2009 Water Quality Monitoring Report

CRWD

Prepared for

Clearwater River Watershed District

January 2010



2009 Water Quality Monitoring Report



Wenck File #0002-129

Prepared for:

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The Clearwater River Watershed District (CRWD) has conducted a stream, precipitation, and lake monitoring program since 1980 (Appendix A). Ongoing monitoring is critical to establish baseline water quality and hydrologic data and to assess long-term water quality trends within the CRWD. Lake water quality has generally has improved dramatically since the early 1980's, and in stream nutrient and sediment loads were reduced as the result of the CRWD's Chain of Lakes Restoration Project and other District initiatives (Appendix B and C). However, some water bodies do not meet state water quality standards for designated uses (recreation or drinking water for example).

The CRWD, in partnership with the Minnesota Pollution Control Agency (MPCA), began a Total Maximum Daily Load (TMDL) study in 2003 to address the District's impaired waters. The TMDL process establishes the amount of a given pollutant that the water body can assimilate while still meeting its designated uses. The TMDL studies are nearing final approval and the required nutrient, bacteria and oxygen demand load reductions have been quantified. The CRWD has identified a suite of implementation strategies in the watershed needed to meet water quality goals for impaired waters and to protect water quality of all CRWD waters.

The monitoring program going forward will:

- 1. Track progress towards water quality goals for impaired waters,
- 2. Fill data gaps identified in the TMDLs, and evaluate water quality through annual monitoring program,
- Continue to provide baseline water quality data and calibration data sets to refine TMDL load reductions, and
- Track long-term trends in all CRWD waters monitored ensuring early detection of declining trends.

Figure 1.1 shows the monitoring locations. Figure 1.2 shows locations of impaired water bodies in the CRWD, impairments and their status are listed in Table 1.1.

Water	Impairment and Impaired Use	TMDL Status
Clear Lake (47-0095)	Nutrients, aquatic life and	At EPA awaiting final
Lake Betsy (47-0042)	recreation	approval, implementation has
Union Lake (86-0298)		begun except for DO listing,
Scott Lake (86-0297)		which still requires public
Lake Louisa (86-0282)		notice and final EPA review.
Lake Marie (73-0014)		
The Clearwater River,	Dissolved oxygen and bacteria,	
Clear Lake to Lake Betsy	aquatic life & recreation	
Lake Caroline (86-0281)	Nutrients, aquatic life and	Under EPA review
Lake Augusta (86-0284)	recreation	
Swartout Lake (86-0208)		
Lake Albion (86-0212)		
Henshaw Lake (86-0213)		
The Clearwater River,	Dissolved oxygen, aquatic life	Proposed De-listed
Grass Lake to the	and recreation	
Mississippi		

 Table 1.1 Impaired Waters in CRWD

As shown in Table 1.1, the TMDL is close to completion for all impairments, and a Draft Implementation Plan has been completed. TMDL reports can be found at the MPCA website at http://www.pca.state.mn.us/water/tmdl. The TMDL studies show that to meet lake water quality goals nutrient loads must be managed from watershed sources and in some case internal nutrient cycling sources. Several of the watershed management strategies identified for lakes will also assist with meeting water quality goals in the Clearwater River for bacteria and dissolved oxygen. Projects and programs to achieve water quality goals have been identified in the Draft Implementation Plan. The CRWD has applied for grants to fund five of the projects identified so far.

The 2009 CRWD monitoring plan is found in Appendix A. In 2009:

- Twenty-one lakes were monitored in 2009. Generally, a few lakes are sampled each year on a rotating basis, but this watershed0-wide 21-lake sampling event provides a baseline for water quality across the District, provides a full watershed data set for model calibration, and better characterizes internal nutrient cycling through measuring the anoxic period explicitly through collection of additional temperature and dissolved profile data as well as bottom phosphorus and iron. The lakes monitored by CRWD in 2009 included Albion Lake, Lake Augusta, Bass Lake, Lake Betsy, Lake Caroline, Cedar Lake, Clear Lake, Clearwater Lake (2 sites), Grass Lake, Henshaw Lake, Little Mud Lake, Lake Louisa, Lake Marie, Nixon Lake, Otter Lake, Pleasant Lake, School Section Lake, Scott Lake, Swartout Lake, Union Lake and Weigand Lake.
- Lake sediment cores were collected from Lake Betsy and Clear Lake to measure release rates to quantify internal nutrient cycling.
- Long-term Clearwater River monitoring station CR-28.2 located upstream of Lake Betsy was sampled as well as Warner Creek near its inflow to Clearwater Lake at WR-0.2, and a tributary to the Clearwater River at TB 33.2 near Watkins.
- Citizen Precipitation Recorders (CPRs) maintained precipitation records in Watkins, Kimball, and Annandale. Citizen volunteers also measured Secchi depths in CRWD lakes in 2009.

Monitoring was also conducted in the Cedar Lake subwatershed in 2009 to track progress on the Cedar Chain of Lakes Improvement Project #06-1. Samples were collected from Albion Lake, Cedar Lake, Henshaw Lake, and Swartout Lake as well as from selected tributary streams in the subwatershed.

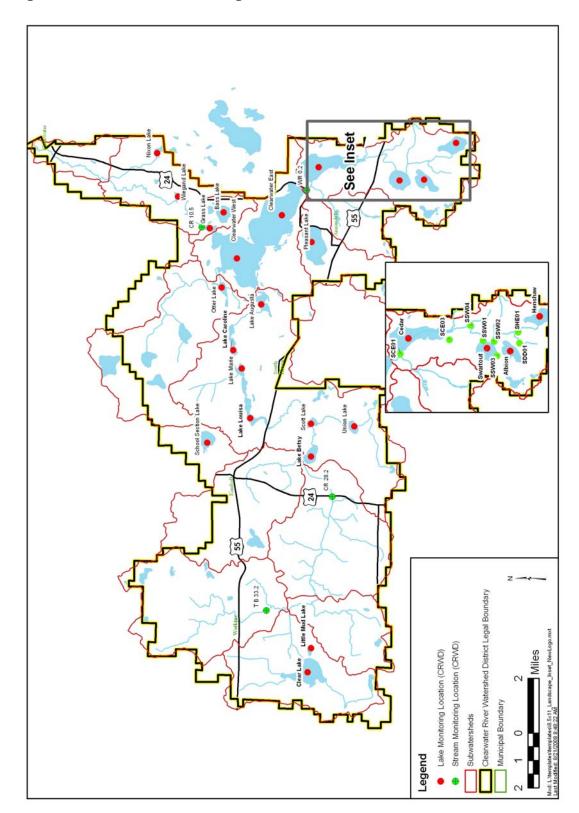
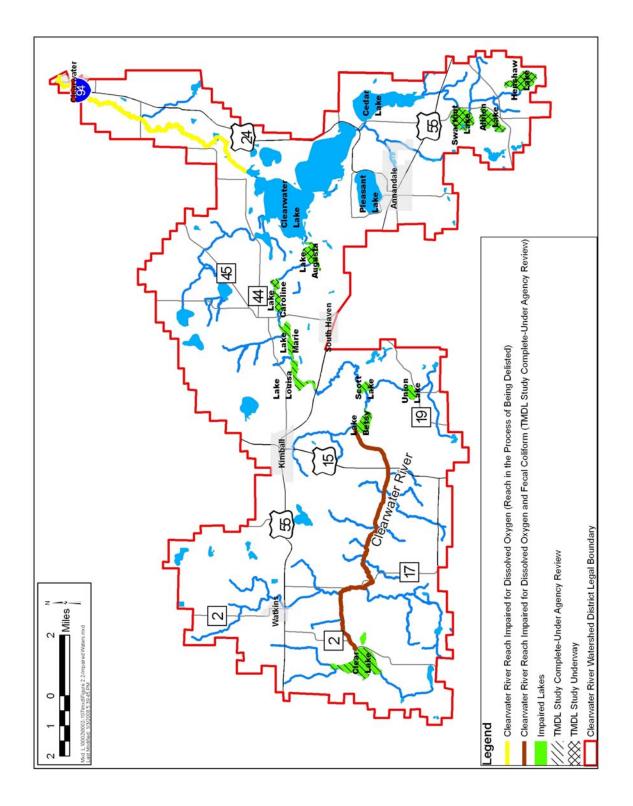


Figure 1.12009 Monitoring Locations



2.1 PRECIPITATION

Total annual precipitation during 2009 was near normal overall throughout the District. However, precipitation was well above normal during the months of March, August, and October. Table 2.1 summarizes 2009 precipitation levels and Appendix D contains summary charts for each station and the precipitation records for the CRWD.

Table 2.1Clearwater River Watershed District 2009 Precipitation Records and Normals
(inches)

	2009 St. Cloud (Saint Cloud WSO Airport)	1971-2000 Normal (St. Cloud)	2009 Watkins (Meeker)	2009 Kimball (Meeker)	1971-2000 Normal (Litchfield)	2009 Annandale/ Corinna (Wright)	1971-2000 Normal (Cokato)
January	0.54	0.76	0.62	0.67	0.79	0.66	0.93
February	0.8	0.59	0.82	1.79	0.67	0.76	0.70
March	4.66	1.50	4.06	4.90	1.55	3.03	1.69
April	1.37	2.13	1.46	1.42	2.35	0.97	2.33
Мау	1.63	2.97	0.65	0.82	3.37	0.88	3.30
June	3.47	4.51	3.87	3.68	4.89	5.49	4.62
July	2.59	3.34	2.15	1.59	4.02	1.31	4.04
August	5.23	3.93	6.50	4.14	3.67	5.90	4.00
September	0.75	2.93	0.81	0.81	2.92	0.82	2.78
October	5.97	2.24	6.04	6.43	2.15	6.32	2.23
November	0.35	1.54	0.27	0.20	1.50	0.20	1.73
December	1.31	0.69	1.61	1.61	0.68	1.31	0.71
Total	28.67	27.13	28.86	28.06	28.56	27.65	29.06

T:\0002\134\[Monitoring Data_Compiled.xls]Sheet1

Above Normal Precipitation Below Normal Precipitation

2.2 RUNOFF AND DISCHARGE

In 2009, above average spring precipitation that coincided with snowmelt caused extreme high flows in the Clearwater River in March. Below normal precipitation between April and July

caused very low to near zero flows in Clearwater River and tributary monitoring locations. Above average precipitation in October led to high flows again in late fall.

Runoff over the upper watershed was 6.9 inches at CR 28.2 and 7.6 inches at CR10.5 in the lower watershed compared to the long term average runoff at CR 10.5 of 7.6 inches.

Average flows at CR 28.2 and CR10.5 were 40.5 cfs and 141 cfs respectively. Table 2.2 summarizes the runoff volumes and average flows for the monitoring stations. Table 1 in Appendix B compares the long-term precipitation to runoff for the CRWD as recorded at CR 10.5. Figure 2 in Appendix B compares historic annual runoff and precipitation in the CRWD.

Table 2.2	2009 Runoff Volume and Average Flow

	2009					
	Tributary Sub-RunoffNub-RunoffWatershedRunoffAreaVolume (ac-					
Station/ Location	(acres)	ft)	(inches)	(cfs)		
CR28.2	33,977	19,440	6.9	40.5		
CR10.5	99,200	62,921	7.6	141		

T:\0002\115\CR40_Fairhaven Q Records Summary Tables

Total runoff over the watershed was higher in 2009 than in recent years as shown in Table 2 in Appendix B. However, the majority of the runoff occurred from the middle of March to the middle of April, when the snowmelt coincided with early spring precipitation events. There was little runoff in the watershed during most of the summer until September and October, when precipitation events initiated another high flow event. Expanded monitoring efforts in 2009, which increased the frequency of early season monitoring, allowed for better quantification of the early season runoff.

3.0 Water Quality

3.1 STREAM WATER QUALITY

CRWD lies in the NCHF Ecoregion but is close to the border with the Western Corn Belt Plains (WCBP) Ecoregion as demonstrated in Figure 3.1. The watersheds tributary to stations TB 33.2 and CR28.2 have characteristics similar to the nearby WCBP ecoregion. For this reason, typical concentrations from both ecoregions are provided for comparison to mean concentrations at CRWD stream monitoring stations (Table 3.1).

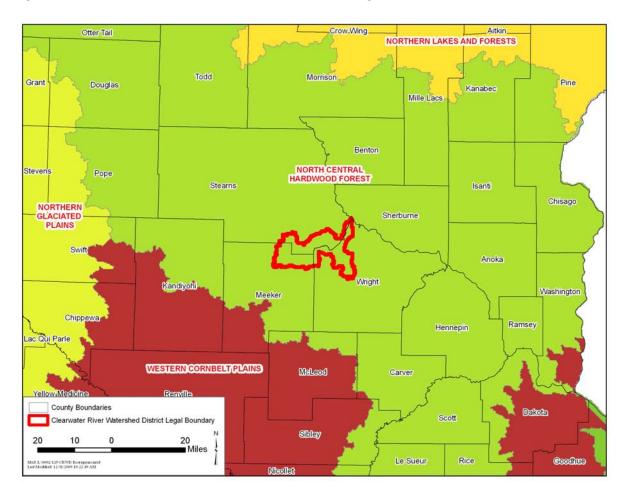




Table 3.1	CRWD Mo	an Concontrat	tions and	Francian	Typical Range
1 <i>able</i> 5.1	CAWD Me	un Concentrat	ions ana	Ecoregion	<i>I ypical Kange</i>

	Flow-Weighted Mean
Monitoring Location	TP (µg/L)
CR 28.2	333
TB 33.2	445
WR0.2	87
CR 10.5*	25
NCHF Ecoregion	
Typical Range	60-150
WCBP Ecoregion	
Typical Range	160-330

*Measured at Grass Lake

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Monitoring Location	Flow-Weighted Mean Nitrate-Nitrite (mg/L)
CR 28.2	3.465
TB 33.2	6.887
WR0.2	0.317
CR 10.5*	<0.20
NCHF Ecoregion	
Typical Range	0.04-0.26
WCBP Ecoregion	
Typical Range	1.4-7.4

*Measured at Grass Lake

Monitoring Location	Flow-Weighted Mean TSS (mg/L)
CR 28.2	22.5
TB 33.2	45.9
WR0.2	10.6
NCHF Ecoregion	
Typical Range	4.8-16
WCBP Ecoregion	
Typical Range	10-61

3.1.1 Phosphorus Concentrations and Phosphorus Loads

Baseline total phosphorus (TP) concentrations in the Clearwater River remain low as compared with conditions monitored in the early 1980s. Flow-weighted mean total phosphorus concentrations at CR 28.2, just upstream of Lake Betsy, ranged from 740 to 920 μ g/l in the early 1980s but were 333 μ g/l in 2009. The TP load at CR 28.2 in 2009 was 17,597 lbs, higher than TP loads in recent years, but still far below the high TP loads observed in the early 1980s.

The increased TP load in 2009 is due primarily to high flow events following snow melt and precipitation events in late March, as 80% of the annual runoff and TP load occurred during this time period. Overall, TP concentrations at CR 28.2 are lower than average concentrations observed in the early 1980s. Although TP concentrations were higher at CR 28.2 in 2009 than in recent years, overall TP concentrations at CR 28.2 have continued on a downward trend since the 1980s. Figure 3.1 shows the historical phosphorus load and flow-weighted mean concentration at CR 28.2.

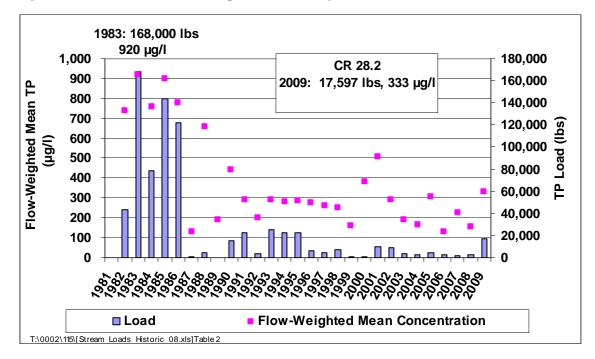


Figure 3.2 Historical Total Phosphorus Loading and Mean Concentration at CR 28.2

Flow-weighted mean TP concentrations and phosphorus loads at CR 10.5 were estimated using in-lake concentrations from Grass Lake and continuous Clearwater River level data collected by the MPCA. The estimated mean phosphorus concentration at CR 10.5 in 2009 was 25 μ g/l and the estimated total phosphorus load was 4,297 lbs (Figure 3.3). While this is higher than loads observed in recent years, the load is well below historic levels.

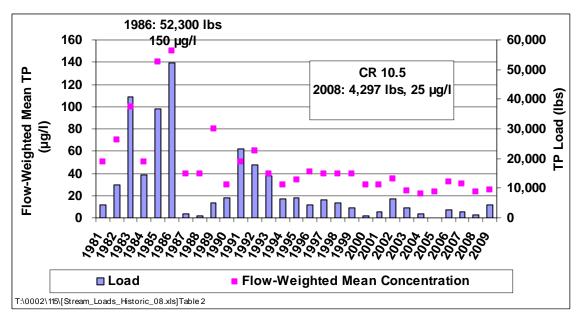
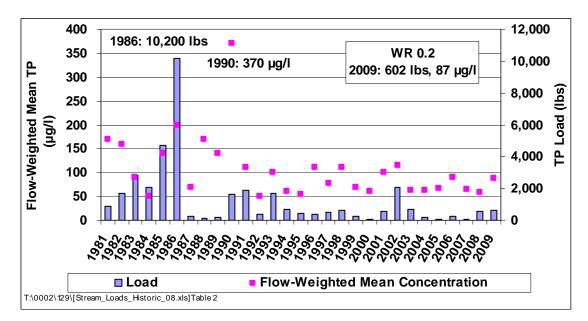


Figure 3.3 Historical Total Phosphorus Loading and Mean Concentration at CR 10.5

In 2009, the flow-weighted mean TP concentration at WR 0.2 was 87 μ g/l and the total phosphorus loads was 602 lbs at WR 0.2 (Figure 3.4), similar to concentrations and loads observed in recent years.

Figure 3.4 Historical Total Phosphorus Loading and Mean Concentration at WR-0.2



TP concentrations were also monitored at TB 33.2, located on a tributary stream to the Clearwater River in the upper watershed. This site was last monitored in 2006 during the TMDL study, and has been monitored periodically in the past. The flow-weighted mean TP concentration at TB 33.2 was 445 ug/l compared to the 2006 flow-weighted mean TP concentration of 230 μ g/l.

The TP load at TB 33.2 was 13,729 lbs in 2009. Over 80 percent of the TP load occurred during a high flow period following snow melt and precipitation events in March and early April of 2009. The impact of the early spring load on lake water quality is not clear as it fell outside the growing season and at a time of high flush rate for the smaller lakes in the upper portion of the chain. While these types of loads impact the upper lakes, they have a greater impact on downstream larger lakes where residence times allow phosphorus to be retained long enough in the lakes to be available for algal uptake in early summer.

As demonstrated in Table 3.1 and Figure 3. 5, flow-weighted mean phosphorus concentrations at WR0.2 and CR 10.5 were below or within the typical range for both Ecoregions, while flow-weighted mean concentration at the upper watershed stations monitored in 2009, CR 28.2 and TB 33.2, were above the typical range in both Ecoregions in 2009.





As demonstrated in Table 3.2 phosphorus loading rates varied throughout the watershed. The loading rates from the watersheds tributary to the upper watershed monitoring stations, TB 33.2 and CR 28.2, 1.27 lbs/acre and 0.52 lbs/acre respectively, were higher than loading rates observed at lower watershed stations CR10.5 and WR0.2, which were 0.04 lbs/acre and 0.05 lbs/ acre. Loading rates for the upper most portion of the watershed likely are the truest measurement of watershed phosphorus export as loading data collected downstream reflects the sedimentation of phosphorus in District Lakes.

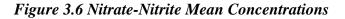
Site	Watershed Area (acres)	Phosphorus Load (Ibs)	Phosphorus Loading Rate (Ibs/acre)
TB 33.2	11,341	13,729	1.27
CR28.2	33,997	17,597	0.52
WR0.2	12,667	602	0.05
CR 10.5	99,200	4,297	0.04

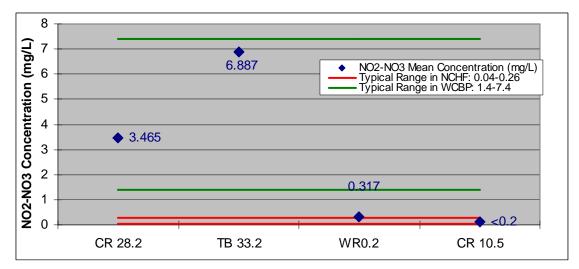
Table 3.2 2009 Phosphorus Loading Rates by Tributary Watershed

Soluble reactive phosphorus (SRP) (the dissolved form of phosphorus readily used by algae) was also monitored in 2009. At CR 28.2, SRP was between 56% and 87% of the total phosphorus, with the highest ratio occurring in late summer and early fall. SRP represented between 43% and 89% of the total phosphorus at CR 10.5. The ratio at station WR 0.2 ranged from 16% to 98%, increasing in the late summer and early fall events. SRP made up the majority of TP at station TB 33.2, ranging from 54% to 90%, indicating the export of soluble phosphorus from the large wetland upstream of that station. These values are within the ranges of those observed historically, with the higher percentage of SRP likely due to low flow during late summer in 2009. The values potentially indicate the export of soluble phosphorus from wetlands in the upper watershed. Expanded monitoring upstream of these wetlands would help to verify the export of soluble phosphorus from the wetlands.

3.1.2 Nitrogen

Nitrogen concentrations in the form of nitrate plus nitrite were also monitored in 2009 at CR28.2, WR0.2, and TB 33.2. Figure 3.6 shows flow-weighted mean nitrogen concentrations at each of the three stream monitoring sites in comparison to Ecoregion typical concentrations.





Nitrate plus nitrite represents the inorganic form of nitrogen. While nitrate occurs naturally in soils and water, elevated levels of nitrates may be caused by over application of fertilizers that runoff into water bodies or discharge to the Clearwater River from shallow groundwater. Excessive levels of nitrate may contribute to algae blooms and can be detrimental to the health of aquatic organisms.

Flow-weighted mean concentrations of nitrate plus nitrite are highest at TB 33.2 and CR 28.2, which are located in the upper watershed in areas where the land use is dominated by agriculture. Concentrations are lower at WR 0.2, where agriculture makes up a smaller portion of the land use in the watershed. Similarly, nitrate plus nitrite concentrations were low at CR10.5, as concentrations were below laboratory detection limits during each sample event in 2009.

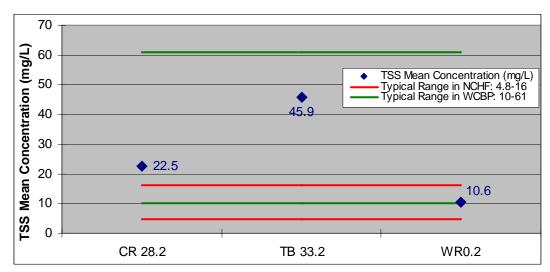
Typical nitrate plus nitrite concentrations in the WCBP Ecoregion range from 1.4 to 7.4 mg/L. While mean concentrations observed in 2009 at the upper watershed stations are well above the

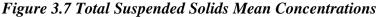
typical range for streams in the NCHF Ecoregion, they are within the typical range of streams in the nearby WCBP Ecoregion.

Since nitrate concentrations are higher at monitoring sites located in agricultural portions of the watershed, and concentrations increase with increased flow, it is likely that agricultural runoff contributes to elevated concentrations of nitrate in the watershed.

3.1.3 Total Suspended Solids

Samples were also analyzed for total suspended solids (TSS) in 2009. Mean concentrations of TSS are compared to typical Ecoregion concentrations in Figure 3.7. Mean concentrations were within the range of typical concentrations in the NCHF Ecoregion at WR0.2. Mean concentrations at CR 28.2 and TB 33.2 were above NCHF typical concentrations but within the range of typical concentrations in the WCBP.





3.1.4 Additional Parameters

Dissolved oxygen was also measured at each stream monitoring location and concentrations are compared to the MPCA standard for impairment of 5 mg/L in Figure 3.8. Concentrations were above the impairment standard at all stations except for two summer sampling dates in low flow

conditions at CR 28.2. These data reflect the conclusions drawn in the TMDL, that periodic low- flow DO violations occur downstream of Kingston Wetland and are driven primarily by wetland sediment oxygen demand (SOD). Data are collected to track progress towards TMDL implementation.

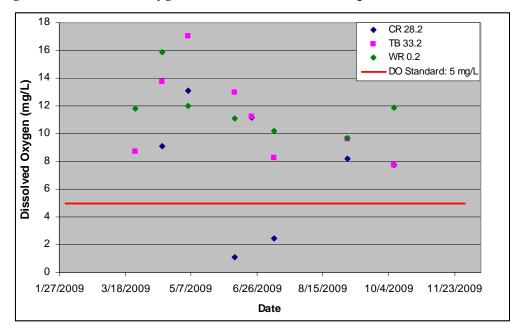


Figure 3.8 Dissolved Oxygen Concentrations and Comparison to Standard

Fecal coliform bacteria monitoring in the Clearwater River was recommended for 2009. However, extremely short laboratory holding times and relative distance to certified labs made this infeasible due to shipping costs. The District is in the process of identifying a certified local laboratory in 2010 to accommodate fecal coliform bacteria monitoring to track progress towards TMDL water quality goals.

Additional stream water quality data is found in Appendix B, including summaries of historical phosphorus loads, stream flows, and flow-weighted mean concentrations.

3.2 LAKE WATER QUALITY

CRWD sampled 21 lakes in 2009. While lakes are typically sampled on a rotating basis, in 2009 most major District lakes were sampled to provide a baseline water quality data set to track progress towards goals and to provide a calibration data set for refining watershed models built for the TMDL.

Parameters analyzed in 2009 include surface total phosphorus, soluble reactive phosphorus, chlorophyll-a, total Kjeldahl nitrogen (TKN), nitrate plus nitrite, and a field reading of Secchi depth. Surface samples characterize lake water quality. Near bottom samples for total phosphorus, soluble reactive phosphorus, and total iron were collected along with lake water temperature and dissolved oxygen profiles were collected at each lake to better characterize the period of anoxia and to quantify internal loading.

3.2.1 2009 Monitoring Results

Water quality of the lakes monitored in 2009 was generally comparable to monitoring data collected in recent years. Summer average (June 1 to September 30) values were compared with the MCPA eutrophication standards for phosphorus, chlorophyll-a, and Secchi disk depth, based on Ecoregion and lake type. The MPCA uses separate standards for shallow (less than 15 foot maximum depth or 80% of lake area less than 15 feet deep) and deep lakes (greater than 15 foot maximum depth). The appropriate standards for lakes monitored in the CRWD, which is in the North Central Hardwood Forest Ecoregion, are shown in Table 3.3. The MPCA standards are also used as the TMDL goals for summer average concentrations and Secchi depth in District lakes.

	Total Phosphorus	Chlorophyll-a	Secchi Depth			
Lake Category	μg/L	μg/L	meters (not less than)			
Shallow Lakes	60	20	1			
Deep Lakes	40	14	1.4			
Source: Minnesota Pollution Control Agency						

Table 3.3 MPCA Standards for Lakes in the North Central Hardwood Forest Ecoregion

Figures 3.9 and 3.10 compare the average total phosphorus concentrations in lakes sampled in 2009 to the TMDL goal.

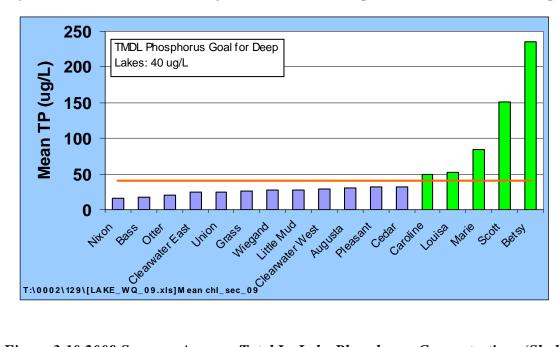
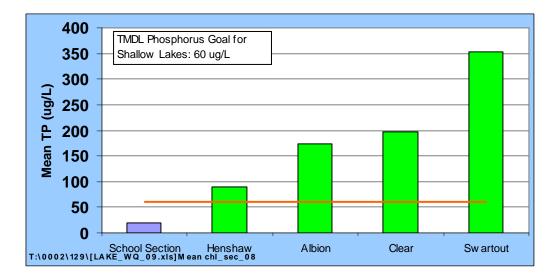


Figure 3.9 2009 Summer Average Total In-Lake Phosphorus Concentrations (Deep Lakes)

Figure 3.10 2009 Summer Average Total In-Lake Phosphorus Concentrations (Shallow Lakes)



Based on the 2009 monitoring data for each lake, Caroline, Louisa, Marie, Scott, Betsy, Henshaw, Albion, Clear, and Swartout Lakes are above the TMDL goal for total phosphorus.

Figures 3.11 and 3.12 compare the most recent summer average chlorophyll-a concentration for CRWD lakes to the appropriate chlorophyll-a TMDL goal. The 2009 chlorophyll-a concentrations in Louisa, Caroline, Marie, Scott, Henshaw, Albion, Clear, and Swartout Lakes are above the TMDL goal for chlorophyll-a.

Figure 3.11 2009 Summer Average Chlorophyll-a Concentrations (Deep Lakes)

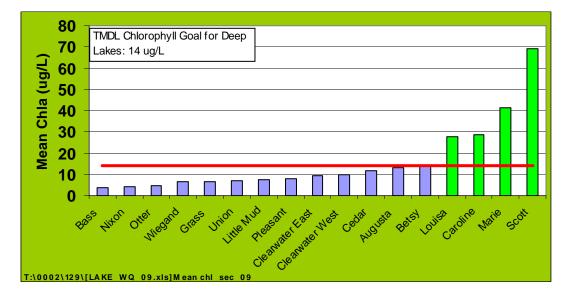
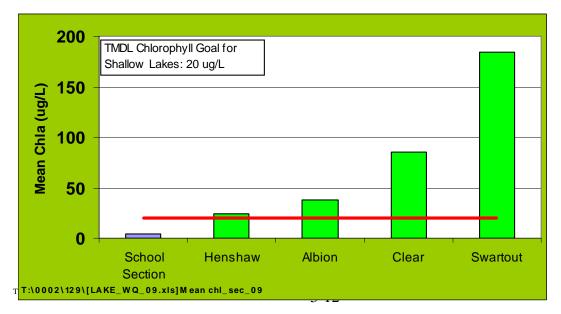


Figure 3.12 2009 Summer Average Chlorophyll-a Concentrations (Shallow Lakes)



Figures 3.13 and 3.14 compare the 2009 Secchi disk depth for all CRWD lakes to the appropriate Secchi TMDL goal. The most recent average Secchi depths demonstrate that Scott, Marie, Swartout, Clear, and Henshaw Lakes are below the TMDL goal for Secchi depth.

Figure 3.13 2009 Summer Average In-Lake Secchi Depth (Deep Lakes)

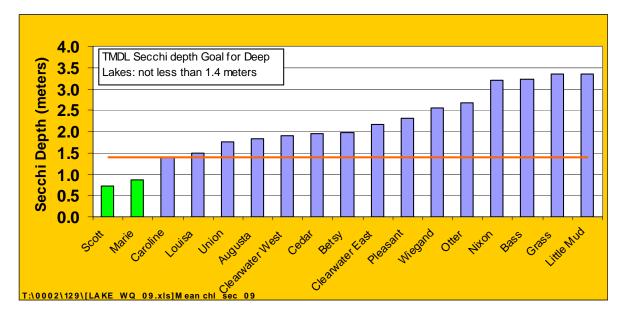
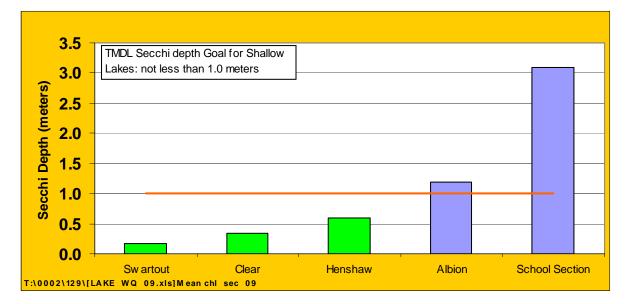


Figure 3.14 2009 Summer Average In-Lake Secchi Depth (Shallow Lakes)



Surface samples were also analyzed for Total Kjeldahl Nitrogen, which is the total amount of organic nitrogen and ammonia in a water body. Figure 3.13 compares summer average TKN concentrations in each lake to typical summer average TKN concentrations in lakes in the NCHF ecoregion. TKN concentrations in most District lakes are within the range of typical concentrations with the exception of Union, Marie, Albion, Betsy, Scott, Little Mud, Clear, Henshaw, and Swartout Lakes.

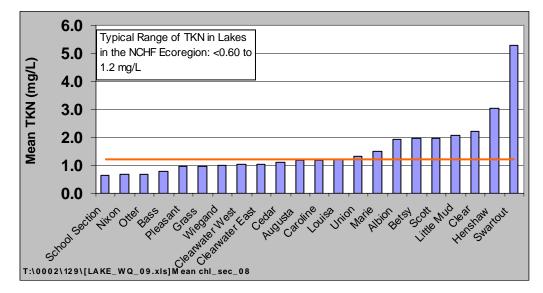


Figure 3.15 Summer Average Total Kjeldahl Nitrogen Concentrations

Surface samples were also monitored for nitrate plus nitrite in 2009. Concentrations were at or below detection limits in 18 of the 21 lakes sampled in 2009 and were just slightly above detection limits in the three lakes where nitrate plus nitrite was detected.

Water quality observed in lakes monitored during 2009 (Table 3.4) is within ranges seen in recent years. TP and chlorophyll-a concentrations were at the low end of historical ranges in several lakes, including Henshaw, Little Mud, Nixon, School Section, Union, and Wiegand.

Table 3.42009 Mean In-Lake Total Phosphorus, Chlorophyll-a, and Secchi Depth, and
Historical Ranges

	Total Phosp	<u>ohorus ug/l</u>	<u>Chloroph</u>	<u>yll-a ug/l</u>	<u>Secchi Depth</u>	(meters)
LAKE	2009 Mean	Historical Range Mean	2009 Mean	Historical Range Mean	2009 Mean	Historical Range Mean
Albion	173	130-296	38	60-204	1.2	0.5-1.2
Augusta	31	28-300	13	4-73	1.8	1.1-1.9
Bass	17	13-28	4	2-5	3.2	3.1-4.2
Betsy	235	120-700	14	4-170	2.0	0.5-2.4
Caroline	50	36-300	29	3-55	1.4	0.8-1.9
Cedar	32	19-58	12	3-20	1.9	1.1-3.0
Clear	197	80-307	85	17-134	0.3	0.3-1.2
Clearwater East	25	22-130	9	3-85	2.2	1.2-3.0
Clearwater West	29	25-160	10	4-77	1.9	1.4-2.6
Grass	26	17-38	7	1-14	3.4	1.9-3.4
Henshaw	90	90-390	25	25-278	0.6	0.2-0.9
Little Mud	28	28-62	8	5-36	3.4	1.4-3.4
Louisa	52	33-440	28	4-101	1.5	0.6-1.5
Marie	84	69-360	42	4-153	0.9	0.6-2.3
Nixon	16	15-39	4	2-8	3.2	1.8-3.3
Otter	21	13-34	5	1-8	2.7	1.9-3.0
Pleasant	32	15-51	8	4-12	2.3	2.0-3.0
School Section	20	20-50	4	3-14	3.1	1.0-3.1
Scott	151	82-660	69	3-223	0.7	0.5-1.9
Swartout	354	200-421	184	144-832	0.2	0.2-1.0
Union	25	25-88	9	7-39	1.8	1.0-2.3
Wiegand	28	28-61	7	3-12	2.6	1.7-3.4

T:\0002\129\[mean in lake_tp_chla_secchi_09.xls]Table

2009 Mean Values Above TMDL Goals

Table 3.5 compares CRWD lakes to MPCA impairment standards and identifies phosphorus trends in each lake. Overall, based on the most recent monitoring data for all lakes within CRWD, water quality in most lakes is generally good and appears to be remaining stable or improving. However, water quality remains above TMDL goals in 11 lakes.

	Last			
Lake	Monitored	Phosphorus Trend	Use	
Albion	2009	Decreasing Trend	Impaired	
Augusta	2009	Recent Stable Trend	Full Use	
Bass	2009	Stable Trend	Full Use	
Betsy	2009	Recent Increasing Trend	Impaired	
Caroline	2009	Recent Stable Trend	Impaired	
Cedar	2009	Recent Stable Trend	Full Use	
Clear	2009	Stable to Decreasing Trend	Impaired	
Clearwater East	2009	Recent Stable Trend	Full Use	
Clearwater West	2009	Recent Stable Trend	Full Use	
Grass	2009	Decreasing Trend	Full Use	
Henshaw	2009	Recent Decreasing Trend	Impaired	
Little Mud	2009	Decreasing Trend	Full Use	
Louisa	2009	Recent Stable Trend	Impaired	
Marie	2009	Recent Stable Trend	Impaired	
Nixon	2009	Recent Stable Trend	Full Use	
Otter	2009	Stable Trend	Full Use	
Pleasant	2009	Stable Trend	Full Use	
School Section	2009	Stable Trend	Full Use	
Scott	2009	Stable to Decreasing Trend	Impaired	
Swartout	2009	Stable to Increasing Trend		
Union	2009	Decreasing Trend	Full Use	
Wiegand	2009	Decreasing Trend	Full Use	

Table 3.5 Lake Trend and Impairment Summary

T:\0002\129\[LAKE_WQ_09.xls]Summary

Historical lake data and trends are included in Appendix C. Citizen Secchi depths are found in Appendix E. Water quality lab reports are in Appendix F, and field notes are in Appendix G.

3.2.2 Cedar Lake Project #06-1 Monitoring

Since 2009 represented the third and final year of Cedar Lake Project #06-1, an evaluation of the Project was conducted in November 2009. A complete summary of monitoring data from the Cedar Lake watershed is found in the Project evaluation in Appendix H. Overall, the external phosphorus load to Cedar Lake from the upstream watershed ranged from approximately 500 lbs to 1,000 lbs with an average of 797 lbs, compared to the Project goal of 1,000 lbs over the three years of monitoring during the Project.

Summer average phosphorus concentrations in Albion and Henshaw Lakes have decreased and water clarity has improved since the start of the Project. The suspected cause of improved water quality in these two lakes is the apparent improved ecological health. Summer average phosphorus concentrations remained high in Swartout Lake but were relatively stable since the start of the Project. Summer average phosphorus concentrations in Cedar Lake have decreased since 2006 but still remain above the Project goal of $20 \mu g/L$.

Watershed BMPs, including drain tile inlet replacement, buffering of tile inlets, and ditch and stream buffer strips were implemented as part of the Project. Rough fish management activities including constructing carp barriers and rough fish harvest were implemented as part of the Project as well.

4.0 Progress Toward TMDL Water Quality Goals

The CRWD TMDL addresses water quality impairments in lakes and streams and identifies load reduction goals necessary to meet water quality standards. A District-wide Implementation Plan was developed that identifies strategies to meet water quality goals in impaired waters. Because of the flow-through nature of the Clearwater Chain of Lakes, the water quality in lakes in the upper portion of the chain such as Clear Lake and Lake Betsy impact the water quality in downstream lakes like Clearwater Lake. For this reason, the approach to improving water quality in the entire District is to begin implementation by focusing on upper watershed lakes. Clear Lake, Lake Betsy, and the tributary watersheds are targeted for intensive BMPs to not only improve water quality in those lakes, but to also reduce the load to downstream water bodies. All lakes will eventually be targeted, but the greatest impact will be made by initially focusing the efforts on improvements in the upstream end of the District and working downstream.

In 2009, the District implemented several BMPs identified in the TMDL Implementation report to achieve water quality goals. Additionally priority projects were identified and are described in Section 4.1. Additional monitoring was conducted throughout the District to fill data gaps and better focus the implementation efforts. Additional monitoring was focused on improving the water quality models constructed during the TMDL studies. Upstream watersheds tributary to Clear Lake and Lake Betsy were the primary focus of additional monitoring. Additional monitoring tasks are described in Section 4.2.

4.1 TMDL IMPLEMENTATION PROJECTS

In 2009, five priority projects for which grant applications were submitted were identified. Table 4.1 provides summary information for these projects and selected projects are described in more detail below. The five projects, which are located in the watersheds tributary to Clear Lake and

Lake Betsy, vary in cost and potential TP load reduction. Selected projects are described in more detail below.

Project	Potential TP Reduction (Ibs/yr)	Cost of TP Reduction (\$/Ib)	Estimated Expense
Watkins		A A A A W	
Impoundment	147	\$204/lb	\$30,000
City of Kimball	257	\$444/lb	\$114,000
Fertilizer Field Trial	600	\$295/lb	\$177,000
Lake Betsy Hypolimnetic Withdrawal	480	\$525/lb	\$315,000
Clear Lake V-Notch Weir	588	\$128/lb	<u>\$75,000</u>
Totals	2,072 lbs	Avg: \$320/lb	\$711,000

Table 4.1 Priority Implementation Projects

Watkins Impoundment

The proposed project is the construction of an impoundment on a 20-acre CRWD-owned parcel of land northeast of the city to treat runoff discharged from the city's storm drainage system. The impoundment would be created by constructing an earthen dike across the creek that runs west to east across the parcel. Two subwatersheds totalling 740 acres of urban and agricultural land drains through this creek to a nearby ditch. A sheet pile weir with a V-notch outlet point would control discharge from the impoundment. The impoundment is sized to store runoff form the 0.5 inch event, which would provide an annual nutrient removal efficiency of 25%. The impoundment would also potentially provide some removal of bacterial load from the agricultural land and biological oxygen demand currently stressing the Clearwater River.

The filter consists of 3/4 inch to 3 inch diameter limestone wrapped in geotextile fabric and staked in place at the outlet of the structure. As the water passes through the filter, the phosphorus comes in contact with and binds to the calcium in the limestone, and is removed from the water.

City of Kimball

This project targets phosphorus removal for Lake Betsy and protection of the Willow Creek trout habitat by infiltrating the 1.5-inch storm event off 428 acres in and around the City of Kimball. Stormwater runoff from the City of Kimball drains untreated into Willow Creek, a trout stream. Willow Creek is tributary to Lake Betsy, which is impaired by excess nutrients..

It is estimated that this project will reduce phosphorus discharged to Willow Creek and Lake Betsy by 244 pounds annually, or about 3 percent of the 8,300 pound annual load reduction required for Lake Betsy. Kimball is one of two urban areas tributary to Lake Betsy, making it a targeted area for load reduction in the TMDL.

Fertilizer Field Trial

The proposed soil testing and fertilizer application field trial includes systematic soil tests on up to 10,000 acres of critical cropland to determine the proper amount of fertilizer to be applied to each field. The applicator will use GPS to apply the correct amount of fertilizer in each grid of the fields based on the results of the soil tests.

Monitoring will be conducted at drain tile outlets from selected fields. Samples will also be collected from two tile outlets in fields that are not a part of the field trial to be used as background data for comparison. The results will be publicized to encourage wider application of this technique.

This field trial will demonstrate the feasibility and utility of systematic soil testing in reducing fertilizer application and thus phosphorus load in agricultural runoff. This technology can be implemented throughout the agricultural areas of the state to cut down on fertilizer costs and reduce runoff of nutrients into adjacent water bodies.

The outcomes of the field trial are a reduction in phosphorus from fertilizer exported to impaired waters from cropland, and a quantification, evaluation, and publication of the load reduction achieved.

Lake Betsy Hypolimnetic Withdrawal

This proposed project would pump nutrient-rich water from the lake hypolimnion and use it to irrigate a nearby farm field. Intensive monitoring will be completed to evaluate the effectiveness of the BMP in reducing internal load. Lake inflows and outflows will be monitored for flow and quality, while weekly temperature and dissolved oxygen profiles and bi weekly nutrient profiles will be taken to evaluate impact on lake water quality. Volume and timing of withdrawals will be tracked to estimate load reduction.

The proposed project will assess the cost-effectiveness of lake hypolimnetic withdrawal and irrigation as an internal phosphorus load management BMP, and evaluate its transferability to lakes in the Clearwater River Watershed District and elsewhere.

Clear Lake V-Notch Weir

The proposed project will impound water by installing a V-notch weir on a Clear Lake tributary. The resulting retention basin will allow phosphorus to settle out of agricultural runoff before discharging to Clear Lake. The targeted load reduction for this project is 600-800 pounds of phosphorus annually. The phosphorus load removed through the proposed project represents a significant component of the required load reduction from watershed sources to Clear Lake. The V-notch imoundment will catch water from smaller runoff events while allowing controlled overflow of stormwater during larger storm events.

4.2 EXPANDED MONITORING

Additional monitoring tasks were performed in 2009 in order to better quantify internal loading of nutrients in CRWD lakes, to fill data gaps identified in the TMDL study, and to better calibrate water quality models. These monitoring efforts will assist in designing BMPs and load reduction projects, making implementation more efficient and effective.

4.2.1 Water Quality Monitoring

Samples were collected near the bottom at each of the monitored lakes and analyzed for total phosphorus, soluble reactive phosphorus, and total iron. A summary of surface and bottom phosphorus concentrations, bottom iron concentrations, and a DO/temperature profile at each lake for each monitoring date is found in Appendix I.

Analysis of these parameters in bottom samples is helpful in estimating internal nutrient cycling in lakes. In-lake nutrient cycling is an important component of the whole lake nutrient budget. Phosphorus builds up in lake-bottom sediments due to increases in phosphorus load export from the tributary watershed.

Lake profile data, in which temperature and dissolved oxygen were recorded at 1 meter increments in each lake helps to identify the period of stratification in lakes. This data also allows quantification of the period of anoxia, defined as dissolved oxygen levels less than 2 mg/L, in each lake. Internal loading can be a result of sediment anoxia, where weakly bound phosphorus is released into the water column in a form readily available for phytoplankton production.

Table 4.2 provides a summary of conditions in CRWD lakes which can be used to determine the potential for in-lake nutrient cycling in each lake. Generally, lakes which have high bottom phosphorus concentrations and periods of anoxia from stratification are susceptible to internal nutrient cycling.

	Surface	Surface	Bottom	Bottom	Bottom	
	Summer	Summer	Summer	Summer	Summer	
	Average TP	Average OP	Average TP	Average OP	Average Iron	Lake Stratification
Lake Name	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	Pattern
Albion	173	86	168			Mixed
Augusta	31	11	494	410	0.076	Strongly Stratifies
Bass	17	10	128	21		Stratifies
Betsy	235	177	779	628		Weakly Stratifies
Caroline	50	14	1353	938	0.867	Strongly Stratifies
Cedar	32	8	282	216	0.062	Strongly Stratifies
Clear	197	27	237	35		Polymictic
Clearwater East	25	18	114	61		Strongly Stratifies
Clearwater West	29	16	57	42		Strongly Stratifies
Grass	26	18	362	239	0.074	Weakly Stratifies
Henshaw	90	79	78	29	0.076	Mixed
Little Mud	28	6	778	18	4.798	Strongly Stratifies
Louisa	52	12	1224	1074	0.154	Strongly Stratifies
Marie	84	15	1107	828	0.584	Stratifies
Nixon	16	15	298	26	16.300	Strongly Stratifies
Otter	21	19	349	266	0.341	Strongly Stratifies
Pleasant	32	20	240	136	0.402	Stratifies
School Section	20	7	20	7	0.099	Mixed
Scott	151	38	448	297	2.294	Polymictic
Swartout	354	70	278	65	0.258	Polymictic
Union	25	11	720	552		Stratifies
Wiegand	28	16	184	69	0.130	Weakly Stratifies

Table 4.2 Summer Average Concentrations and Lake Stratification Patterns

Lake stratification patterns identified in Table 4.2 vary between water bodies. Lake stratification can drive anoxia, which can drive internal loading in deeper lakes. Identifying the stratification and anoxic period can guide design of efforts to reduce internal loading.

Mixed and Polymictic: In mixed water bodies, water temperature is fairly uniform from top to bottom in the lake. As a result, oxygen enriched water from near the surface is able to mix throughout the water column, and anoxia is typically not present. Polymictic lakes are lakes that develop a weak stratification and mix periodically throughout the growing season. As a result of the frequent mixing, anoxic conditions would likely occur infrequently.

Stratified: In stratified lakes a warm surface layer forms during summer months and the lake maintains a cooler lower layer in the lake and prevents mixing between the two layers. This does not allow oxygen enriched water to reach the bottom layer and anoxia can develop below the thermocline.

Lakes with high bottom phosphorus concentrations that experience anoxic conditions during periods when the lake is stratified have a high potential for internal loading. Lakes with the highest bottom concentrations of phosphorus in 2009 include Augusta, Betsy, Caroline, Grass, Louisa, Marie, Scott, and Union. Based on the presence of high bottom phosphorus concentrations, lake stratification patterns and associated periods of anoxia during a given year, these lakes have a high potential for internal loading. Shallow lakes can load internally throughout the season based on disturbance of bottom sediments through wind and rough fish.

4.2.2 Clear Lake and Lake Betsy

4.2.2.1 Sediment Sampling

In 2009, sediment sampling was conducted at Betsy and Clear Lakes. On March 18, 2009, sediment cores were collected from each lake. The sediment cores were analyzed for phosphorus content and the phosphorus release rate under oxic and anoxic conditions from each lake was quantified.

The analysis of the sediment phosphorus content allows for the phosphorus to be characterized into two categories, redox-sensitive and biologically labile phosphorus, and refractory phosphorus. Redox-sensitive and biologically labile phosphorus is the form of phosphorus that is subject to recycling in the lake while refractory phosphorus is strongly bound and does not readily cycle back into the lake. Data from the analysis of the sediment cores is summarized in Table 4.3.

	Phosphorus Release Rate (mg/m²/day)		Total Phosphorus	Redox-sensitive and biologically labile P	Percentage of redox- sensitive and	Refractory P
Lake	Oxic	Anoxic	(mg/g)	(mg/g)	biologically labile P	(mg/g)
Betsy	Not detected	19	1.419	0.753	53.1%	0.694
Clear	Not detected	2.4	1.462	0.353	24.1%	0.861

Table 4.3 Lake Betsy and Clear Lake Sediment Analysis Summary

Phosphorus release was not detected from sediments under oxic conditions for either lake. The sediment core analysis indicates that the phosphorus release rate from bottom sediments under anoxic conditions in Lake Betsy is much higher than the release rate from Clear Lake sediments. Analysis of the phosphorus content shows that although the phosphorus content is similar in both

lakes, the percentage of redox-sensitive and biologically labile phosphorus in Lake Betsy is over twice that of Clear Lake. These results indicate that under anoxic conditions, internal loading of phosphorus can potentially result in a significant loading of phosphorus to the lakes, especially Lake Betsy.

The additional data collected on Betsy and Clear Lakes allows for the estimation of internal phosphorus loading in each lake. Figure 4.1 and Figure 4.2 show the depth of anoxia during each date that lake profile data was collected. Table 4.6 shows the predicted internal load and annual load allocations as identified in the 2009 CRWD Lake Nutrient TMDL, as well as the 2009 estimated internal phosphorus load in Betsy and Clear Lakes. Variability in the annual internal phosphorus load from year to year is caused by variability in the depth of stratification and area of anoxia in the lakes.

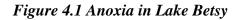
Table 4.4 shows the internal load predicted by modeling used during the TMDL process for comparison to the internal phosphorus load that was estimated from results of monitoring conducted in 2009. Table 4.4 also shows both the total annual phosphorus load allocation for all sources and the portion of the total phosphorus load allocation that is from internal loading.

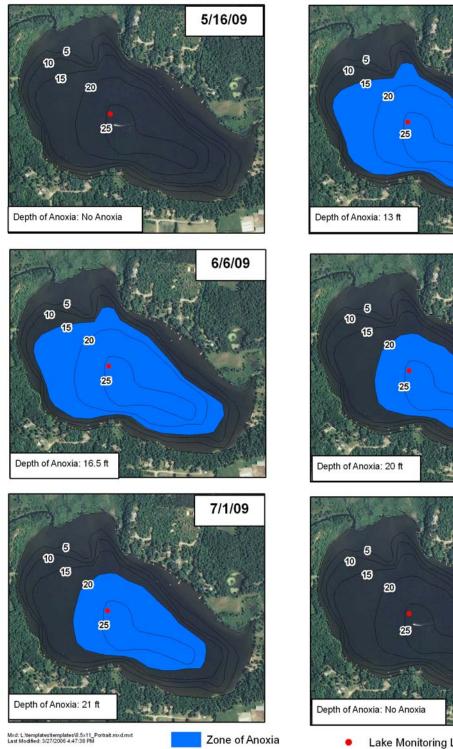
Lake	Predicted Internal Load* (Ibs/year)	Annual Phosphorus Load Allocation* (Ibs/year)	Annual Phosphorus Internal Load Allocation* (Ibs/year)	2009 Estimated Internal Phosphorus Load (Ibs/year)	
Betsy	7,080	2,868	354	1354	
Clear	8,364	1,250	21	76	

*From CRWD Lake Nutrient TMDLs, 2009

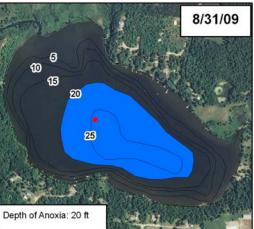
While the 2009 estimated internal phosphorus loads in Lake Betsy and Clear Lake appeared to be less than the modeled average they still are above the TMDL annual phosphorus internal load allocation for each lake.

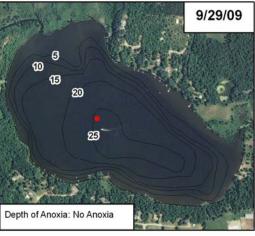
Summaries for Lake Betsy and Clear Lake, including Lake Report Cards summarizing general lake information, historical and current water quality, and identifying TMDL goals are found in Section 4.2.2.2.



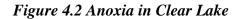


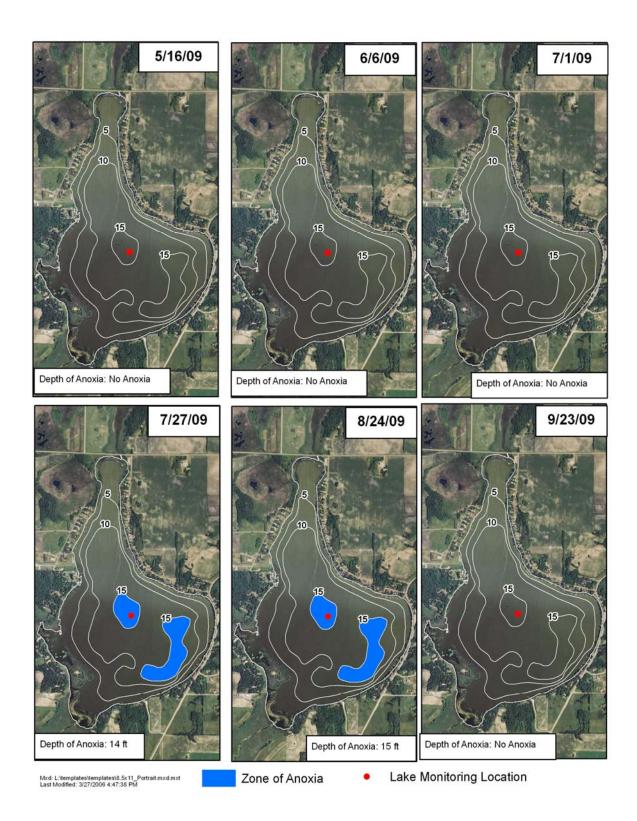
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Lake Monitoring Location





4.2.2.2 Lake Betsy and Clear Lake Summaries

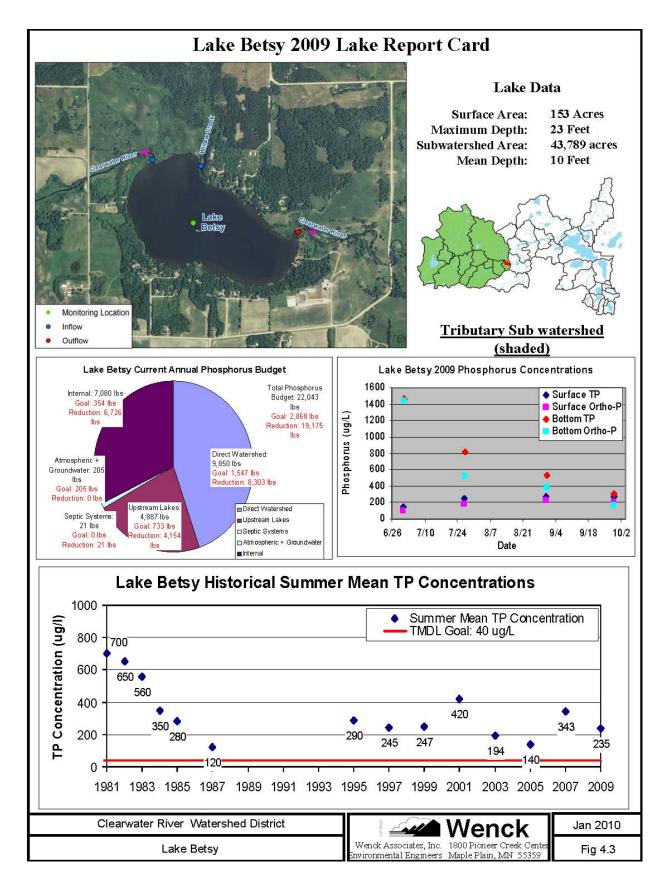
Lake Betsy

As recommended in the TMDL, watershed monitoring was expanded in 2009 to better characterize watershed and internal loads in Lake Betsy. Early spring watershed loads were measured by collecting additional samples and sampling earlier in the season to capture spring melt. Further, internal phosphorus release rates were measured in Lake Betsy by collecting sediment cores. The measured release rates used in conjunction with additional temperature and DO profiles to define the summer stratification period were used to characterize internal loading.

