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80% Depth Data Se	Velocity (ft/sec)		(Q, ft ³ /sec)
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80% Depth Data Se	Velocity	T 7/9/	(Q, ft ³ /sec)
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	ocity 80% Depth Data Se	Velocity (ft/sec)	T 7/9/	(Q, ft ³ /sec)

Client:	(CRWD	_	Site Location:	CR 7.(
Project No.:	0(002-107	_	Site Description:	,
Date:	5.23.	07	-	Weather:	cloudy Sprinkles 650
Sampler(s):	NILLW	Samples Taken:			
Start Time:	1112	//2 Sample Time:			1120
End Time:	1140		_		
Channel Conditions:	Cloury	_	<u>-</u>	DTW Measurement:	16.26
COC Number:	•				
					Notes:
		Field Parameters			
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.Ų.)	
	19.31	434	7.65	8.20	
			,,,,,		
Stage Ht:			Rated Flow:	***************************************	Gauged Flow: \$17.54.338

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
		, , , , , , , , , , , , , , , , , , , ,						
								110
	·				Data Si	4 4		
					177 27 \$ 77 24 24	D/12.	77 7/4	1/07
					down a d Si Sin A Sin Sight	By/Date:	JA IN	20107
					AMA	D)///////	ve w	2407

Client:	(CRWD	_	Site Location:	CRF.		
Project No.:	00	002-107	_	Site Description:	Clearwater River C140th St MV		
Date:	5.30	07	_	Weather: SINNU 47			
Sampler(s):	Jes	Nic	_	Samples Taken:	Yes No		
Start Time:	11:2	0	_	Sample Time:	11:30		
End Time:	11:4	2	-				
Channel Conditions:	flowi	24	_	DTW Measurement:	16:50		
COC Number:		2	_				
					Notes: Stagner + looket		
]	Field Parameters			Notes: Stagner + lookey downstran		
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			
	21.91	433	9.03	6.14	Ryst pand sick. downstream of bridge.		
Stage H	; <u> </u>		Rated Flow:		51.025 Gauged Flow: 65		

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ecity 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
0, (left side)								
							-	
	· · · · · · · · · · · · · · · · · · ·							
					Jata Sett		**************************************	
					ntered By	/Daie: JI	7/9/	7
				<u> </u>	A/QC By	/Date: JT /Date: WB	(0[30]	
			* ·· · · · · · · · · · · · · · · · · ·			-		www.percocote.com

Client:		CRWD	_	Site Location:	CR 7.1	
Project No.:	00	002-107		Site Description:	Cleanater Livere, 140	j ^{1h} S
Date:	Co- 6	-07			65° closely	
Sampler(s):	Nich	Je55	_	Samples Taken:		
Start Time:	10: 3	53	_	Sample Time:	der 11:00	
End Time:	11:10	H	-			
Channel Conditions:	- Flow	ing	_	DTW Measurement:	16.11	
COC Number:			-		U: 40+	
					Notes:	
		Field Parameters				
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
	20.3		9.36			
Stage Ht			Rated Flow:		Gauged Flow: Move 112,23	37

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							-	
			·		-			
			**************************************				····	
					Data Set:	: accommission open physicisms repress; . A.C., N.M. Sceller	te en entlet entre en en en entre en en entre en en entre en	- Million de de la companya de la co
1				Non-ex-	intered By	/Date: J †	7/9/	ot
				(MAZOC BA	/Date: WP	2 10/30	107
					,		,	

Client:		CRWD	_	Site Location:	
Project No.:	0(002-107	_	Site Description:	CRC140+11 St NW sing
Date:	6-20	·0+	<u></u>	Weather:	860 SUNNY
Sampler(s):	Nich	Jess		Samples Taken:	Yes No
Start Time:	11: F	<u>+ </u>	_	Sample Time:	11:25
End Time:			_		
Channel Conditions:	Placin	<u>na</u>	_	DTW Measurement:	16.54
COC Number:			-	C-85	. •
P					Notes: murky - how waln
		Field Parameters			While bridge and
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	desurtion.
	235	551	746	9.36	
Stage Ht	;		Rated Flow:		Gauged Flow: ANAL

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
0, (left side)								
							-	-
								:
				f		annigen e e e e e e e e e e e e e e e e e e	- New Comment of the State of t	entre de la companya
				Ë	itered By	Daie: JI	7/9/0	L
				Q	A/QC By:	Date: WE	2 10/31/	Commence of the commence of th
							, , ,	

Client:		CRWD	_	Site Location:	CR7-1	
Project No.:	00	002-107	_	Site Description:		
Date:	7.7.07		.	Weather:	overest o	(05°
Sampler(s):	Me		-	Samples Taken:	(Yes	No
Start Time:	10310		<u>.</u>	Sample Time:	1645	
End Time:	1055		.			
Channel Conditions:	Slowing		<u>.</u>	DTW Measurement:	16.88	
COC Number:	U		.			
		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Notes: _	Vegetation (pondweed) No filamentous algre
		Field Parameters	Yr		a	nt filamentous algre
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	p H (S.U.)	<u>a</u>	bundant and
	21.43	367	7.19	8-62	a	bundant and Itering flow in vest side of channel
					ı	vest side of channel
Stage H	t:	w.xxx	Rated Flow:		Gauged Flow:	9.360cB

D:			Velocity	Velo	ocity	Augraga		Diasharas
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							-	
					Oafa Sett.	to the succession and succession of the successi	Вин добе и е опшинентаційную де напишиння е бастра де це	Service demonstrates annual for remark datase in Security Services
					Entered B	y/Date: JJ	7/9/0	7
					DA/OC B	v/Date: W	B 10/3	0/87
								V

Client:		CRWD		Site Location:	CR 7./
Project No.:	00	002-107	Site Description:		
Date:	7.11.00			Weather:	Suny 950
Sampler(s):	pic		•	Samples Taken:	No No
Start Time:	1050		-	Sample Time:	1100
End Time:	W 150 11 11 11 11 11 11 11 11 11 11 11 11 11				
Channel Conditions:	flowng DTW Measureme			DTW Measurement:	16.49
COC Number:			-		
					Notes:
		Field Parameters			-sandbar on
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	- sandbar or West side of Channel
	22.74	363	7.65	8.49	channel
Stage H	t:		Rated Flow: Stream Gaug	ing Data	Gauged Flow: 27.298
			T	V = 1	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
			:				=	
:								
			Data	lat:				
		•	F-37-70-06	4 29/13	MR	7/12/	10	
			QA/0		WB	2 17	nizmo brancamer.	
			6.24	- 1977LEI	§	10/50,	27	·
		The state of the s						
				:				

Client:	CRWD	Site Locati	on: CTI
Project No.:	0002-107	Site Descripti	on: Cleawater (rossing @ 140th of
Date:	1.25.07		ner: 90° Sunny NW
Sampler(s):	JUSS/NV	Samples Tak	en: Yes No
Start Time:	10:51	Sample Tir	ne: 1:05
End Time:	11:25	_	
Channel Conditions:	Mowing	DTW Measureme	ent: 17.12
COC Number:		_	
			Notes:
	Field Parameters		
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	
	24.17 .386	9.34 8.66	
	•	1	
Stage H	::	Rated Flow:	Gauged Flow: 3.3

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							-	
19		Data Sc	8 annes Casson and Grade And Spatters, cell of	Name - Name (Name (Name - Colombia (Name - Andrea)	No. No species a construction of the construct	><4-0.05440000-m-cmor		
		Entered	By/Date:.	WB	7/25/	<u> </u>		
		QA/QC	By/Datet.	WP.	, 10/30	01		
								11000
								The state of the s
							With the second	

Blient:	<u>C</u>	RWD		Site Location:	CR 7.1
Project No.:	00	02-107		Site Description:	
Date:	8.8.67			Weather:	Sury 850
Sampler(s):	hic			Samples Taken:	
Start Time:	1135			Sample Time:	1145
End Time:	1155				
Channel Conditions:	Clown	8		DTW Measurement:	17.09
COC Number:					
					Notes: with of
]	Field Parameters			dramed is dristically
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	Jess. sandling cry
	22-69	499	7.02	8 ol	gamment now.
					1.17
Stage H	t:		Rated Flow:		Gauged Flow: Of Classical Control of Control

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
			Data Se		The state of the s		- depth-life/America and a	
				3y/Date:	1	10/08/0		
			QA/QC	گ _ا //Date:	WB_	10/30/67	²⁰⁰ Celeysolomic weg.	
1								
					, , , , , , , , , , , , , , , , , , , ,			

Client:		CRWD	_	Site Location:	CR 7	٠(
Project No.:	00	002-107	_	Site Description:			
Date:	8.22.07	· <u> </u>	-	Weather:	schuf	760	
Sampler(s):	NIC		_	Samples Taken:		e No	
Start Time:	1030		_	Sample Time:	10 45	i	
End Time:	1055		_				
Channel Conditions:	1055 floury	•	-	DTW Measurement:	16.61		
COC Number:			-				
			V . 10000 SERVICE		Note	es: slighty	nere Pleas
		Field Parameters				b/c of	men Pleso
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			of min.
	22.21	539	7.69	7.59			
Stage H	t:		Rated Flow:		Gauged Flo	ow: 2512 6	75.181 A

Distance from		· · · ·	Velocity		ocity	Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft ²)	(Q, ft ³ /sec)
(11)			Depth)	Depth	Depth	(ft/sec)		(Q, 11 /Sec)
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Page: 1 of 1

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 7.1

Report Date: 22 May 07 Lab Number: 07-A15434 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 10:45 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					2 May 07	DAP
BOD, Carbonaceous	3	mg/L	2	SM 5210B	25 Apr 07 14:26	JED
CBOD, 20 Day	11	mg/L	2	SM 5210B	25 Apr 07 17:39	AKF
Solids, Total Suspended	6	mg/L	2	USGS I-3765-85	25 Apr 07 9:45	JED
Carbon, Total Organic	8.6	mg/L	0.5	415.1	27 Apr 07 10:30	Bis
Chlorophyll a	5.6	mg/cubic m	1.0	10200H	2 May 07 7:05	JD
Fecal Coliform, MF	* 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Apr 07 19:00	ES
Chloride	18.5	mg/L	3.0	325.2	30 Apr 07 15:47	DAP
Nitrate+Nitrite	0.30	mg/L as N	0.20	353.2	25 Apr 07 15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	30 Apr 07 10:45	TAM
Phosphorus, Total	0.041	mg/L	0.005	EPA 365.1	2 May 07 9:35	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Apr 07 7:19	DAP
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	2 May 07 6:30	TAM

CFU = Colony Forming Units

* Holding time Exceeded

A STATE OF THE PARTY OF THE PAR Linkered By/Dake: JT 7/9/07 CARC BI/Date: WB 10/30/07

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 7.1

1 of 1 Page:

Report Date: 8 Jun 07 Lab Number: 07-A18772 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 10:45

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest					14 May 07		₽ М У
BOD, Carbonaceous	3	mg/1.	2	SM 5210B	10 May 07	14.16	JETA
CBOD, 20 Day	5	mg/L	2	SM 5210B	10 May 0	13:31	ARP
Solids, Total Suspended	16	mq/L	2	USGS I-3765-85	10 May 07	12:05	CJL
Carbon, Total Organic	7.5	mg/L	0.5	415.1	5 Jun 07	16:30	Bis
Chlorophyll a	3.3	mg/cubic m	1.0	10200H	11 May 07	8:31	JD
Fecal Coliform, MF	* 54	CFU/100 mL	10.	SM 9222D 18th Ed	9 May 07		
Chloride	21.7	mq/L	3.0	325.2	16 May 07	15:57	DAP
Nitrate+Nitrite	0.26	mg/L as N	0.20	353.2	14 May 07	7:22	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15 May 07	10:35	TAM
Phosphorus, Total	0.041	mg/L	0.005	EPA 365.1	17 May 07	7 8:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May 07	10:06	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	16 May 07	6:55	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Data Sett _____

Entered By/Date: JT 7/9/07

QA/QC By/Date: WB 10/30/07

RL = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix t = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 7.1

Page: 1 of 1

Report Date: 14 Jun 07 Lab Number: 07-A21651 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 11:20

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	8	mg/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	12	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	8.6	mg/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 460	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	20.6	mg/L	3.0	325.2	25 May 07 12:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.025	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	29 May 07 14:10	EJP

"U = Colony Forming Units

* Holding time Exceeded

Entered By/Date: JT 7/9/07

QA/OC By/Date: WB 10/30/01 Chlor-A: NOT Tested for

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

. Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND WW/DW # R-040 ND MICRO # 1013-M IA LAB 8: 132 IA LAB #: 022



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Sample Description: CR 7.1

1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Page: 1 of 1

Report Date: 21 Jun 07 Lab Number: 07-A23065 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 11:30

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					4 Jun 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	6	mg/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	4	mq/L	2	USGS I-3765-85	31 May 07 8:00	JED
Carbon, Total Organic	6.5	mq/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	4.7	mg/cubic m	1.0	10200H	1 Jun 07 13:07	JD
Fecal Coliform, MF	45	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	21.7	mq/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	4 Jun 07 8:15	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	31 May 07 8:55	TAM
Phosphorus, Total	0.024	mg/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

"U = Colony Forming Units

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

AReporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Entered By/Date: JT 7/9/07

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1 of 1 Page:

Report Date: 21 Jun 07 Lab Number: 07-A23068 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 10:07

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Sample Description: T 4.0

Temp at Receipt: 1.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest				····	4 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	3	mq/L	2	SM 5210B	31 May 07 11:04	CJL
Solids. Total Suspended	2	mg/L	2	USGS I-3765-85	31 May 07 8:00	JED
Carbon, Total Organic	9.5	mq/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	5.8	mg/cubic m	1.0	10200H	1 Jun 07 13:07	JD
Fecal Coliform, MF	* 200	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	6.7	mg/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	4 Jun 07 8:14	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	4 Jun 07 9:25	TAM
Phosphorus, Total	0.052	mg/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	0.020	mg/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

TU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Data Set;

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB [0/36/07



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MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 7.1

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24646 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER
Date Sampled: 6 Jun 07 11:00

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	7 Jun 07 11:43	JED
CBOD, 20 Day	3	mq/L	2	SM 5210B	7 Jun 07 11:29	JED
Solids, Total Suspended	9	mg/L	2	USGS I-3765-85	7 Jun 07 9:15	CJL
Carbon, Total Organic	9.0	mg/L	0.5	415.1	13 Jun 07 8:00	Bis
Chlorophyll a	2.7	mg/cubic m	1.0	10200H	12 Jun 07 9:45	AJK
Fecal Coliform, MF	* 40	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES
Chloride	21.8	mg/L	3.0	325.2	11 Jun 07 10:22	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	7 Jun 07 11:20	EJP
Phosphorus, Total	0.027	mg/L	0.005	EPA 365.1	12 Jun 07 11:50	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:00	EJP

J = Colony Forming Units

* Holding time Exceeded

Data Sett,

Entered By/Date: JT 7/9/07

QA/QC By/Date: WB 10/30/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

+ = Bue to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WENCK ASSOCIATES INC
1800 PIONEER CRK CTR
MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 7.1 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27465 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 11:25

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					22 Jun 07	AKW
BOD, Carbonaceous	3	mg/L	2	SM 5210B	21 Jun 07 14:34	JED
CBOD, 20 Day	11	mg/L	2	SM 5210B	21 Jun 07 14:05	JED
Solids, Total Suspended	10	mg/L	2	USGS I-3765-85	21 Jun 07 10:00	Clr
Carbon, Total Organic	10.5	mg/L	0.5	415.1	27 Jun 07 8:00	Bis
Chlorophyll a	20.9	mg/cubic m	1.0	10200Н	26 Jun 07 15:02	JD
Fecal Coliform, MF	* 82	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES
Chloride	20.2	mg/L	3.0	325.2	25 Jun 07 13:13	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	27 Jun 07 14:51	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	21 Jun 07 9:40	EJP
Phosphorus, Total	0.331	mg/L	0.005	EPA 365.1	26 Jun 07 13:59	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365,1	21 Jun 07 7:39	RMV
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

J = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040

IA LAB #: 132

IA LAB #: 022



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: CR 7.1 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29584 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 2 Jul 07 10:45

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					9 Jul 07	AKW
Water Digestions					9 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	3 Jul 07 14:14	JED
CBOD, 20 Day	13	mg/L	2	SM 5210B	3 Jul 07 14:27	JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	3 Jul 07 11:30	CJL
Carbon, Total Organic	10.5	mg/L	0.5	415.1	12 Jul 07 8:00	Bis
Chlorophyll a	2.1	mg/cubic m	1.0	10200H	10 Jul 07 7:35	JD
Nitrogen Total, Calculat	1.0	mg/L	AN	Calc	20 Jul 07 12:00	Calculated
Chloride	25.0	mg/L	3.0	325.2	9 Jul 07 15:20	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	20 Jul 07 12:00	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	5 Jul 07 7:15	TAM
Phosphorus, Total	0.030	mg/L	0.005	EPA 365.1	10 Jul 07 11:14	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	3 Jul 07 18:57	DAP
trogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	9 Jul 07 5:40	TAM
on	0.209	mg/L	0.015	6010	9 Jul 07 15:44	CJR

Ent NB 7/26/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 7.1

1 of 1 Page:

Report Date: 2 Aug 07 Lab Number: 07-A31300 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 11:00

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					13 Jul 07	AKW
Water Digestions					17 Jul 07	JMS
BOD, Carbonaceous	2	mg/L	2	SM 5210B	12 Jul 07 11:11	CJL
CBOD, 20 Day	16	mg/L	2	SM 5210B	12 Jul 07 11:24	CJL
Solids, Total Suspended	7	mg/L	2	USGS I-3765-85	12 Jul 07 10:30	JED
Carbon, Total Organic	9.50	mg/L	0.50	415.1	19 Jul 07 11:00	Bis
Chlorophyll a	5.5	mg/cubic m	1.0	10200Н	17 Jul 07 9:43	JD
Fecal Coliform, MF	* 18	CFU/100 mL	10.	SM 9222D 20th Ed	11 Jul 07 19:00	ES
Nitrogen Total, Calculat	1.1	mq/L	NA	Calc	21 Jul 07 13:15	Calculated
Chloride	21.4	mg/L	3.0	325.2	23 Jul 07 14:11	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	21 Jul 07 13:15	JGS
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	16 Jul 07 11:45	EJP
Phosphorus, Total	0.031	mg/L	0.005	EPA 365.1	18 Jul 07 11:23	DAP
osphorus, Ortho	0.008	mg/L	0.005	EPA 365.1	12 Jul 07 8:18	DAP
_trogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	16 Jul 07 15:00	EJP
Iron	0.153	mg/L	0.015	6010	18 Jul 07 11:37	CJR

Batch matrix spike and spike duplicate recoveries for Nitrate+Nitrite were outside MVTL 85-115% limit at 126% and 126%. Data reported based on acceptable spike duplication and known recovery.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/OC By/Date: WB 10/30/01

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 - Fax 515-382-3885 www.mvtl.com



WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: CR 7.1

1 of 1 Page:

Report Date: 16 Aug 07 Lab Number: 07-A34000 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 25 Jul 07 11:05

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					28 Jul 07	AKW
Water Digestions					27 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	26 Jul 07 11:34	CJL
CBOD, 20 Day	11	mg/L	2	SM 5210B	26 Jul 07 12:00	CJL
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	26 Jul 07 9:45	JED
Carbon, Total Organic	10.00	mq/L	0.50	415.1	6 Aug 07 8:00	Bis
Chlorophyll a	5.5	mg/cubic m	1.0	10200Н	1 Aug 07 8:41	JD
Nitrogen Total, Calculat	1.3	mq/L	NA	Calc	6 Aug 07 11:50	Calculated
Chloride	22.0	mg/L	3.0	325.2	3 Aug 07 10:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	6 Aug 07 11:50	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	1 Aug 07 11:50	EJP
Phosphorus, Total	0.030	mg/L	0.005	EPA 365.1	1 Aug 07 10:41	DAP
hosphorus, Ortho	< 0.01	mq/L	0.005	EPA 365.1	26 Jul 07 B:41	DAP
trogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	26 Jul 07 9:50	EJP
ron	0.465	mg/L	0.015	6010	30 Jul 07 12:37	CJR

Data Set: ___

Entered By/Date: WB 10/08/07

QA/QC By/Date: WB 10/3 107

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 7.1

1 of 1 Page:

Report Date: 24 Sep 07 Lab Number: 07-A36437 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07 11:45

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receir Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 07	KAD
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 20 Day	8	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	8.00	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	3.8	mg/cubic m	1.0	10200Н	10 Aug 07 12:54	JD
Fecal Coliform, MF	2400	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	1.1	mg/L	NA	Calc	13 Aug 07 14:28	Calculated
Chloride	25.3	mg/L	3.0	325.2	14 Aug 07 10:04	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	13 Aug 07 14:28	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	10 Aug 07 8:35	EJP
Phosphorus, Total	0.028	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
Phosphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	9 Aug 07 8:31	DAP
trogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 07 15:00	EJP

RL for Ortho Phosphorus elevated to 0.01 mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

Emered By/Date: WB 10/08/07

ONOC BY Date: WB 10/30/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

/ Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

IA LAB #: 132

IA LAB #: 022

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 7.1

Page: 1 of 1

Report Date: 13 Sep 07 Lab Number: 07-A39074 Work Order #:12-9964 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 22 Aug 07 10:45

Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv Result	<i>r</i> ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Aug 07	KAD
BOD, Carbonaceous	5	mg/L	2	SM 5210B	23 Aug 07 13:56	CJL
CBOD, 20 Day	6	mg/L	2	SM 5210B	23 Aug 07 14:10	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	23 Aug 07 10:30	JED
Carbon, Total Organic	9.50	mg/L	0.50	415.1	29 Aug 07 8:00	Bis
Chlorophyll a	4.8	mg/cubic m	1.0	10200Н	24 Aug 07 9:14	JD
Fecal Coliform, MF	* 160	CFU/100 mL	10.	SM 9222D 20th Ed	22 Aug 07 18:55	MKG
Nitrogen Total, Calculat	1.2	mg/L	NА	Calc	28 Aug 07 14:45	Calculated
Chloride	23.7	mg/L	3.0	325.2	27 Aug 07 14:27	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	28 Aug 07 12:47	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	29 Aug 07 9:45	TAM
Phosphorus, Total	0.023	mg/L	0.005	EPA 365.1	29 Aug 07 13:11	DAP
esphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	23 Aug 07 8:56	DAP
trogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	28 Aug 07 14:45	TAM

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: NB 10/08/07
QA/OC By/Date: NB 10/30/07

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND WW/DW # R-040 IA LAB #: 132

ND MICRO # 1013-M

Client:	(CRWD	_	Si	ite Location	:_CR (1.5	
Project No.:	00	002-107	_	Site	Description	Dam a	at Gras	s hake C
Date:	4/21	1/07			Weather	50°	Cloud	
Sampler(s):	WP	NČ		San	nples Taken	Yes) No	
Start Time:	10:0	90			ample Time	10	15	
End Time:	10: 6	15	_		·			
Channel Conditions:	Water	flouring a	over dam	DTW M	easurement			
COC Number:					45	Gauge	: 3.46	2
			_		ds	Gauge Gauge Gauge	3.36	,
		Field Parameters					-dam	15
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l) pH	(S.U.)		Subm	
	12.90	423	11.68	8.4	12		-water	is clea
				()		_		
Stage H	t:		Rated Flow	/:		Gauged Flow	not go Dam o	w site
And the second s		1	Stream Gau	ging Data				
Distance from	Width (ft)	Donth (ft)	Velocity	Velo	ocity 80%	Average	- 7.	Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	Depth	Depth	Velocity (ft/sec)	Area (ft ²)	(Q, ft ³ /sec)
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		Did /	Vot					
		Did /	Vot				-	
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		Did /	Vot					
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		Did /	Vot					
		Did /	Vot		Dans Se		Jan W. Prostate	
		Did /	Vot		Dan Se	<i>SQD</i>		10/30/07

Client:	C	CRWD		Site Location:	CR9	1.5
Project No.:	00	02-107	-	Site Description:	Grass	Lake Dam
Date:	4/25	<i>l</i> 07	_	Weather:		
Sampler(s):	WB'		-	Samples Taken:	Yes	No
Start Time:			-	Sample Time:		
End Time:			.			
Channel Conditions:	•		-	DTW Measurement:		6
COC Number:			_		ds: 336	
					Notes:	
		Field Parameters				
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	_	
	,			•		
Stage H	t:		Rated Flow		Gauged Flow:	
			•			

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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	- Dum	ped 50	02 0	£ 9	ve a	11:45		
	- Dye	15 Circ	lina i	h edi	lus de	ownstre	em of	dam
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· d					シロコ じてし	the second secon	Temperat New Committee Englandering Co. Co. Although State Co. Co.	
					Entered 8	y/Date: J	J 7/9/	0 L
					PA/QC B	/Date:		and the second of the second o

Client:	CRWD	Site Location:	CP 9.5
roject No.:	0002-107	Site Description:	Grass Lake Dam
Date:	6.9.07	Weather:	Suny 70°
Sampler(s):	NIC/WB	_ Samples Taken:	Yes No
Start Time:	10:55	Sample Time:	11:10
End Time:	11;20	_	
Channel Conditions:	flowing	DTW Measurement:	105:3.18
COC Number:	, ,		DS: 288
			Notes: -water is flowing
	Field Parameters		over dam
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	-water level just
DS of dam	17.19 1419	11.47 8.32	above crest
US of dem	17.17 419	11.44 8.31	•
Stage H	t:	Rated Flow:	Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q. ft ³ /sec)
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				9.00				
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			<u> </u>					

					Data S	The state of the second of the	ego, ego, and protest	
					Entere	d By/Datet.	JIJ	19/07
					QA/Q	d By/Date:_ C B _y /Date:_	WB	0 30 /01

Client:	(CRWD		;	Site Location	: CR 9.	5	
Project No.:	0	002-107				contly		. Ło
Date:	5-23.0	7-				closede		
Sampler(s):	NILLW	<u>3</u>		Sa		: <i>K</i> e)
Start Time:	1145					12:00		
End Time:	1205				•			
Channel Conditions:	flowing	_	- 	DTW N	Measurement	: US	-29	4
COC Number:						: US	- 1.8	4
						Notes	: ~ 4.76.	ter flow
		Field Parameters		/			0100	dam
Sample I.D.	Temp. (°C)	Cond. (mS/cm) D.O. (mg/	1) p I	H (S.U.)	-		inches
	18.73	418	8.72	8.L	15			
						⊒.	below	dam
Stage H	t:	···	Rated Flov	V:		Gauged Flov		
						Ü		
			Stream Gau	iging Dat	a			
Distance from	33 P. Lit. (65)		Velocity	Ve 20%	locity	Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	Depth	80% Depth	Velocity (ft/sec)	Area (ft ²)	(Q, ft ³ /sec)
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					Date Cat			
					Data Set:	The state of the s	7/	21.4
				1	Entered i	2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /	JT 7/9	1407
3					QWGC I	y/Dire	ub iq	130/02
				L	I)]

					9.5
Client:		CRWD "	_	Site Location:	CL MA
Project No.:	00	002-107	_	Site Description:	Outlet of Glass lake below Pan
Date:	5.3	0.07	_	Weather:	overcast 750
Sampler(s):	Nic	Jes	.	Samples Taken:	•
Start Time:	11:50)	_	Sample Time:	12:00
End Time:	17:6	4	_		
Channel Conditions:	Power	M	_	DTW Measurement:	vpstrcam: 2.94
COC Number:	,		•		bownstrum: 1.80
[Notes: water enter he
		Field Parameters			sever from the later
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	appeared green in tent.
	21.04	पार	10.45	8.49	were than in the port-
Stage H	t:	·	Rated Flow:	**************************************	Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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				E:	itered By/	Date: JI Date: Wi	7/9/0	T
<u> </u>				<u> </u>	4/00 By/	Date: W	7 10/3	
					:			

					9.5
Client:		CRWD	_	Site Location	CR GET
Project No.:	0	002-107	-	Site Description	: atlet of Glasslake, Jelas
Date:	(0-6-	07	_		: 60° Clardy Dam
Sampler(s):	Nich	KS5	_	Samples Taken	· No
Start Time:	11:35	5	-	Sample Time:	11:46
End Time:	11:6	50	_		
Channel Conditions:	Flowir	M	_	DTW Measurement:	2.62 downs h
COC Number:		<u> </u>	_		300 Upstur
				C-90+	Notes: high levels
		Field Parameters			1
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	comer out of
	19.78		9.73		commy out of the lake
				, , , , , , , , , , , , , , , , , , , ,	
Stage Ht	•	N-Maria	Rated Flow:	**************************************	Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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1				(WILE.	/Date:_ J	10/01	30/01
						ĺ		

Client:		CRWD	-	Site Location:	CR915
Project No.:	00	002-107	_	Site Description:	outlet of Grass lake below
Date:	Co-20	2-07	_	Weather:	Sunny 85° Du
Sampler(s):	Nic/	565	_	Samples Taken:	Mes No
Start Time:	12:1	5	_	Sample Time:	12:26
End Time:	12:	20	_		
Channel Conditions:	Flowing	20	_	DTW Measurement:	Dan: 1.60
COC Number:		$\overline{}$	-		J55/860M : 2.56
					Notes:
	1	Field Parameters			
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	рН (S.U.)	
	24.77	<u> </u>	9.52	8.00	
					•
Stage H	t:		Rated Flow:		Gauged Flow:

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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					200			
					Data Set:		The same of the sa	net annula the entire emission of the entire
						y/Date:して		
					QA/QC B	y/Date: W .	B 10/3	C0/0

Člient:	·	CRWD	<u></u>	Sit	e Location:	CR 9.	5	
Project No.:	00	002-107	_	✓ Site Description:				
Date:	7.7.0	7-	Weather:			6bacart	50°	
Sampler(s):	MC		_	Sam		P s		
Start Time:	1100		_	Sa	mple Time:	1110		
End Time:	1115							
Channel Conditions:	Plaving		_	DTW Me	easurement:	us: 2, 7	Ч	
COC Number:			_		(d9:11:24	e.	
						Notes:		
		Field Parameters	- IE:-				water	r barely
Sample I.D.		Cond. (mS/cm)	D.O. (mg/l)	pН	(S.U.)		flowing	r barely g ever
	22.94	331	7.59	8.6	9		dam	
Stage H	t:		Rated Flow	-		Gauged Flow	•	····
			Stream Gau	ging Data				
Distance from	***************************************	D (1.46)	Velocity	Velo 20%	eity 80%	Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	Depth	Depth	Velocity (ft/sec)	Area (ft ²)	(Q, ft ³ /sec)
0, (left side)								
							-	:
				 	 			

	Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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								-	
			*			***************************************			
	Page 1								
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l				14					
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F					Ent	ered By/D	nie: WI	2	Stat. 29 Mil-109 Mily - Andrew Inglycom;
					QA	QC By/D	WB.	[0]30]	
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Elient:		RWD	_	Site Location:	_CR	9.5		
Project No.:	00	02-107	_	Site Description:				
Date:	7.11.	07	_	Weather:	5u n	<u> </u>		00
Sampler(s):	KU-		_	Samples Taken:) No	1100
Start Time:	1155		-	Sample Time:	178	0		
End Time:			_		,			
Channel Conditions:	Plaws.	70	_	DTW Measurement:		ARPER SELECTION		
COC Number:		U	_					
					No	tes: —	wate	2/15
		Field Parameters				4)/(ho
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			ver	The
3	25.23	338	8.69	8.83			dao	
					=		J. 80	1-45
Stage H	t:		Rated Flow:	:	Gauged F	low:	1. 42	9-ds
	***************************************				J			
}		S	Stream Gaug	ging Data				
				Velogity				

