

**TMDL FOR DISSOLVED OXYGEN
FOR LAKE CONCORDIA, LOUISIANA
(SUBSEGMENT 101604)**

**DRAFT
MAY 25, 2007**

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(SUBSEGMENT 101604)

Prepared for

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Contract No. 68-C-02-108
Task Order 95

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May 25, 2007

EXECUTIVE SUMMARY

Section 303(d) of the Federal Clean Water Act requires states to identify waterbodies that are not meeting water quality standards and to develop total maximum daily loads (TMDLs) for those waterbodies. A TMDL is the amount of pollutant that a waterbody can assimilate without exceeding the established water quality standard for that pollutant. Through a TMDL, pollutant loads can be distributed or allocated to point sources and nonpoint sources discharging to the waterbody. This report presents a TMDL that has been developed for dissolved oxygen (DO) for Lake Concordia (subsegment 101604) in the Red River basin in east central Louisiana.

Lake Concordia is an oxbow of the Mississippi River in Concordia Parish near Ferriday, Louisiana. Lake Concordia has a surface area of approximately 1,150 acres (1.80 mi^2) and a relatively small drainage area of 7.16 mi^2 (excluding the lake surface area). The primary land uses in the subsegment are cultivated crops (60%), wetlands (18%), and open water (13%). Nonpoint sources of oxygen demand include runoff from cropland as well as septic tanks and individual home sewage treatment systems for homes along the edge of the lake. There are no point source discharges in this subsegment.

Subsegment 101604 was included on the final 2004 303(d) list for Louisiana as not fully supporting the designated use of propagation of fish and wildlife and was ranked as priority #7 for TMDL development. The DO criterion specified in the Louisiana water quality standards for this subsegment is 5 mg/L year round.

A water quality model (LA-QUAL) was set up to simulate DO, carbonaceous biochemical oxygen demand (CBOD), ammonia nitrogen, and organic nitrogen in Lake Concordia. The model was calibrated to conditions during July 23, 2002 – August 20, 2002, which is the period when the two lowest DO values were recorded in the lake (3.93 mg/L and 4.69 mg/L). Depths and widths in the model were based on a bathymetric map of the lake obtained from the Louisiana Department of Wildlife and Fisheries. Growth and death of algae were not simulated, but the effects of algal photosynthesis and respiration on DO were included by specifying chlorophyll in the initial conditions. Reaeration was specified in the model using a surface transfer coefficient calculated from wind speed. Decay rates for CBOD and ammonia

nitrogen were set to averages of values from LDEQ intensive field surveys in the Ouachita and Red River basins. Headwater flow rates were based on flows per unit area from several US Geological Survey (USGS) flow gages in surrounding areas. Headwater concentrations were based on field data collected by LDEQ and FTN Associates, Ltd. (FTN) in subsegments with at least 40% cropland. Model inputs for nonpoint source loads of CBOD and organic nitrogen, benthic loads of ammonia, and sediment oxygen demand were treated as calibration parameters; their values were adjusted until the model output was similar to the calibration target values.

The summer and winter projection simulations were run at critical flows and temperatures to address seasonality as required by the Clean Water Act. Reductions of existing nonpoint source loads were required for the projection simulations to show the DO criterion of 5 mg/L being maintained in the lake. In general, the modeling in this study was consistent with guidance in the Louisiana TMDL Technical Procedures Manual (the “LTP”).

A TMDL for oxygen demanding substances (CBOD, ammonia nitrogen, organic nitrogen, and sediment oxygen demand) was calculated for summer and winter using the results of the projection simulations. The TMDL calculations included an implicit margin of safety as well as an explicit margin of safety (10% of the TMDL) and an explicit allocation for future growth (also 10% of the TMDL). The wasteload allocation (WLA) for point sources was set to zero because there are no point sources in this subsegment. The load allocation (LA) for nonpoint sources was calculated from the loading simulated in the model. Nonpoint source load reductions of 16% in the summer and 13% in the winter were needed for the projection simulations to show the DO criterion of 5.0 mg/L being maintained in the lake. The results of the TMDL calculations for summer and winter are summarized in Tables ES.1 and ES.2.

Table ES1. Summer DO TMDL for subsegment 101604.

	Oxygen Demand (kg/day) from:				Total Oxygen Demand (kg/day)
	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	
WLA point sources	NA	0	0	0	0
MOS all point sources	NA	0	0	0	0
FG all point sources	NA	0	0	0	0
LA for nonpoint sources	14,403.57	14,775.34	1,332.19	0.20	30,511.30
MOS for nonpoint sources	1,800.44	1,846.92	166.52	0.03	3,813.91
FG for nonpoint sources	1,800.44	1,846.92	166.52	0.03	3,813.91
TMDL	18,004.45	18,469.18	1,665.23	0.26	38,139.12

Table ES2. Winter DO TMDL for subsegment 101604.

	Oxygen Demand (kg/day) from:				Total Oxygen Demand (kg/day)
	SOD	CBODu	Organic Nitrogen	Ammonia Nitrogen	
WLA for point sources	NA	0	0	0	0
MOS for all point sources	NA	0	0	0	0
FG for all point sources	NA	0	0	0	0
LA for nonpoint sources	7,062.74	15,262.64	1,394.33	1.88	23,721.59
MOS for nonpoint sources	882.84	1,907.83	174.29	0.23	2,965.19
FG for nonpoint sources	882.84	1,907.83	174.29	0.23	2,965.19
TMDL	8,828.42	19,078.30	1,742.91	2.34	29,651.97

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1.0 INTRODUCTION

This report presents a total maximum daily load (TMDL) for dissolved oxygen (DO) for Lake Concordia (subsegment 101604). This subsegment was cited as being impaired on the final 2004 303(d) list for Louisiana (Louisiana Department of Environmental Quality (LDEQ) 2005a). The priority ranking and the suspected sources and suspected causes for impairment from the 303(d) list are presented in Table 1.1. The TMDL in this report was developed in accordance with Section 303(d) of the Federal Clean Water Act and Environmental Protection Agency (EPA) regulations at 40 CFR 130.7.

The purpose of a TMDL is to determine the pollutant loading that a waterbody can assimilate without exceeding the water quality standard for that pollutant and to establish the load reduction that is necessary to meet the standard in a waterbody. The TMDL is the sum of the wasteload allocation (WLA), the load allocation (LA), future growth (FG), and a margin of safety (MOS). The WLA is the load allocated to point sources of the pollutant of concern. The LA is the load allocated to nonpoint sources, including natural background. The FG is reserved for future increases in loads to the waterbody. The MOS is a percentage of the TMDL that accounts for any lack of knowledge concerning the relationships between pollutant loading and water quality, including uncertainty associated with model assumptions and data inadequacies.

Table 1.1. Summary of 303(d) listing for subsegment 101604.

Subsegment Number	Waterbody Description	Suspected Sources	Suspected Causes	Priority Ranking (1 = highest)
101604	Lake Concordia	Unknown	Low DO	7

2.0 BACKGROUND INFORMATION

2.1 General Information

Lake Concordia (subsegment 101604) is located in east central Louisiana in the Red River basin (see Figure A.1 in Appendix A). The lake is located in Concordia Parish near Ferriday, Louisiana. Lake Concordia has a surface area of approximately 1,150 acres (1.80 mi^2) and an average depth of 10 ft, although one small area within the lake has a maximum depth of approximately 55 ft. Lake Concordia is an oxbow of the Mississippi River, but the lake and its watershed have been completely cutoff from the river by a levee. The drainage area of the lake is 7.16 mi^2 (excluding the surface area of the lake). The outflow from the lake forms Bayou Cocodrie. The water level in the lake is partially controlled by a small structure at the lake outlet that acts as a weir with a crest elevation that can be varied by adding or removing “slotboards”. During dry periods, the lake level usually drops below the top of the weir because the small drainage area does not provide enough inflow to balance losses from evaporation from the lake surface.

2.2 Land Use

Land use characteristics for the Lake Concordia drainage area were compiled from the United States Geological Survey (USGS) 2001 National Land Cover Database (USGS 2006a). These data are the most recent land use data that are currently available for this area. The spatial distribution of these land uses is shown on Figure A.2 (located in Appendix A) and land use percentages are shown in Table 2.1. These data indicate that the primary land use in this subsegment is cultivated crops. It should also be noted that part of the northeastern end of the lake was classified as wetlands rather than water because that part of the lake is shallow and has some vegetation.

Table 2.1. Land uses in subsegment 101604.

Land Use Type	Percent of Total Area
Water	17.6%

Urban/Transportation	5.4%
Barren	0.1%
Forest	3.8%
Shrubland/Grassland	0.1%
Pasture/Hay	0.0%
Cultivated Crops	60.3%
Wetlands	12.7%
TOTAL	100.0%

2.3 Water Quality Standards

Water quality standards for Louisiana are included in the Title 33 Environmental Regulatory Code (LDEQ 2006a). The designated uses for Lake Concordia are primary contact recreation, secondary contact recreation, and propagation of fish and wildlife. The primary numeric criteria for the TMDL presented in this report are the DO criterion of 5 mg/L (year round) and the temperature criterion of 32°C.

The Louisiana water quality standards also include an antidegradation policy (LAC 33:IX.1109.A). This policy states that waters exhibiting high water quality should be maintained at that high level of water quality. If this is not possible, water quality of a level that supports designated uses of the waterbody should be maintained. Changing the designated uses of a waterbody to allow a lower level of water quality can only be achieved through a use attainability study.

2.4 Point Sources

A list of point sources in selected portions of the Red River basin was developed using data from LDEQ's internal point source databases with additional information obtained from LDEQ's Electronic Document Management System (EDMS). Using this information, no point source discharge permits were identified within subsegment 101604. The Town of Ferriday has a wastewater treatment plant, but it discharges to Bayou Cocodrie, not to Lake Concordia.

2.5 Nonpoint Sources

The 303(d) list did not cite any specific nonpoint sources as suspected sources of the impairment for Lake Concordia (Table 1.1). However, based on land use data, runoff from cropland contributes some oxygen demanding pollutants to Lake Concordia.

Another nonpoint source of oxygen demanding pollutants to the lake comes from the numerous homes along the western shore of the lake. Each older home has a septic tank and each newer home has an individual home sewage treatment system that discharges through a field line into the lake. None of the homes right along the edge of the lake is connected to a municipal sewer system (Concordia Parish Health Unit 2007).

The magnitude of individual nonpoint sources is not computed here because this TMDL focuses on total nonpoint source loading. Individual sources should be quantified by state or local agencies if they develop an implementation plan.

2.6 Historical Data Summary

There is one LDEQ routine monitoring station in this subsegment; it is station 1231 (Lake Concordia at Ferriday, Louisiana). Its location is shown on Figure A.1 in Appendix A. The DO data for this station are summarized in Table 2.2 and the individual data are listed in Table B.1 in Appendix B (LDEQ 2007). The percentage of DO values below 5 mg/L was 17% (2 out of 12 values were below 5 mg/L). This percentage is slightly higher than the allowable percentage of DO violations in EPA's guidance for assessment procedures (10%; EPA 2002).

Table 2.2. Summary of LDEQ routine monitoring DO data for Lake Concordia.

Station	Description	Period	Total Number of Values	Min. (mg/L)	Average (mg/L)	Median (mg/L)	Max. (mg/L)	Number of Values Below Criterion	Percent of Values Below Criterion
1231	Lake Concordia at Ferriday, LA	Jan-Dec 2002	12	3.9	7.8	8.4	12.0	2	17%

The USGS collected DO data in Lake Concordia on 35 different days between 1977 and 1986. The location of the USGS water quality monitoring station is shown on Figure A.1 (in

Appendix A) and the data are listed in Table B.2 (in Appendix B). Although these data are too old to use for assessment and 303(d) listing decisions, it is interesting to note that all of the DO values measured in the top 5 ft of the lake were above the DO criterion in the standards (5.0 mg/L). The DO data collected at depths of 10 ft or more are limited, but the values collected at those depths during June and July show decreasing DO towards the bottom of the lake.

One other LDEQ data set that is of interest for Lake Concordia is LDEQ's intensive field survey data for Bayou Cocodrie immediately downstream of Lake Concordia. Data were collected at the edge of Lake Concordia, in Bayou Cocodrie at Fisherman Road (immediately downstream of the Lake Concordia outlet structure), and in Bayou Cocodrie at US Highway 65 (same location as FTN station 101604-A on Figure A.1). The data that were collected included in situ parameters, carbonaceous biochemical oxygen demand (CBOD) time series, nitrogenous biochemical oxygen demand (NBOD) time series, and various other laboratory analyses. Selected data from this field survey are shown in Table 2.3.

Table 2.3. Selected data from LDEQ intensive field survey of Bayou Cocodrie.