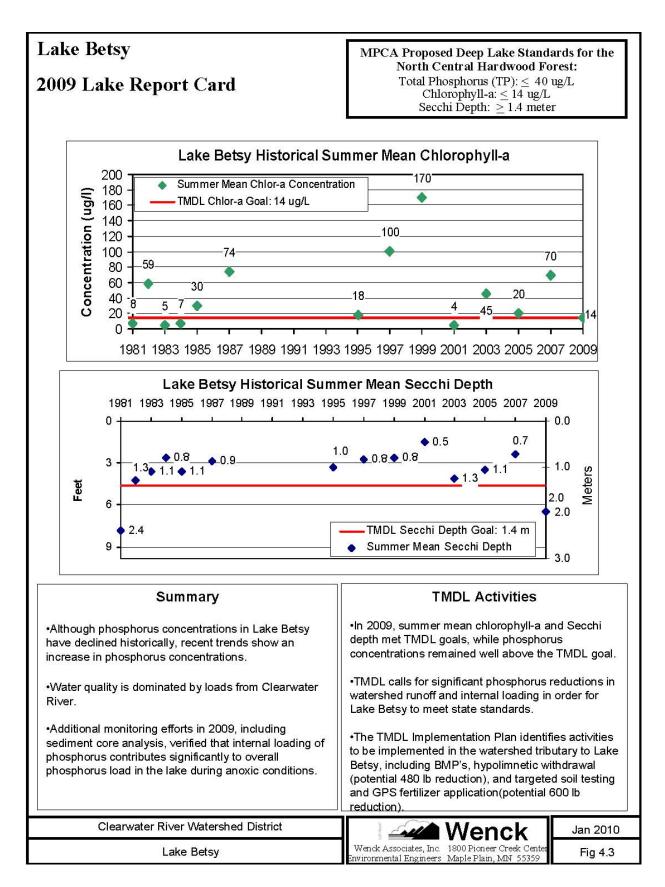
The collection of these supplemental data yielded the following conclusions and recommendations:

- Phosphorus release rates in Lake Betsy are very high, 19 mg/m2-day, which is characteristic of a hypereutrophic lake. However, due to a short anoxic period driven by high flow mixing events, internal loading in Lake Betsy in 2009 was significantly lower than the predicted average condition for the TMDL. The relatively low internal load is likely representative of the low end of a range of internal loads to the lake.
- Watershed loads were significantly higher in 2009 than measured in recent history, due mostly to high spring flows (80% of the load occurred during spring melt).
- The Canfield Bachmann Model for Lake Betsy was updated with 2009 data, including measured internal load, runoff and watershed loads. The model predicted in-lake concentrations almost exactly. This indicates that the Canfield Bachmann model accurately describes the relationship between total load to the lake and lake response in Lake Betsy.
- Though the current nutrient load quantified in the TMDL represents an "average" current condition, depending on the flow regime in the Clearwater River, the dominant driver of loads likely shifts between watershed and internal loads. Similar to the case in Lake Louisa and Lake Marie, internal loading in Lake Betsy (and probably Scott Lake as well) is likely significant in low flow years, but plays a lesser role in high-flow years where watershed loads dominate- this is the case in 2009. Continued characterization of stratification through measurement of DO/ temperature profiles will bracket the impact of

high and low flows and subsequent internal loading variation and assist in optimizing implementation project design. This indicates that projects such as hypolimnetic aeration should probably be implemented only in low-flow years, or years where internal loading is dominant.



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Clear Lake

The P load and required P load reductions to meet TMDL water quality goals were calculated for Clear Lake based on the average in-lake conditions measured over the past 10 years and a model of expected internal loading based on those conditions. Lakes are listed as impaired based on the most recent 10-year period of data, and as such, it is a good practice to set TMDLs based on the past 10 years.

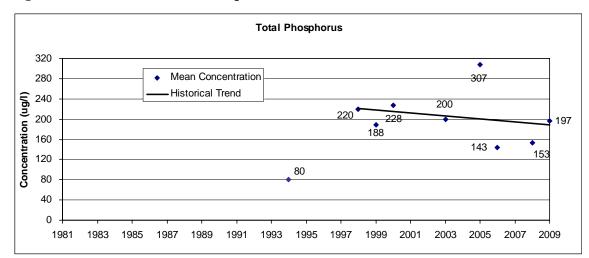
Internal loading was modeled based on literature value release rates and existing sparse records that identified lake stratification. The model predicted extremely high internal loading.

One TMDL implementation plan recommendation was to verify the predicted high internal loads by measuring release rates in 2009 and to better characterize the anoxic factor through collecting more temperature and DO profile measurements during the growing season annually. The anoxic factor changes annually with weather conditions, especially in shallow polymictic lakes like Clear Lake.

The additional monitoring on Clear Lake in 2009 demonstrated that the release rates and anoxic factor were lower than modeled. The result is that the TMDL predicted that internal loading is much higher than what was measured in 2009.

There are several potential reasons for this. In recent years, the Clear Lake Association has taken several steps to reduce both internal and watershed loads to the lake including treating curly leaf pondweed in the lake since 2005 and conducting commercial harvest of rough fish (black bullheads). Lake responses to P load reductions do not necessarily happen instantaneously, especially in shallow lakes such as Clear Lake. For this reason, it is possible that Clear Lake is responding to the changes made by the Clear Lake Association and the full impacts of these improvements are not yet seen in terms of lake water quality. As demonstrated in Figure 4.3, the lake shows a decreasing annual average TP trend in recent years, with much lower average TP concentrations since 2006. It appears that the data collected more recently (2006 -2009) may be more representative of current conditions than a 10 year average condition.

Figure 4.4 Clear Lake Mean Phosphorus Concentrations



The Clear Lake lake-response model was updated using the newly measured internal release rates. The model predicts an annual average in-lake concentration of $114 \mu g/L$ under average runoff conditions. Recent measurements show annual averages are about $164 \mu g/L$ with a high standard deviation. This indicates that either:

- The load reductions already undertaken by the Clear Lake Association have not fully taken effect and that we may see the lake trend continue to improve.
- The model is essentially correct and represents the lake well within the observed range of variability of in-lake concentrations (recall the high spring loads based on early runoff and snow melt events).
- The anoxic factor for this year was not characteristic of average conditions (i.e. represents the low end of internal loads seen in the lake based on thermal stratification and behavior in this shallow lake system).
- Watershed loads are higher than predicted. If this is the case it may indicate some readily available opportunities in terms of nutrient load reductions in the watershed tributary to Clear Lake.
- Some combination of the above factors.

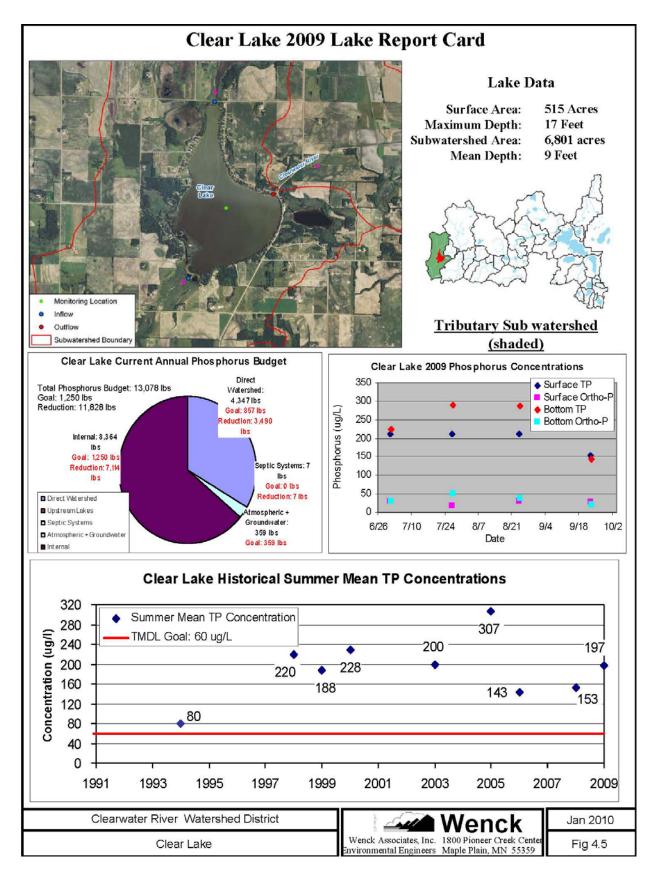
The additional monitoring tasks on Clear Lake in 2009, led to the following conclusions:

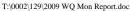
◆ TP Load reduction strategies by Clear Lake Association appear to have been effective.

- ◆ There may be readily available opportunities for load reductions in the watershed.
- Load reductions originally set in the TMDL for Clear Lake may be too high. (EPA requires they be set conservatively to ensure goals are met). The additional monitoring and updated modeling indicate that a 60% to 85% load reduction is necessary, compared to the 90% load reduction identified in the TMDL.

Recommendations for future actions on Clear Lake include:

- ✤ Continue to measure in-lake TP annually.
- Continue to measure stratification to track anoxic factor—update model in 1 to 2 years.
- Consider watershed windshield survey to ID potential readily available opportunities for load reduction.
- Consider inflow monitoring for Clear Lake watershed and monitoring to track readily available load reduction practices.
- Clear Lake Association should continue managing curly leaf pond weed.
- Research putting a pressure transducer at lake outflow or having someone take weekly stage readings there to better define the lake's hydrology.
- Since shallow lake management is not just TP load reduction, consider biological management of the lake, including determining fisheries goals and conducting plant surveys.

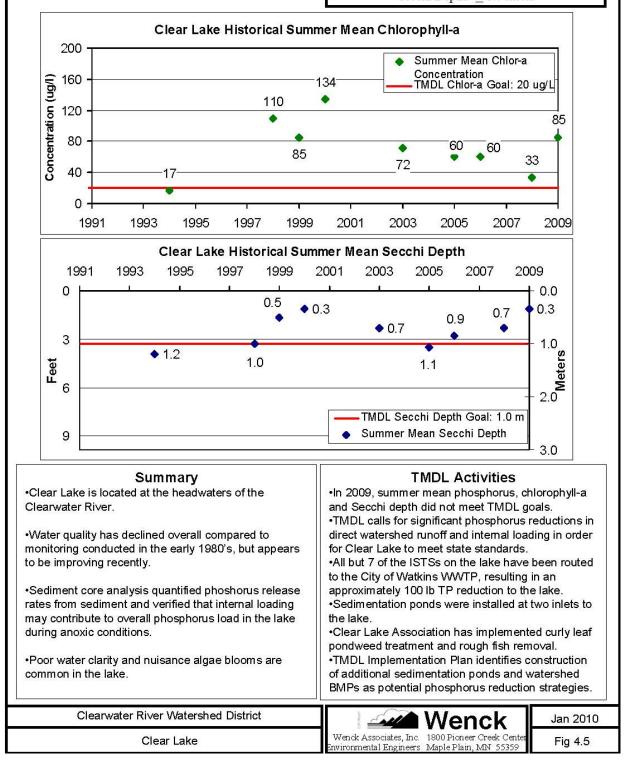




Clear Lake

2009 Lake Report Card

MPCA Shallow Lake Standards for the North Central Hardwood Forest: Total Phosphorus (TP): ≤ 60 ug/L Chlorophyll-a: ≤ 20 ug/L Secchi Depth: ≥ 1.0 meter



- Annual precipitation was near normal at monitored locations in 2009, but was below normal throughout most of the year. However, significant precipitation events in the months of March and October led to precipitation that was well above normal during spring and fall.
- 2. Runoff over the watershed at CR 28.2 was 6.9 inches, and at CR 10.5 was 7.6 inches. The higher than normal runoff in both portions of the watershed is due primarily to high flow events following snow melt and precipitation in spring.
- 3. The Clearwater River phosphorus load was estimated at 4,297 pounds at CR-10.5, slightly higher than recent loads, but similar to historic averages. The upper watershed load at CR 28.2 was 17,597 pounds, which was significantly higher than loads measured in recent years. However, nearly 80% of the load occurred during extreme high flow events in early spring and fall.
- 4. With the exception of the 11 lakes that are impaired in the watershed, the water quality of CRWD lakes is generally good. Water quality has generally improved or remained stable in the majority of the lakes in the CRWD in recent years.
- 5. Water quality continues to be poor in Lake Betsy. Additional monitoring conducted in 2009 confirms that the impact of internal loading of nutrients is likely significant in low flow years, but plays a lesser role in high-flow years where watershed loads dominate. Additional monitoring in the Lake Betsy watershed in subsequent years will aid in focusing implementation efforts in the watershed.

- 6. Water quality in Clear Lake remains poor, but it appears to be improving in recent years. Additional monitoring conducted in Clear Lake indicates that necessary loading reductions may be less than initially estimated. TP Load reduction strategies by the Clear Lake Association appear to have been effective and should be continued in future years. There may also be readily available opportunities for load reductions in the watershed that should be investigated.
- 7. The evaluation of Project #06-1 indicates that external phosphorus loads to Cedar Lake were within project goals. However, summer average phosphorus concentrations in Cedar Lake remain above the Project goal of 20 µg/L, indicating that additional load reductions and time are necessary to meet lake water quality goals.
- 8. The additional frequency of monitoring at stream locations in 2009 allowed for a more accurate estimation of runoff and phosphorus loading in CRWD. Additional lake monitoring efforts, including collecting bottom phosphorus and iron concentrations, collecting temperature and dissolved oxygen profiles more frequently, and conducting sediment phosphorus release studies led to better quantification of internal loading in District lakes in 2009. The CRWD may want to consider continuing the additional monitoring efforts in 2010 to more effectively design and implement load reduction projects.
- 9. The CRWD has made progress towards water quality goals established in the TMDLs by:
 - implementing additional monitoring which filled data gaps identified in the TMDL and which will assist in final design of capital improvement projects and targeting BMPs
 - identifying five projects for implementation and applying for funding through the Clean Water Partnership grant process for these projects
 - ✤ By beginning a targeted fertilizer application reduction project

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2009 Water Quality Monitoring Program

MEMORANDUM

TO:	Clearwater River Watershed District Board of Managers						
FROM:	Norman C. Wenck Engineer for the District						
DATE:	February 11, 2009						
RE:	Proposed 2009 Water Quality Monitoring Program						

Introduction

The Clearwater River Watershed District conducts annual water quality monitoring at selected lakes and selected locations on streams. The District's proposed 2009 program is intended to provide data throughout the District.

The 2009 proposed lake monitoring follows the long-term plan as shown in Table 1 and Figure 1. The proposed stream monitoring sites together with laboratory and field parameters are shown in Table 2.

Lake Monitoring

It is recommended that the District's 2009 lake monitoring include all of the lakes in the District as shown on Table 1. The sampling of all of the lakes provides a District-wide look at lake water quality. It is also recommended that bottom water samples be collected at all of the sampled lakes. The proposed stations and the parameters to be monitored are shown on Table 2. Citizens also monitor approximately 10 lakes for secchi depth. The Cedar Lake watershed and its upper watershed lakes will be monitored for the third year under a special three year program as part of the Cedar, Albion, Swartout, Henshaw Improvement Project No 06-1.

Stream Monitoring

The Clearwater River will be monitored twice a month from April-June and once a month from July-September at station CR28.2. A tributary to the Clearwater River will be monitored once a month from April-September at station T B 33.2 near Watkins. Warner Creek will be monitored once a month from April-September at WR 0.2. These stations will be monitored for water quality and flow. Parameters are total phosphorus, total suspended solids, total nitrogen and soluble reactive phosphorus. CR 28.2 and T B33.2 will also be monitored for *E. coli* bacteria.

Estimated Cost

This proposed basic program is estimated to cost \$26,700.

Recommended Supplemental Monitoring

In addition to the basic program, it is recommended that supplemental monitoring efforts be considered in 2009. The proposed supplemental monitoring efforts would allow the District to track the success of individual projects or to investigate specific water quality concerns.

Supplemental Monitoring Task 1: Collect additional temperature/dissolved oxygen profiles from selected lakes in the District to better characterize the anoxic factor in lakes.

It is recommended that the District collect profile data twice monthly from May to October in Clear, Betsy, Scott, Union, Louisa, and Marie Lakes. Since the lakes are already being sampled monthly from June to September, this additional task would add eight visits to each lake. The cost of this additional task is approximately \$1,200.

Supplemental Monitoring Task 2: Collect lake bottom sediment samples to quantify phosphorus release rates in selected District Lakes.

It is recommended that the District collect lake sediment samples from Clear, Betsy, Scott, Union, Louisa, and Marie Lakes on an one lake per year basis. The cost of this task is approximately \$3,500 per lake.

Supplemental Monitoring Task 3: Maintain two continuous flow measurement stations in the District.

It is recommended that the District install pressure transducers at the watershed outlet and midpoint to measure continuous flows and better characterize annual runoff. The approximate cost of this task, including equipment purchase is \$4,500.

Equipment Purchase

The current equipment used to collect lake profile data and gauge stream flow is in need of replacement. New equipment would improve the efficiency of data collection and improve the quality of the data. The cost of a new digital temperature/dissolved oxygen meter is approximately \$950. The cost of a new digital velocity meter to be used in stream flow gauging is approximately \$750.

Summary

The proposed monitoring program continues the program in place since 1981, coordinates with other programs, and reflects input from the Board and citizens. Please feel free to call me at 763-479-4201 or Rebecca Kluckhohn at 763-479-4224 with any questions or comments that you may have.

LAKE STATIONS ⁽¹⁾	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	2005	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
Clearwater Lake:														
Clearwater East	Х	Х	Х	Х	Х	Х	Х	Х	DNR		Х		Х	
Clearwater West	Х	Х	Х	Х	Х	Х	Х	Х	DNR	Х		Х	Х	Х
Main Stem Lakes:														
Augusta	Х		Х		Х		Х		DNR		Х		Х	
Louisa	Х		Х		Х		Х		TMDL/ DNR	TMDL	Х		Х	
Caroline		Х				Х		Х	DNR	Х		Х	Х	Х
Scott		Х	Х			Х		Х		Х		Х	Х	Х
Marie		Х		Х		Х		Х	DNR	Х		Х	Х	Х
Betsy	Х		Х		Х		Х		Х		Х		Х	
Other Lakes:														
Cedar			Х		Х		Х	Х	Х	Х		X(2)	X(2)	Х
Pleasant	Х		Х	Х				Х	MPCA		Х	X(3)	Х	Х
School Section	Х		Х	Х				Х			Х		Х	х
Nixon	Х		Х		Х			Х			Х	Х	Х	х
Otter	Х		Х		Х			Х			Х		Х	х
Bass		Х	Х		Х				MPCA/ DNR	х		X(3)	Х	
Clear		Х	Х	Х			Х		х			Х	Х	х
Union		Х	Х			Х			MPCA			Х	Х	
Henshaw		Х	Х			Х			Х		Х	X(2)	X(2)	
Little Mud			Х			Х				х			X	
Wiegand			Х			Х			Х				Х	
Swartout			Х				Х		Х	Х		X(2)	X(2)	
Albion			Х				х		Х	х		X(2)	X(2)	
Grass			Х				Х		DNR			X	X	
Number of Lakes														
Monitored W/	0	0	20	~	0	0	10	10	7	10	0	14	22	10
CRWD Funding	9	9	20	6	9	9	10	10	7	10	9	14	22	10
Note:	⁽¹⁾ Lake s	electio	n basec	d on tot	al lake	size ra	nking s	scores	(Lake Priority	Rankiı	ng, 199	0)		
	(2) Part of	f Projec	ct #06-1	1										
	(2)													

TABLE 1 PROPOSED LONG-TERM WATER QUALITY MONITORING PLAN FOR CRWD LAKES

⁽³⁾ Added to assess trends

TABLE 2
Proposed 2009 CRWD Monitoring Plan Summary

Category	2009Schedule	Station	Parameters
	June 1-5, July 6- 10, August 3-7, September 7-11	The CRWD will monitor Clearwater (West), Clearwater (East), Augusta, Louisa, Caroline, Scott, Marie, Betsy, Pleasant, School Section, Nixon, Otter, Bass, Clear, Union, Little Mud, Wiegand, Grass	Field: Secchi depth, DO and temperature profiles
Lakes:			
		Cedar, Albion, Swartout, and Hensaw Lakes will be monitored under Project No. 06-1	Lab: surface samples for total phosphorus, soluble reactive phosphorus, total nitrogen, chlorophyll-a Bottom samples for total phosphorus, soluble reactive phosphorus, and total iron.
			Citizen Secchi: 10 sites not listed here
	Twice monthly	CR 28.2	Field: flows, DO and temperature
Streams:	April-June, monthly July- September	GR 20.2	Lab: total phosphorus, soluble reactive phosphorus, total suspended solids, Total Nitrogen, E. coli
	Monthly April- September	TB 33.2	Field: flows, DO and temperature Lab: total phosphorus, soluble reactive phosphorus, total suspended solids, Total Nitrogen, E. coli
	Monthly April- September	WR0.2	Field: flows, DO and temperature Lab: total phosphorus, soluble reactive phosphorus, total suspended solids, Total Nitrogen
	Bi-weekly	River Stage at CR10.5	
Precipitation:	Daily	Corinna, Kimball, Watkins	
	,	· · · ·	
		Cedar, Albion, Swartout, Henshaw, Project #06-1	Tributaries Field: DO, temperature, conductivity, pH profiles; Lab: total phosphorus, soluble reactive phosphorus, TSS, TN
			Lakes Field: Secchi, DO, temperature profiles Lab: surface: total phosphorus, soluble reactive phosphorus, total nitrogen, chlorophyll-a bottom: total phosphorus, soluble reactive phosphorus, total iron

Historical Mean Flow and Phosphorus Loading

Appendix B-TABLE 1

YEARLY PRECIPITATION AND RUNOFF TOTALS

Clearwater River Watershed District

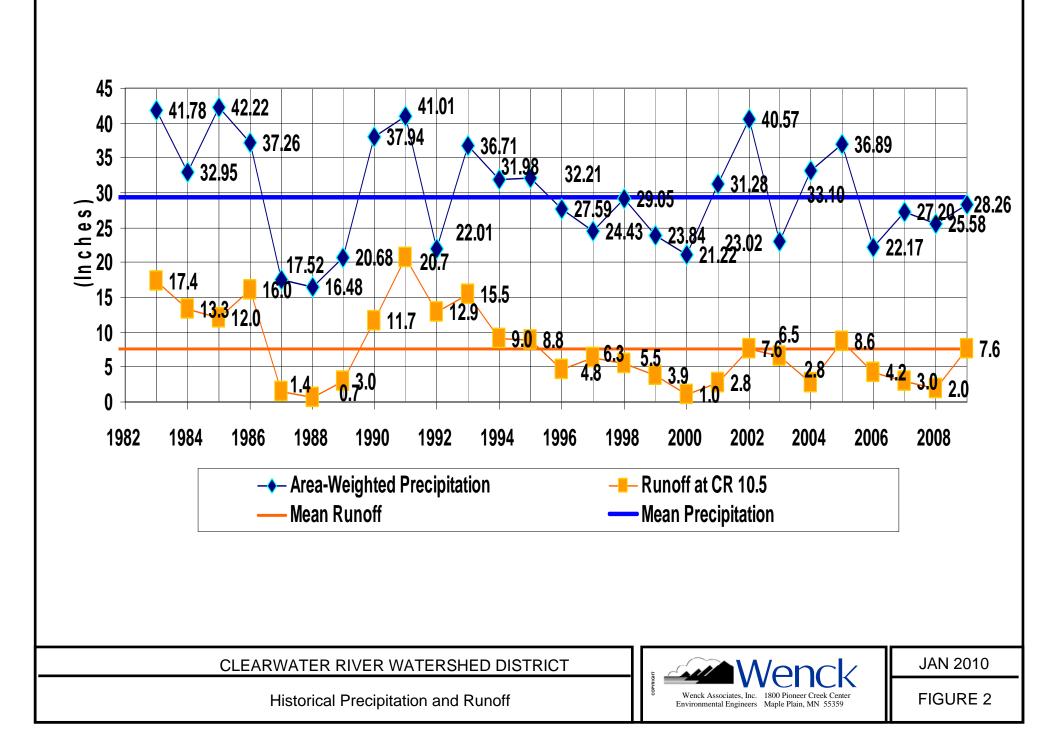
				Maine				Area-Weighted		Runoff
YEAR	Watkins	Kingston		Prairie		Corinna		Precipitation Average		(inches)
1981								19.76	(1)	3.6
1982								24.58	(1)	6.8
1983	46.54			42.32		35.02		41.78		17.4
1984	32.23	30.13		32.37		36.07		32.95		13.3
1985	40.72	39.49		45.28				42.22		12.0
1986	40.02	35.63		39.68		33.40		37.26		16.0
1987	18.97	15.40		19.41		16.16		17.52		1.4
1988	16.57	18.98		15.96		15.01		16.48		0.7
1989	22.13	22.68		21.80		16.96		20.68		3.0
1990	40.35	39.18		41.36		32.18		37.94		11.7
1991	41.30	45.11		43.41		36.28		41.01		20.7
1992	23.06	18.41		20.47		24.35		22.01		12.9
1993	40.17	35.27	(2)	37.54	(2)	33.33		36.71		15.5
1994	34.77			30.13		30.26		31.98		9.0
1995	33.80			33.65		28.66		32.21		8.8
1996	31.31			24.32	(2)	26.13	(2)	27.59		4.8
1997	24.18			21.90		27.37		24.43		6.3
1998	30.03			29.39		27.43	(2)	29.05		5.5
1999	22.08			22.31	(2)	27.71		23.84		3.9
2000	23.83			20.56		19.91		21.22		1.0
2001	31.00			33.56		29.57		31.28		2.8
2002	37.50			40.27		44.72		40.57		7.6
2003	22.63			21.34		26.77	(2)	23.02		6.5
2004	33.58			33.58		31.67		33.10		2.8
2005	32.30	(2)				41.47		36.89		8.6
2006	20.95					23.38		22.17		4.2
2007	26.58					27.82		27.20		3.0
2008	26.19					25.00		25.58		2.0
2009	28.86					27.65		28.26		7.6
							Mean	29.32		7.6
						Std. Dev.		8.1	1	5.4

NOTES:

Whole watershed runoff is based on time-weighted average flow at Clearwater Lake outlet (station CR 10.5), and total drainage area of 155 square miles.

- (1) Data for single gauge in east-central part of watershed (Camp Heritage on Lake Caroline).
- (2) Average values of other stations in District were used to fill in missing data.

T:\0002\129\[Stream_Loads_Historic_09.xls]Precip_Runoff Data



APPENDIX B Historical Mean Flow and Phosphorus Loading

Clearwater River Watershed District

2009 Annual Report

				Flow-Weighted Average		
				Total Phosphorus		
Station		Average Stream	n Flow	Concentration	Total Phospho	rus Load
Main Stem:	Year	(cu m/sec)	(cfs)	(mg/l)	(kg)	(lb)
CR 28.2	1981 (1) 1981			1.400		
(Actual River	1982 (1)	0.93	32.8	0.740	19,700	43,500
Mile 27.2)	1983	2.62	92.6	0.920	76,000	168,000
	1984	1.49	52.6	0.760	35,700	78,800
	1985	2.32	81.9	0.900	65,500	144,000
	1986	3.20	113	0.780	55,200	122,000
	1987	0.11	3.90	0.130	460	1,020
	1988	0.09	3.12	0.660	1,850	4,080
	1989 1990	0.02 0.51	0.72 18.0	0.190 0.440	120 7,040	260 15,500
	1990	1.11	39.1	0.290	10,200	22,500
	1992	0.26	9.30	0.200	1,660	3,650
	1993	1.28	45.2	0.290	11,600	25,600
	1994	1.17	41.2	0.280	10,100	22,300
	1995	1.15	40.4	0.288	10,400	22,900
	1996	0.33	11.7	0.274	2,860	6,300
	1997	0.27	9.36	0.260	2,170	4,790
	1998	0.41	14.4	0.250	3,190	7,020
	1999	0.08	2.78	0.160	400	870
	2000	0.02	0.72	0.380	240	530
	2001 (4),(5)	0.27	9.46	0.510	4,309	9,500
	2002	0.47	16.50	0.291	4,290	9,460
	2003 2004	0.28	9.92	0.190	1,710	3,770
	2004 2005 (6)	0.48 1.11	17.04 39.28	0.166 0.306	1,248 1,862	2,751 4,105
	2005 (0) 2006	0.31	11.10	0.130	1,302	2,928
	2000	0.14	5.02	0.228	767	1,692
	2008	0.64	22.53	0.155	1,333	2,938
	2009	1.15	40.60	0.333	7,982	17,597
CR 10.5	1981 (1)	1.15	40.6	0.050	2,060	4,550
	1982 (1)	2.20	77.8	0.070	4,990	11,000
	1983	5.64	199	0.100	18,500	40,800
	1984	4.28	151	0.050	6,620	14,600
	1985	3.88	137	0.140	16,700	36,800
	1986 1987	5.52 0.46	195 16.2	0.150 0.040	23,700 600	52,300
	1987	0.40	7.95	0.040	260	1,320 580
	1989	0.23	34.2	0.040	2,340	5,150
	1990	3.77	133	0.030	3,060	6,750
	1991	6.68	236	0.050	10,500	23,200
	1992	4.16	147	0.060	8,090	17,800
	1993	5.01	177	0.040	6,330	14,000
	1994	2.92	103	0.030	2,850	6,290
	1995	2.83	100	0.034	3,040	6,710
	1996	1.53	54.2	0.041	1,970	4,350
	1997	2.06	72.8	0.040	2,690	5,940
	1998	1.78	63.0	0.040	2,330	5,120
	1999	1.25	44.1	0.040	1,520	3,350
	2000 2001 (4),(5)	0.31 0.90	10.8 31.7	0.030 0.030	280 850	610 1,873
	2001 (4),(5) 2002	0.90 2.46	31.7 87.0	0.030	850 2,950	1,873 6,500
	2002	2.40	74.6	0.033	2,930 1,590	3,500
	2003	1.66	58.8	0.024	639	1,409
	2005 (6)	3.05	107.6	0.023	59	130
	2006 (6)	1.76	62.2	0.032	1,263	2,785
	2007	0.97	34.1	0.031	933	2,057
	2008	1.27	44.8	0.023	452	997
	2009	3.99	141.0	0.025	1,949	4,297

APPENDIX B Historical Mean Flow and Phosphorus Loading

Clearwater River Watershed District

2009 Annual Report

				Flow-Weighted Average Total Phosphorus			
Station		Average Stream	n Flow	Concentration	Total Phosphorus Load		
Main Stem: Tributaries:	Year	(cu m/sec)	(cfs)	(mg/l)	(kg)	(lb)	
WR 0.2 (2)	1981 (1)	0.07	2.60	0.170	390	860	
	1982 (1)	0.23	8.20	0.160	780	1,720	
	1983	0.47	16.50	0.090	1,270	2,800	
	1984	0.60	21.20	0.050	950	2,100	
	1985	0.48	17.10	0.140	2,130	4,700	
	1986	0.86	30.40	0.200	4,630	10,200	
	1987	0.04	1.50	0.070	100	230	
	1988	0.01	0.40	0.170	60	130	
	1989	0.03	1.19	0.140	80	180	
	1990	0.06	2.28	0.370	750	1,660	
	1991	0.26	9.22	0.111	860	1,900	
	1992	0.11	4.02	0.050	170	370	
	1993	0.24	8.59	0.100	760	1,670	
	1994	0.18	6.34	0.060	320	700	
	1995	0.12	4.27	0.054	210	460	
	1996	0.05	1.78	0.110	180	380	
	1997	0.09	3.15	0.077	220	480	
	1998	0.09	3.11	0.110	290	650	
	1999	0.06	2.03	0.070	130	280	
	2000 (3)	0.01	0.44	0.060	25	56	
	2001 (4),(5)	0.08	2.88	0.100	257	567	
	2002	0.26	9.17	0.114	930	2,060	
	2003	0.16	5.79	0.062	320	710	
	2004	0.07	2.6	0.063	78	172	
	2005	0.58	20.6	0.066	22	48	
	2006	0.06	2.1	0.090	102	224	
	2007	0.03	0.9	0.064	34	76	
	2008	0.31	11.1	0.058	246	542	
	2009	0.15	5.3	0.087	273	602	

NOTES:

Flow values are time-weighted averages unless otherwise noted.

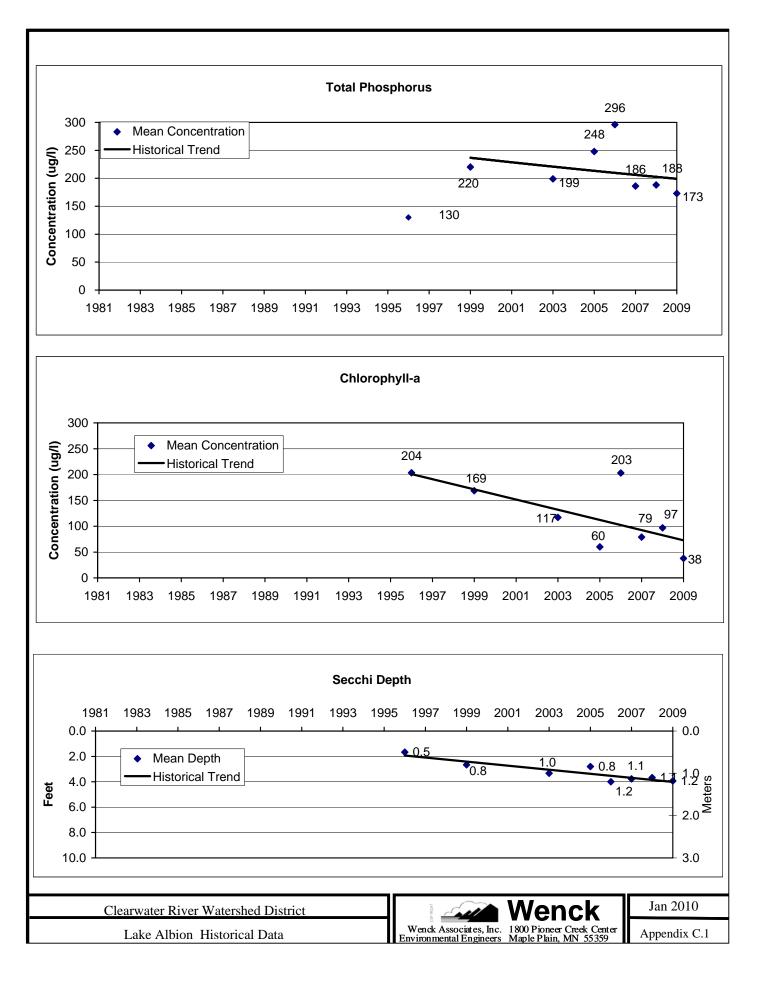
Total phosphorus values are flow- and time-weighted averages unless otherwise noted.

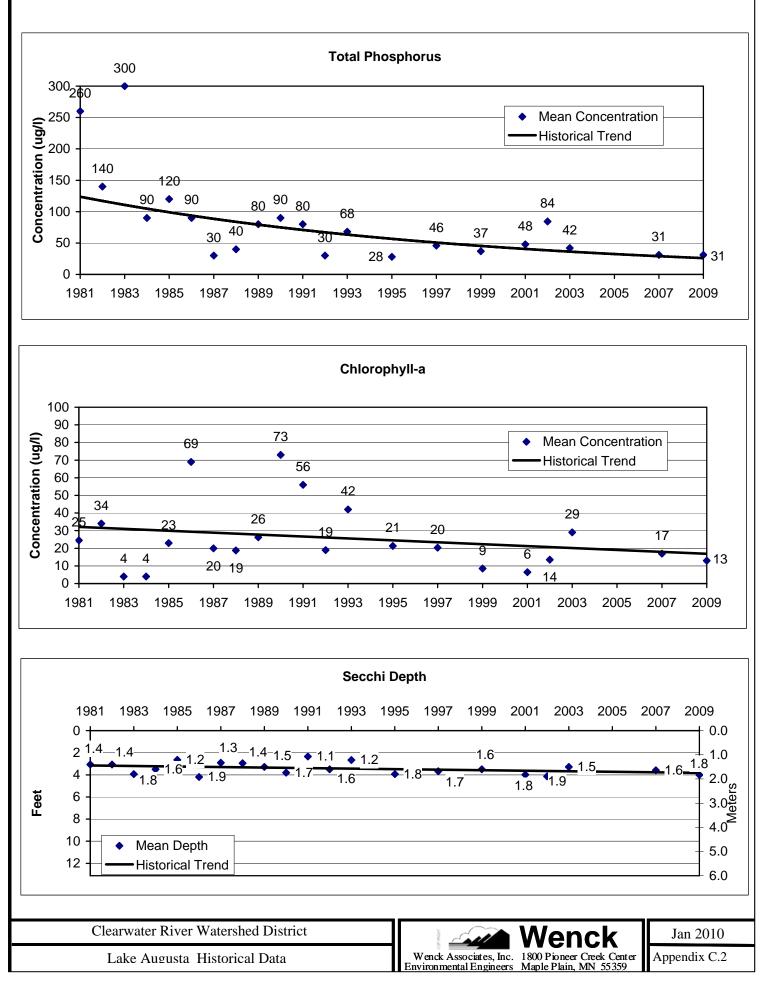
- (1) Values in 1981 and 1982 are arithmetic means
- (2) Station WR 0.2 was designated Station WC 0.2 in 1981-1983
- (3) Phosphorus values in 2000 are flow-weighted and adjusted per log-log regression on flow so as to correspond to annual mean flows.
- (4) 2001 Flow and total phosphorus values are arithmetic averages.
- (5) 2001 total phosphorus loads estimated from arithmetic averages of flow and total phosphorus values.

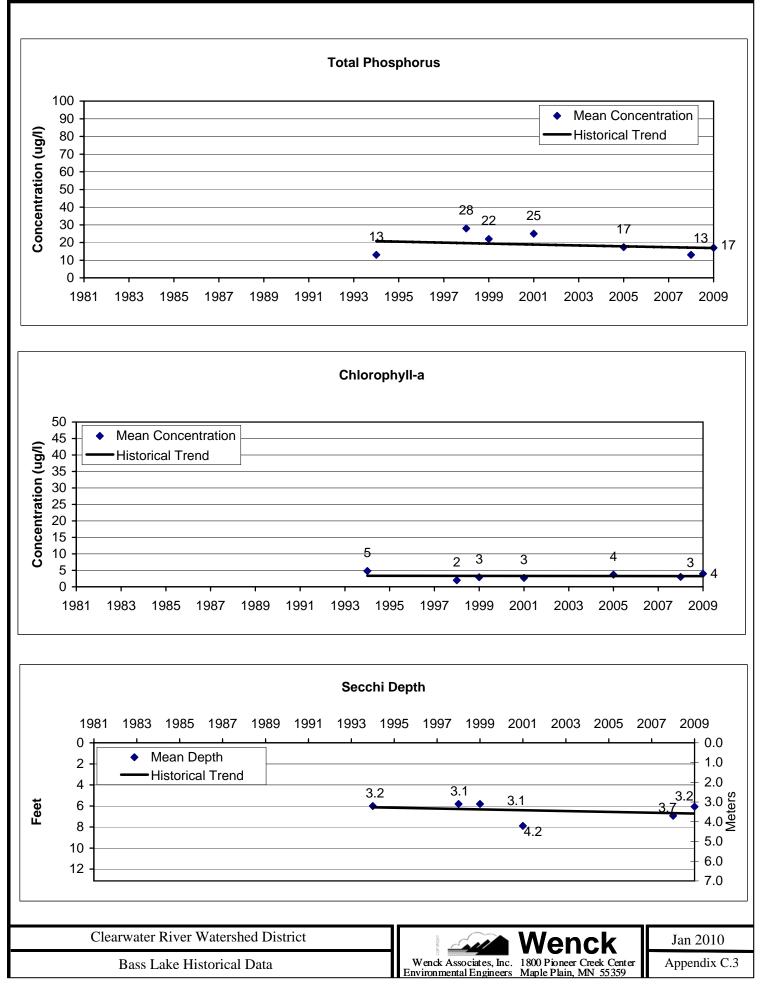
(6) Values in 2005 and 2006 were calculated using supplemental flow data from CSAH 40 near Clearwati T:)0002)/29(Stream_Loads_Historic_09.xls]Precip_Runoff Data

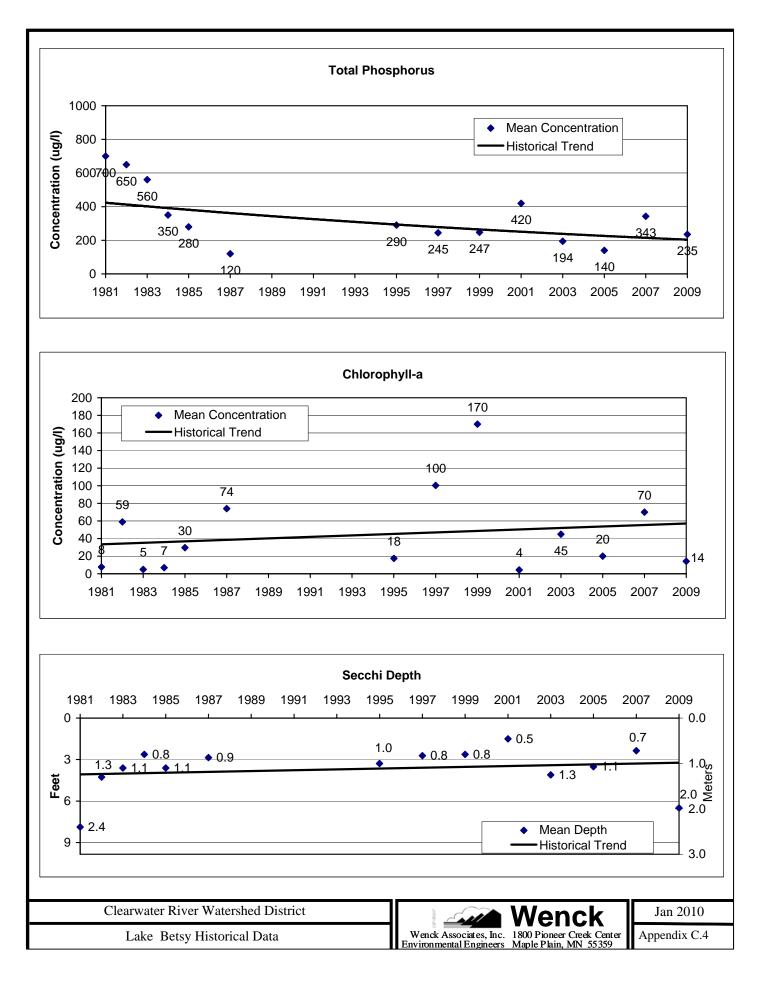
Appendix C

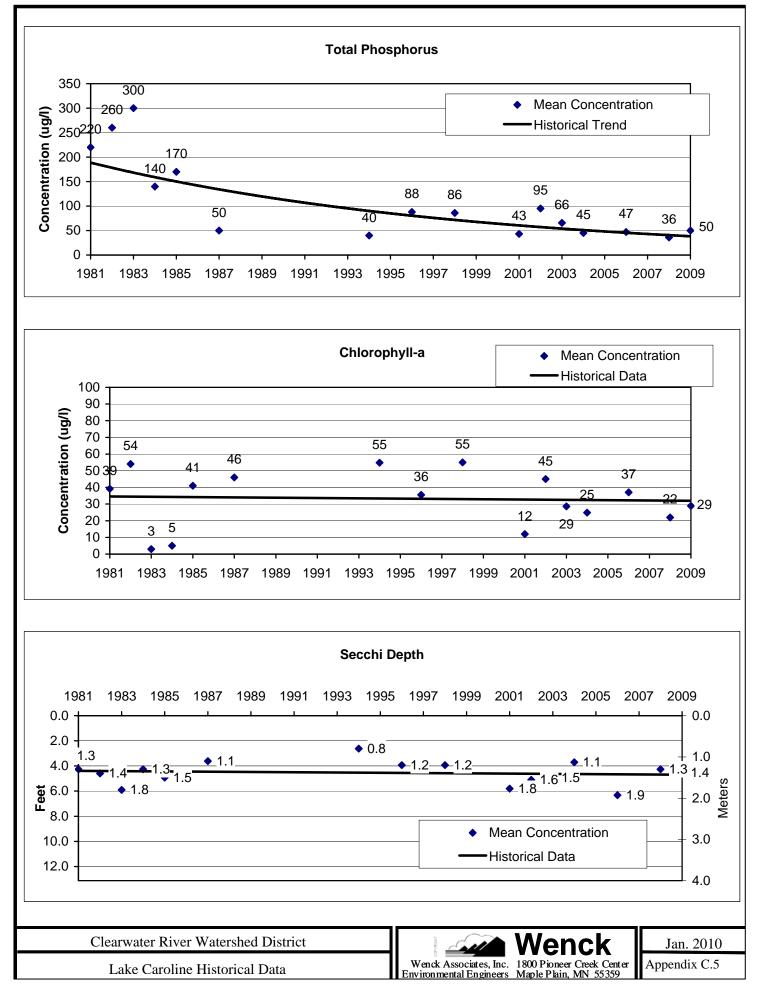
Summary of Historical Lake Water Quality Data

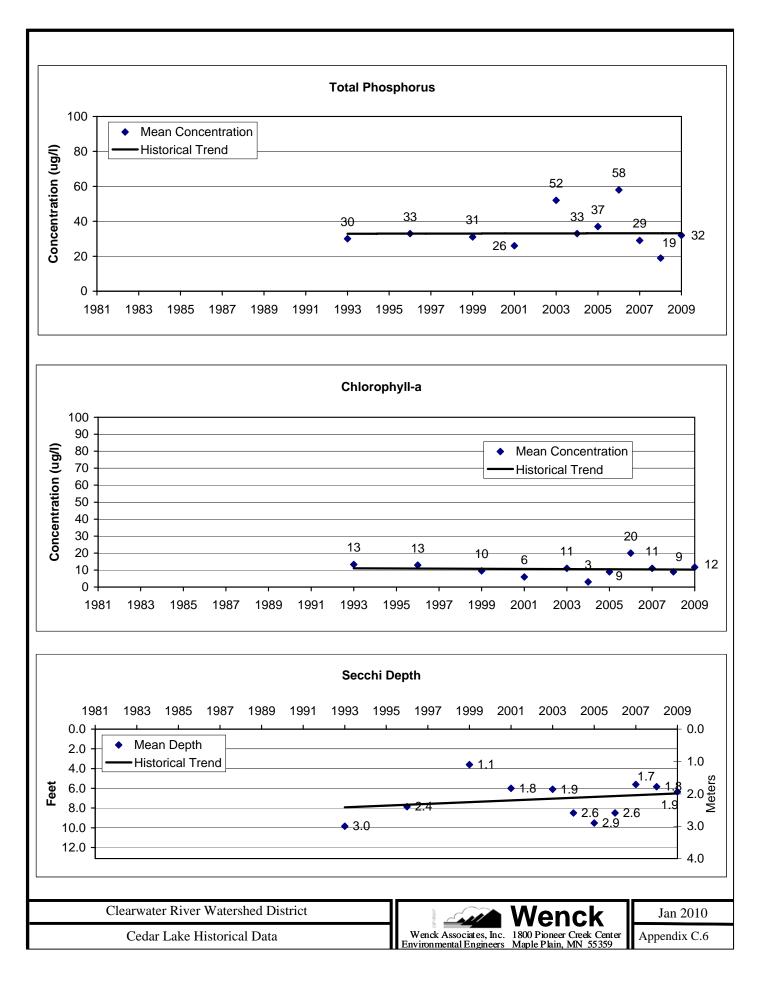


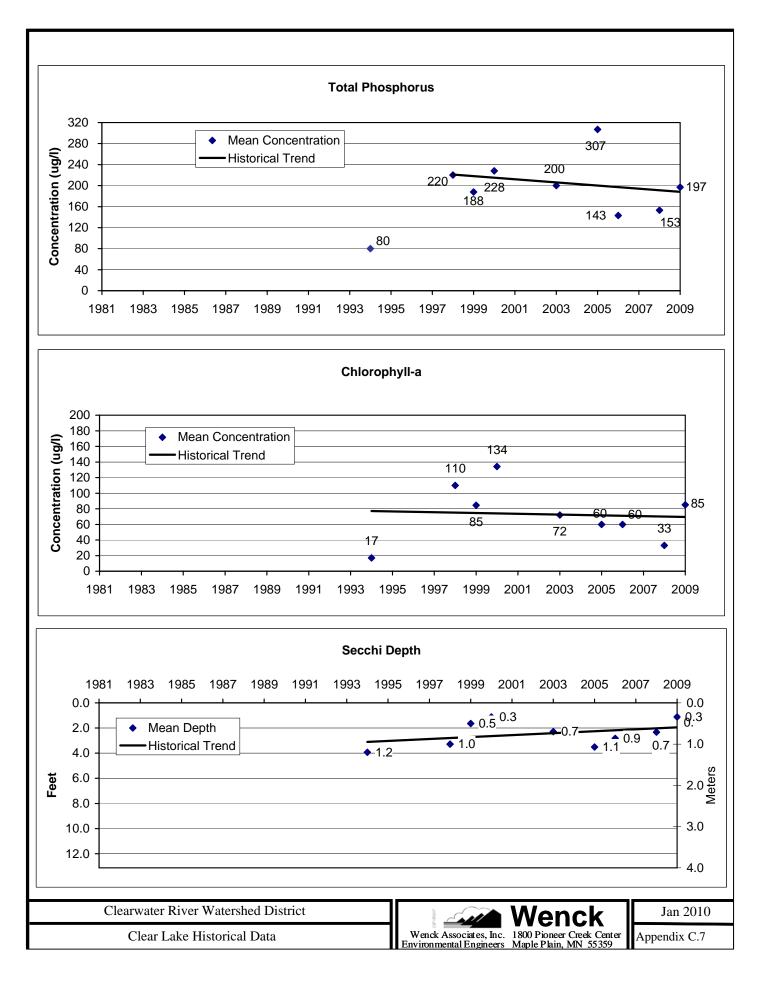


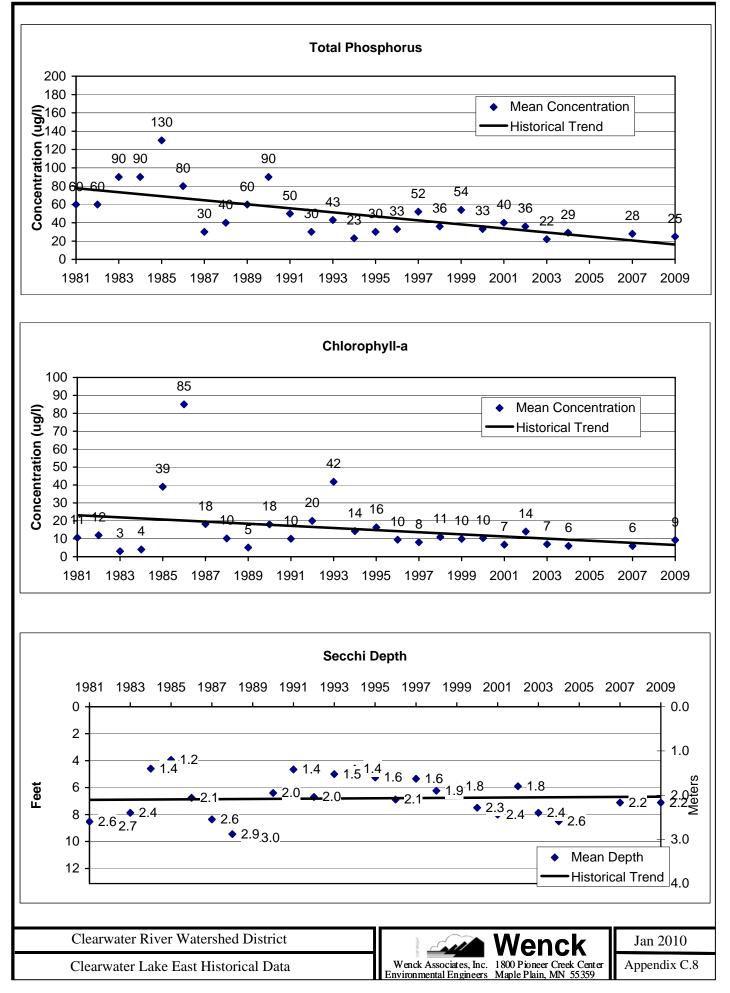


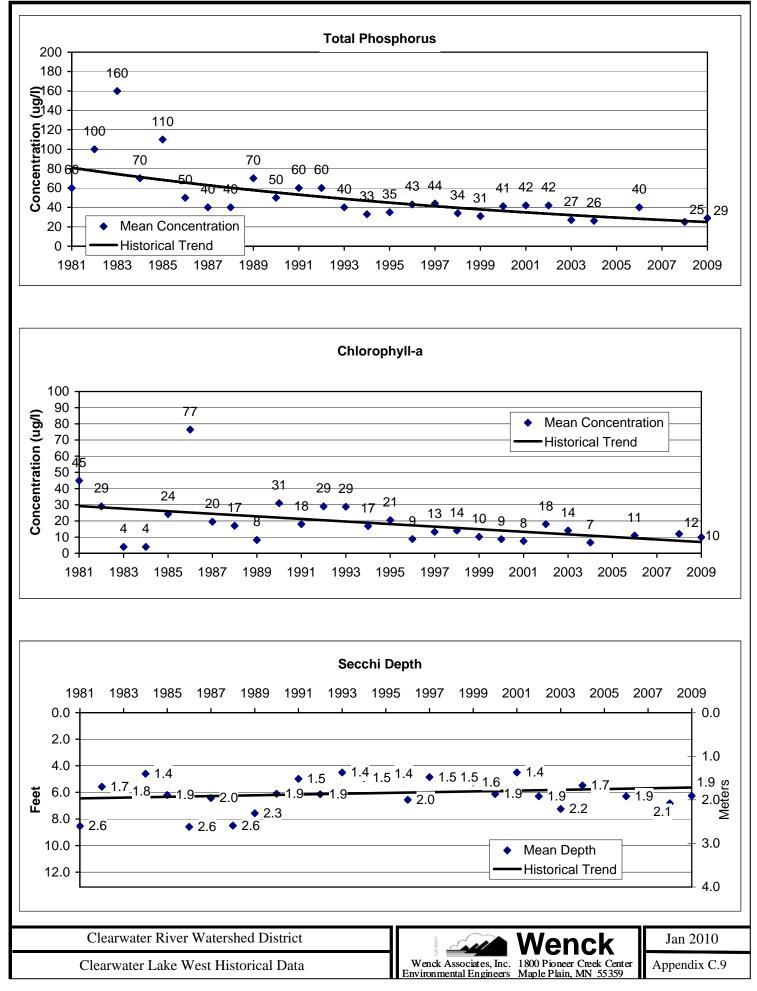




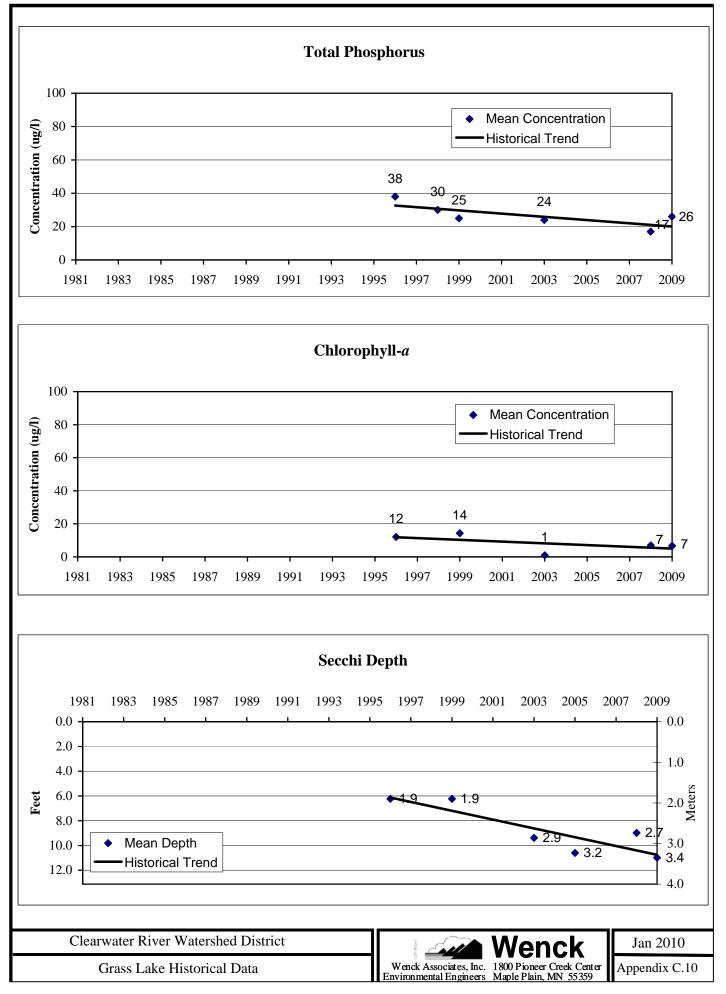


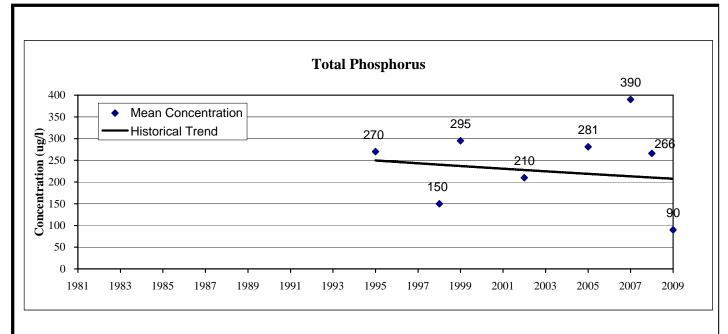


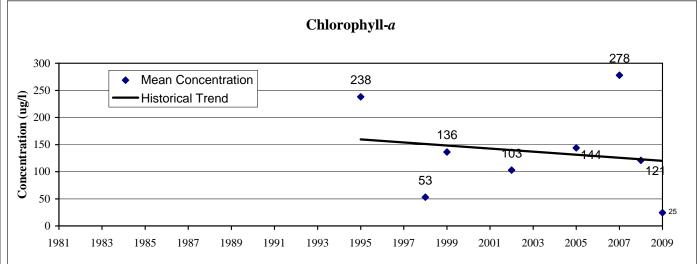


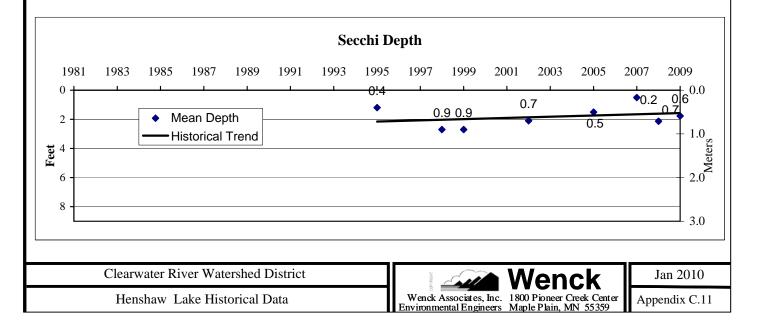


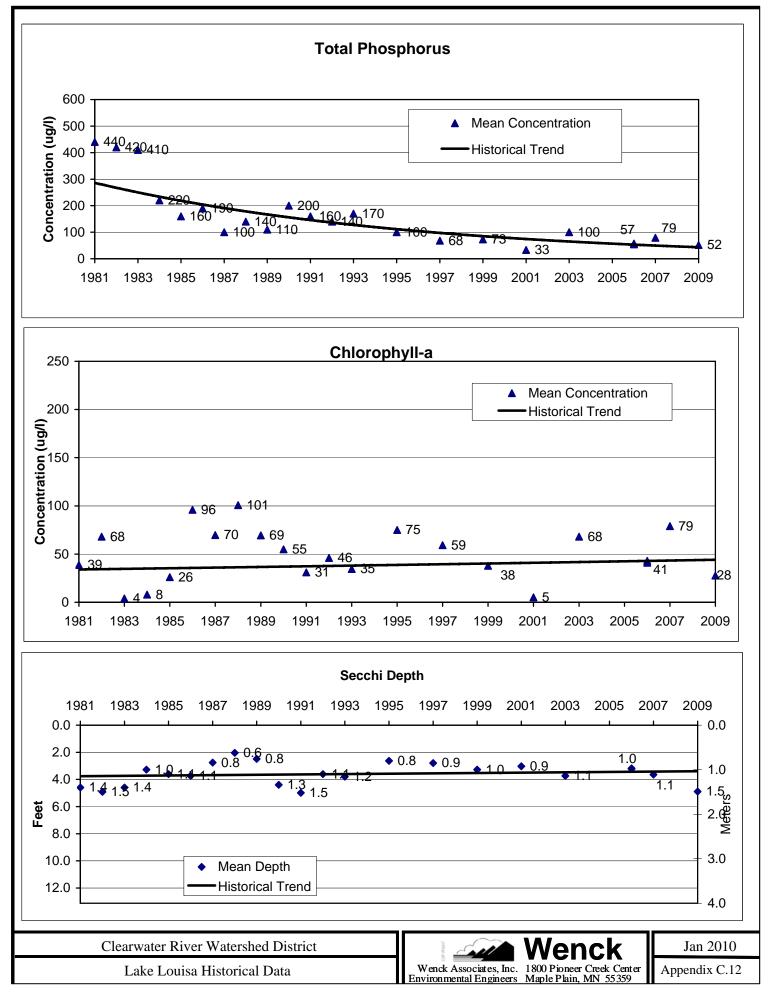
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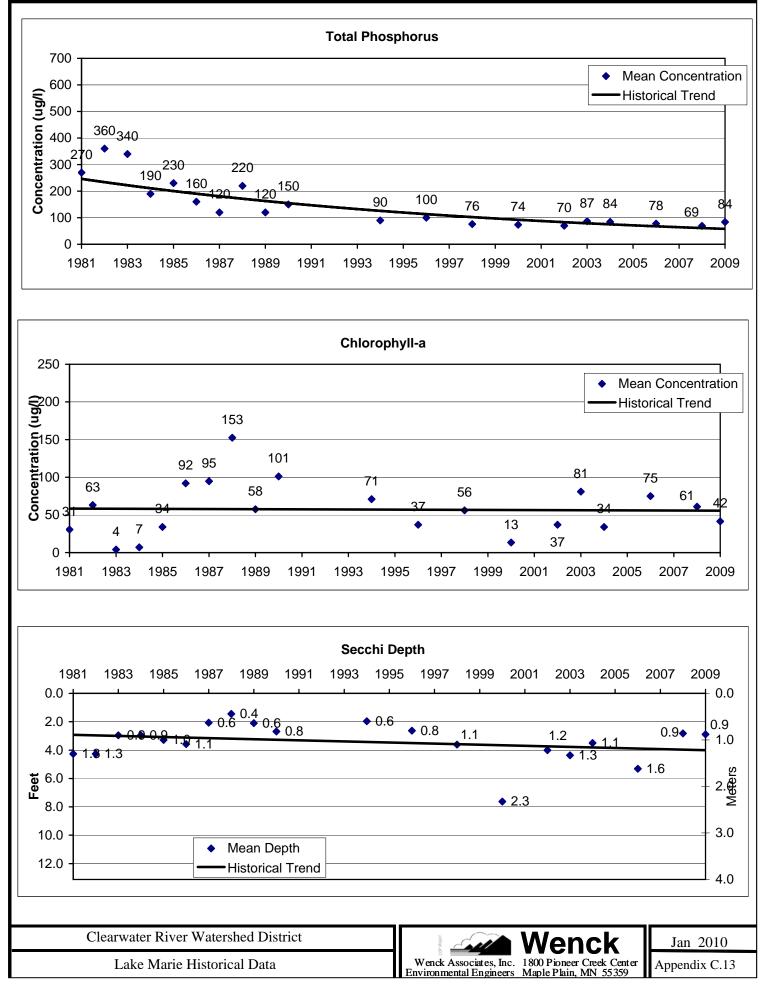