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)							:	
		Data Set:		/\ \	-	a start diffe		
		Entered By/	Date: VV	B 11	12/07	e (VAMERICO)		
		CAMC BA		WB	(0/30)	1		
)								

llient:	CRWD	_	Site Location:	CK 9.5	<u> </u>	· · · · · · · · · · · · · · · · · · ·
Project No.:	0002-107	_	Site Description:	wtlet of	- (wasslu	ke balas
Date:	7.25-04	_	Weather:		Sonny	Dam
Sampler(s):	JOSE NIV	_	Samples Taken:	Yes) No	
Start Time:	10.22	_	Sample Time:	10:3:	5	
End Time:		_				
Channel Conditions:	Placing	-	DTW Measurement:	Down stream	- 1.15	
COC Number:		_		costeem	2-70	
				Notes:		
	Field Parameters					
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			
	24.45 .353	7.07	63	_		
						1
Stage H		Rated Flow:	-	Gauged Flow:_	4,839	Ź

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
0, (left side)								
		Engag 3y/I	Missing William	7/	25/01	AARIG		
	÷	- Qa/QC B,/ [UB (13010	}		
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Client:		CRWD	_	Site Location:	<u>CR. 9</u>	· 2_	
Project No.:	00	002-107	<u>-</u>	Site Description:			
Date:	8.22.0		_	Weather:	SURRY	<u> ጉ</u> ፄ¹	9
Sampler(s):	NIC		-	Samples Taken:		ed .	No
Start Time:	1050		-	Sample Time:	1115		
End Time:	1125		-				
Channel Conditions:	& lowery.	•	-	DTW Measurement:	Upsteen	- 2.8	8
COC Number:			-	d	lours from	-1.7	?2
					Note	:s: <u>w</u>	when flower
		Field Parameters					- dan veg
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)			ghtly prsty only
	21-89	८५ ८	7.92	80(st a week or so
Stage H	t:		Rated Flow:		Gauged Flo	ow:	

Distance from	Width (ft)	Depth (ft)	Velocity (60%	Vel	ocity 80%	Average	A (Q ²)	Discharge
Initial Point (ft)	widii (ii)	Depth (1t)	Depth)	Depth	Depth	Velocity (ft/sec)	Area (ft²)	(Q, ft ³ /sec)
0, (left side)								
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		(, (, (, (, (, (, (, (, (, (, (, (, (, (1,					
		Data Set:	. ,	N	alaala	1		
		Entered By/Da	re: <u>N</u>	0 1	0000			
		QA/QC By/Da	5 A	70 1	0/30/01			
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PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 9.5

Report Date: 22 May 07 Lab Number: 07-A15433 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 10:15 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest					2 May 0'	,	DAP
BOD, Carbonaceous	3	mg/L	2	SM 5210B	25 Apr 0	14:26	JED
CBOD, 40 Day	Not Enter	ed	2	SM 5210B	-		
CBOD, 20 Day	19	mg/L	2	SM 5210B	25 Apr 0	7 17:39	AKF
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	25 Apr 0	9:45	JED
Carbon, Total Organic	8.2	mg/L	0.5	415,1	27 Apr 0	7 10:30	Bis
Chlorophyll a	6.7	mg/cubic m	1.0	10200H	2 May 0	7:05	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Apr 0'	7 19:00	ES
Chloride	18.9	mq/L	3.0	325.2	30 Apr 0'	7 15:47	DAP
Nitrate+Nitrite	0.30	mg/L as N	0.20	353.2	25 Apr 0	7 15:39	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	30 Apr 0'	7 10:45	TAM
Phosphorus, Total	0.049	mg/L	0.005	EPA 365.1	2 May 0	7 9:35	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Apr 0	7:19	DAP
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	2 May 0	6:30	MAT

CFU = Colony Forming Units

* Holding time Exceeded

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Entered	By/Date:	JT 3	7/9/07	"Mil-dd"—"Stind" seprencesserarios
QA/QC	Bi/Daidi	WB	10130	107

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WES BOLL

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 9.5 Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18773 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 9 May 07 11:10

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Receiv Result	eđ	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					14 May 07	RMV
BOD, Carbonaceous	< 2	mq/L	2	SM 5210B	10 May 07	14:16 JED
CBOD, 20 Day	6	mg/L	2	SM 5210B	10 May 07	13:11 AKF
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	10 May 07	12:05 CJL
Carbon, Total Organic	6.5	mg/L	0.5	415.1	5 Jun 07	16:30 Bis
Chlorophyll a	2.2	mg/cubic m	1.0	10200H	11 May 07	8:31 JD
Fecal Coliform, MF	* 10	CFU/100 mL	10.	SM 9222D 18th Ed	9 May 07	18:05 ES
Chloride	21.9	mg/L	3.0	325.2	16 May 07	15:57 DAP
Nitrate+Nitrite	0.27	mg/L as N	0.20	353.2	14 May 07	7:23 RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15 May 07	10:35 TAM
Phosphorus, Total	0.025	mq/L	0.005	EPA 365.1	17 May 07	8:00 DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May 07	10:06 DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	16 May 07	6:55 TAM

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/30/07

RL = Reporting Limit

alevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 9.5

1 of 1 Page:

Report Date: 14 Jun 07 Lab Number: 07-A21650 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 12:00

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		·	***************************************		29 May 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	9	mq/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	9.0	mg/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	110	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	20.9	mg/L	3.0	325.2	25 May 07 12:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.018	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	29 May 07 14:10	EJP

'FU = Colony Forming Units

Data Set:

Entered By/Daie: JT 7/9/07

QA/QC By/Date: Wb 10/30/07 (WOT A -7 NOT Tested for

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

A Reporting Limit

Elevated "Less Than Result" {<}: 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 CERTIFICATION: MN LAB # 027-015-125 IA LAB #: 132 IA LAB #: 022



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Page: 1 of 1

Report Date: 21 Jun 07 Lab Number: 07-A23064 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 12:00

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Sample Description: CR 9.X5 Temp at Receipt: 1.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					4 Jun 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	31 May 07 11:25	CJL
CBOD, 20 Day	6	mg/L	2	SM 5210B	31 May 07 11:04	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	31 May 07 8:00	JED
Carbon, Total Organic	7.5	mg/L	0.5	415.1	8 Jun 07 16:00	Bis
Chlorophyll a	2.3	mg/cubic m	1.0	10200Н	1 Jun 07 13:07	JD
Fecal Coliform, MF	18	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:10	ES
Chloride	21.7	mg/L	3.0	325.2	31 May 07 8:42	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	4 Jun 07 8:15	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	31 May 07 8:55	TAM
Phosphorus, Total	0.014	mg/L	0.005	EPA 365.1	5 Jun 07 8:07	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	31 May 07 8:12	DAP
Nitrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:10	EJP

'U = Colony Forming Units

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration + = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Data Set:___

Entered By/Date: TT 7/9/07



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 9.X5

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24645 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 11:45

Sampled By: NICK C

6 Jun 07 16:00 Date Received:

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	W				7 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	7 Jun 07 11:43	JED
CBOD, 20 Day	4	mg/L	2	SM 5210B	7 Jun 07 11:29	JED
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	7 Jun 07 9:15	CJL
Carbon, Total Organic	9.0	mq/L	0.5	415.1	13 Jun 07 8:00	Bis
Chlorophyll a	3.6	mg/cubic m	1.0	10200Н	12 Jun 07 9:45	AJK
Fecal Coliform, MF	* 10	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES
Chloride	21.8	mq/L	3.0	325.2	11 Jun 07 10:22	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	7 Jun 07 11:20	EJP
Phosphorus, Total	0.018	mg/L	0.005	EPA 365.1	12 Jun 07 11:50	RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:00	EJP

J = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: Jt 7/9/07

QA/QC By/Date: WB 10/30/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

/Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 9.5

1 of 1 Page:

Report Date: 12 Jul 07 Lab Number: 07-A27472 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 12:25

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Chloride	< 2 10 3 10.5 7.8 10 21.0	mg/L mg/L mg/L mg/L mg/cubic m CFU/100 mL mg/L	2 2 2 0.5 1.0 10. 3.0	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed 325.2	22 Jun 07 21 Jun 07 14:50 21 Jun 07 14:05 21 Jun 07 11:45 27 Jun 07 8:00 26 Jun 07 15:02 20 Jun 07 18:25 25 Jun 07 13:14	AKW JED JED CJL Bis JD ES DAP
Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total Phosphorus, Ortho Witrogen, Total Kjeldahl	< 0.2 < 0.16 0.017 < 0.005 0.6	mg/L as N mg/L mg/L mg/L mg/L	0.2 0.16 0.005 0.005 0.2	353.2 4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	27 Jun 07 14:52 25 Jun 07 8:25 26 Jun 07 14:00 21 Jun 07 7:40 21 Jun 07 15:15	DAP EJP DAP RMV EJP

.U = Colony Forming Units

Enti WB 7/75/07 WB 10/30/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

* Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 \simeq Due to sample matrix ! \simeq Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 022 IA LAB #: 132



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: CR 9.5 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29585 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 2 Jul 07 11:10

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Nitrogen Total, Calculat Chloride	2 12 < 2 10.0 2.5 1.3 23.4	mg/L mg/L mg/L mg/cubic m mg/L	2 2 2 0.5 1.0 NA 3.0	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H Calc 325.2	9 Jul 07 9 Jul 07 3 Jul 07 14:14 3 Jul 07 14:27 3 Jul 07 11:30 12 Jul 07 8:00 10 Jul 07 7:35 20 Jul 07 12:00 9 Jul 07 15:20	JED CJL Bis JD Calculated
Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total Phosphorus, Ortho trogen, Total Kjeldahl	< 0.2 < 0.16 0.074 0.033 1.3 0.054	mg/L as N mg/L mg/L mg/L mg/L mg/L	0.2 0.16 0.005 0.005 0.2 0.015	353.2 4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	20 Jul 07 12:00 5 Jul 07 7:15 10 Jul 07 11:14 3 Jul 07 18:57 9 Jul 07 5:40 9 Jul 07 15:44	TAM DAP DAP

Ent WB 7/26/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 0

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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 9.5 Page: 1 of 1

Report Date: 2 Aug 07 Lab Number: 07-A31302 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 12:00

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic	< 2 13 5 9.50	mg/L mg/L mg/L mg/L	2 2 2 0.50	SM 5210B SM 5210B USGS I-3765-85 415.1	13 Jul 07 17 Jul 07 12 Jul 07 13:36 12 Jul 07 11:24 12 Jul 07 10:30 19 Jul 07 11:00	AKW JMS CJL CJL JED Bis
Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride Nitrate+Nitrite Nitrogen, Ammonia "bosphorus, Total psphorus, Orthotrogen, Total Kjeldahl Iron	4.7 * 27 1.0 23.5 < 0.2 < 0.16 0.022 0.007 1.0 < 0.015	mg/Cubic m mg/Cubic m CFU/100 mL mg/L mg/L mg/L as N mg/L mg/L mg/L mg/L mg/L mg/L mg/L	1.0 10. NA 3.0 0.2 0.16 0.005 0.005	10200H SM 9222D 20th Ed Calc 325.2 353.2 4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	17 Jul 07 9:43 11 Jul 07 19:00 21 Jul 07 13:32 23 Jul 07 14:11 21 Jul 07 11:45 18 Jul 07 11:23 12 Jul 07 8:32 20 Jul 07 13:45 18 Jul 07 11:37	JD ES Calculated AKW JGS EJP DAP DAP EJP CJR

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/OC By/Date: WB 10/30/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" {<}: θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: CR 9.5

Page: 1 of 1

Report Date: 16 Aug 07 Lab Number: 07-A33996 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 25 Jul 07 10:35

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					28 Jul 07	AKW
Water Digestions					27 Jul 07	JMS
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	26 Jul 07 11:34	CJL
CBOD, 20 Day	11	mg/L	2	SM 5210B	26 Jul 07 12:00	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	26 Jul 07 9:45	JED
Carbon, Total Organic	11.00	mg/L	0.50	415.1	6 Aug 07 8:00	Bis
Chlorophyll a	3.0	mg/cubic m	1.0	10200H	31 Jul 07 9:09	JD
Nitrogen Total, Calculat	1.1	mg/L	NA	Calc	6 Aug 07 11:33	Calculated
Chloride	23.2	mg/L	3.0	325.2	3 Aug 07 10:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	6 Aug 07 11:33	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	1 Aug 07 11:50	EJP
Phosphorus, Total	0.016	mg/L	0.005	EPA 365.1	1 Aug 07 10:28	DAP
Thosphorus, Ortho	< 0.01	mq/L	0.005	EPA 365.1	26 Jul 07 8:27	DAP
trogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	26 Jul 07 9:50	EJP
Leon	0.030	mg/L	0.015	6010	30 Jul 07 12:37	CJR

Entered By/Date: WB 10/08/07
CA/OC By/Date: WB 10/30/09

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" {<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 51 L Avenue ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 9.5

1 of 1 Page:

Report Date: 24 Sep 07 Lab Number: 07-A36438 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07 12:30

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 07	KAD
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 40 Day	22	mg/L	2	SM 5210B	9 Aug 07 11:53	
CBOD, 20 Day	10	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	9.50	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	8.5	mg/cubic m	1.0	10200Н	10 Aug 07 12:54	JD
Fecal Coliform, MF	28000	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	1.5	mg/L	NA	Calc	20 Aug 07 13:40	Calculated
Chloride	24.7	mg/L	3.0	325.2	14 Aug 07 10:04	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	13 Aug 07 14:28	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	14 Aug 07 9:15	EJP
Phosphorus, Total	0.040	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
osphorus, Ortho	< 0.01	mg/L	0,005	EPA 365.1	9 Aug 07 8:31	DAP
trogen, Total Kjeldahl	1.5	mg/L	0.2	SM 4500NorgB/NH3 E	20 Aug 07 13:40	EJP

RL for Ortho Phosphorus elevated to 0.01~mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

Entered By/Date: WB 10/08/07
QA/OC By/Date: WB 10/30/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

Due to sample concentration ND WW/DW # R-040

+ = Due to extract volume

IA LAB #: 132

ND MICRO # 1013-M



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 9.5

Page: 1 of 1

Report Date: 13 Sep 07 Lab Number: 07-A39075 Work Order #:12-9964 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 22 Aug 07 11:15

Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Aug 07	KAD
BOD, Carbonaceous	3	mg/L	2	SM 5210B	23 Aug 07 13:56	
CBOD, 20 Day	8	mg/L	2	SM 5210B	23 Aug 07 14:10	CJL
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	23 Aug 07 10:30	JED
Carbon, Total Organic	11.50	mg/L	0.50	415.1	29 Aug 07 8:00	Bis
Chlorophyll a	5.1	mg/cubic m	1.0	10200Н	24 Aug 07 9:14	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 20th Ed	22 Aug 07 18:55	MKG
Nitrogen Total, Calculat	1.3	mq/L	NA	Calc	28 Aug 07 14:45	Calculated
Chloride	23.7	mg/L	3.0	325.2	27 Aug 07 14:27	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	28 Aug 07 12:47	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	29 Aug 07 9:45	TAM
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	29 Aug 07 13:11	DAP
osphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	23 Aug 07 8:56	DAP
rogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	28 Aug 07 14:45	MAT

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/30/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 8 = Due to sample matrix ! = Due to sample quantity = Due to sample concentration