	At the edge of Lake Concordia	Bayou Cocodrie at Fisherman Road	Bayou Cocodrie at US Highway 65
Date and time	8/04/04 4:30 pm	8/04/04 8:15 am	8/04/04 10:40 am
Water temperature (°C)	32.64	32.14	31.75
DO (mg/L)	9.03	5.68	4.69
pH (su)	8.75	8.52	8.25
Secchi depth (inches)	NA	24	24
Chlorophyll <i>a</i> (µg/L)	NA	42.4	40.8
Total Kjeldahl nitrogen (mg/L)	2.91	2.16	2.52
Ammonia nitrogen (mg/L)	< 0.1	< 0.1	< 0.1
Ultimate CBOD (mg/L)	18.2	12.5	10.6
CBOD decay rate (1/day)	0.098	0.085	0.095
NBOD decay rate (1/day)	0.086	0.066	0.076

3.0 FTN FIELD SURVEY

FTN conducted a field survey for 14 subsegments in the Red River and Sabine River basins during August 31 through September 9, 2005. Low flow conditions existed throughout the survey area during this time. The survey was conducted after Hurricane Katrina and before Hurricane Rita. Hurricane Katrina did not cause any noticeable impacts on water quality in the survey area. At the Vidalia weather station (approximately 8-9 miles southeast of Lake Concordia), only 1.25 inches of rain fell from Hurricane Katrina and the total rainfall in the 40 days prior to Hurricane Katrina was only 0.45 inches. Field data were collected in the Lake Concordia subsegment on September 9.

The field survey included water quality sampling and corresponding in situ measurements at various locations; measurements of flow, depth, and width at several locations; and continuous in situ monitoring at several locations. The water quality samples were analyzed for 20-day CBOD time series, total Kjeldahl nitrogen (TKN), ammonia nitrogen (NH₃-N), nitrate+nitrite nitrogen, total phosphorus, chlorophyll *a*, total organic carbon (TOC), and total suspended solids (TSS). A list of the survey sites and the type of data collected at each site is presented in Table C.1 (in Appendix C). The in situ measurements and water quality sampling results are summarized in Tables C.2 and C.3, respectively. The calculations of CBOD decay rates and ultimate CBOD (CBOD_u) concentrations from the time series data are shown in Table C.4.

For the Lake Concordia subsegment, field data were collected in Lake Concordia at LDEQ station 1231 (in situ measurements and sample) and in Bayou Cocodrie at station 101604-A (in situ measurements only; location shown on Figure A.1 in Appendix A). The field data collected at these two sites are listed in Table 3.1. The DO concentration measured in Lake Concordia was well above the 5 mg/L criterion in the water quality standards, even though the measurement was taken at 8:45 in the morning.

Table 3.1. FTN field data collected for subsegment 101604.

	Station 1231 (Lake Concordia)	Station 101604-A (Bayou Cocodrie)
Date and time of sample / measurements	9/09/05 8:45 am	9/09/05 8:30 am
Depth (m) of sample / measurements	1.0	1.0
Water temperature (°C)	28.9	27.2
DO (mg/L)	7.5	2.2
Conductivity ($\mu\text{mhos}/\text{cm}$)	251	282
pH (su)	8.3	6.9
TSS (mg/L)	12	--
TKN (mg/L)	1.9	--
Total phosphorus (mg/L)	0.15	--
TOC (mg/L)	7.9	--
Chlorophyll <i>a</i> ($\mu\text{g}/\text{L}$)	49	--
NH ₃ -N (mg/L)	0.23	--
Nitrate+nitrite nitrogen (mg/L)	<0.05	--
CBOD on day 3 of analysis (mg/L)	< 2	--
CBOD on day 5 of analysis (mg/L)	3.6	--
CBOD on day 9 of analysis (mg/L)	7.3	--
CBOD on day 14 of analysis (mg/L)	9.9	--
CBOD on day 20 of analysis (mg/L)	12	--
Ultimate CBOD (mg/L; calculated)	18.5	--
CBOD decay rate (1/day; calculated)	0.06	--

4.0 CALIBRATION OF WATER QUALITY MODEL

4.1 Model Setup

In order to evaluate the linkage between pollutant sources and water quality, a computer simulation model was used. The model used for these TMDLs was LA-QUAL (version 8.0; Wiland and LeBlanc 2005), which was selected because it includes the relevant physical, chemical, and biological processes and it has been used successfully in the past for other TMDLs in Louisiana. The LA-QUAL model was set up to simulate organic nitrogen, ammonia nitrogen, ultimate CBOD (CBOD_U), and DO as state variables.

Figure D.1 in Appendix D shows the model reach/element design and the location of the modeled inflows. Lake Concordia was divided into two branches, one on each side of Bayou Cocodrie. Both branches flow towards Bayou Cocodrie. The outflow from both branches merges into a one-element reach that forms the downstream end of the model. Nine reaches were used to represent varying depths and widths in the lake and one reach was used to combine the flow from both branches. The nine reaches were divided into smaller elements to allow variations in simulated water quality along their length.

4.2 Calibration Period and Calibration Targets

The purpose of the FTN field survey was to provide data for setting up and calibrating water quality models. The FTN field data was used to estimate various model inputs, but the model was not calibrated to conditions during the FTN field survey because the Lake Concordia DO concentration from the FTN field survey (7.5 mg/L at 8:45 am) was not representative of critical conditions. Therefore, the LDEQ routine monitoring data were reviewed and July 23, 2002 through August 20, 2002 was selected as the calibration period because the two lowest DO measurements occurred on those two days (3.93 mg/L and 4.69 mg/L). The purpose of selecting a critical, low DO period for calibration is so that the model will be calibrated as accurately as possible for making projection simulations for critical conditions.

The calibration target (i.e., the concentration to which the model was calibrated) for each parameter was based on the average of the observed concentrations on the two LDEQ sampling

dates during the calibration period. The LDEQ routine monitoring data for Lake Concordia and the calibration targets for the model are shown in Table B.1 in Appendix B. Organic nitrogen was calculated as TKN minus ammonia nitrogen. Because the LDEQ routine monitoring data does not include CBOD, the CBOD_U target (10.6 mg/L) was estimated from the average TOC concentration measured by LDEQ during the calibration period (8.75 mg/L). The TOC value was multiplied by the median ratio of CBOD_U to TOC (1.21) from LDEQ intensive field surveys conducted on subsegments in the Ouachita River and Red River basins with at least 40% of the land in crops (because the Lake Concordia drainage area is primarily cropland). The data used to calculate the CBOD_U to TOC ratio are shown in Table B.3 in Appendix B (LDEQ 2005b).

4.3 Program Constants (Data Type 3)

A value was input to replace the LA-QUAL default value for net oxygen production per unit of chlorophyll *a*. The default value (0.05 mg oxygen / µg chlorophyll *a* / day) was replaced because the chlorophyll specified in the initial conditions was contributing an unreasonably large amount of oxygen to the lake in the preliminary simulations. Calculations of oxygen production from photosynthesis and oxygen consumption from respiration were developed in a spreadsheet for a 24-hour period during the calibration period (shown in Appendix E). The calculations assumed a steady state concentration of algae; the increases in algal biomass due to growth were equal to the decreases in algal biomass due to respiration and settling over a 24-hour period. The net rate of oxygen added to the system from the combination of photosynthesis and respiration over a 24-hour period was calculated to be 0.026 mg oxygen / µg chlorophyll *a* / day. This value was input to the model in Data Type 3.

4.4 Temperature Correction of Kinetics (Data Type 4)

The temperature correction factors used in the model were consistent with the Louisiana Technical Procedures Manual (the “LTP”; LDEQ 2006b). These correction factors were:

1. Correction for BOD decay: 1.047 (value in LTP is same as model default)
 2. Correction for SOD: 1.065 (value in LTP is same as model default)
 3. Correction for ammonia N decay: 1.070 (specified in Data Group 4)
-

4. Correction for organic N decay: 1.020 (not specified in LTP; model default used)
 5. Correction for reaeration: automatically calculated by the model

4.5 Hydraulics (Data Type 9)

The widths and depths were specified in the LA-QUAL model using the power functions ($\text{width} = a * Q^b + c$ and $\text{depth} = d * Q^e + f$). The width and depth of each reach were calculated based on a bathymetric map obtained from the Louisiana Department of Wildlife and Fisheries local office in Ferriday. The bathymetric contours were digitized and used to calculate volumes and surface areas at each depth contour. Then the average width for each reach was calculated as the surface area divided by the reach length. The average depth for each reach was calculated as the volume divided by the surface area. Because the widths and depths in Lake Concordia do not fluctuate as a function of the flow rate through the lake, the depths and widths were entered in the model as constants. The values that were input to the model for length, width, and depth of each reach are listed in Table 4.1.

Table 4.1. Model calibration input values for length, width, and depth.

Reach	Length (km)	Width (m)	Depth (m)
1	1.2	283	2.85
2	1.1	289	4.12
3	1.9	310	1.34
4	1.9	387	2.29
5	1.9	304	2.92
6	0.8	342	5.53
7	2.7	347	2.85
8	1.3	360	3.56
9	1.3	313	4.71
10	0.1	289	4.12

4.6 Initial Conditions (Data Type 11)

Because temperature is not being simulated in the model, the water temperature was specified in the initial conditions for LA-QUAL. The temperature for all reaches was set to 30.2°C, which was the average of temperatures measured at LDEQ station 1231 during the calibration period (see Table B.1). Initial concentrations of DO and NH3-N were set equal to the calibration targets (4.31 mg/L and 0.10 mg/L, respectively). A value for chlorophyll *a* was also

specified in the initial conditions because observations and data from the FTN field survey indicated that this lake has a significant amount of algae. The model input value for chlorophyll *a* was set to the observed value from the FTN field survey (49 µg/L) because no chlorophyll *a* data were available for the calibration period. This chlorophyll *a* value was similar to the values measured by LDEQ just downstream of Lake Concordia in the Bayou Cocodrie intensive field survey (42.4 µg/L and 40.8 µg/L; see Table 2.3).

For other constituents not being simulated, the initial concentrations were set to zero. Otherwise the model would have assumed a fixed concentration of those constituents and the model would have included effects of the unmodeled constituents on the modeled constituents.

4.7 Water Quality Kinetics (Data Types 12 and 13)

Kinetic rates used in LA-QUAL include reaeration rates, CBOD decay rates, nitrification rates, and mineralization rates (organic nitrogen decay).

For reaeration, a surface transfer coefficient (option 20) was specified because reaeration in Lake Concordia is controlled by wind rather than by velocity of flowing water. The surface transfer coefficient was calculated using daily wind data for the calibration period as shown in Appendix F. The closest weather stations with wind data during the calibration period were the Alexandria Esler Airport, which is about 45 miles west-southwest of the lake, and Jackson, Mississippi, which is approximately 90 miles northeast of the lake (NCDC 2007a). The average wind speed for the calibration period was similar for both stations, even though the two weather stations are in opposite directions from the lake. Therefore, the surface transfer coefficient was calculated for each weather station and the average of the two values (0.80 m/day) was used as input for all reaches in the LA-QUAL model.

The nitrification and CBOD decay rates were set to average values of laboratory rates from LDEQ intensive field surveys conducted on subsegments in the Ouachita River and Red River basins with at least 40% of the land in row crops. The average rates for nitrification and CBOD decay were both 0.09/day. These data are shown in Table B.3 in Appendix B (LDEQ 2005). The average CBOD decay rate from the LDEQ data (0.09/day) was similar to, but slightly more conservative than, the CBOD decay rate from the FTN sample at station 1231 (0.06/day as

shown in Table 3.1). The decay rate of 0.09/day was also similar to the CBOD and NBOD decay rates from a sample at the edge of Lake Concordia from LDEQ's intensive field survey of Bayou Cocodrie (0.098/day for CBOD and 0.086/day for NBOD; see Table 2.3).

The mineralization rates (organic nitrogen decay) in the model were set to 0.02/day for all reaches. This value was similar to the values shown in the "Rates, Constants, and Kinetics" publication (EPA 1985) for dissolved organic nitrogen being transformed to ammonia nitrogen.

4.8 Nonpoint Source Loads (Data Types 12, 13, and 19)

The nonpoint source loads that are specified in the model can be most easily understood as resuspended load from the bottom sediments and are modeled as sediment oxygen demand (SOD), benthic ammonia source rates, CBOD_U loads, and organic nitrogen loads. The SOD (specified in data type 12), the benthic ammonia source rates (specified in data type 13), and the mass loads of organic nitrogen and CBOD_U (specified in data type 19) were all treated as calibration parameters; their values were adjusted until the model output was similar to the calibration target values. The values used as model input are shown in Table 4.2. No benthic ammonia source was included in the model because the predicted ammonia nitrogen values were slightly higher than the calibration target even without the benthic source.

4.9 Headwater Flow Rates (Data Type 20)

The inflow to Lake Concordia from the watershed was estimated based on flow per unit area from three flow gages (USGS 2006b) because there are no known measurements of inflow to the lake. The total inflow from the watershed was specified in the model by dividing it equally between the headwater inflows at the two ends of the lake.

Table 4.2. Nonpoint source loads for model calibration.