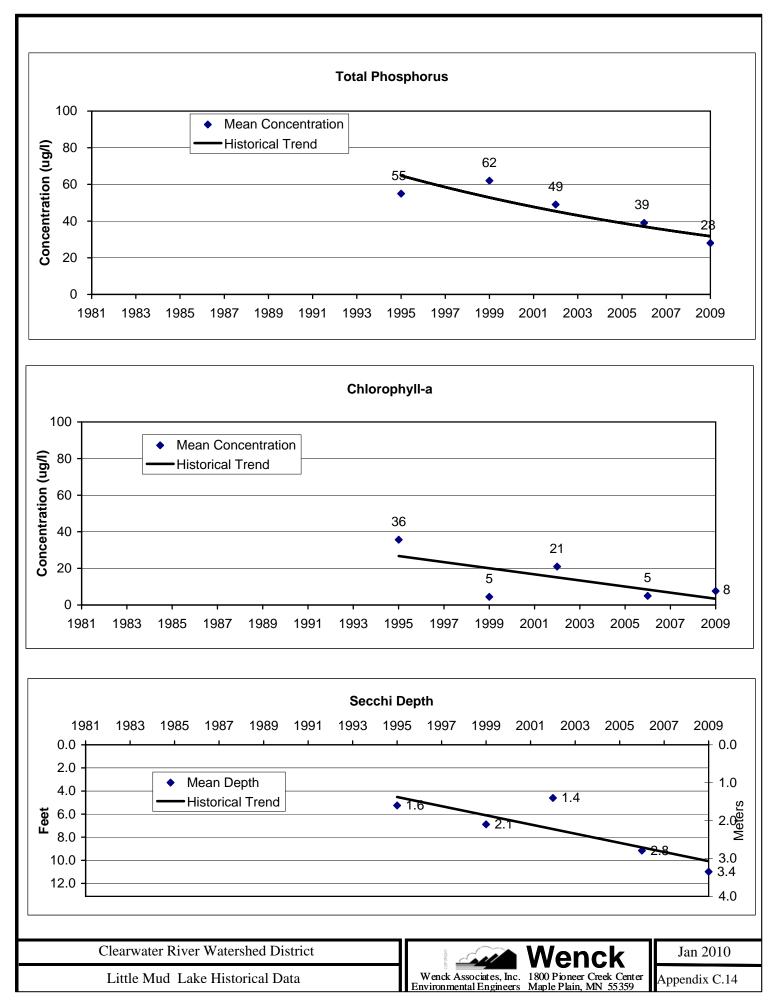


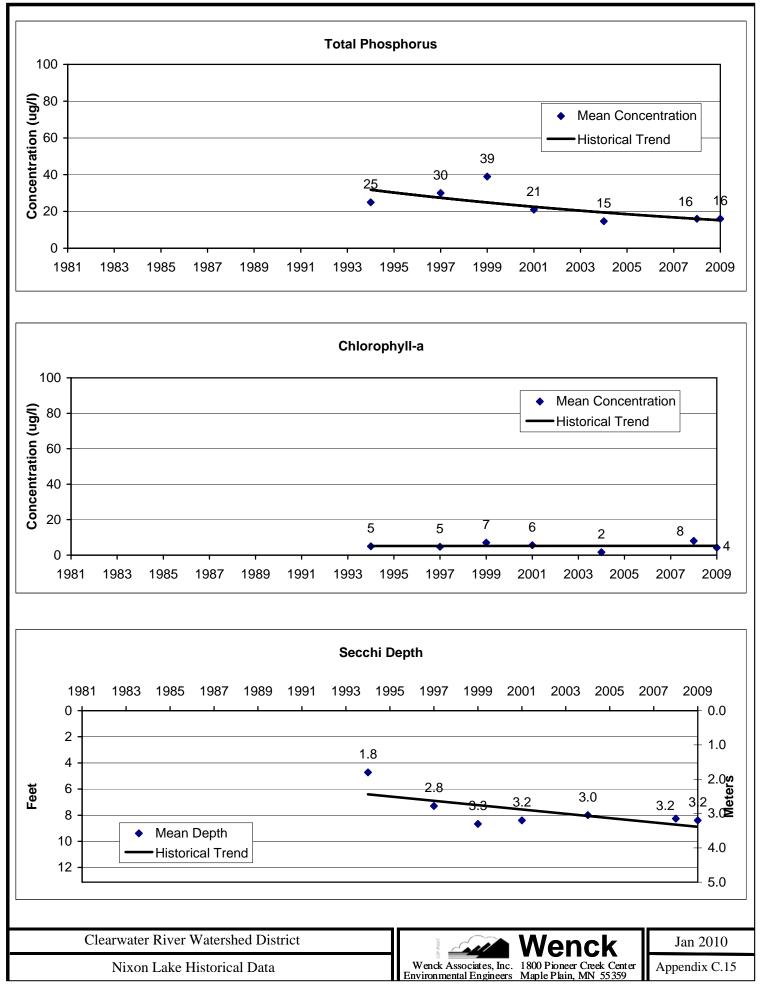




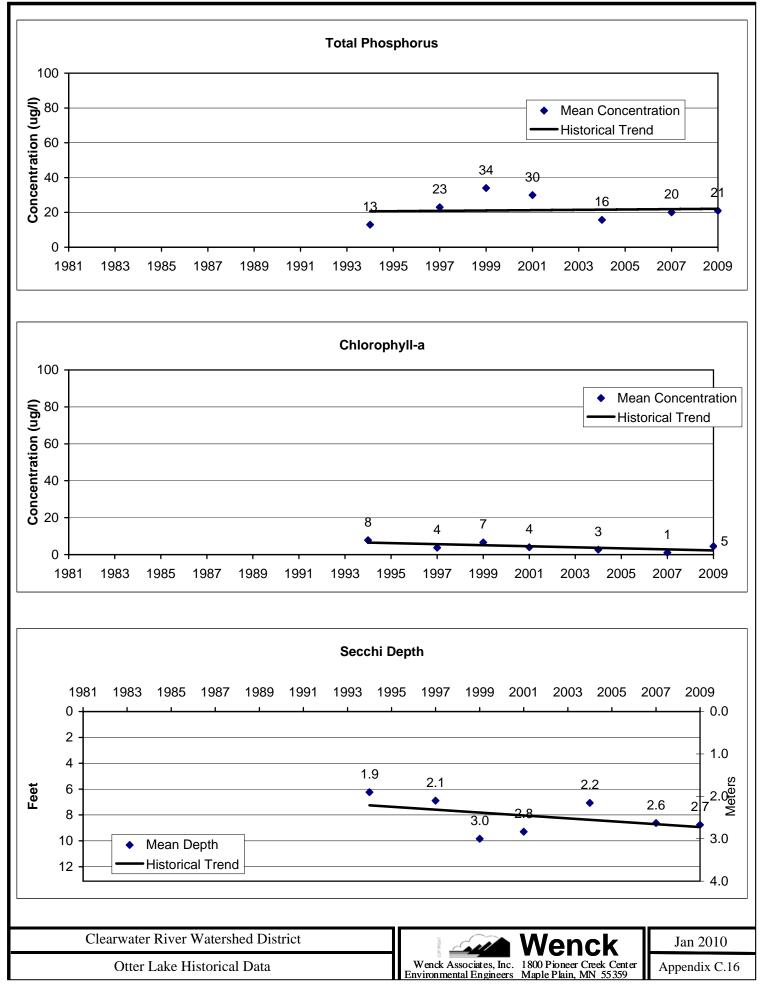
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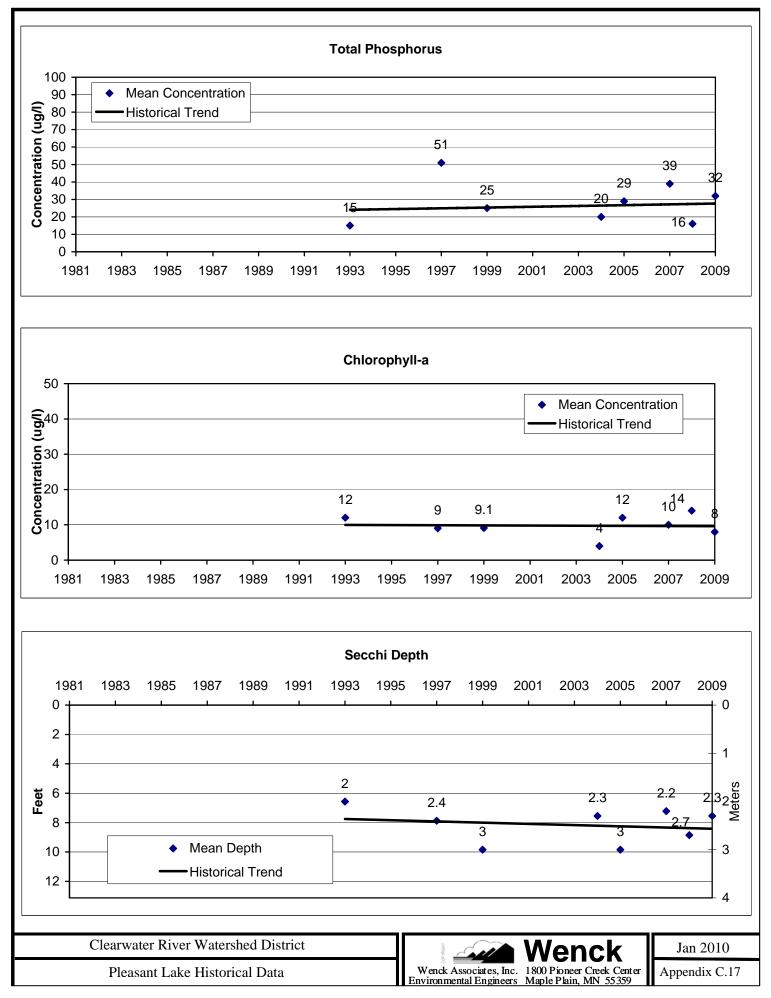


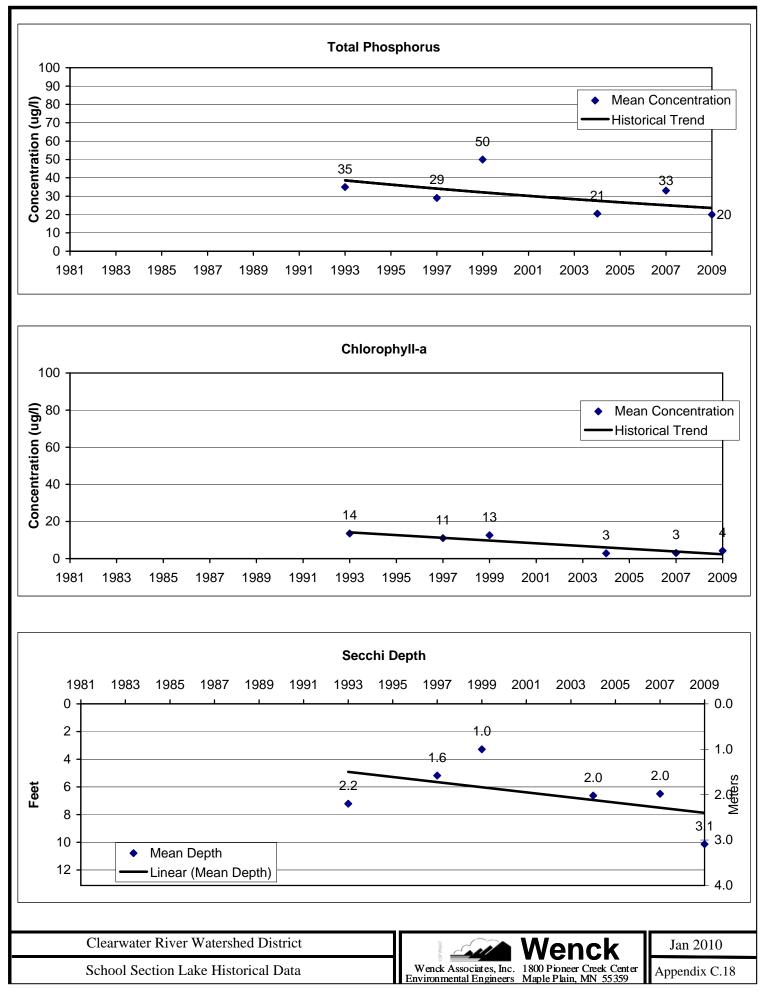


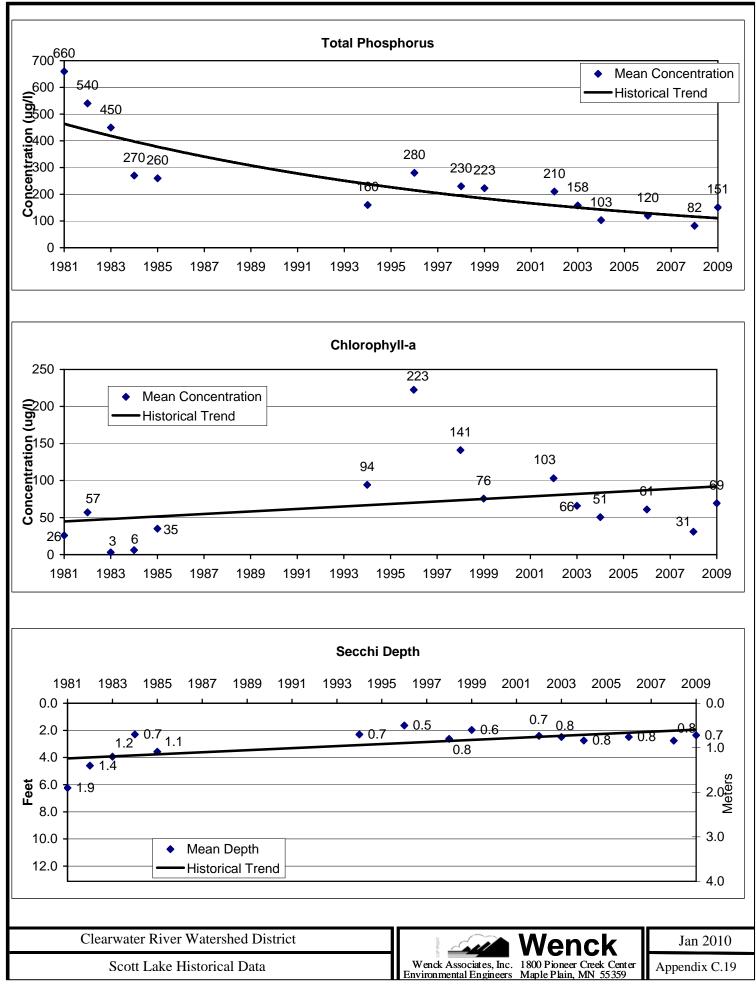


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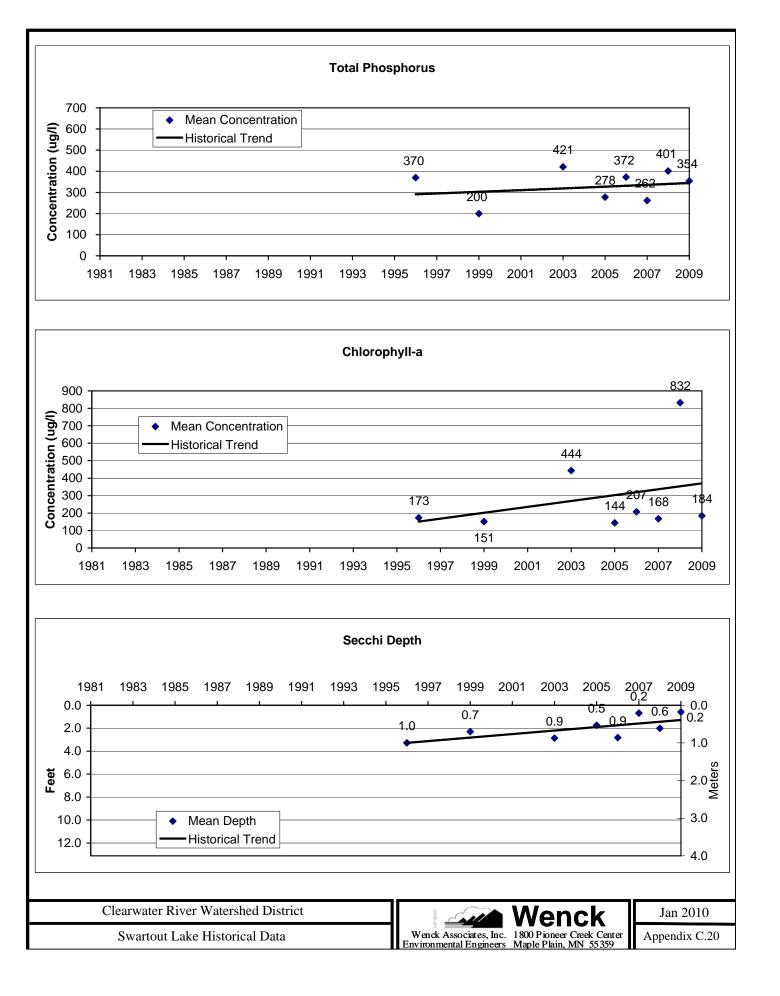


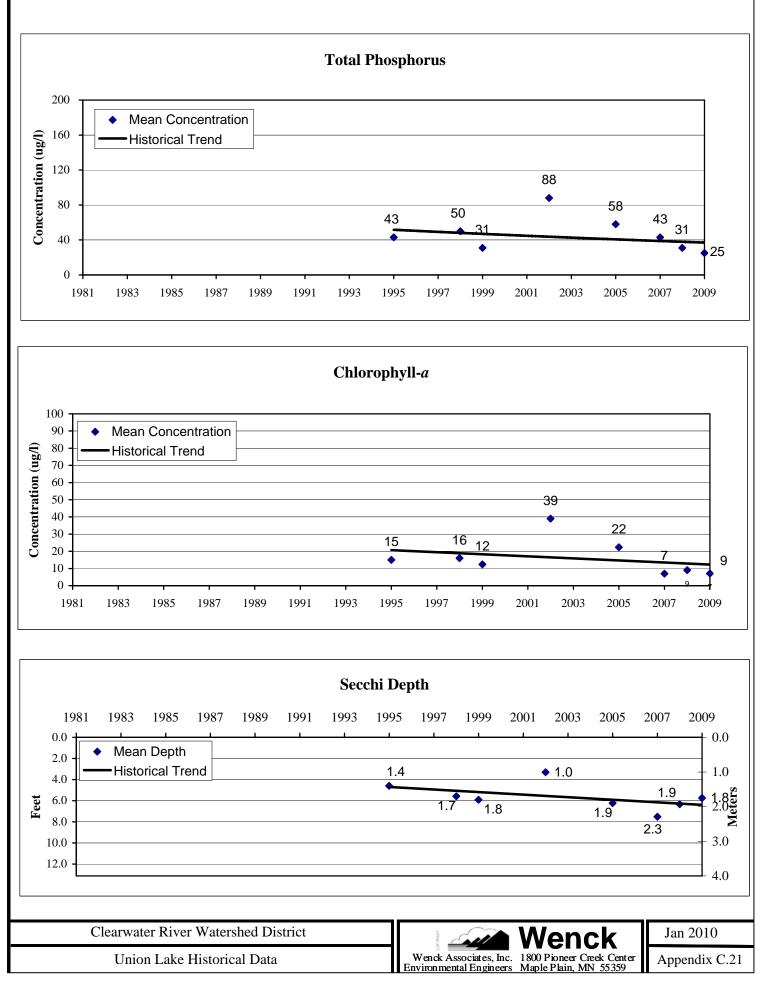


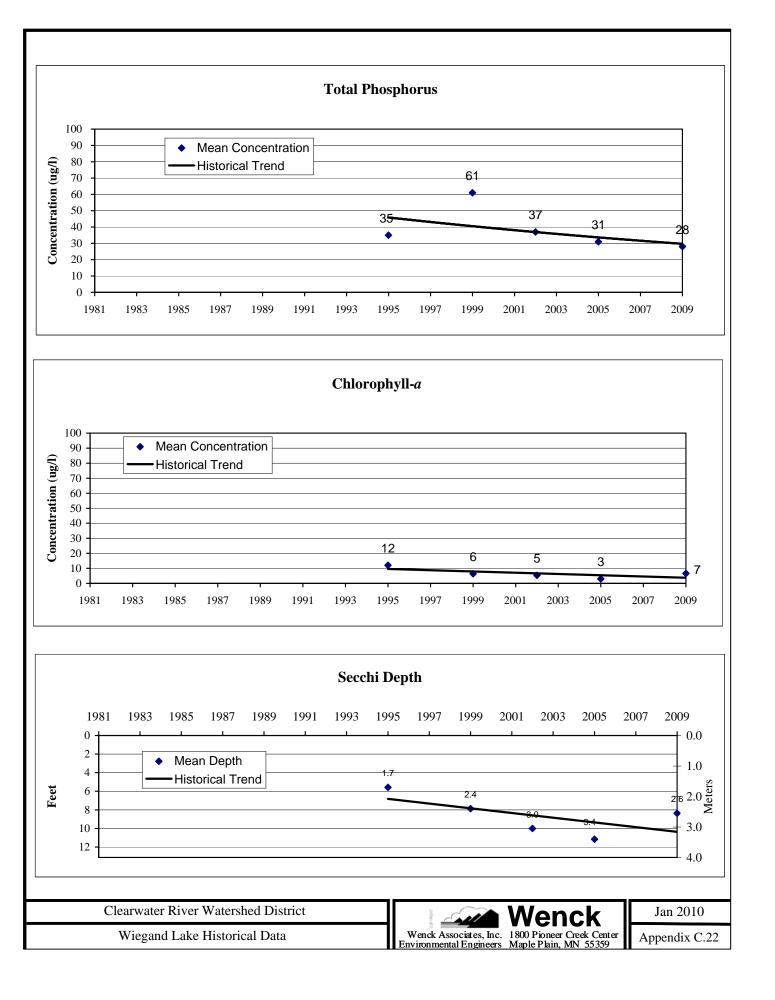




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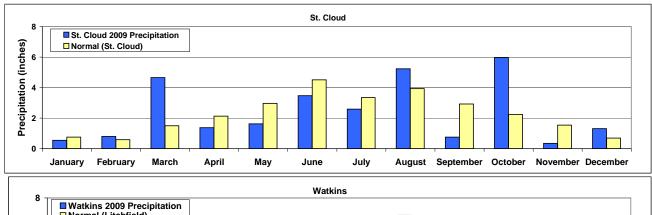


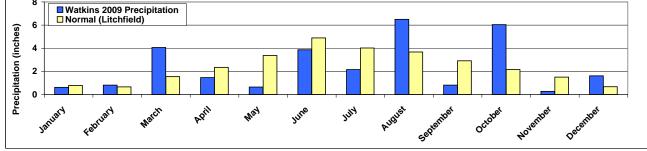


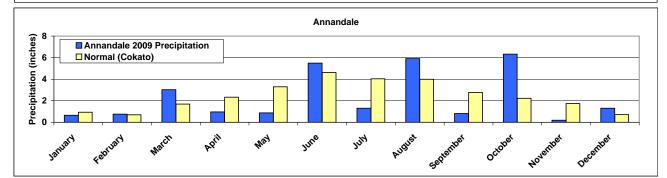
Appendix D

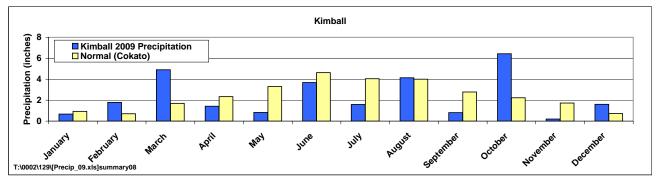
Citizen Precipitation Records

Appendix D Figure 1 Clearwater River Watershed District 2009 Annual Report









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State Climatology Office, 439 Borlaug Hall, University of Minnesota, 1991 Upper Buford Circle, St. Paul, MN 55108-6028

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DEPARTMENT OF Natural Region	RCEL				Year	Month	Oh Time	County	Township Range Section
Name	<u>) 201</u>	V K	le.	С	Col	unty Na	Meeker	<u>~</u>	Township Name
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	0 7		<u>Ke</u> z		Vat Ki			3,89	Telephone No. (320) 764-2645
Rain,	OUR AMO	Snow	- 6	REMARKS: live times and comments			(Check One):	catch on	ening diameter/size (inches)
Melted Show	4 (ins. &	On	1	about events.	cylinder test tube	×	tipping bucket		n catch depth (inches)
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Voter & Soli Resources	Mata		ershed Districts anagement Organization		County Township Range Section
Name /					County Meeker Township Forest Prairie Telephone No. B201764-2645
	Sary	Kle	iA	·····	Township (Q a 'a' -
Address			Ker Ave S	any	name Forest Fraine
omai-	Wa	tKi	ns Mn. 5.	5389	Telephone No. (320)764-2645
24-HC	UR AMO	UNTS	REMARKS: Give times and comments	Gauge type (Check One):	catch opening diameter/size (inches)
Rain, Melted Snow,		Snow On	about events.		maximum catch depth (inches)
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Address		Maria	V_	Ave S					name Forest Prairie
	101	<u>nee</u>	<u>ner</u>	M. FC	389				County Meeker Township Forest Prairie Telephone No. 820)764-264
	Wa	$+R_i$	<u>ns '</u>	<u>ИЛ. 55</u> REMARKS:	<u> </u>	type	(Check One):		catch opening diameter/size (inches)
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email (Ngt	-Ki	15	MA 55	389				Telept	hone	No. (32	0)7	164-26	545
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		24-110	UR AMOL			REMARKS:	Gauge	type (Check One):	l o	catch opening diameter/size (inches)
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State Climatology Office, 439 Borlaug Hall, University of Minnesota, 1991 Upper Bulord Circle, St. Paul, MN 55108-6028

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State Climatology Office, 439 Borlaug Hall, University of Minnesota. 1991 Upper Buford Circle, St. Paul, MN 55108-6028

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State Climatology Office, 439 Borlaug Hall, University of Minnesota, 1991 Upper Buford Circle, St. Paul, MN 55108-6028

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State Climatology Office, 439 Borlaug Hall, University of Minnesota, 1991 Upper Butord Circle, St. Paul, MN 55108-6028

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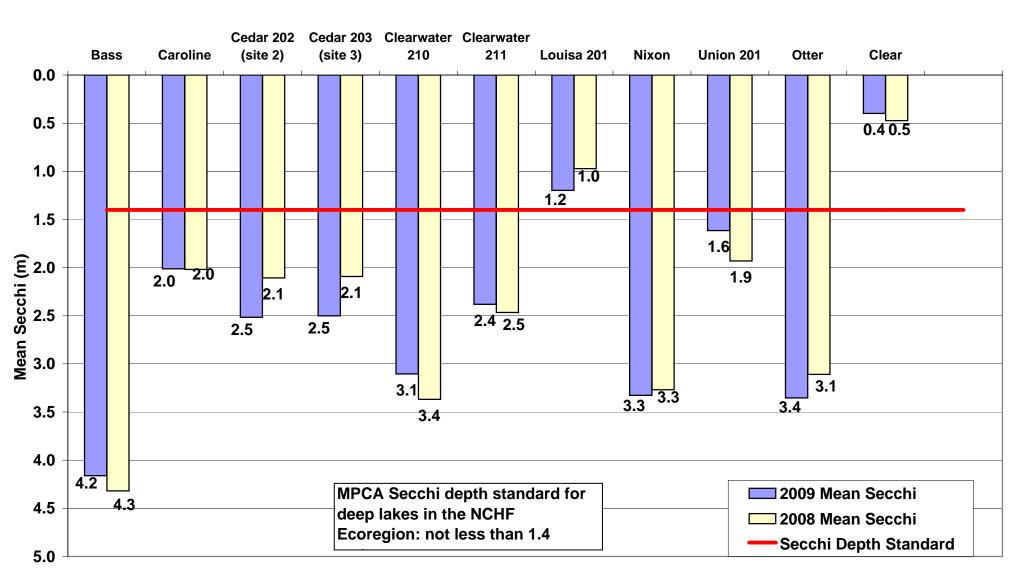
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Appendix E

Secchi Data from Citizen's Lake Monitoring Program

APPENDIX E

Secchi Data from Citizen's Lake Monitroing Program



Clearwater River Watershed District 2009 Annual Report

t:/0002/129/secchi_09

Wenck Associates, Inc.

2009 Water Quality Laboratory Reports and Data

Lake Data



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

Report Date: 19 Jun 09 Lab Number: 09-A25581 Work Order #:12-8268 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 11 Jun 09 8:45 Sampled By: DL Date Received: 12 Jun 09 9:50 PO #: CRWD

Sample Description: LSW 01T

Temp at Receipt: 3.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	223 6.1 < 0.2 0.359 ~ 0.219 ~ 6.1	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	15 Jun 09 16 Jun 09 8:07 18 Jun 09 12:06 18 Jun 09 12:06 17 Jun 09 9:56 12 Jun 09 15:01 16 Jun 09 7:40	KAD

~Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

. = Reporting Limit



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Page: 1 of 1

Report Date: 19 Jun 09 Lab Number: 09-A25582 Work Order #:12-8268 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 11 Jun 09 8:50 Sampled By: DL Date Received: 12 Jun 09 9:50 PO #: CRWD

Sample Description: LSW 01B

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.187 0.161 0.140	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	15 Jun 09 16 Jun 09 17 Jun 09 9:56 12 Jun 09 15:01 18 Jun 09 15:37	KAD

860⁵⁴10⁴

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): @ = Due to sample matrix # ! = Due to sample quantity + ^ = Due to instrument performance at RL # = 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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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Page: 1 of 1

Report Date: 19 Jun 09 Lab Number: 09-A25583 Work Order #:12-8268 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 11 Jun 09 9:30 Sampled By: DL Date Received: 12 Jun 09 9:50 PO #: CRWD

Sample Description: LHE 01T

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl Iron	14.6 4.4 < 0.2 0.100 0.191 4.4 0.137	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2 0.015	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	15 Jun 09 16 Jun 09 16 Jun 09 8:07 18 Jun 09 12:06 18 Jun 09 12:06 17 Jun 09 9:56 12 Jun 09 15:01 16 Jun 09 7:40 18 Jun 09 15:37	KAD AKF

Ortho Phosphorus is greater than Total Phosphorus. Total Phosphorus reanalyzed with no significant change in result. One can assume that all Phosphorus is in Ortho form.

319/00/

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<); @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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

Report Date: 19 Jun 09 Lab Number: 09-A25584 Work Order #:12-8268 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 11 Jun 09 10:35 Sampled By: DL Date Received: 12 Jun 09 9:50 PO #: CRWD

Sample Description: LCE 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 3.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					15 Jun 09	KAD
Chlorophyll a	13.8	mg/cubic m	1.0	10200H	16 Jun 09 8:07	ERK
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	18 Jun 09 12:06	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	18 Jun 09 12:06	KAD
Phosphorus, Total	0.026	mg/L	0.005	EPA 365.1	17 Jun 09 9:56	AKF
Phosphorus, Soluble Ortho	0.005	mg/L	0.005	EPA 365.1	12 Jun 09 15:01	KAD
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	16 Jun 09 7:40	TAM

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<); @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
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Page: 1 of 1

Report Date: 19 Jun 09 Lab Number: 09-A25585 Work Order #:12-8268 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 11 Jun 09 10:45 Sampled By: DL Date Received: 12 Jun 09 9:50 PO #: CRWD

Sample Description: LCE 01B

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

WES BOLL

Temp at Receipt: 3.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.212 ~ mg/L 0.166 mg/L < 0.015 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	15 Jun 09 16 Jun 09 17 Jun 09 9:5 12 Jun 09 15:0 18 Jun 09 15:3	1 KAD

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Um, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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

Report Date: 25 Jun 09 Lab Number: 09-A26218 Work Order #:12-8425 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 16 Jun 09 9:35 Sampled By: DL Date Received: 17 Jun 09 11:45 PO #: CRWD

Sample Description: LAL 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Water Digestions					19 Jun 09	JMS
Chlorophyll a	4.9	mg/cubic m	1.0	10200H	19 Jun 09 8:13	ERK
Nitrogen Total, Calculat	1.6	mg/L	NA	Calc	22 Jun 09 8:10	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	18 Jun 09 12:39	KAD
Phosphorus, Total	0.142	mg/L	0.005	EPA 365.1	23 Jun 09 10:13	DAP
Phosphorus, Soluble Ortho	0.096 ~	mg/L	0.005	EPA 365.1	18 Jun 09 9:29	AKF
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	22 Jun 09 8:10	DSH
Iron	0.074	mg/L	0.015	6010	22 Jun 09 16:28	AM

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" {<}: @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL

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

Report Date: 25 Jun 09 Lab Number: 09-A26219 Work Order #:12-8425 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 16 Jun 09 11:11 Sampled By: DL Date Received: 17 Jun 09 11:45 PO #: CRWD

Sample Description: LOT 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 5.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Chlorophyll a	6.3	mg/cubic m	1.0	10200H	19 Jun 09 8:13	ERK
Nitrogen Total, Calculat	< 0.2	mg/L	NA	Calc	22 Jun 09 8:10	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	18 Jun 09 12:39	KAD
Phosphorus, Total	0.020	mg/L	0.005	EPA 365.1	23 Jun 09 10:13	DAP
Phosphorus, Soluble Ortho	0.016	mg/L	0.005	EPA 365.1	18 Jun 09 9:29	AKF
Nitrogen, Total Kjeldahl	< 0.2	mg/L	0.2	SM 4500NorgB/NH3 E	22 Jun 09 8:10	DSH

Approved by:



Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Page: 1 of 1

Report Date: 25 Jun 09 Lab Number: 09-A26220 Work Order #:12-8425 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 16 Jun 09 11:11 Sampled By: DL Date Received: 17 Jun 09 11:45 PO #: CRWD

Sample Description: LOT 01B

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 5.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.271 ~ mg/L 0.150 ~ mg/L 0.328 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	19 Jun 09 19 Jun 09 23 Jun 09 10:13 18 Jun 09 9:29 22 Jun 09 16:28	LMF JMS DAP AKF AM

~Sample diluted due to result above calibration or linear range.

Britter and

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument perfo	<pre># = Due to sample concentration + = Due to extract volume mance at RL</pre>	
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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1 of 1 Page:

Report Date: 25 Jun 09 Lab Number: 09-A26221 Work Order #:12-8425 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 16 Jun 09 12:50 Sampled By: DL Date Received: 17 Jun 09 11:45 PO #: CRWD

Sample Description: LSE 01T

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Chlorophyll a	2.9	mg/cubic m	1.0	10200H	19 Jun 09 8:13	ERK
Nitrogen Total, Calculat	0.6	mg/L	NA	Calc	22 Jun 09 8:10	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	18 Jun 09 12:39	KAD
Phosphorus, Total	0.020	mg/L	0.005	EPA 365.1	23 Jun 09 10:13	DAP
Phosphorus, Soluble Ortho	< 0.005	mg/L	0.005	EPA 365.1	18 Jun 09 9:29	AKF
Nitrogen, Total Kjeldahl	0.6	mg/L	0.2	SM 4500NorgB/NH3 E	22 Jun 09 8:10	DSH

by Sid

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

= 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

Report Date: 25 Jun 09 Lab Number: 09-A26222 Work Order #:12-8425 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 16 Jun 09 12:50 Sampled By: DL Date Received: 17 Jun 09 11:45 PO #: CRWD

Temp at Receipt: 5.0C

Sample Description: LSE 01B

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Method Method As Received Date Result RL. Reference Analyzed Analyst Phosphorus Water Digest 19 Jun 09 LMF 19 Jun 09 JMS Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho 0.005 EPA 365.1 23 Jun 09 10:13 DAP 0.016 mg/L < 0.005 mg/L 0.005 EPA 365.1 18 Jun 09 9:29 AKF 22 Jun 09 16:28 0.015 6010 Iron 0.040 mg/L AΜ

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

= Reporting Limit



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Project Name: CRWD

Sample Description: LCLE 01T

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Report Date: 25 Jun 09 Lab Number: 09-A26624 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 9:12 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Temp at Receipt: 8.00

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Chlorophyll a	7.2	mg/cubic m	1.0	10200H	19 Jun 09 8	:19 ERK
Nitrogen Total, Calculat	1.2	mg/L	NA	Calc	23 Jun 09 8	:05 Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	22 Jun 09 12	:06 KAD
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	23 Jun 09 12	:58 DAP
Phosphorus, Soluble Ortho	* 0.014	mg/L	0.005	EPA 365.1	19 Jun 09 9	:27 AKF
Nitrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	23 Jun 09 8	:05 DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

MA ST

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L = Reporting Limit

	e to sample matrix e to sample guantity e to instrument perfo	+ - Due t	c sample concentratio o extract volume	on	
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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Project Name: CRWD

Sample Description: LCLW 01T

Page: 1 of 1

Report Date: 25 Jun 09 Lab Number: 09-A26625 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 9:36 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Chlorophyll a	12.4	mg/cubic m	1.0	10200H	19 Jun 09 8:19	ERK
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	23 Jun 09 8:05	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	22 Jun 09 12:06	KAD
Phosphorus, Total	0.033	mq/L	0.005	EPA 365.1	23 Jun 09 12:58	DAP
Phosphorus, Soluble Ortho	0.009	mq/L	0.005	EPA 365.1	19 Jun 09 9:27	AKF
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	23 Jun 09 8:05	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Project Name: CRWD

Sample Description: LAU 01T

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Report Date: 25 Jun 09 Lab Number: 09-A26626 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 10:38 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Chlorophyll a	15.3	mg/cubic m	1.0	10200Н	19 Jun 09 8:1) ERK
Nitrogen Total, Calculat	2.2	mg/L	NA	Calc	23 Jun 09 8:0	5 Calculated
Nitrate+Nitrite	0.70	mg/L as N	0.20	353.2	22 Jun 09 12:0	5 KAD
Phosphorus, Total	0.034	mg/L	0.005	EPA 365.1	23 Jun 09 12:5	B DAP
Phosphorus, Soluble Ortho	0.005	mg/L	0.005	EPA 365.1	19 Jun 09 9:2	7 AKF
Nitrogen, Total Kjeldahl	1.5	mg/L	0.2	SM 4500NorgB/NH3 E	23 Jun 09 8:0	5 DSH

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Project Name: CRWD

Sample Description: LGR 01T

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Report Date: 25 Jun 09 Lab Number: 09-A26627 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 13:30 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Jun 09	LMF
Chlorophyll a	13.5	mg/cubic m	1.0	10200H	19 Jun 09 8:1	9 ERK
Nitrogen Total, Calculat	1.2	mg/L	NA	Calc	23 Jun 09 8:0	5 Calculated
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	22 Jun 09 12:0	5 KAD
Phosphorus, Total	0.028	mg/L	0.005	EPA 365.1	23 Jun 09 12:5	B DAP
Phosphorus, Soluble Ortho	0.012	mg/L	0.005	EPA 365.1	19 Jun 09 9:2	7 AKF
Nitrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	23 Jun 09 8:0	5 DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample main ! = Due to sample qu ^ = Due to instrumer	antity + = Due to	o sample concentration o extract volume		
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 99944	7680 ND MICRO # 1013-M	ND WW/DW # R-040 IA	A LAB #: 132	IA LAB #: 022



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Project Name: CRWD

Sample Description: LCLE 01B

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Report Date: 25 Jun 09 Lab Number: 09-A26628 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 9:06 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions			······································		19 Jun 09 22 Jun 09	LMF JMS
Phosphorus, Total	0.029	mg/L	0.005	EPA 365.1	23 Jun 09 12:58	
Phosphorus, Soluble Ortho	* 0.024	mg/L	0.005	EPA 365.1	19 Jun 09 9:27	AKF
Iron	0.045	mg/L	0.015	6010	23 Jun 09 16:07	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

 $\dot{\perp}$ = Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perf	/ * = Due	to sample concentrat to extract volume	ion	
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680	ND MICRC # 1013-M	ND WW/DW # R-040	IA LAB #: 132	IA LAB #: 022



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Project Name: CRWD

Sample Description: LCLW 01B

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Report Date: 25 Jun 09 Lab Number: 09-A26629 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 9:36 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.082 0.055 0.017	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	19 Jun 09 22 Jun 09 23 Jun 09 12:58 19 Jun 09 9:27 23 Jun 09 16:07	LMF JMS DAP AKF AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Approved by: R D Q C C C C C

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

L = Reporting Limit

Elevated "Less Than Result" (<); 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity * " Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 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 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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Report Date: 25 Jun 09 Lab Number: 09-A26630 Work Order #:12-8511 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 17 Jun 09 10:38 Sampled By: DL Date Received: 18 Jun 09 11:35 PO #: CRWD

Project Name: CRWD

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Sample Description: LAU 01B

Temp at Receipt: 8.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.226 ~ mg/L 0.148 ~ mg/L 0.050 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	19 Jun 09 22 Jun 09 23 Jun 09 12:58 19 Jun 09 9:27 23 Jun 09 16:07	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L = Reporting Limit

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Project Name: CRWD

Sample Description: LGR 01B

Temp at Receipt: 8.0C

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	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.300 ~ mg/L 0.162 ~ mg/L 0.033 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	19 Jun 09 22 Jun 09 23 Jun 09 14:13 19 Jun 09 9:27 23 Jun 09 16:07	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

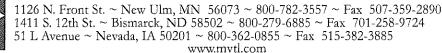
~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

. L = Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument performance a	<pre># = Due to sample concentrat: + = Due to extract volume t RL</pre>	ion	
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680 ND MICR	O # 1013-M ND WW/DW # R-040	IA LAB #: 132	IA LAB #: 022





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Report Date: 30 Jun 09 Lab Number: 09-A27192 Work Order #:12-8661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 22 Jun 09 12:55 Sampled By: DL Date Received: 23 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 11.0C

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1800 PIONEER	CRK	CTR
MAPLE PLAIN	MN	55359-9000

Project Name: CRWD

MNTT

Sample Description: LCA01T

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Jun 09	LMF
Chlorophyll a	12.4	mg/cubic m	1.0	10200H	25 Jun 09 13:53	ERK
Nitrogen Total, Calculat	1.6	mg/L	NA	Calc	29 Jun 09 10:50	Calculated
Nitrate+Nitrite	0.65	mg/L as N	0.20	353.2	26 Jun 09 11:42	AKF
Phosphorus, Total	0.027	mq/L	0.005	EPA 365.1	30 Jun 09 10:23	KAD
Phosphorus, Soluble Ortho	* 0.009	mg/L	0.005	EPA 365.1	24 Jun 09 14:32	KAD
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	29 Jun 09 10:50	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ « Due to sample matrix # ~ Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ ~ Due to instrument performance at RL 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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Report Date: 30 Jun 09 Lab Number: 09-A27193 Work Order #:12-8661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 22 Jun 09 12:50 Sampled By: DL Date Received: 23 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 11.0C

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

Project Name: CRWD

Sample Description: LCA01B

As Received Method Method Date Result RL Reference Analyzed Analyst

Phosphorus Water Digest				24 Jun 09	LMF
Water Digestions				25 Jun 09	JMS
Phosphorus, Total 1.1	0~ mg/L	0.005	EPA 365.1	30 Jun 09 10:23	KAD
Phosphorus, Soluble Ortho * 0.7	0 ~ mg/L	0.005	EPA 365.1	24 Jun 09 14:32	KAD
Iron 0.8	3 mg/L	0.015	6010	29 Jun 09 12:04	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

Sample diluted due to result above calibration or linear range.

All 10

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Project Name: CRWD

Sample Description: TB33.2

Report Date: 30 Jun 09 Lab Number: 09-A27194 Work Order #:12-8661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 22 Jun 09 14:30 Sampled By: DL Date Received: 23 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 11.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total	2 9.2 7.17 0.241 ~	mg/L mg/L mg/L as N mg/L	2 NA 0.20 0.005	USGS I-3765-85 Calc 353.2 EPA 365.1	24 Jun 09 23 Jun 09 14:45 29 Jun 09 10:50 26 Jun 09 11:42 30 Jun 09 10:23	Calculated AKF KAD
Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	* 0.218 ~ 2.0	mg/L mg/L	0.005 0.2	EPA 365.1 SM 4500NorgB/NH3 E	24 Jun 09 14:32 29 Jun 09 10:50	KAD DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

~Sample diluted due to result above calibration or linear range.

Mr. aller

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + ~ Due to extract volume ^ = Due to instrument performance at RL 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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Project Name: CRWD

Sample Description: CR28.2

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Report Date: 30 Jun 09 Lab Number: 09-A27195 Work Order #:12-8661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 22 Jun 09 15:00 Sampled By: DL Date Received: 23 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 11.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					24 Jun 09	LMF
Solids, Total Suspended	11	mq/L	2	USGS I-3765-85	23 Jun 09 14:45	SM
Nitrogen Total, Calculat	1.6	mg/L	NA	Calc	29 Jun 09 10:50	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	26 Jun 09 11:42	AKF
Phosphorus, Total	0.411 ~	mg/L	0.005	EPA 365.1	30 Jun 09 10:23	KAD
Phosphorus, Soluble Ortho	0.284 ~	mg/L	0.005	EPA 365.1	24 Jun 09 14:32	KAD
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	29 Jun 09 10:50	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Sample Description: LLO-01T

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Report Date: 1 Jul 09 Lab Number: 09-A27572 Work Order #:12-8732 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Jun 09 13:49 Date Received: 24 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 16.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					25 Jun 09	LMF
Chlorophyll a	29.8	mg/cubic m	1.0	10200H	26 Jun 09 13:54	ERK
Nitrogen Total, Calculat	1.5	mg/L	NA	Calc	29 Jun 09 14:20	Calculated
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	26 Jun 09 11:53	AKF
Phosphorus, Total	0.054	mq/L	0.005	EPA 365.1	30 Jun 09 13:55	KAD
Phosphorus, Soluble Ortho	0.010	mq/L	0.005	EPA 365.1	24 Jun 09 14:32	KAD
Nitrogen, Total Kjeldahl	1.5	mg/L	0.2	SM 4500NorgB/NH3 E	29 Jun 09 14:20	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

🚈 Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-14 ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

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MAPLE PLAIN MN 55359-9000

WES BOLL

Sample Description: LMA-01T

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Page: 1 of 1

Report Date: 1 Jul 09 Lab Number: 09-A27573 Work Order #:12-8732 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Jun 09 14:34 Date Received: 24 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 16.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	· · · · · · · · · · · · · · · · · · ·				25 Jun 09	LMF
Chlorophyll a	28.0	mg/cubic m	1.0	10200H	26 Jun 09 13:54	ERK
Nitrogen Total, Calculat	1.2	mg/L	NA	Calc	29 Jun 09 14:20	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	26 Jun 09 11:53	AKF
Phosphorus, Total	0.041	mg/L	0.005	EPA 365.1	30 Jun 09 13:55	KAD
Phosphorus, Soluble Ortho	0.007	mg/L	0.005	EPA 365.1	24 Jun 09 14:32	KAD
Nítrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	29 Jun 09 14:20	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

H. Mar

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 0 " Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Sample Description: LLO-01B

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Page: 1 of 1

Report Date: 1 Jul 09 Lab Number: 09-A27574 Work Order #:12-8732 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Jun 09 13:40 Date Received: 24 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 16.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.627 ~ mg/L 0.484 ~ mg/L 0.061 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	25 Jun 09 26 Jun 09 30 Jun 09 13:55 24 Jun 09 14:32 29 Jun 09 13:32	KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

J. wh

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

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WES BOLL

Sample Description: LMA-01B

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Page: 1 of 1

Report Date: 1 Jul 09 Lab Number: 09-A27575 Work Order #:12-8732 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Jun 09 14:28 Date Received: 24 Jun 09 12:00 PO #: CRWD

Temp at Receipt: 16.0C

	As Received Result	Meth RL	od Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		· · · ·		25 Jun 09	LMF
Water Digestions				26 Jun 09	JMS
Phosphorus, Total	0.737 ~ mg	r/L 0.00	5 EPA 365.1	30 Jun 09 13:55	KAD
Phosphorus, Soluble Ortho	0.454 ~ mg	/L 0.00	5 EPA 365.1	24 Jun 09 14:32	KAD
Iron	0.730 mg	/L 0.01	5 6010	29 Jun 09 13:32	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

S. A

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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

Report Date: 9 Jul 09 Lab Number: 09-A28849 Work Order #:12-9020 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 30 Jun 09 7:40 Sampled By: DL Date Received: 1 Jul 09 11:45 PO #: CRWD

IA LAB #: 022

Sample Description: LNI OIT

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	4.0 0.3 < 0.2 0.016 * 0.017 0.3	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Jul 09 2 Jul 09 13:27 2 Jul 09 14:49 2 Jul 09 14:49 7 Jul 09 11:22 2 Jul 09 10:37 1 Jul 09 15:15	DAP DAP KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Holding time Exceeded

Approved by:

Dan O'Connell,

L = Reporting Limit

Elevated "Less Than Result"

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" (<	1	= Due	to s		aatrix quantity ant performance	at R	+		sample concentration extract volume	

ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125 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 action with 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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Page: 1 of 1

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 9 Jul 09 Lab Number: 09-A28850 Work Order #:12-9020 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 30 Jun 09 7:50 Sampled By: DL Date Received: 1 Jul 09 11:45 PO #: CRWD

Sample Description: LNI OIB

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.176 * 0.036 7.100	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Jul 09 8 Jul 09 7 Jul 09 11:22 2 Jul 09 10:37 8 Jul 09 14:23	LMF JMS DAP KAD AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

. - Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ = Due	to sample concentrati to extract volume	on	
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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Report Date: 9 Jul 09 Lab Number: 09-A28851 Work Order #:12-9020 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 30 Jun 09 8:30 Sampled By: DL Date Received: 1 Jul 09 11:45 PO #: CRWD

Sample Description: LWI01T

Temp at Receipt: 8.0C

	As Recei Result	.ved	Method RL	Method Reference	Date *Analyzed	Analyst	
Phosphorus Water Digest					2 Jul 09	LMF	
Chlorophyll a	3.4	mg/cubic m	1.0	10200H	2 Jul 09 13:27	ERK	
Nitrogen Total, Calculat	1.0	mg/L	NA	Calc	2 Jul 09 14:57	Calculated	
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	2 Jul 09 14:57	DAP	
Phosphorus, Total	0.032	mg/L	0.005	EPA 365.1	7 Jul 09 11:22	DAP	
Phosphorus, Soluble Ortho	* 0.020	mg/L	0.005	EPA 365.1	2 Jul 09 10:37	KAD	
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	1 Jul 09 15:15	DSH	

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Page: 1 of 1

Report Date: 9 Jul 09 Lab Number: 09-A28852 Work Order #:12-9020 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 30 Jun 09 8:40 Sampled By: DL Date Received: 1 Jul 09 11:45 PO #: CRWD

Sample Description: LWI01B

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Temp at Receipt: 8.0C

		Reference	Analyzed	Analyst
			2 Jul 09	LMF
			8 Jul 09	JMS
mg/L	0.005	EPA 365.1	7 Jul 09 11:22	DAP
mq/L	0.005	EPA 365.1	2 Jul 09 10:37	KAD
mg/L	0.015	6010	8 Jul 09 14:23	AM
1	mg/L mg/L mg/L	mg/L 0.005	mg/L 0.005 EPA 365.1	mg/L 0.005 EPA 365.1 7 Jul 09 11:22 mg/L 0.005 EPA 365.1 2 Jul 09 10:37

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Project Name: CRWD

Sample Description: LCL 01T

Page: 1 of 1

Report Date: 9 Jul 09 Lab Number: 09-A29161 Work Order #:12-9108 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 7:43 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Temp at Receipt: 14.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	74.3 2.9 < 0.2 0.212 ~ 0.029 2.9	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	6 Jul 09 7 Jul 09 13:09 8 Jul 09 14:39 8 Jul 09 14:39 7 Jul 09 14:01 2 Jul 09 15:57 6 Jul 09 8:30	Calculated KAD KAD KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

 γ Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

S ≠ Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument perf		ion	
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680	ND NICKO S 1013 N ND WAYDA A D VI		IA LAB #: 022



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Page: 1 of 1

Report Date: 9 Jul 09 Lab Number: 09-A29162 Work Order #:12-9108 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 7:50 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LCL 01B

WENCK ASSOCIATES INC

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Temp at Receipt: 14.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Ortho Iron	0.225 ~ mg/L 0.030 mg/L 0.291 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Jul 09 8 Jul 09 7 Jul 09 14:01 2 Jul 09 15:57 8 Jul 09 16:13	LMF JMS KAD KAD AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L = Reporting Limit

El	evated "Less Than Result"	! =	Due to sample matrix Due to sample quantity Due to instrument perf	+ = Due	to sample concentrat to extract volume	ion	
<u>ر</u> ب	PRTIFICATION, 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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Report Date: 9 Jul 09 Lab Number: 09-A29163 Work Order #:12-9108 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 8:20 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LLI 01T

Temp at Receipt: 14.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	15.7 4.7 < 0.2 0.651 ~ 0.294 ~ 4.7	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	6 Jul 09 7 Jul 09 13:09 8 Jul 09 14:39 8 Jul 09 14:39 7 Jul 09 14:01 2 Jul 09 15:57 6 Jul 09 8:30	KAD KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Sample diluted due to result above calibration or linear range.