ND WW/DW # R-040

+ = Due to extract volume

IA LAB #: 132 IA LAB #: 022

ND MICRO # 1013-M

Client:	CRWD	Site Location:	CR 10.1
Project No.:	0002-107	Site Description:	Clearwater Lake Outlet
Date:	4/24/07	Weather:	
Sampler(s):	WBINC	Samples Taken:	Yes No
Start Time:	8:50	Sample Time:	9:15
End Time:			
Channel Conditions:	flowing	DTW Measurement:	10,58 Lake Gange: 11.60
COC Number:			Lake Gange: 11.60
			Notes:
	Field Parameters		
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	
	12.87 423	11.76 8.42	
H anet2	t·	Rated Flow:	Gauged Flow: 190,06

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q. ft ³ /sec)
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3 3 3 3 3 3 3 3 3 3		3	0.07	1.01	0.24	1	-	
18	V	3/\	/ /		0/50			
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					Data Set.		and the second s	
							JT 7	19/07
1					QA/QC E	y/Date:W	b 10/	<u> </u>

* Duplicate SIte

Client:	,	an tito		_		25		
		CRWD			Site Location	ECP	10.1	<u>, </u>
Project No.:	- 100	002-107	_	Site	Description	:- IEGNU	vater 1	Lake Out
Date:	-510	7/0/	_					
Sampler(s):	WB	11VC	<u> </u>	Sai	mples Taken	: 	No	
Start Time:	11:00			S	Sample Time	11:35		
End Time:	11:5		_					
Channel Conditions:	Flow	ma		DTW N	leasurement	10.8	13	
COC Number:					Lak	:	: 11.36	
	***************************************				, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Notes		
		Field Parameters				Attended to the state of the st	- filar	nentous a
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/	l) pF	I (S.U.)		and i	regetation
	17.61	419	11.67	7 8,	3		Dieces	nentous a regetation Suspendente
						=1	in Str	ram
Stage F	It:		Rated Flov	v:		Gauged Flox	v. 10=	3,983
				***************************************		8		
			Stream Gai	iging Dat	a			
Distance from			Velocity		ocity	Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	Velocity	Area (ft ²)	(Q, ft ³ /sec)
			Deptity		-	(ft/sec)		
0, (left side)								
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-			3					
					tata Set:	to engage a control or resource of the St. W. and the second of the seco	economica es consumera en en escala y estado	months of the state of the stat
				100	ntered Su	Date. F	7/10	103

A/QC By Date: W

Client:		CRWD	_	Site Location	: CR 10.1
Project No.:	0	002-107	_	Site Description	claude lake ofter
Date:	6.23.0	7	-		: cloudy/sprinkly 650
Sampler(s):	MIC/WB		-	Samples Taken	Ces No
Start Time:	12:05		_	Sample Time:	12:15
End Time:	12125		_		
Channel Conditions:	flourng		_	DTW Measurement:	11.06
COC Number:			<u>.</u>		
					Notes:
		Field Parameters			
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	18.66		8.46	8.41	
		7421			
Stage H	1		Rated Flow:		Gauged Flow: 37,569
					and the second

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
				:	Data Sett.	Commonth (Control of Annie of		
			,		Entered By	Baci JI	7-191	07
				(DA/OCB.	Maria W	5 10/4	/67
\								And the Control of the State of

Client:		CRWD	_	Site Location:	CR 10.1		
Project No.:	0(002-107	_	Site Description:	atlet of a	learwort	Wake C
Date:	5.30	. ot	_		overcast		colld.
Sampler(s):	Nich	J055	<u></u>	Samples Taken:	Yes	No	
Start Time:	17:0	00	<u>.</u>	Sample Time:	12:15		·
End Time:	1230	·	-				
Channel Conditions:	flow	ina	_	DTW Measurement:	10.94		
COC Number:			_		•	•	
					Notes:		
		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	р Н (S.U.)			
	20.63	419	10.02	8.44			
				•	-		
Stage H	-4 -1		Rated Flow	:	Gauged Flow: 5	559.38	20

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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				T)est	1 Sate			
						ナナ	2101	6 7
					red By/D		1010	1
1				- VA	(QC B ₃ /I)	OF STREET, STR	/	JUL
				·		· · · · · ·		
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Client:		CRWD "	_	Site Location	: CR 10.1
Project No.:	0	002-107	_	Site Description	: outlet of Clearwaterlake @
Date:	6-6	-07	_	Weather	: 60° class co. Rd
Sampler(s):	Nic	Jess .	-	Samples Taken	: Pes No Crossia
Start Time:	11:53	>	-	Sample Time	12:05
End Time:	12:15		_		
Channel Conditions:	flowi	<u> </u>	_	DTW Measurement	10.82
COC Number:		<u> </u>	_	C-90 [Ga. 11.25
					Notes: Vey hyl, dighty
		Field Parameters			Motes: Very high, dighty.
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	, , ,
	20.5		10.13		
	_				
Stage Ht	·•	Tracks.	Rated Flow:	E-8-2010-0-0-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	Gauged Flow: 105.16

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	ocity~ 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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			·					
					Tata Set: _	se magget (2015) por months and magget (2015)	······································	NEW ANNOUNCES - SOFTENESS - NESSEC - S.
					Entered By	/Date:	- 7/9	107
<u> </u>				I .	1	/Dare: W	* 1	16-7

Client:		CRWD "	_	Site Location:	CR 10		
Project No.:	00	002-107	_	Site Description:	parct 0	Leorlake C	coRd
Date:	Ce 20	-04	_	Weather:	SONAU	86°	12
Sampler(s):	Nict	Tess	_	Samples Taken:	Yes	No	1
Start Time:	11:4	5	_	Sample Time:	1250	11:55	·
End Time:		:	_				·
Channel Conditions:	flow:	na	_	DTW Measurement:	11.54		
COC Number:		<u> </u>	-		•		
	Market 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				Notes:		<u>-</u>
		Field Parameters					
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	рН (S.U.)			
	23.70	326	9.83	8,74			
				THE	,		
Stage Ht	:		Rated Flow	•	Gauged Flow:	70 30.2	'00°

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, fi ³ /sec)
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								-
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				ŲA.	UU by/U	The first of the control of the cont	and the second seco	W/WEE W. 172

Client:	C	RWD		Site Location:	CP 10.	
Project No.:	00	02-107		Site Description:		
Date:	7.2.0	7		Weather:	Ran	650
Sampler(s):	ML			Samples Taken:	<u> </u>	No No
Start Time:	11:20		-	Sample Time:	//:36	
End Time:	12:40					
Channel Conditions:	flowing			DTW Measurement:	11.26	
COC Number:			-			
	not sometimes				Notes	: - very ()++/e
]	Field Parameters				flow
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		- vegetation abunda
	23.14	33 %	8.41	8.78		- vegetation abunda in channel
						(Portweets)
Stage H	[t:	**************************************	Rated Flow:	:	Gauged Flo	A A

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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					Data Sett	· · · · · · · · · · · · · · · · · · ·	t de trois de la train de la referencie de la companya de la colonia de la colonia de la colonia de la colonia	et 5 v 1 April 12 September 2000 en
					Colored B	v/Date:	WB	
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Client:	C	RWD		Site Location:	CR 10.	
Project No.:	00	02-107		Site Description:		
Date:	7.11.27 NIC			Weather:	SLHny	75°
Sampler(s):	p1c_			Samples Taken:	(Yes)	No
Start Time:	1120			Sample Time:	1130	
End Time:						
Channel Conditions:	Ploring			DTW Measurement:		
COC Number:				lake gage:		
					Notes:	manany t
		Field Parameters				
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
	22.96	334	8.64	୫.୫୪		
Stage H	t:		Rated Flow:		Gauged Flow	16.22

Stream Gauging Data

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							-	
		Data Set:		TAIA	7 m			
			sy/Date:	WB	10/09/6	1		
					7			
							:	1010

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lient:		CRWD	<u> </u>	Site Location	- (b 10).	
Project No.:	0	002-107	_	Site Description	note of	clearwater 1	alce (
Date:	1.25	5-07		Weather	9005	onm	Co. 1
Sampler(s):	_Jes	Mic		Samples Taken:	Yes) No	'.
Start Time:	11:37		-	Sample Time:	11:46		
End Time:	11:5	8	_				<u></u>
Channel Conditions:	Flowir	70	_	DTW Measurement:	11.15		
COC Number:	· · · · · · · · · · · · · · · · · · ·	<u>)</u>	_				
		10.100111111111111111111111111111111111	s.		Notes:		
		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	рН (S.U.)			
	27.62	347	S.AB	平多			
			943	8.93	_		
54. TT	.		9.91		Caused Die	Mrs 7.636	\
Stage H	[:		Rated Flow:		Gauged Flow:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
			i I				
	Data Set	managanas managanas seguna mis managanas (ga) . e juma	R 10	7/08/07	_{CC}		
	Entered 39	Dag: W	VB	i0/04/0	<u> </u>		
	QA/QC B	/Date:	Service of the service of the	ALANYAMIAN KARINGANIAN YANIMAN KARINGANIAN YANIMAN KARINGANIAN KARINGANIAN YANIMAN KARINGANIAN KANINGANIAN KARINGANIAN			
	Width (ft)	Data Set.— Entered 5) QA/QC By	Data Set. Data Set. Entered 5)/Date: V QA/QC B /Date:	Width (ft) Depth (ft) (60% Depth) Depth Depth Depth Data Set. Entered 5)/Date: Who Depth	Depth (ft) (60% 20% Depth De	Width (ft) Depth (ft) (60% Depth) Depth Depth Pepth Velocity (ft/sec) Data Set. B 10/03/07 Entered 3)/Date: 10/09/07	Width (ft) Depth (ft) (60% Depth) Depth Depth Depth Velocity (ft/sec) Area (ft²) Data Set. Entered B)/Date: 10/08/07 QA/QC B /Date: 10/08/07

Client:		CRWD	_	Site Location:	CR 10.
Project No.:	00	002-107	_	Site Description:	
Date:	8.22.07 NIC	<u> </u>		Weather:	Surry 75°
Sampler(s):	NIL		_	Samples Taken:	(es) No
Start Time:	1135		-	Sample Time:	1200
End Time:	1215		_		
Channel Conditions:	Flowing.		_	DTW Measurement:	
COC Number:			-	late	gaze: 11.10
					Notes:
]	Field Parameters			
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	
	21.83	571	8.12	7.78	
Stage H	t:	···········	Rated Flow	<u>:</u>	Gauged Flow: 23.819

Distance from			Velocity	Velo		Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft ²)	(Q, ft ³ /sec)
			Depth)	Depth	Depth	(ft/sec)		(Q, 11 /300)
0, (left side)								
							-	
			Data S	2[;	Mary classification 3. 5 Novice Adaptive control control			
				By/Dat		10/08/07	3-00-4-4-00000	
			QA/QC	By/Date	:_WP	10/08/07 > 10/09/	07	
						and the second s	The second secon	
:								

MVTL

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1 of 1 Page:

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 10.1 Report Date: 22 May 07 Lab Number: 07-A15432 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 9:15 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Received Result		Method RL	Method Reference	Date Analyzed			Analyst	
Phosphorus Water Digest					2	Мау	07		DAP
BOD, Carbonaceous	4	mg/L	2	SM 5210B	25	Apr	07	14:26	JED
CBOD, 20 Day	16	mg/L	2	SM 5210B	25	Apr	07	17:39	AKF
Solids, Total Suspended	7	mg/L	2	USGS I-3765-85	25	Apr	07	9:45	JED
Carbon, Total Organic	8.4	mg/L	0.5	415.1	27	Apr	07	10:30	Bis
Chlorophyll a	8.2	mg/cubic m	1.0	10200H	2	Мау	07	7:05	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	24	Apr	07	19:00	ES
Chloride	19.0	mg/L	3.0	325.2	30	Apr	07	15:47	DAP
Nitrate+Nitrite	0.30	mg/L as N	0.20	353.2	25	Apr	07	15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	30	Apr	07	10:45	TAM
Phosphorus, Total	0.039	mg/L	0.005	EPA 365.1	2	May	07	9:35	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25	Apr	07	7:19	DAP
Nitrogen, Total Kjeldahl	0.6	mg/L	0.2	SM 4500NorgB/NH3 E	2	May	07	6:30	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Data Set: Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/67

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

RL = Reporting Limit

slevated "Less Than Result" (<): @ * Due to sample matrix ! " Due to sample quantity

* Due to sample concentration
• * Due to extract valume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

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WES BOLL

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 10.1 Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18774 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 11:35

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest					14 May 07		RMV
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	10 May 07	14:16	JED
CBOD, 20 Day	9	mq/L	2	SM 5210B	10 May 07	13:11	AKF
Solids, Total Suspended	3	mq/L	2	USGS I-3765-85	10 May 07	12:05	CJL
Carbon, Total Organic	6.5	mg/L	0.5	415.1	5 Jun 07	16:30	Bis
Chlorophyll a	1.1	mg/cubic m	1.0	10200H	11 May 07	8:31	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	9 May 07	18:05	ES
Chloride	22.8	mg/L	3.0	325.2	16 May 07	15:57	DAP
Nitrate+Nitrite	0.28	mq/L as N	0.20	353.2	14 May 07	7:23	RMV
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	15 May 07	10:35	TAM
Phosphorus, Total	0.028	mg/L	0.005	EPA 365.1	17 May 07	8:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May 07	10:07	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	16 May 07	6:55	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/07

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WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: FD 1

Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18775 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

**************************************	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					14 May 07	RMV
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	10 May 07 14:30	JED
CBOD, 20 Day	7	mg/L	2	SM 5210B	10 May 07 13:11	AKF
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	10 May 07 12:05	CJL
Carbon, Total Organic	6.5	mg/L	0.5	415.1	5 Jun 07 16:30	Bis
Chlorophyll a	1.7	mg/cubic m	1.0	10200H	11 May 07 8:31	JD
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	9 May 07 18:05	ES
Chloride	22.3	mq/L	3.0	325.2	16 May 07 15:57	DAP
Nitrate+Nitrite	0.27	mg/L as N	0.20	353.2	14 May 07 7:23	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15 May 07 10:35	TAM
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	17 May 07 8:00	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May 07 10:07	DAP
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	16 May 07 6:55	MA'I

CFU = Colony Forming Units

Approved by:

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

Entered By/Date: JJ 7/9/07
QA/QC By/Date: WB 10/9/07

RL = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Bue to sample concentration
+ = Due to extract volume

^{*} Holding time Exceeded

^{**} No collection time supplied by the client.