Reach	SOD (g/m ² /day)	Benthic Ammonia Source (g/m ² /day)	CBOD _U Load (kg/day)	Organic Nitrogen Load (kg/day)
1	2.18	0	1,475	31
2	2.43	0	2,000	42
3	1.92	0	1,225	25

4	2.07	0	2,600	54
5	2.17	0	2,600	54
6	2.70	0	2,300	49
7	2.18	0	4,100	86
8	2.33	0	2,550	53
9	2.53	0	2,950	61
10	2.40	0	182	4

The total inflow rate for both headwaters was estimated to be 3.0 cfs (0.085 m³/sec). This was calculated by multiplying the drainage area of the lake (7.16 mi² excluding the surface of the lake) by the average flow per unit of drainage area during the calibration period at three USGS flow gages (0.42 cfs/mi²; see Appendix G). The average flows per unit area for each gage were 0.46 cfs/mi² for Bayou des Glaises Diversion Channel at Moreauville, LA (07383500), 0.40 cfs/mi² for Homochitto River near Eddiceton, MS (07291000), and 0.41 cfs/mi² for Buffalo River near Woodville, MS (07295000). These gages are between 30 and 50 miles away from Lake Concordia, which is farther away than desired for this analysis, but the small variation in average flows per unit area between the three gages provided confidence in the result.

The average flow per unit area (0.42 cfs/mi²) was checked for reasonableness by calculating an equivalent runoff coefficient. Daily rainfall data was obtained for the Vidalia, LA weather station during the calibration period (4.63 inches over 29 days; NCDC 2007b). The average rainfall rate (0.16 inches/day) was converted to the same units as flow per unit area, which yielded a value of 4.29 cfs/mi². Therefore, 0.42 cfs/mi² of flow per unit area would indicate that approximately 10% of the rainfall was becoming runoff or seepage into stream channels during the calibration period. Considering that annual runoff coefficients for the Mississippi Alluvial Plain in northeastern Louisiana are on the order of 25% to 30% (USGS 1986), a runoff coefficient of 10% for July-August 2002 seemed reasonable.

Because the calculated inflow to the lake is very small compared to the volume of the lake, the model was not sensitive to changes in the headwater flow rate. Additional refinement of the headwater flow rate was not warranted.

4.10 Headwater Quality (Data Type 21)

No measurements of inflow water quality were available for Lake Concordia. Therefore, headwater concentrations of DO, ammonia nitrogen, and organic nitrogen were estimated based on LDEQ and FTN field survey data for streams in subsegments with at least 40% cropland. These data are shown in Tables H.1 – H.3 in Appendix H. The headwater concentrations of DO and ammonia nitrogen were set to the average concentrations from the LDEQ and FTN field survey data (4.06 mg/L of DO and 0.13 mg/L of ammonia nitrogen). The headwater concentration of organic nitrogen was set to the average TKN concentration (1.45 mg/L) minus the average ammonia nitrogen concentration.

The headwater CBOD_u concentration was set to 9.62 mg/L, which is the average CBOD_u concentration from LDEQ long term BOD analyses of samples collected in subsegments with at least 40% cropland. These data are shown in Table B.3 in Appendix B. The same water quality values were specified for both headwater inflows in the model.

4.11 Model Results for Calibration

LA-QUAL plots of predicted and observed water quality for the calibration are presented in Appendix I and a printout of the LA-QUAL tabular output file is included as Appendix J. All reaches in the model were calibrated to the calibration targets at LDEQ station 1231 because that is the only location where water quality data were collected during the calibration period. Also, there are no data documenting spatial variations of water quality in the lake. The calibration was considered to be acceptable based on the amount of data that were available.

5.0 WATER QUALITY MODEL PROJECTIONS

EPA's regulations at 40 CFR 130.7 require the determination of TMDLs to take into account critical conditions for stream flow, loading, and water quality parameters. Therefore, the calibrated model was used to project water quality for critical conditions. The identification of critical conditions and the model input data used for critical conditions are discussed below.

5.1 Critical Conditions and Seasonality

Section 303(d) of the Federal Clean Water Act and EPA's regulations at 40 CFR 130.7 both require the consideration of seasonal variation of conditions affecting the constituent of concern and the inclusion of a MOS in the development of a TMDL. For the TMDL in this report, analyses of LDEQ long-term ambient data were used to determine critical seasonal conditions. Both an implicit MOS and an explicit MOS were used in developing the projection simulations.

Critical conditions for DO have been determined for Louisiana waterbodies in previous TMDL studies. The analyses concluded that the critical conditions for stream DO concentrations occur during periods with negligible nonpoint runoff, low stream flow, and high water temperature. For lakes and reservoirs, though, critical conditions for DO tend to be correlated more closely to high water temperature than to flow rates during the critical periods. High temperatures cause DO saturation values to be lower and SOD, CBOD decay, and nitrification to be higher. High flow rates usually generate more reaeration in streams (due to increased velocity and turbulence), but changes in flow rates for lakes and reservoirs normally have little or no effect on reaeration because the advective velocities are very small. Periods of high nonpoint loading to Louisiana waterbodies tend to be cooler periods of the year because rainfall during summer usually creates less runoff due to evapotranspiration in the watershed. Therefore, periods of high nonpoint loading do not necessarily coincide with critical periods for DO.

LDEQ interprets this phenomenon in its TMDL modeling by assuming that the annual nonpoint loading, rather than loading for any particular day, is responsible for the accumulated benthic blanket of the waterbody, which is, in turn, expressed as SOD and/or resuspended BOD

in the model. This accumulated loading has its greatest impact on the waterbody during periods of higher temperature.

According to the Louisiana TMDL Technical Procedures manual (the “LTP”; LDEQ 2006b), critical summer conditions in DO TMDL projection modeling are simulated by using the annual 7Q10 flow or 0.1 cfs, whichever is higher, for all headwaters. Model loading is from perennial tributaries, point sources, SOD, and resuspension of sediments.

The impact of various conservative assumptions regarding rates and loadings yields an implicit MOS that is not quantified. Over and above this implicit MOS, an explicit MOS of 10% was incorporated into the TMDL in this report to account for model uncertainty.

5.2 Temperature Inputs

The LTP (LDEQ 2006b) specifies that the critical temperatures should be determined by calculating the 90th percentile seasonal temperatures for the waterbody being modeled. Water temperature data were collected in Lake Concordia (station 1231) for only one year, which is not enough data to calculate 90th percentile temperatures. Therefore, data from a nearby, similar lake (Lake Bruin) were used to estimate 90th percentile temperatures for Lake Concordia. Lake Bruin is located about 25-30 miles north of Lake Concordia and is also an oxbow lake of the Mississippi River. Long term water temperature data were collected by LDEQ at two stations in Lake Bruin (stations 0140 and 0141). These data are summarized in Table K.1 in Appendix K. Calculations for 90th percentile temperatures were developed for each of these two stations for each season (summer and winter). These calculations are shown in Tables K.2 and K.3. The results of these calculations were averaged between the two stations to obtain 90th percentile temperatures of 31.5°C for summer and 19.7°C for winter (see Table K.1). Because there was no overlapping period of record during which temperature data were collected in both Lake Concordia and Lake Bruin, it was not possible to adjust these 90th percentile temperatures based on differences between temperatures taken at both lakes on the same day. Therefore, the 90th percentile temperatures for Lake Bruin were used as model inputs for the Lake Concordia projection simulations without any adjustment.

The implicit assumption of similar 90th percentile temperatures between Lake Bruin and Lake Concordia was evaluated by comparing temperatures measured on the same days in Lake Concordia and in Lake St. John, which is another Mississippi River oxbow lake that is located between Lake Concordia and Lake Bruin and has only one year of data. This comparison (shown on Figure K.1 in Appendix K) indicates that water temperatures are typically similar from one lake to the other on any given day. Therefore, it was considered reasonable to use Lake Bruin's 90th percentile temperatures as model inputs for Lake Concordia with no adjustments.

5.3 Headwater Inputs

The headwater flow rates for the projection simulation were based on guidance in the LTP (LDEQ 2006b), which states that headwater flows should be set equal to either the 7Q10 flow or 0.1 cfs for summer and 1.0 cfs for winter, whichever is greater. There is no published 7Q10 value for the inflow to Lake Concordia. The 7Q10 value was assumed to be less than 0.1 cfs due to the small drainage area (7.16 mi^2). This assumption was considered reasonable based on published 7Q10 values for other streams in heavily agricultural watersheds located in the Mississippi River or Red River alluvial plains of Louisiana. Five of the six 7Q10 values shown in Table 5.1 are less than 0.01 cfs/ mi^2 , which corresponds to less than 0.07 cfs for the Lake Concordia drainage area. Therefore, each of the headwater flow rates in the Lake Concordia projection simulations was set to 0.1 cfs for summer and 1.0 cfs for winter.

It was assumed that the headwater quality would improve with reductions of nonpoint sources in the watershed. For the projection simulations, the headwater concentrations of CBOD_u, organic nitrogen, and ammonia nitrogen were reduced from the calibration simulation by the same percentages as the reductions of nonpoint source loads (see Section 5.4 for reductions applied to nonpoint source loads). The values used as model inputs for headwater concentrations are summarized in Table 5.2. The headwater DO concentrations for the projection simulations were estimated assuming that 0% reduction of nonpoint sources in the watershed would correspond to the same DO percent saturation as in the calibration, and 100% reduction of nonpoint sources in the watershed would correspond to 100% DO saturation in the headwater. The calculations for headwater DO for the projection simulations are shown in Appendix L.

Table 5.1. Published 7Q10 values for streams in similar watersheds (USGS 2003).

USGS gage number and name	Distance from Lake Concordia	Published 7Q10 flow (cfs)	Drainage area (mi²)	7Q10 flow per unit area (cfs/mi²)
07383500 Bayou des Glaises Diversion Channel at Moreauville, LA	48-53 miles southwest	6.4	270	0.024
07383000 Chatlin Lake Canal near LeCompte, LA	59-64 miles southwest	0.54	75.9	0.007
07368540 Big Creek near Mangham, LA (partial record station)	45-48 miles northwest	3.1	347	0.009
07368560 Little Creek near Mangham, LA (partial record station)	47-50 miles northwest	0.0	25.1	0.0
07369200 Turkey Creek at Winnsboro, LA (partial record station)	26-29 miles northwest	0.04	101	0.0004
07369640 Bayou Vidal at Quimby, LA (partial record station)	42-45 miles north	0.0	160	0.0

Table 5.2. Headwater concentrations used in each simulation.

	CBOD_u (mg/L)	Organic Nitrogen (mg/L)	Ammonia Nitrogen (mg/L)	DO (mg/L)
Calibration	9.62	1.32	0.13	4.06
Summer projection (16% reduction)	8.08	1.11	0.11	4.51 (see Appendix L)
Winter projection (13% reduction)	8.33	1.14	0.11	5.50 (see Appendix L)

5.4 Nonpoint Source Loads

An initial projection simulation was run with no reductions of nonpoint source loads and no improvements in headwater quality, but this simulation predicted DO values in the lake below the 5.0 mg/L criterion in the water quality standards. Therefore, the nonpoint source loadings were reduced until all of the predicted DO values were equal to or greater than 5.0 mg/L. There are no point source discharges in the Lake Concordia subsegment, so there were no point source loads to reduce. The nonpoint source loads used in the calibration (SOD and mass loads of

CBOD_u and organic nitrogen) were reduced by a uniform percentage within each projection simulation. Nonpoint source loads for all reaches in the summer simulation were reduced by 16% and nonpoint source loads for all reaches in the winter simulation were reduced by 13%. The values used as model input for nonpoint source loads are shown in Table 5.3. The benthic ammonia source loads are not shown in Table 5.3 because they were set to zero in the calibration and the projections.

5.5 Other Inputs

The only model inputs that were changed from the calibration to the projection simulations were the inputs discussed above in Sections 5.2 through 5.4. Other model inputs (e.g., hydraulic coefficients, decay rates, reaeration equations, etc.) were unchanged from the calibration simulation.

5.6 Model Results for Projections

Printouts of the LA-QUAL graphs and tabular output files for the summer and winter projection simulations are included in Appendix M. The predicted minimum DO values in the lake were 5.00 mg/L for summer and 5.01 mg/L for winter. Nonpoint source load reductions of 16% for summer and 13% for winter were required to obtain these predicted minimum DO values. These percentage reductions for nonpoint source loads represent percentages of the entire nonpoint source loading, not percentages of the manmade nonpoint source loading. The nonpoint source loads in this model were not divided between natural and manmade because it would be difficult to accurately estimate natural nonpoint source loads for the study area.

Table 5.3. Nonpoint source loads for each simulation.

Reach	SOD (g/m ² /day)			CBOD _u (kg/day)			Organic Nitrogen (kg/day)		
	Calibration	Summer Projection	Winter Projection	Calibration	Summer Projection	Winter Projection	Calibration	Summer Projection	Winter Projection
1	2.18	1.83	1.89	1,475	1,239	1,277	31	26	27
2	2.43	2.04	2.10	2,000	1,680	1,732	42	35	36
3	1.92	1.61	1.66	1,225	1,029	1,061	25	21	22
4	2.07	1.74	1.79	2,600	2,184	2,252	54	45	47
5	2.17	1.82	1.88	2,600	2,184	2,252	54	45	47
6	2.70	2.27	2.34	2,300	1,932	1,992	49	41	42
7	2.18	1.83	1.89	4,100	3,444	3,551	86	72	74
8	2.33	1.96	2.02	2,550	2,142	2,208	53	45	46
9	2.53	2.13	2.19	2,950	2,478	2,555	61	51	53
10	2.40	2.02	2.08	182	153	158	4	3	3

6.0 TMDL CALCULATIONS

6.1 DO TMDL

A TMDL for DO was calculated for the Lake Concordia subsegment using the results of the summer and winter projection simulations. The DO TMDL is presented as oxygen demand from CBOD_u, organic nitrogen, ammonia nitrogen, and SOD. Summaries of the TMDL for Lake Concordia are presented in Tables 6.1 and 6.2.