XIA

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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	Due to sample matrix Due to sample quantity Due to instrument performanc	<pre># = Due to sample concentrat + = Due to extract volume ce at RL</pre>	ion	
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680 ND N	4ICRO # 1013-M ND WW/DW # R-040	IA LAB #: 132	IA LAB #: 022



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Page: 1 of 1

Report Date: 9 Jul 09 Lab Number: 09-A29164 Work Order #:12-9108 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 8:30 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Temp at Receipt: 14.0C

Sample Description: LLI 01B

WENCK ASSOCIATES INC

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Method Method As Received Date RL Reference Analyzed Analyst Result 6 Jul 09 LMF Phosphorus Water Digest Water Digestions 8 Jul 09 JMS 0.005 EPA 365.1 7 Jul 09 14:01 KAD 0.024 mg/L Phosphorus, Total EPA 365.1 2 Jul 09 15:57 0.005 KAD 0.009 Phosphorus, Ortho mg/L 8 Jul 09 16:13 AΜ 0.015 6010 0.062 mg/L Iron

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

N. W.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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	Due to sample matrix Due to sample guantity Due to instrument perfor	+ = Due	to sample concentrat. to extract volume	lon	
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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1 of 1 Page:

Report Date: 9 Jul 09 Lab Number: 09-A29165 Work Order #:12-9108 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 10:10 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LUN 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 14.0C

As Received		Method	Method	Date	Analyst	
Result		RL	Reference	Analyzed		
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	10.1 1.2 < 0.2 0.030 0.014 1.2	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Jul 09 15:57	KAD KAD KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

L = Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration + = Due to extract volume WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 TA LAB #: 022 IA LAB #: 132 CERTIFICATION: MN LAB # 027-015-125

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Report Date: 9 Jul 09 Lab Number: 09-A29166 Work Order #:12-9108 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 10:15 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LUN 01B

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Temp at Receipt: 14.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Ortho Iron	0.453 ~ mg/L 0.407 ~ mg/L 0.362 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Jul 09 8 Jul 09 7 Jul 09 14:19 2 Jul 09 15:57 8 Jul 09 16:35	KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

3 CUSTON

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 15 Jul 09 Lab Number: 09-A29167 Work Order #:12-9109 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 9:25 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Date

Sample Description: LBE 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

As Received

lemp at Receipt: 12.00

Method

	Result		RL	Reference	Analyzed	Analyst
Phosphorus Water Digest					6 Jul 09	LMF
Chlorophyll a	26.2	mg/cubic m	1.0	10200H	7 Jul 09 13:09	ERK
Nitrogen Total, Calculat	1.5	mg/L	NA	Calc	8 Jul 09 14:39	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	8 Jul 09 14:39	KAD
Phosphorus, Total	0.142	mg/L	0.005	EPA 365.1	7 Jul 09 14:19	KAD
Phosphorus, Ortho	0.101	mg/L	0.005	EPA 365.1	2 Jul 09 15:57	KAD
Nitrogen, Total Kjeldahl	1.5	mg/L	0.2	SM 4500NorgB/NH3 E	6 Jul 09 8:30	DSH

Method

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 15 Jul 09 Lab Number: 09-A29168 Work Order #:12-9109 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 9:33 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LBE 01B

Temp at Receipt: 12.0C

	As Receiv Result	As Received Result		Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					6 Jul 09	LMF
Water Digestions					8 Jul 09	JMS
Phosphorus, Total	1.46 ~	mg/L	0.005	EPA 365.1	7 Jul 09 14:19	KAD
Phosphorus, Ortho	1.44 ~	mg/L	0.005	EPA 365.1	2 Jul 09 15:57	KAD
Iron	0.654	mg/L	0.015	6010	8 Jul 09 16:35	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Page: 1 of 1

Report Date: 15 Jul 09 Lab Number: 09-A29169 Work Order #:12-9109 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 11:00 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LPL 01T

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Temp at Receipt: 12.00

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	4.1 0.7 < 0.2 0.020 0.025 0.7	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	6 Jul 09 7 Jul 09 13:09 8 Jul 09 14:39 8 Jul 09 14:39 7 Jul 09 14:19 2 Jul 09 16:04 6 Jul 09 8:30	9 Calculated 9 KAD 9 KAD 1 KAD

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The ortho phosphorus result is greater than the total phosphorus result. The total phosphorus was rerun with similar results. One can assume that all the phosphorus is in the ortho form.

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Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity * = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 15 Jul 09 Lab Number: 09-A29170 Work Order #:12-9109 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 11:22 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LPL 01B

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 12.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions				·······	6 Jul 09 8 Jul 09	LMF JMS
Phosphorus, Total	0.109	mg/L	0.005	EPA 365.1	14 Jul 09 14:19	
Phosphorus, Ortho	0.068	mg/L	0.005	EPA 365.1	2 Jul 09 16:04	KAD
Iron	0.076	mg/L	0.015	6010	8 Jul 09 16:35	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Report Date: 15 Jul 09 Lab Number: 09-A29171 Work Order #:12-9109 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 12:06 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LBA 01T

Temp at Receipt: 12.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	3.4 1.0 < 0.2 0.014 0.010 1.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	L CAL OF MOIO!	KAD KAD KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.



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





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Report Date: 15 Jul 09 Lab Number: 09-A29172 Work Order #:12-9109 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 1 Jul 09 12:13 Sampled By: DL Date Received: 2 Jul 09 11:55 PO #: CRWD

Sample Description: LBA 01B

Temp at Receipt: 12.0C

	As Recei Result	As Received Result		Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Ortho Iron	0.063 0.028 0.396	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Jul 09 8 Jul 09 7 Jul 09 14:19 2 Jul 09 16:04 8 Jul 09 16:35	LMF JMS KAD KAD AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Sample Description: LSC 01T

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Report Date: 17 Jul 09 Lab Number: 09-A30627 Work Order #:12-9459 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jul 09 16:33 Date Received: 10 Jul 09 11:50 PO #: CRWD

Temp at Receipt: 7.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	36.0 1.7 < 0.2 0.119 0.018 1.7	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E		LMF ERK Calculated DAP AKF DAP CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Sample Description: LSC 01B

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Report Date: 17 Jul 09 Lab Number: 09-A30628 Work Order #:12-9459 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jul 09 16:39 Date Received: 10 Jul 09 11:50 PO #: CRWD

Temp at Receipt: 7.0C

	As Receiv Result	Received sult		Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Phosphorus, Total Phosphorus, Soluble Ortho	8.8 1.38 ~ 0.990 ~	mg/cubic m mg/L mg/L	1.0 0.005 0.005	10200H EPA 365.1 EPA 365.1	13 Jul 09 14 Jul 09 13:53 14 Jul 09 11:21 10 Jul 09 15:45	LMF ERK AKF DAP

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

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Approved by:

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Report Date: 23 Jul 09 Lab Number: 09-A30977 Work Order #:12-9542 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 7:30 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LCE 01T

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 9.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	16.3 0.042 0.010 1.2	mg/cubic m mg/L mg/L mg/L	1.0 0.005 0.005 0.2	10200H EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	15 Jul 09 15 Jul 09 9:21 21 Jul 09 9:52 14 Jul 09 16:15 15 Jul 09 15:00	

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Report Date: 23 Jul 09 Lab Number: 09-A30979 Work Order #:12-9542 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 8:32 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LAL 01T

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 9.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest					15 Jul 0	9	LMF
Water Digestions					16 Jul 0	9	JMS
Chlorophyll a	13.9	mg/cubic m	1.0	10200н	15 Jul 0	9 9:21	ERK
Phosphorus, Total	0.218 ~	mg/L	0.005	EPA 365.1	21 Jul 0	9 9:52	DAP
Phosphorus, Soluble Ortho	0.111 ~	mg/L	0.005	EPA 365.1	14 Jul 0	9 16:15	AKF
Nitrogen, Total Kjeldahl	1,9	mg/L	0.2	SM 4500NorgB/NH3 E	15 Jul 0	9 15:00	CJL
Iron	0.055	mg/L	0.015	6010	22 Jul 0	9 9:27	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 23 Jul 09 Lab Number: 09-A30978 Work Order #:12-9542 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 7:53 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LCE 01B

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 9.0C

As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
			15 Jul 09	LMF
			16 Jul 09	JMS
0.279 ~ mg/L	0.005	EPA 365.1	21 Jul 09 9:5:	2 DAP
0.179 ~ mg/L	0.005	EPA 365.1	14 Jul 09 16:1	5 AKF
0.015 mg/L	0.015	6010	22 Jul 09 9:2	7 AM
	Result 0.279 ~ mg/L 0.179 ~ mg/L	0.279 ~ mg/L 0.005 0.179 ~ mg/L 0.005	Result RL Reference 0.279 ~ mg/L 0.005 EPA 365.1 0.179 ~ mg/L 0.005 EPA 365.1	Result RL Reference Analyzed 15 Jul 09 16 Jul 09 0.279 ~ mg/L 0.005 EPA 365.1 21 Jul 09 0.179 ~ mg/L 0.005 EPA 365.1 14 Jul 09 16:15

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.



Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 23 Jul 09 Lab Number: 09-A30980 Work Order #:12-9543 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 9:12 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LHE 01T

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 8.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions Chlorophyll a Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl Iron	27.8 0.096 0.048 3.3 0.096	mg/cubic m mg/L mg/L mg/L mg/L	1.0 0.005 0.005 0.2 0.015	10200H EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	15 Jul 09 16 Jul 09 15 Jul 09 21 Jul 09 14 Jul 09 15 Jul 09 22 Jul 09	9:21 9:52 16:15 15:00	LMF JMS ERK DAP AKF CJL AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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= Due to sample concentration - Due to extract volume ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 TA LAB #: 022 WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125



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1 of 1 Page:

Report Date: 23 Jul 09 Lab Number: 09-A30981 Work Order #:12-9543 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 9:49 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LSW 01T

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Temp at Receipt: 8.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Chlorophyll a Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	70.4 0.240 ~ 0.012 4.3	mg/cubic m mg/L mg/L mg/L	1.0 0.005 0.005 0.2	10200H EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	15 Jul 0 15 Jul 0 21 Jul 0 14 Jul 0 17 Jul 0	9 9:21 9 9:52 9 16:15	LMF ERK DAP AKF CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 23 Jul 09 Lab Number: 09-A30982 Work Order #:12-9543 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 10:00 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LSW 01B

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 8.0C

	As Receiv Result	As Received Result		Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		······			15 Jul 09	LMF
Water Digestions					16 Jul 09	JMS
Phosphorus, Total	0.232 ~	mg/L	0.005	EPA 365.1	21 Jul 09 9	52 DAP
Phosphorus, Soluble Ortho	0.012	mg/L	0.005	EPA 365.1	14 Jul 09 16	:15 AKF
Iron	0.128	mg/L	0.015	6010	22 Jul 09 9	:27 AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

C. M

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Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 23 Jul 09 Lab Number: 09-A30983 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 10:44 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LCLE 01T

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

	As Recei Result	.ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					15 Jul 09	LMF
Chlorophyll a	10.5	mg/cubic m	1.0	10200H	15 Jul 09 9:21	ERK
Phosphorus, Total	0.027	mq/L	0.005	EPA 365.1	21 Jul 09 10:10	DAP
Phosphorus, Soluble Ortho	0.019	mg/L	0.005	EPA 365.1	15 Jul 09 8:51	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	17 Jul 09 7:35	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 23 Jul 09 Lab Number: 09-A30984 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 10:52 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LCLE 01B

WENCK ASSOCIATES INC

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MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					15 Jul 09	LMF
Water Digestions					16 Jul 09	JMS
Phosphorus, Total	0.194	mg/L	0.005	EPA 365.1	21 Jul 09 10:10	DAP
Phosphorus, Soluble Ortho	0.095	mg/L	0.005	EPA 365.1	15 Jul 09 8:51	DAP
Iron	0.656	mg/L	0.015	6010	22 Jul 09 9:27	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Um, MN

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Elevated "Less Than Result" {<}: @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 23 Jul 09 Lab Number: 09-A30985 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 11:06 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LCLW 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

	As Recei Result	As Received Result		Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Chlorophyll a Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	10.4 0.032 0.019 1.0	mg/cubic m mg/L mg/L mg/L	1.0 0.005 0.005 0.2	10200H EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	15 Jul 09 15 Jul 09 9:21 21 Jul 09 10:10 15 Jul 09 8:51 17 Jul 09 7:35	LMF ERK DAP DAP CJL	

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Kin

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 23 Jul 09 Lab Number: 09-A30988 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 11:50 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LOT 01B

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
			15 Jul 09	LMF
0.344 ~ ma/T	0.005	EPA 365.1		JMS DAP
0.221 ~ mg/L	0.005	EPA 365.1	15 Jul 09 8:51	DAP
	Result 0.344 ~ mg/L	Result RL 0.344 ~ mg/L 0.005 0.221 ~ mg/L 0.005	Result RL Reference 0.344 ~ mg/L 0.005 EPA 365.1 0.221 ~ mg/L 0.005 EPA 365.1	Result RL Reference Analyzed 15 Jul 09 16 Jul 09 0.344 ~ mg/L 0.005 EPA 365.1 21 Jul 09 10:10 0.221 ~ mg/L 0.005 EPA 365.1 15 Jul 09 8:51

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Marile 104

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulin, MN

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 23 Jul 09 Lab Number: 09-A30987 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 11:32 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LOT 01T

Temp at Receipt: 7.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyz	ed	Analyst
Phosphorus Water Digest Chlorophyll a Phosphorus, Total Phosphorus, Soluble Ortho	6.7 0.021 0.026	mg/cubic m mg/L mg/L	1.0 0.005 0.005	10200H EPA 365.1 EPA 365.1		09 9:21 09 10:10	LMF ERK DAP DAP
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	17 Jul	09 7:35	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Ortho Phosphorus is greater than Total Phosphorus. Total Phosphorus reanalyzed with no significant change in result. One can assume that all Phosphorus is in Ortho form.



Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Uln, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 23 Jul 09 Lab Number: 09-A30986 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 11:19 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LCLW 01B

WENCK ASSOCIATES INC 1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					15 Jul 09	LMF
Water Digestions					16 Jul 09	JMS
Phosphorus, Total	0.116	mg/L	0.005	EPA 365.1	21 Jul 09 10:10	DAP
Phosphorus, Soluble Ortho	0.094	mg/L	0.005	EPA 365.1	15 Jul 09 8:51	DAP
Iron	0.039	mg/L	0.015	6010	22 Jul 09 9:27	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): 6 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 23 Jul 09 Lab Number: 09-A30990 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 12:35 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LAU 01B

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.611 ~ mg/L 0.489 ~ mg/L 0.085 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	15 Jul 09 16 Jul 09 21 Jul 09 10:10 15 Jul 09 8:51 22 Jul 09 9:27	DAP

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 23 Jul 09 Lab Number: 09-A30989 Work Order #:12-9544 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 13 Jul 09 12:20 Sampled By: DL Date Received: 14 Jul 09 11:10 PO #: CRWD

Sample Description: LAU 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

Temp at Receipt: 7.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					15 Jul 09	LMF
Chlorophyll a	18.1	mg/cubic m	1.0	10200H	15 Jul 09 9:21	ERK
Phosphorus, Total	0.036	mg/L	0.005	EPA 365.1	21 Jul 09 10:10	DAP
Phosphorus, Soluble Ortho	0.013	mg/L	0.005	EPA 365.1	15 Jul 09 8:51	DAP
Nítrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	17 Jul 09 7:35	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

85-15-1091 M1161091

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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

Project Name: CRWD

Sample Description: LCL 01T

Report Date: 5 Aug 09 Lab Number: 09-A33650 Work Order #:12-10149 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 7:40 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 6.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	108 2.5 < 0.2 0.212 ~ 0.018 2.5	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	30 Jul 09 30 Jul 09 11:45 30 Jul 09 11:07 30 Jul 09 11:07 4 Aug 09 9:40 28 Jul 09 15:28 28 Jul 09 15:10	Calculated KAD KAD AKF

~Sample diluted due to result above calibration or linear range.

h. the

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Page: 1 of 1

Report Date: 5 Aug 09

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

Project Name: CRWD

Sample Description: LCL 01B

Lab Number: 09-A33651 Work Order #:12-10149 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 7:50 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho	0.290 ~ 0.051	mg/L mg/L	0.005 0.005	EPA 365.1 EPA 365.1	30 Jul 09 4 Aug 09 4 Aug 09 9:40 28 Jul 09 15:28	AKF
Iron	0.527	mg/L	0.015	6010	4 Aug 09 12:31	AM

~Sample diluted due to result above calibration or linear range.

Approved by: Ŕ

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Report Date: 5 Aug 09 Lab Number: 09-A33652 Work Order #:12-10149 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 8:26 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

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

Project Name: CRWD

Sample Description: LLI 01T

Temp at Receipt: 6.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho	5.2 1.6 < 0.2 0.028 0.008	mg/cubic m mg/L mg/L as N mg/L mg/L	1.0 NA 0.2 0.005 0.005	10200H Calc 353.2 EPA 365.1 EPA 365.1	30 Jul 09 30 Jul 09 11:45 30 Jul 09 11:07 30 Jul 09 11:07 4 Aug 09 9:40 28 Jul 09 15:28	Calculated KAD
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	28 Jul 09 15:10	DSH

Ost. And

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 5 Aug 09 Lab Number: 09-A33653 Work Order #:12-10149 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 8:38 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

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

Project Name: CRWD

Sample Description: LLI 01B

Temp at Receipt: 6.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.024 mg	g/L g/L g/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Jul 09 4 Aug 09 4 Aug 09 9:40 28 Jul 09 15:28 4 Aug 09 12:31	AKF

~Sample diluted due to result above calibration or linear range.

Approved by: ¢

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perf	+ = Due	to sample concentrat to extract volume	ion	
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

Sample Description: LDE 01T

Lab Number: 09-A33644 Work Order #:12-10148 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 10:26 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 12.0C

Report Date: 5 Aug 09

As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
		• •	· · · · · · · · · · · · · · · · · · ·	30 Jul 09	LMF
10.1	mg/cubic m	1.0	10200H	30 Jul 09 11:45	ERK
2.1	mg/L	NA	Calc	30 Jul 09 11:07	Calculated
< 0.2	mg/L as N	0.2	353.2	30 Jul 09 11:07	KAD
0.251 ~	mg/L	0.005	EPA 365.1	4 Aug 09 9:22	KAD
		0.005	EPA 365.1	28 Jul 09 15:22	AKF
2.1	mg/L	0.2	SM 4500NorgB/NH3 E	28 Jul 09 15:10	DSH
	Result 10.1 2.1 < 0.2 0.251 ~ 0.180	10.1 mg/cubic m 2.1 mg/L < 0.2 mg/L as N 0.251 ~ mg/L 0.180 mg/L	Result RL 10.1 mg/cubic m 1.0 2.1 mg/L NA < 0.2	Result RL Reference 10.1 mg/cubic m 1.0 10200H 2.1 mg/L NA Calc < 0.2	Result RL Reference Analyzed 10.1 mg/cubic m 1.0 10200H 30 Jul 09 2.1 mg/L NA Calc 30 Jul 09 11:45 <.0.2

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

-Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 5 Aug 09 Lab Number: 09-A33645 Work Order #:12-10148 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 10:35 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 12.0C

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

Project Name: CRWD

Sample Description: LBE 01B

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.818 ~ mg/L 0.517 ~ mg/L 0.959 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Jul 09 4 Aug 09 4 Aug 09 9:22 28 Jul 09 15:22 4 Aug 09 12:31	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Vin Ar

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

= Due to sample concentration
+ = Due to extract volume Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument performance at RL 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

Sample Description: LSE 01T

Work Order #:12-10148 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 9:28 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 12.0C

Report Date: 5 Aug 09

Lab Number: 09-A33646

	As Recei Result	eived Metho RL		Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Jul 09	LMF
Chlorophyll a	2.8	mg/cubic m	1.0	10200H	30 Jul 09 11:45	ERK
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	30 Jul 09 11:07	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	30 Jul 09 11:07	KAD
Phosphorus, Total	0.016	mg/L	0.005	EPA 365.1	4 Aug 09 9:22	KAD
Phosphorus, Soluble Ortho	0.009	mg/L	0.005	EPA 365.1	28 Jul 09 15:22	AKF
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	28 Jul 09 15:10	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.



Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

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

Sample Description: L3E 01B

Report Date: 5 Aug 09 Lab Number: 09-A33647 Work Order #:12-10148 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 9:34 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 12.0C

	As Recei Result	as Received Material R		Method Reference	Date Analyzed		Analyst	
Phosphorus Water Digest					30 J			LMF JMS
Water Digestions Phosphorus, Total	0.021	mg/L	0.005	EPA 365.1		ιg 09 ισ 09	9:22	KAD
Phosphorus, Soluble Ortho	0.010	mg/L	0.005	EPA 365.1			15:22	
Iron	0.059	mg/L	0.015	6010	4 A.	ıg 09	12:31	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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

MVTI

Sample Description: LUN 01T

1 of 1 Page:

Report Date: 5 Aug 09 Lab Number: 09-A33648 Work Order #:12-10148 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 11:11 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 12.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	4.3 1.5 < 0.2 0.029 0.012 1.5	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	30 Jul 09 30 Jul 09 11:45 30 Jul 09 11:07 30 Jul 09 11:07 4 Aug 09 9:22 28 Jul 09 15:22 28 Jul 09 15:10	Calculated KAD KAD AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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= Due to sample concentration Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity 4 ^ = Due to instrument performance at RL = Due to extract volume IA LAB #: 022 ND WW/DW # R~040 IA LAB #: 132 ND MICRO # 1013-M

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

Sample Description: LON 01B

Temp at Receipt: 12.0C

Sample Matrix: SURFACE WATER

Date Sampled: 27 Jul 09 11:21

Date Received: 28 Jul 09 10:50

Report Date: 5 Aug 09 Lab Number: 09-A33649

Work Order #:12-10148

Account #: 013173

Sampled By: DL

PO #: CRWD

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.633 ~ mg/L 0.382 ~ mg/L 0.416 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Jul 09 4 Aug 09 4 Aug 09 9:40 28 Jul 09 15:22 4 Aug 09 12:31	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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WES BOLL

Project Name: CRWD

Sample Description: LLO 01T

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Page: 1 of 1

Report Date: 5 Aug 09 Lab Number: 09-A33640 Work Order #:12-10147 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 12:05 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Jul 09	LMF
Chlorophyll a	44.9	mg/cubic m	1.0	10200H	30 Jul 09 11:45	ERK
Nitrogen Total, Calculat	1.5	mg/L	NA	Calc	30 Jul 09 10:59	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	30 Jul 09 10:59	KAD
Phosphorus, Total	0.054	mg/L	0.005	EPA 365.1	4 Aug 09 9:22	KAD
Phosphorus, Soluble Ortho	0.014	mg/L	0.005	EPA 365.1	28 Jul 09 15:22	AKF
Nitrogen, Total Kjeldahl	1.5.1	mg/L	0.2	SM 4500NorgB/NH3 E	28 Jul 09 15:10	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Page: 1 of 1

Report Date: 5 Aug 09 Lab Number: 09-A33641 Work Order #:12-10147 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 12:18 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Project Name: CRWD

WENCK ASSOCIATES INC

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Sample Description: LLO 01B

WES BOLL

Temp at Receipt: 8.0C

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.22 ~ 1.08 ~ 0.175	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Jul 09 4 Aug 09 4 Aug 09 9:22 28 Jul 09 15:22 4 Aug 09 12:31	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

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Approved by: \mathcal{O}

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Report Date: 5 Aug 09 Lab Number: 09-A33642 Work Order #:12-10147 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 12:30 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 8.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Jul 09	LMF
Chlorophyll a	67.7	mg/cubic m	1.0	10200H	30 Jul 09 11:45	
Nitrogen Total, Calculat	2.1	mg/L	NA	Calc	30 Jul 09 11:07	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	30 Jul 09 11:07	KAD
Phosphorus, Total	0.106	mg/L	0.005	EPA 365.1	4 Aug 09 9:22	KAD
Phosphorus, Soluble Ortho	0.018	mg/L	0.005	EPA 365.1	28 Jul 09 15:22	AKF
Nitrogen, Total Kjeldahl	2.1	mg/L	0.2	SM 4500NorgB/NH3 E	28 Jul 09 15:10	DSH

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

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WES BOLL

Project Name: CRWD

Sample Description: LMA 01T

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Project Name: CRWD

Sample Description: LMA 01B

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Page: 1 of 1

Report Date: 5 Aug 09 Lab Number: 09-A33643 Work Order #:12-10147 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 27 Jul 09 12:45 Sampled By: DL Date Received: 28 Jul 09 10:50 PO #: CRWD

Temp at Receipt: 8.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.12 ~ mg/L 0.830 ~ mg/L 0.735 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Jul 09 4 Aug 09 4 Aug 09 9:22 28 Jul 09 15:22 4 Aug 09 12:31	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.



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Report Date: 11 Aug 09 Lab Number: 09-A34390 Work Order #:12-10291 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Jul 09 12:35 Sampled By: DL Date Received: 30 Jul 09 11:05 PO #: CRWD

Temp at Receipt: 5.4C

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Project Name: CRWD

Sample Description: LSC 01T

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					31 Jul 09	LMF
Chlorophyll a	94.1	mg/cubic m	1.0	10200H	3 Aug 09 13:	45 ERK
Nitrogen Total, Calculat	2.0	mg/L	NA	Calc	5 Aug 09 13:	13 Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	5 Aug 09 13:	13 KAD
Phosphorus, Total	0.122	mg/L	0.005	EPA 365.1	4 Aug 09 13:	55 KAD
Phosphorus, Soluble Ortho	0.023	mg/L	0.005	EPA 365.1	30 Jul 09 15:	36 AKF
Nitrogen, Total Kjeldahl	2.0	mg/L	0.2	SM 4500NorgB/NH3 E	3 Aug 09 8:	10 CJL

An Party

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Report Date: 11 Aug 09 Lab Number: 09-A34391 Work Order #:12-10291 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Jul 09 12:25 Sampled By: DL Date Received: 30 Jul 09 11:05 PO #: CRWD

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

Project Name: CRWD

Sample Description: LSC 01B

Temp at Receipt: 5.4C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.122 0.054 0.086	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	31 Jul 09 10 Aug 09 4 Aug 09 13:55 30 Jul 09 15:36 10 Aug 09 15:00	AKF

Brystian

Approved by:

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Report Date: 11 Aug 09 Lab Number: 09-A34392 Work Order #:12-10291 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Jul 09 13:42 Sampled By: DL Date Received: 30 Jul 09 11:05 PO #: CRWD

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Project Name: CRWD

Sample Description: LCA 01T

Temp at Receipt: 5.4C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	23.2 1.0 < 0.2 0.062 0.017 1.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	31 Jul 09 3 Aug 09 13:45 5 Aug 09 13:13 5 Aug 09 13:13 4 Aug 09 13:55 30 Jul 09 15:36 3 Aug 09 8:10	Calculated KAD KAD AKF

entry which

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Report Date: 11 Aug 09 Lab Number: 09-A34393 Work Order #:12-10291 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Jul 09 13:35 Sampled By: DL Date Received: 30 Jul 09 11:05 PO #: CRWD

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Project Name: CRWD

Sample Description: LCA 01B

Temp at Receipt: 5.4C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.25 ~ mg/L 0.882 ~ mg/L 0.759 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	31 Jul 09 10 Aug 09 4 Aug 09 14:1 30 Jul 09 15:3 10 Aug 09 15:3	6 AKF

~Sample diluted due to result above calibration or linear range.

Breeks Mann

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Project Name: CRWD

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Report Date: 11 Aug 09 Lab Number: 09-A34394 Work Order #:12-10291 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Jul 09 14:36 Sampled By: DL Date Received: 30 Jul 09 11:05 PO #: CRWD

Sample Description: LGR 01T

Temp at Receipt: 5.4C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					31 Jul 09	LMF
Chlorophyll a	3.3	mg/cubic m	1.0	10200H	3 Aug 09 13:45	ERK
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	5 Aug 09 13:13	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	5 Aug 09 13:13	KAD
Phosphorus, Total	0.023	mg/L	0.005	EPA 365.1	4 Aug 09 14:13	KAD
Phosphorus, Soluble Ortho	0.020	mg/L	0.005	EPA 365.1	30 Jul 09 15:36	AKF
Nítrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	3 Aug 09 8:10	CJL

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Elevated "Less Than Result" (<): 0 ≈ Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Project Name: CRWD

Sample Description: LGR 01B

Temp at Receipt: 5.4C

Report Date: 11 Aug 09 Lab Number: 09-A34395

Work Order #:12-10291

Sample Matrix: SURFACE WATER Date Sampled: 29 Jul 09 14:46

Date Received: 30 Jul 09 11:05

Account #: 013173

Sampled By: DL

PO #: CRWD

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.380 ~ mg/L 0.262 ~ mg/L 0.070 - mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	31 Jul 09 10 Aug 09 4 Aug 09 14:13 30 Jul 09 15:36 10 Aug 09 15:35	AKF

~Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 11 Aug 09 Lab Number: 09-A34917 Work Order #:12-10417 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 7:44 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 4.5C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Aug 09	LMF
Chlorophyll a	6.9	mg/cubic m	1.0	10200H	6 Aug 09 15:49	ERK
Nitrogen Total, Calculat	0.7	mq/L	NA	Calc	5 Aug 09 13:29	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	5 Aug 09 13:29	KAD
Phosphorus, Total	0.030	mg/L	0.005	EPA 365.1	11 Aug 09 9:13	AKF
Phosphorus, Soluble Ortho	* 0.024	mg/L	0.005	EPA 365.1	5 Aug 09 9:50	DAP
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	5 Aug 09 7:50	TAM
••••			* ** * *			

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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WES BOLL

Project Name: CRWD

Sample Description: LPL 01T

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Report Date: 11 Aug 09 Lab Number: 09-A34918 Work Order #:12-10417 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 8:40 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 4.5C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Aug 09	LMF
Chlorophyll a	3.6	mg/cubic m	1.0	10200H	6 Aug 09 15:	49 ERK
Nitrogen Total, Calculat	0.6	mg/L	NA	Calc	5 Aug 09 13:	29 Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	5 Aug 09 13:	29 KAD
Phosphorus, Total	0.013	mg/L	0.005	EPA 365.1	11 Aug 09 9:	13 AKF
Phosphorus, Soluble Ortho	* 0.012	mg/L	0.005	EPA 365.1	5 Aug 09 9:	50 DAP
Nitrogen, Total Kjeldahl	0.6	mg/L	0.2	SM 4500NorgB/NH3 E	5 Aug 09 7:	50 TAM

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Project Name: CRWD

Sample Description: LBA 01T

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Project Name: CRWD

Sample Description: LPL 01B

Report Date: 11 Aug 09 Lab Number: 09-A34919 Work Order #:12-10417 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 7:55 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 4.5C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho	0.179 * 0.096	mg/L mg/L	0.005	EPA 365.1 EPA 365.1	7 Aug 0 10 Aug 0 11 Aug 0 5 Aug 0	9 9 9:13	
Iron	0.450	mg/L	0.015	6010	10 Aug 0	9 15:35	RMV

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

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Report Date: 11 Aug 09 Lab Number: 09-A34920 Work Order #:12-10417 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 8:45 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 4.5C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.185 * 0.023 1.550	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	7 Aug 09 10 Aug 09 11 Aug 09 5 Aug 09 5 10 Aug 09 15	:50 DAP

* Holding time Exceeded



Approved by:

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Elevated "Less Than Result" (<): @ > Due to sample matrix # > Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Project Name: CRWD

Sample Description: LBA 01B



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Project Name: CRWD

Sample Description: LNI 018

Page: 1 of 1

Report Date: 12 Aug 09 Lab Number: 09-A34921 Work Order #:12-10418 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 9:36 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 3.8C

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest					7 Aug 09		LMF
Water Digestions					10 Aug 09		JMS
Phosphorus, Total	0.361 ~ n	ng/L	0.005	EPA 365.1	11 Aug 09	9:13	AKF
Phosphorus, Soluble Ortho	* 0.035 п	ng/L	0.005	EPA 365.1	5 Aug 09	9:50	DAP
Iron	16.50 ~ n	ng/L	0.015	6010	11 Aug 09	9 14:01	RMV

* Holding time Exceeded

~Sample diluted due to result above calibration or linear range.

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" {<}: @ > Due to sample matrix # = Due to sample concentration ! > Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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

Report Date: 12 Aug 09 Lab Number: 09-A34922 Work Order #:12-10418 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 10:29 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 3.8C

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

Project Name: CRWD

Sample Description: LWI 01B

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.080 0.021 0.118	mg∕L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	7 Aug 09 10 Aug 09 11 Aug 09 9:13 5 Aug 09 9:50 10 Aug 09 15:35	DAP

BRUGION

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): θ \simeq Due to sample a $!$ = Due to sample a $^{\circ}$ \approx Due to instrume		to sample concentration to extract volume		
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 9994	47680 ND MICRO # 1013-M	ND WW/DW # R-040 I	A 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

Sample Description: LNI 01T

Page: 1 of 1

Report Date: 12 Aug 09 Lab Number: 09-A34923 Work Order #:12-10418 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 9:27 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 3.8C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total	2.7 0.7 < 0.2 0.012	mg/cubic m mg/L mg/L as N mg/L	1.0 NA 0.2 0.005	10200H Calc 353.2 EPA 365.1	7 Aug 09 6 Aug 09 15:49 5 Aug 09 13:29 5 Aug 09 13:29 11 Aug 09 9:31	Calculated KAD AKF
Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	* 0.019 0.7	mg/L mg/L	0.005 0.2	EPA 365.1 SM 4500NorgB/NH3 E	5 Aug 09 9:50 5 Aug 09 7:50	

The ortho phosphorus result is greater than the total phosphorus result. The data was reviewed and the QC was acceptable. One can assume that all the phosphorus is in the ortho form.

* Holding time Exceeded

No AA

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Page: 1 of 1

Report Date: 12 Aug 09 Lab Number: 09-A34924 Work Order #:12-10418 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Aug 09 10:20 Sampled By: DL Date Received: 4 Aug 09 11:05 PO #: CRWD

Temp at Receipt: 3.8C

1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

WENCK ASSOCIATES INC

Project Name: CRWD

Sample Description: LWI 01T

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					7 Aug 09	LMF
Chlorophyll a	9.4	mg/cubic m	1.0	10200H	6 Aug 09 15:49	ERK
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	5 Aug 09 13:29	Calculated
Nitrate+Nítrite	< 0.2	mg/L as N	0.2	353.2	5 Aug 09 13:29	KAD
Phosphorus, Total	0.029	mg/L	0.005	EPA 365.1	11 Aug 09 9:31	AKF
Phosphorus, Soluble Ortho	0.019	mg/L	0.005	EPA 365.1	5 Aug 09 9:50	DAP
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	5 Aug 09 7:50	TAM

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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 Report Date: 17 Aug 09 Lab Number: 09-A35992 Work Order #:12-10659 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 11:00 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Sample Description: LOT 01T

Project Name: CRWD

Temp at Receipt: 4.6C

1 of 1

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	,,				10 Aug 09	LMF
Chlorophyll a	4.0	mg/cubic m	1.0	10200H	14 Aug 09 10:02	ERK
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	10 Aug 09 12:01	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	10 Aug 09 12:01	AKF
Phosphorus, Total	0.018	mg/L	0.005	EPA 365.1	11 Aug 09 12:53	AKF
Phosphorus, Soluble Ortho	0.026	mg/L	0,005	EPA 365.1	7 Aug 09 15:34	KAD
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 09 8:25	

The ortho phosphorus result is greater than the total phosphorus result. The data was reviewed and the QC was acceptable. One can assume that all the phosphorus is in the ortho form.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # > Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Name: CRWD

Sample Description: LOT 01B

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1800 PIONEER CRK CTR

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Page: 1 of 1

Report Date: 17 Aug 09 Lab Number: 09-A35993 Work Order #:12-10659 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 11:00 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 4.6C

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.351 ~ 0.350 ~ 0.528	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	10 Aug 09 14 Aug 09 11 Aug 09 12:53 7 Aug 09 15:34 14 Aug 09 15:59	

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

A Reporting Limit



WES BOLL

Sample Description: LAU 01T

Project Name: CRWD

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1 of 1 Page:

Report Date: 17 Aug 09 Lab Number: 09-A35994 Work Order #:12-10659 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 11:52 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 4.6C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 09	LMF
Chlorophyll a	10.7	mg/cubic m	1.0	10200H	14 Aug 09 10:0	2 ERK
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	10 Aug 09 12:0	1 Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	10 Aug 09 12:0	1 AKF
Phosphorus, Total	0.030	mg/L	0.005	EPA 365.1	11 Aug 09 12:5	3 AKF
Phosphorus, Soluble Ortho	0.011	mg/L	0.005	EPA 365.1	7 Aug 09 15:3	4 KAD
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 09 8:2	5 CJL
Mitrogen, Totar Kjerdani	0.7	11/2/11		ou loosuorgernuo u	10 1109 00 010	

WB (0/1/09

IA LAB #: 022

IA LAB #: 132

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

= Due to sample concentration Elevated "Less Than Result" (<): θ = Due to sample matrix ! = Due to sample quantity ! = Due to sample quantity ^ = Due to instrument performance at RL WI LAB # 999447680

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



Project Name: CRWD

Sample Description: LAU 01B

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 17 Aug 09 Lab Number: 09-A35995 Work Order #:12-10659 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 12:00 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 4.6C

1 of 1

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.529 ~ mg/L 0.503 ~ mg/L 0.079 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	10 Aug 09 14 Aug 09 11 Aug 09 12:53 7 Aug 09 15:34 14 Aug 09 15:59	KAD

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

WB [0/1/09

- Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<); @ = Due to sample matrix # ! = Due to sample quantity + ^ = Due to instrument performance at RL # = 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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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 17 Aug 09 Lab Number: 09-A35996 Work Order #:12-10660 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 9:26 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Sample Description: LSW 01T

Project Name: CRWD

Temp at Receipt: 8.2C

1 of 1

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	222 4.8 < 0.2 0.368 ~ 0.028 4.8	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	10 Aug 09 14 Aug 09 10:02 10 Aug 09 12:01 10 Aug 09 12:01 11 Aug 09 12:53 7 Aug 09 15:34 10 Aug 09 8:25	Calculated AKF AKF KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Approved by:



Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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

Report Date: 17 Aug 09 Lab Number: 09-A35997 Work Order #:12-10660 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 9:35 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Sample Description: LSW 01B

Project Name: CRWD

Temp at Receipt: 8.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.311 ~ mg/L 0.040 mg/L 0.422 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	10 Aug 09 14 Aug 09 11 Aug 09 12:53 7 Aug 09 15:34 14 Aug 09 15:59	LMF JMS AKF KAD AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

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

Sample Description: LCLE 01T

Page: 1 of 1

Report Date: 17 Aug 09 Lab Number: 09-A35998 Work Order #:12-10660 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 10:20 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 8.2C

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 09	LMF
Chlorophyll a	5.0	mg/cubic m	1.0	10200H	14 Aug 09 10:02	ERK
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	10 Aug 09 12:01	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	10 Aug 09 12:01	AKF
Phosphorus, Total	0.025	mg/L	0.005	EPA 365.1	11 Aug 09 13:11	AKF
Phosphorus, Soluble Ortho	0.020	mg/L	0.005	EPA 365.1	7 Aug 09 15:34	KAD
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 09 8:25	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

101101

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perf	+ = Due	to sample concentrat to extract volume	≩on	
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680	ND MICRO # 1013-M	ND WW/DW ∦ R-040	IA LAB #: 132	IA LAB #: 022



Project Name: CRWD

Sample Description: LCLE 01B

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

Report Date: 17 Aug 09 Lab Number: 09-A35999 Work Order #:12-10660 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 10:26 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

IDII 109

Temp at Receipt: 8.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 09	LMF
Water Digestions					14 Aug 09	JMS
Phosphorus, Total	0.031	mq/L	0.005	EPA 365.1	11 Aug 09 13:11	AKF
Phosphorus, Soluble Ortho	0.027	mq/L	0.005	EPA 365.1	7 Aug 09 15:34	KAD
Iron	0.778	mg/L	0.015	6010	14 Aug 09 15:59	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ = Due	to sample concentrat: to extract volume	ion	
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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Project Name: CRWD

MNTI

Sample Description: LCLW 01T

Page: 1 of 1

Report Date: 17 Aug 09 Lab Number: 09-A36000 Work Order #:12-10660 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 11:43 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 8.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	5.1 0.7 < 0.2 0.027 0.019 0.7	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	10 Aug 09 14 Aug 09 10:02 10 Aug 09 12:09 10 Aug 09 12:09 11 Aug 09 13:11 7 Aug 09 15:34 10 Aug 09 8:25	Calculated AKF AKF KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

WB 10/1/09

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perf	+ = Due	to sample concentrat: to extract volume	ion	
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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Project Name: CRWD

Sample Description: LCLW 01B

Page: 1 of 1

Report Date: 17 Aug 09 Lab Number: 09-A36001 Work Order #:12-10660 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 11:33 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 8.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		10 L			10 Aug 09	LMF
Water Digestions					14 Aug 09	JMS
Phosphorus, Total	0.031	mg/L	0.005	EPA 365.1	11 Aug 09 13:11	AKF
Phosphorus, Soluble Ortho	0.020	mg/L	0.005	EPA 365.1	7 Aug 09 15:34	KAD
Iron	0.125	mg/L	0.015	6010	14 Aug 09 15:59	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

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Project Name: CRWD

Sample Description: LCE 01T

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 17 Aug 09 Lab Number: 09-A36002 Work Order #:12-10661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 7:02 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

1 of 1

Temp at Receipt: 6.7C

As Received Result		ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 09	LMF
Chlorophyll a	9.2	mg/cubic m	1.0	10200H	14 Aug 09 10:02	ERK
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	10 Aug 09 12:09	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	10 Aug 09 12:09	AKF
Phosphorus, Total	0.032	mg/L	0.005	EPA 365.1	11 Aug 09 13:11	AKF
Phosphorus, Soluble Ortho	0.007	mg/L	0.005	EPA 365.1	7 Aug 09 15:40	KAD
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	10 Aug 09 8:25	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

Approved by:

WB 10/1/09

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ - Due	to sample concentrat. to extract volume	ion	
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 Report Date: 17 Aug 09 Lab Number: 09-A36003 Work Order #:12-10661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 7:19 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Sample Description: LCE 01B

Project Name: CRWD

Temp at Receipt: 6.7C

1 of 1

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.272 ~ mg/L 0.254 ~ mg/L 0.036 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	10 Aug 09 14 Aug 09 11 Aug 09 13:11 7 Aug 09 15:40 14 Aug 09 15:59	KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

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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Report Date: 17 Aug 09 Lab Number: 09-A36004 Work Order #:12-10661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 8:07 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

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

Project Name: CRWD

Sample Description: LHE 01T

Temp at Receipt: 6.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl Iron	30.9 2.2 < 0.2 0.085 0.048 2.2 0.058	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2 0.015	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E 6010	10 Aug 09 14 Aug 09 14 Aug 09 10:02 10 Aug 09 12:09 10 Aug 09 13:11 7 Aug 09 15:40 10 Aug 09 8:25 14 Aug 09 15:59	Calculated AKF AKF KAD CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

WB, 0/1/04

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit



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

Project Name: CRWD

Sample Description: LAL 01T

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Report Date: 17 Aug 09 Lab Number: 09-A36005 Work Order #:12-10661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 8:47 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 6.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	24.3 1.3 < 0.2 0.142 0.078 1.3	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	10 Aug 09 14 Aug 09 10:02 10 Aug 09 12:09 10 Aug 09 12:09 11 Aug 09 13:11 7 Aug 09 15:40 10 Aug 09 8:25	Calculated AKF AKF KAD

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ = Due	to sample concentrat: to extract volume	.cn	
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

Sample Description: LAL 01B

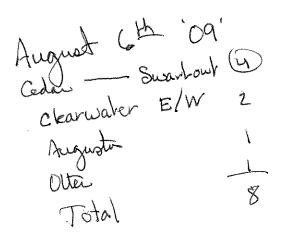
Page: 1 of 1

Report Date: 17 Aug 09 Lab Number: 09-A36006 Work Order #:12-10661 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 6 Aug 09 8:50 Sampled By: DL Date Received: 7 Aug 09 11:20 PO #: CRWD

Temp at Receipt: 6.7C

	As Recei Result	.ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					10 Aug 09	LMF
Water Digestions					14 Aug 09	JMS
Phosphorus, Total	0.163	mg/L	0.005	EPA 365.1	11 Aug 09 13:11	AKF
Phosphorus, Soluble Ortho	0.084	mg/L	0.005	EPA 365.1	7 Aug 09 15:40	KAD
Iron	0.139	mg/L	0.015	6010	14 Aug 09 15:59	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.



Approved by:

10/1/09 10/8

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Report Date: 3 Sep 09 Lab Number: 09-A39838 Work Order #:12-11435 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 25 Aug 09 12:30 Sampled By: DL Date Received: 26 Aug 09 11:35 PO #: CRWD

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

Project Name: CRWD

Sample Description: LBA 01T

Temp at Receipt: 3.1C

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	2.8 0.6 < 0.2 0.017 0.011 0.6	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	30 Aug 09 27 Aug 09 11:03 2 Sep 09 12:51 2 Sep 09 12:51 1 Sep 09 12:10 27 Aug 09 8:51 31 Aug 09 14:10	Calculated AKF AKF AKF

Approved by: K

WB 10/1/04

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

= Due to sample concentration
+ = Due to extract volume Elegated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument performance at RL IA LAB #: 022 IA LAB #: 132 ND WW/DW # R-040 ND MICRO # 1013-M WI LAB # 999447680 CERTIFICATION: MN LAB # 027-015-125



Project Name: CRWD

Sample Description: LBA 01B

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 3 Sep 09 Lab Number: 09-A39839 Work Order #:12-11435 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 25 Aug 09 12:40 Sampled By: DL Date Received: 26 Aug 09 11:35 PO #: CRWD

Temp at Receipt: 3.1C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.244 ~ 0.027 3.510	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Aug 09 1 Sep 09 1 Sep 09 12:10 27 Aug 09 8:51 1 Sep 09 15:12	AKF

~Sample diluted due to result above calibration or linear range.

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

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Report Date: 3 Sep 09 Lab Number: 09-A39840 Work Order #:12-11435 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 25 Aug 09 13:20 Sampled By: DL Date Received: 26 Aug 09 11:35 PO #: CRWD

Temp at Receipt: 3.1C

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

Project Name: CRWD

Sample Description: LGR 01T

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Aug 09	LMF
Chlorophyll a	5.4	mg/cubic m	1.0	10200H	27 Aug 09 11:03	JD
Nitrogen Total, Calculat	1.0	mg/L	NA	Calc	2 Sep 09 13:00	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	2 Sep 09 13:00	AKF
Phosphorus, Total	0.032	mg/L	0.005	EPA 365.1	1 Sep 09 12:10	AKF
Phosphorus, Soluble Ortho	0.021	mg/L	0.005	EPA 365.1	27 Aug 09 8:51	AKF
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	31 Aug 09 14:10	CJL

WB 10/1104

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit



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Report Date: 3 Sep 09 Lab Number: 09-A39841

Work Order #:12-11435

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

Project Name: CRWD

Sample Description: LGR 01B

Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 25 Aug 09 13:30 Sampled By: DL Date Received: 26 Aug 09 11:35 PO #: CRWD

Temp at Receipt: 3.1C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.398 ~ mg/L 0.292 ~ mg/L 0.105 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Aug 09 1 Sep 09 1 Sep 09 12:10 27 Aug 09 8:51 1 Sep 09 15:12	AKF

~Sample diluted due to result above calibration or linear range.

WB 10/1/04

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Due to sample matrix Due to sample quantity Due to instrument performance .	<pre># = Due to sample concentra + = Due to extract volume t RL</pre>	tion	
	0 # 1013-M ND WW/DW # R-040		



WES BOLL

Project Name: CRWD

Sample Description: LLO 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

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Report Date: 3 Sep 09 Lab Number: 09-A39557 Work Order #:12-11367 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 9:50 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 5.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Aug 09	LMF
Chlorophyll a	23.2	mg/cubic m	1.0	10200H	26 Aug 09 7:04	JD
Nitrogen Total, Calculat	1.2	mg/L	NA	Calc	27 Aug 09 8:40	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	26 Aug 09 12:46	AKF
Phosphorus, Total	0.067	mg/L	0.005	EPA 365.1	1 Sep 09 10:58	AKF
Phosphorus, Soluble Ortho	0.017	mg/L	0.005	EPA 365.1	25 Aug 09 15:42	AKF
Nitrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	27 Aug 09 8:40	TAM

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument performance at	<pre># = Due to sample concentration + = Due to extract volume RL</pre>
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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Report Date: 3 Sep 09

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

Project Name: CRWD

Sample Description: LLO 01B

Lab Number: 09-A39558 Work Order #:12-11367 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 9:59 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

WB 10/1/09

Temp at Receipt: 5.7C

	As Receix Result	/ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.27 ~ 1.05 ~ 0.182	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Aug 09 31 Aug 09 1 Sep 09 10:58 25 Aug 09 15:42 1 Sep 09 12:25	AKF

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity ^ = Due to instrument performance at RL = 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 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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WB 10/1/09

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Report Date: 3 Sep 09

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Lab Number: 09-A39559 Work Order #:12-11367 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 10:13 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Sample Description: LMA 01T

Project Name: CRWD

Temp at Receipt: 5.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Aug 09	LMF
Chlorophyll a	66.9	mg/cubic m	1.0	10200H	26 Aug 09 7:04	JD
Nitrogen Total, Calculat	1.7	mg/L	NA	Calc	31 Aug 09 8:40	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	26 Aug 09 12:46	AKF
Phosphorus, Total	0.122	mq/L	0.005	EPA 365.1	1 Sep 09 11:16	AKF
Phosphorus, Soluble Ortho	0.029	mg/L	0.005	EPA 365.1	25 Aug 09 15:42	AKF
Nitrogen, Total Kjeldahl	1.7	mg/L	0.2	SM 4500NorgB/NH3 E	31 Aug 09 8:40	CJL

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ « Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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

MUTI

Sample Description: LMA 01B

Lab Number: 09-A39560 Work Order #:12-11367 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 10:21 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 5.7C

Report Date: 3 Sep 09

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.12 ~ mg/L 0.859 ~ mg/L 0.445 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Aug 09 31 Aug 09 1 Sep 09 11:16 25 Aug 09 15:42 1 Sep 09 12:25	AKF

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Aeporting Limit

Elevated "Less Than Result" (<): 0 - Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + - Due to extract volume ^ = Due to instrument performance at RL 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

Sample Description: LCA 01T

Report Date: 3 Sep 09 Lab Number: 09-A39561 Work Order #:12-11367 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 11:22 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 5.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	57.5 1.7 < 0.2 0.068 0.023 1.7	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	30 Aug 09 26 Aug 09 7:0 31 Aug 09 8:4 26 Aug 09 12:4 1 Sep 09 11:1 25 Aug 09 15:4 31 Aug 09 8:4	D Calculated 6 AKF 6 AKF 8 AKF

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



Project Name: CRWD

Sample Description: LCA 01B

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



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

Report Date: 3 Sep 09 Lab Number: 09-A39562 Work Order #:12-11367 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 11:29 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 5.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.34 ~ mg/L 0.921 ~ mg/L 0.932 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Aug 09 31 Aug 09 1 Sep 09 11:16 25 Aug 09 15:48 1 Sep 09 12:25	AKF

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

	 Due to sample matrix Due to sample quantity Due to instrument performance at 1 		on	
CERTIFICATION: MN LAB # 027-015-125				
MVTL guarantees the accuracy of the analysis	done on the sample submitted for testing. It is not po	ssible for MVTL to guarantee that a test result	obtained on a particular sa	mple will be the same on any other same

niple 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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Report Date: 3 Sep 09

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

Project Name: CRWD

Sample Description: LCL 01T

Lab Number: 09-A39551 Work Order #:12-11366 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 7:47 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 6.1C

	As Receiv Result	<i>r</i> ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	109 2.0 < 0.2 0.212 ~ 0.031 2.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	30 Aug 09 26 Aug 09 7:04 27 Aug 09 8:40 26 Aug 09 12:37 1 Sep 09 10:58 25 Aug 09 15:42 27 Aug 09 8:40	Calculated AKF AKF AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

WB (011/04

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

= Due to sample concentration
+ = Due to extract volume Elevated "Less Than Result" (<): 0 = Due to sample matrix ! = Due to sample quantity
^ = Due to instrument performance at RL 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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Page: 1 of 1

PO #: CRWD

Report Date: 3 Sep 09 Lab Number: 09-A39552 WENCK ASSOCIATES INC Work Order #:12-11366 1800 PIONEER CRK CTR Account #: 013173 MAPLE PLAIN MN 55359-9000 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 7:52 Sampled By: DL

Project Name: CRWD

Sample Description: LCL 01B

Temp at Receipt: 6.1C

Date Received: 25 Aug 09 12:05

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.287 ~ 0.038 1.300	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	30 Aug 09 31 Aug 09 1 Sep 09 10:58 25 Aug 09 15:42 1 Sep 09 12:25	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): ℓ = Due to sample matrix ! = Due to sample quantity # = Due to sample concentration
+ > Due to extract volume ! = Due to sample quantity
^ = Due to instrument performance at RL 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

Sample Description: LLI 01T

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Report Date: 3 Sep 09 Lab Number: 09-A39553 Work Order #:12-11366 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 8:18 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 6.1C

	As Recei Result	.ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					30 Aug 09	LMF
Chlorophyll a	4.6	mg/cubic m	1.0	10200H	26 Aug 09 7:04	JD
Nitrogen Total, Calculat	1.0	mg/L	NA	Calc	27 Aug 09 8:40	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	26 Aug 09 12:46	AKF
Phosphorus, Total	0.025	mg/L	0.005	EPA 365.1	1 Sep 09 10:58	AKF
Phosphorus, Soluble Ortho	0.006	mg/L	0.005	EPA 365.1	25 Aug 09 15:42	AKF
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	27 Aug 09 8:40	TAM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

10/1/05

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perf	+ - Due	to sample concentrat to extract volume	ion	
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680	ND MICRO # 1013-M	ND WW/DW # R-040	1A 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

Sample Description: LLI 01B

Report Date: 3 Sep 09 Lab Number: 09-A39554 Work Order #:12-11366 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 8:24 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 6.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	*****				30 Aug 09	LMF
Water Digestions					31 Aug 09	JMS
Phosphorus, Total	0.886~ mg	J/L	0.005	EPA 365.1	1 Sep 09 10:58	AKF
Phosphorus, Soluble Ortho	0.024 mg	J/L	0.005	EPA 365.1	25 Aug 09 15:42	AKF
Iron	,	J/L	0.015	6010	1 Sep 09 12:25	AM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

A Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration + = Due to extract volume ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022 WI LAB # 999447680 ND MICRO # 1013-M CERTIFICATION: MN LAB # 027-015-125



WES BOLL

Project Name: CRWD

Sample Description: LSE 01T

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Report Date: 3 Sep 09 Lab Number: 09-A39555 Work Order #:12-11366 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 9:04 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Temp at Receipt: 6.1C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest					30 Aug 09	,,,,	LMF
Chlorophyll a	7.0	mg/cubic m	1.0	10200H	26 Aug 09	7:04	JD
Nitrogen Total, Calculat	0.7	mg/L	NA	Calc	27 Aug 09	8:40	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	26 Aug 09	12:46	AKF
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	1 Sep 09	10:58	AKF
Phosphorus, Soluble Ortho	0.009	mq/L	0.005	EPA 365.1	25 Aug 09	15:42	AKF
Nitrogen, Total Kjeldahl	0.7	mg/L	0.2	SM 4500NorgB/NH3 E	27 Aug 09	8:40	TAM

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

WB 10/109

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sampl ! = Due to sampl ^ = Due to instr		to sample concentration to extract volume	
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 9	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

Lab Number: 09-A39556 Work Order #:12-11366 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 24 Aug 09 9:12 Sampled By: DL Date Received: 25 Aug 09 12:05 PO #: CRWD

Project Name: CRWD

Sample Description: LSE 01B

Temp at Receipt: 6.1C

Report Date: 3 Sep 09

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions					30 Aug 09 31 Aug 09	LMF JMS
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	1 Sep 09 10:58	
Phosphorus, Soluble Ortho	0.010	mg/L	0.005	EPA 365.1	25 Aug 09 15:42	
Iron	0.068	mg/L	0.015	6010	1 Sep 09 12:25	

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

WB (0/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" {<}: 0 = Due to sample matrix # ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration = Due to extract volume ND WW/DW # R-040 IA LAB #: 132 IA LAB #; 022

WI LAB # 999447660 ND MICRO # 1013-M CERTIFICATION: MN LAB # 027-015-125

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WES BOLL

Project Name: CRWD

Sample Description: LUN 01T

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Report Date: 11 Sep 09 Lab Number: 09-A40630 Work Order #:12-11638 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 8:35 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Temp at Receipt: 4.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest					6 Sep 09		LMF
Chlorophyll a	8.5	mg/cubic m	1.0	10200H	2 Sep 09	9:51	JD
Nitrogen Total, Calculat	1.2	mg/L	NA	Calc	3 Sep 09	8:00	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	2 Sep 09	14:00	AKF
Phosphorus, Total	0.018	mg/L	0.005	EPA 365.1	8 Sep 09	8:11	AKF
Phosphorus, Soluble Ortho	* 0.013	mg/L	0.005	EPA 365.1	2 Sep 09	8:41	AKF
Nitrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	,3 Sep 09	8:00	CJL

* Holding time Exceeded

Approved by:

NB 10/1109

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): ℓ = Due to sample matrix ! " Due to sample quantity # = Due to sample concentration
+ = Due to extract volume ! " Due to sample quanticy
^ = Due to instrument performance at RL WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAS #: 132 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125

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Report Date: 11 Sep 09

WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Lab Number: 09-A40631 Work Order #:12-11638 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 8:44 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Project Name: CRWD

Sample Description: LUN 01B

Temp at Receipt: 4.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.848 ~ mg/L 0.656 ~ mg/L 0.450 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Sep 09 8 Sep 09 8 Sep 09 8 Sep 09 8:11 2 Sep 09 8:41 9 Sep 09 15:17	AKF

~Sample diluted due to result above calibration or linear range.

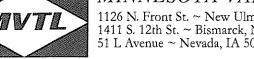
WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Report Date: 11 Sep 09 Lab Number: 09-A40632 Work Order #:12-11638 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 9:20 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

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

Project Name: CRWD

Sample Description: LBE 01T

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	10.5 2.5 0.24 0.272 ~ 0.223 ~ 2.3	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.20 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	6 Sep 09 2 Sep 09 9:51 3 Sep 09 8:00 2 Sep 09 14:00 8 Sep 09 8:11 2 Sep 09 8:41 3 Sep 09 8:00	Calculated AKF AKF AKF

~Sample diluted due to result above calibration or linear range.

NB 10/1/05

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample ! = Due to sample ^ = Due to instrum		to sample concentration to extract volume	
CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999	9447680 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 Report Date: 11 Sep 09 Lab Number: 09-A40633 Work Order #:12-11638 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 9:30 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Project Name: CRWD

Sample Description: LBE 01B

Temp at Receipt: 4.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.532 ~ mg/L 0.388 ~ mg/L 0.473 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Sep 09 8 Sep 09 8 Sep 09 8:11 2 Sep 09 8:41 9 Sep 09 15:17	AKF

~Sample diluted due to result above calibration or linear range.

Approved by:

1112

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

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Elevated "Less Than Result" (<); @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity ^ = Due to instrument performance at RL = Due to extract volume IA LAB #: 022 IA LAB #: 132 ND MICRO # 1013-M ND WW/DW # R-040 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680

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WES BOLL

Sample Description: LPL 01T

Project Name: CRWD

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1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

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Report Date: 11 Sep 09 Lab Number: 09-A40624 Work Order #:12-11637 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 10:29 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Temp at Receipt: 5.4C

	As Receí Result	ved	Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	7.6 1.4 < 0.2 0.030 0.025 1.4	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	6 Sep 0 2 Sep 0 3 Sep 0 2 Sep 0 8 Sep 0 2 Sep 0 2 Sep 0 3 Sep 0	9:51 8:00 14:00 7:53 8:41	Calculated AKF AKF AKF

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Elevated "Less Than Result" (<): 0 = Due to sample matrix # ! = Due to sample quantity + ^ = Due to instrument performance at RL # = 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 Report Date: 11 Sep 09 Lab Number: 09-A40625 Work Order #:12-11637 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 10:39 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Project Name: CRWD

Sample Description: LPL 01B

Temp at Receipt: 5.4C

1 of 1

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.286 ~ mg/L 0.166 mg/L 0.559 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Sep 09 8 Sep 09 8 Sep 09 7:53 2 Sep 09 8:41 9 Sep 09 15:17		

~Sample diluted due to result above calibration or linear range.