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MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 10.1

1 of 1 Page:

Report Date: 14 Jun 07 Lab Number: 07-A21649 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 12:15

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest			*		29 May 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	24 May 07 11:28	JED
CBOD, 20 Day	9	mg/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	6	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	9.0	mg/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	300	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	20.5	mg/L	3.0	325.2	25 May 07 12:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	29 May 07 14:10	

TU = Colony Forming Units

Data Set: Entered By/Date: JT 7/9/07

Chlor A -7 not tested for

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

= Due to sample concentration

+ = Due to extract volume

IA LAB #: 022

CERTIFICATION: MN LAB # 027-015-125

WI LAB # 999447680

ND MICRO # 1013-M ND WW/DW # R-040

IA LAB #: 132



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MAPLE PLAIN MN 55359-9000

1 of 1 Page:

Report Date: 21 Jun 07 Lab Number: 07-A23063 Work Order #:12-6461 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 30 May 07 12:15

Sampled By: NICK C

Date Received: 30 May 07 16:00

PO #: 0002-107

Sample Description: CR 10.1

Temp at Receipt: 1.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					4 Jun 07	AKW
BOD, Carbonaceous	< 2	mq/L	2	SM 5210B	31 May 07 11:2	5 CJL
CBOD, 20 Day	5	mg/L	2	SM 5210B	31 May 07 11:0	4 CJL
Solids, Total Suspended	< 2	mq/L	2	USGS I-3765-85	31 May 07 8:0	O JED
Carbon, Total Organic	7.5	mq/L	0.5	415.1	8 Jun 07 16:0	O Bis
Chlorophyll a	2.2	mg/cubic m	1.0	10200Н	1 Jun 07 13:0	7 JD
Fecal Coliform, MF	82	CFU/100 mL	10.	SM 9222D 18th Ed	30 May 07 17:1	O ES
Chloride	21.7	mq/L	3.0	325.2	31 May 07 8:4	2 AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	4 Jun 07 8:1	5 RMV
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	31 May 07 8:5	5 TAM
Phosphorus, Total	0.013	mg/L	0.005	EPA 365.1	5 Jun 07 8:0	7 RMV
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	31 May 07 8:1	2 DAP
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	4 Jun 07 8:1	O EJP

U = Colony Forming Units

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/9/07

CERTIFICATION: MN LAB # 027-015-125

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

IA LAB #: 022 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 WI LAB # 999447680



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MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 10.1

Page: 1 of 1

Report Date: 29 Jun 07 Lab Number: 07-A24644 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 12:05

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyz	ed	Analyst
Phosphorus Water Digest					7 Jun	07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	7 Jun	07 11:43	JED
CBOD, 20 Day	5	mg/L	2	SM 5210B	7 Jun	07 11:29	JED
Solids, Total Suspended	7	mg/L	2	USGS I-3765-85	7 Jun	07 9:15	CJL
Carbon, Total Organic	8.5	mq/L	0.5	415.1	13 Jun	07 8:00	Bis
Chlorophyll a	3.0	mg/cubic m	1.0	10200H	12 Jun	07 9:45	AJK
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun	07 18:55	ES
Chloride	21.5	mg/L	3.0	325.2	11 Jun	07 10:22	AKW
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	7 Jun	07 12:23	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	7 Jun	07 11:20	EJP
Phosphorus, Total	0.020	mq/L	0.005	EPA 365.1	12 Jun	07 11:50	RMV
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	7 Jun	07 7:22	RMV
'trogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun	07 13:00	EJP

ofU = Colony Forming Units

* Holding time Exceeded

Approved by

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<); 8 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

IA LAB #: 132

IA LAB #: 022

ND MICRO # 1013-M ND WW/DW # R-040



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: CR 10.1 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27464 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 11:55

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Receiv Result	red	Method Method RL Reference		Date Analyzed	Analyst
Phosphorus Water Digest BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Chloride Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total	3 21 16 10.5 10.8 * < 10 21.2 < 0.2 < 0.16 0.022	mg/L mg/L mg/L mg/L mg/cubic m CFU/100 mL mg/L mg/L as N mg/L mg/L	2 2 2 0.5 1.0 10. 3.0 0.2 0.16 0.005	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed 325.2 353.2 4500 NH3 B, E EPA 365.1	22 Jun 07 21 Jun 07 14:34 21 Jun 07 14:05 21 Jun 07 10:00 27 Jun 07 8:00 26 Jun 07 15:02 20 Jun 07 18:25 25 Jun 07 13:13 27 Jun 07 14:51 21 Jun 07 9:40 26 Jun 07 14:00	AKW JED JED CJL Bis JD ES DAP DAP EJP DAP
Phosphorus, Ortho "trogen, Total Kjeldahl	< 0.005 1.0	mg/L mg/L	0.005 0.2	EPA 365.1 SM 4500NorgB/NH3 E	21 Jun 07 7:39 21 Jun 07 15:15	RMV EJP

__U = Colony Forming Units

* Holding time Exceeded

1991 - Commonwealer (Control of the Control of the
Entered By/Date:
QNOCBY/Date WB 10/9/07-Intered WE
7/25/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration

+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 027



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL Project Number: 0002-107 Sample Description: CR 10.1 Page: 1 of 1

Report Date: 24 Jul 07 Lab Number: 07-A29580 Work Order #:12-7958 Account #: 013173

Sample Matrix: SURFACE WATER
Date Sampled: 2 Jul 07 11:30

Sampled By: NICK C

Date Received: 3 Jul 07 9:55

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Nitrogen Total, Calculat Chloride Nitrate+Nitrite	3 14 < 2 10.5 2.8 0.9 25.2 < 0.2	mg/L mg/L mg/L mg/L mg/Cubic m mg/L mg/L mg/L	2 2 2 0.5 1.0 NA 3.0	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H Calc 325.2 353.2	9 Jul 07 9 Jul 07 3 Jul 07 14:14 3 Jul 07 14:27 3 Jul 07 11:30 12 Jul 07 8:00 10 Jul 07 7:35 20 Jul 07 11:43 9 Jul 07 15:20 20 Jul 07 11:43	AKW JMS JED JED CJL Bis JD Calculated AKW DAP
Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total Phosphorus, Ortho "rogen, Total Kjeldahl on	< 0.16 0.019 < 0.005 0.9 0.034	mg/L mg/L mg/L mg/L mg/L	0.16 0.005 0.005 0.2 0.2	4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	5 Jul 07 7:15 10 Jul 07 11:00 3 Jul 07 18:56 9 Jul 07 5:40 9 Jul 07 15:44	TAM DAP DAP TAM CJR

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix θ = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

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MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: CR 10.1 Page: 1 of 1

Report Date: 2 Aug 07 Lab Number: 07-A31301 Work Order #:12-8261 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 11 Jul 07 11:30

Sampled By: WES B

Date Received: 11 Jul 07 15:50

PO #: 0002-107

Temp at Receipt: 0.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride Nitrate+Nitrite Nitrogen, Ammonia Thosphorus, Total osphorus, Orthotrogen, Total Kjeldahl Iron	3 38 6 10.50 3.3 * 40 1.1 22.6 < 0.2 < 0.16 0.022 0.007 1.1 0.080	mg/L mg/L mg/L mg/L mg/cubic m CFU/100 mL mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg	2 2 2 0.50 1.0 10. NA 3.0 0.2 0.16 0.005 0.005	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed Calc 325.2 353.2 4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	13 Jul 07 17 Jul 07 12 Jul 07 12 Jul 07 13:36 12 Jul 07 10:30 19 Jul 07 11:00 17 Jul 07 9:43 11 Jul 07 19:00 21 Jul 07 13:15 23 Jul 07 14:11 21 Jul 07 13:15 16 Jul 07 11:45 18 Jul 07 11:23 12 Jul 07 8:32 16 Jul 07 15:00 18 Jul 07 11:37	AKW JMS CJL CJL JED Bis JD ES Calculated AKW JGS EJP DAP DAP EJP CJR

Batch matrix spike and spike duplicate recoveries for Nitrate+Nitrite were outside MVTL 85-115% limit at 126% and 126%. Data reported based on acceptable spike duplication and known recovery.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07
QA/QC By/Date: WB 10/09/07

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: CR 10.1

1 of 1 Page:

Report Date: 16 Aug 07 Lab Number: 07-A34001 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 25 Jul 07 11:45

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Nitrogen Total, Calculat Chloride Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total osphorus, Ortho trogen, Total Kjeldahl	3 10 5 11.00 2.2 1.3 23.7 < 0.2 < 0.16 0.016 0.011 1.3 0.056	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2 2 2 0.50 1.0 NA 3.0 0.2 0.16 0.005 0.005 0.2	SM 5210B SM 5210B USGS 1-3765-85 415.1 10200H Calc 325.2 353.2 4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	28 Jul 07 27 Jul 07 26 Jul 07 11:46 26 Jul 07 12:00 26 Jul 07 9:45 6 Aug 07 8:41 6 Aug 07 11:50 3 Aug 07 11:50 6 Aug 07 11:50 1 Aug 07 11:50 1 Aug 07 11:50 1 Aug 07 11:50 26 Jul 07 8:41 31 Jul 07 8:43 30 Jul 07 12:3	CJL DED Calculated AKW DAP

Data Set: ____ Entered By/Date: WB

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

2 Reporting Limit

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

Due to sample concentration

+ = Due to extract volume

IA LAB #: 132 IA LAB #: 022 ND WW/DW # R-040 ND MICRO # 1013-M CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680



1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 35 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER TMDL

Sample Description: FD1

Page: 1 of 1

Report Date: 16 Aug 07 Lab Number: 07-A34002 Work Order #:12-8817 Account #: 013173

Sample Matrix: SURFACE WATER

Date Sampled: 25 Jul 07

Sampled By: NICK C

Date Received: 25 Jul 07 15:15

PO #: CLEARWATER

Temp at Receipt: 4.0C

	As Recei [.] Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					28 Jul 07 27 Jul 07	AKW JMS
Water Digestions	2	/T	2	SM 5210B	26 Jul 07 11:48	CJL
BOD, Carbonaceous CBOD, 20 Day	2 8	mg/L mg/L	2	SM 5210B	26 Jul 07 12:00	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	26 Jul 07 9:45	JED
Carbon, Total Organic	10.00	mg/L	0.50	415.1	6 Aug 07 8:00	Bis
Chlorophyll a	2.1	mg/cubic m	1.0	10200Н	1 Aug 07 8:41	JD
Nitrogen Total, Calculat	1.6	mg/L	NA	Calc	6 Aug 07 11:50	Calculated
Chloride	23.4	mg/L	3.0	325.2	3 Aug 07 10:59	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	6 Aug 07 11:50	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	2 Aug 07 8:40	EJP
Phosphorus, Total	0.016	mg/L	0.005	EPA 365.1	1 Aug 07 10:41	DAP
hosphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	26 Jul 07 8:41	DAP
trogen, Total Kjeldahl	1.6	mq/L	0.2	SM 4500NorgB/NH3 E	31 Jul 07 8:30	EJP
ron	0.040	mg/L	0.015	6010	30 Jul 07 12:37	CJR

** No collection time supplied by the client.

Jason G. Smith, Inorganic

Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity = Due to sample concentration

+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: CR 10.1

1 of 1 Page:

Report Date: 24 Sep 07 Lab Number: 07-A36439 Work Order #:12-9361 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 8 Aug 07 13:00

Sampled By: NICK C

Date Received: 8 Aug 07 15:30

PO #: CRWD TMDL

Temp at Receipt: 3.0C

	As Recei	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 07	KAD
BOD, Carbonaceous	3	mg/L	2	SM 5210B	9 Aug 07 11:30	CJL
CBOD, 20 Day	8	mg/L	2	SM 5210B	9 Aug 07 11:42	CJL
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	9 Aug 07 9:50	JED
Carbon, Total Organic	10.00	mg/L	0.50	415.1	16 Aug 07 8:00	Bis
Chlorophyll a	4.3	mg/cubic m	1.0	10200Н	10 Aug 07 12:54	JD
Fecal Coliform, MF	1200	CFU/100 mL	10.	SM 9222D 20th Ed	8 Aug 07 16:40	JLS
Nitrogen Total, Calculat	1.3	mq/L	NА	Calc	14 Aug 07 8:15	Calculated
Chloride	25.9	mg/L	3.0	325.2	14 Aug 07 10:04	AKW
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	13 Aug 07 14:44	DAP
Nitrogen, Ammonia	< 0.16	mq/L	0.16	4500 NH3 B, E	14 Aug 07 9:15	EJP
Phosphorus, Total	0.024	mg/L	0.005	EPA 365.1	20 Aug 07 13:42	DAP
Phosphorus, Ortho	< 0.01	mg/L	0.005	EPA 365.1	9 Aug 07 8:31	DAP
trogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	14 Aug 07 8:15	EJP

RL for Ortho Phosphorus elevated to 0.01 mg/L due to reporting limit check falling outside method 60-140% acceptance limit at 0.005 mg/L.

CFU = Colony Forming Units

Entered By/Date: NB 10/08/07

OA/QC By/Date: WB 10/09/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concent
+ = Due to extract volume

IA LAB #: 022 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125



Page:

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1 of 1

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Report Date: 13 Sep 07 Lab Number: 07-A39076 Work Order #:12-9964 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 22 Aug 07 12:00

Sampled By: NICK C

Date Received: 22 Aug 07 15:20

PO #: CRWD TMDL

Temp at Receipt: 3.0C

Sample Description: CR 10.1

Project Name: CRWD TMDL

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest BOD, Carbonaceous CBOD, 20 Day Solids, Total Suspended Carbon, Total Organic Chlorophyll a Fecal Coliform, MF Nitrogen Total, Calculat Chloride	3 9 < 2 10.00 5.0 * 140 1.2 24.1 < 0.2	mg/L mg/L mg/L mg/L mg/Cubic m CFU/100 mL mg/L mg/L mg/L	2 2 2 0.50 1.0 10. NA 3.0	SM 5210B SM 5210B USGS I-3765-85 415.1 10200H SM 9222D 20th Ed Calc 325.2 353.2	24 Aug 07 23 Aug 07 13:56 23 Aug 07 14:10 23 Aug 07 12:00 29 Aug 07 8:00 24 Aug 07 9:14 22 Aug 07 18:55 28 Aug 07 14:45 27 Aug 07 14:47 28 Aug 07 14:47	KAD CJL CJL JED Bis JD MKG
Nitrate+Nitrite Nitrogen, Ammonia Phosphorus, Total psphorus, Ortho trogen, Total Kjeldahl	< 0.16 0.018 < 0.01 1.2	mg/L mg/L mg/L	0.16 0.005 0.005 0.2	4500 NH3 B, E EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	29 Aug 07 9:45 29 Aug 07 13:11 23 Aug 07 8:56 28 Aug 07 14:45	TAM DAP

Elevated RL for Ortho Phosphorus due to RL check failure at 0.005 mg/L.

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: WB 10/08/07

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

· Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1613-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125

Client:	CRWD	_ Site Location	- T 4.0
Project No.:	0002-107	_ Site Description	: Tributary Stream at Drivena,
Date:	4/24/07	_ Weather	
Sampler(s):	WB,NC	_ Samples Taken	: Yes No
Start Time:	11:05	_ Sample Time	:
End Time:	11:30	<u></u>	
Channel Conditions:	flowing	DTW Measurement	
COC Number:		_	-top center of culverst downstream Notes: -water 13 flowma fast and clear
	The state of the s		Notes: -Water 13 flowm
	Field Parameters		fast and clear
Sample I.D.	Temp. (°C) Cond. (mS/cm)	D.O. (mg/l) pH (S.U.)	
Downstream	8.87 317	11.04 7.85	
Upotream	8.93 316	11.06 7.78	
Stage H	t:	Rated Flow:	Gauged Flow: 3.592 Ls

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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		01001 00.	· ng ortice	<u> </u>		The state of the s		
						1 2 / 1 2 constant and the second an	H 1/	9/07
)					İ			1/30/BD
							VV	

Client:		CRWD	Site Location: T 4.0					
?roject No.:	0002-107			Site	Description	1: Tribuley	at Prive	un b (P.U)
Date:	5.9.07			Site Description: Tribular at Privacy by C Weather: Sunny 650				
Sampler(s):		NIC/WB		San	nples Taker	1: (Fe	s) No)
Start Time:	_					9:20		-
End Time:	9:30							
Channel Conditions:	floury			DTW M	easurement	t:()(?)	0	
COC Number:								
	<u> </u>					Notes	: - slow) Mesury
	<i>\$</i> \$\frac{1}{2}\$	Field Parameters					water	moury
Sample I.D.		Cond. (mS/cm	D.O. (mg/l) pH	(S.U.)			
	12.28	399	7.79	7.60	2			
						····		
Stage H	t:		Rated Flow	/: <u></u>		Gauged Flov	v: 2.22 3	15
	н							···
	.		Stream Gau	ging Data				
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft ²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft ²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity (ft/sec)	Area (ft²)	_
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	80% Depth	Velocity (ft/sec)		(Q, ft ³ /sec)
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	Bo% Depth Data Se	Velocity (ft/sec)		(Q, ft ³ /sec)
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20%	Bo% Depth Data Se	Velocity (ft/sec)	Area (ft²)	(Q, ft ³ /sec)