Table 6.1. Summer DO TMDL for subsegment 101604.

	Oxygen Demand (kg/day) from:				Total Oxygen Demand (kg/day)
	SOD	CBOD _u	Organic Nitrogen	Ammonia Nitrogen	
WLA point sources	NA	0	0	0	0
MOS all point sources	NA	0	0	0	0
FG all point sources	NA	0	0	0	0
LA for nonpoint sources	14,403.57	14,775.34	1,332.19	0.20	30,511.30
MOS for nonpoint sources	1,800.44	1,846.92	166.52	0.03	3,813.91
FG for nonpoint sources	1,800.44	1,846.92	166.52	0.03	3,813.91
TMDL	18,004.45	18,469.18	1,665.23	0.26	38,139.12

Table 6.2. Winter DO TMDL for subsegment 101604.

	Oxygen Demand (kg/day) from:				Total Oxygen Demand (kg/day)
	SOD	CBOD _u	Organic Nitrogen	Ammonia Nitrogen	
WLA for point sources	NA	0	0	0	0
MOS for all point sources	NA	0	0	0	0
FG for all point sources	NA	0	0	0	0
LA for nonpoint sources	7,062.74	15,262.64	1,394.33	1.88	23,721.59
MOS for nonpoint sources	882.84	1,907.83	174.29	0.23	2,965.19
FG for nonpoint sources	882.84	1,907.83	174.29	0.23	2,965.19
TMDL	8,828.42	19,078.30	1,742.91	2.34	29,651.97

A one-page summary of the methodology for the TMDL calculations is shown in Appendix N. The TMDL calculations were performed using a FORTRAN program that was written by FTN personnel. This program reads two files; one is the LA-QUAL output file from

the projection simulation and the other is a small input file with miscellaneous information needed for the TMDL calculations (shown in Appendix N). The output files from the program are also shown in Appendix N for the summer and winter projections. The source code for the program is shown in Appendix O.

6.2 MOS and FG

The MOS accounts for any lack of knowledge or uncertainty concerning the relationship between pollutant loading and water quality. This TMDL includes an implicit MOS based on the conservative calibration target for DO. The calibration target for DO was the average of the two lowest DO values that have been recorded in the top 5 ft of the lake. Other data collected by LDEQ, USGS, and FTN all show higher DO values than the calibration target. Calibrating to a lower DO value results in higher SOD being specified in the calibration simulation, which makes the model more conservative for the projections. Additionally, the model projections were run with the 90th percentile seasonal water temperatures (conservative values). These modeling procedures yield an implicit MOS, which is not quantified. In addition to the implicit MOS, the TMDL in this report includes an explicit MOS equal to 10% of the TMDL and an explicit allowance for FG that is also equal to 10% of the TMDL.

6.3 Ammonia Toxicity Calculations

Although subsegment 101604 is not on a 303(d) list for ammonia, the ammonia concentrations predicted in the projection simulations were checked to make sure that they did not exceed EPA criteria for ammonia toxicity (EPA 1999). The EPA criteria are dependent on temperature and pH. The water temperatures used to calculate the ammonia toxicity criteria for summer and winter for Lake Concordia were the same as the critical temperatures used in the projection simulations (31.5°C for summer and 19.7°C for winter). For pH, an average of the values measured at LDEQ station 1231 during the calibration period was used (7.93 su). The resulting criteria for ammonia nitrogen were 0.9 mg/L for summer and 1.9 mg/L for winter. The ammonia nitrogen concentrations predicted by the LA-QUAL model were well below these criteria. This indicates that the ammonia nitrogen loadings that will maintain the DO standard are

low enough that the EPA ammonia toxicity criteria will not be exceeded under critical conditions. The ammonia toxicity calculations are shown in Appendix P.

7.0 SENSITIVITY ANALYSES

All modeling studies necessarily involve uncertainty and some degree of approximation. Therefore, it is of value to consider the sensitivity of the model output to changes in model coefficients, and in the hypothesized relationships among the parameters of the model. The sensitivity analyses were performed by allowing the LA-QUAL model to vary one input parameter at a time while holding all other parameters to their original value. The calibration simulation was used as the baseline for the sensitivity analysis. The percent change of the model's minimum DO projections to each parameter is presented in Table 7.1. Each parameter was varied by $\pm 30\%$, except for temperature, which was varied $\pm 2^{\circ}\text{C}$.

Values reported in Table 7.1 are sorted by percentage variation of minimum DO from largest percentage variation to smallest. The model output was most sensitive to chlorophyll *a* (in the initial conditions), SOD, nonpoint source CBOD_u loads, and reaeration. The model output was least sensitive to the headwater flow, headwater concentrations, ammonia decay rate, and organic nitrogen decay rate (mineralization rate).

Table 7.1. Summary of results of sensitivity analyses.

Input Parameter	Parameter Change	Predicted Minimum DO (mg/L)	Percent Change in Predicted DO (%)
Baseline	--	4.23	N/A
Chlorophyll <i>a</i>	-30%	1.69	60.0%
Nonpoint CBOD Loads	+30%	1.93	54.4%
SOD	+30%	2.77	34.5%
Reaeration	-30%	2.82	33.3%
SOD	-30%	5.32	25.8%
Chlorophyll <i>a</i>	+30%	5.07	19.9%
Reaeration	+30%	4.99	18.0%
Nonpoint CBOD Loads	-30%	4.67	10.4%
Water Temperature	+2°C	3.86	8.7%
Nonpoint Organic Nitrogen Loads	+30%	4.10	3.1%
Water Temperature	-2°C	4.11	2.8%
Headwater CBOD	+30%	4.12	2.6%
CBOD Decay Rate	+30%	4.14	2.1%
Headwater DO	-30%	4.18	1.2%
Nonpoint Organic Nitrogen Loads	-30%	4.27	0.9%
Headwater Organic Nitrogen	+30%	4.21	0.5%
Organic Nitrogen Decay Rate	+30%	4.22	0.2%
Organic Nitrogen Decay Rate	-30%	4.24	0.2%
CBOD Decay Rate	-30%	4.23	0.0%
Ammonia Decay Rate	-30%	4.23	0.0%
Headwater Flow	-30%	4.23	0.0%
Headwater CBOD	-30%	4.23	0.0%
Headwater Ammonia	-30%	4.23	0.0%
Headwater Organic Nitrogen	-30%	4.23	0.0%
Ammonia Decay Rate	+30%	4.23	0.0%
Headwater Flow	+30%	4.23	0.0%
Headwater DO	+30%	4.23	0.0%
Headwater Ammonia	+30%	4.23	0.0%

8.0 OTHER RELEVANT INFORMATION

This TMDL has been developed to be consistent with the State antidegradation policy (LAC 33:IX.1109.A).

This TMDL report does not include an implementation plan. Implementation plans are not required for TMDLs under current federal regulations. Implementation plans can be developed most effectively and efficiently on the state and local level.

LDEQ will work with other agencies such as local Soil Conservation Districts to implement nonpoint source best management practices in the watershed through the 319 programs. LDEQ will also continue to monitor the waters to determine whether standards are being attained.

In accordance with Section 106 of the federal Clean Water Act, and under the authority of the Louisiana Environmental Quality Act, the LDEQ has established a comprehensive program for monitoring the quality of the State's surface waters. The LDEQ Surveillance Section collects surface water samples at various locations, utilizing appropriate sampling methods and procedures for ensuring the quality of the data collected. The objectives of the surface water monitoring program are to determine the quality of the State's surface waters, to develop a long-term data base for water quality trend analysis, and to monitor the effectiveness of pollution controls. The data obtained through the surface water monitoring program is used to develop the State's biennial 305(b) report (Water Quality Inventory) and the 303(d) list of impaired waters. This information is also utilized in establishing priorities for the LDEQ nonpoint source program.

The LDEQ has implemented a watershed approach to surface water quality monitoring. Through this approach, the entire state is sampled over a 4-year cycle. Long-term trend monitoring sites at various locations on the larger rivers and Lake Pontchartrain are sampled throughout the 4-year cycle. Sampling is conducted on a monthly basis to yield approximately 12 samples per site each year the site is monitored. Sampling sites are located where they are considered to be representative of the waterbody. Under the current monitoring schedule, approximately one half of the State's waters are newly assessed for each 305(b) and 303(d)

listing biennial cycle, with sampling occurring statewide each year. The 4-year cycle follows an initial 5-year rotation that covered all basins in the state according to the TMDL priorities. This will allow the LDEQ to determine whether there has been any improvement in water quality following implementation of the TMDLs. As the monitoring results are evaluated at the end of each year, waterbodies may be added to or removed from the 303(d) list.

9.0 PUBLIC PARTICIPATION

When EPA establishes a TMDL, federal regulations require EPA to publicly notice and seek comment concerning the TMDL. The TMDL in this report was prepared under contract to EPA. EPA is seeking comments, information, and data from the general and affected public concerning this draft TMDL. If comments, data, or information are submitted during the public comment period, EPA will address the comments and revise this TMDL accordingly. EPA will then transmit the final TMDL to LDEQ for implementation and for incorporation into LDEQ's current water quality management plan.

10.0 REFERENCES

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APPENDIX A

Maps of the Study Area

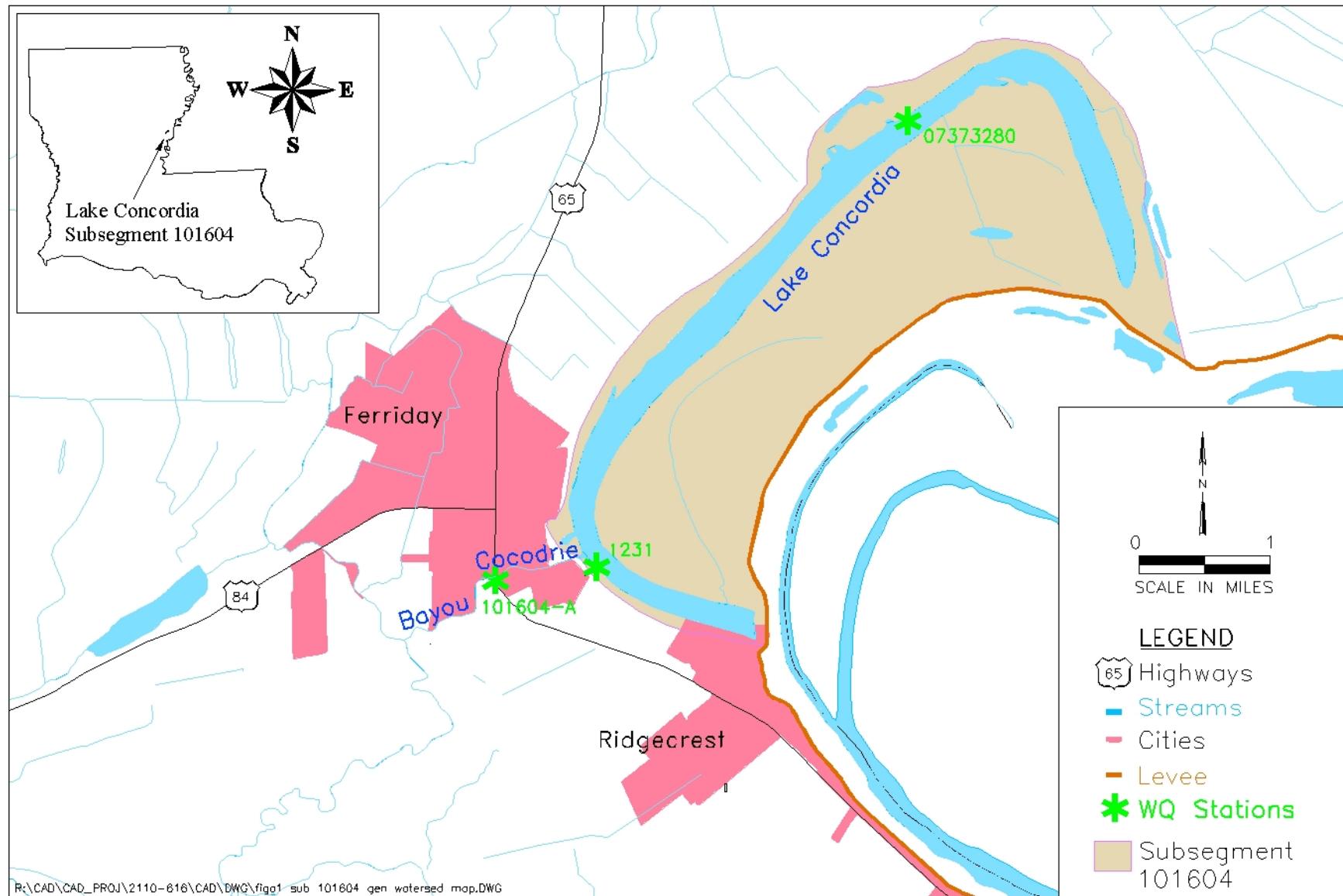


Figure A.1. General watershed map for subsegment 101604.