WB 10/109

Approved by:

Dan O'Connell, Asst. Chemistry 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 / = Due to instrument performance at RL 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

Sample Description: LNI 01T

Page: 1 of 1

Report Date: 11 Sep 09 Lab Number: 09-A40626 Work Order #:12-11637 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 11:30 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Temp at Receipt: 5.4C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	2.8 1.0 < 0.2 0.015 0.020 1.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	6 Sep 09 2 Sep 09 9:51 3 Sep 09 8:00 2 Sep 09 14:00 8 Sep 09 8:11 2 Sep 09 8:41 3 Sep 09 8:00	Calculated AKF AKF AKF

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

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Elevated "Less Than Result" (<): 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + ~ Due to extract volume ^ = Due to instrument performance at RL 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 Report Date: 11 Sep 09 Lab Number: 09-A40627 Work Order #:12-11637 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 11:40 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Project Name: CRWD

Sample Description: LNI 01B

Temp at Receipt: 5.4C

1 of 1

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.024 m	ng∕L ng∕L ng∕L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Sep 09 8 Sep 09 8 Sep 09 8:11 2 Sep 09 8:41 9 Sep 09 15:17	

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

IA LAB #: 022

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

WI LAB # 999447680 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.



WES BOLL

Project Name: CRWD

Sample Description: LWI 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

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Page: 1 of 1

Report Date: 11 Sep 09 Lab Number: 09-A40628 Work Order #:12-11637 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 12:30 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Temp at Receipt: 5.4C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	***************************************				6 Sep 09	LMF
Chlorophyll a	3.9	mg/cubic m	1.0	10200H	2 Sep 09 9:51	JD
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	3 Sep 09 8:00) Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	2 Sep 09 14:00) AKF
Phosphorus, Total	0.021	mg/L	0.005	EPA 365.1	8 Sep 09 8:11	
Phosphorus, Soluble Ortho	0.021	mq/L	0.005	EPA 365.1	2 Sep 09 8:41	AKF
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	3 Sep 09 8:00) CJL

WB [0/1/09

IA LAB #: 022

IA LAB #: 132

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL

CERTIFICATION: MN LAB # 927-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040

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WES BOLL

Project Name: CRWD

Sample Description: LWI 01B

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MAPLE PLAIN MN 55359-9000

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Page: 1 of 1

Report Date: 11 Sep 09 Lab Number: 09-A40629 Work Order #:12-11637 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 31 Aug 09 12:40 Sampled By: DL Date Received: 1 Sep 09 11:35 PO #: CRWD

Temp at Receipt: 5.4C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.036 r	mg∕L mg∕L mg∕L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Sep 09 8 Sep 09 8 Sep 09 8:11 2 Sep 09 8:41 9 Sep 09 15:17	AKF	

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix Due to sample concentration ! = Due to sample quantity ^ = Due to instrument performance at RL = 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

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 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.



WES BOLL

Project Name: CRWD

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Report Date: 14 Sep 09 Lab Number: 09-A41580 Work Order #:12-11875 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Sep 09 14:27 Sampled By: DL Date Received: 4 Sep 09 11:30 PO #: CRWD

Sample Description: LSC 01T

Temp at Receipt: 3.30

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					6 Sep 09	LMF
Chlorophyll a	90.5	mg/cubic m	1.0	10200H	8 Sep 09 7:00	JD
Nitrogen Total, Calculat	1.9	mg/L	NA	Calc	10 Sep 09 9:30	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	8 Sep 09 14:02	AKF
Phosphorus, Total	0.200	mg/L	0.005	EPA 365.1	14 Sep 09 11:01	DAP
Phosphorus, Soluble Ortho	0.072	mg/L	0.005	EPA 365.1	4 Sep 09 15:30	AKF
Nitrogen, Total Kjeldahl	1.9	mg/L	0.2	SM 4500NorgB/NH3 E	10 Sep 09 9:30	CJL

NB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Resul	t" (<): 0 = Due to s	ample matrix	# = Due to sample concentration
	! = Due to s	sample quantity	* = Due to extract volume
	^ = Due to i	instrument performance at R	L

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 Report Date: 14 Sep 09 Lab Number: 09-A41581 Work Order #:12-11875 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Sep 09 14:25 Sampled By: DL Date Received: 4 Sep 09 11:30 PO #: CRWD

Project Name: CRWD

Sample Description: LSC 01B

Temp at Receipt: 3.30

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.095	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	6 Sep 09 4 Sep 09 14 Sep 09 11:01 4 Sep 09 15:30 9 Sep 09 16:43	

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

🔆 = Reporting Limit

Elevated	"Less	Than	Result	;" (<);	@ =	Due t	o sample	e matrix		井 =	- Due	e to	sample	concentrati	on				
					_! =	Due t	o sample	≥ quantit	у	+ ≈	- Due	to to	extract	volume					
					^	Due t	o instru	ument per	formance at	RL									
CERTIFICA	TION:	MN LA	AB # 02	27-015-1	125	WI	LAB # 99	99447680	ND MICRO	# 101	13-M	1	ND WW/DW	# R-040	IA LAB 🕴	#: 132	IA LAB	H:	022



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Page: 1 of 1

Report Date: 24 Sep 09 Lab Number: 09-A42728 Work Order #:12-12225 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 10:32 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

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

Project Name: CRWD

Sample Description: LCWE 01T

Temp at Receipt: 7.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					21 Sep 09	AKF
Chlorophyll a	14.6	mg/cubic m	1.0	10200H	16 Sep 09 7:40	JD
Nitrogen Total, Calculat	1.1	mg/L	NA	Calc	18 Sep 09 10:45	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	16 Sep 09 13:34	AKF
Phosphorus, Total	0.026	mg/L	0.005	EPA 365.1	22 Sep 09 10:37	DAP
Phosphorus, Soluble Ortho	0.017	mq/L	0.005	EPA 365.1	15 Sep 09 15:52	AKF
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	18 Sep 09 10:45	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

WP 10/1/04

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulin, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration
+ = Due to extract volume WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA 1AB #: 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

Sample Description: LCWE 01B

1 of 1 Page:

Report Date: 24 Sep 09 Lab Number: 09-A42729 Work Order #:12-12225 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 10:32 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Temp at Receipt: 7.2C

	As Receiv Result	zed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.285 ~ 0.131 0.645	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:37 15 Sep 09 15:52 18 Sep 09 15:15	5:52 AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

WB 10/11/09

IA LAB #: 132

1A LAB #: 022

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

= 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



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Report Date: 24 Sep 09 Lab Number: 09-A42730 Work Order #:12-12225 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 11:11 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

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

Project Name: CRWD

Sample Description: LCWW 01T

Temp at Receipt: 7.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					21 Sep 09	AKF
Chlorophyll a	11.5	mg/cubic m	1.0	10200H	16 Sep 09 7:40	JD
Nitrogen Total, Calculat	1.1	mg/L	NA	Calc	18 Sep 09 10:45	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	16 Sep 09 13:34	AKF
Phosphorus, Total	0.025	mg/L	0.005	EPA 365.1	22 Sep 09 10:37	DAP
Phosphorus, Soluble Ortho	0.016	mg/L	0.005	EPA 365.1	15 Sep 09 15:52	AKF
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	18 Sep 09 10:45	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

– Reporting Limit

Elevated "Less Than Result" {<}: @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 24 Sep 09 Lab Number: 09-A42731

Work Order #:12-12225

Account #: 013173

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

Project Name: CRWD

Sample Description: LCWW 01B

Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 11:19

Temp at Receipt: 7.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho	0.026	mg/L mg/L	0.005	EPA 365.1 EPA 365.1	21 Sep 09 18 Sep 09 22 Sep 09 10:37 15 Sep 09 15:52	
Iron	0.109	mg/L	0.015	6010	18 Sep 09 15:52	

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

NB 10/1/04

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

🖙 Reporting Limít

Elevated "Less Than Result" <<>: @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Report Date: 24 Sep 09 Lab Number: 09-A42732 Work Order #:12-12225 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 11:48 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

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

Project Name: CRWD

Sample Description: LOT 01T

Temp at Receipt: 7.2C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		<u> </u>			21 Sep 09	AKF
Chlorophyll a	< 1	mg/cubic m	1.0	10200H	16 Sep 09 7:40	JD
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	18 Sep 09 10:45	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	16 Sep 09 13:34	AKF
Phosphorus, Total	0.016	mg/L	0.005	EPA 365.1	22 Sep 09 10:56	DAP
Phosphorus, Soluble Ortho	* 0.006	mg/L	0.005	EPA 365.1	24 Sep 09 15:52	AKF
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	18 Sep 09 10:45	CJL

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

The initial test for soluble ortho phosphorus was analyzed within

a 48 hour holding time.

Lue to posssible interference with the initial testing the sample was re-analyzed beyond the holding time.

* Holding time Exceeded

NB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit



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Report Date: 24 Sep 09 Lab Number: 09-A42733

Work Order #:12-12225

Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 11:48

Date Received: 15 Sep 09 11:30

Account #: 013173

Sampled By: DL

PO #: CRWD

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

Project Name: CRWD

Sample Description: LOT 01B

Temp at Receipt: 7.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.429 ~ mg/L 0.344 ~ mg/L 0.188 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:56 15 Sep 09 15:52 18 Sep 09 15:15	AKF

Client notified that temperature at receipt was outside the requirement specified in Minnesota Statute 4740.2087 Subpart 2.A.

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm MI

- Reporting Limit



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 24 Sep 09 Lab Number: 09-A42720 Work Order #:12-12223 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 9:26 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Project Name: CRWD

Sample Description: LAL 01T

Temp at Receipt: 5.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					21 Sep 09	AKF
Chlorophyll a	108	mg/cubic m	1.0	10200Н	16 Sep 09 7:40	JD
Nitrogen Total, Calculat	2.9	mg/L	NA	Calc	18 Sep 09 7:55	Calculated
Nitrate+Nitrite	< 0.2	mq/L as N	0.2	353.2	16 Sep 09 13:26	AKF
Phosphorus, Total	0.189	mg/L	0.005	EPA 365.1	22 Sep 09 10:19	DAP
Phosphorus, Soluble Ortho	0.059	mg/L	0.005	EPA 365.1	15 Sep 09 15:46	AKF
Nitrogen, Total Kjeldahl	2.9	mg/L	0.2	SM 4500NorgB/NH3 E	18 Sep 09 7:55	TAM

WB 10/1/09

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ = Due	to sample concentrat to extract volume	ion		
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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Report Date: 24 Sep 09 Lab Number: 09-A42721 Work Order #:12-12223 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 9:26 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

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

Project Name: CRWD

Sample Description: LAL 01B

Temp at Receipt: 5.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.172 0.108 0.045	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:19 15 Sep 09 15:46 18 Sep 09 14:28	AKF

NB 1011/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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

Sample Description: LSW 01T

Report Date: 24 Sep 09 Lab Number: 09-A42722 Work Order #:12-12223 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 9:54 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Temp at Receipt: 5.9C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite	221 6.0 < 0.2	mg/cubic m mg/L mg/L as N	1.0 NA 0.2	10200H Calc 353.2	21 Sep 09 16 Sep 09 7:40 18 Sep 09 10:45 16 Sep 09 13:26	Calculated
Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	0.449 ~ 0.022 6.0	mg/L mg/L mg/L	0.005 0.005 0.2	EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	22 Sep 09 10:37 15 Sep 09 15:46 18 Sep 09 10:45	AKF

~Sample diluted due to result above calibration or linear range.

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

WB 10/1/09

- Reporting Limit



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 24 Sep 09 Lab Number: 09-A42723 Work Order #:12-12223 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 9:54 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Project Name: CRWD

Sample Description: LSW 01B

Temp at Receipt: 5.9C

	As Receive Result	đ	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.380 ~ 0.046 0.343	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:37 15 Sep 09 15:46 18 Sep 09 14:28	AKF

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfe	+ = Due t	to sample concentrat to extract volume	ion		
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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Report Date: 24 Sep 09 Lab Number: 09-A42724 Work Order #:12-12224 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 12:28 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

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

Project Name: CRWD

Sample Description: LGR 01T

Temp at Receipt: 3.8C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	4.6 1.0 < 0.2 0.019 0.017 1.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	21 Sep 09 16 Sep 09 7:40 18 Sep 09 10:45 16 Sep 09 13:34 22 Sep 09 10:37 15 Sep 09 15:46 18 Sep 09 10:45	Calculated AKF DAP AKF

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

WB (0/1/04

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 24 Sep 09 Lab Number: 09-A42725 Work Order #:12-12224 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 12:35 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Project Name: CRWD

Sample Description: LGR 01B

Temp at Receipt: 3.8C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.371 ~ mg/L 0.239 ~ mg/L 0.087 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:37 15 Sep 09 15:46 18 Sep 09 14:28	

~Sample diluted due to result above calibration or linear range.

WB 10/1/09

IA LAB #: 022

IA LAB #: 132

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

WI LAB # 999447680

🖞 = Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

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



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Report Date: 24 Sep 09

Lab Number: 09-A42726

Work Order #:12-12224

Account #: 013173

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

Project Name: CRWD

Sample Description: LAU 01T

Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 12:58 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Temp at Receipt: 3.8C

	As Recei Result	veđ	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					21 Sep 09	AKF
Chlorophyll a	8.0	mg/cubic m	1.0	10200H	16 Sep 09 7:40	JD
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	18 Sep 09 10:45	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	16 Sep 09 13:34	AKF
Phosphorus, Total	0.025	mg/L	0.005	EPA 365.1	22 Sep 09 10:37	DAP
Phosphorus, Soluble Ortho	0.016	mg/L	0.005	EPA 365.1	15 Sep 09 15:52	AKF
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	18 Sep 09 10:45	CJL

NB 10/1/10

Approved by: 6

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

kL = Reporting Limit

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

Report Date: 24 Sep 09 Lab Number: 09-A42727 Work Order #:12-12224 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 13:08 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Project Name: CRWD

Sample Description: LAU 01B

Temp at Receipt: 3.8C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.609 ~ mg/L 0.501 ~ mg/L 0.090 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:37 15 Sep 09 15:52 18 Sep 09 14:28	

~Sample diluted due to result above calibration or linear range.

ND

IA LAB #: 132

IA LAB #: 022

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm,

WI LAB # 999447680

L = Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): ℓ = Due to sample matrix ! = Due to sample quantity # = Due to sample concentration
+ = Due to extract volume ! = Due to sample quantity ^ = Due to instrument performance at RL ND MICRO # 1013-M

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ND WW/DW # R-040



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Report Date: 24 Sep 09

Lab Number: 09-A42716

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

Project Name: CRWD

Sample Description: LCE 01T

Work Order #:12-12222 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 7:32 Sampled By: DL Date Received: 15 Sep 09 11:30 PC #: CRWD

Temp at Receipt: 5.0C

	As Recei Result	ved.	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a	7.4	mg/cubic m	1.0	10200H	21 Sep 09 16 Sep 09 7:40	
Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total	1.1 < 0.2 0.026	mg/L mg/L as N mg/L	NA 0.2 0.005	Calc 353.2 EPA 365.1	18 Sep 09 7:55 16 Sep 09 13:26 22 Sep 09 10:19	AKF
Phosphorus, local Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	0.008	mg/L mg/L	0.005	EPA 365.1 SM 4500NorgB/NH3 E	15 Sep 09 15:46 18 Sep 09 7:55	AKF

WB 10/1/09

IA LAB #: 022

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm. MN

WI LAB # 999447680

L = Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

- Due to sample concentration - Due to extract volume = Due to instrument performance at RL

ND MICRO # 1013-M

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ND WW/DW # R-040

IA LAB #: 132



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

Project Name: CRWD

Sample Description: LCE 01B

Temp at Receipt: 5.0C

Report Date: 24 Sep 09 Lab Number: 09-A42717

Work Order #:12-12222

Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 7:40

Date Received: 15 Sep 09 11:30

Account #: 013173

Sampled By: DL

PO #: CRWD

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.365 ~ mg/L 0.263 ~ mg/L 0.135 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:19 15 Sep 09 15:46 18 Sep 09 14:28	AKF

~Sample diluted due to result above calibration or linear range.

10/1/69

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

WI LAB # 999447680

L = Reporting Limit

CERTIFICATION: MN LAB # 027-015-125

Elevated "Less Than Result" (<): \underline{e} = Due to sample matrix $\underline{!}$ = Due to sample quantity # = Due to sample concentration
+ = Due to extract volume Due to instrument performance at RL ND MICRO # 1013-M ND WW/DW # R-040 IA LAS #: 132 IA 1.AB #: 022



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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 24 Sep 09 Lab Number: 09-A42718 Work Order #:12-12222 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 8:36 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

Sample Description: LHE 01T

Project Name: CRWD

Temp at Receipt: 5.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat	24.8 2.2	mg/cubic m mg/L	1.0 NA	10200Н Саlс	21 Sep 09 16 Sep 09 7:40 18 Sep 09 7:55	Calculated
Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	< 0.2 0.078 0.029 2.2	mg/L as N mg/L mg/L mg/L	0.2 0.005 0.005 0.2	353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	16 Sep 09 13:26 22 Sep 09 10:19 15 Sep 09 15:46 18 Sep 09 7:55	DAP AKF

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L = Reporting Limit

Elevated "Less Than Result" {<}: @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL

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

Report Date: 24 Sep 09 Lab Number: 09-A42719 Work Order #:12-12222 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Sep 09 8:36 Sampled By: DL Date Received: 15 Sep 09 11:30 PO #: CRWD

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

Project Name: CRWD

Sample Description: LHE 01B

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.029 n	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	21 Sep 09 18 Sep 09 22 Sep 09 10:19 15 Sep 09 15:46 18 Sep 09 14:28	

WB 10/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

L - Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447660 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

Page:



Project Name: CRWD

Sample Description: LCL 01T

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

Lab Number: 09-A44662 Work Order #:12-12697 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 7:50 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

1 of 1

Report Date: 1 Oct 09

Temp at Receipt: 4.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					26 Sep 09	LMF
Chlorophyll a	49.1	mg/cubic m	1.0	10200н	25 Sep 09 9:19	JD
Nitrogen Total, Calculat	1.4	mg/L	NA	Calc	30 Sep 09 9:35	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 Sep 09 12:21	DAP
Phosphorus, Total	0.153	mg/L	0.005	EPA 365.1	29 Sep 09 11:41	DAP
Phosphorus, Soluble Ortho	* 0.028	mg/L	0.005	EPA 365.1	25 Sep 09 8:34	DAP
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	30 Sep 09 9:35	CJL

The ortho phosphorus was analyzed beyond the holding time due to instrument failure delaying analysis.

* Holding time Exceeded

NB

Approved by: R. Dan Q. O'Cumb

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

		# ≈ Due to sample concentra	cion		
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680 ND MIC	RO # 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

Sample Description: LCL 01B

Temp at Receipt: 4.0C

Report Date: 1 Oct 09 Lab Number: 09-A44663

Work Order #:12-12697

Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 7:50

Date Received: 24 Sep 09 11:25

Account #: 013173

Sampled By: DL

PO #: CRWD

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.144 * 0.020 0.135	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	26 Sep 09 25 Sep 09 29 Sep 09 11:41 25 Sep 09 8:34 30 Sep 09 10:49	DAP

The ortho phosphorus was analyzed beyond the holding time due to instrument failure delaying analysis.

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit



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

Project Name: CRWD

Sample Description: LLI 01T

Report Date: 1 Oct 09 Lab Number: 09-A44664 Work Order #:12-12697 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 8:26 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					26 Sep 09	LMF
Chlorophyll a	5.0	mg/cubic m	1.0	10200H	25 Sep 09 9:19	JD
Nitrogen Total, Calculat	1.0	mg/L	NA	Calc	30 Sep 09 9:35	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	25 Sep 09 12:21	DAP
Phosphorus, Total	0.032	mg/L	0.005	EPA 365.1	29 Sep 09 11:41	DAP
Phosphorus, Soluble Ortho	* < 0.005	mg/L	0.005	EPA 365.1	25 Sep 09 8:34	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	30 Sep 09 9:35	CJL

The ortho phosphorus was analyzed beyond the holding time due to instrument failure delaying analysis.

* Holding time Exceeded

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Sampled By: DL

PO #: CRWD

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

Project Name: CRWD

Sample Description: LLI 01B

Temp at Receipt: 4.0C

Report Date: 1 Oct 09

Lab Number: 09-A44665

Work Order #:12-12697 Account #: 013173

Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 8:26

Date Received: 24 Sep 09 11:25

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.23 ~ * 0.014 7.190	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	26 Sep 09 25 Sep 09 29 Sep 09 11:59 25 Sep 09 8:34 30 Sep 09 10:49	DAP

The ortho phosphorus was analyzed beyond the holding time due to instrument failure delaying analysis.

* Holding time Exceeded

~Sample diluted due to result above calibration or linear range.

NY

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ = Due i	co sample concentrat: to extract volume	lon	
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

Sample Description: LSE 01T

Report Date: 1 Oct 09 Lab Number: 09-A44666 Work Order #:12-12697 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 9:23 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Temp at Receipt: 4.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	< 1 0.4 < 0.2 0.020 < 0.005 0.4	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	26 Sep 09 25 Sep 09 9: 30 Sep 09 9: 25 Sep 09 12: 29 Sep 09 11: 25 Sep 09 8: 30 Sep 09 9:	5 Calculated 1 DAP 9 DAP 4 DAP

ALLON

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 1 Oct 09 Lab Number: 09-A44667 Work Order #:12-12697 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 9:23 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Project Name: CRWD

Sample Description: LSE 01B

Temp at Receipt: 4.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.022 mg/L < 0.005 mg/L 0.227 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	26 Sep 09 25 Sep 09 29 Sep 09 11:59 25 Sep 09 8:34 30 Sep 09 10:49	DAP

12/11/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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

Project Name: CRWD

Sample Description: LMA 01T

Lab Number: 09-A44668 Work Order #:12-12698 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 10:35 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Temp at Receipt: 5.7C

Report Date: 1 Oct 09

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					26 Sep 09	LMF
Chlorophyll a	3.5	mg/cubic m	1.0	10200H	25 Sep 09 9:19	JD
Nitrogen Total, Calculat	1.0	mq/L	NA	Calc	30 Sep 09 9:35	Calculated
Nitrate+Nitrite	< 0.2	mg∕L as N	0.2	353.2	25 Sep 09 12:21	DAP
Phosphorus, Total	0.066	nq/L	0.005	EPA 365.1	29 Sep 09 11:59	DAP
Phosphorus, Soluble Ortho	< 0.005	mg/L	0.005	EPA 365.1	25 Sep 09 8:34	DAP
Nitrogen, Total Kjeldahl	1.0	mg/L	0.2	SM 4500NorgB/NH3 E	30 Sep 09 9:35	CJL

1211/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 1 Oct 09 Lab Number: 09-A44669 Work Order #:12-12698 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 10:35 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Project Name: CRWD

Sample Description: LMA 01B

Temp at Receipt: 5.7C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.45 ~ 1.17 ~ 0.424	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	26 Sep 09 25 Sep 09 29 Sep 09 11:59 25 Sep 09 8:34 30 Sep 09 10:49	

~Sample diluted due to result above calibration or linear range.

12/109

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" {<}: @ = Due to sample matrix # 4 Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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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Project Name: CRWD

Sample Description: LLO 01T

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Report Date: 1 Oct 09 Lab Number: 09-A44670 Work Order #:12-12698 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 10:11 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Temp at Receipt: 5.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
Phosphorus Water Digest Chlorophyll a	13.1	mg/cubic m	1.0	10200H	26 Sep 09 25 Sep 09	9:19	LMF JD
Nitrogen Total, Calculat Nitrate+Nitrite	0.6 < 0.2	mg/L mg/L as N	NA 0.2	Calc 353.2	30 Sep 09 25 Sep 09		Calculated DAP
Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	0.033 0.008 0.6	mg/L mg/L mg/L	0.005 0.005 0.2	EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	29 Sep 09 25 Sep 09 30 Sep 09	8:34	DAP

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IA LAB #: 022

IA LAB #: 132

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

WI LAB # 999447680

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CERTIFICATION: MN LAB # 027~015-125

ND MICRO # 1013-M

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 1 Oct 09 Lab Number: 09-A44671 Work Order #:12-12698 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 10:11 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

Sample Description: LLO 01B

Project Name: CRWD

Temp at Receipt: 5.7C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.68 ~ r	mg∕L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	26 Sep 09 25 Sep 09 29 Sep 09 11:59 25 Sep 09 8:34 30 Sep 09 10:49	LMF TB DAP DAP RMV

~Sample diluted due to result above calibration or linear range.

WB 12/1/09

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

	Due to sample matrix Due to sample quantity Due to instrument perfo	+ ≂ Due	to sample concentrati to extract volume	on	
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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Report Date: 1 Oct 09 Lab Number: 09-A44672 Work Order #:12-12698 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 11:05 Sampled By: DL Date Received: 24 Sep 09 11:25 PO #: CRWD

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

Project Name: CRWD

Sample Description: LCA 01T

Temp at Receipt: 5.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total	22.3 1.2 0.25 0.042	mg/cubic m mg/L mg/L as N mg/L	1.0 NA 0.20 0.005	10200H Calc 353.2 EPA 365.1	26 Sep 09 25 Sep 09 9:19 30 Sep 09 9:30 25 Sep 09 12:20 29 Sep 09 11:59	Calculated DAP
Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	0.007 1.0	mg/L mg/L	0.005 0.2	EPA 365.1 SM 4500NorgB/NH3 E	25 Sep 09 8:46 30 Sep 09 9:35	

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<); @ " Due to sample matrix # = Due to sample concentration ! = Due to sample quantity * " Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-D15-125 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

Sample Description: LCA 01B

Temp at Receipt: 5.7C

Report Date: 1 Oct 09 Lab Number: 09-A44673

Work Order #:12-12698

Sample Matrix: SURFACE WATER Date Sampled: 23 Sep 09 11:05

Date Received: 24 Sep 09 11:25

Account #: 013173

Sampled By: DL

PO #: CRWD

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	1.63 ~ mg/L 1.16 ~ mg/L 0.955 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	26 Sep 09 25 Sep 09 29 Sep 09 11:59 25 Sep 09 8:46 30 Sep 09 10:49	DAP

~Sample diluted due to result above calibration or linear range.

WB 17-11 has

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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Report Date: 14 Oct 09 Lab Number: 09-A45460 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 10:25 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

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

Project Name: CRWD

Sample Description: LBA 01T

Temp at Receipt: 5.90

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest				, <u>, , , , , , , , , , , , , , , , </u>	2 Oct 09	LMF
Chlorophyll a	6.1	mg/cubic m	1.0	10200H	1 Oct 09 7:31	JD
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	2 Oct 09 9:00	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	1 Oct 09 13:11	AKF
Phosphorus, Total	0.022	mg/L	0.005	EPA 365.1	6 Oct 09 9:30	DAP
Phosphorus, Soluble Ortho	< 0.005	mq/L	0.005	EPA 365.1	30 Sep 09 15:20	AKF
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	2 Oct 09 9:00	CJL

WB

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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	due to sample matrix Due to sample quantity Due to instrument performance at R	<pre># = Due to sample concentratio * = Due to extract volume L</pre>	a	
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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Report Date: 14 Oct 09 Lab Number: 09-A45461 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 10:30 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

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

Project Name: CRWD

Sample Description: LBA 01B

Temp at Receipt: 5.9C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.021 0.005 0.122	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:30 30 Sep 09 15:20 13 Oct 09 14:11	AKF

WB 211109

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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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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Project Name: CRWD

VTI

Sample Description: LNI 01T

Report Date: 14 Oct 09 Lab Number: 09-A45462 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 11:00 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 5.90

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	7.4 0.7 < 0.2 0.016 < 0.005 0.7	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Oct 09 1 Oct 09 7:31 2 Oct 09 9:00 1 Oct 09 13:11 6 Oct 09 9:30 30 Sep 09 15:20 2 Oct 09 9:00	Calculated AKF DAP AKF	

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Project Name: CRWD

Sample Description: LNI 01B

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Report Date: 14 Oct 09 Lab Number: 09-A45463 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 11:10 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 5.9C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.569 ~ mg/L 0.007 mg/L 21.20 ~ mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:30 30 Sep 09 15:20 7 Oct 09 11:22		

~Sample diluted due to result above calibration or linear range.

WB 12)1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

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Project Name: CRWD

Sample Description: LWI 01T

Page: 1 of 1

Report Date: 14 Oct 09 Lab Number: 09-A45464 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 11:46 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 5.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	9.6 1.2 < 0.2 0.028 < 0.005 1.2	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Oct 09 1 Oct 09 7:31 2 Oct 09 9:00 1 Oct 09 13:11 6 Oct 09 9:30 30 Sep 09 15:32 2 Oct 09 9:00	Calculated AKF DAP AKF	

UB 17/19

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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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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Project Name: CRWD

Sample Description: LWI 01B

Page: 1 of 1

Report Date: 14 Oct 09 Lab Number: 09-A45465 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 11:54 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 5.90

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.036 0.006 0.110	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:30 30 Sep 09 15:32 13 Oct 09 14:11		

NB 17/1/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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

Project Name: CRWD

Sample Description: LSC 01T

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Report Date: 14 Oct 09 Lab Number: 09-A45466 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 13:50 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 5.9C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest					2 Oct 09	LMF	
Chlorophyll a	57.1	mg/cubic m	1.0	10200H	1 Oct 09 7:31	JD	
Nitrogen Total, Calculat	2.3	mg/L	NA	Calc	2 Oct 09 9:00	Calculated	
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	1 Oct 09 13:11	AKF	
Phosphorus, Total	0.162	mg/L	0.005	EPA 365.1	6 Oct 09 9:30	DAP	
Phosphorus, Soluble Ortho	0.039	mq/L	0.005	EPA 365.1	30 Sep 09 15:32	AKF	
Nitrogen, Total Kjeldahl	2.3	mg/L	0.2	SM 4500NorgB/NH3 E	2 Oct 09 9:00	CJL	

WB 211/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Report Date: 14 Oct 09 Lab Number: 09-A45467 Work Order #:12-12887 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 13:57 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

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

Project Name: CRWD

Sample Description: LSC 01B

Temp at Receipt: 5.9C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst	
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.149 0.050 0.104	mg/L mg/L mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:30 30 Sep 09 15:32 13 Oct 09 14:11	AKF	

, TH 109

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

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Eleva	ted "Less Than Result"	!	Due tc	sample matrix sample quantity instrument perfo	+ =		to sample to extract	concentratio volume	n				
CERTI	FICATION: MN LAB # 027	~015-125	WI LA	AB # 999447680	ND MICRO # 101	3~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

Sample Description: LBE 01T

Report Date: 14 Oct 09 Lab Number: 09-A45454 Work Order #:12-12886 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 7:46 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 2.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	9.9 2.0 < 0.2 0.276 ~ 0.202 ~ 2.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Oct 09 1 Oct 09 7:3 2 Oct 09 9:0 1 Oct 09 13:0 6 Oct 09 9:1 30 Sep 09 15:2 2 Oct 09 9:0	2 AKF 2 DAP 0 AKF

~Sample diluted due to result above calibration or linear range.

WB

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

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

Project Name: CRWD

Sample Description: LBE 01B

Report Date: 14 Oct 09 Lab Number: 09-A45455 Work Order #:12-12886 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 7:54 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 2.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.305 ~ mg/L 0.165 mg/L 0.742 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:12 30 Sep 09 15:20 13 Oct 09 14:11	

~Sample diluted due to result above calibration or linear range.

911104

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

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 instrument performance at RL # = Due to sample concentration
* = Due to extract volume IA LAB #: 132 IA LAB #: 022

ND MICRO # 1013-M

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

ND WW/DW # R-040

WES BOLL

Project Name: CRWD

Sample Description: LUN 01T

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

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Page: 1 of 1

Report Date: 14 Oct 09 Lab Number: 09-A45456 Work Order #:12-12886 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 8:30 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 2.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	5.3 1.4 < 0.2 0.022 0.005 1.4	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Oct 09 1 Oct 09 7:31 2 Oct 09 9:00 1 Oct 09 13:02 6 Oct 09 9:12 30 Sep 09 15:20 2 Oct 09 9:00	Calculated AKF DAP AKF

·NB ,211/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<); @ = Due to sample matrix # = Due to sample concentration ! » Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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

Sample Description: LUN 01B

Lab Number: 09-A45457 Work Order #:12-12886 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 8:35 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 2.0C

Report Date: 14 Oct 09

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.947 ~ mg/L 0.762 ~ mg/L 0.440 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:12 30 Sep 09 15:20 13 Oct 09 14:11	AKF

~Sample diluted due to result above calibration or linear range.

10B

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 1A 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

MUTT

Sample Description: LPL 01T

Report Date: 14 Oct 09 Lab Number: 09-A45458 Work Order #:12-12886 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 9:33 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 2.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Chlorophyll a Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	13.7 1.0 < 0.2 0.047 < 0.005 1.0	mg/cubic m mg/L mg/L as N mg/L mg/L mg/L	1.0 NA 0.2 0.005 0.005 0.2	10200H Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	2 Oct 09 1 Oct 09 7:31 2 Oct 09 9:00 1 Oct 09 13:11 6 Oct 09 9:12 30 Sep 09 15:20 2 Oct 09 9:00	Calculated AKF DAP AKF

WBIIDA

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Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit



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

Project Name: CRWD

Sample Description: LPL 01B

Report Date: 14 Oct 09 Lab Number: 09-A45459 Work Order #:12-12886 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 29 Sep 09 9:42 Sampled By: DL Date Received: 30 Sep 09 11:05 PO #: CRWD

Temp at Receipt: 2.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Water Digestions Phosphorus, Total Phosphorus, Soluble Ortho Iron	0.386 ~ mg/L 0.215 ~ mg/L 0.523 mg/L	0.005 0.005 0.015	EPA 365.1 EPA 365.1 6010	2 Oct 09 5 Oct 09 6 Oct 09 9:30 1 Oct 09 8:46 13 Oct 09 14:11	

~Sample diluted due to result above calibration or linear range.

BING BING

IA LAB #: 132

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

- Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # i = Due to sample quantity # ^ = Due to instrument performance at RL # - Due to sample concentration + = Due to extract volume IA LAB #: 022

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

Stream Data





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

Project Name: CRWD

Sample Description: WK 0.2

Page: 1 of 1

Report Date: 21 Oct 09 Lab Number: 09-A47659 Work Order #:12-13415 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 8 Oct 09 9:20 Sampled By: WES B Date Received: 9 Oct 09 14:20 PO #: CRWD

Temp at Receipt: 0.8C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	2 1.3 < 0.2 0.108 0.081 1.3	mg/L mg/L mg/L as N mg/L mg/L mg/L	2 NA 0.2 0.005 0.005 0.2	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	18 Oct 09 9 Oct 09 15:40 16 Oct 09 9:55 15 Oct 09 13:37 20 Oct 09 9:52 9 Oct 09 15:55 16 Oct 09 9:55	Calculated RMV AKF AKF



Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager. New Ulm, MN

Reporting Limit



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Project Name: CRWD

Sample Description: CR 28.2

Page: 1 of 1

Report Date: 21 Oct 09 Lab Number: 09-A47660 Work Order #:12-13415 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 8 Oct 09 10:15 Sampled By: WES B Date Received: 9 Oct 09 14:20 PO #: CRWD

Temp at Receipt: 0.8C

	As Receiv Result	7ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho Nitrogen, Total Kjeldahl	3 7.5 5.58 0.272 ~ 0.224 ~ 1.9	mg/L mg/L mg/L as N mg/L mg/L mg/L	2 NA 0.20 0.005 0.005 0.2	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	20 Oct 09 9:52 9 Oct 09 15:55	Calculated RMV AKF

~Sample diluted due to result above calibration or linear range.

11/03/01

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

		o sample concentration o 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

Sample Description: TB 33.2

Page: 1 of 1

Report Date: 21 Oct 09 Lab Number: 09-A47661 Work Order #:12-13415 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 8 Oct 09 10:50 Sampled By: WES B Date Received: 9 Oct 09 14:20 PO #: CRWD

Temp at Receipt: 0.8C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Ortho	4 13.1 10.9 0.488 ~ 0.415 ~	mg/L mg/L mg/L as N mg/L mg/L	2 NA 0.20 0.005 0.005	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1	16 Oct 09 9:55 15 Oct 09 13:46 20 Oct 09 9:52	RMV
Nitrogen, Total Kjeldahl	2.2	mg/L	0.2	SM 4500NorgB/NH3 E	16 Oct 09 9:55	

~Sample diluted due to result above calibration or linear range.

NA

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Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

Reporting Limit

Elevated "Less Than Result" (<): 8 = Due to sample matrix ! = Due to sample quantity + = Due to sample quantity ^ = Due to instrument performance at RL 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

Page: 1 of 1

Report Date: 15 Sep 09 Lab Number: 09-A41571 Work Order #:12-11873 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Sep 09 12:50 Sampled By: DL Date Received: 4 Sep 09 11:30 PO #: CRWD

Sample Description: WR 0.2

Project Name: CRWD

Temp at Receipt: 3.8C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest		<u></u>			6 Sep 09	LMF
Solids, Total Suspended	25	mg/L	2	USGS I-3765-85	4 Sep 09 13:15	TWS
Fecal Coliform, MF	* < 10	CFU/100 mL	10.	SM 9222D 20th Ed	4 Sep 09 16:40	MKG
Nitrogen Total, Calculat	1.5	mg/L	NA	Calc	10 Sep 09 9:30	Calculated
Nitrate+Nitrite	0.21	mg/L as N	0.20	353.2	8 Sep 09 13:54	AKF
Phosphorus, Total	0.122	mg/L	0.005	EPA 365.1	14 Sep 09 10:25	DAP
Phosphorus, Soluble Ortho	* 0.119 ~	ma/L	0.005	EPA 365.1	15 Sep 09 15:30	
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	10 Sep 09 9:30	CJL
CFU = Colony Forming Units			* Holding t	ime Exceeded		

~Sample diluted due to result above calibration or linear range.

WB 11/2/0

Approved by:

Dan O'Connell, Asst. Chemistry Lab Manager. New Ulm, MN

Annu

Jesse L Portner, Microbiology Lab Manager New Ulm, MN

🚊 Reporting Limit					
	Due to sample matrix Due to sample quantity Due to instrument perfo	+ = Due	to sample concentrat to extract volume	ion	
CERTIFICATION: MN LAB # 027-015-125		ND MICRO # 1013-M			IA LAB #: 022



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Project Name: CRWD

Sample Description: TB 33.2

Page: 1 of 1

Report Date: 15 Sep 09 Lab Number: 09-A41572 Work Order #:12-11873 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Sep 09 15:15 Sampled By: DL Date Received: 4 Sep 09 11:30 PO #: CRWD

Temp at Receipt: 3.8C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					6 Sep 09	LMF
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	4 Sep 09 13:15	TWS
Fecal Coliform, MF	* 110	CFU/100 mL	10.	SM 9222D 20th Ed	4 Sep 09 16:40	MKG
Nitrogen Total, Calculat	7.3	mg/L	NA	Calc	10 Sep 09 9:30	Calculated
Nitrate+Nitrite	5.86	mg/L as N	0.20	353.2	8 Sep 09 13:54	AKF
Phosphorus, Total	0.306 ~	mg/L	0.005	EPA 365.1	14 Sep 09 10:25	DAP
Phosphorus, Soluble Ortho	0.248 ~	mg/L	0.005	EPA 365.1	4 Sep 09 15:30	AKF
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	10 Sep 09 9:30	CJL
CFU = Colony Forming Units			* Holding t	ime Exceeded		

~Sample diluted due to result above calibration or linear range.

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Approved by:

Dan O'Connell, Asst. Chemistry Lab Manager. New Ulm, MN

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Jesse L Portner, Microbiology Lab Manager New Ulm, MN

- Reporting Limit					
	Due to sample matrix Due to sample quantity Due to instrument perfor	+ = Due t	o sample concentrati o extract volume	ion	
CERTIFICATION: MN LAB # 027-015-125			ND WW/DW # R-040		

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Project Name: CRWD

Approved by:

Sample Description: CR 28.2

Page: 1 of 1

Report Date: 15 Sep 09 Lab Number: 09-A41573 Work Order #:12-11873 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 3 Sep 09 15:41 Sampled By: DL Date Received: 4 Sep 09 11:30 PO #: CRWD

Temp at Receipt: 3.8C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest				,, <u>-</u>	6 Sep 09	LMF
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	4 Sep 09 13:15	TWS
Fecal Coliform, MF	* 110	CFU/100 mL	10.	SM 9222D 20th Ed	4 Sep 09 16:40	MKG
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	10 Sep 09 9:30	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	8 Sep 09 13:54	AKF
Phosphorus, Total	0.336 ~	mq/L	0.005	EPA 365.1	14 Sep 09 10:25	DAP
Phosphorus, Soluble Ortho	0.250 ~	mg/L	0.005	EPA 365.1	4 Sep 09 15:30	AKF
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	10 Sep 09 9:30	CJL
CFU = Colony Forming Units			* Holding t	ime Exceeded		

~Sample diluted due to result above calibration or linear range.

Dan O'Connell, Asst. Chemistry Lab Manager New Ulm, MN

essantru

Jesse L Portner, Microbiology Lab Manager New Ulm, MN

= Reporting Limit						
	Due to sample matrix Due to sample quantity Due to instrument perf	+ - Due	to sample concentrat to extract volume	ion		
CERTIFICATION: MN LAB # 027-015-125	WI LAB # 999447680	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 STREAMS

Sample Description: CR 28.2

Page: 1 of 1

Report Date: 3 Apr 09 Lab Number: 09-A10487 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 9:15 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05 PO #: 0002-129

Temp at Receipt: -1.0C

	As Receiv Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	······				29 Mar 09	KAD
Solids, Total Suspended	26	mg/L	2	USGS 1-3765-85	27 Mar 09 17:45	SM
Nitrogen Total, Calculat	6.2	mg/L	NA	Calc	1 Apr 09 8:40	Calculated
Nítrate+Nitrite	3.44	mg/i as N	0.20	353.2	30 Mar 09 12:37	AKF
Phosphorus, Total	0.470	mq/L	0.005	EPA 365.1	31 Mar 09 11:43	AKF
Phosphorus, Soluble Ortho	* 0.263 ~	mg/L	0.005	EPA 365.1	2 Apr 09 9:00	DAP
Nitrogen, Total Kjeldahl	2.8	mg/L	0.2	SM 4500NorgB/NH3 E	1 Apr 09 8:40	CJL

* Holding time Exceeded

~Sample diluted due to result above calibration or linear range.

WB 1109

S Approved by Jason G. Smith, Chemistry



or



Laboratory Manager New Ulm, MN

L = Reporting Limit

Elevated "Less Than Result" (<): 0 - Due to sample matrix ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration + - Due to extract volume WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R+040 IA LAB #: 022 CERTIFICATION: MN LAB # 027-015-125 IA LAB #: 132



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

Project Name: CLEARWATER

Sample Description: CR 28.2

Page: 1 of 1

Report Date: 22 Apr 09 Lab Number: 09-A14484 Work Order #:12-5632 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 15 Apr 09 12:32 Sampled By: DENNIS L Date Received: 16 Apr 09 12:25 PO #: CRWD

Temp at Receipt: 5.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Apr 09	KAD
Solids, Total Suspended	3	mg/L	2	USGS I-3765-85	16 Apr 09 15:05	SM
Nitrogen Total, Calculat	3.3	mq/L	NA	Calc	22 Apr 09 14:09	Calculated
Nitrate+Nitrite	1.86	mg/L as N	0.20	353.2	22 Apr 09 14:09	DAP
Phosphorus, Total	0.141	mg/L	0.005	EPA 365.1	21 Apr 09 11:42	AKF
Phosphorus, Soluble Ortho	0.079	mg/L	0.005	EPA 365.1	17 Apr 09 10:38	DAP
Nitrogen, Total Kjeldahl	1.4	mg/L	0.2	SM 4500NorgB/NH3 E	21 Apr 09 7:25	CJL

WB 1172/09

Approved by: Jason G. Smith, Chemistry Laboratory Manager New Ulm, MN



Laboratory Manager New Ulm, MN

or

= Reporting Limit

- Due to sample concentration Elevated "Less Than Result" (<): 8 = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument performance at RL - Due to extract volume ND MICRO # 1013-M ND WW/DW & B+040 TA LAB #: 332 TA LAB 8: 022 CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680



WES BOLL

Project Number: 0002-129

Sample Description: CR 28.2

WENCK ASSOCIATES INC

1800 PIONEER CRK CTR

MAPLE PLAIN MN 55359-9000

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Page: 1 of 1

Report Date: 17 Jun 09 Lab Number: 09-A24925 Work Order #:12-8107 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jun 09 13:00 Sampled By: DL Date Received: 10 Jun 09 11:30 PO #: CRWD

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	· · ·				11 Jun 09	LMF
Solids, Total Suspended	5	mg/L	2	USGS I-3765-85	10 Jun 09 13:20	RMV
Nitrogen Total, Calculat	1.2	mg/L	NA	Calc	12 Jun 09 11:46	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	12 Jun 09 11:46	AKF
Phosphorus, Total	0.269 ~	mg/L	0.005	EPA 365.1	16 Jun 09 13:58	AKF
Phosphorus, Soluble Ortho	* 0.179 ~	mg/L	0.005	EPA 365.1	17 Jun 09 8:47	KAD
Nitrogen, Total Kjeldahl	1.2	mg/L	0.2	SM 4500NorgB/NH3 E	11 Jun 09 9:30	DSH

Soluble Ortho Phosphorus was greater than Total Phosphorus after original analysis. Soluble Ortho Phosphorus was refiltered and reanalyzed beyond holding time.

* Holding time Exceeded

Sample diluted due to result above calibration or linear range.

11/2/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulre, MN

- Reporting Limit



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

Project Name: 0002-129

Sample Description: CR 28.2

Report Date: 20 Jul 09 Lab Number: 09-A30631 Work Order #:12-9460 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jul 09 15:13 Date Received: 10 Jul 09 11:50 PO #: CRWD

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					13 Jul 09	LMF
Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	16 Jul 09 12:50	SM
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	16 Jul 09 10:59	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	16 Jul 09 10:59	DAP
Phosphorus, Total	0.484 ~	mg/L	0.005	EPA 365.1	14 Jul 09 11:21	AKF
Phosphorus, Soluble Ortho	0.422 ~	mq/L	0.005	EPA 365.1	10 Jul 09 15:45	DAP
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	15 Jul 09 7:50	CJL

~Sample diluted due to result above calibration or linear range.

WB

Approved by: R

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Name: CRWD

Project Number: 0002-130 Sample Description: FD1

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MAPLE PLAIN MN 55359-9000

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Page: 1 of 1

Report Date: 27 May 09 Lab Number: 09-A21114 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest			•		20 May 09	DAP
Solids, Total Suspended	84 mg	I/L	2	USGS I-3765-85	20 May 09 11:45	
Phosphorus, Total	0.214 ~ mg	/L	0.005	EPA 365.1	26 May 09 13:09	KAD
Phosphorus, Soluble Ortho	* 0.044 mg	/L	0.005	EPA 365.1	20 May 09 9:15	KAD

* Holding time Exceeded

No collection time supplied by the client.

~Sample diluted due to result above calibration or linear range.

Approved by:	Jason G. Smith, Chemistry Laboratory Manager New Ulm, MN	or Dan O'Connell, Asst. Laboratory Manager			
- Reportin	g Limit				
Elevated "Les	s Than Result" (<): @ = Due to sample ! = Due to sample ^ = Due to instru		<pre># = Due to sample concentrat + = Due to extract volume</pre>	ion	
CERTIFICATION	: MN LAB # 027-015-125 WI LAB # 99	99447680 ND MICRO # 3	1013-M ND WW/DW # R-040	IA LAB \$: 132	IA LAB #: 022



Project Name: CRWD STREAMS

Sample Description: SCE01

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

Lab Number: 09-A10489 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 10:30 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

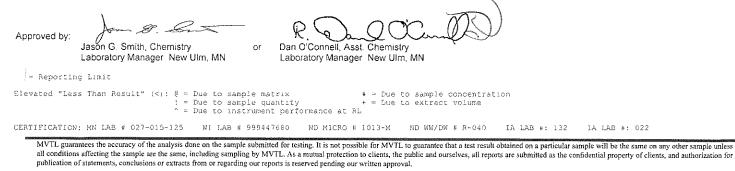
Temp at Receipt: -1.0C

Report Date: 3 Apr 09

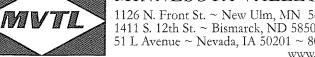
	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Phosphorus, Total Phosphorus, Soluble Ortho	0.037 * 0.017	mg/L mg/L	0.005 0.005	EPA 365.1 EPA 365.1	29 Mar 09 31 Mar 09 11:43 2 Apr 09 9:00	KAD AKF DAP

* Holding time Exceeded

WB



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Project Name: CRWD STREAMS Project Number: 0002-130 Sample Description: SCE 01

1 of 1 Page:

Report Date: 21 Apr 09 Lab Number: 09-A14090 Work Order #:12-5536 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Apr 09 8:30 Sampled By: WB Date Received: 15 Apr 09 9:50 PO #: 0002-130WB

Temp at Receipt: 1.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Phosphorus, Total Phosphorus, Soluble Ortho	0.034 mg/L < 0.005 mg/L	0.005	EPA 365.1 EPA 365.1	19 Apr 09 21 Apr 09 9:5 16 Apr 09 6:5	

NB





WES BOLL

Project Name: CRWD

Project Number: 0002-130 Sample Description: SCE 01

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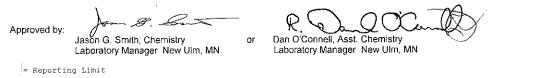


Page: 1 of 1

Report Date: 27 May 09 Lab Number: 09-A21109 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 14:15 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest				20 May 09	DAP
Phosphorus, Total	0.032 mg/L	0.005	EPA 365.1	26 May 09 12:51	KAD
Phosphorus, Soluble Ortho	< 0.005 mg/L	0.005	EPA 365.1	20 May 09 9:15	KAD





WES BOLL

Project Name: CRWD STREAMS

Sample Description: SDD01

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Page: 1 of 1

Report Date: 3 Apr 09 Lab Number: 09-A10495 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 12:15 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

Temp at Receipt: -1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	10 0.270 * 0.197	mg/L mg/L mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	29 Mar 09 31 Mar 09 14:00 31 Mar 09 11:43 2 Apr 09 9:00	AKF

* Holding time Exceeded

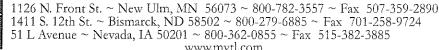
WB

54 Approved by Jason G. Smith. Chemistry Dan O'Connell, Asst. Chemistry or Laboratory Manager New Ulm, MN Laboratory Manager New Ulm, MN - Reporting Limit Elevated "Less Than Result" (<): 8 = Due to sample matrix 4 : = Due to sample quantity 4 ^ = Due to instrument performance at RL # = 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 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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Project Name: CRWD STREAMS

Sample Description: SDD 01

Project Number: 0002-130

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Report Date: 21 Apr 09 Lab Number: 09-A14087 Work Order #:12-5536 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Apr 09 10:45 Sampled By: WB Date Received: 15 Apr 09 9:50 PO #: 0002-130WB

Temp at Receipt: 1.0C

1 of 1

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	3 0.140 0.097	mg/L mg/L mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	19 Apr 09 15 Apr 09 15:00 21 Apr 09 9:39 16 Apr 09 6:53	AKF

IN/B

P P Approved by: Jason G. Smith, Chemistry Dan O'Connell, Asst. Chemistry or Laboratory Manager New Ulm, MN Laboratory Manager New Ulm, MN } = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + * Due to extract volume ^ * Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Name: CRWD

Project Number: 0002-130 Sample Description: SEGNER

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Report Date: 27 May 09 Lab Number: 09-A21115 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 16:30 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	21 mg/L 0.202 ~ mg/L 0.035 mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	20 May 09 20 May 09 11:45 26 May 09 13:09 20 May 09 9:15	KAD

~Sample diluted due to result above calibration or linear range.

P Approved by: Jason G. Smith, Chemistry or Laboratory Manager New Ulm, MN



Laboratory Manager New Ulm, MN

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WES BOLL

Project Name: CRWD STREAMS

Sample Description: SHE01

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Report Date: 3 Apr 09 Lab Number: 09-A10493 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 12:30 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

Temp at Receipt: -1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended	4	mg/L	2	USGS 1-3765-85	29 Mar 09 27 Mar 09 17:45	
Phosphorus, Total Phosphorus, Soluble Ortho	0.266 * 0.154	mg/L mg/L	0.005 0.005	EPA 365.1 EPA 365.1	31 Mar 09 11:43 2 Apr 09 9:00	

* Holding time Exceeded

Approved by Jason G. Smith, Chemistry Dan O'Connell, Asst. Chemistry or Laboratory Manager New Ulm, MN Laboratory Manager New Ulm, MN - Reporting Limit Elevated "Less Than Result" (<): @ = Due to sample matrix # ! = Due to sample quantity # ^ = Due to instrument performance at RL # = 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 LAS #: 022



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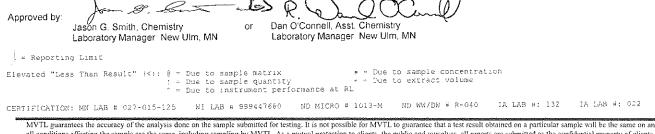
Page: 1 of 1

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

Project Name: CRWD STREAMS Project Number: 0002-130 Sample Description: SHE 01 Report Date: 21 Apr 09 Lab Number: 09-A14086 Work Order #:12-5536 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Apr 09 11:00 Sampled By: WB Date Received: 15 Apr 09 9:50 PO #: 0002-130WB

Temp at Receipt: 1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	13 0.188 0.033	mg∕L mg∕L mg∕L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	19 Apr 09 15 Apr 09 15:00 21 Apr 09 9:39 16 Apr 09 6:53	AKF





WES BOLL

Project Number: 0002-130 Sample Description: SHE01

Project Name: CRWD

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Report Date: 27 May 09 Lab Number: 09-A21112 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 15:45 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	10	/ 7			20 May 09	DAP
Solids, Total Suspended	12	mg/L	2	USGS I-3765-85	21 May 09 16:00	
Phosphorus, Total	0.140	mg/L	0.005	EPA 365.1	26 May 09 13:09	KAD
Phosphorus, Soluble Ortho	0.037	mg/L	0.005	EPA 365.1	20 May 09 9:15	KAD

 \leq Approved by: Jason G. Smith, Chemistry Dan O'Connell, Asst. Chemistry or Laboratory Manager New Ulm, MN Laboratory Manager New Ulm, MN - Reporting Limit Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument performance at RL # = Due to sample concentration
+ = Due to extract volume

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Project Name: CRWD STREAMS

Sample Description: SSW01

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WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000 Report Date: 3 Apr 09 Lab Number: 09-A10490 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 11:30 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

Temp at Receipt: -1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	· · · · · ·				29 Mar 09	KAD
Solids, Total Suspended	3	mg/L	2	USGS I~3765~85	27 Mar 09 17:45	SM
Phosphorus, Total	0.066	mg/L	0.005	EPA 365.1	31 Mar 09 11:43	AKF
Phosphorus, Soluble Ortho	* 0.010	mg/L	0.005	EPA 365.1	2 Apr 09 9:00	DAP

* Holding time Exceeded

WP

ķ Approved by: Jason G. Smith, Chemistry Dan O'Connell, Asst, Chemistry or Laboratory Manager New Ulm, MN 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 / = Due to instrument performance at RL WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # 8-040 IA LAB #: 132 IA LAB #: 022 FRTIFICATION: MN LAB # 027-015-125 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

Wy it guarantees the accuracy of the analysis done on the sample submittee for testing, it is no possible for My it 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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Project Name: CRWD STREAMS Project Number: 0002-130 Sample Description: SSW 01

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Page: 1 of 1

Report Date: 21 Apr 09 Lab Number: 09-A14089 Work Order #:12-5536 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Apr 09 9:45 Sampled By: WB Date Received: 15 Apr 09 9:50 PO #: 0002-130WB

Temp at Receipt: 1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total	6 0.127	mg/L mg/L	2	USGS I-3765-85 EPA 365.1	19 Apr 09 15 Apr 09 15:00 21 Apr 09 9:39	
Phosphorus, Soluble Ortho	0.014	mg/L	0.005	EPA 365.1	16 Apr 09 6:53	

WB

IA LAB #: 132

IA LAB #: 022

Approved by:	Jason G. Smith, Cher Laboratory Manager		Dan O'Connell, Asst. Laboratory Manager	
= Reportin	ig Limit			
Elevated "Les	s Than Result" (<):	<pre>0 > Due to sample m 1 = Due to sample q ^ = Due to instrume</pre>		<pre># = Due to sample concentration # = Due to extract volume</pre>

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

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

WES BOLL

Project Name: CRWD

CERTIFICATION: MN LAB # 027-015-125

Project Number: 0002-130 Sample Description: SSW01

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Report Date: 27 May 09 Lab Number: 09-A21110 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 14:45 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	64 mg/L 0.966 ~ mg/L < 0.005 mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1		KAD

~Sample diluted due to result above calibration or linear range.

NB

IA LAS #: 132

IA LAB #: 022

P K Approved by: Jason G. Smith, Chemistry Dan O'Connell, Asst. Chemistry or Laboratory Manager New Ulm, MN Laboratory Manager New Ulm, MN - Reporting Limit Elevated "Less Than Result" (<): @ = Due to sample matrix in ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration
+ = Due to extract volume ND MICRO # 1013-M ND WW/DW # R-040

W1 LAB # 999447680



WES BOLL

Project Name: CRWD STREAMS

Sample Description: SSW02

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Report Date: 3 Apr 09 Lab Number: 09-A10491 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 12:00 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

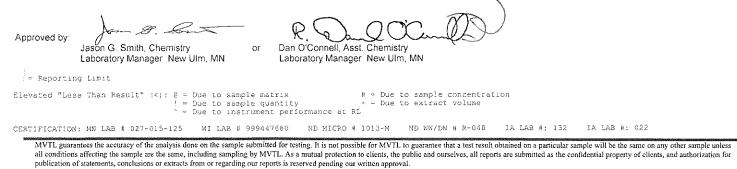
Temp at Receipt: -1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	9 0.462 * 0.275 ~	mg/L mg/L mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	29 Mar 09 27 Mar 09 17:45 31 Mar 09 11:43 2 Apr 09 9:00	

* Holding time Exceeded

~Sample diluted due to result above calibration or linear range.

WD



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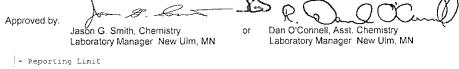
Page: 1 of 1

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

Project Name: CRWD STREAMS Project Number: 0002-130 Sample Description: SSW 02 Report Date: 21 Apr 09 Lab Number: 09-A14088 Work Order #:12-5536 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Apr 09 10:30 Sampled By: WB Date Received: 15 Apr 09 9:50 PO #: 0002-130WB

Temp at Receipt: 1.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	2 0.189 0.081	mg/L mg/L mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	19 Apr 09 15 Apr 09 15:00 21 Apr 09 9:39 16 Apr 09 6:53	AKF



Elevated "Less Than Result" (<): @ = Due to sample matrix # A Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447660 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Name: CRWD

Project Number: 0002-130 Sample Description: SSW02

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Page: 1 of 1

Report Date: 27 May 09 Lab Number: 09-A21111 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 15:15 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended	3 mg/L	2	USGS I-3765-85	20 May 09 21 May 09 16:00	DAP SM
Phosphorus, Total Phosphorus, Soluble Ortho	0.333 ~ mg/L 0.165 mg/L	0.005	EPA 365.1 EPA 365.1	26 May 09 12:51	KAD

~Sample diluted due to result above calibration or linear range.