Client:	CRWD	Site	e Location: T 4.0
Project No.:	0002-107		escription: tr.b. to CR at Deweng
Date:	5.23.07		Weather: class 650
Sampler(s):	MYWB	Samp	oles Taken: Ve No
Start Time:	INO	Sar	nple Time: /015
End Time:	1025		
Channel Conditions:	flowns	DTW Me	asurement: [.5]
COC Number:	<u> </u>		
	THE RESERVE OF THE PARTY OF THE	-	Notes: - Small amount
	Field Parameters	3	Notes: - Small amount of flow through
Sample I.D.	Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.)
	18.3) 462	4.13 7.5	2
			•
Stage H	:	Rated Flow:	Gauged Flow: 0.882.4
		Stream Gauging Data	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
0, (left side)								
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					Data_9			
					- Entere	d By/Dater	7/9/07	VI - 2 FROM \$ Dip ds JOHNSTONE, 40 ADJUSTONMO, 4 ADJUSTS ON
				#	Q/\/Q	d By/Dater. I By/Dater.	WB FOR	30/07
			1,1111111111111111111111111111111111111					

Client:	(CRWD	-	Site Location	14.0	
Project No.:	. 00	002-107	_	Site Description	Tribatary-	to dearnater rever
Date:	6.20.	0+	_		: Sonny	75
Sampler(s):	505/	Nic	_	Samples Taken	: <u>(Yes</u>)	No
Start Time:	10:05	<u> </u>	_	Sample Time	: 10:07	\$
End Time:	10:1	6	_			
Channel Conditions:	8 1000	Λα	_	DTW Measurement	:_1.52_	
COC Number:		\bigcup	_			
					Notes:	
		Field Parameters				
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		
	19.47	444	5.18	4.42		
-					-	
Stage Hi	t:		Rated Flow	·	Gauged Flow:_	1.295

Stream Gauging Data

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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:				En	ered By/l	Pale: JT Pare: WB	7/9/01	To the second se
				Q/	/QC B)/I	Dave WB	10/30/6	<u></u>

TA0185\04\292\Field Forms\Gauging Form

					1.
Client:		CRWD		Site Location:	054.0 worter
Project No.:	00	002-107	<u></u>	Site Description:	Clearwater Every CO. 2d 40
Date:	4-6	-07	-	Weather:	Scra Clarly Raindras
Sampler(s):	NICI	565		Samples Taken:	
Start Time:	9:34		_	Sample Time:	9:40
End Time:	9:47				
Channel Conditions:	flowing		***	DTW Measurement:	1.48
COC Number:	V		<u>.</u>	C- 90+	
					Notes: cler, hyl
		Field Parameters			then past few
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	wacks.
	136		6.32		
Stage Ht	•	MFR.	Rated Flow:	TO PERSONAL PROPERTY OF A STATE OF THE STATE	Gauged Flow: 1.148

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel- 20% Depth	ocity- 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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	***************************************	· · · · · · · · · · · · · · · · · · ·						

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					Note Cata			
					Data Set:_	6 January	er kind de menteren mentere de en	2000.00 i- 200 ;- 200.00 ;- 200.00 ;-
H					Entered B	/Date:	7/9/	27
				į.	BA/OCB	Maie W	B 101	30/N7
					,	V		Combina Parina - Professi Andréa (San Diregna de Inglande e e pari

Client:		CRWD .	···	Site Location	<u> </u>
Project No.:	0	002-107	_	Site Description	: Silvatury to CRE Dr. Verage
Date:	6-20	1-07	_	Weather	
Sampler(s):	Nic	505	_	Samples Taken	
Start Time:	9:0	10	_	Sample Time:	9:56
End Time:	10:05	<u>-</u>	-		
Channel Conditions:	Davis	ν//ν	_	DTW Measurement:	2.79 1.74
COC Number:				C-82	,
					Notes: Bown weter,
]	Field Parameters			low flow Duck
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	р Н (S.U.)	Notes: Bown weben, low Slow, Duch weld presen
	18.84	459	4:76	7.52	
Stage Ht	• •		Rated Flow:		Gauged Flow: 6.144 cfs

Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ecity~ 80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft³/sec)
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				,	,		
					e-management (#2 #uprompton	on the second aggregation of the second seco	namenano eminare e semborane e e e e e e e e e e e e e e e e e e
	· · · · · · · · · · · · · · · · · · ·		Ī	ntered By	Date: JI	7/9/0	7
			C	A/OC By	Date: W	5 10/	30/07
	· · · · · · · · · · · · · · · · · · ·						
	Width (ft)	Width (ft) Depth (ft)	Width (ft) Depth (ft) (60%	Width (ft) Depth (ft) (60% Depth) Depth	Width (ft) Depth (ft) (60% Depth) Depth Depth Depth Depth Depth Depth Depth Depth Depth Depth Depth Depth Depth Depth Depth De	Width (ft) Depth (ft) (60% Depth) Depth Depth Popth Velocity (ft/sec)	Width (ft) Depth (ft) (60% Depth) Depth Depth Depth Velocity (ft/sec) Area (ft²)

Client:	C	RWD		Site Location:	T 4.0	
Project No.:	00	02-107		Site Description:		
Date:	7.2.0	7		Weather:	Obech	650
Sampler(s):	NC			Samples Taken:	Yes	<u></u> €
Start Time:	930			Sample Time:		
End Time:	935					
Channel Conditions:	dry			DTW Measurement:		
COC Number:			<u>.</u>			
					Notes:	No Slow, day
		Field Parameters				NU Scaple or
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		flow data
				_		No Slow, day NO Scaples or Flow data taken
Stage H	t:	Analysis and Assault and Assau	Rated Flow	•	Gauged Flow	n Dry

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
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								Part of the state
						one WI		The Court, of Signature and Signature.
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Client:	C	RWD		Site Location:	T4.0.	
Project No.:	00	02-107		Site Description:	Tributar	x Stream
Date:	7111	/07		Weather:	•	
Sampler(s):				Samples Taken:	Yes	(No)
Start Time:	10:9	0		Sample Time:		
End Time:						
Channel Conditions:				DTW Measurement:		
COC Number:					Notes:/	Vo Flow
		Field Parameters			+1	rough culvert
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)	· 	
Stage H	t:		Rated Flow:		Gauged Flow:	

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	80% Depth	Average Velocity (ft/sec)	Area (ft²)	Discharge (Q, ft ³ /sec)
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					and the control of th	Ser. 194		

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Page: 1 of 1

PRELIMINARY REPORT

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: T4.0

Report Date: 22 May 07 Lab Number: 07-A15435 Work Order #:12-4795 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 24 Apr 07 11:15 Date Received: 24 Apr 07 16:30

PO #: 002-107

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyz	ed	Analyst
Phosphorus Water Digest		· .			2 May	07	DAP
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	25 Apr	07 14:26	JED
CBOD, 20 Day	5	mg/L	2	SM 5210B	25 Apr	07 17:39	AKF
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	25 Apr	07 11:50	JED
Carbon, Total Organic	9.6	mg/L	0.5	415.1	27 Apr	07 10:30	Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	2 May	07 7:05	JD
Fecal Coliform, MF	* 10	CFU/100 mL	10.	SM 9222D 18th Ed	24 Apr	07 19:00	ES
Chloride	7.6	mg/L	3.0	325.2	30 Apr	07 15:47	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 Apr	07 15:39	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	30 Apr	07 10:45	TAM
Phosphorus, Total	0.017	mg/L	0.005	EPA 365.1	2 May	07 9:35	DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Apr	07 7:20	DAP
Nitrogen, Total Kjeldahl	0.3	mg/L	0.2	SM 4500NorgB/NH3 E	2 May	07 6:30	TAM

CFU = Colony Forming Units

* Holding time Exceeded

Entered By/Date: JT 7/9/07 QA/QC By/Date: WB 10/30/07

PRELIMINARY REPORT: RESULTS ARE SUBJECT TO CHANGE PENDING FINAL APPROVAL OF DATA.

RL = Reporting Limit

Elevated "Less Than Result" (<): @ « Due to sample matrix | « Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1813-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

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AN EQUAL OPPORTUNITY EMPLOYER

WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Number: 0002-107 Sample Description: T 4.0 Page: 1 of 1

Report Date: 8 Jun 07 Lab Number: 07-A18770 Work Order #:12-5557 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 9 May 07 9:20

Sampled By: WES BOLL

Date Received: 9 May 07 16:12

PO #: 0002-107

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					14 May 07	RMV
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	10 May 07 14:	16 JP1
CBOD, 20 Day	5	mg/L	2	SM 5210B	10 May 07 13:	II ARE
Solids, Total Suspended	< 2	mg/L	2	USCS 1-3765 85	10 May 07 13	65 C.//
Carbon, Total Organic	7.0	mg/L	0.5	415.1	5 Jun 07 16:	30 Bis
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	11 May 07 8;	31 JD
Fecal Coliform, MF	* 20	CFU/100 mL	10.	SM 9222D 18th Ed	9 May 07 18:	DS ES
Chloride	8.8	mg/L	3.0	325.2	16 May 07 15:	57 DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	14 May 07 7:	22 RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	15 May 07 10:	35 TAM
Phosphorus, Total	0.014	mg/L	0.005	EPA 365.1	17 May 07 8:	00 DAP
Phosphorus, Ortho	< 0.005	mg/L	0.005	EPA 365.1	10 May 07 10:	06 DAP
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	16 May 07 6:	55 TAM

CFU = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

RL = Reporting Limit

Slevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration . = Due to extract volume

CERTIFICATION: MV LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/3/07



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WES BOLL

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: T 4.0

Page: 1 of 1

Report Date: 14 Jun 07 Lab Number: 07-A21654 Work Order #:12-6194 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 May 07 10:15

Sampled By: NICK C

Date Received: 23 May 07 15:55

PO #: CRWD TMDL

Temp at Receipt: 4.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 May 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	24 May 07 11:40	JED
CBOD, 20 Day	5	mg/L	2	SM 5210B	24 May 07 11:12	JED
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	24 May 07 9:45	CJL
Carbon, Total Organic	10.5	mq/L	0.5	415.1	6 Jun 07 8:00	Bis
Fecal Coliform, MF	* 60	CFU/100 mL	10.	SM 9222D 18th Ed	23 May 07 17:55	JLS
Chloride	6.9	mg/L	3.0	325.2	25 May 07 13:13	AKW
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 May 07 11:26	RMV
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 May 07 7:00	TAM
Phosphorus, Total	0.040	mg/L	0.005	EPA 365.1	31 May 07 15:26	DAP
Phosphorus, Ortho	0.013	mg/L	0.005	EPA 365.1	24 May 07 6:26	JGS
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	29 May 07 14:10	EJP

TWU = Colony Forming Units

* Holding time Exceeded

Data Set:

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/30/07

Chlor-A-7 Not tested For

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



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WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CRWD TMDL

Sample Description: T 4.0

1 of 1 Page:

Report Date: 29 Jun 07 Lab Number: 07-A24667 Work Order #:12-6814 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 6 Jun 07 9:40

Sampled By: NICK C

Date Received: 6 Jun 07 16:00

PO #: CRWD TMDL

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	······································				7 Jun 07	AKW
BOD, Carbonaceous	2	mg/L	2	SM 5210B	7 Jun 07 11:43	JED
CBOD, 20 Day	5	mg/L	2	SM 5210B	7 Jun 07 11:29	JED
Solids, Total Suspended	7	mg/L	2	USGS I-3765-85	7 Jun 07 9:15	CJL
Carbon, Total Organic	8.5	mg/L	0.5	415.1	13 Jun 07 8:00	Bis
Chlorophyll a	2.7	mg/cubic m	1.0	10200Н	12 Jun 07 9:45	AJK
Fecal Coliform, MF	* 130	CFU/100 mL	10.	SM 9222D 18th Ed	6 Jun 07 18:55	ES
Chloride	21.3	mg/L	3.0	325.2	11 Jun 07 10:37	AKW
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	7 Jun 07 12:23	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	11 Jun 07 9:15	TAM
Phosphorus, Total	0.023	mg/L	0.005	EPA 365.1	12 Jun 07 11:50	RMV
Phosphorus, Ortho	< 0.005	mq/L	0.005	EPA 365.1	7 Jun 07 7:23	RMV
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	8 Jun 07 13:00	EJP

J = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

Data Set:

IA LAB #: 132 IA LAB #: 022

Entered By/Date: JT 7/9/07
QA/QC By/Date: WB 10/30/07

ND MICRO # 1013-M ND WW/DW # R-040



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1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Project Name: CLEARWATER Project Number: 0002-108 Sample Description: T 4.0 Page: 1 of 1

Report Date: 12 Jul 07 Lab Number: 07-A27468 Work Order #:12-7478 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 20 Jun 07 9:55

Sampled By: NICK C

Date Received: 20 Jun 07 16:00

PO #: CLEARWATER

Temp at Receipt: 6.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	•				22 Jun 07	AKW
BOD, Carbonaceous	< 2	mg/L	2	SM 5210B	21 Jun 07 14:34	JED
CBOD, 20 Day	10	mg/L	2	SM 5210B	21 Jun 07 14:05	JED
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	21 Jun 07 11:45	CJL
Carbon, Total Organic	12.0	mg/L	0.5	415.1	27 Jun 07 8:00	Bis
Chlorophyll a	1.1	mg/cubic m	1.0	10200Н	26 Jun 07 15:02	JD
Fecal Coliform, MF	* 140	CFU/100 mL	10.	SM 9222D 20th Ed	20 Jun 07 18:25	ES
Chloride	6.1	mg/L	3.0	325.2	25 Jun 07 13:13	DAP
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	27 Jun 07 14:52	DAP
Nitrogen, Ammonia	< 0.16	mg/L	0.16	4500 NH3 B, E	25 Jun 07 8:25	EJP
Phosphorus, Total	0.058	mg/L	0.005	EPA 365.1	26 Jun 07 14:00	DAP
Phosphorus, Ortho	0.027	mg/L	0.005	EPA 365.1	21 Jun 07 7:40	RMV
™itrogen, Total Kjeldahl	0.4	mg/L	0.2	SM 4500NorgB/NH3 E	21 Jun 07 15:15	EJP

.U = Colony Forming Units

* Holding time Exceeded

Approved by:

Jason G. Smith, Inorganic Laboratory Manager New Ulm, MN

WI LAB # 999447680

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity

= Due to sample concentration
+ = Due to extract volume

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Ent WB 7/25/07 WB

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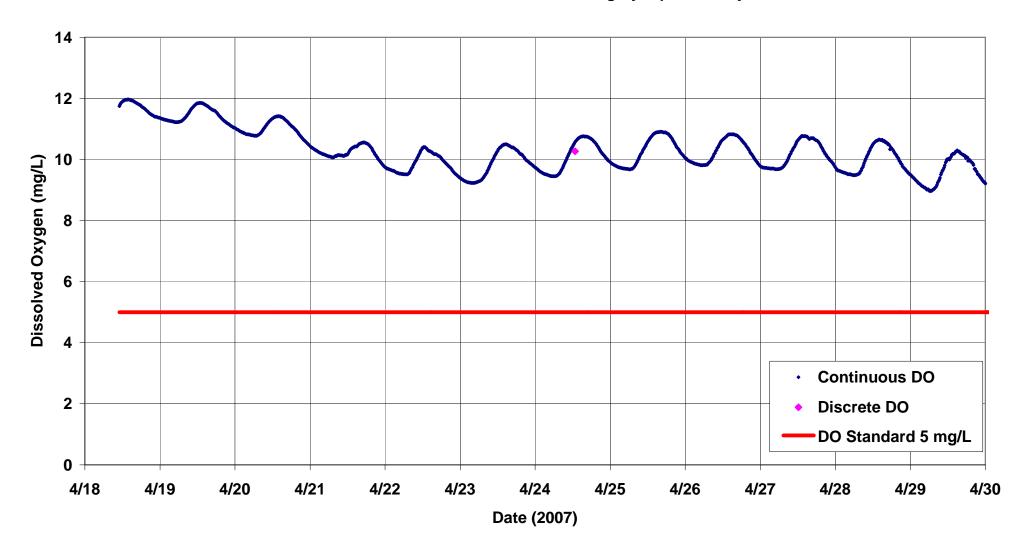
Appendix D