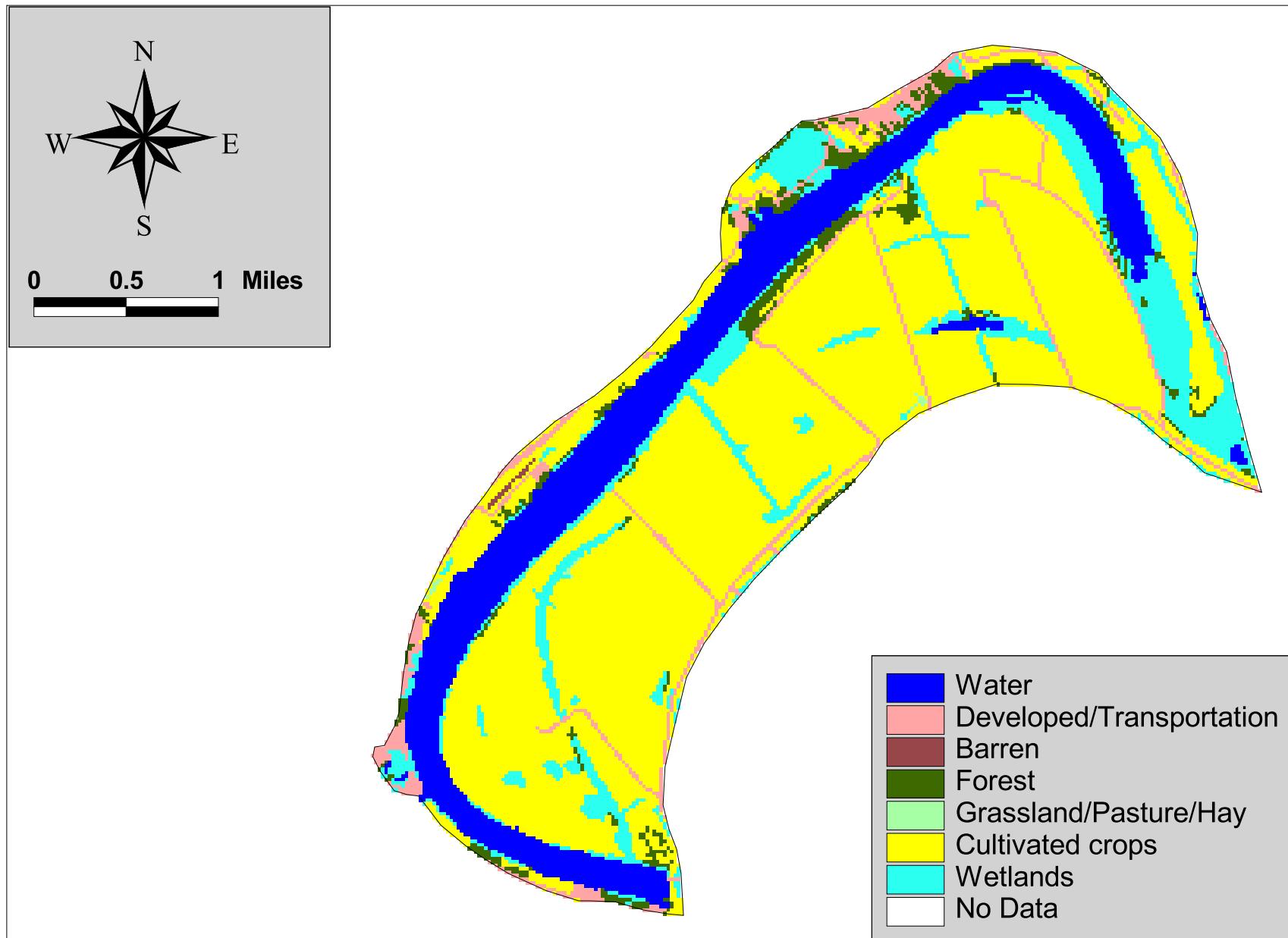


Figure A.2. Land use for subsegment 101604.

APPENDIX B

LDEQ and USGS Water Quality Data

Table B.1. LDEQ water quality data for station 1231 (Lake Concordia at Ferriday).

Date	Temp (°C)	DO (mg/L)	TKN (mg/L)	TOC (mg/L)	NH3-N (mg/L)	pH (su) for ammonia Toxicity
1/22/02	10.95	9.41	1.06	7.40	< 0.10	7.10
2/18/02	12.50	9.09	0.75	7.20	< 0.10	7.28
3/26/02	17.27	8.47	0.94	6.70	< 0.10	7.20
4/16/02	22.17	8.25		6.70	< 0.10	7.90
5/21/02	23.78	12.03	1.05	9.10	< 0.10	8.70
6/18/02	28.70	5.82	1.18	7.50	< 0.10	8.20
7/23/02	30.65	3.93	1.25	9.00	< 0.10	8.00
8/20/02	29.80	4.69	1.55	8.50	< 0.10	7.86
9/24/02	26.19	6.42	1.48	8.60	0.18	7.80
10/22/02	21.10	6.48	1.18	6.30	0.14	7.60
11/19/02	15.65	8.55	0.90	6.00	< 0.10	7.30
12/17/02	11.87	10.57		6.10	< 0.10	7.42

Averages for calibration period (7/23 - 8/20) = 30.23 4.31 1.40 8.75 < 0.10 7.93

D.O. statistics for entire period of record:

No. of values = 12
 Minimum = 3.93
 Average = 7.81
 Median = 8.36
 Maximum = 12.03
 No. of values < 5 mg/L = 2
 % of values < 5 mg/L = 16.7%

Calibration targets for organic nitrogen and CBODu:

$$\text{Organic nitrogen} = \text{TKN} - \text{ammonia} = 1.40 - 0.10 = 1.30 \text{ mg/L}$$

$$\text{CBODu:TOC ratio} = \quad 1.21 \quad \text{(from Table B.2)}$$

$$\text{CBODu} = \text{TOC} \times \text{CBODu:TOC ratio} = 8.75 \times 1.21 = 10.59 \text{ mg/L}$$

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TABLE B.2. SUMMARY OF USGS DO DATA FOR LAKE CONCORDIA TOWARDS NORTHERN END (07373280)

Date	Time	DO (mg/L) measured at depths of:								
		< 1 ft *	5 ft	10 ft	11 ft	12 ft	13 ft	14 ft	15 ft	21 ft
11/03/77	8:40	7.6								
11/03/77	9:05			6.0						
11/03/77	9:06								6.0	
2/23/78	9:05	12.8								
2/23/78	9:06	12.8								
2/23/78	9:07			13.0						
4/06/78	8:25	9.1								
4/06/78	8:26	9.1								
4/06/78	8:27						8.5			
7/27/78	7:45	5.4								
7/27/78	7:46	6.8								
7/27/78	7:47					4.8				
12/20/78	14:30	11.6								
2/14/79	15:30	13.6								
4/11/79	12:05	9.0								
6/25/79	14:00	8.3								
6/25/79	14:01	8.3								
6/25/79	14:02		7.8							
6/25/79	14:03				2.2					
6/05/80	12:20	12.1								
6/05/80	12:21		9.0							
6/05/80	12:22			2.2						
6/05/80	12:23								0.5	
6/05/80	12:24									0.5
7/16/80	13:30	9.7								
11/21/80	14:45	11.1								
1/06/81	10:15	13.1								
4/21/81	12:00	6.8								
7/23/81	8:30	9.9								
10/29/81	12:00	12.6								
1/28/82	12:30	13.7								
4/19/82	11:00	10.4								
7/15/82	11:30	11.7								
11/04/82	16:00	9.3								
11/04/82	16:01							9.2		
1/07/83	8:30	12.0								
1/07/83	8:31					11.6				
1/07/83	8:32		11.7							
4/14/83	16:30	12.8								
7/14/83	14:15	10.5								
10/07/83	8:30	5.2								
1/13/84	9:15	12.8								
4/06/84	8:30	9.7								
7/19/84	16:10	12.2								
10/01/84	11:00	8.7								
1/07/85	14:00	11.2								
4/17/85	15:45	13.0								
7/11/85	18:30	5.9								
10/07/85	12:30	11.3								
1/06/86	10:45	9.1								
4/07/86	11:30	9.5								
7/07/86	10:45	8.7								
10/22/86	18:45	8.7								

Statistics for measurements in top 5 ft of lake:

No. of sampling days = 35
 No. of DO values = 42
 Minimum = 5.2
 Average = 10.1
 Median = 9.8
 Maximum = 13.7

* Note: Depth of measurement was assumed to be < 1 ft when not specified in the original data.

Table B.3. LDEQ Intensive Survey Data For Subsegments With At Least 40% Row Crops.

Subseg. Number	Sample ID	CBOD decay rate	CBODu (mg/L)	Initial TOC (mg/l)	NBOD decay rate	NBODu (mg/L)	Ratio CBODu / TOC
080901	LBR202 / Lower Boeuf River End of Peckerwood Rd. off Hwy. 561	0.10	8.50	4.60	0.06	1.78	1.85
	LBR204 / Lower Boeuf River Downstream of Muddy Bayou	0.07	13.41	9.20	0.06	2.40	1.46
	LBR205 / Lower Boeuf River Downstream of Big Creek	0.11	7.98	2.10	0.03	2.83	3.80
	LBR207 / Lower Boeuf River Downstream of Upper Goose Creek	0.11	12.98	4.60	0.06	3.47	2.82
	LBR209 / Lower Boeuf River Upstream of Bayou Marengo	0.12	16.26	5.30	0.06	3.87	3.07
	LBR211 / Lower Boeuf River Downstream of Bayou Lafourche Cutoff @ H	0.10	9.80	4.70	0.04	2.91	2.09
	LBR214 / Lower Boeuf River Downstream of Lower Eagle Creek	0.08	6.70	4.40	0.07	1.78	1.52
	LBR216 / Lower Boeuf River Downstream of Grassy and Big Grassy Bayo	0.08	5.47	3.80	0.05	1.49	1.44
	LBR218 / Lower Boeuf River Downstream of Lower Goose Creek	0.09	5.76	4.80	0.05	1.76	1.20
	LBR220 / Lower Boeuf River Downstream of Duck Creek	0.09	6.70	4.50	0.05	1.44	1.49
	LBR222 / Lower Boeuf River Upstream of Turkey Creek	0.08	6.77	5.90	0.07	1.58	1.15
	LBR224 / Lower Boeuf River Downstream of Deer Creek	0.08	5.83	5.20	0.04	1.70	1.12
	LBR226 / Lower Boeuf River Dave's Bayou: Upstream from Boeuf River	0.11	8.60	1.00	0.05	2.10	8.60
	LBR228 / Lower Boeuf River Big Creek: Upstream from Boeuf River	0.10	6.83	2.40	0.09	1.47	2.85
	LBR229 / Lower Boeuf River Upper Goose Creek: Upstream from Boeuf River	0.14	42.65	11.30	0.06	12.62	3.77
	LBR231 / Lower Boeuf River Bayou Lafourche Cutoff: Upstream from Boeuf River	0.10	6.52	1.00	0.06	1.89	6.52
	LBR232 / Lower Boeuf River Lower Eagle Creek: Upstream from Boeuf	0.09	8.44	4.00	0.10	2.18	2.11
	LBR233 / Lower Boeuf River Big Grassy Bayou: Upstream from Boeuf River	0.11	7.28	4.80	0.07	1.97	1.52
	LBR234 / Lower Boeuf River Grassy Bayou: Upstream from Boeuf River	0.08	5.67	4.90	0.03	2.08	1.16
	LBR237 / Lower Boeuf River Turkey Creek: Upstream from Boeuf River	0.08	7.44	5.40	0.05	1.86	1.38
	LBR238 / Lower Boeuf River Deer Creek: Upstream from Boeuf River	0.09	11.19	5.20	0.07	3.27	2.15
080907	TC12 / Turkey Creek unnamed tributary at Main Street	0.14	7.79	1.00	0.11	1.37	7.79
	TC13 / Turkey Creek Winnsboro Municipal POTW effluent ditch	*	*	*	*	*	*
	TC15 / Turkey Creek Unnamed Trib #2 on Hwy. 865	0.10	2.25	1.00	0.13	0.96	2.25
	TC19 / Turkey Creek Unnamed Trib at Dummy Line Rd.	0.07	7.67	4.20	0.06	1.37	1.83
	TC2 / Turkey Creek @ Alice Shaw Rd.	0.08	8.35	6.10	0.07	1.48	1.37
	TC4 / Turkey Creek @ Hwy. 15	0.10	4.52	3.30	0.13	1.17	1.37
	TC6 / Turkey Creek @ Green Light Rd.	0.09	5.60	3.90	0.07	1.34	1.44
	TC9 / Turkey Creek @ Hwy. 128	0.08	6.50	8.40	0.09	1.60	0.77
	TC99 / Turkey Creek above dam	0.08	6.64	3.80	0.13	3.22	1.75
080909	CL1 - N of Start, LA (Culverts at Conley Rd)	0.09	5.35	5.80	0.14	2.01	0.92
	CL1 - N of Start, LA (Culverts at Conley Rd)	0.09	5.83	5.30	0.15	2.09	1.10
	CL2 - N of Start, LA (@ Hwy 595 Bridge)	0.10	8.67	6.50	0.22	1.57	1.33
	CL3 - W of Start, LA (on Crew Lake Loop Rd)	0.11	8.24	7.10	0.09	2.01	1.16
	CL4 - Southwest of Start, LA (@ boat launch of	0.11	7.37	7.50	0.12	1.83	0.98