1.00



P \leq Approved by: Jason G. Smith, Chemistry Dan O'Connell, Asst. Chemistry ог Laboratory Manager New Ulm, MN Laboratory Manager New Ulm, MN - Reporting Limit # = Due to sample concentration
+ = Due to extract volume



WES BOLL

Project Name: CRWD STREAMS

Sample Description: SSW04

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Page: 1 of 1

Report Date: 3 Apr 09 Lab Number: 09-A10494 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 13:00 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

Temp at Receipt: -1.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	12 0.446 * 0.262 ~	mg/L mg/L mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	29 Mar 09 27 Mar 09 17:45 31 Mar 09 11:43 2 Apr 09 9:00	KAD SM AKF DAP

* Holding time Exceeded

~Sample diluted due to result above calibration or linear range.



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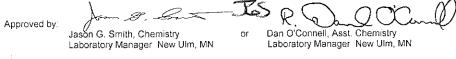
Page: 1 of 1

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

Project Name: CRWD STREAMS Project Number: 0002-130 Sample Description: SSW04 Report Date: 21 Apr 09 Lab Number: 09-A14085 Work Order #:12-5536 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 14 Apr 09 11:30 Sampled By: WB Date Received: 15 Apr 09 9:50 PO #: 0002-130WB

Temp at Receipt: 1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended	27	mg/L	2	USGS I-3765-85	19 Apr 09 15 Apr 09 15:00	KAD SM
Phosphorus, Total Phosphorus, Soluble Ortho	0.191 0.021	mg/L mg/L	0.005 0.005	EPA 365.1 EPA 365.1	21 Apr 09 9:39 16 Apr 09 6:53	



> * Reporting Limit

Elevated "Less Than Result" (<): 0 " Due to sample matrix # " Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Name: CRWD

Project Number: 0002-130 Sample Description: SSW04

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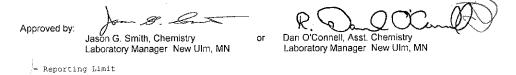


Page: 1 of 1

Report Date: 27 May 09 Lab Number: 09-A21113 Work Order #:12-7116 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 18 May 09 16:15 Sampled By: WB Date Received: 19 May 09 15:40

Temp at Receipt: -1.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Phosphorus, Total Phosphorus, Soluble Ortho	128 0.192 0.042	mg/L mg/L mg/L	2 0.005 0.005	USGS I-3765-85 EPA 365.1 EPA 365.1	20 May 09 20 May 09 11:45 26 May 09 13:09 20 May 09 9:15	KAD





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

Project Name: CRWD STREAMS

Sample Description: TB 33.2

Report Date: 3 Apr 09 Lab Number: 09-A10486 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 8:30 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05 PO #: 0002-129

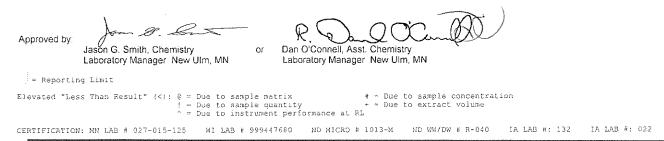
Temp at Receipt: -1.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 Mar 09	KAD
Solids, Total Suspended	56	mg/L	2	USGS I-3765-85	27 Mar 09 17:45	SM
Nítrogen Total, Calculat	10.4	mg/L	NA	Calc	1 Apr 09 8:40	Calculated
Nitrate+Nitrite	6.19	mg/L as N	0.20	353.2	30 Mar 09 12:28	AKF
Phosphorus, Total	0.628	mg/L	0.005	EPA 365.1	31 Mar 09 11:43	AKF
Phosphorus, Soluble Ortho	* 0.380 ~	mg/L	0.005	EPA 365.1	2 Apr 09 9:00	DAP
Nitrogen, Total Kjeldahl	4.2	mg/L	0.2	SM 4500NorgB/NH3 E	1 Apr 09 8:40	CJL

* Holding time Exceeded

-Sample diluted due to result above calibration or linear range.

WV 1112/109





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

Project Name: CLEARWATER

Sample Description: TB 33.2

Report Date: 22 Apr 09 Lab Number: 09-A14483 Work Order #:12-5632 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 15 Apr 09 13:33 Sampled By: DENNIS L Date Received: 16 Apr 09 12:25 PO #: CRWD

Temp at Receipt: 5.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	4 7.2 5.62 0.265 ~ 0.215 ~ 1.6	mg/L mg/L mg/L as N mg/L mg/L mg/L	2 NA 0.20 0.005 0.005 0.2	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NordB/NH3 E	19 Apr 09 16 Apr 09 15:05 22 Apr 09 14:09 22 Apr 09 14:09 21 Apr 09 11:42 17 Apr 09 10:38 21 Apr 09 7:25	Calculated DAP AKF DAP

~Sample diluted due to result above calibration or linear range.

W\$





Laboratory Manager New Ulm, MN

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Elevated "Less Than Result" (<): © = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity * = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

or



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Project Number: 0002-129

Sample Description: TB 33.2

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Report Date: 17 Jun 09 Lab Number: 09-A24924 Work Order #:12-8107 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jun 09 12:05 Sampled By: DL Date Received: 10 Jun 09 11:30 PO #: CRWD

Temp at Receipt: 6.0C

	As Receiv Result	red	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	7 6.4 3.84 0.334 ~ * 0.181 ~ 2.6	mg/L mg/L mg/L as N mg/L mg/L mg/L	2 NA 0.20 0.005 0.005 0.2	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	11 Jun 09 10 Jun 09 13:20 12 Jun 09 11:46 12 Jun 09 11:46 16 Jun 09 13:58 17 Jun 09 8:47 11 Jun 09 9:30	AKF

Soluble Ortho Phosphorus was greater than Total Phosphorus after original analysis. Soluble Ortho Phosphorus was refiltered and reanalyzed beyond holding time.

* Holding time Exceeded

Sample diluted due to result above calibration or linear range.

WB 1117109

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Uln, MN

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Elevated "Less Than Result" (<); @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL 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: 0002-129

Sample Description: TB 33.2

Report Date: 20 Jul 09 Lab Number: 09-A30630 Work Order #:12-9460 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jul 09 14:45 Date Received: 10 Jul 09 11:50 PO #: CRWD

Temp at Receipt: 6.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					13 Jul 09	LMF
Solids, Total Suspended	19	mg/L	2	USGS I-3765-85	16 Jul 09 12:50	SM
Nitrogen Total, Calculat	3.4	mg/L	NA	Calc	16 Jul 09 10:59	Calculated
Nitrate+Nítrite	2.08	mg/L as N	0.20	353.2	16 Jul 09 10:59	DAP
Phosphorus, Total	0.306 ~	mg/L	0.005	EPA 365.1	14 Jul 09 11:21	AKF
Phosphorus, Soluble Ortho	0.242 ~	mg/L	0.005	EPA 365.1	10 Jul 09 15:45	DAP
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	15 Jul 09 7:50	CJL

~Sample diluted due to result above calibration or linear range.

NB

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Name: CRWD STREAMS

Sample Description: WR 0.2

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Report Date: 3 Apr 09 Lab Number: 09-A10488 Work Order #:12-4777 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 26 Mar 09 10:00 Sampled By: WES BOLL Date Received: 27 Mar 09 15:05

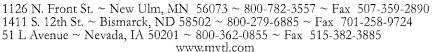
Temp at Receipt: -1.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					29 Mar 09	KAD
Solids, Total Suspended	16	mg/L	2	USGS I-3765-85	27 Mar 09 17:45	SM
Nitrogen Total, Calculat	2.1	mg/L	NA	Calc	l Apr 09 8:40	Calculated
Nitrate+Nitrite	0.51	mq/L as N	0.20	353.2	30 Mar 09 12:37	AKF
Phosphorus, Total	0.108	mg/L	0.005	EPA 365.1	31 Mar 09 11:43	AKF
Phosphorus, Soluble Ortho	* 0.047	mg/L	0.005	EPA 365.1	2 Apr 09 9:00	DAP
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	1 Apr 09 8:40	CJL

* Holding time Exceeded

WB







Page: 1 of 1

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

Project Name: CLEARWATER

MNTI

Sample Description: WR 0.2

Report Date: 22 Apr 09 Lab Number: 09-A14485 Work Order #:12-5632 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 15 Apr 09 10:25 Sampled By: DENNIS L Date Received: 16 Apr 09 12:25 PO #: CRWD

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					19 Apr 09	KAD
Solids, Total Suspended	2	mg/L	2	USGS I-3765-85	16 Apr 09 15:05	SM
Nitrogen Total, Calculat	0.9	mg/L	NA	Calc	22 Apr 09 14:09	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	22 Apr 09 14:09	DAP
Phosphorus, Total	0.050	mg/L	0.005	EPA 365.1	21 Apr 09 11:42	ARF
Phosphorus, Soluble Ortho	* 0.008	mg/L	0.005	EPA 365.1	17 Apr 09 10:38	DAP
Nitrogen, Total Kjeldahl	0.9	mg/L	0.2	SM 4500NorgB/NH3 E	22 Apr 09 7:50	TAM

* Holding time Exceeded

WP, r



= Reporting Limit

Approved by:

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ = Due to instrument performance at RL CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447630 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022



WES BOLL

Project Number: 0002-129

Sample Description: WR 0.2

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Report Date: 17 Jun 09 Lab Number: 09-A24923 Work Order #:12-8107 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jun 09 11:10 Sampled By: DL Date Received: 10 Jun 09 11:30 PO #: CRWD

Temp at Receipt: 6.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho Nitrogen, Total Kjeldahl	10 1.2 < 0.2 0.106 * 0.058 ~ 1.2	mg/L mg/L mg/L as N mg/L mg/L mg/L	2 NA 0.2 0.005 0.005 0.2	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1 SM 4500NorgB/NH3 E	11 Jun 09 10 Jun 09 13:20 12 Jun 09 11:46 12 Jun 09 11:46 16 Jun 09 13:39 17 Jun 09 8:47 11 Jun 09 9:30	

Soluble Ortho Phosphorus was greater than Total Phosphorus after original analysis. Soluble Ortho Phosphorus refiltered and reanalyzed beyond holding time.

* Holding time Exceeded

Sample diluted due to result above calibration or linear range.

WB 117109

Approved by

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<); @ = Due to sample matrix # • Due to sample concentration ! = Due to sample quantity + = Due to extract volume ^ • Due to instrument performance at RL 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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Report Date: 20 Jul 09 Lab Number: 09-A30629 Work Order #:12-9460 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 9 Jul 09 13:50 Date Received: 10 Jul 09 11:50 PO #: CRWD

Project Name: 0002-129

Sample Description: WR 0.2

Temp at Receipt: 6.0C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended	< 2	mg/L	2	USGS I-3765-85	13 Jul 09 16 Jul 09 12:50	LMF SM
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc		Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	16 Jul 09 10:59	
Phosphorus, Total	0.093	mg/L	0.005	EPA 365.1	14 Jul 09 11:21	
Phosphorus, Soluble Ortho	0.080	mg/L	0.005	EPA 365.1	10 Jul 09 15:45	
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	15 Jul 09 7:50	CJL

NB 1172/09

Approved by:

Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

= Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix ! = Due to sample quantity ^ = Due to instrument performance at RL # = Due to sample concentration - Due to extract volume 1A LAB #: 132 IA LAB #: 022

WI LAB # 999447680 ND MICRO # 1013-M CERTIFICATION: MN LAB # 027-015-125

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ND WW/DW # R-040



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Report Date: 15 May 09

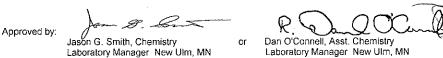
WES BOLL WENCK ASSOCIATES INC 1800 PIONEER CRK CTR MAPLE PLAIN MN 55359-9000

Project Number: 0002-129 Sample Description: WRO.2 Lab Number: 09-A18325 Work Order #:12-6507 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 5 May 09 12:03 Sampled By: DENNIS L Date Received: 6 May 09 12:00 PO #: 0002-129

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest					12 May 09	AKF
Solids, Total Suspended	8	mg/L	2	USGS I-3765-85	6 May 09 14:50	LH
Nitrogen Total, Calculat	1.3	mg/L	NA	Calc	11 May 09 8:15	Calculated
Nitrate+Nitrite	< 0.2	mg/L as N	0.2	353.2	8 May 09 12:13	DAP
Phosphorus, Total	0.058	mg/L	0.005	EPA 365.1	14 May 09 14:50	KAD
Phosphorus, Soluble Ortho	0.027	mg/L	0.005	EPA 365.1	7 May 09 8:49	DAP
Nitrogen, Total Kjeldahl	1.3	mg/L	0.2	SM 4500NorgB/NH3 E	11 May 09 8:15	TAM

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WES BOLL

Project Number: 0002-129 Sample Description: TB 33.2

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Report Date: 15 May 09 Lab Number: 09-A18326 Work Order #:12-6507 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 5 May 09 12:57 Sampled By: DENNIS L Date Received: 6 May 09 12:00 PO #: 0002-129

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest Solids, Total Suspended Nitrogen Total, Calculat Nitrate+Nitrite Phosphorus, Total Phosphorus, Soluble Ortho	< 2 7.7 6.08 0.161 0.114	mg/L mg/L mg/L as N mg/L mg/L	2 NA 0.20 0.005 0.005	USGS I-3765-85 Calc 353.2 EPA 365.1 EPA 365.1	12 May 09 6 May 09 14:50 11 May 09 8:15 8 May 09 12:13 14 May 09 14:50 7 May 09 8:49	Calculated DAP KAD
Nitrogen, Total Kjeldahl	1.6	mg/L	0.2	SM 4500NorgB/NH3 E	11 May 09 8:15	ТАМ

WB 112 109



- Reporting Limit

Elevated "Less Than Result" (<): 0 = Due to sample matrix # ! = Due to sample quantity + ^ = Due to instrument performance at RL # = Due to sample concentration + = Due to extract volume WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 TA LAR #+ 022 CERTIFICATION: MN LAB # 027-015-125



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 Number: 0002-129 Sample Description: CR 28.2

1 of 1 Page:

Report Date: 15 May 09 Lab Number: 09-A18327 Work Order #:12-6507 Account #: 013173 Sample Matrix: SURFACE WATER Date Sampled: 5 May 09 13:28 Sampled By: DENNIS L Date Received: 6 May 09 12:00 PO #: 0002-129

Temp at Receipt: 5.0C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Phosphorus Water Digest	· ·				12 May 09	AKF
Solids, Total Suspended	4	mg/L	2	USGS I-3765-85	6 May 09 14:50	LH
Nitrogen Total, Calculat	2.1	mg/L	NA	Calc	11 May 09 8:15	Calculated
Nitrate+Nitrite	0.99	mg/L as N	0.20	353.2	8 May 09 12:13	DAP
Phosphorus, Total	0.092	mg/L	0.005	EPA 365.1	14 May 09 14:50	KAD
Phosphorus, Soluble Ortho	0.044	mg/L	0.005	EPA 365.1	7 May 09 8:49	DAP
Nitrogen, Total Kjeldahl	1.1	mg/L	0.2	SM 4500NorgB/NH3 E	11 May 09 8:15	TAM

pproved by:	Jason G. Smith, Laboratory Mana			Dan O'Cor Laboratory		
= Reportin	g Limit					
levated "Les	s Than Result"	! - Du	e to sample		-	to sample c to extract

WI LAB # 999447680

Ξ

CERTIFICATION: MN LAB # 027-015-125

oncentration volume

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

Appendix G

Field Notes and Measurements

Lake Data

e 05/09/09 Lake Union Sechi 8.5' Time 4:50 PM Jepth Temp -D.D. Cloudy day little Murky 0.5 1418 14.7 12.54 14.7 12.40 23 1917 14.6 17 12.411 14.5 12.24 955 9.04 454 12.2 17 2395 ¥ 54 3.61 7,9 0.15 7 5.3 0.06 8 H.q 0.05 9 0.05 4.8 D 4.8 0:02 4.9 0.02 Bre Mallon

Date 05/09/09 Lake Marie Time 410 - 6:30 pm dech 51 Depth D. O. JEnp_ Claider 169 15.01 0.5 ŧţ. Je 1 15.01 2 14:62 15.8 16.77 p.24 3 14.73 123 28 H 9.42 1.01 5 8.5 Ļ 6.4 :07 7 5.5 :06 8 304 5.5 9 5.3 -04 10 53 .03 53 102 1 5.3 Ø. 2 13 ereijaim

- 05/09/09 Da -DUISA Lakt_ Seachi 5' 7:15 Time. pM_ .Depth Temp D, O_{*} Cloudy day a little MWKY 0.5 12.93 15.2 -15.2 12.51 2 15.2 12:77 3 145 11.56 Ц 9,45 13.0 5 5.89 10.8 6 7,6 6.26 7 0.10 . Li 8 5,5 0,07 q 5.2 0.05 D 5.1 0.04 1 4.9 6.05 12 47 0.04 41.6 13 0,03 14 4.7 0.02 Bottom Brycolon

36° Very Windy & Clarky Lake <u>Clear</u> Jecchi <u>1.5</u> Date (05/16/09 Start time 7:05 a.m. Winder Meter Do De Temp 0.5 9.18 13,4 We could not hold the 13,5 9.18 boat when we were -----9.04 on Betsy this morning, 23 13,5 8年79.04 about an hour dater. 13.6 45 893897 Measured Belsy May 19th 13,6 2,73 13.6 $\langle \phi \rangle$ 0:07 13.4 6-05-04

Lake Betsy Secchi _____ Date 5/19/09) 820 Start Time 7:07 <u>D.O.</u> Meter Temp 9.38 Clear day Water Clean Yz 17.84 State 9.40 17.3 ALC: NO. 2 16.184 9788 9.14 Hardly any movement 3 9403 9.82 16.12 1556 14.40 130 7.62 5 13.76 6. Fry 7.46 13.5 6.799 6.47 Ģ 3 danse priver it was 36-39° # "Very windy" 7 彩.如夜 5.03 13.3 8 9 Bangh

281 Date 06/06/2009 Lake Time 7:55 A.m. Jecchi Depth Temp DO 19.0 0.5 alpha - appared to be 10.58 algae floating - almost ball-like in appearance 19.1 10.70 2 19.1 10.39 3 approximate size vange : 19.1 10.50 Ц FA.1 · to @ 10.48 5 17.8 1.841 4 Temp Mid 40's 16.1 0.16 cloudy & a little windy 15.0 0.12 8 9

18 06/06/2009 Date Lake Clear Seachi 1/2" Start Time 6:42 A.M. Depth D. O. Temp 18.7 9.01 0.5 . 18.7 8.96 23 8.9Z 18.7 18.7 8.88 45 18,7 8,95 18,7 \$ 87 4 for you

421 Date Late Laisa 06/06/2009 Sachi 10' Start Time 10: 10 A.M Temp Britte D.O. 19.3 193 200 Depth 0.5 H3 6.75 l 2 19.3 8.64 3 19.3 8 45 45 19.3 8,20 2.21 16.7 13.4 3.4 (p 0.13 10.0 10.0 T 0.11 8 77F6.9 6.008 9 5.9 0.06 659116109 5.4 10 0.05 Sø 0.04 11 12 4.9 0.04 13

34 Late Marie Date 06/06/2009 Secchi _1 Start Time 10:50 Depth Temp D.O 0.5 8.70 193 ĺ 19,541 8.417 23 8.90 19.5 8.33 19.5 4547 5:43 17.7 14,3 6.47 Q.Q 0.14 ∇ 0.0 8 6.1 6.08 9 6.1 0.37 10 11 12 13 6425000

35 Date 06/06/2009 Lave Union Sachi 41/2" Start Time 3:15 A.M. Weather Conditions : Cloudy / Windy Temp Duda Depth 6.96 6.5 19.2 162 . . 6.43 2 Temp's Mid 40's 442 7.01 34567 四十11.1 158676 15.3 5. ie 14.3 0.33 113 0.11 0.08 \$8.0 8 6.5 6.04 9 5.3 0.04 10 1.1 Ar an No. of the second se

Date 04/08/09 Lake Scott 3 Secchi Time T. 20 pm A This sample 2 days after the other 5 upper lutes Derth Temp DO, 0.5 16.6 8.01 16,5 EX. L. Mud. 7,87 algae appeared to be smaller than 2 7.65 16,5 3 16.5 7.86 Ļ Betsy 77 5.35 6.2 5 16.0 4,9 Weather about 25-30° Warmen Partly Sunny a lot less Wind Coordinates off didn't find noted depth 65° 109

Site Location: LCEDI Site Description <u>Cedar Lake</u> Date of Sampling: Start Time: End Time: Sampler(s): Chain of Custody; 45 16 21.67 Comments: Site Coordinates: 94 3 58,14 -Nater VERY clear sample at 29m Expected Depth (ft): Measured Depth (ft): bottom DIN:45 Weather: 65° Sunny 11.5' Secchi Disk (ft): **Field Measurements** Temp (°C) Cond. (uS/cm) Field Sample D.O. (mg/l) Depth (m) pH (S.U.) Sample ID Date and Time 6/1109 10:30 LCEMT C .29 -10,5 31 1 2 25 3 (\mathcal{I}) 4 \overleftarrow{q} 5 6 Q 7 8 9 9 01 ľ3 10 \mathcal{C} 11 \cap 12 13 2 2 14 7 (n'r 15 11 2 ζ 9 16 . 6 17 GĿ Û 18 19 \mathcal{C} G 20 21 ĹĻĮ 22 23 24 25 OL Ċ 0.50 26 F 0.51 ,29 7.4

Date of Sampling: Start Time: End Time: Sampler(s): Comments: Stain Water G 1 Ne rowr Sampil bortom nn Secchi Disk (ft):

LHEO Site Location:

Site Description Henshaw LK

Chain of Custody:

Site Coordinates:

45 12 1.40 94 2 45.70 Expected Depth (ft):

Measured Depth (ft):

Weather: Sunny, NW wind Smph, 65°

Field Measurements							
Field	Sample	Temp (°C)	Cond. (uS/cm)	D.O. (mg/l)	Depth (m)	pH (S.U.)	
Sample ID	Date and Time						
LHEDT		18.2		6.12	10.5		
		17.3		5.25	1	-	
				• • •	2	,	
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		•		•	6	•	
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		•		•	8		
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					10	•	
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		•			23	•	
		4		-	24		
		•		•	25		

Bre Marth

Date of Sampling Start Time: End Time: Sampler(s):	8:30 WB, DL			Site Location: Site Description Chain of Custod	Swarton	
Comments: - Water is - With a lag	very green	Site Coordinates: 45 13 45,38 94 4 22,62				
			Exp	ected Depth (ft)	·	
-collected	bottom samp	ole	Mea	asured Depth (ft	<u>): 11.5</u>	
9+ 2.75	meters		IW/eather	Calm with		y
Secchi Disk (ft):	0.5					
		Field N	leasurements	· · · · · · · · · · · · · · · · · · ·		
Field	Sample	Temp (°C)	Cond. (uS/cm)	D.O. (mg/l)	Depth (m)	pH (S.U.)
Sample ID	Date and Time		1			
LSWOLT	1.11110A G:45	7.7		11.47	\$25	
	white or of	17.2		9.74	1	
		16.9		5.50	2	
LSWALK	0/11/09 8150	15.0		T .04	3	
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, 	Meters	Temp	<u>D.O.</u>	Secchi 6' Bottom
	6.5	20.7	7.94	· · · · · · · · · · · · · · · · · · ·
	1		7.57	Water Clear
	2		7.75	
			117,9,17,4,117,118,118,118,118,118,118,118,118,118	Clarky & Overcast
	· · · · · · · · · · · · · · · · · · ·	99,199,° 11° 1		<u> </u>
				Sample Time 9:35
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			1,	
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		1999), far efter en		
			94.4 a.4	
		99 y 19 y 2 y 1 y 1 y 1 y 1 y 1 y 1 y 1 y 1 y 1		
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04/16/09

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			Offer 50' detto
Meters	Temp	DQ	Seachi 9'
0.5	20.8	13.46	
l	20.8	13.18	cloudy & avercast
2	20.8	12.58	
3	18.1	13.30	Sample Time 11:11
Ч	16.7	13.02	• ₹ .
5	15.9	16.00	
6	14.2	15.74	
	10.9	0.74	
8	8.2	0.29	
9	6.8	0.24	
10	5.5	0.24	
<u> </u>	5.1	0.20	
12	4.8	0.21	
13	had the second s	0.18	
í Li	4.6	0.17	······

A

06/16/09

School Section 121

r bers	IEmp	D.O.	Seach: M' Bottom
0.5	20.6	14.50	
	20.4	14.18	Cloudy & Overcast
2	20.6	14.18	V
3	20.4	15.51	Sample Time 12:50
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ан на н	48-11-9-11-9-14-9-14-9-1-9-1-9-1-9-1-9-1-9		
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10111111111111111111111111111111111111			1. 4.
			KW ///
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06/17/09

06/1	7/09		
1			Clearwater West
Meters	Temp	D.0.	Dath 42349
0.5	20.8	9.12	Sechi 9
	20.8	8.89	-
2	20.7	9.87	Sample Time 9.36
3	20.6	8.68	•
4	20.2	7.85	
5	17.8	6.78	10:40
6	16.3	5.45	
	15.9	4.44	
8	15.8	4.12	
9	15.7	3.81	
ID	15.7	3.52	
	15.6	3.23	
12	15.6	3.20	
BLS	15.5	3,10	
14	15.4	2.84	
15	15.3	2.11	
TK			
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		NN XX	
I	~~ = 3.2808		
r ind	<u>re 7 d. 6040</u>		

06/17/09

	w ² (Clearwater East
meters	Temp	D.O.	D-41
0.5	19.4	8.66	Seachi <u>II</u>
	19.4	8.67	
2	19.4	8.40	
3	19.4	8.63	Sample Time 8:45 An
4	18.6	7.54	I
5	17.3	7.10	906
<u> </u>	16.8	6.25	
7	16.6	5.57	,
8	16.3	4.86	
9	16.1	4.23	
0	16.0	3.85	
	16.0	3.80	
12	15.9	3.60	
13	15.9	3.57	
14	15.9	3-57	
15	15.9	3.49	
14	15.9	3.47	
	15.9	3.43	1941. 220
18	15.9	3.41	N. M.
19	15.9	3.41	***** •
20	15.8	0.09	
21	15.7	.005	

22 meters = 72.18'

26/17/09

Grass 35' m'eters Sechi Temp 21-3 <u>DB.</u> 8.90 0,5 21-3 8.78 Sample Time 1:30 PM 9.18 21.2 2 18.1 6.84 3 5.58 17.2 U 4.78 16.4 5 15.4 0.68 0.19 13.9 7 0.08 12.18 11-4 0.08 9 0.07 10.8 10 Prestore 10 meters = 32.81

06/17/09

06/1/10	R		
			Augusta
Meters	Temp	<u>D.O.</u>	Depth <u>81</u>
0,5	20.6	8.88	Secchi 9.5
· · · · · · · · · · · · · · · · · · ·	20.6	8.40	
2	20.6	8.56	Sample Time 10:38 AM
3	18.4	7.50	F
4	1 Ca. 7	6.25	
5	15.7	5.38	
4	13.3	2.80	
· ·	9.3 9.3	6.50	
8	6.3	0-28	
9	5.5	0.19	
D	5.1	0.16	
	4.6	0.14	
12	4.2	0.11	
13	3.9	0010	
14	3.8	0.10	
5	3.7	0.09	
16	3.5	0.08	
	3.5	0.07	C.N.
18	3.5	0.07	EN ,
19			
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23	······		
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Date 3/22/09

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Lake Caroline Depth <u>45'</u> Seichi <u>9.25</u>Ff. DO Temp 55 8.68 Sample Time Top 12:38 25 9.24 24.2 Bottom 12:50 7.54 22.5 6.64 19.6 5.75 17.2 15.9 2,88 14,3 0.17 11, 9 0.11 8, 4 0.11 0.13 1.0 6.2 0.12 5.7 0.14 12, Bottom 5.5 0.14

13 meters = 42.65

Date 6123/09

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Temp Meters D.O. 28 11.32 26 10.67 22.3 5.54 12.8 4.62 (6.3)2.99 15.3 0.36 13.1 0.15 10.3 Out 8.3 0.14 7.1 0.14 6.1 0.13 5.7 0.15 5.4 0,16

Lake Louisa Depth 42' Socchi 3'6''

Sample Time Top 1:49 Billion

Autside Temp 20°

12 meters = 39.37

Marie Dapth 341 Jachi 6.5 Temp Meters DO 0.5 27.9 9.09 Sample Time Top 2:34 26.2 8.22 22.9 4.43 Boltom 2, 18.G 5.51 3 16.4 2.09 4 14.8 0,29 5 11.6 0.16 6 9.0 0.12 -7.4 0,14 8 G.8 0,13 9 6.4 0.11 10 32 July 10 1 10 meters = 32.81 feet

7113/09 Albion One Sample Sample Time 832 Sacchi 5 FF Temp. <u>D.O.</u> 0.5 2.3.1 530 231 534 232 511 2 寧 Brits 109 (Albion & Henshaw A, B, C, D&B 5 bottles Red 2 yellow Amber 1500 ML . .

D.O. Cedar Lake TEMP Time Boltom 7:30 0.5 8.60 - 66 79-Top 753 22.8 3.5 22.8 Secchi 22.8 22.7 Ĩ q -----9=8 \$5 UOJ 3.2808 × 29 = 95 0.01

Augusta 81' Time Top 1220 Bottom 4235 81' Meters Temp D.O. Beech 0.5 8.92 9.14 And a second 9.13 6.48 0,12 Ч 0.09 11.2 8 2-Ø OIL 4.3 OH 4.1 3.7 3.6 $\langle \langle \cdot \rangle$ 3.5 r [.] 25 = 82' ¢

Bass Depth 33' Studii 10 Meters <u>Temp</u> <u>D0,</u> 0.5 19.2 21.1 11.8 Sample Time Top 1206 Bettom 12.13 118 11.8 20.8 2 3 21.1 11.8 179 Ц 10,1 162 69 5 15.9 2.2 φ 159 1 1.7 15.6 8 14 9 156 I.L ID $\overset{}{\not\sim}$ Profile 10 meters = 32.81

Lake Betsy Depth <u>28'</u> Jechi 4.5 Meters Temp 0.5 19.2 D. O. 12.5 Sample Time Top 925 Boltom 933 199 11.9 Australia a ろ 20,0 120 3 200 120 Ц 19.1 4.2 3.3 5 161 2.5 6 15.4 7 1.5 15.3 8 Creston Charles 8 meters = 26.25

Lake: Clean Depth 18' Secchi / Meters Temp. DO 9.5 201 0.5 Sample Time Top 243 Bottom 750 201 202 9.5 A 2 10.6 3 20.3 10.2 20.3 4 10.2 5 20.2 4.5 109 5 meters = 16.4 L ·· = 19.7' String Of

Cleanair. Time Top 107 Bottom 1052 155 Cleanwater East 73' Meters <u>D.O.</u> TEMP 0.5 760 22.5 272 22.5 · 22.1 219 703 2 650 3 217 573 4 495 21.4 5 255 20.4 19.9 150 191 Z 040 006 9 180 0.04 17.3 0 16.7 604 -----16.0 004 (214.9 004 13 14.5 003 ÌЧ 15 IL \sum 18 lq 20 21 22 22 = 72.2

Clearwater West 42' Time Top 1106 Meters Temp Bottom 1119 Sembin 51 <u>.</u> 0.5 230 1 230 'Seahi 760 759 22.9 779 2 751 228. 3 605 L. 22.4 4 11 5 21.8 030 20.0 6 18.5 00.7 .01 * 8 00.7 .07 17.1 00.4 ,04 162 9 00.4 .04 15.7 Ø 66.4,04 154 03 603 14.5 + 12 XX B 14.4 002.02 001 14.5 , Ô Green WOM × 3.2808 × 12 = 39.4 13= 42, 45' XX

Henshaw 6 Time Top <u>912</u> Secchi 2' Meters Temp D.O. Secchi 0.5 23.1 450 1 232 450 231 368 L BY Bie Why 3.2808 x 2 = (.56 Henshaw & Albian one sample 5) bottles 1000 H2304 500 " 500 Nitric 1000 Amber 500 U.P.

Lake! L. Mud Depth <u>42'</u> Seachi <u>12.5</u> Meters Temp D. O. 13.0 0.5 19.9 Sample Fime Top 820 Bottom 830 12.8 1 201 202 2 14.1 3 20.2 12.2 4 16.8 6.3 14.1 2.4 5 6 11.1 2.2 7 9.1 2.4 8.0 2.6 8 9 2.2 26 24 2.2 10 7.2 1.8 12 Curringly 12 meters = 39.37'

Nixon Depth <u>67'</u> Meters Temp <u>D. D.</u> 20.5 0.5 15.2 21.2 17.4 -17.8 Sample Time Top 7:40 Billion 7:50 21.1 7____ 16.1 201 3 156 18.0 4 5.2 5 15.9 L. 14.1 4.3 Wes there was some 3.8 11.8 8 4.5 pieces of debri (Very few) 9.1 in the bottom Sample. q 4.2 7.5 3.9 Size hanged 1/6 to 1/8. 6.5 10 6.1 3.6 $\left(\right)$ 3.5 Outsile Terry ibout 64° 5.5 12 5.4 3.2 13 - 673469 14 15 14 \square 6-childy 18 19 20 20 meters = 65.62

Offer <u>301</u> Time Top 1132 Boltom 1150 Meters Temp D.O. 6 0.5 741 Secchi 23.5 234 748 / 755 232 2 723 232 3 730 19.2 4 152 391 5 131 015 4 9.3 012 7 7.3 009 8 6.3 008 q 5.7 010 D -----5.4 010 5.2 009 12 52 $\bigcirc \circ 9$ В 55 008 4 56 004 15 15 = 49.2

.....

Pleasant Lake' Depth 70' Jacchi 8' Meters D.O. Temp 11.8 20.9 0.5 Sample Time Top 1100 20.9 11.2 and the second second Bottom 1122 20.9 11.2 2 3 207 11.2 Ч 20.4 11.1 5 20.8 11.1 6 6.6 18.0 17.1 U.2 ~) 2.8 8 16.8 9 1.6 161 1.5 10 159 15.9 1.5 1.3 15.3 12 1.3 15.1 13 14 15.0 1.1 15 14.9 0.8 0,8 149 IL 0,8 14.4 0.8 18 14.2 0.3 14.2 19 08 14.1 20 21 3.2808 × 21= 68.9 feet

Stoff Depth 231 Suchi 205 Meters D.D. Temp 23.2 6.80 6.5 23.2 6.68 Sample Time Top 4:33 Billion 4:39 22.9 5064 2 3 22.4 A.M ц 5 21.3 0.43 18.6 0.09 く 夏 B WHAT W 7 32 metros = 22.96

Swartows 949 Top <u>449</u> Bitton <u>1000</u> Meters Temp, _D.O. 0.5 232 850 Secch; 23.2 8.30 23.1 819 2 230 3 740 A HIGH totate the *

Lake Union Depth 35' Seachi 5 Temp Meters D.O. 0.5 200 120 Sample Time Top 1016 210 12.0 Although and 20.2 11.8 2 Bettom 1015 3 20.2 118 6 17.9 49 15.5 5 2.2 13.2 6 1.3 1 10.5 1.3 99 8 1.2 9 8.8. 1.2 8.1 1.1 10 -71109 Ħ ACT CA 10 metors = 32,81

Lare Wiegand Depth 24' Secchi 8' Meters D.D. Temp 19.4 0.5 13.2 Sample Time Top - 8:30 20.5 131 -Bottom 8:40 205 129 2 8.1 3 17.4 16.2 L 42 Very Weedy From share to 3:1 5 15.0 15.0 1.5 a distance about 100 as we L entered lake from the outlet. 7 -** Repth of growth 8'-10' at least. ** 7 meters = 22.97 120109 6-10-104

Depth <u>D.O.</u> Temp 671 23.8 0.5 211 237 -650 235 2, 229 451 3 1.67 221 Ц 5 213 0.14 007 20.0 Ļ 005 19.6 \$****T 004 8 191

Tèmp

24.4

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683.

07/27/09 28 Betse 10.5 Seachi. 1026 Time Top Bitton 1035

07-27-09 Humid Mostly Sunny Lots of Algae floating up to 1/4" balls -07/27/09 Union 35' Max Dept

Jeachi TIME TOP Bottom

1,

7' 11:11 1121

Dept-*J.*5 2 3 454789 O

Depth Temp. 0.5 22.9 22.9 . . 22.7 2 219 3 217 Ĵ 212 5 211 4 Death Temp 23.4 0.5 23.4

739 651 4.20 259 000 003 D. D. 785 814 811 23.4 7.56 22.5 681 22.1 674 20.1 2.52 180 0.58 140 012 10.7 008 09.8 Oll 2.7 011 7.2 012 707.0 012

DO

18 Mar Depth Clear Seachi 740 Time Top 750 Bottom 11 7 2709 Date Little 42 May Deally Muz 11.5 826 Seachi Time Tap 838 Bottom

07/27/09

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- Andrew

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Louisa

			~		States and
			lepth .	Temp	$\mathcal{D}\mathcal{O}$
Louisa	12:05	7/27/2009	0.5	25	8.88
Louisa	12:05	7/27/2009	1	23.9	8.56
Louisa	12:05	7/27/2009	2	23.5	7.22
Louisa	12:05	7/27/2009	3	21.2	2.07
ouisa	12:05	7/27/2009	4	19.5	0.12
Louisa	12:05	7/27/2009	5	17.5	0.09
Louisa	12:05	7/27/2009	6	13.3	0.08
_ouisa	12:05	7/27/2009	7	10.7	0.06
_ouisa	12:05	7/27/2009	8	9.3	0.05
_ouisa	12:05	7/27/2009	9	7.8	0.04
_ouisa	12:05	7/27/2009	10	6.8	0.08
₋ouisa	12:05	7/27/2009	11	6.2	0.09
ouisa	12:05	7/27/2009	12	6	0.09
ouisa	12:05	7/27/2009	13	5.9	0.08
ouisa	12:05	7/27/2009	14	6	0

Britton

<u>D.</u>O, TEmp 978 24.8 0.5 995 24.9 -230 442 2 20.0 3 016 18.8 009 Ц 008 15.5 5 006 Ļ 12.9 00,6 9.9 -8 9.1 00.4 003 7.6 ٩ 001 7.6. 10 7.9 001 Temp 2021 D. 0. 8.88 250 0.5 23,9 856 722 23,5 2 207 21.2 3 195 0.12 Ц 0.09 17.5 5 008 13.3 Ļ 006 107 005 8 9.3 004 7.8 ٩ 6.8 008 Ø 0.09 6.2 0.09 6:0 12 008 5.9 13 000 6.0

34 Marie

May Dept

Secchi Time Top Bottom

1230

07/27/09

Louisa Jecchi Time Top 12.05 1218 Betton

School Section

			Dooth.	Temp	DO
	School Section	9:28 7/27/2009	0.5	23.2	7.2
N.	School Section	9:28 7/27/2009	1	23.2	7.33
	School Section	9:28 7/27/2009	2	23.1	7.3
	School Section	9:28 7/27/2009	3	22.5	8.31
	School Section	9:28 7/27/2009	4	22.1	5.6

All the

Union

			Depth	Temp	DO
Union	11:11	7/27/2009	0.5	24.4	7.06
Union	11:11	7/27/2009	1	24.4	7.06
Union	11:11	7/27/2009	2	23.9	6.81
Union	11:11	7/27/2009	3	22.5	6.83
Union	11:11	7/27/2009	4	19.2	1.49
Union	11:11	7/27/2009	5	15.6	0.2
Union	11:11	7/27/2009	6	11.2	0.08
Union	11:11	7/27/2009	7	8.8	0.07
Union	11:11	7/27/2009	8	8.3	0.04
Union	11:11	7/27/2009	9	8.	0.06
Union	11:11	7/27/2009	10	7.6	0.07
Union	11:11	7/27/2009	11	7.8	0.08

Anglogon

liftle Mud

					$\cap \cap$
			jepin -	CMD.	00
Little Mud	8:26	7/27/2009	0.5	23.4	7.85
Little Mud	8:26	7/27/2009	1	23.4	8.14
Little Mud	8:26	7/27/2009	2	23.4	8.11
Little Mud	8:26	7/27/2009	3	22.5	7.56
Little Mud	8:26	7/27/2009	4	22.1	6.81
Little Mud	8:26	7/27/2009	5	20.1	6.74
Little Mud	8:26	7/27/2009	6	18	2.52
Little Mud	8:26	7/27/2009	7	14	0.58
Little Mud	8:26	7/27/2009	8	10.7	0.12
Little Mud	8:26	7/27/2009	9	8.8	0.08
Little Mud	8:26	7/27/2009	10	7.7	0.11
Little Mud	8:26	7/27/2009	11	7.2	0.11
Little Mud	8:26	7/27/2009	12	7	0.12
Little Mud	8:26	7/27/2009	13	7	0.12

Creditor

Depth D.O. Temp 8 11.36 0.5 <u> 23</u>° 11.4 -----2 <u>20</u>° 9.55 ° 05 2.4 3 754789 19.20 0.15 1753 0.11 0.08 KAR 11.0 0.67 0007 9. 0.06 7.P 8.06 10 6.5 0.08 b.2 ,2 0.10 6.0 13

Caroline 45' max Depth 4 Seachi

Time Top 11 Bolton

1835

216104

07/27/09 School Section 12' Max Det 928 928 934 Secchi Time Top Bottom

lagth Lemp 0.5 23.2 23.2 - Allowedd Z 3 23.1 225

221

D.O. 720 7.33 730 831 560

Grass 35' May Depth

Seachi Time Top RISK R:46 Bottom 11

Jemp D.0. P3.5 8.75 23.5 8.86 B.5 8.60 95.59 已韵。布 20.8 5.23 19. R 1.14 16.3 139 0.)3 体。已 0.06 但,4 1109 0.03 N.OE. 11:4-

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BENGA ASPIT

Scotet

Name	CA MAG.	da ve	depth	Temp	0.0,
Scott	12:35	7/29/2009	0.5	23.3	11.74
Scott	12:35	7/29/2009	1	23.3	11.54
Scott	12:35	7/29/2009	2	23.3	11.07
Scott	12:35	7/29/2009	3	22.5	7.08
Scott	12:35	7/29/2009	4	21.4	0.4
Scott	12:35	7/29/2009	5	20.7	0.07

Aley all all

(Wiegand) 24 上 Max Depth Temp D.D. 761 0.5 214 790 65 214 Jeachi 786 214 2 1020 Time Top "Bottom Z? 205 398 2 629 19.7 1.06 4 189 014 5 003 16.0 Y Britian 7 006 156 Scott 23 Da. Jax Depth Jeot Temp 1.74 5 23.3 23.3 11051 2' Seachi 11:07 23.3 Time Top 12.BC 2 7.08 3 22,5 12:25 · Boltom 21.4 0.40 75 20.7 0.07 4

08/03/09 Bass 33 Max Depth Loth. D.O. Temp 0.5 12.5 Secchi Time Top <u>840</u> 1. Betton <u>845</u> Y 18.2 018 16.3 008 eserver on

Temp_ <u>D.C.</u> 752 20.7 0.5 7,14 21.2 Concernant State 21.3 682 2 21.3 680 3 213 701 山ちくての 687 21.2 653 21.1 630 20.9 19.5 0.37 008 18.1 9 005 17.2 р 004 15.9 1) À 004 155 003 15.3 13 150 003 002 148 15 002 143 4 Π 18 19

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08/03/09 Pleasan D 70' Max Dapth Sechi 2.44 Time Top " Bettom

BRIGH

Wixon 67' may Digth Lepth. Temp. _D.O. 0.5 21.5 9'5 Seachi Time Top 927 11 Betton 936 2-13 L 20.8 18.5 11.6 6.8 8,2,4 7.4 5.8 5.4 5.0 4.9 4.8 4.7 4.9 W. S. WOM

			Augusta
) m.	eters Temp	D. O.	Time Top 1152
0, 5		966	Bottom 1200
	223	966 974	Secchi 4.5
2	230	1012	Julian Julian
3	225	933	Date 3609
U	216	3-714	aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
	190	250	
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	41	288	dandammanananananananananananananananana
9	68	335	
10	56	378	
	U1	403	
12	4.5	412	
13	4.3	401	
iЦ	40	399 .	
15	39	379	
16	38	380	
177	37	371	<u> </u>
18	37	365	Cherry Cherry
19	37	361	
60	36	352	
adaa daha dadaa daga daga daga daga daga	36	350	
:			

Gedar Time Top 702 Bottom 219 Meters D.O. Temp Date. 0.5 Secchi 26 8.7 27 87 8.6 Ц 5 2,13 Ś 2.58 ile Gy 25 meters = 82,02 feet

Clearwater East Time Top 1020 Bottom 1026 Meters D. O. Temp 222 Secchi 55 0.5 Date 8609 Ц Ľ 20,9 Ś 20.6 1.23 ね 17.9 1.67 iL| BAR NOILOG 20= 65.6'

Swartout

			Deoth	Temp	00
Swartout Lake	9:26	8/6/2009	0.5	22.9	15.73
Swartout Lake	9:26	8/6/2009	1	22.4	12,12
Swartout Lake	9:26	8/6/2009	2	21.8	6.02
Swartout Lake	9:26	8/6/2009	3	21.2	1.7
Swartout Lake	9:26	8/6/2009	Bottom	21.1	1.49

My allahon

Otten Time Top 1100 Bottom 500 Secchi 9:5

Date 8/1/69

14 = 45.9

Henshaw

Henshaw Henshaw Henshaw	8:07 8:07 8:07	8/6/2009 8/6/2009 8/6/2009	depth 0.5 1 2	- Emp 22.8 22.9 21.9	12.13 12.07 4.4

Bright

Albion Time Top 847 Bottom 850 Meters D. O. Temp 0.5 228 1130 Seachi 3:0 229 223 1138 2 1:50 Bretobi 7 ithink? Dite 8/6/04. Brokerkelog Henshaw 1213 228 0.5 Time Top 807 221 1207 3 440 219 Seachi 1.5 8 Date \$1669 Juarbout Time Top 926 Bottom 935 Decchi 6" 0.5 229 1573 224 1912 2 3 218 Jecchi 602 1.70 212 Date 8/6/04 Boltom 1.49 2.11 TEhinh Riet 3 meteres = 9.8424 feet

Cleanucter West

Me	ters	Temp). 0.	 Time	Top 116	12
0,5	1	22.3		017		ottom 113	-
	\ 	221		010	 Secch	<u>i 5'5</u>	
2		213		1006	 		
3	· · ·	2-16		025	 		
Ц		214		740	 Date	8609	
5		211		850	 		
	۰ 	20.4		620	 		
7		203	·	715	 		
8		201		301	 		· · ·····
9		rg 7	*	121	 		
lt	:	92		121	 		
	J	76		137	 · · · · · · · · · · · · · · · · · · ·		
12	1	63	5.Y	153			
13	•	63 5 C44 Bretty	, MY	153			
[L]	. /(; 0		160	 		
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18' lear Lake 08-24-09 1 BM Depth D.O. Seech; 1'0 0.5 728 20.9 729 . 20.9 747 Time Top. 6.68 20.7 2 Boltom 3 682 20.7 Ч 4.42 206 5 { 20.1 0.50 200 040 August 24th

Little Mud D,O. 24/09 21,5 215 850 Secchi 9.5 0.5 848 8:18 Time Top and in the second 739 211 2 Bulton 624 591 205 3 500 5 201 5 195 319 15.0 072 () 7 063 121 8 069 9.4 070 9 8.2 068 7.7 IJ 065 17 061 SD 12

12 School Section Depth Do. Vate <u>emp</u> 894 0.5 213 Sechi 890 904 213 . Time Top 213 877 912 2 Bottom 2:2 \$822 3 597 20.5 0.5 600 20.9 Z Time Top 20.3 599 920 3 20.8 6.11 930 Battom Ц 20.8 625 5 20.7 425 6 20.4 201 202 1 221 0.45 198 8 MB 18/4/

42 ausa Depth D.0. Secchi 4.5 216 311 0.5 822 Time Top 216 215 816 Boffor 959 2 212 601 8/24/09 3 Pate 202 2147 4 0.40 5 18.4 039 $\langle \varphi \rangle$ 15.1 046 7 11.5 8 049 9.8 050 9 8.5 051 2.7 D 050 6.8 046 6.6 12 043 13 66 13= 42.6504 Ì

D.O. 22 1171 6.5 Seati 212 · 640 Time Top 1013 349 200 2 Boltom 19.4 3 1.34 10,30 175 L 0.38 5 129 037 4 10.7 037 7 9.3 0 3.7 8 86 035 84 9 034 8.4 10 Caroline 1175 0.5 1178 Secchi Ser. 21.3 \$73 2 Time Top 81122 20.5 5.59 3 Bollom 1129 20.2 330 4 0.42 5 18.1 039 4 15.0 044 12.2 7 050 9.2 X 055 7.5 9 69 053 ١D 049 6.5 -----047 63 12 041 13 62

Temp 23 Dept First D. O. X: 0.5 22.7 8,3 Secchi 22.7 8.21 2 22.7 Time Top 8.34 12:30 3 22.6 8.32 Bollon 12:40 4 5 22.5 8.06 7,96 22.4 Ļ 7.65 22,3 4.94 21,5 203 4 0,81 9 16.7 0.37 D.5 220 12,20 Appendix visited 21.8 Secchi 11,97 2 21.7 2:27 11.88 Time Typ 3 Bottom 2:25 20,7 9.48 म 5 874 20,4 678 20,4 141-8 $\overline{\mathbb{C}}$ 101

shass 35 DO. Devol 8/251 8-70 22.7 0.5 8.40 Secchi 22.6 224 842 2 Time Top 1:20 8.39 22.7 3 1:30 Betton 21.4 6.65 Ц 2.61 5 20. Ú 0.76 18.2 4 19.8 0.4% 7 8 B 11.5h 054 9 ルナ . 9 0.53 11 10 6.50 11.9 11

XON \mathcal{O} Secchi Time Top Bottom Ç 9.0 6.8 0 84 O 5.9 0 \$5 ()5.3 λZ 5.1 (4 5.0 4-9 []4.8 4.8 4-7

D.O. 1cmp 6.5 7,89 Printing the Seahi Time Top BUL Ч Ţ Ś 20.2 18.5 15.8 B []0 36 2)

Wiegand D.U. Temp ent Jecchi 40 0.5 8 21.2 846 210 . . Time Top 202 547 2 Batton 655 3 200 655 L 19.7 5 330 194 4 120 192 -1 :061 182

Union D.O em 0.5 21:3 5.5篇 Secchi 2:3 Time Top Boltom Ч 5 Q 66 0 63 8.7 t 4/04 10 meters = 32.2808

School Section 12' Date \$12469 Dale Depth Temp DO. 213 894 213 890 213 877 5' 904 Seathi D.5 Time Top 1 912 ζ Bottom 21.2 R 1822 Befsu 28 83.1p. 597 20.5 0.5 600 20.9 ζ 599 Time Top 20.3 920 3 6.11 20.3 930 Bottom 4 5 6 7 20.8 625 20.7 425 201 20.4 221 202 0.45 198 8

Temp D.J. Depth 850 21.5 0.5 848 215 1 211 739 ζ - 541 205 3 500 э 5 201 314 195 15.0 072 () 7 063 121 g 069 9.4 070 9 8.2.7.7 068 IJ 065 77 061 SD 12

Little Mud) 42 8/24/09 Date Secchi <u>95</u> 8:18 Time Top Bulton 624

18' 08-24-09 Clear Lake Date Temp Depth D.O. Secchi, 10 728 0.5 20.9 747 729 Time Top 1 20.9 6.68 20.7 2 Bolton 3 652 20.7 Ч 4.42 206 20.1 5 0.50 6 200 040 August 24th

81¹ Hagusta Depth Temp D. Ò. 6 71 Secthi D.5 2.28 Time Top Bothom 561 Ź ک 09/14/09 5 く 2.30 8 9 7.7 6.4 5.5 4.8 1) 4.1 3.9 3.7 37 6 38

24=78.7' 25= 82.02'

Depth.	Temp	D.0.
0.5	232 231	1788 802
2.	226	794
3	222	754
4	219	7.00
5 4	215	6 15 4 95
7	206	319
8	202	230
9	194	152
10	181	1.09 090
11	66 50	071
F once	1 34.7	067
	141	056
Depth	Temp	<u> </u>
0.5	2,30 2,24	6:33 6:55
1 Z	2.21	654
3	2.16	644
and the second se	2.0.6	6.25
5 6	Gene 173	320
	128 100	2.89 2.34
7 8 9	80 \$	160
9	\$ 6,9	140
10	6.5	120
	64	040 677
- 13	6.1	668
19	67-	061

42 (Clearwater West) Secchi <u>5.5</u> Time Top <u>11:11</u> Bottom <u>11:19</u> 09-14-09) 12=39.4 50 Otter Secchi Time Top 1148 Bottom 09/14/09 14 = 45.91 15 = 49.2

NP)

 Depth	Temp)	D.O.
 0.5 1 2 3	237 235 229 220	7.91 906 815 752
45678910112131415117181922122	21.4 212 210 20.8 20.6 20.5 20.6 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5	644 573 530 430 348 301 240 1.02 047 037 037 035 030

Clearwater East 73' Secchi Time Top Boltom 65 1,002 9/14/09

12/4/09

ſ

21 = 68.9'22 = 72.17'

Swortout Secchi \mathcal{B}' y inches Depth 411 954 Temp D. D. 976 0.5 223 Time Jop 721 Boltom 400 045 212

Temp 221 _ D.O. 835 0.5 221 828 ------2 21.6 5 15

Temp

229 229

21.7

09-14-09 Jenshaw 6' Timo Tap <u>\$36</u> Bolton \$1409

0.5 Non-text 2

4

______ 1035 1014 355

69-14-09 9' <u>1'.5</u> 9:2.6 Albion Seachi Time Top Bottom





Dodo Temp 0.5 22.5 22.5 22.5] 20.5]D 1) 11.0 10.4 Ny 9.8 9.5 027 aψ ZD 91 22, .1 Z3 27 Metors = 88,6"

W-14-07 edah Secchi Top Bottom 740 Time



14123109 45' Caroline Depth Temp D.0. 753 Secchi 206 0.5 745 Time Top 1105 20.6 -----Boltom ,700 20.5 2 625 203 3 050 19.1 45478 031 17.2 028 144 202 028 11.7 029 9.6 029 8.2 G 028 10 10 026 6.le 13= 42.65 -----024 4.5 12 622 65 13 14th Sept 09 **G** 35' ept Temp D.0. rass 15.5 687 23.6 0.5 Secchi 231 700 Time Top 1228 AND DESCRIPTION OF 701 226 Bsttom 2 645 3 220 215 09/14/09 4 565 5 207 347 197 1.03 Ļ 090 18.4 7 060 8 103 050 ٩ 14 2 039 127 1D

Derth 0.5 1 2 3 3.5-4	Temp 20.7 20.8 20.8 20.8 20.8 20.8	D.D. 431 626 645 637 510	School Section 12' Secchi 7' Time Top Bottom 223
0.5 1 2 3 4 5 6 7 8 9	Temp 171 172 173 173 173 173 173 173 171 16.8	$\frac{D.0.}{562}$ 562 562 560 562 561 560 559 510	$\frac{\text{Retory}}{\text{Secchi}} = \frac{28^{12}}{5}$ $\frac{5}{746}$ $\frac{746}{754}$ $\frac{9/29/09}{8=26.25}$ $8=26.25$
0.5 1 2 3 4 5 6 7 8 9 10	Temp 166 170 170 170 170 170 170 170 171 162 10.7 9.1 8.8	$\begin{array}{r} \underline{D.0.} \\ 565 \\ 501 \\ 503 \\ 501 \\ 500 \\ 500 \\ 500 \\ 2.80 \\ 2.7 \\ 2.3 \\ 2.2 \\ 2.1 \end{array}$	Union $34'$ Secchi 5.5 Time Top 8.30 Bottom 9/29/09

42' Louisa D.O. Temp 9/23/09 9' 2:0 Secchi 520 0.5 4 95 1011 1 210 Time Top 210 495 ζ Bottom 3 209 440 4 5 207 290 024 180 024 (, 155 7 124 024 8 10.0 026 025 9 8.7 024 10 79 022 72 11 020 69 12 67 020 09/23/09 9/23/09 34' Deoth Temp Marie D.O. 0.5 670 Jeachi 20.8 20.7 624 Time Top 635 603 20.7 Bottom 2 3 406 205 Ц 138 0 34 5 026 16.2 132 6 026 i O O D D 025 11.1 7 024 8 9.7 G 022 40 019 8.8 10 10 = 35.808

NB NB

Depth	Temp	D.0.
0.5	20.2	4.20
1	4	4.25
2	<i>yV</i> =	4.04
3	1)	4,17
4 5	73	4,05
	1)	4.1)
L	1)	4.09
	Temp	D.O.
0.5	20.4	17.71
	20.6	4.96
2	20.7	4.8)
3	20.5	3.75
4	20.4	3.37
5	19.7	0.45
6	167	0,29
7	12.8	0.29
8	9.3	0.36
9	8.3	0.34
D	7.9	0.34
	הר	0.28
12	7.6	0.27
12.5 - 13	7.6	0.25

altra Clear Secchi 18' 1.5' Time Top Bottom 7:50

09-23-04 Little Mud Secchi Time Top Bottom 42 10.5

12= 39.36

WB 12/4/29

Pleasav 70' Temp. D. 0. 955-66. Secchi 5 0.5 17.3 175 464 Time Top 233 Bottom 942 1 663 2 17.5 663 176 3 662 Ц 76 660 5 174 Ģ 176 455 7 176 661 8 135 662 174 9 656 174 655 Q 649 174 11 647 12 174 644 73 13 173 642 14 642 173 15 640 173 16 173 440 17 640 172 18 16.6 540 19 3 13 146 2D (9/2**9**/09 21 = 68.9 21 (; 23' 312 Secchi D. De 1emp 9.48 1:50 1:57 Time Top 16.9 0,5 9,40 16.8 Bottom ٤١ 9,36 16.6 23 8,68 16.2 7.86 Ц 5 6 16.1 -1.68 14 60 16.0 5.46

Depth D.O. Jemp 0.5 18.3 9.5-10

Temp

,162

D.O.