Continuous Dissolved Oxygen Records

Appendix D Figure 1

Phase II Addendum TMDL Study Clearwater River (Grass Lake to the Mississippi)

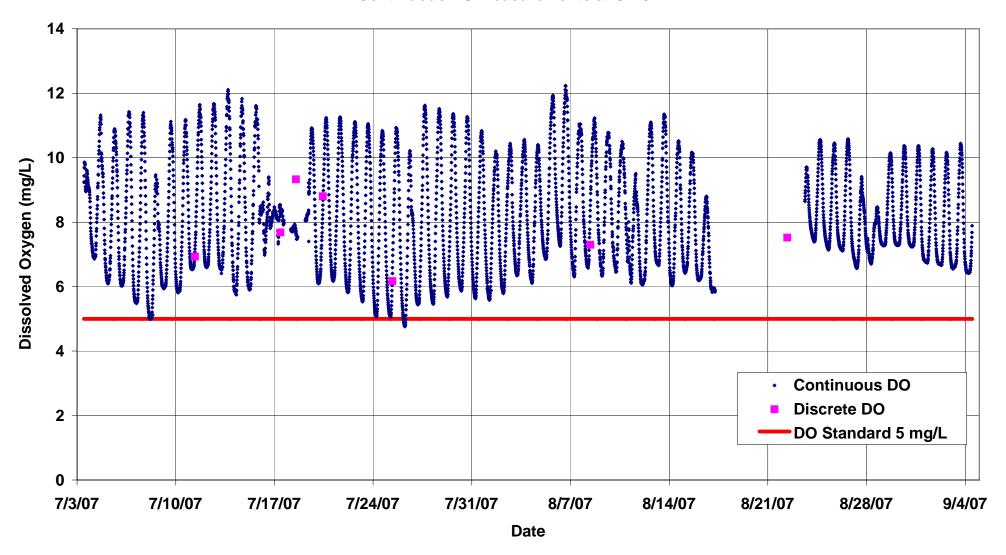
Continuous DO Measurements at CR 1.4 During Synoptic Survey 1



Appendix D Figure 2

Phase II Addendum TMDL Study Clearwater River (Grass Lake to the Mississippi)

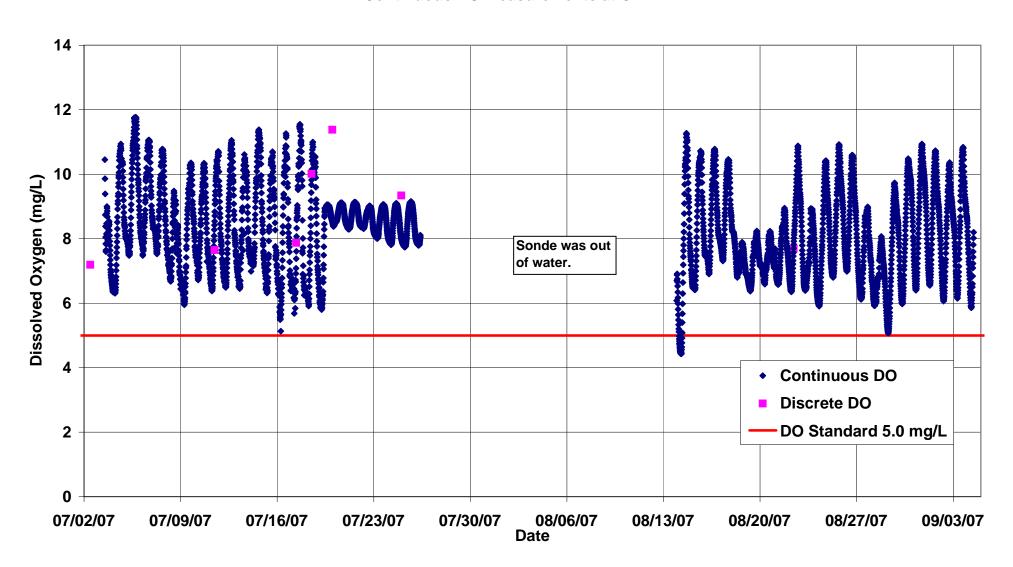
Continuous DO Measurements at CR 0.1



Appendix D Figure 3

Phase II Addendum TMDL Study Clearwater River (Grass Lake to the Mississippi)

Continuous DO Measurements at CR 7.1



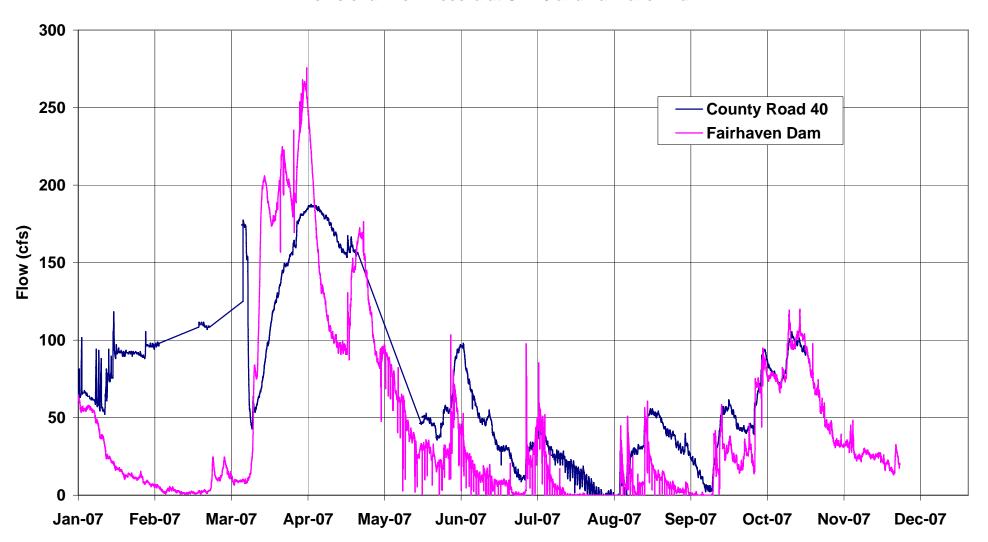
Appendix E

Continuous Flow Records

Appendix E Figure 1

Phase II Addendum TMDL Study Clearwater River (Grass Lake to the Mississippi River)

Provisional Flow Record at CR 40 and Fairhaven Dam



Appendix F

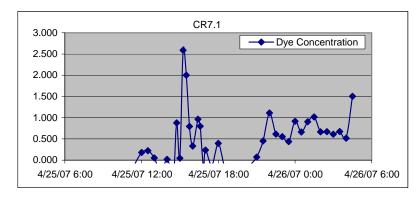
Time of Travel Study Results

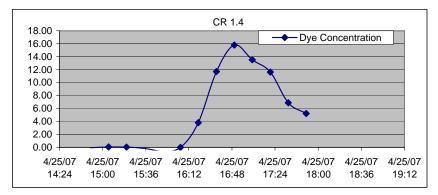
Appendix F Figure 1

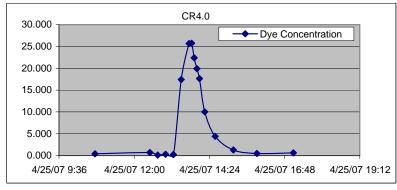
Phase II Addendum TMDL Study Clearwater River (Grass Lake to the Mississippi)

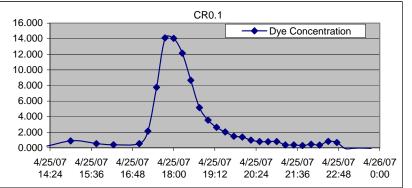
April 2007, High Flow Time of Travel Study Results

				Distance from		Time of			Measured	
			Dye Concentration	Dump Site		Travel	Velocity	Velocity	Velocity	Gauged
	Site	Dye Dump Time	(oz)	(miles)	Dye Peak Time	(hours)	(miles/hr)	(ft/sec)	(ft/sec)	Flow (cfs)
Dye Dump	CR9.5	4/25/2007 11:45	54					-		
#1	CR7.1			2.4	4/25/2007 15:15	5.50	0.436364	0.637091	1.85	183.386
	CR7.1	4/25/200 11:00	54					1	1.85	183.386
Dye Dump	CR4.0			3.1	4/25/2007 13:50	2.83	1.095406	1.599293	1.59	183.114
#2	CR1.4			5.7	4/25/2007 16:50	5.83	0.977702	1.427444	2.4	179.364
	CR0.1			7	4/25/2007 17:45	6.75	1.037037	1.514074		







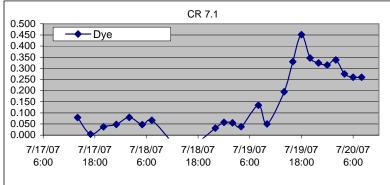


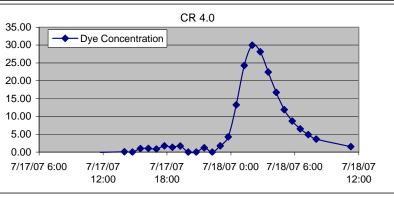
Appendix F Figure 2

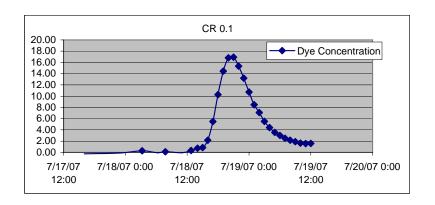
Phase II Addendum TMDL Study Clearwater River (Grass Lake to the Mississippi)

July 2007, Low Flow Time of Travel Study Results

				Distance from		Time of			Average	
Dye Dump			Dye Concentration	Dump Site		Travel	Velocity	Velocity	Velocity	Gauged
	Site	Dye Dump Time	(oz)	(miles)	Dye Peak Time	(hours)	(miles/hr)	(ft/sec)	(Gauged)	Flow (cfs)
#1	CR9.5	7/17/2007 12:20	30						-	11.75
	CR7.1	-		2.4	7/19/2007 18:00	53.66	0.044726	0.0653	0.52	12.53
Dye Dump #2	CR7.1	7/17/2007 11:00	24						0.52	12.53
	CR4.0	-		3.1	7/18/2007 2:00	15	0.206667	0.301733	0.29	11.34
#2	CR0.1			7	7/18/2007 21:00	34	0.205882	0.300588	0.49	13.84







T:\0002\107\Report\Appendix F\Ap F_ Fig 2 Dye Stdy

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Appendix G

Field Survey Results

Date/Time
Stream Site Reach 8
Water Body Clearwater River Observer WB
GPS Coordinates:
Photos: 3317-340 + wide area in channel upstream of Wilgard
341-344 -> channel and backwaters
- Channel Morphometry widens to various widths through wetland area
- backwater 000/5 are numerous - side channels and braided flow Riparian Land Use Characteristics - Wetland corridor
- Some boat channels maintained through wetland
Vegetation blue flag, phragnite, need carry and
Tree Canopy and Shaded Areas - some wooded areas upslope from Olo rest of reach riparian wetland
0% rest of reach riparian wetland
Sediment Type and Classification - Sand/grawl mix near dam and in channelized areas - Gand/silt in wetland channel — muck in wetland
Comments and Notes
- many carp spawning in emergent vegetation throughout wetland and along edges of channel - very wide riparian wetland vegetated almost exclusively by narrow leaf cattail.
- very wide riparian wetland vegetated almost
exclusively by narrow leaf cattail,

Date/Time
Stream Site Reach 7
Water Body Clearwater River (Wiegand Lk) Observer WB
GPS Coordinates:
Photos: 345-347 -> Photos of Wiegand Lk and Channel at outlet of lake
Channel Morphometry - Channelized through wetland on upper end of lake Channel opens into lake and becomes channelized again at ontlet
Riparian Land Use Characteristics - Wetland fringe - 2 residences near lake
Vegetation Wetland - Narrow Leaf cattail, phragmises
Aquatic - Enrasian Milfoil, coontail, bulrush
Tree Canopy and Shaded Areas Dolo tree canopy directly adjacent to stream
Sediment Type and Classification - Silty muck through lake, becomes gradually harder at its end of la - Sana/gravel at outlet
Comments and Notes
- Distinct change in riparian zone downstream of Wiegard Lake ontlet (changes from wide, flat, wetland to narrower wetland fringe with some forest)
to narrower wetland fringe with some forest)

Date/Time <u>6/06/07</u>
Stream Site Reach 6
Water Body Clearwater River Observer WB
GPS Coordinates:
Photos: 348-357
Channel Morphometry - point/bend stream channel - many meanders with some oxbows and cutoff channels - Narrow floolplain Riparian Land Use Characteristics - Wetland fringe along entire reach (varies in width) - Mostly forested upslope of watland fringe with some ag fields Vegetation Vetland-Namewleaf cattail Forest - Oak boxelder, ash Tree Canopy and Shaded Areas
Wooded riparian zone upslope from wetland fringe 2 15% tree cover
Sediment Type and Classification - Substrate is mostly gravel and sand with some larger rocks on ontside bends
Comments and Notes
- channel is varied in width throughout reach
- channel is varied in width throughout reach - water depth is variable with some deep pools next to steep banks on outside bends
- 10 DIECH BUNKS ON UNTSIDE UCIUS

Date/Time $6/06/07$
Stream Site Reach 5
Stream Site Reach 5 Water Body Clearwater River Observer WB
GPS Coordinates:
Photos: 358-371
Channel Morphometry -many sharp meanders with oxbows and channels -braided in some locations
Riparian Land Use Characteristics -narrow to wide wetland fringe, wide floodplain in some areas - forested riparian area in some portions - ag fields Vegetation Vetland - Reed Canary Grass, Narrow Leaf Cattail Orest - Ash, Oak, Boseller, Maple, Willow
Tree Canopy and Shaded Areas -Some thee Canopy, where forested in Ciparian zone
Sediment Type and Classification - substrate is mostly und, with some granel and nock in fast current areas
Comments and Notes
-bordered by Steep, rolling hills
-bordered by Steep, rolling hills -agriculture more prevalent than farther upstream