Subseg. Number	Sample ID	CBOD decay rate	CBODu (mg/L)	Initial TOC (mg/l)	NBOD decay rate	NBODu (mg/L)	Ratio CBODu / TOC
080903	Big Creek Survey Site 1 (A)	0.05	10.09	7.70	0.25	1.84	1.31
	Big Creek Survey Site 13 (A)	0.04	16.44	14.00	0.20	3.26	1.17
	Big Creek Survey Site 3 (A)	0.04	9.66	8.10	0.25	1.99	1.19
	Big Creek Survey Site 7 (A)	0.05	10.86	9.80	0.13	1.83	1.11
	Big Creek Survey Site 1 (B)	0.06	8.13	5.40	0.07	0.93	1.51
	Big Creek Survey Site 13 (B)	0.04	17.59	15.10	0.14	3.70	1.16
	Big Creek Survey Site 3 (B)	0.06	9.21	6.50	0.06	1.17	1.42
	Big Creek Survey Site 7 (B)	0.08	14.71	7.10	0.09	2.00	2.07
101605	BYCOC5-Bayou Cocodrie-Near Boat Launch	*	*	11.6	*	*	*
	BYCOC7-Bayou Cocodrie-Below Vidalia Canal	0.06	9.54	11.4	0.07	3.06	0.84
	BYCOC9-Bayou Cocodrie-At Pump #2	*	*	*	*	*	*
	BYCOC9-Bayou Cocodrie-At Pump #2	0.05	8.34	1.0	0.10	2.09	8.34
	BYCOC9-Bayou Cocodrie-At Pump #2	0.05	8.21	1.0	0.10	1.96	8.21
	BYCOC10-Bayou Cocodrie-Below Plouden Bayou	0.10	9.91	11.5	0.09	2.25	0.86
	BYCOC11-Bayou Cocodrie-Below Plouden Bayou	0.10	10.40	10	0.13	2.52	1.04
	BYCOC12-Bayou Cocodrie-Below Wyches Bayou	0.06	7.46	9.6	0.10	2.07	0.78
	BYCOC14-Bayou Cocodrie-Below Wallace Bayou	0.05	6.64	8.6	0.09	1.79	0.77
	BYCOC18-Bayou Cocodrie-Southwest of Weir (Upstream)	0.07	7.10	8.5	0.09	2.22	0.84
	BYCOC19-Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	*	*	*	*	*	*
	BYCOC19-Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	0.06	7.25	1.0	0.09	1.94	7.25
	BYCOC19-Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	0.07	7.23	1.0	0.09	1.91	7.23
	BCC2-Bayou Cross Cocodrie-Upstream from Bayou Cocodrie	0.08	7.83	11.5	0.10	2.52	0.68
	FLB1-Flat Bayou-Upstream from Bayou Cocodrie	0.07	6.56	10.9	0.10	1.98	0.60
101601	VC1-Vidalia Canal-Upstream from Bayou Cocodrie	0.07	7.43	11.0	0.09	1.80	0.68
	WABY1-Wallace Bayou-Upstream from Bayou Cocodrie	0.05	6.47	10.9	0.07	1.61	0.59
	LCO1-Lake Concordia-at Bayou Cocodrie	0.10	18.18	11.80	0.09	4.53	1.54
	BYCOC1-Bayou Cocodrie-at Fisherman Road	0.08	12.46	8.80	0.07	3.61	1.42
	BYCOC2-Bayou Cocodrie-at Fisherman Road	0.09	10.60	8.70	0.08	3.56	1.22
	BYCOC3-Bayou Cocodrie-at upstream side of LA Hwy 15	0.08	8.53	8.20	0.09	3.83	1.04
	BYCOC4-Bayou Cocodrie-at downstream side of LA Hwy 15	0.08	8.50	8.00	0.09	3.75	1.06
	BYCOC17-Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	0.09	10.06	9.20	0.06	3.54	1.09
	BYCOC21-Bayou Cocodrie-Below Unnamed Canal	0.08	8.65	8.60	0.09	3.22	1.01
	BYCOC22-Bayou Cocodrie-At Yakey Road	0.08	9.02	8.80	0.07	3.58	1.02
GBC1	BYCOC26-Bayou Cocodrie-Below Dobbs Bay	0.04	6.40	8.50	0.08	1.81	0.75
	BYCOC28-Bayou Cocodrie-Upstream of flood gates	0.07	7.49	8.30	0.05	2.22	0.90
	UNT1-Unnamed Trib-Just above mixing zone with Bayou Cocodrie	0.07	7.68	8.30	0.06	2.85	0.93
	GBC1-Grand Bayou Cutoff-Just above mixing zone with Bayou Cocodrie	0.60	7.24	11.20	0.04	1.05	0.65

Subseg. Number	Sample ID	CBOD decay rate	CBODu (mg/L)	Initial TOC (mg/l)	NBOD decay rate	NBODu (mg/L)	Ratio CBODu / TOC
101601 (cont.)	COL1-Cocodrie Lake-North of Worringer Bayou	*	*	*	*	*	*
	COL1-Cocodrie Lake-North of Worringer Bayou	0.09	12.73	10.40	0.09	3.18	1.22
	COL1-Cocodrie Lake-North of Worringer Bayou	0.09	12.96	10.90	0.09	3.26	1.19
	COL2-Cocodrie Lake-Near boat launch on Hwy 565	0.09	11.53	11.60	0.09	3.02	0.99
	COL3-Cocodrie Lake-At confluence with Bayou Cross Cocodrie	0.09	12.13	11.90	0.07	3.41	1.02
	COL4-Cocodrie Lake-Midway between Bayou Cross Cocodrie and SE end of Lake	0.09	13.25	11.90	0.09	3.64	1.11
	COL5-Cocodrie Lake-At SE end of Lake	0.10	14.70	12.30	0.09	3.94	1.19
	BCC1-Bayou Cross Cocodrie-Just above confluence with Cocodrie Lake	0.09	13.86	11.20	0.11	3.61	1.24
	WBY1-Worringer Bayou-0.5 miles south of confluence with Cocodrie Lake	0.10	8.87	8.90	0.10	2.27	1.00
	COL2-Cocodrie Lake-Near boat launch on Hwy 565	*	*	*	*	*	*
	COL2-Cocodrie Lake-Near boat launch on Hwy 565	0.09	14.48	*	0.10	3.44	*
	COL2-Cocodrie Lake-Near boat launch on Hwy 565	0.09	14.47	*	0.10	3.38	*
	COL4-Cocodrie Lake-Midway between Bayou Cross Cocodrie and SE end of Lake	0.08	13.34	*	0.09	3.48	*
		Count	79	79	77	79	76
		Min	0.04	2.25	1.00	0.03	0.93
		Average	0.09	9.62	7.19	0.09	2.52
		Median	0.08	8.35	7.70	0.09	2.09
		Max	0.60	42.65	15.10	0.25	12.62
							8.60

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APPENDIX C

FTN Field Survey Data

Table C.1. Field data collection sites for FTN Field survey for Red and Sabine basins.

SUBSEG. NUMBER	SITE NO.	SITE NAME	DIRECTIONS	TYPE OF DATA COLLECTED
Red River basin				
100404	100404-A	Cypress Bayou Reservoir at upper end	At LA Hwy 162 bridge east of Benton	In situ
100404	1181	Cypress Bayou Reservoir southeast of Benton, LA	At spillway on Parks Road, 3.1 miles southeast of Benton, 3.5 miles southwest of Bellevue, 9.1 miles north of Bossier	In situ, sample
100405	100405-A	Black Bayou near Benton, LA	At LA Hwy 162 on east edge of Benton	In situ, sample
100405	1182	Black Bayou Reservoir at Linton Road, southeast of Benton, LA	4.4 miles southeast of Benton, 3.2 miles northeast of Dukedale, 4.3 miles southwest of Linton	In situ, sample
100406	363	Flat River Drainage Canal north of Bossier City, LA	At Airline Drive bridge, 4.0 miles south-southeast of Benton, LA	In situ, sample, flow, width
100406	389	Flat River Drainage Canal northeast of Bossier City, LA	At Swan Lake Road bridge 7.5 miles north-northeast of City Hall in Bossier City, LA	In situ, width, flow
100406	390	Flat River Drainage Canal NE of Shreveport	At Deer Point Road bridge 5.75 miles southeast of Benton, LA	In situ, width
100406	272	Flat River east of Taylortown, LA	At State Highway 527 bridge, 13 miles southeast of Shreveport, LA	In situ, flow, width, contin.
100406	100406-A	Flat River east of Poole, LA	At Poole Rd, 3 miles southeast of intersection of Poole Rd and US Hwy 71	In situ, flow, width
100501	100501-A	Bayou Dorcheat south of AR state line	At LA Hwy 157 several miles south of AR state line, east of Springhill, LA	In situ, sample, flow, width
100501	100501-B	Bayou Dorcheat NE of Cotton Valley	At LA Hwy 160 about 4-5 miles northeast of Cotton Valley, LA	In situ, sample, flow, width
100501	61	Bayou Dorcheat west of Minden, LA	At bridge on US Hwy 80, 3.0 miles west of Minden	In situ, flow, width
100501	274	Bayou Dorcheat west of Sibley, LA	At State Highway 164 bridge, 2.0 miles west of Sibley, LA, 6.0 miles southwest of Minden, LA	In situ, flow, width,
100601	100601-A	Wallace Bayou upstream of Bayou Pierre	At White Springs Rd, about 4 miles southwest of Gayles, LA, about 2 miles downstream of Wallace Lake	In situ, sample, flow, width
100601	278	Bayou Pierre near Shreveport, LA	At State Highway 526 bridge, 0.75 mile northeast of Forbing, LA, 8.0 miles south of Shreveport, LA	In situ, sample, flow, width
100601	1183	Bayou Pierre at Ellerbee Road, S of Gayles	3.2 miles south of Gayles, 2.4 miles southwest of Cecile, 5 miles northeast of Frierson	In situ, sample, flow, width
100601	100601-B	Bayou Pierre southwest of Williams, LA	At highway 509, about 4 miles southwest of Williams, LA, about 9 miles south of Caddo/Red River Parish line	In situ, flow, width
100602	100602-A	Boggy Bayou SE of Hicks Crossing, LA	At LA Hwy 169, about 2-3 miles southeast of Hicks Crossing	In situ, sample, flow, width
100602	1207	Boggy Bayou southwest of Shreveport, LA	6.4 miles southwest of Shreveport, 3.1 miles north of Keithville, 2.9 miles southeast of Reservoir	In situ, sample, flow, width
100702	100702-A	Black Lake Bayou west of Mt. Lebanon	At LA Hwy 793 about 5-6 miles west of Mt. Lebanon (in 100701)	In situ, flow, width
100702	100702-B	Leatherman Creek west of Mt. Lebanon	At LA Hwy 793 about 4 miles west of Mt. Lebanon	In situ, sample, flow, width