668 582

Death

0.5

Z

Ц

33' Bass

Secchi Time Top Bottom

09/29/09 Wiegan Time Top Bottom



(Nixon) 67 Secchi Time Top 69/29/9) 67 q'1100 Battom TID

20= 65.61"

538 16.8 6.5 16.8 538 -----16.8 2 5-23 3 16.3 16.6 45 478 505 495 165 496 164 194 215 14.0 107 9 7.9 3.3 3.0 65 10 58 3.1 1 2.8 53 12 51 2.8 13 14 5,0 26 2,40 4.9 15 2210 IĻ 48 4.8 17 18 4.8 4.8 G

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Stream Data

ient:	(CRWD		Site Location:	KOD	W Ssh	214	
Project No.:		002-129	-	Site Description:	ATI	Joy Ave	<u>- p / </u>	
Date:	14/14	1/14	-	Weather:	1.0	Sunny		
Sampler(s):	- HB	10)	-	Samples Taken:				
Start Time:	1115		-	Sample Time:	111	11:7 ^		
End Time:	<u></u>		-	1				
Channel Conditions:	Flows	14	DT	W Measurement:	1.3	4		
COC Number:	<u> </u>		-					
			-		Notes:	-WHER i	3	
	manuta ti i i i i i i i i i i i i i i i i i	Field Parameters				-Wheeri Flowing - carp bar	<u> </u>	
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		- curp but	<u></u> ンパへ	
	7,49	375	11.55	7.92		is down		
					-	1. 0.11		
Stage Ht	t:		Rated Flow:		Gauged Flow	BOXA	7.68	
					B IMPION	y y		
			Stream Gaugi	ng Data VV	D Church			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	1 x ze.2s 1	scharge ft ³ /sec)	
0, (left side)								
			1.	-				
			3. Second and a	1 20				
					48" 0	ylvery		
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Field Form	n: 2009	Stream	Sampling
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Elient:	С	CRWD		Site Location:	SHE	01		
Project No.:	0002-129		Site Description: Henshaw Lk artler					
Date:	4/14/09		Weather: <u>60°, Sunny</u>					
Sampler(s):	TAB T		-	Samples Taken:	and the second se	`		
Start Time:			-	Sample Time:		5		
End Time:			•	r r	<u> </u>			
Channel Conditions:	flowing		- DTV	V Measurement:	20).5″	2.04	
COC Number:				,		/ * * ****#		
COC Mulliber.					Notes:			
		Field Parameters	····			.		
Sample I.D.	Temp. (⁰ C)		II	pH (S.U.)		•		
Sample 1.D.	$7.7/_{0}$	317	10,12	7.76				
	<u>[[]]]</u>				U.			
Stage Ht			Rated Flow:		Gauged Flow	. 1.56	and a second and a s	
			Stream Gaugin					
d'an an a			Stream Oaugu	ig Data				
· 	<u> </u>	1070-10			r <u> </u>			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)	
Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period		Area (ft ²)	- 1	
	Width (ft)	Depth (ft)	Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft)	Width (ft)		Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft)			Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft)			Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft)			Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft)			Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft) 0, (left side)			Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft) 0, (left side)			Revolutions	Time Period		Area (ft ²)	- 1	
Initial Point (ft) 0, (left side)			Revolutions	Time Period	(ft/sec)	Area (ft ²)	- 1	
Initial Point (ft) 0, (left side)			Revolutions	Time Period	(ft/sec)		- 1	
Initial Point (ft) 0, (left side)			Revolutions	Time Period	(ft/sec)		- 1	
Initial Point (ft) 0, (left side)			Revolutions	Time Period	(ft/sec)		- 1	

lient: Project No.: Date: Sampler(s): Start Time: End Time: Channel Conditions: COC Number:	01 	CRWD 002-129 /(Mi D	- - - - DT`	Site Location: Site Description: Weather: Samples Taken: Sample Time: W Measurement:	<u>Co RI Z</u> <u>45°, 5</u> <u>Ves</u> <u>10!4</u> <u>3' 8.</u>	<u>nny</u>) № 5	
Sample I.D.	Temp. (°C) 5:47	Field Parameters Cond. (mS/cm) 994		рН (S.U.) 7.69			
Stage H	t:		Rated Flow:		Gauged Flow	. <u>0.18</u>	cfs
			Stream Gaugi	ng Data			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)	·						
				101 WWWWYY - 745 TATA			
				· · · · · · · · · · · · · · · · · · ·			
AMANANAN AN INA MILANI							
	· · ·						

ient:	(CRWD		Site Location:		WOD	
Project No.:	00)02-129		Site Description:	SWARHO	in+ Inl.	etSE.
Date:	4/14	104		Weather:	11 m h	Snany	
Sampler(s):	WB	>		Samples Taken:			
Start Time:	10:1	5		Sample Time:	Statistics of the second second	30	
End Time:							
Channel Conditions:	Flow	ing	DT	W Measurement:		0.0	8
COC Number:		<u> </u>					
					Notes:	W4+e	cris_
		Field Parameters				Clea	La contraction of the second s
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		- KN	little_
	2.04	478	7.74	7.64		flow	
						- 1440 	
Stage H	t:		Rated Flow:		Gauged Flow	" <u>- 1/1</u>	
5							
			Stream Gaugi	ng Data		т т	
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)							
					0.18		
	· .						
			A&V 01				
					- 		
-							
T:\0185\04\292\Field Forms\Gauging	Form				いや	1112	March 27, 2002

lient: Project No.: Date: Sampler(s): Start Time: End Time: Channel Conditions: COC Number:		2RWD)02-129 109 1ý	- - - - - -	Site Location: Site Description: Weather: Samples Taken: Sample Time: W Measurement:	554 45°, 50 (Yes 9:4	$\frac{nny}{15}$	G. 16 is Abu	
		Field Parameters				over c	Distlet	
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		-5/13h	it brow	<u>n</u>
Stage H	t:		Rated Flow:		Gauged Flow	. 7,92	>	-
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)	
0, (left side)				······				_
								-
				···· ·		<u> </u>		~
						10.0		-
		<u>, n</u>						
				······································			······································	
					<u> </u>			_
T:\0185-04\292\Field Forms\Gauging	- Funs			WB	11/2/04	<u>Lange and a second s</u>	March 27, 2002	

March 27, 2002

Client: Project No.: Date: Sampler(s): Start Time: End Time:		CRWD 002-129 / ()9)	- - -	Site Location: Site Description: Weather: Samples Taken: Sample Time:	<u>Cedar</u> <u>40°</u> <u>Yes</u>	many	l Jutlet
Channel Conditions:	flowir	ng	- DTV	W Measurement:	6	1,25	6.19
COC Number:			•				~~~~~~~
			-		Notes:	Wate	r is
		Field Parameters				Clear.	r is Flowing
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		over	ontlet
	6:42	267	15.27	9.20		lake	132 50%
Stage H	t:		Rated Flow:		Gauged Flow	in	overed 86
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)	EV.	12.2		····	1:29		
		1.30			1.28		
3		1.24			1.14		L
3		1.24			1.50		
		1.20			1.20		
5		1.20			0.80		
6		1.20			0.94		
7		1.20			0.94		
8		Ø1,20			0.87		
q		1.20			0.05		
10		1.20			0.92		
) 							
						WP III	δ

lient: Project No.: Date:		CRWD 102-129 6/04	-	Site Location: Site Description: Weather:	IIIs/e	1/by x Ave lowly,) •••••••••
Sampler(s): Start Time: End Time:	WB 13	: 00	-	Samples Taken: Sample Time:		<u>No</u>	
Channel Conditions: COC Number:	Flow	Flowing		DTW Measurement:		8 With	er is vh
Sample I.D.	Temp. (°C) (), 5⊥)	Field Parameters Cond. (mS/cm)	1	pH (S.U.) 7,32		6.000	<u>~ n</u>
Stage H	: <u> </u>		Rated Flow:		Gauged Flow	: 6.5	<u>, 0</u>
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)	Form				0.76fz		March 27, 2002

Client: Project No.: Date: Sampler(s): Start Time:		CRWD 002-129 1047 20	- - -	Site Location: Site Description: Weather: Samples Taken: Sample Time:	Yes	2000	
End Time: Channel Conditions:	f which	<u> </u>	DT'	W Measurement:	1	92	
COC Number:		,, , , , , , , , , , , , , , , , , , ,	• •				
1		· · · · · · ·	,		Notes:	Wate,	un is
		Field Parameters	1			<u> n::::</u>	2n
Sample I.D.		Cond. (mS/cm)		pH (S.U.)		<u> </u>	
	0.56	212	7.37	<u>(i) []</u>			
Stage H	t. <u></u>		Rated Flow:		Gauged Flow	0.7	9
			Stream Gaugi	ng Data			
Distance from							Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	(Q, ft ³ /sec)
Initial Point (ft) 0, (left side)	Width (ft)	Depth (ft)	Revolutions	Time Period		Area (ft ²)	-
2	Width (ft)	Depth (ft)	Revolutions	,		Area (ft ²)	-
5	Width (ft)	Depth (ft)	Revolutions	,		Area (ft ²)	-
2	Width (ft)	Depth (ft)	Revolutions	,		Area (ft ²)	-
5	Width (ft)	Depth (ft)	Revolutions	,		Area (ft ²)	-
5	Width (ft)	Depth (ft)	Revolutions	,		Area (ft ²)	-
5	Width (ft)	Depth (ft)	Revolutions	,		Area (ft ²)	-
5	Width (ft)		Revolutions	,		Area (ft ²)	-
5	Width (ft)		Revolutions	e		Area (ft ²)	-
5	Width (ft)		Revolutions			Area (ft ²)	-
5	Width (ft)		Revolutions			Area (ft ²)	-
5	Width (ft)		Revolutions			Area (ft ²)	-

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Client:	(CRWD		Site Location:	SDN	01		
Project No.:	00	002-129		Site Description:		ţ · · ·		
Date:	312	119			<u> </u>	Clevely	Wind y	
Sampler(s):	WR WR		_	Samples Taken:	and the second se	Concessor	-	
Start Time:	12:1	6	_		» 12:15			
End Time:	12:3				<u></u>			
Channel Conditions:		ing		W Measurement:	3.6	8		
COC Number:								
					Notes			
		Field Parameter	s		-	Wate.	r 15	
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		cleu	r and ng	
	0.94	723	6.05	7.16		flow !!	10	
		-				<u>~ 1</u>	~	
Stage H	It:		Rated Flow:		Gauged Flov	r: 0.40	2	
				. Ditti				
			Stream Gaugi	ng Data		Г		
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)	
0, (left side)								
		- -						
T-101081042020E1-14 Econol Gourain					WB II	12	March 27, 2002	

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March 27, 2002

						. An	
Client:	(CRWD	_	Site Location Site Description	:	NQ	······································
Project No.:	0(002-129		Site Description	: Swart	out J.	nley
Date:	<u>_3D</u>	0/09	_	Weather	: 30°, Windy, Cloudy		
Sampler(s):		<u></u>	_	Samples Taken:			
Start Time:	<u> </u>	.0	_	Sample Time:		<u>5:00</u>	
End Time:			_				
Channel Conditions:	<u>flow</u>	in,	DT	W Measurement:	- AL	V +0.	06
COC Number:			_			-1-1-1-2	1+ is fal
					Notes	=Wate	1.5
		Field Parameters	3			prow	n in
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		c 0 10.	~
	0.27	431	6,02	7.33	 -	Plawin	ang art
					÷1	Witt	ond
Stage H	t:		Rated Flow:		Gauged Flow	/:	
0		44			~		
			Stream Gaugi	ing Data			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)		1997 - Anno 2007 - Anno 200					
		Ammeening (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (199		$v = 1.10f_{E}$	k		······
				/	[
				-			
<u> </u>							
				····			
						· · · · · · · · · · · · · · · · · · ·	
<u> </u>							
				. እ	JB III		
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March 27, 2002

Client:		CRWD	_	Site Location:	SSIN	01	
Project No.:	00	02-129		Site Description:	Swarn	our Ou	+164
Date:	3/2/	119	-	Weather:	700		~ <i>y</i>
Sampler(s):	11/		-	Samples Taken:	Yes	No No	
Start Time:	MA-IN	:20	-	Sample Time:	10. 7	>0	
End Time:		Ser Harris	-		1 8.		
Channel Conditions:	TION	inh	DT'	W Measurement:		12 1	
COC Number:			_				
					Notes:	Lake	15 mg
		Field Parameters				Corere	is re- id. Thew.ny
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		Water	· flew.ny
	3,24	235	-11,14	8.12		over	outles
			ŕ				
Stage H	t:		Rated Flow:		Gauged Flow	/:	
			Stream Gaugi	ng Data		1	
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)							
						`	
					<i>,</i> * :		
-		· · · · · · · · · · · · · · · · · · ·					
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March 27, 2002

Client: Project No.: Date: Sampler(s): Start Time:		002-129 002-129 004 DL	- - -	Site Location: Site Description: Weather: Samples Taken: Sample Time:	<u>Cedar</u> 30°, [(Yes	<u>LKO</u> Vindy D No	1+k+
End Time: Channel Conditions: COC Number:	FICWIM	lý ovar Ontl	- [e+ dt	W Measurement:		1	
COC Number.			-		Notes:	TWite	- is deg
		Field Parameters					
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	рН (S.U.)			
	3.13	83	12.11	5.59			· · · · · · · · · · · · · · · · · · ·
Stage H	t:		Rated Flow:		Gauged Flow		49
			Stream Gaugi	ng Data		T	
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)		1.6.9			1.00		
		1.70			1.24		
		.6.2			0.90		
3		1,60			0.90		
Eustro		1.60			2000 Control C		
5		1.62			<u> 14</u>		
6		1.54					
7		1.50			0.47		
8				· · · · · · · · · · · · · · · · · · ·			
٩		1.58			1.21		
10		1.68			1.26		
,i 							

Client:	(CRWD		Site Location:	WRC	<u>), 2</u>	
Project No.:		002-129		Site Description:	· · · · · · · · · · · · · · · · · · ·		
Date:	03/2	6/09					
Sampler(s):	Wes F	Soll		Samples Taken:	Yes	> No	
Start Time:	4345	10:00		Sample Time:	9:35	10.00	
End Time:							
Channel Conditions:			DTV	V Measurement:	3' 5'	3,	<u> イン</u>
COC Number:					ω,	1 m m, je - 200	
					Notes:		
	1	Field Parameters				VETIN 7 77	
Sample I.D.	Temp. (⁰ C)			pH (S.U.)			
	0.97	293	1.79	7,92			
						てつ	22
Stage H	t:		Rated Flow:		Gauged Flow	: <u>Dd</u>	00
			Stream Gaugin	ig Data			
Distance from							Discharg
Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Period	Velocity	Area (ft ²)	(Q, ft ³ /sec
					(ft/sec)		
0, (left side)		2.7			(ft/sec) 0.83		
0, (left side)	-tot	2.7 2.18					
					0.83		
	يلام م	2,98			0.83 0.18		
<u>1.5</u> 3		2,98 2,90 2,90			0.83 0.98 0.89 0.93		
1.5 2 1.5 1.5		2,98			0.83 0.98 0.89		
1.5 3 4.5 6		2,98 2,90 2,90 2,64			0.83 0.98 0.89 0.93 0.93		
1.5 3 4.5 6 7.5		2,98 2,90 2,90 2,64 2,64 2,62			0.83 0.98 0.89 0.93 0.93 0.85		
1.5 3 4.5 6 7.5 9		2,98 2,90 2,40 2,64 2,64 2,62 2,70			0.83 0.98 0.89 0.93 0.93 0.85 0.85 0.64		
1.5 3 4.5 6 7.5 9 10.3		2,98 2,90 2,64 2,64 2,64 2,62 2,70 2,70			0.83 0.98 0.89 0.93 0.93 0.85 0.85 0.64 0.64		
1.5 3 4.5 6 7.5 9 10.3 12		2,98 2,90 2,64 2,64 2,64 2,62 2,70 2,70 2,78			0.83 0.98 0.89 0.93 0.93 0.85 0.85 0.64 0.64 0.64		
1.5 3 4.5 6 7.5 9 10.5 12 13.5		2,98 2,90 2,64 2,64 2,62 2,70 2,70 2,70 2,78 2,74			0.83 0.98 0.98 0.89 0.93 0.89 0.85 0.64 0.64 0.64 0.15 0.68		
1.5 3 4.5 6 7.5 9 10.5 12 13.5		2,98 2,90 2,64 2,64 2,62 2,70 2,70 2,70 2,78 2,74			0.83 0.98 0.98 0.89 0.93 0.89 0.85 0.64 0.64 0.64 0.15 0.68		

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lient:		CRWD		Site Location:	TB	33.2	
Project No.:	00)02-129		Site Description:	, ,	· · · ·	
Date:	03/26	09		Weather:			
Sampler(s):	Wee I	301		Samples Taken:	Yes	No No	
Start Time:	8:3	>\\		Sample Time:	8:30		
End Time:	Λ				\$		<i>6</i> . 1
Channel Conditions:	<u>High F</u>	1000	DT	W Measurement:	μ' i ^μ	4.0	8
COC Number:							
r					Notes:		
		Field Parameters					
Sample I.D.		Cond. (mS/cm)		pH (S.U.)			
	<u>,03</u>	358	8.71	7.72			
Stage Ht	· ·		Rated Flow:		Gauged Flow	7 .	
)			Stream Gaugi	ng Data			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Revolutions	Time Períod	Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)					3,96		
					<u></u>		
	· · ·				-,		
					stariu.	ļ	
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Date: $3/26/09$ Weather:Sampler(s): $Westher:$ Samples Taken:Start Time: 4.56 Samples Taken:End Time: 4.56 Sample Time:Channel Conditions: 4.56 DTW Measurement:	client:	(CRWD		Site Location:		18.2	
Date: $\Box f (AC) C f$ $V Caller Sampler(s): \Box B C A C f Samples Taken: V cs No Start Time: C f (F) Samples Taken: V cs No End Time: C f (F) Sample Time: O f (F) No Channel Conditions: C f (F) DTW Measurement: Notes: U d f c (F) (F) (F) COC Number: Field Parameters D T W Measurement: D C (F) (F) (F) (F) Notes: U d f c (F) (F) (F) (F) Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) D C (F) (C) (C) (C) (C) (C) (C) (C) (C) (C) (C$	Project No.:	. 00)02-129		Site Description:		·	
Start Time: Image: Start Time: Sample Time: Image: Start Time: End Time: Image: Start Time: Image: Time:	Date:	03/26/	09		Weather:			
End Time: Image: Channel Conditions: Image: Channel	Sampler(s):	Wes B	011		Samples Taken:	Yes	<u>No</u>	
Channel Conditions: $\overbrace{(X, H, e,m, h, H, f,h)}^{(H, f,h)}$ DTW Measurement: COC Number:	Start Time:	<u> </u>	: 15		Sample Time:	<u> </u>		
COC Number:	End Time:	, v						
Notes: $Water kuple Field Parameters Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Stage Ht: Rated Flow: Gauged Flow: Gauged Flow: COOL Distance from Time Period Velocity (fr/sec) Area (fr2) Discharge (Q, fr3/sec) 0, (left side) 0 $	Channel Conditions:	Cy-h-2w	Whith play	DT	W Measurement:			
Field Parameters Sample I.D. Temp. (0 C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) Stage Ht: Gauged Flow: Stage Ht: Rated Flow: Gauged Flow: Distance from Initial Point (ft) Depth (ft) Revolutions Time Period Velocity (ft/sec) Discharge (Q, ft ³ /sec) 0, (left side) 0	COC Number:	~					a tre	2 1
Sample I.D. Temp. (°C) Cond. (mS/cm) D.O. (mg/l) pH (S.U.) c_{AL} be represented in the second s						Notes:	Water	level
Stage Ht: Rated Flow: Gauged Flow: Gauged Flow: Stage Ht: Rated Flow: Gauged Flow: Gauged Flow: Gauged Flow: Distance from Initial Point (ft) Width (ft) Depth (ft) Revolutions Time Period Velocity (ft/sec) Area (ft ²) Discharge (Q, ft ³ /sec) 0, (left side) Image: Image: <td< td=""><td></td><td></td><td>Field Parameters</td><td></td><td></td><td></td><td>to top</td><td><u>of</u></td></td<>			Field Parameters				to top	<u>of</u>
Stage Ht: Rated Flow: Gauged Flow: Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Revolutions Time Period Velocity (ft/sec) Area (ft²) Discharge (Q, ft³/sec) 0, (left side) Image: Color of the side of the sid	Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH (S.U.)		Culver	
Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Revolutions Time Period Velocity (ft/sec) Area (ft ²) Discharge (Q, ft ³ /sec) 0, (left side) 0							Adure	- 19/101
Stream Gauging Data Distance from Initial Point (ft) Width (ft) Depth (ft) Revolutions Time Period Velocity (ft/sec) Area (ft ²) Discharge (Q, ft ³ /sec) 0, (left side) 0							Cot	
Distance from Initial Point (ft)Width (ft)Depth (ft)RevolutionsTime PeriodVelocity (ft/sec)Area (ft²)Discharge (Q, ft³/sec)0, (left side) $ -$	Stage Ht	t:	<u>,</u>	Rated Flow:		Gauged Flow	<u>. 608</u>	ş
Distance from Initial Point (ft)Width (ft)Depth (ft)RevolutionsTime PeriodVelocity (ft/sec)Area (ft²)Discharge (Q, ft³/sec)0, (left side) $ -$	- 000 · · · ·							
Initial Point (ft)Width (ft)Depth (ft)RevolutionsTime PeriodVelocity (ff/sec)Area (ft²)(Q, ft³/sec)0, (left side) $3, \sqrt{8}$ $3/\sqrt{8}$ $3/\sqrt{2}$				Stream Gaugi	ng Data			
0, (left side) 3,88 90,78,33(4)		Width (ft)	Depth (ft)	Revolutions	Time Period		Area (ft^2)	
	Initial Point (It)	fridai (it)	Departity	revolutions	Third Forrid	•	Alca (It)	$(Q, ft^3/sec)$
	0, (left side)					3,88	SOM 783	\$314
						3. <i>8</i> 8	8//78.3	314/DA
Image: Second								в

MB 117 March 27, 2002

lient: Project No.: Date: Sampler(s): Start Time: End Time: Channel Conditions: COC Number:	0007 5/18/0 WB 14:00	CRWD -130 09 Over ou		Site San Si	nples Taken: ample Time:	Cedar 75°, Si (200 14:15 (0.77	<u>vnn y</u>) _{No}	nt/et
		· · · · · · · · · · · · · · · · · · ·				Notes:	Water	
Sample I.D.	T	Field Parameters Cond. (mS/cm) 344		200 1	I (S.U.)		filan algae o	c lear, hentons n rocks
Stage H	t:		Rated Flow	•		Gauged Flow	/:	
			Stream Gau	ging Data	a			
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Vel 20% Depth	locity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)								
							·	
						· · · · · · · · · · · · · · · · · · ·	·	
2 711	· · · · · · · · · · · · · · · · · · ·					<u></u>		
				······································				
								100-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0

T/0185\04\292\Field Forms\Gauging Form

4W

lient:	C	RWD	_	Site	te Location:	55h Swart	Out D	10+10+
Project No.:	Fliple		_	Site	Description:	756		<u>vrie</u>
Date:	_5//8/0	7	<u> </u>			-12-1	Sum	
Sampler(s):	W	>	_		ples Taken:	1111	/ No	
Start Time:	14:40		_	Sa	ample Time:	14:4	5	
End Time:							~	16.4mm
Channel Conditions:	flowin	14	_	DTW M	easurement:	6.60)	
COC Number:		J					1.	
				***		Notes:	[:++	le flou
]	Field Parameters					over	outlet.
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)) D.O. (mg/l)) pH	(S.U.)		Water	green
SSWØI		<u> </u>					inc	dar
Stage II	t:		Rated Flow Stream Gau	ging Data	1	Gauged Flow		
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)								
·								
				4	~ d			
= · · ·								
	1							
				1	-	<u> </u>		
								E
; 					<u></u>			
				1				
				<u> </u>	<u></u>		1	
T-10185/04/292/Field Forms/Gauging F	מיזט		1	N	MA			March 27, 2002

Field F	orm:	2009	Stream	Sampling
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lient:	C	CRWD		Si	ite Location:	JJW	07	
Project No.:	B/N)-			Site	Description:	Swarton	nt Ir	let
Date:	5/18	109			Weather:	75°,5	MANNY	• ••••••••••••••••••••••••••••••••••••
Sampler(s):	WB	Y		San	nples Taken:) _{No}	
Start Time:	15:01)		Sa	ample Time:	15:1	5	
End Time:						•		
Channel Conditions:	Very 1:	ryle Flow	<u>/</u>	DTW M	leasurement:	0.1	2	
COC Number:			_					. .
<u> </u>						Notes:	Water	flowing
]	Field Parameters						510Why
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)			(S.U.)	-	film	on
	17.67	620	12.40	7.8	1		Burfac	e of wat
			Stream Gau				F	
Distance from			Velocity		ocity	Average		Discharg
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20% Depth	80% Depth	Velocity	Area (ft ²)	-
Initial Point (ft)	Width (ft)	Depth (ft)	(60% Depth)	20% Depth	80% Depth	-	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft)		Depth (ft)	· ·			Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	-
Initial Point (ft) 0, (left side)			· ·	Depth		Velocity	Area (ft ²)	(Q, ft ³ /sec

llient: Project No.: Date: Sampler(s): Start Time: End Time: Channel Conditions: COC Number:	5/18/ 5/18/ 15:4 16:00 Flow	CRWD (Ø) (Ø) (Ø) (Ø) (O) (O) (O) (O) (O) (O) (O) (O		Site I Sam Sa	te Location: Description: Weather: ples Taken: mple Time: easurement:	Hen 75 15:4	15 37-	Olustet ny
		Field Parameters Cond. (mS/cm)	DO (mg/l	Ha	(S.U.)		<u>silt o</u>	hannel
Sample I.D.	22.23	428	3.83	7.79				
Stage H	t:		Rated Flow	ging Data		Gauged Flow	:_0,17	7
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velc 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)		·····						
	· · · · · · · · · · · · · · · · · · ·							
T::0185:04:292:Field Forms: Gauging F		L		<u> </u>		WB (March 27, 2002

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Coc Number:	5/18/09 WB 14:00 14:00 16:2 Flowin	, 0	-	Sam Sa	weather:) No 5	× <u>}</u>
Alexandre and an and a second		Field Parameters				Notes:	UP due	is stimes
Sample I.D.		Cond. (mS/cm)	D.O. (mg/l)	pH	(S.U.)		upst	to Carp
	19.03	423	8.96	8.	06		Dup	taken FD1
Stage H	t:		Rated Flow			Gauged Flow		
		S	Stream Gaug			1		
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)					35	0.33		

15.87

Client:	(CRWD		Si	te Location	: WR.(2	
Project No.:	0002-1	.29		Site	Description	: <u>Warner</u>	Creek	near Annanda
Date:	04/15/0	9	_		Weather	: Clear &	Sunny	
Sampler(s):	DL.			Sam	ples Taken	: (Ye	s) / _{NO})
Start Time:	10:20		_	Sa	mple Time	: 10:20		
End Time:	11;23		<u> </u>					
Channel Conditions:	Whiter	Cloudy/M	lerky	DTW M	easurement	: <u> 4' 10</u>	<u>14" L</u>	1.95
COC Number:			-					
		1872-1973-1979-1979-1979-1979-1979-1979-1979				Notes	Spean	
]	Field Parameters	1	- r-				
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l) pH	(S.U.)	z.	<u></u>	
	7.6		15.87					
Stage H	lt: 1D	1.	Rated Flow	v:		Gauged Flov	v: <u>10.6</u>	2
		S	Stream Gau	ging Data				
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	bootity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)	- PF'	Q:84		120	.26	0.24		
1.5		2:84		b /	.72	0.19		
3		2.7		,20	,23	0.22		
4.5		2.6		.21	, 38	0.33		
6		24		,21	,39 36 ,38 ,38	0.33		
7.5		2.4		345	34	0.31		
9		2.3		.24	.38	0.31		
id, 5		2,3	· ·	128	.38	0.33		
12		2.3 2,3 2,6		.28	.38	0.33		
(3,5		2.5		22	,29	0.26		
15 811 of (Wyert	24		,16	,29 . (7 25	40.19		
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Client:		CRWD		Si	te Location:	WRO	12	
Project No.:	0002-	129		Site	Description:	Warner	Creak A	ear Annandol
Date:	05/05/1	79			Weather:	Partly	Cloudy	to sunny
Sampler(s):	D. L	£		Sam	ples Taken:	in the second		
Start Time:	12:00	·		Sa	mple Time:	=12103		
End Time:		· · · · · · · · · · · · · · · · · · ·						
Channel Conditions:	5			DTW M	easurement:	5'5	-// 1	5.42
COC Number:								
						Notes	:	
		Field Parameters						·
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)) D.O. (mg/l) pH	(S.U.)		<u> </u>	
	13.8		12,01					AUUULU / /
						T		~
Stage H	t:		Rated Flov	v:		Gauged Flow	N: 8.1	8
U U				<u></u>	·	5		
		:	Stream Gau	ging Data	l			
Distance from			Velocity		ocity	Average		Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	(60%	20% Depth	80%	Velocity	Area (ft^2)	$(Q, ft^3/sec)$
41				1	Depth	•		(Q, 11 / Sec)
		ž 🖌	Depth)		Depth	(ft/sec)		(Q, 11/300)
0, (left side)		1,6	,25			•		(Q, It / SCC)
1,5		1.72	,25 ,33			•		
1,5		1.72 1.62	,25 ,33 ,40			•		
1,5 3 4,5		1.72 1.62 1.6	,25 ,33 ,40 ,44			•		
1,5 3 4,5 6		1.72 1.62 1.6 1.6	,25 ,33 ,40 ,44 ,44 ,46			•		
1,5 3 4,5 6 7,5		1.72 1.62 1.6 1.6 1.6 1.5	,25 ,33 ,40 ,44 ,44 ,46 ,52			•		
1.5 3 4.5 6 7.5 9 7		1.72 1.62 1.6 1.6 1.5 1.54	,25 ,33 ,40 ,44 ,44 ,46 ,52 ,50			•		
1.5 3 4.5 6 7.5 9 10.5 10.5 10.5		1.72 1.62 1.6 1.6 1.5 1.54 1.54	,25 ,33 ,40 ,44 ,44 ,52 ,50 ,31			•		
1.5 3 4.5 6 7.5 9 10.5 12 12		1.72 1.62 1.6 1.6 1.5 1.54 1.54 1.62 1.7	,25 ,33 ,40 ,44 ,44 ,52 ,50 ,31 ,24			•		
$ \begin{array}{c} 1.5 \\ 3 \\ 4.5 \\ 6 \\ 7.5 \\ 9 \\ 10.5 \\ 12 \\ 13.5 \\ \end{array} $		1.72 1.62 1.6 1.6 1.5 1.54 1.54 1.62 1.7 1.55	,25 ,33 ,40 ,44 ,44 ,52 ,50 ,50 ,31 ,24 ,26			•		
1.5 3 4.5 6 7.5 9 10.5 12 12		1.72 1.62 1.6 1.6 1.5 1.54 1.54 1.62 1.7	,25 ,33 ,40 ,44 ,44 ,52 ,50 ,31 ,24			•		
$ \begin{array}{c} 1.5 \\ 3 \\ 4.5 \\ 6 \\ 7.5 \\ 9 \\ 10.5 \\ 12 \\ 13.5 \\ \end{array} $	ert	1.72 1.62 1.6 1.6 1.5 1.54 1.54 1.62 1.7 1.55	,25 ,33 ,40 ,44 ,44 ,52 ,50 ,50 ,31 ,24 ,26			•		
$ \begin{array}{c} 1.5 \\ 3 \\ 4.5 \\ 6 \\ 7.5 \\ 9 \\ 10.5 \\ 12 \\ 13.5 \\ \end{array} $	evt	1.72 1.62 1.6 1.6 1.5 1.54 1.54 1.62 1.7 1.55	,25 ,33 ,40 ,44 ,44 ,52 ,50 ,50 ,31 ,24 ,26			•		

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riis Mg

Client:		CRWD	_	Sit	e Location:		0.2	
Project No.:	<u> </u>	-129	_	Site D	Description:	·		
Date:	06/00	1/19	_		Weather:	Clardy		
Sampler(s):	DL	5	_	Samj	ples Taken:	2		
Start Time:			-	Sai	nple Time:		in Am	
End Time:			-					
Channel Conditions:			-	DTW Me	asurement:	1	CAL 5	75
COC Number:			-					
	·	·	-			Notes	:	
		Field Parameters						
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l) pH ((S .U.)		<u></u>	
	120		JI.07					
	11:590	······································	•			9		
Stage H	t:		Rated Flow	/:		Gauged Flow	v: 2.5	37
-					<u> </u>	Ũ	<u>. </u>	
		S	tream Gau	ging Data				
Distance from			Velocity	Velo 20%	city 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)			• •	Q. OI		(It/sec)		<u></u>
J		1 2		0.07				·····
				2.65				·
K T.		1. 12	<u></u>	1.22		<u>. , , , , , , , , , , , , , , , , , , ,</u>		
			· · · · · · · · · · · · · · · · · · ·	1 22		,		
17 2		11		1:22				
9				MAR				
10.5		1.2		0.03	· · · · · · · · · · · · · · · · · · ·			
Carrilla		1.4		hhq				
		<u></u>		12012				
T:10185\04\292\Field Forms\Gauging Form		<u>, , , , , , , , , , , , , , , , , , , </u>		<u></u>	P		<u></u>	March 27, 2002
				V	N N	0-		
					Å.	1-		

Field Form:	2009 Stream S	ampling		
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, S	No. of the second se		Field Form	n: 2009	Stream	Samplin	g		
	Client:	(CRWD				WRD		
	Project No.:	0002-	-129	_	Site I	Description:	Warn e	GREAK N	- Annand
	Date:	- Hard	097/9/9	_		Weather:	***		5 R.
	Sampler(s):	DL			Sam	ples Taken:	Ye	s) No	*¢
	Start Time:			_	Sa	mple Time:			
	End Time:			_		2			
	Channel Conditions:				DTW Me	asurement:	5,	42	
	COC Number:			_		Υ. & Φ ₁			
				-			Notes	:	
		J	Field Parameters			*嶺山			······
	Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l) pH	(S.U.)		, <u>, , , , , , , , , , , , , , , , </u>	
		20.7		10.20					\M880-
a and a second sec	Distance from		. S	tream Gau Velocity	Velo		Avances		Disabaraa
	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)		1.5		0				
	1.55		15		0.02				
	3		15		0.01				
	A. K		1.2		0.09				
	10		1.0		0.03				
	7.5		$\mathcal{B}_{s}\Lambda$		0.01				
	9		ň.9		- 0.02				
	10.5		0.7		0.02				
	12.		ð.7	· · · · · · · · · · · · · · · · · · ·	-0.06				
	for side		0.6	-	0.0e				
			- <i>4</i>						
		-							

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WB

Client:		CRWD		Si	ite Location	:	28,2	
Project No.:	0002-	-129		Site	Description	: Clearwate	r River	@Hug 15
Date:	,	<u>/09</u>				: Clear \$		
Sampler(s):	DL	e		San		:(Ye	j	
Start Time:	12:25	·····	-	Sa	ample Time	:_12:32		
End Time:	1:14							
Channel Conditions:	Slight	ly Murky		DTW M	easurement	:_5'6"	ł	
COC Number:		<u> </u>						
[]						Notes:		
		Field Parameters		······································		-		
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l) pH	(S.U.)			
	8.1		9.1					
Stage H	īt:		Rated Flov	/:		Gauged Flov	v. 15.	21
		S	Stream Gau					
	1		1	1 77.1	•.	· · · · · · · · · · · · · · · · · · ·		
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	20% Depth	ocity 80% Depth	- Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft)	Width (ft)		(60% Depth)	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side)	Width (ft)	1,5	(60% Depth)	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side)	Width (ft)	1,5	(60% Depth) ,01 ,04 ,12	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 4		<u>5</u> <u>3</u> <u>2</u>	(60% Depth)	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (1,5 1,3 1,2 2,4	(60% Depth) .01 .04 .12 .12 .14	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (. 9 12		1,5 1,3 1,2 2,4 2,4	(60% Depth) .01 .04 .12 .12 .14 .43	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (9 12 15		1,5 1,3 1,2 2,4 2,4 2,4 2,4	(60% Depth) .01 .04 .12 .12 .14 .43 .43 .43	20%	80%	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (9 12 15 18 2 24		1,5 1,3 1,2 2,4 2,4 2,4 2,4 2,4 2,2	(60% Depth) .01 .04 .12 .12 .14 .43 .43 .43 .45	20%	80% Depth	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (9 12 15 18 2]		1,5 1,3 1,2 2,4 2,4 2,4 2,4 2,4 2,2 2,1	(60% Depth) .01 .04 .12 .14 .43 .43 .43 .45 .31	20%	80% Depth	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (9 12 15 18 2 24		1,5 1,3 1,2 2,4 2,4 2,4 2,4 2,4 2,2 2,1 2,1 2,1	(60% Depth) .01 .04 .12 .14 .43 .43 .43 .45 .31 .23	20%	80% Depth	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (. 9 12 15 18 2 24 27		1,5 1,3 1,2 2,-1 2,-1 2,-1 2,2 2,1 2,1 2,1	(60% Depth) .01 .04 .12 .14 .14 .43 .43 .43 .45 .31 .23 .10	20%	80% Depth	Velocity	Area (ft ²)	
Initial Point (ft) 0, (left side) 3 (1,5 1,3 1,2 2,4 2,4 2,4 2,4 2,2 2,1 2,1 2,1 2,1 1,8	(60% Depth) .01 .04 .12 .14 .14 .43 .43 .43 .45 .31 .23 .10 .02	20%	80% Depth	Velocity	Area (ft ²)	

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WBID

Client:		CRWD				CR 29		
Project No.:	0002-	. 129		Site	Description	Clear water	= Riser	@ Hury 15
Date:	05/05	109)
Sampler(s):		* · · · ·		San	ples Taken:	Ye	s) No	,
Start Time:				Sa	imple Time:	1:28 1	m	
End Time:	1:55	PM PM						
Channel Conditions:				DTW M	easurement:	5'91/2	// 1	5.79
COC Number:								
(Notes:		
	and the second	Field Parameters	and Astronomy Company Station	÷				
Sample I.D.	(Temp. (⁰ C)	Cond. (mS/cm)) (D.O. (mg/l	рн	(S.U.)			
	15,6		13,07					
Stage H	t:		Rated Flov Stream Gau			Gauged Flov	v <u>. [] 5.</u>	.81
Distance from			Velocity		ocity	Average		Disaharga
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
	Width (ft)	Depth (ft)	(60%	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft)	Width (ft)		(60% Depth)	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side)	Width (ft)	-75	(60% Depth) -,04	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side)	Width (ft)	-75 1:28	(60% Depth) 04 .06 .09	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6	Width (ft)	-75 1:28 1.6	(60% Depth) 04 .06	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 15	Width (ft)	-75 1:28 1.6 2.1	(60% Depth) 04 .06 .09 .31	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 15	Width (ft)	-75 1.28 1.6 2.1 2	(60% Depth) 04 .06 .09 .31 .51	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 12 15	Width (ft)	-75 1.28 1.6 2.1 2	(60% Depth) 04 .06 .09 .31 .51 .54	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 12 15 18 21 24		-75 1.28 1.6 2.1 2 2 1.8 1.8	(60% Depth) 04 .06 .09 .31 .51 .51 .54 .45	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 12 15 18 21 24		-75 1.28 1.6 2.1 2 2 1.8	(60% Depth) 04 .06 .09 .31 .51 .51 .54 .45 .55	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 12 15 18 21 24		-75 1.28 1.6 2.1 2 1.8 1.82 2.1	(60% Depth) 04 .06 .09 .31 .51 .51 .54 .45 .55 .55 .22	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 12 15 18 21		-75 1:28 1.6 2.1 2 2 1.8 1.8 1.82 2.1 1.3 1.25 1.25	(60% Depth) 04 .06 .09 .31 .51 .51 .54 .55 .55 .22 .02	20%	80%	Velocity	Area (ft ²)	1
Initial Point (ft) 0, (left side) 3 6 9 12 15 18 21 24		-75 1.28 1.6 2.1 2 1.8 1.82 2.1 1.3 1.25	(60% Depth) 04 .06 .09 .31 .51 .51 .54 .45 .55 .22 .22 .02	20%	80%	Velocity	Area (ft ²)	1

WF.

WB 11/2

Client:	(CRWD	_	Sit	e Location	CR 28.	2	<u>_</u> _
Project No.:	0002-	-129	_	Site D	Description	Clearwater	- River (@ Huy 15
Date:	04091	09				<u></u> mo	3 0	· · · ·
Sampler(s):	DL			Samp	oles Taken	Ye	No	
Start Time:				Sar	nple Time	<u> </u>	npm	
End Time:			_				· · · · · · · · · · · · · · · · · · ·	
Channel Conditions:	<u></u>		_	DTW Me	asurement	- ACC	OB B	64
COC Number:			-			890-0-0-0-0-0		
				<u> </u>		Notes:	<u>closyc</u>	novestation
		Field Parameters	FI	.			· · · ·	
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)) pH ((S.U.)			
	4.4							
	· · · · ·							01
Stage H	t:		Rated Flow	/:		Gauged Flov	v:	16
		S	Stream Gau		water water water water and a state		······	
Distance from		Dauth (A)	Velocity (60%	Velo 20%	city 80%	Average	(0 ²)	Discharge
Initial Point (ft)	Width (ft)	Depth (ft)	Depth)	Depth	Depth	Velocity (ft/sec)	Area (ft ²)	(Q, ft ³ /sec)
0, (left side)		5	<u> </u>	206				
ing a second sec		2		NN2				
		1.85		0.08	r			
9.1		1 6		0.27				
R2'		1.4						
15'		1.25		0.24 D.12				
181		1.25		17				
21		1.5		0.06				
p4')	*******	DOR				
271	- -	,75 ,7		0.02				
30'	-	÷7	"maye	0.02				
33		•6		0.01				
21/ 15 21/ 24/ 27/ 33 4/ 33 4/ 33 5/ 5/ 33 5/ 5/ 33		Ţ ≈₽		0.06 D.02 D.02 D.02 D.02 D.02 D.02 D.02				

NB 11/2

Client:		CRWD		Si	te Location	: <u>CR2</u>	.8.2	
Project No.:	0002 12	9	_	Site I	Description	: Hwy 15	· Claru	abour Rise
Date:		9				: 89 Very		
Sampler(s):	DL			Sam		: Ye		}
Start Time:			_	Sa	mple Time:	3.00)	
End Time:			_					
Channel Conditions:			-	DTW Me	easurement:	C' 3"	affrer	Rainc
COC Number:			_					
putereture			_			Notes	alize o	1 sides
		Field Parameters						Veritation
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l) pH	(S.U.)			. Murky
	27.8		11.13] la	une Ca	rp
Stage H	t:		Rated Flow	v:		Gauged Flov	v: <u>[</u> 7	9
		S	tream Gau	ging Data				
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velo 20% Depth	00000000000000000000000000000000000000	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)		,3		-0.09				
3'		.8		-0.62				
3' 6'		.9		-0.02				
9'		1.2		,15				
12'		1,7		.12				
15 ¹		1.45		,04				
18'		1.2		.01				
Х\$ ¹		1.0		.12				
24				.02				
12' 15' 18' 24' 24' 24' 24' 24' 24' 24' 24' 24' 24		,5		-0.01				
27'30'		.5	**	- ,06				
33'		.75		-,02				
Bank		. L		02				

WB 11/2

T:\0185\04\292\Field Forms\Gauging Form

Client:		CRWD		S	Site Location	: <u>CR 2</u>	8.2	
Project No.:	0002	-129	- IL CARE	Site		Rive .	and the second	
Date:		<u>19100</u>	BESEAPTER	or Straine		• <u>A</u>		1
Sampler(s):	DL	¥ 8	Brothe came Stoupled t WR 0.2 U DR 0.2 U	9/09 Sar		:(Ye)
Start Time:		an a star and a star and a star and a star a sta	-	S	1. S.			
End Time:			_			£ .		
Channel Conditions:			_	DTW M	leasurement	*	*******	
COC Number:			_					4
					• • • • • • • • • • • • • • • • • • •	Notes	:	
	······································	Field Parameters						
Sample I.D.	Temp. (°C)	Cond. (mS/cm)	D.O. (mg/l) pH	I (S.U.)		4 mmusuu	
	22,2		2.43				**************************************	
	5/5	> //				-	999877588778889799999999999999999999999	anders gange and a second and a s
Stage H	t: 743	<u></u>	Rated Flow	/:		Gauged Flov	v:	
[S	tream Gau	ging Data	1			
Distance from	WELL (B)	D (1 (0)	Velocity	Vel 20%	ocity 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)								
		· · · · · · · · · · · · · · · · · · ·						
a		······································						
		· · · · · · · · · · · · · · · · · · ·		*******	-			

	<u> </u>							
		**************************************		**************************************				

WBND

T:\0185\04\292\Field Forms\Gauging Form

Client:	(CRWD		Si	te Location	: <u>†B</u>	33.2		
Project No.:	6002	-129		Site	Description	:Tributan	n Stream	South Wat	Kin
Date:	OY/15	>/09	-		Weather	: Clear a	Sunny	South Wat	
Sampler(s):	DL		<u></u>			: (Ye			
Start Time:	1:28		_	Sa	mple Time	: 1/33			
End Time:	_1:63					····		······································	
Channel Conditions:	<u>Clear</u>	~		DTW Me	easurement	69	" 6.	.75	
COC Number:	<u> </u>		_						
<u></u>	,					Notes	·	Math Som	
]	Field Parameters					<u></u>	<u></u>	っ
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)) pH	(S.U.)		·····		
	9,3		13.71				•••	· · · · · · · · · · · · · · · · · · ·	
Stage H	t:		Rated Flow			Gauged Flov	<u></u>	<u>ц</u>	
		S	Stream Gau	ging Data					
Distance from		S	Stream Gaug	Velo	ocity	Average		Disaharaa	
Distance from Initial Point (ft)	Width (ft)	S Depth (ft)				Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)	
	Width (ft)		Velocity (60%	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth) ,04 ,24	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side)	Width (ft)	Depth (ft) し。2 しいり	Velocity (60% Depth)	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 2	Width (ft)	Depth (ft)	Velocity (60% Depth) -,04 .24 .24	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 2 3	Width (ft)	Depth (ft)	Velocity (60% Depth) -,04 .24 .24 .24 .24 .53	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 2 3 4	Width (ft)	Depth (ft) 1.2 1.4 1.5 1.4 1.3	Velocity (60% Depth) -,04 .24 .24 .24 .24 .53 .5]	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 2 2 3 4 5 (Width (ft)	Depth (ft) 1.2 1.4 1.5 1.4 1.3 1.L	Velocity (60% Depth) -,04 ,24 ,24 ,24 ,53 ,51 ,51	Velc 20%	ocity 80%	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 2 2 3 4 5 (Width (ft)	Depth (ft) 1.2 1.4 1.5 1.4 1.3 1.1 1.4	Velocity (60% Depth) -,04 ,24 ,24 ,24 ,53 ,51 ,51 ,58 ,58	Velc 20%	ocity 80% Depth	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 2 3 4 5 6 7	Width (ft)	Depth (ft) 1.2 1.4 1.5 1.4 1.3 1.1 1.4 1.3 1.1 1.4 1.3	Velocity (60% Depth) -,04 ,24 ,24 ,24 ,53 ,51 ,51 ,58 ,58 ,58 ,58 ,58 ,58 ,58	Velc 20%	ocity 80% Depth	Velocity	Area (ft ²)	- 11	
Initial Point (ft) 0, (left side) 1 2 3 4 5 6 7 8	Width (ft)	Depth (ft) 1.2 1.4 1.5 1.4 1.3 1.1 1.4 1.3 1.1 1.4 1.3	Velocity (60% Depth) -,04 ,24 ,24 ,24 ,53 ,51 ,51 ,58 ,58 ,58 ,58 ,58 ,58 ,58 ,58 ,58 ,58	Velc 20%	ocity 80% Depth	Velocity	Area (ft ²)	- 11	

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WBUD

Client:		CRWD		S	ite Location	: <u>TB 37</u>	3.2	
Project No.:	0002.	- 129						South of Watkin
Date:	05/05	109			Weather	: Partly (Touchy & m	indy
Sampler(s):	DL			Sar			may i i)
Start Time:	12:55					: 12:57		
End Time:	1:15						······································	
Channel Conditions:	Clear			DTW M	easurement	: 6' 10 1/2	" e-	88
COC Number:	·····							**************************************
Provide and the second s		·				Notes	:	
	<u>`</u>	Field Parameters						
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)) D.O. (mg/l	у) рН	(S.U.)			, , , , , , , , , , , , , , , , , , ,
	15,14.9		17.05				·····	
						<u></u>	<u></u>	
Stage H	t:		Rated Flov	v:		Gauged Flow	N: 2,9	(
						_		
		5	Stream Gau	ging Data	1			
Distance from	With an	D (1 (0)	Velocity	Vel 20%	ocity 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)			05			(10300)		
			-,05					· · · · · · · · · · · · · · · · · · ·
2		1.15	,08					
3		1,2	.36			And		
		1.12	,5a					
5	·	1.2	.68			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
		1,3	.50					
7		1.3	,26					
8		1.	05					·
			-:06			····		
Bank		,9	7,09					
				<u></u>				
	[

68°F

WB 112

Client:		CRWD	_	Sit	e Location	-TB 3	3.2	· · · · · · · · · · · · · · · · · · ·
Project No.:	0002-	129	-	Site I	Description	Tributary	Stream S	outh Watkins
Date:	0109/0	1	_			- Mrs		
Sampler(s):	DL		-	Sam		:(Yes		o
Start Time:						: 12		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
End Time:							,	
Channel Conditions:	· · · · · · · · · · · · · · · · · · ·		_	DTW Me	asurement	7'	211	7.16
COC Number:			_					·
					· · · · · · · · · · · · · · · · · · ·	Notes:		
	1	Field Parameters	1	T				
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l)	pH	(S.U.)			· · · · · · · · · · · · · · · · · · ·
	IP.3		15.96					
04 H			D (151			Gauged Flow	07	γ
Stage H	t:		Rated Flow:			Gauged Flow	: <u>() • 1</u>	6
		S	tream Gaug	ing Data				
Distance from Initial Point (ft)	Width (ft)	Depth (ft)	(0070	Velo 20% Depth	city 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)		0.75' -	-0.07	-0.07				
A CALL CALL CALL CALL CALL CALL CALL CA		Young	-D.DS	-0.05				
2		÷ 9	+	86.5			-	
3		,9/-		1.27				
4.		.951		7.26				
5		. /	•	5 11				
				/)。				
Le I		and a second sec		D.11 D.23				
(Alicenter of the second s				D.D. D.D.S. D.D.S.				
71) /) /)]		D.D.2 D.D.2 D.D.2 D.D.8				
ا الملية		11		0.11 0.23 0.03 0.08 0.03				
7' 8'		11		D.D3 D.D3 D.D8 D.D8	· · · · · · · · · · · · · · · · · · ·			
7' 8'		11		D.D3 D.D3 D.D8 D.D8				
7' 8'		11		D.D3 D.D3 D.D8 D.D8				

WB 11/2

Client:	CRWD	Site Location: TB 33, 2
Project No.:	0002-129	Site Description: Tributary Stream So Walking
Date:	06/22/09	Weather: 89° & Humid Some Clouds
Sampler(s):	DL	Samples Taken: Yes No
Start Time:	2:30	Sample Time: 2:30
End Time:	2:47	
Channel Conditions:	fairly Clear	DTW Measurement: 7 1" after rains 7.08
COC Number:		
		Notes: lots of vegitation
	Field Parameters	

Field Form: 2009	Stream	Sampling
------------------	--------	----------

Temp. (⁰C) **Cond.** (mS/cm) **D.O.** (mg/l) Sample I.D. **pH** (S.U.) 23.Y 11.22

Gauged Flow: 1.34

Stage Ht:_____

Rated Flow:

Stream Gauging Data

Distance from Initial Point (ft)	Width (ft)	Depth (ft)	Velocity (60% Depth)	Velc 20% Depth	ocity 80% Depth	Average Velocity (ft/sec)	Area (ft ²)	Discharge (Q, ft ³ /sec)
0, (left side)		D.8		-0.04				
• 1		0.9		-0.07				
2		1.0		-D.01				
<u> </u>		1.0		.32				
4		1.0		,45				
5		1.0		,50				
Ý				,04		<u>н , уулдан как н т</u>		
: 7			10	-0.02				
8		1.0	1	-0.05				<u></u>
9		0.8		-2.04				
(°O		0.65		.0.13				
Bank		.0 M5		-0.01				
		3						
								· · · · · · · · · · · · · · · · · · ·
T:\0185\04\292\Field Forms\Gauging Form	3		V	UB,	1/2			March 27, 2002

Client:		CRWD	_	Si	ite Location	: TB 3	33.2	
Project No.:	0002	- 129	- I le - Cal					ins
Date:		109	- Stuped 6	y Yar				"台灣"。
Sampler(s):	DL		Brother - Can - Starped E - Starped E - WRD 2 Ca - Jule - 7/6 - Jule - 7/6	λ Sam	nples Taken	: <u>(Ye</u>	s) No	
Start Time:	<u> </u>			Sa	ample Time			•
End Time:	, .	· · · · · · · · · · · · · · · · · · ·	<u> </u>					
Channel Conditions:	<u></u>		_	DTW M	easurement:	7.2	5	
COC Number:					w.			
		17- 17- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-			· · · · · · · · · · · · · · · · · · ·	Notes:	. <u> </u>	
		Field Parameters	1			-		
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	<u> </u>		(S.U.)			
	2.4		8,27					
	s. 1 1	3						<i>u</i>
Stage H	t: <u>7'3'</u>		Rated Flov	v:		Gauged Flov	v:	
r			Stream Gau			1		
Distance from	Width (ft)	Depth (ft)	Velocity (60%	20%	ocity 80%	Average	Area (ft ²)	Discharge
Initial Point (ft)		Depin (ii)	Depth)	Depth	Depth	Velocity	Alca (III)	$(Q, ft^3/sec)$
			Depui)		Dopti	(ft/sec)		(2, 11, 500)
0, (left side)						(ft/sec)		(2,11,500)
0, (left side)						(ft/sec)		
0, (left side)		······				(fl/sec)		(((, , , , , , , , , , , , , , , , , ,
0, (left side)		······				(fl/sec)		(((, , , , , , , , , , , , , , , , , ,
0, (left side)						(fl/sec)		(((, 1, 1, 5, 6)))
0, (left side)						(ft/sec)		(((, , , , , , , , , , , , , , , , , ,
0, (left side)						(ft/sec)		
0, (left side)						(ft/sec)		
0, (left side)						(ft/sec)		
0, (left side)						(ft/sec)		
0, (left side)						(ft/sec)		
0, (left side)						(ft/sec)		
0, (left side)						(ft/sec)		

WB 11P

Field For	rm: 2009	Stream	Sampling
		OCI OCCILL	~~~~~ <u>~~</u>

Client:		CRWD		S	ite Location	: TB 3	3.2	
Project No .:	<u> </u>	1247						h of Watki
Date:	09-03	3-2004				Clear		
Sampler(s):	DL			San	ples Taken:	<u> </u>	s) No	2940.000
Start Time:	3:12		a	Sa	imple Time:	3:15	-	991-199-1994 (n. 1999)
End Time:	3:28					· · · ·		
Channel Conditions:	Clear, C	DVERGEDWA		DTW M	easurement:	7'1"	7.	08
COC Number:	<u> </u>							
f						Notes	:	
		Field Parameters						ann an an Anna an Anna ann an Anna an A
Sample I.D.	Temp. (⁶ C)	Cond. (mS/cm) D.O. (mg/l) рН	(S.U.)			
	14.4		2.ec					······································
			9.63			2		
Stage H	t:	14 databalda dama 16 ya a 19 100 y	Rated Flov	v:		Gauged Flov	,, 0.8	99
								onneeroon.org
		·	Stream Gau	ging Data				
Distance from	WEER (D)	Durath (6)	Velocity	Vela 20%	ocity 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)		.5				(10300)		
				+	1			
11 L		.15	-,07			**************************************		
2		.75	03					
2-		,45	,01			444 4		
2-34		,9	,01 10.25					
3		,9 ,9 ,95	,01 ,00,,25 ,38					
3		,9	,01 ,10,25 ,38 ,26					
3 4 5		,9 ,9 ,95 .9	,01 10.25 ,38 ,26 ,07					
3 4 5 6 1		,9 ,9 ,95 .9	,01 10.25 ,38 ,26 ,07 -,01					
3 4 5		,9 ,9 ,95 .9	,01 10.25 ,38 ,26 ,07					
3 4 5 6 1		,9 ,9 ,95 .9	,01 10.25 ,38 ,26 ,07 -,01					
3 4 5 6 1		,9 ,9 ,95 .9	,01 10.25 ,38 ,26 ,07 -,01					
3 4 5 6 1		,9 ,9 ,95 .9	,01 10.25 ,38 ,26 ,07 -,01					

Client:	C	RWD		Si	te Location	WRO.	2	
Project No.:	0002-1	29		Site	Description	: Clear		
Date:	9-3-	9	went		Weather	: Sunny	Few 1	Clouds
Sampler(s):	DL			Sam	ples Taken	: (¥e:		
Start Time:	12:50			Sa	mple Time	12:50	5	
End Time:	12:55					۷ ه.		
Channel Conditions:	×, ,		-	DTW M	easurement	6'		
COC Number:	<u></u>	· · · · · · · · · · · · · · · · · · ·						
	The Bart Hall of the The Wester Address				1	Notes:		
	F	field Parameters	4					
Sample I.D.		Cond. (mS/cm)) pH	(S.U.)			••
WRO.2	16.4		9.65		147-7-1			
	Anton -							
Stage H	t:		Rated Flow	/:		Gauged Flov	V:	the state from the second of
			· ·					
{	T		Stream Gau			1	1	
Distance from	· Width (ft)	Depth (ft)	Velocity (60%	20%	ocity 80%	Average	Area (ft ²)	Discharge
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T30185334292/Field Forms/Gauging Form

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Client:	CRWD			Site Location: CR 28.7					
Project No.:	0002-129			Site Description: Riser @. MN 11W-1 15					
Date:	09-0	3-2009	_	Site Description: Rijer @ MN 110 7 15 Weather: Clear, Sunny					
Sampler(s):	DL	,	M	Samples Taken: Yes No					
Start Time:	3:39		_	Sample Time 3' 111					
End Time:	3:48	3		offerio: DTW Measurement: 6' 1'					
Channel Conditions:	Alfre 1	Houms; clea	swi w otteriwi	у ДТ Ш М	leasurement	: 6'1	11		
COC Number:				<u> </u>			<u> </u>		
				Notes:					
Field Parameters									
Sample I.D.	Temp. (⁰ C)	Cond. (mS/cm)	D.O. (mg/l	pH	(S.U.)		H	Windows	
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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)	
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Cedar Chain of Lakes Evaluation Memorandum

TECHNICAL MEMORANDUM

TO:	Marvin Brunsell, Chairperson, Clearwater River Watershed District
FROM:	Norman Wenck, District Engineer
DATE:	November 11, 2009
SUBJECT:	Evaluation of Cedar Lake Project #06-1

INTRODUCTION

This memorandum is prepared to assess Cedar Lake Project #06-1. Project #06-1 was initiated in 2007 in response to a petition by lake shore residents to address the declining water quality and severe algae blooms in Cedar Lake.