IMG_0557



IMG_0337



IMG_0558



T:\0002\107\Inventory\Stream Inventory Photos

IMG_0339



IMG_0341



IMG_0344



IMG_0342



IMG_0345



IMG_0347



IMG_0349



IMG_0348



IMG_0350



IMG_0354



IMG_0357



IMG_0356



IMG_0359



IMG_0360



IMG_0366



IMG_0362



IMG_0368



IMG_0370



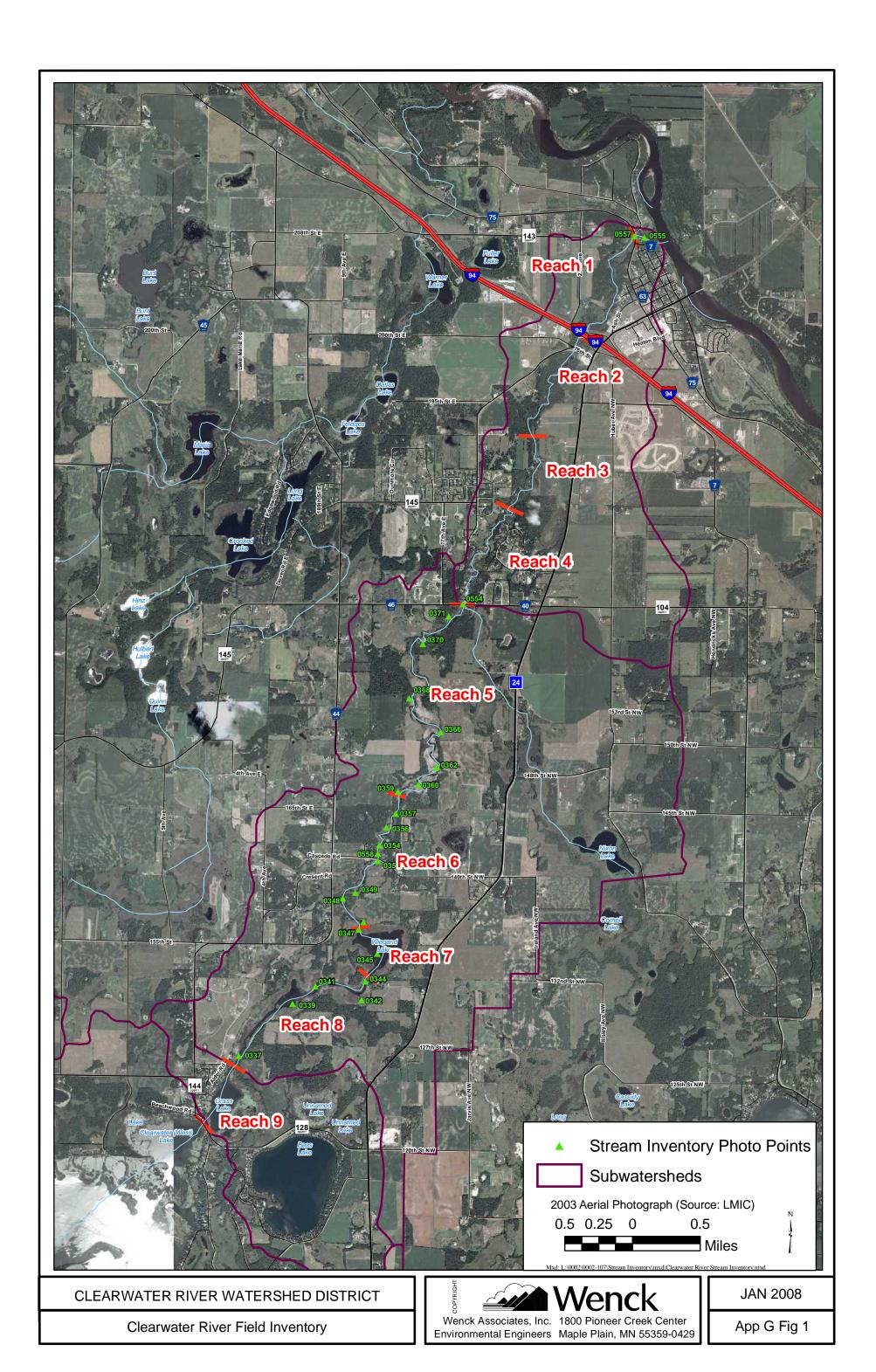
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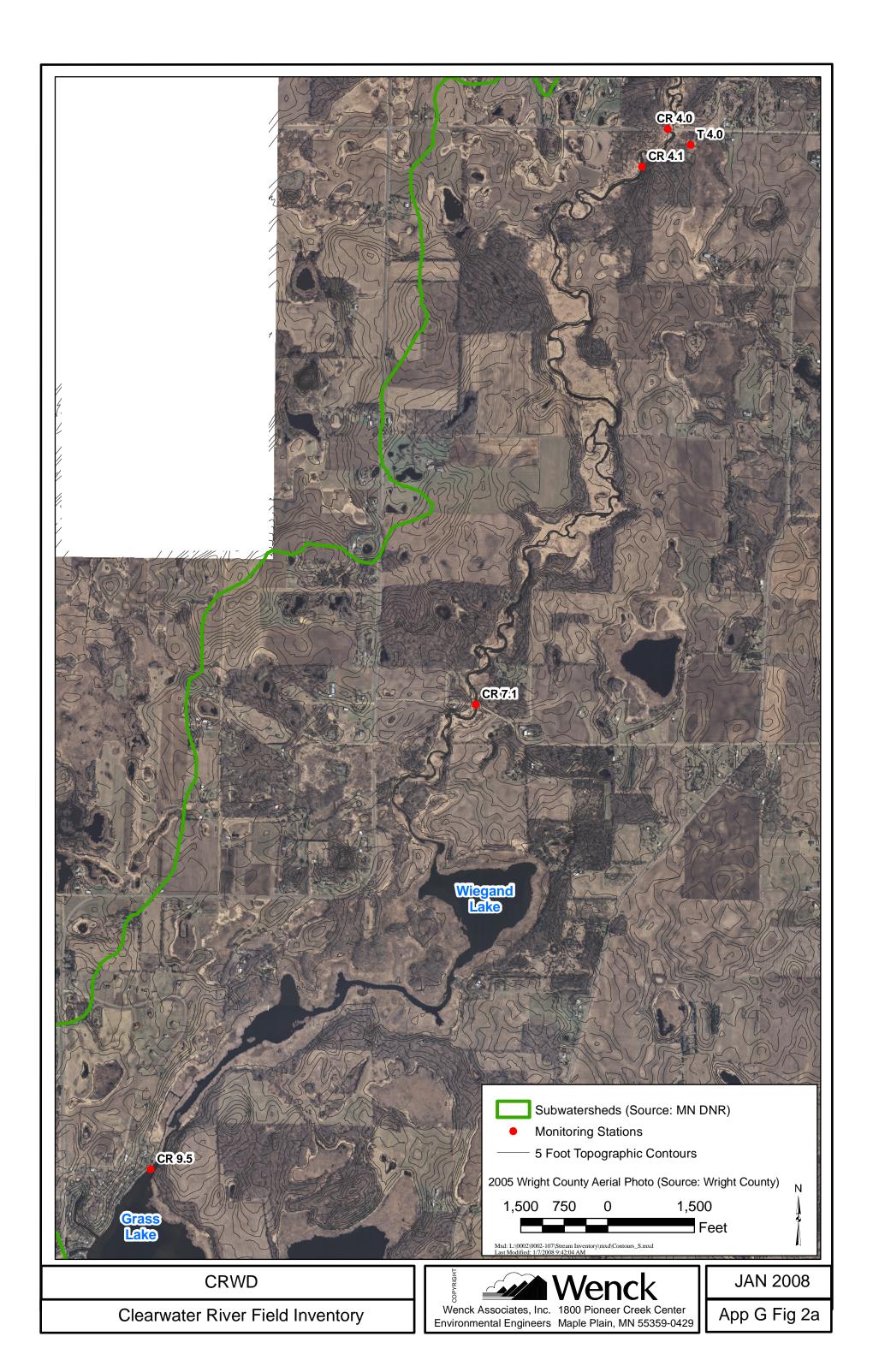


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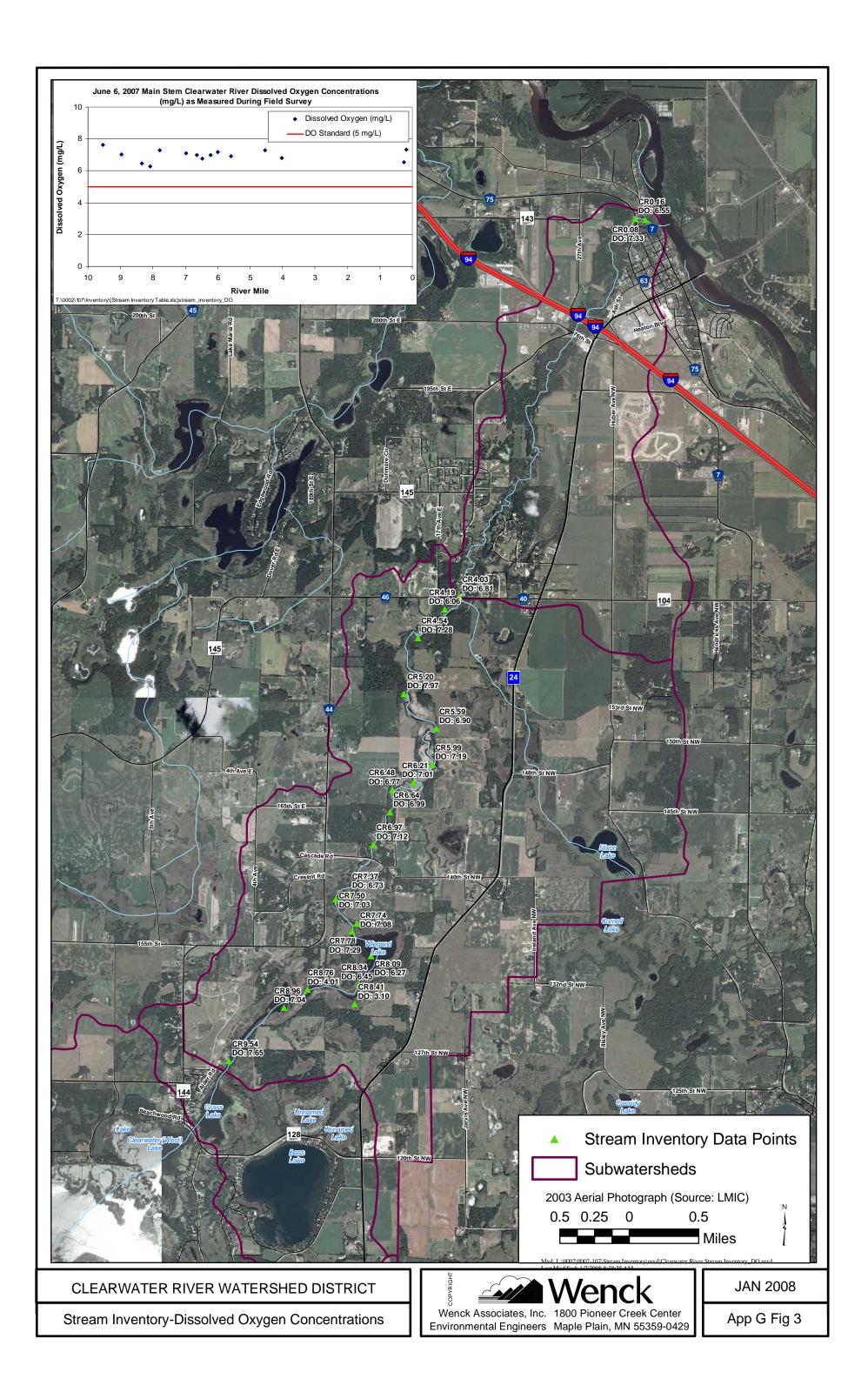


IMG_0555



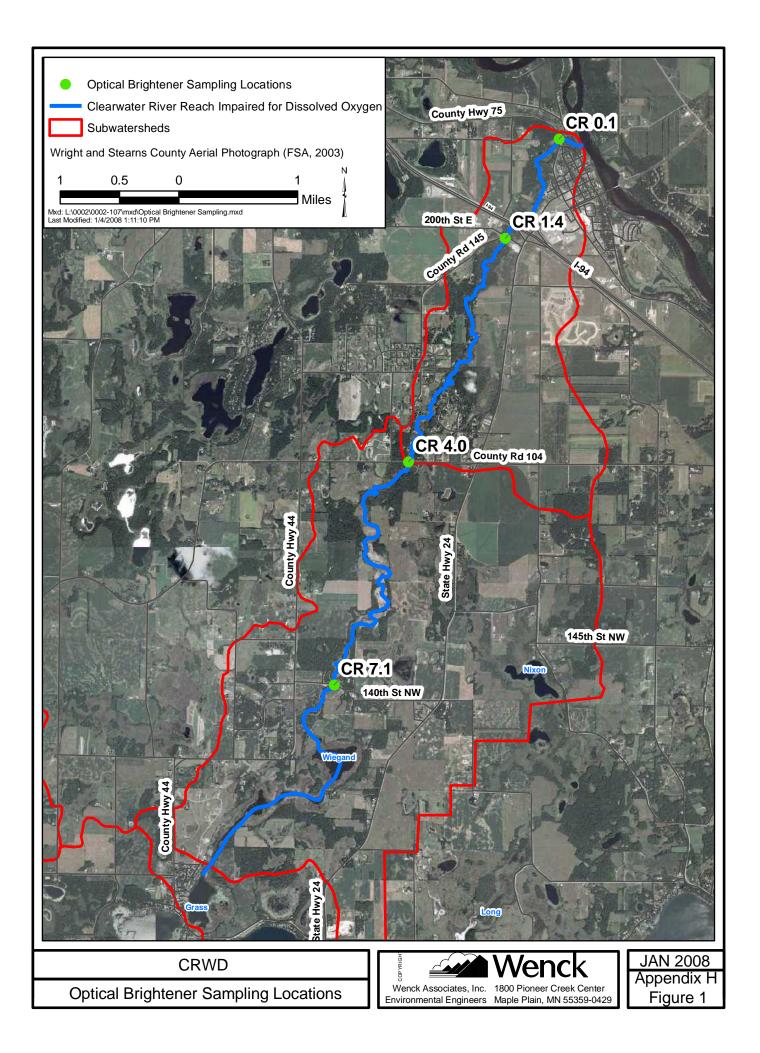






Appendix H

Optical Brightener Sampling Results



Appendix H

Clearwater River Watershed District TMDL Phase II Addendum

Optical Brightener Sampling Results

Passive sampling for optical brighteners was conducted in the CRWD in 2007 to determine the role of failing septic systems in the dissolved oxygen impairment for the listed reach of the Clearwater River between Grass Lake and the Mississippi River. The study was conducted as part of the Phase II TMDL Addendum.

Optical brighteners are fluorescent white dyes that are often added to laundry soaps and detergents. As a result of their use in laundry soaps, they typically can be found in domestic waste waters that contain laundry effluent. Optical brighteners are removed from waste water by binding to soil and organic particles. If they are not removed by a functioning septic system, they can enter groundwater and surface water bodies.

Because optical brighteners can be detected with the use of a long wave fluorescent, or black light, their presence can be detected in surface or groundwater. The presence of optical brighteners in surface or groundwater, while they are not necessarily harmful to the water themselves, can be an indicator of failing septic systems or a direct discharge of untreated waste water into a surface water body. Since untreated wastewater can be a source of oxygen demand in natural waters, optical brightener sampling is useful in this TMDL study to determine if failing septic systems are contributing to the impairment.

Methodology

Optical brightener sampling involves placing a sampling device into a stream and allowing the stream to flow through the device for a fixed period of time. As water flows through sampling device, the optical brighteners accumulate on the pad. The sampling device is then viewed under a fluorescent or black light. If fluorescent areas are seen on the pad under the light, the pad has been exposed to optical brighteners. If the pad does

not fluoresce, it can be assumed that optical brighteners were not present in the stream in

which it was deployed.

The sampling device is made up of an unwashed cotton pad that is placed inside of a

black plastic mesh cage that secures the pad. The sampling device is then secured in

flowing water in the stream.

Optical brightener sampling was conducted at four mainstem sites on the Clearwater

River between Grass Lake and the Mississippi River (Figure H-1). The sampling devices

were placed in the stream on July 25, 2007 and were collected August 8, 2007.

After the devices were collected from the stream, the cotton pads were cleaned of as

much sediment and organic matter as possible, dried, and analyzed for the presence of

optical brighteners in accordance with methodologies set forth in "An Optical Brightener

Sampling Handbook" that can be found at http://www.naturecompass.org/8tb/sampling/.

Results

After the cotton pads collected from each site were dried, they were analyzed for the

presence of optical brighteners by viewing them in a dark room under a black light.

Indicators of optical brighteners were not detected on any of the pads.

Conclusions

Because no optical brighteners were found in the Clearwater River, and there are very

few homes in close proximity to the stream in the reach that was sampled, results indicate

that failing septic systems are most likely not a significant source of oxygen demand in

the impaired reach of the Clearwater River.

Reference

Sargent, Dave and Castonguay, Wayne. "An Optical Brightener Sampling Handbook"

http://www.naturecompass.org/8tb/sampling/

Wenck Associates, Inc.

Page 2 of 2

CRWD 2008