SUBSEG. NUMBER	SITE NO.	SITE NAME	DIRECTIONS	TYPE OF DATA COLLECTED
100702	282	Black Lake Bayou west of Castor, LA	At LA Highway 4, 2.5 miles west of Castor, LA, 18.5 miles northeast of Coushatta, LA	In situ, sample, flow, width
100702	1187	Black Lake Bayou at Hwy 155, E of Martin	At bridge on State Hwy 155, 3.5 miles east of Martin, 6.2 miles west of Skidder, 5 miles SW of Ashland	In situ, sample, flow, width
100703	100703-A	Black Lake northeast of Campti, LA	On LA Hwy 9 bridge about 6 miles northeast of Campti, LA	In situ, sample
100703	100703-B	Clear Lake outlet northeast of Clarence, LA	At LA Hwy 1226, just downstream of Chivery Dam at outlet of Clear Lake, about 5 miles northeast of Clarence	In situ, sample, flow, width
100803	100803-A	Saline Bayou northeast of Clarence, LA	Access point at end of LA Hwy 1227 at Allen Dam, about 5.5 miles NE of Clarence	In situ, sample, flow, width
100803	1214	Saline Bayou southeast of Clarence, LA	At US Hwy 71, 7 miles east of Natchitoches, 5.1 miles southeast of Clarence, 3.4 miles south of Trichell	In situ, sample, flow, width, contin.
101301	556	Cress Creek west of Oak Grove, LA	At bridge on LA Hwy 8, 2.8 miles W of Oak Grove, 4 miles S of Fairfield, 3.7 miles N of Bagdad	In situ, sample
101301	101301-A	Rigolette Bayou WNW of Bagdad, LA	At LA Hwy 492, about 1 mile WNW of Bagdad, about 7 miles southeast of Colfax	In situ, sample, flow, width
101301	1220	Rigolette Bayou northwest of Pineville, LA	Bridge on Rigolette Rd., 4.8 miles NW of Pineville, 1.6 miles NE of Barrett, 3.9 miles SW of Tio	In situ, sample, flow, width, contin.
101302	101302-A	Iatt Creek near upstream end of Iatt Lake	At LA Hwy 122 about 10 miles east of Montgomery, LA	In situ, sample
101302	570	Beaver Creek south of Faircloth, LA	0.35 miles west of Faircloth, 2 miles northwest of Fairfield, 4.5 miles southwest of Wilhana	In situ, sample
101302	1221	Iatt Lake southwest of Fairfield, LA	Public boat launch near spillway, 4.4 miles southwest Fairfield, 7.1 miles northwest of Oak Grove, 3.7 miles northeast	In situ, sample
101503	371	Saline Bayou east of Alexandria, LA	9.0 miles east of Buckeye, LA, 1.5 mile northeast of Saline Lake, 0.5 mile south of entrance to Bushyhead Bayou	In situ
101503	101503-A	Saline Bayou southeast of Saline Lake	At local road about 1-2 miles southeast of east end of Saline Lake	In situ, sample
101604	1231	Lake Concordia at Ferriday, LA	Sportsman's Marina, 1.7 miles NW of Ridgecrest, 6.8 miles S of Clayton, 16 miles E of Jonesville	In situ, sample
101604	101604-A	Bayou Cocodrie at Ferriday, LA	At US Hwy 65 bridge, about 0.5 miles SW of Lake Concordia	In situ, width, xcs
Sabine River basin				
110401	110401-A	Toro Creek southeast of Florien, LA	At Plainview Road, about 3-4 miles southeast of Florien, LA	In situ, sample, flow, width
110401	1160	Bayou Toro northeast of Toro, LA	At LA Hwy 473, about 2 miles northeast of Toro, LA	In situ, sample, flow, width

Note: "contin." = continuous in situ monitoring

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Table C.2. In situ data for FTN field survey in Red River and Sabine River basins.

Subsegment Number	Site No.	Site Name	Date	Time	Water Temp. (C)	DO (mg/L)	Conductivity (umhos/cm)	pH (su)
100404	1181	Cypress Bayou Reservoir southeast of Benton	09/01/05	10:44	30.8	7.3	54	7.3
	100404-A	Cypress Bayou Reservoir @ Hwy 162	09/01/05	11:20	30.4	6.1	51	7.0
100405	1182	Black Bayou Reservoir @ Linton Rd	09/01/05	10:20	29.8	5.5	75	7.2
	100405-A	Black Bayou @ Hwy 162	09/01/05	11:45	24.9	1.0	440	6.9
100406	272	Flat River @ Hwy 527	09/02/05	08:15	25.5	2.9	811	7.1
	363	Flat River Airline Dr. bridge	09/01/05	09:30	29.3	5.2	90	7.1
	389	Flat River Dr. Canal Swan L. Rd.	09/01/05	07:54	26.9	1.4	336	7.6
	390	Flat River @ Deer Pt. Road	09/01/05	08:40	27.1	0.4	179	7.2
	100406-A	Flat River @ Swan Lake Bridge	08/31/05	19:00	30.6	5.3	888	7.3
100501	61	Bayou Dorcheat @ Hwy 80	09/01/05	18:45	32.6	7.1	127	6.7
	274	Bayou Dorcheat @ Hwy 164	09/02/05	09:40	29.1	6.2	193	7.6
	100501-A	Bayou Dorcheat	09/01/05	14:35	27.1	3.2	418	7.1
	100501-B	Bayou Dorcheat @ Hwy 160	09/01/05	15:55	31.8	5.9	76	7.2
100601	278	Bayou Pierre nr Shreveport	08/31/05	12:20	31.0	6.8	498	7.0
	1183	Bayou Pierre @ Ellerbee Rd	08/31/05	10:10	25.0	3.7	476	7.2
	100601-A	Wallace Bayou	08/31/05	11:10	29.5	5.9	214	7.6
	100601-B	Bayou Pierre	08/31/05	08:45	26.6	4.9	338	7.4
100602	1207	Boggy Bayou Hwy 171	08/31/05	14:40	31.5	5.2	156	7.1
	100602-A	Boggy Bayou @ Hwy 169	08/31/05	13:45	27.2	4.4	208	7.1
100702	282	Black Lake Bayou Hwy 4	09/07/05	09:20	24.7	5.3	35	6.1
	1187	Black Lake Bayou Hwy 155	09/07/05	10:25	24.9	5.3	40	6.3
	100702-A	Black Lake Bayou Hwy 793	09/07/05	07:20	23.4	2.9	167	6.3
	100702-B	Leatherman Creek	09/07/05	08:05	23.3	3.4	54	6.3
100703	100703-A	Black Lake @ Hwy 9	09/07/05	11:20	27.6	5.3	71	6.4
	100703-B	Clear Lake outlet	09/07/05	12:40	29.8	6.9	96	6.9
100803	1214	Saline Bayou @ Hwy 71	09/07/05	14:40	30.2	5.4	105	6.8
	100803-A	Saline Bayou @ Allen Dam	09/07/05	13:40	30.6	8.3	82	7.8
101301	556	Cress Creek @ Hwy 8	09/08/05	11:30	21.7	7.5	22	6.5
	1220	Rigolette Bayou @ Rig. Road	09/08/05	09:35	27.4	4.3	108	6.8
	101301-A	Rigolette Bayou @ hwy 492	09/08/05	10:20	24.2	5.0	54	6.6
101302	570	Beaver Creek	09/08/05	12:30	20.3	8.3	29	6.5
	1221	Iatt Lake	09/08/05	11:05	26.5	3.2	6	6.3
	101302-A	Iatt Creek @ Hwy 122	09/08/05	12:05	24.2	1.2	129	6.4
101503	101503-A	Saline Bayou on Farm Rd.	09/09/05	07:05	24.0	3.3	179	6.9
101504	371	Saline Bayou @ WMA boatramp	09/08/05	15:30	30.6	8.3	47	8.0
101604	1231	Lake Concordia @ Sportmans Lodge	09/09/05	08:45	28.9	7.5	251	8.3
	101604-A	Bayou Cocodrie @ Hwy 65	09/09/05	08:30	27.2	2.2	282	6.9
110401	1160	Bayou Toro @ Hwy 473	09/08/05	07:30	24.4	4.8	99	6.4
	110401-A	Toro Creek @ Plainview Rd.	09/08/05	06:40	21.8	1.3	81	6.3

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Table C.3 Analytical laboratory results from samples collected in FTN field survey for Red River and Sabine River basins.

Subsegment Number	Site Number	Site Name	Sampling Date	TSS (mg/L)	TKN (mg/L)	Total Phos. (mg/L)	TOC (mg/L)	Chlorophyll a (mg/L)	Ammonia as N (mg/L)	NO3 + NO2 N (mg/L)
100404	1181	Cypress Bayou Reservoir nr Benton	09/01/05	7.7	1.8	0.045	9.1	0.035	0.24	<0.05
100405	1182	Black Bayou Reservoir nr Linden Rd	09/01/05	8	1.9	0.061	10	0.051	0.14	<0.05
	100405-A	Black Bayou nr Benton	09/01/05	8.4	2.4	0.082	12	<0.02	0.56	<0.05
100406	363-1	Flat River Dr. Canal nr Bossier City	09/01/05	26	2.5	0.093	10	0.027	0.39	<0.05
	363-2	Flat River Dr. Canal nr Bossier City	09/01/05	26	2.2	0.074	11	0.03	0.36	<0.05
100501	100501-A	Bayou Dorcheat nr AR line	09/01/05	11	1.6	0.15	5.7	<0.02	0.2	0.26
	100501-B	Bayou Dorcheat NE Cotton Valley	09/01/05	4.4	1.7	0.048	8.3	0.021	0.18	<0.05
100601	278	Bayou Pierre nr Shreveport	08/31/05	9.8	1.4	0.25	7.6	<0.02	0.13	<0.05
	1183	Bayou Pierre at Ellerbee Rd.	08/31/05	16	2.3	0.22	2.6	<0.02	0.22	0.39
	100601-A-1	Wallace Bayou u/s B. Pierre	08/31/05	19	1.6	0.085	6.8	<0.02	<0.1	<0.05
	100601-A-2	Wallace Bayou u/s B. Pierre	08/31/05	18	1.8	0.085	6.7	<0.02	<0.1	0.06
100602	1207	Boggy Bayou SW of Shreveport	08/31/05	19	1.5	0.14	6.1	<0.02	<0.1	<0.05
	100602-A	Boggy Bayou SE of Hicks Crossing	08/31/05	78	1.8	0.15	8.1	<0.02	<0.1	<0.05
100702	100702-B	Leatherman Creek	09/07/05	18	2.4	0.11	7.5	0.076	0.32	<0.05
	282	Black Lake Bayou w of Castor	09/07/05	4.8	1.6	0.048	5.9	<0.02	0.22	0.064
	1187	Black Lake Bayou @ Hwy 155	09/07/05	5.2	1.7	0.064	6	<0.02	0.17	0.096
100703	100703-A-1	Black Lake NE Campti	09/07/05	73	1.7	0.048	7.7	<0.02	0.17	<0.05
	100703-A-2	Black Lake NE Campti	09/07/05	4.4	1.9	0.05	7.8	<0.02	0.17	<0.05
	100703-B	Clear Lake outlet	09/07/05	16	1.9	0.12	9.2	0.1	0.25	<0.05
100803	1214	Saline Bayou SE of Clarence	09/07/05	22	1.9	0.08	8.6	0.034	0.23	<0.05
	100803-A	Saline Bayou NE of Clarence	09/07/05	16	3	0.098	8.7	0.05	0.21	<0.05
101301	556	Cress Creek	09/08/05	<4	<1	<0.02	3.1	<0.02	0.16	<0.05
	1220	Rigolette Bayou NE of Pineville	09/08/05	13	1.1	0.082	4.9	<0.02	0.12	<0.05
	570	Beaver Creek	09/08/05	6.2	<1	<0.02	1.5	<0.02	<0.1	0.1
	101301-A	Rigolette Bayou WNW of Bagdad	09/08/05	41	1.3	0.08	3.2	<0.02	0.19	<0.05
101302	1221	Iatt Lake	09/08/05	<4	<1	<0.02	9	<0.02	0.19	<0.05
	101302-A-1	Iatt Creek	09/08/05	5.4	1.4	0.048	11	<0.02	0.22	0.059
	101302-A-2	Iatt Creek	09/08/05	5.2	<1	0.048	11	<0.02	0.14	<0.05
101503	101503-A	Saline Bayou SE of Saline L.	09/09/05	280	2.2	0.15	6.8	0.026	0.58	0.068
101604	1231	Lake Concordia	09/09/05	12	1.9	0.15	7.9	0.049	0.23	<0.05
110401	1160	Bayou Toro NE of Toro	09/08/05	16	1.7	0.1	6.4	<0.02	0.14	<0.05
	110401-A	Toro Creek	09/08/05	6.8	1.4	0.11	7.3	<0.02	0.16	<0.05

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Table C.4. Summary of CBOD time series data from FTN field survey of Red River and Sabine River basins..