The anticipated goals of the project were to reduce phosphorus concentrations in Cedar Lake and the accompanying nuisance algae blooms. More specifically, the goal of the project was to reduce the phosphorus load to Cedar Lake to 1,000 lbs and the in-lake summer average phosphorus concentration in Cedar Lake to 20 μ g/l. An additional goal of the project was to further reduce phosphorus loading from upstream lakes through a reduction in the carp population of the lakes.

The recommended solution for reducing the phosphorus loading and carp population in Cedar, Albion, Henshaw, and Swartout Lakes consisted of carp barriers, sedimentation basins, watershed best management practices (BMPs), and a phosphorus removal treatment system. However, the phosphorus removal treatment system was deleted and a three year evaluation task was added. This memorandum presents our evaluation of Project 06-1 as of this date.

Several measures were implemented to reduce in lake phosphorus concentrations in Swartout, Albion, and Henshaw Lakes, thereby reducing the phosphorus load to Cedar Lake and improving lake water quality in Cedar, Swartout, Albion, and Henshaw Lakes. The projects that were implemented are described below and their locations are shown on Figure 1.

Ultimately, the plan that was implemented was a portion of the original plan. When addressing impairments in shallow lakes it is also necessary to address the health of biological communities. To improve the quality of shallow lakes, it is beneficial to restore the health of biological communities in the lake, including fish, plants, and zooplankton. Ideally, shallow lake management plans incorporating water level management to promote vegetation growth, and fish community management strategies, such as lake drawdowns or the application of Rotenone to promote rough fish kills, would be implemented. However, efforts to implement these strategies have been met with limited success with landowners so the implementation strategies were limited to rough fish barriers and harvesting, and watershed BMPs.

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Best Management Practices (BMPs)

The Project recommended the implementation of watershed BMPs, including drain tile inlet replacement, buffering of tile inlets, and ditch and stream buffer strips.

Watershed BMPs that were implemented in 2007 included the buffering of five tile intakes for a three year period, 14 acres of alfalfa buffer for one year, and 132 acres of soybean stubble buffer for one year. The one year cropland buffers were not renewed and were planted into corn in 2008. There were no additional buffers implemented in 2008 or 2009.

Rough Fish Management

Rough fish management activities including the construction of carp barriers and rough fish harvesting were recommended and implemented as part of the Project to help control rough fish populations in the upstream lakes.

The Project recommended the construction of four carp barriers on Cedar Lake tributary streams. The fish barriers are intended to impede upstream migration of carp, which prevents adult carp from reaching their preferred spawning grounds in the wetlands adjacent to the lakes. This can help keep carp populations in check and also reduces carp damage to shallow upstream lakes. Carp can cause problems in shallow lakes by stirring up bottom sediments through their feeding activities. This makes the waters turbid which typically does not allow submerged aquatic vegetation to grow in the lake. The disturbance of the nutrient rich bottom sediments can also lead to an increase in internal cycling of nutrients from the bottom sediments, exacerbating the impairment of upstream lakes and therefore adding higher phosphorus loads to Cedar Lake.

Three fish barriers were installed during early spring 2007 on the Cedar Lake inlet upstream of Highway 55, and at the Swartout Lake and Henshaw Lake outlets. In 2008, carp barriers were installed at two inlets to Swartout Lake and in the diversion channel upstream of Segner Pond. Based on observations made during 2008 and 2009, the barriers appear to be effectively restricting the upstream migration of carp from Cedar Lake to the upstream lakes.

In addition to the installation of fish barriers, rough fish harvesting was conducted in the upstream lakes in 2008. Approximately 57,000 lbs of carp were removed from Swartout Lake by two nettings performed by a commercial fishing operation in February 2008. An additional 4,760 lbs of rough fish were removed from Swartout Lake in December 2008. Netting was also performed on Henshaw Lake in 2008, removing 220 lbs of bullheads from the lake.

While it is difficult to completely eradicate carp from lakes, effective rough fish population management would likely result in a significant reduction in the internal loading in upstream watershed lakes, and a decrease in nutrient loading to waters downstream. A reduction in the carp population in the lakes together with improved water clarity may allow aquatic vegetation to grow in the lake, which would provide more suitable habitat for waterfowl and other wildlife.

It is difficult to determine with certainty the impact that the rough fish management practices that have been implemented have had on carp populations. However, observations made in 2008 and 2009, coupled with the significant decrease in the amount of carp harvested from the lake in

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December 2008, indicate that the implemented practices have been effective in reducing carp populations.

Sedimentation Basins

The Project recommended the construction of three sedimentation basins. However, one larger basin was constructed.

Construction of the Segner Pond treatment wetland on the Cedar Lake inlet just upstream of Cedar Lake was completed in 2008. Construction of the treatment wetland began in December 2007, and the grading and placement of the limestone treatment filter was completed in January 2008. Flow from the inlet to Cedar Lake was not diverted into Segner Pond until September 2008 to allow vegetation to become established on the slopes of the pond and in the mitigation wetland.

The treatment wetland consists of a 2.9 acre sedimentation basin with a limestone treatment filter. A diversion constructed in the stream channel upstream of the treatment wetland routes stream flow into the sedimentation basin to remove particulate phosphorus from the inflow to Cedar Lake. The limestone treatment filter further reduces the phosphorus load to Cedar Lake by removing dissolved phosphorus from the inflow. The limestone filter targets the soluble portion of the phosphorus load to Cedar Lake.

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RESULTS

Water quality monitoring was conducted for the past three years to track the progress of the Project. The results of the monitoring are described in the following section. Samples were collected from four lakes, including Albion Lake, Cedar Lake, Henshaw Lake, and Swartout Lake. Samples were also collected from eight locations in tributary streams in the subwatershed during the time period that the tributary streams were flowing.

Stream Loads

The tributary streams that were monitored typically started flowing in early spring after snow melt and flowed until early summer, depending on precipitation conditions. Since precipitation was near or below normal in 2007-2009 (See Table 1), most of the streams were not flowing after early summer during each year in which they were monitored.

	2007 Annandale/ Corinna (Wright)	2008 Annandale/ Corinna (Wright)	2009 Annandale/ Corinna (Wright)	1971- 2000 Normal (Cokato)
January	0.39	0.34	0.66	0.93
February	0.69	0.40	0.76	0.70
March	2.29	0.83	2.93	1.69
April	1.78	3.31	0.97	2.33
Мау	2.37	5.21	0.88	3.30
June	2.29	4.12	5.49	4.62
July	1.84	1.61	1.45	4.04
August	4.97	1.95	5.90	4.00
September	5.20	2.46	1.06	2.78
October	4.79	2.39	6.32	2.23
November	0.02	1.31		1.73
December	1.19	1.07		0.71
Total	27.82	25.00	26.42*	29.06

Table 1: Annandale Precipitation, 2007-2009

*Total through October (Normal through October is 26.62 inches)

The calculated phosphorus loads at each stream location monitored from 2007-2009 are shown below in Table 2 and on Figure 2. Runoff and phosphorus loads were highest in 2008 due to increased precipitation during the early summer period when the streams were flowing. Overall, the external phosphorus load to Cedar Lake, as measured at monitoring site SSW04 ranged from approximately 500 lbs to 1000 lbs with an average of 797 lbs compared to the project goal of 1000 lbs.

The phosphorus load calculated for monitoring site SSW02 indicates that a large load of phosphorus enters Swartout Lake from the watershed east of the lake.

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Mean TP Concentration (ug/L)			TP Load (lbs)			Runoff (in)			
Site	2007	2008	2009	2007	2008	2009	2007	2008	2009
SCE01	38	28	34	121	199	136	1.6	3.6	2
SCE03	186	49	*	136	8	*	*	*	*
SDD01	352	165	178	163	120	10	3.1	4.8	0.4
SHE01	283	222	195	81	247	61	1.2	4.5	1.3
SSW01	232	159	276	98	698	602	0.7	7	3.5
SSW02	96	301	345	292	858	739	0.5	4.7	3.5
SSW03	257	71	*	102	39	*	1.6	2.2	*
SSW04	58	201	265	870	1011	512	1.2	4	1.5

Table 2: Tributary Stream 2007-2009 Data

*Site not monitored

In-Lake Water Quality

Summer average phosphorus and chlorophyll-a concentrations and Secchi depth from the four lakes monitored from 2007-2009 is shown below in Table 3. Data from the closest year in which each lake was monitored prior to the start of the Project is also included in Table 3 for comparison. These summer average values are compared to past concentrations from all monitoring conducted prior to 2007 in Appendix A.

		Summer Average (June-Sept)				
Lake	Year	Phosphorus (ug/L)	Chlor-a (ug/L)	Secchi Depth (m)		
	2006	296	203	1.2		
	2007	186	79	1.1		
	2008	188	97	1.1		
Albion	2009	173	38	1.4		
	2006	58	20	2.6		
	2007	29	11	1.7		
	2008	19	9	1.8		
Cedar	2009	32	12	1.9		
	2005	281	144	0.5		
	2007	390	278	0.2		
	2008	266	121	0.7		
Henshaw	2009	90	25	0.7		
	2006	372	207	0.9		
	2007	262	168	0.2		
	2008	401	832	0.6		
Swartout	2009	299	152	0.2		

Table 3: Summer Average Monitoring Data

Overall, summer average phosphorus and chlorophyll-a concentrations in Albion and Henshaw Lakes have decreased since the start of the Project. Similarly, water clarity in the two lakes has improved. Abundance of submerged aquatic vegetation was noted to be improved in Albion and Henshaw Lakes in 2009. The suspected cause of the improvement in water quality in these two lakes is the improved ecological health of the two lakes resulting from natural fish kills due to freeze out and lower water levels due to below normal precipitation allowing for an increase in aquatic vegetation growth.

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Summer average total phosphorus and chlorophyll-a concentrations in Swartout Lake have remained high but relatively stable since 2006. Water clarity remains low in the lake due primarily to severe algae blooms throughout the summer.

Monitoring data from events conducted from 2007 to 2009 in Cedar Lake is found in Appendix B. Overall, summer average in-lake phosphorus concentrations ranged from 19 to 32 μ g/l during that time period. From 2007 to 2009, Cedar Lake was also sampled by a lake resident as part of a volunteer lake monitoring program. As demonstrated in Appendix B, data from the two monitoring programs was found to be similar.

While in-lake summer average phosphorus concentrations have decreased in Cedar Lake since 2006, they remain above the Project goal of $20 \mu g/l$.

Although internal loading of phosphorus is not suspected to make up a significant portion of the phosphorus load in Cedar Lake, it is likely that there is some internal loading of phosphorus in the lake. This is evidenced by increased concentrations of phosphorus in the lake in 2009, even though the external load to the lake was relatively low. Samples were collected near the bottom of the lake in 2007 and 2009 (See Table 4). Elevated concentrations of phosphorus near the lake bottom indicates potential internal loading. Temperature and dissolved oxygen profile data indicates that the lake is stratified during most of the time period from June to September.

Table 4. Cedar Dake Tear Dottom Monitoring Data						
			OrthoPhos			
Site ID	Date	TP (µg/L)	(µg/L)	Total Fe (mg/L)		
LCE01B	5/25/2007	56	39	0.14		
LCE 01B	6/29/2007	158	121	0.08		
LCE01B	7/27/2007	150	129	0.12		
LCE01B	8/24/2007	159	139	0.04		
LCE01B	6/11/2009	212	166	< 0.015		
LCE01B	7/13/2009	279	179	0.015		
LCE01B	8/6/2009	272	254	0.036		
LCE01B	9/14/2009	365	263	0.135		

Table 4: Cedar Lake Near Bottom Monitoring Data

It is suspected that curly leaf pondweed, which is present in small areas of the lake, may contribute to internal loading in the lake by making phosphorus from buried lake sediment available in the water column during the growing season.

Although the summer average Secchi depth has not shown an improvement since 2006, at times, water clarity in Cedar Lake has been very good. In 2007, although the average Secchi depth was 1.7 meters, the observed range of Secchi depth was 0.9 to 5.2 meters. In 2008, Secchi depth ranged from 1.4 to 5.5 meters with an average of 1.8 meters, and in 2009 Secchi depth ranged from 1.1 to 9.4 meters with an average of 1.9 meters.

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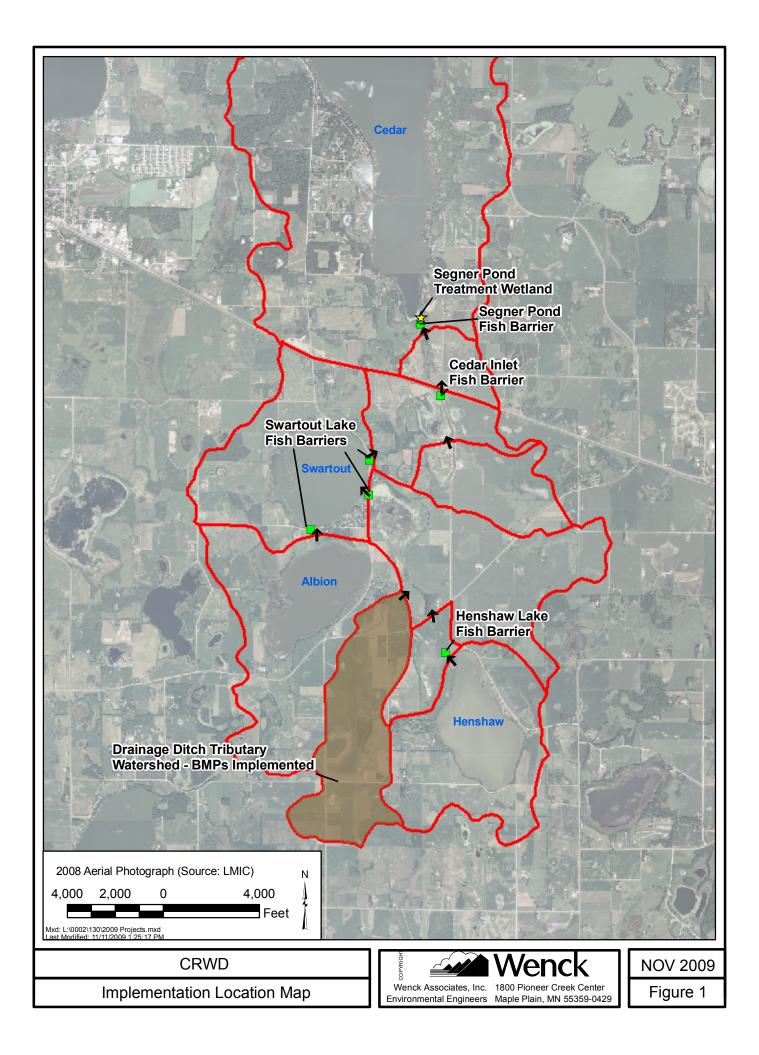
CONCLUSIONS

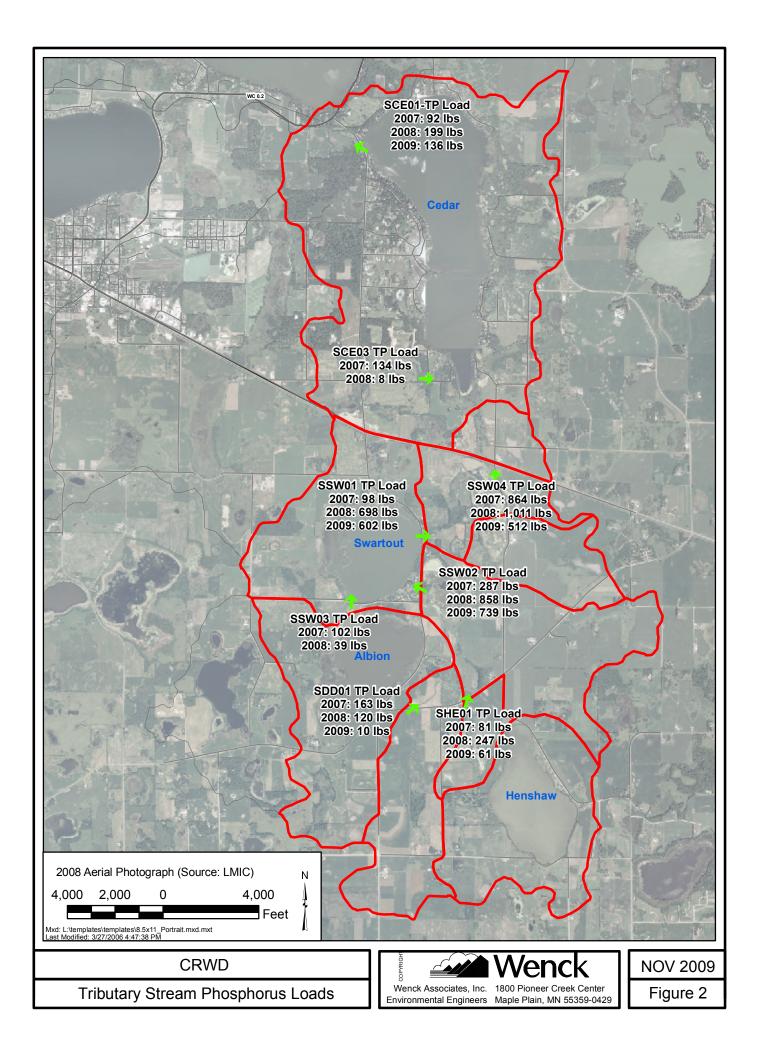
- 1. The external phosphorus load to Cedar Lake from the upstream watershed for 2007 to 2009 was between approximately 500 lbs and 1000 lbs with an average of 798 lbs/year compared to the project goal of 1000 lbs.
- 2. Precipitation during 2007 to 2009 was below average overall, and thus lower than average annual runoff.
- 3. The in-lake phosphorus concentration in Cedar Lake was between 19 and $32 \mu g/l$ compared to a goal of $20 \mu g/l$.
- 4. Three years of reduced external phosphorus loading has not resulted in meeting the Cedar Lake in-lake phosphorus concentration goal.
- 5. Fewer BMPs were implemented than planned.
- 6. Rough fish harvesting in conjunction with the installation of carp barriers was effective in reducing carp populations in Swartout Lake.
- 7. Curly leaf pondweed appears to be contributing to the internal phosphorus loading of Cedar Lake.

RECOMMENDATIONS

- 1. Continue funding additional BMPs (especially in the watershed tributary to Swartout Lake to the southeast) and maintain existing BMPs.
- 2. Continue maintaining carp barriers and continue with rough fish harvesting from Swartout Lake.
- 3. Continue the project evaluation monitoring program.
- 4. Consider curly leaf pondweed management in Cedar Lake, which may include vegetation inventories and chemical treatment.
- 5. Continue maintenance of Segner Pond.

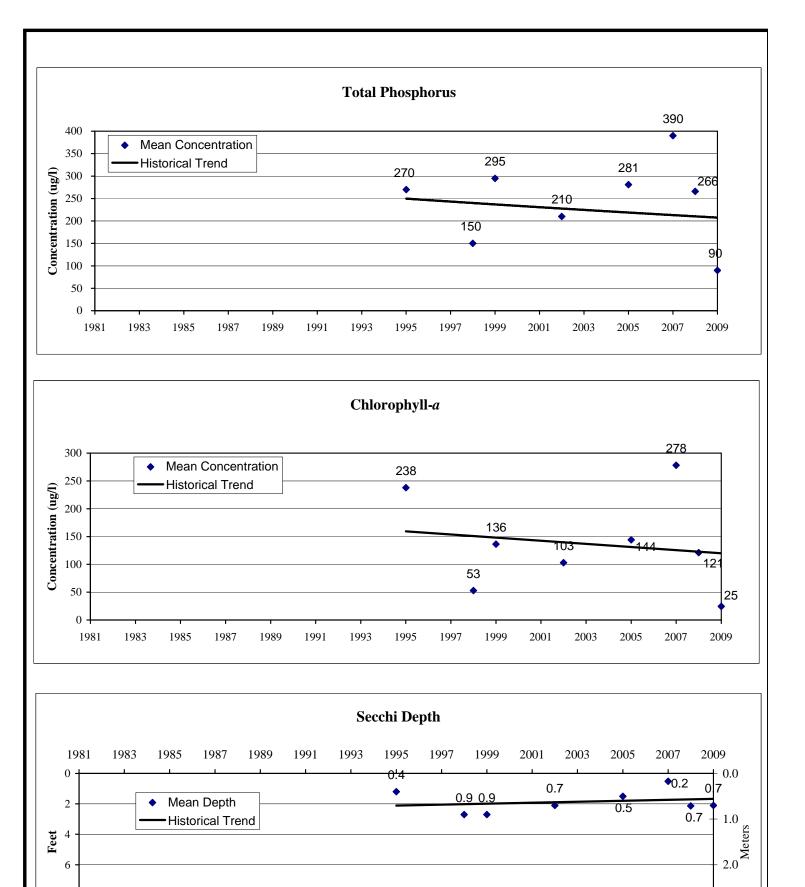
Figures





Appendix A

Historical In-Lake Water Quality



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Jan 2009

Appendix A-1

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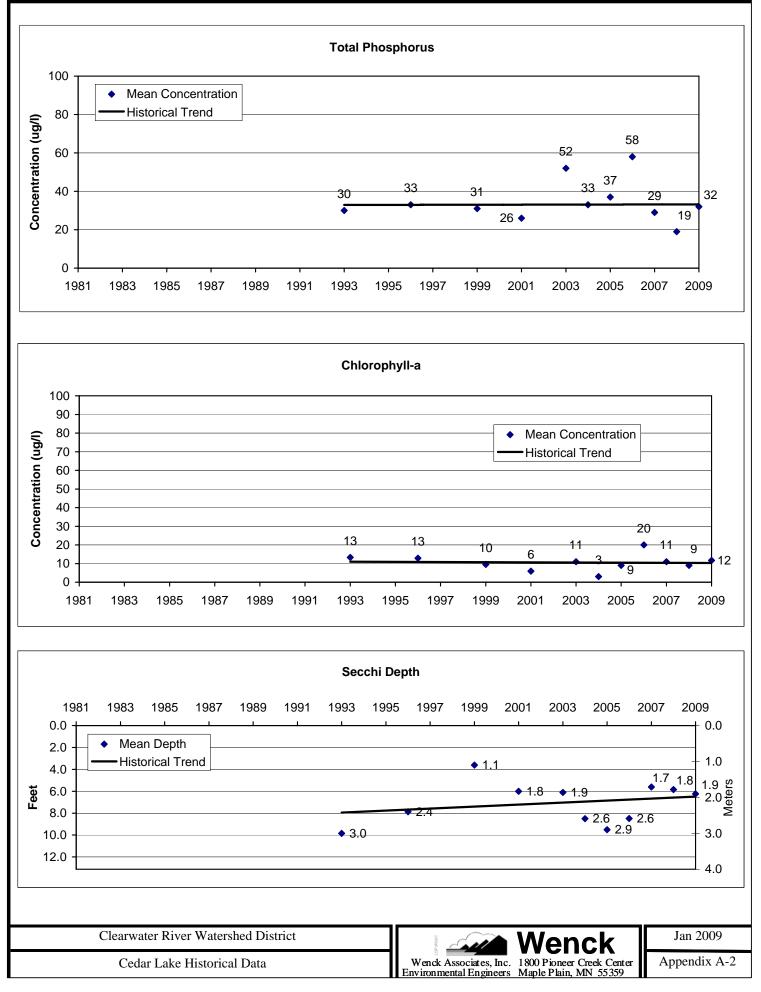
Wenck Associates, Inc. 1800 Pioneer Creek Center Environmental Engineers Maple Plain, MN 55359

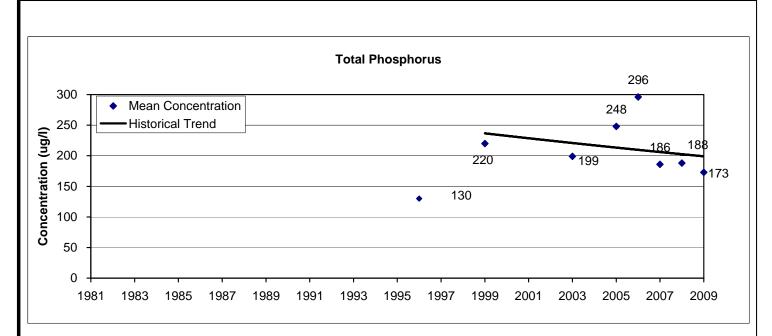
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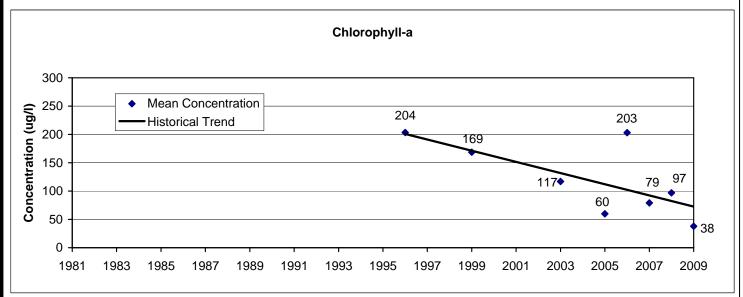
Clearwater River Watershed District

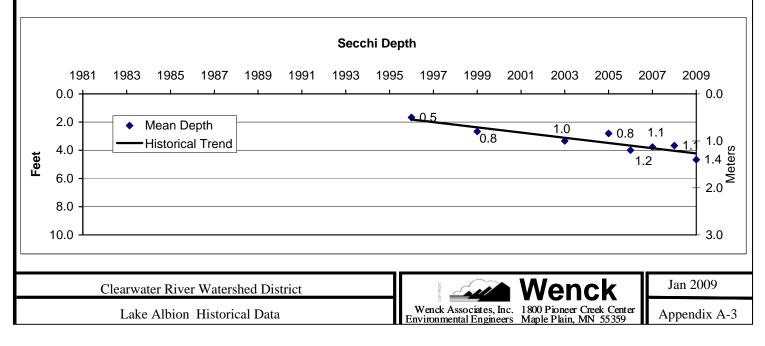
Henshaw Lake Historical Data

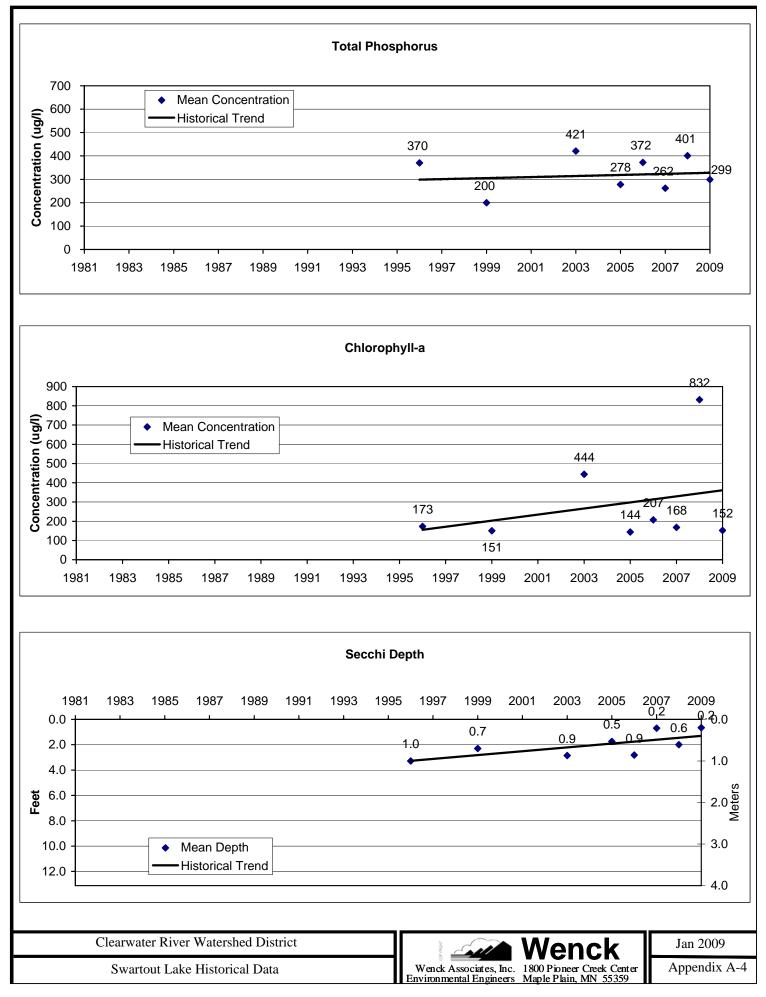
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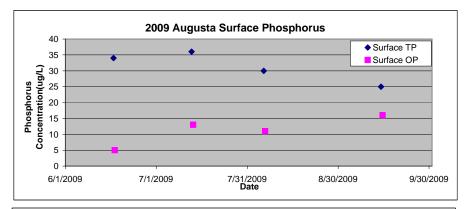
Appendix B

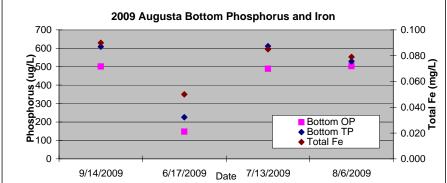
Cedar Lake Monitoring Data

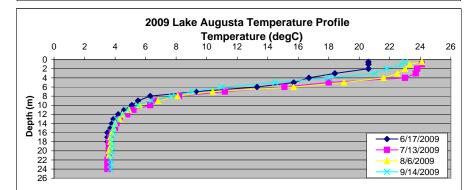
	Date	Total Phosphorus (ug/L)	Chlorophyll-a (ug/L)	Secchi Depth (m)
	5/25/2007	18		3.5
	6/29/2007	45	11	0.9
	7/27/2007	20	9	0.9
	8/24/2007	31	14	1.5
CRWD Sampling Results	2007 Summer (June-Sept) Average	32	11	1 1
Results	5/19/2007	26	6	1.1 5.2
	6/3/2007	37	21	2.1
	6/17/2007	28	16	1.4
	7/1/2007	34	9	1.4
	7/15/2007	20	4	1.1
	8/19/2007	20	14	1.7
	9/4/2007	19	8	1.4
	9/16/2007	21	8	2.0
Volunteer Lake		21	0	2.0
Sampling Results	2007 Summer (June-Sept) Average	26	11	1.6
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	5/8/2008	38	17	3.1
	7/7/2008	18	9.2	1.8
	8/6/2008	20		1.8
	9/30/2008			1.7
	10/21/2008	70	17	1.7
CRWD Sampling	2008 Summer (June-Sept)			
Results	Average	19	9	1.8
	5/18/2008	37	4	4.7
	6/16/2008	24	3	5.5
	7/20/2008	39	14	2.0
	8/17/2008	24	8	1.4
	9/14/2008	20	9	2.4
Volunteer Lake Sampling Results	2008 Summer (June-Sept) Average	27	9	2.8
	6/11/2009	26	13.8	3.5
	7/13/2009	42	16.3	1.1
	8/6/2009	32	9.2	1.4
	9/14/2009	26	7.4	1.8
CRWD Sampling	2009 Summer (June-Sept)		· · ·	
Results	Average	32	12	1.9
	5/17/2009	44	1	9.4
	6/14/2009	34	23	2.1
	7/19/2009	42	22	1.4
	8/23/2009	27	9	1.5
	9/20/2009	36	5	1.7
Volunteer Lake Sampling Results	2009 Summer (June-Sept) Average	35	15	1.7

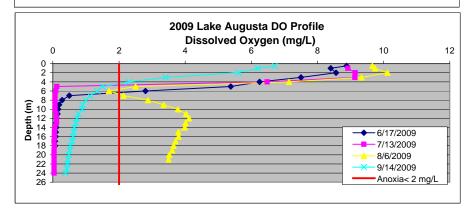
Appendix I

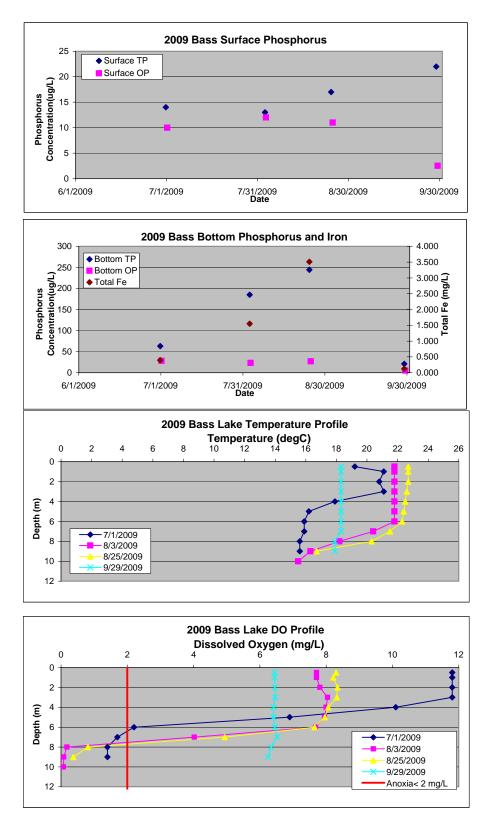
Lake Bottom Phosphorus Data

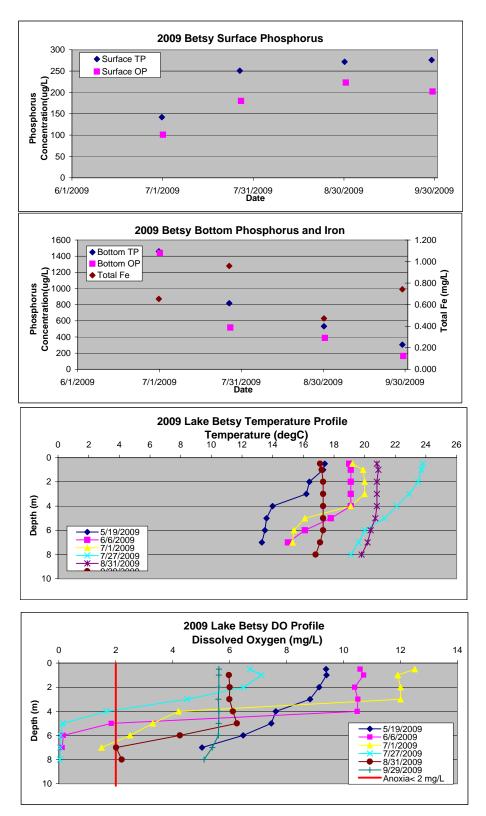


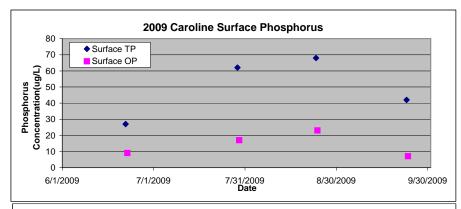


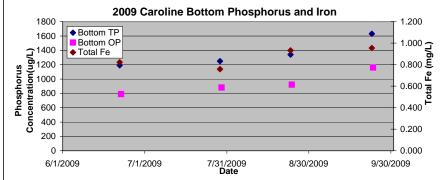


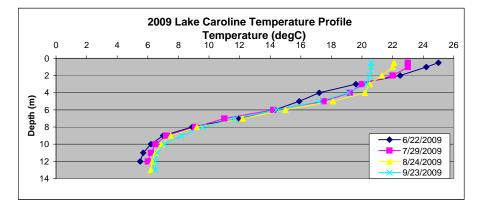


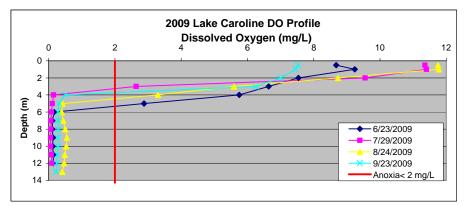


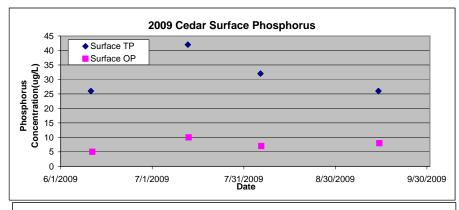


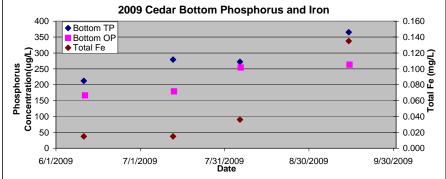


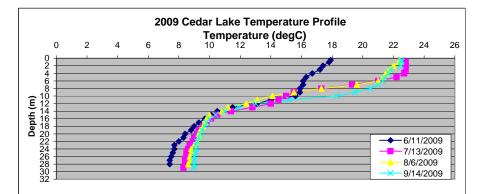


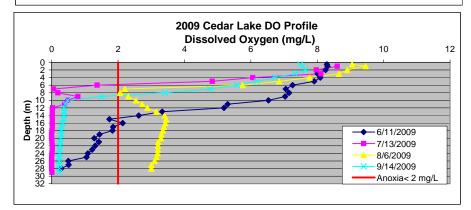


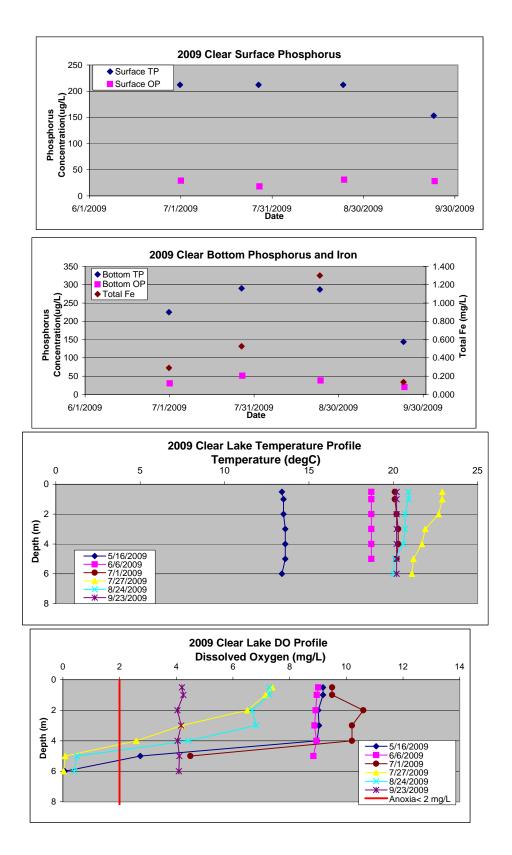


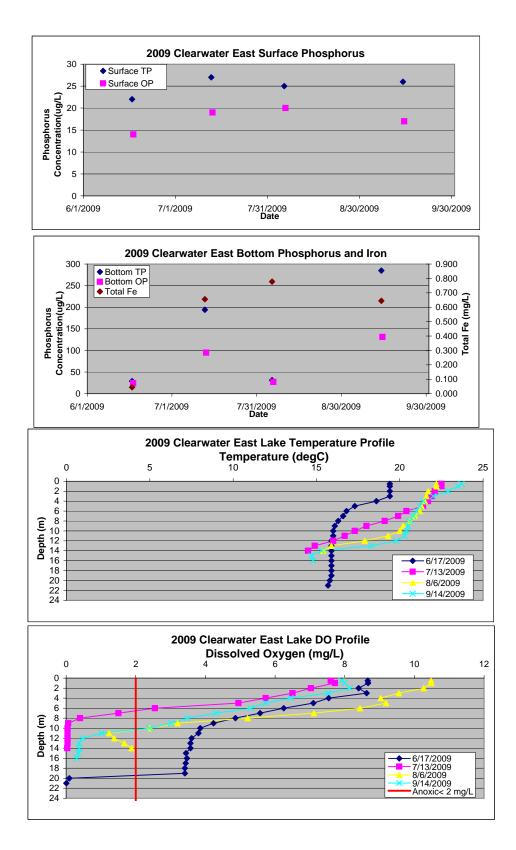


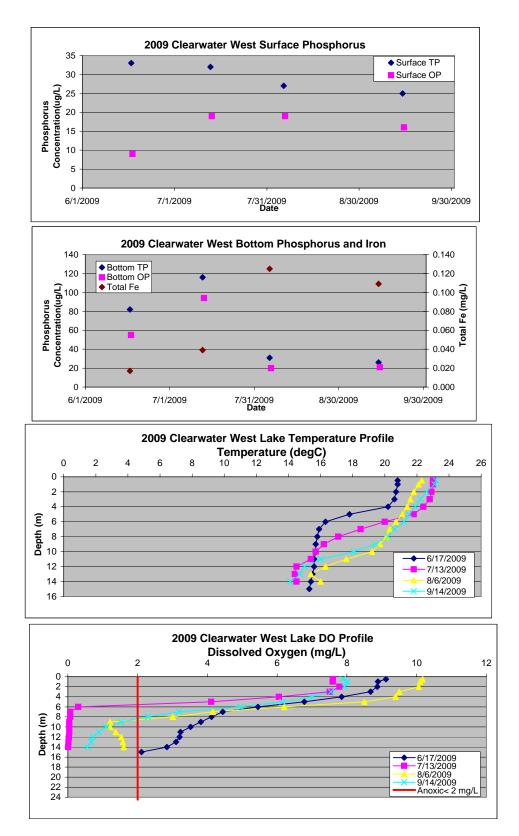


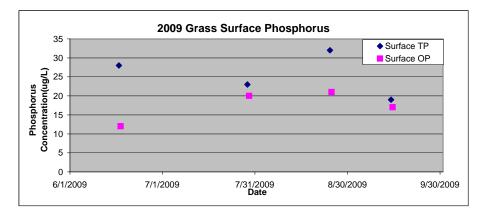


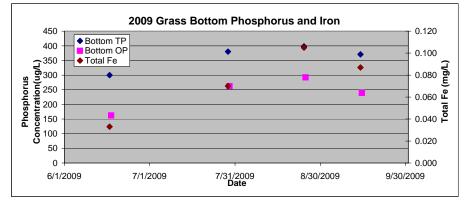


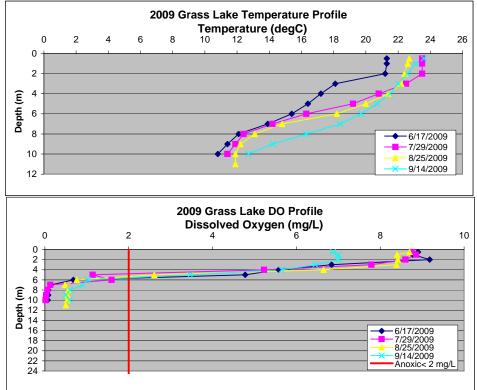


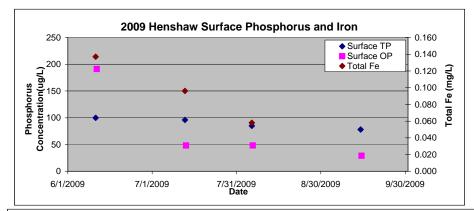


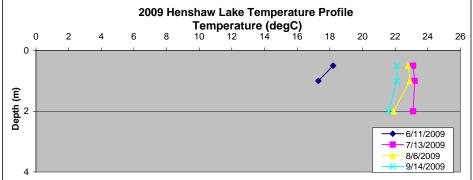


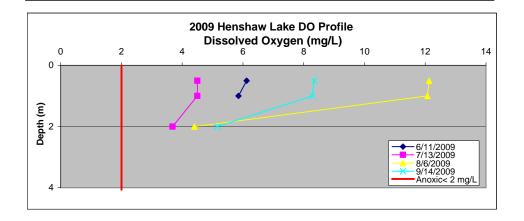


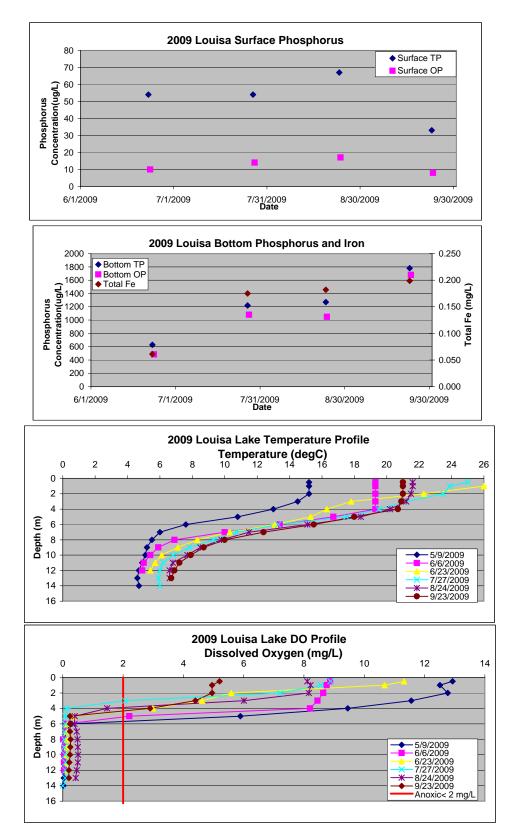


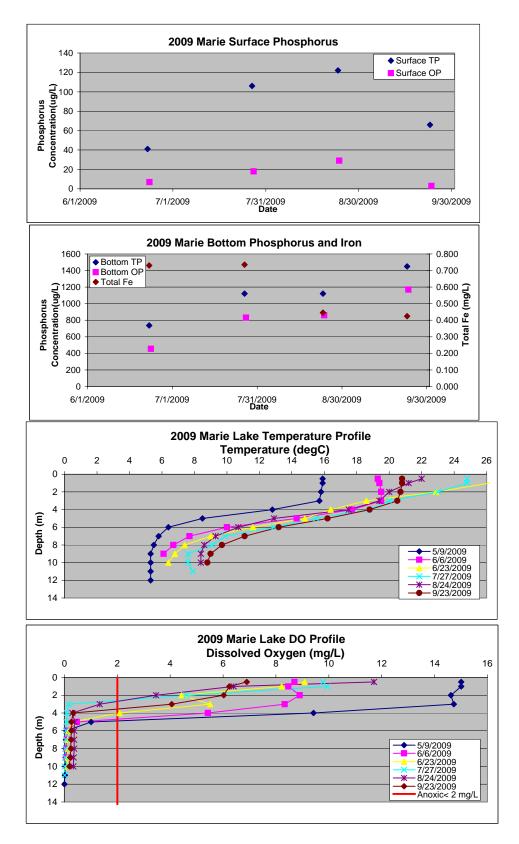


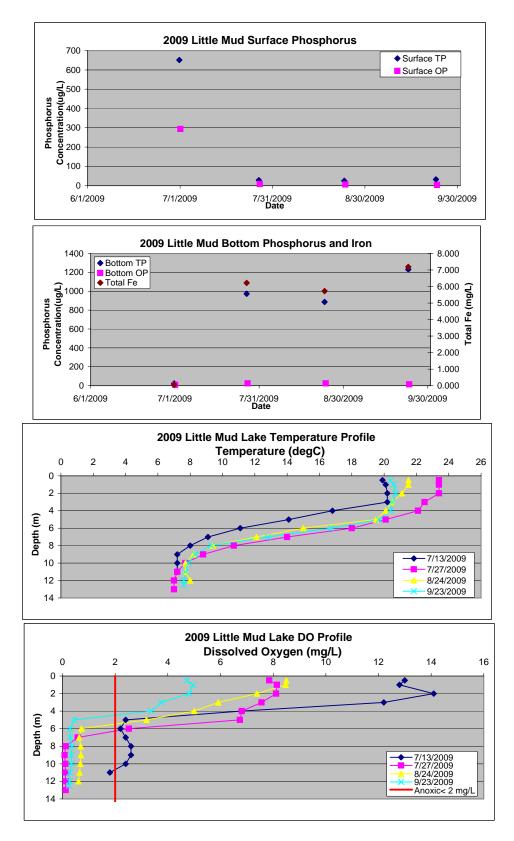


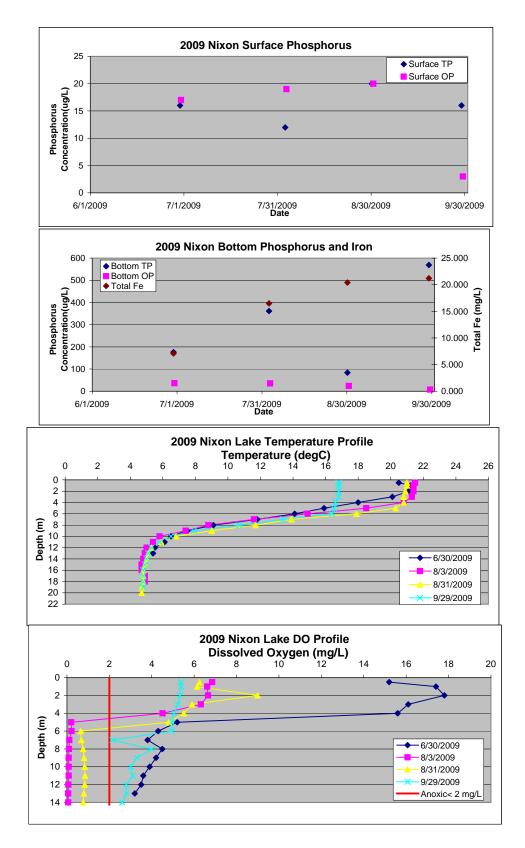


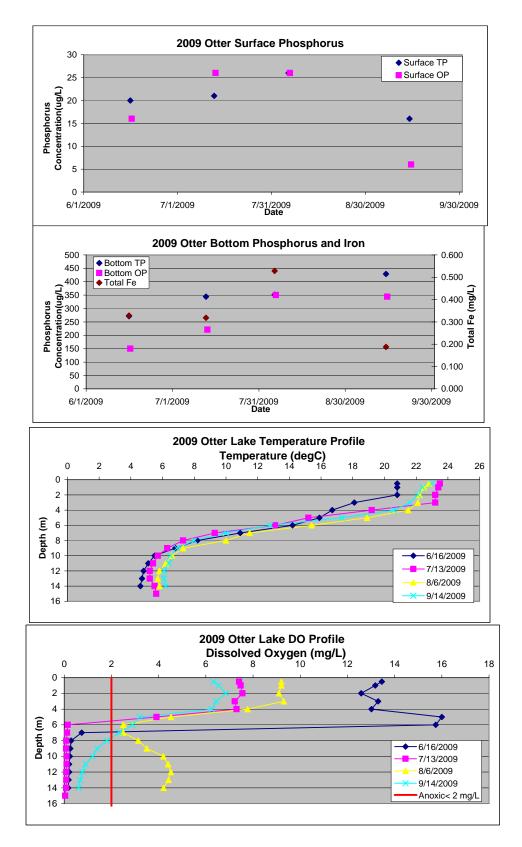


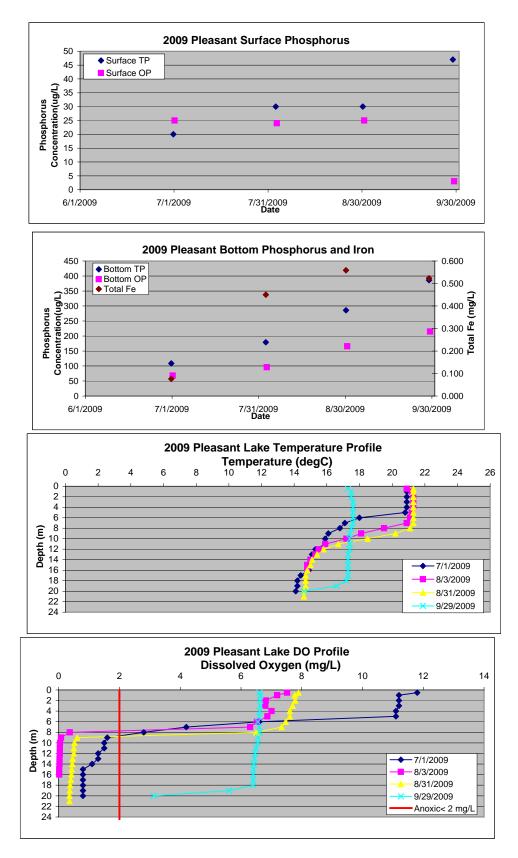


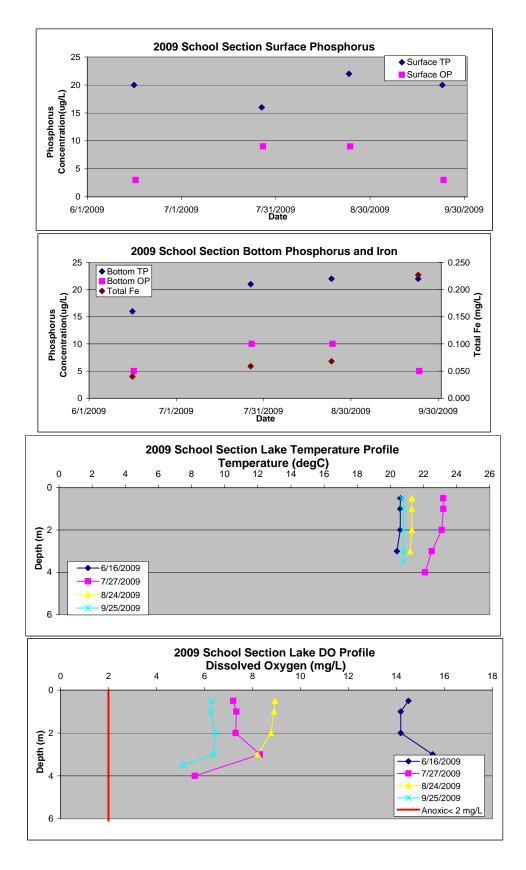


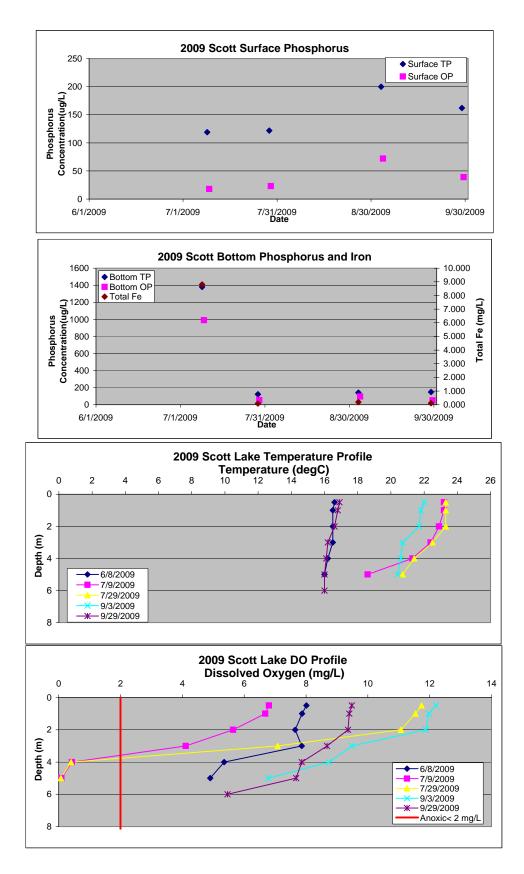


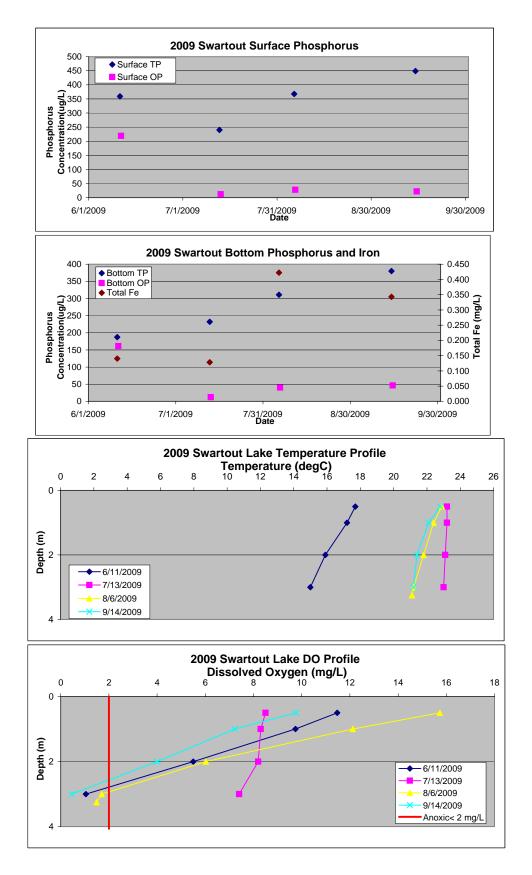


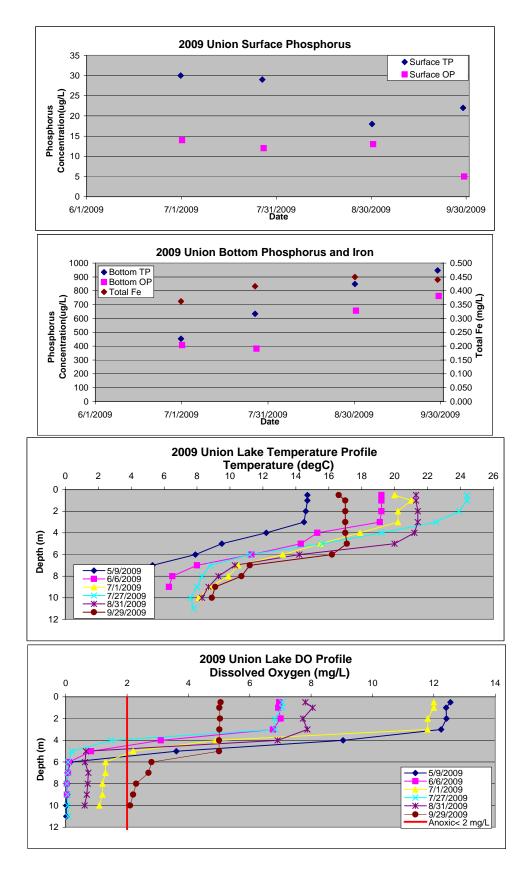


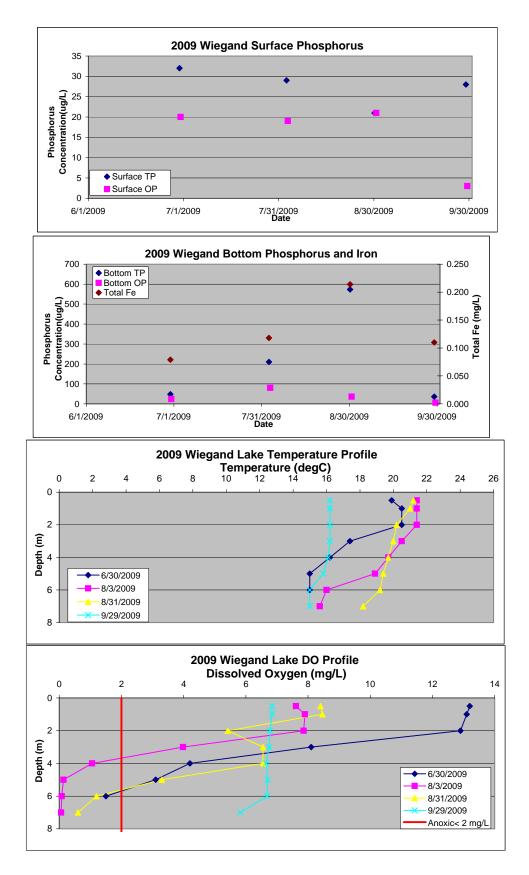












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