Subsegment Number	Sample No.	CBOD 1, 2-day	CBOD 2, 5-day	CBOD 3, 9-day	CBOD 4, 14-Day	CBOD 5, 20-day	k rate (1/day)	CBOD _U (mg/l)
100404	1181	<2	3.3	5	5.3	5.2	0.22	5.49
100405	1182	2.9	4.8	6.7	8.1	12	0.06	15.61
	100405-A	<2	<2	3.3	5.1	6.9	0.05	12.47
100406	363-1	<2	<2	4.3	5.7	6.6	0.12	7.50
	363-2	<2	<2	4.2	5.8	6.8	0.12	7.69
100501	100501-A	2.4	3.2	3.9	4.2	4.8	0.30	4.43
	100501-B	5.2	6.5	7.6	7.9	12	0.21	10.13
100601	278	<2	<2	2.3	4.6	6.8	0.04	13.85
	1183	<2	<2	<2	5.1	3.9	0.60	4.50
	100601-A-1	<2	<2	<2	2.8	4.4	0.16	5.38
	100601-A-2	<2	2.1	2.3	4.1	5.4	0.04	9.83
100602	1207	<2	<2	2.1	3.4	6	0.04	13.05
	100602-A	2.7	3.9	5	7.8	9.4	0.07	11.99
100702	282	<2	<2	<2	<2	2.2	--	--
	1187	<2	<2	<2	<2	<2	--	--
	100702-B	<2	2.1	3.7	4.6	6.2	0.05	9.62
100703	100703-A-1	<2	<2	<2	2.5	4	0.05	8.69
	100703-A-2	<2	<2	<2	2.3	3.1	0.05	5.60
	100703-B	2.4	5.9	8.9	9.6	14	0.08	16.99
100803	1214	<2	2.7	7.1	7.3	8.9	0.31	8.42
	100803-A	<2	<2	3.9	4.8	6.6	0.05	10.75
101301	556	<2	<2	<2	<2	<2	--	--
	1220	<2	<2	<2	3.1	3.9	0.15	4.43
	101301-A	<2	<2	<2	<2	<2	--	--
101302	570	<2	<2	<2	<2	<2	--	--
	1221	<2	<2	<2	<2	2.2	--	--
	101302-A-1	<2	<2	2.7	3.6	4.3	0.10	5.04
	101302-A-2	<2	<2	<2	2.5	3.4	0.05	5.75
101503	101503-A	<2	<2	3.6	6.2	6.9	0.22	7.29
101604	1231	<2	3.6	7.3	9.9	12	0.06	18.50
110401	1160	<2	<2	<2	<2	2	--	--
	110401-A	<2	<2	<2	<2	2.3	--	--

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APPENDIX D

LA-QUAL Vector Diagram

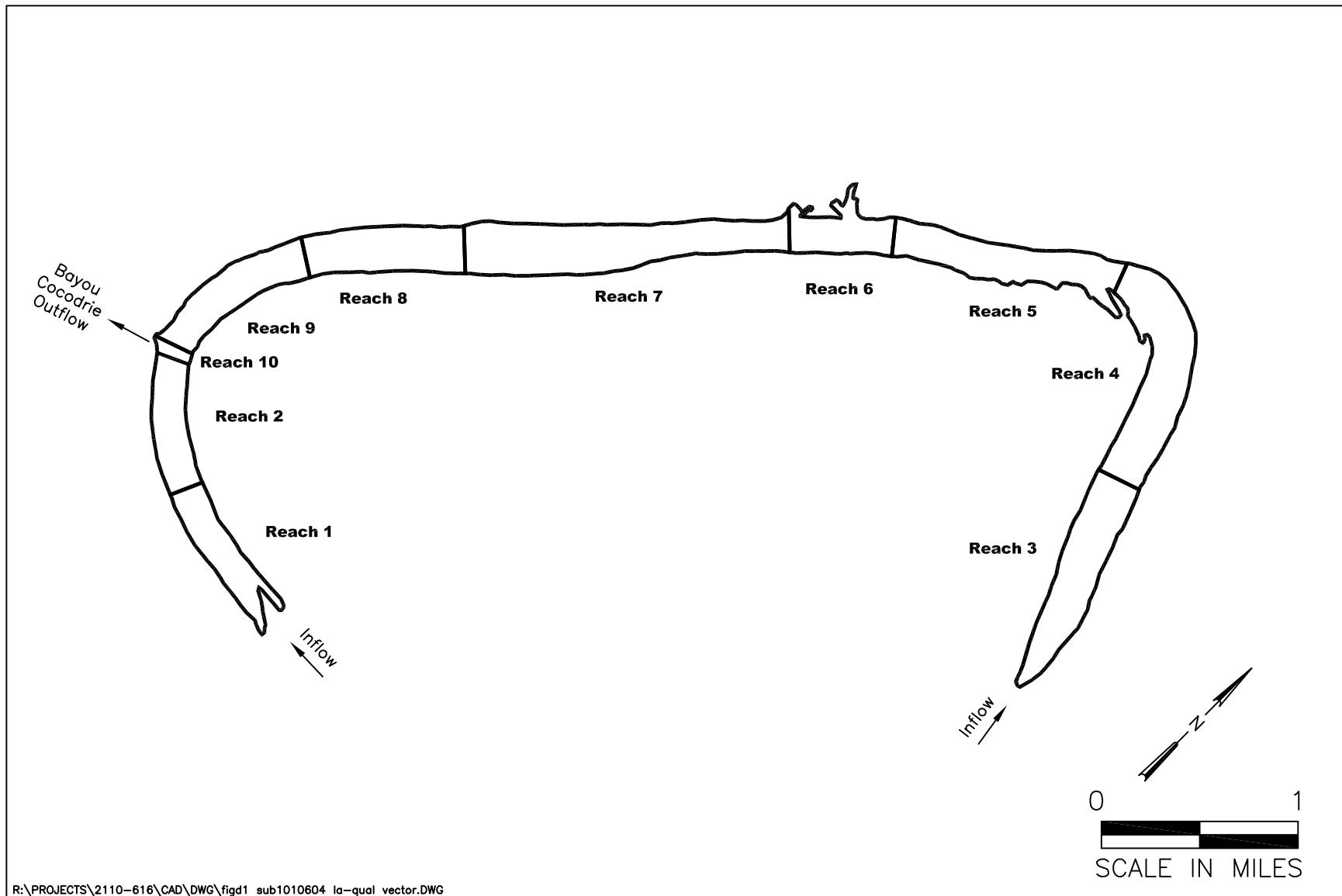


Figure D.1. LA-QUAL model layout for Lake Concordia.

APPENDIX E

Calculation of Net DO Added per Unit of Chlorophyll

STEADY STATE CALCULATION OF NET DO FROM PHOTOSYNTHESIS AND RESPIRATION FOR LAKE CONCORDIA

Value and units	Description of parameter	Data source / comments
49 ug/L	Chlorophyll a concentration	Observed value at station 1231 during FTN intensive field survey
60	Carbon to chlorophyll ratio	Table 6-4 in Rates, Constants, Kinetics manual
1.00 /day	Algal growth rate at solar noon	"Calibrated" to maintain steady state chl a conc. (within range of values in Table 6-5 in Rates, Constants, Kinetics manual)
0.16 /day	Algal respiration rate	"Calibrated" to maintain steady state chl a conc. (within range of values in Table 6-18 in Rates, Constants, Kinetics manual)
0.19 m/day	Algal settling rate	"Calibrated" to maintain steady state chl a conc. (within range of values in Table 6-19 in Rates, Constants, Kinetics manual)
1.56 m	Depth of photic zone	Equations 7.27 and 7.28 of Thomann and Mueller (1987) and assumed secchi depth of 2.0 ft
2.67 g O ₂ / g C	Oxygen produced per unit of algal growth	Table 3-29 in Rates, Constants, Kinetics manual (consistent with stoichiometric ratio of 1 mole O ₂ per mole C in photosynthesis)
2.00 g O ₂ / g C	Oxygen depleted per unit of algal respiration	Table 3-30 in Rates, Constants, Kinetics manual
5:25 AM	Time of sunrise	For midpoint of calibration period (Aug. 5, 2002) for Ferriday, LA
6:58 PM	Time of sunset	For midpoint of calibration period (Aug. 5, 2002) for Ferriday, LA

- Notes:
1. Limitation of algal growth due to sunlight was assumed to vary during the day as a triangular function between sunrise and sunset.
 2. Algae conc (mg/L of C) = Chl a conc (ug/L) / 1000 (ug/L per mg/L) * Carbon:Chl a ratio (mg/L C per mg/L chl a)
 3. Algal growth (mg/L of C per day) = Max growth rate (1/day) * limitation of max growth rate * Algae conc. (mg/L of C)
 4. Algal respiration (mg/L of C per day) = Respiration rate (1/day) * Algae conc. (mg/L of C)
 5. Algal settling (mg/L of C per day) = Settling rate (m/day) / Photic zone depth (m) * Algae conc. (mg/L of C)
 6. Photic zone depth (m) = 4.61 / Light extinction coefficient (1/m)
 7. Light extinction coefficient (1/m) = 1.8 / Secchi depth (m)
 8. Rate of O₂ produced from photosynthesis = Algal growth (mg/L of C per day) * 2.67 g O₂ / g C
 9. Rate of O₂ consumed from respiration = Algal respiration (mg/L of C per day) * 2.00 g O₂ / g C

Time of day	Limitation of max. algal growth due to sunlight	Algal growth (mg/L of C per day)	Algal respiration (mg/L of C per day)	Algal settling (mg/L of C per day)	Rate of O ₂ production by photosynth. (mg/L/day)	Rate of O ₂ consumption by respiration (mg/L/day)
12:00 AM	0	0	0.47	0.36	0	0.94
12:30 AM	0	0	0.47	0.36	0	0.94
1:00 AM	0	0	0.47	0.36	0	0.94
1:30 AM	0	0	0.47	0.36	0	0.94
2:00 AM	0	0	0.47	0.36	0	0.94
2:30 AM	0	0	0.47	0.36	0	0.94

<u>Time of day</u>	<u>Limitation of max. algal growth due to sunlight</u>	<u>Algal growth (mg/L of C per day)</u>	<u>Algal respiration (mg/L of C per day)</u>	<u>Algal settling (mg/L of C per day)</u>	<u>Rate of O2 production by photosynth. (mg/L/day)</u>	<u>Rate of O2 consumption by respiration (mg/L/day)</u>
3:00 AM	0	0	0.47	0.36	0	0.94
3:30 AM	0	0	0.47	0.36	0	0.94
4:00 AM	0	0	0.47	0.36	0	0.94
4:30 AM	0	0	0.47	0.36	0	0.94
5:00 AM	0	0	0.47	0.36	0	0.94
5:30 AM	0.012	0.04	0.47	0.36	0.10	0.94
6:00 AM	0.086	0.25	0.47	0.36	0.68	0.94
6:30 AM	0.160	0.47	0.47	0.36	1.25	0.94
7:00 AM	0.234	0.69	0.47	0.36	1.83	0.94
7:30 AM	0.308	0.90	0.47	0.36	2.41	0.94
8:00 AM	0.381	1.12	0.47	0.36	2.99	0.94
8:30 AM	0.455	1.34	0.47	0.36	3.57	0.94
9:00 AM	0.529	1.55	0.47	0.36	4.15	0.94
9:30 AM	0.603	1.77	0.47	0.36	4.73	0.94
10:00 AM	0.677	1.99	0.47	0.36	5.30	0.94
10:30 AM	0.750	2.21	0.47	0.36	5.88	0.94
11:00 AM	0.824	2.42	0.47	0.36	6.46	0.94
11:30 AM	0.898	2.64	0.47	0.36	7.04	0.94
12:00 PM	0.972	2.86	0.47	0.36	7.62	0.94
12:30 PM	0.954	2.81	0.47	0.36	7.48	0.94
1:00 PM	0.881	2.59	0.47	0.36	6.90	0.94
1:30 PM	0.807	2.37	0.47	0.36	6.33	0.94
2:00 PM	0.733	2.16	0.47	0.36	5.75	0.94
2:30 PM	0.659	1.94	0.47	0.36	5.17	0.94
3:00 PM	0.585	1.72	0.47	0.36	4.59	0.94
3:30 PM	0.512	1.50	0.47	0.36	4.01	0.94
4:00 PM	0.438	1.29	0.47	0.36	3.43	0.94
4:30 PM	0.364	1.07	0.47	0.36	2.85	0.94
5:00 PM	0.290	0.85	0.47	0.36	2.28	0.94
5:30 PM	0.216	0.64	0.47	0.36	1.70	0.94
6:00 PM	0.143	0.42	0.47	0.36	1.12	0.94
6:30 PM	0.069	0.20	0.47	0.36	0.54	0.94
7:00 PM	0	0	0.47	0.36	0	0.94
7:30 PM	0	0	0.47	0.36	0	0.94
8:00 PM	0	0	0.47	0.36	0	0.94
8:30 PM	0	0	0.47	0.36	0	0.94

<u>Time of day</u>	<u>Limitation of max. algal growth due to sunlight</u>	<u>Algal growth (mg/L of C per day)</u>	<u>Algal respiration (mg/L of C per day)</u>	<u>Algal settling (mg/L of C per day)</u>	<u>Rate of O2 production by photosynth. (mg/L/day)</u>	<u>Rate of O2 consumption by respiration (mg/L/day)</u>
9:00 PM	0	0	0.47	0.36	0	0.94
9:30 PM	0	0	0.47	0.36	0	0.94
10:00 PM	0	0	0.47	0.36	0	0.94
10:30 PM	0	0	0.47	0.36	0	0.94
11:00 PM	0	0	0.47	0.36	0	0.94
11:30 PM	0	0	0.47	0.36	0	0.94
24-hour averages =		0.83	0.47	0.36	2.21	0.94

Net rate of change in algal biomass = $0.83 - 0.47 - 0.36 = 0.00$ mg/L of C per day (zero means steady state)

Net rate of change in DO over 24 hrs = $2.21 - 0.94 = 1.27$ mg/L of O2 per day

Net DO added to water per unit of chlorophyll over 24 hrs = $1.27 / 49 = 0.026$ mg/L of O2 per day per ug/L of chl a

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APPENDIX F

Wind-Aided Reaeration Calculations for Calibration

Wind Aided Reaeration for Lake Concordia for Calibration

Wind Aided Reaeration Coefficient Equation (Eq.3-23 from Rates, Constants, and Kinetics publication)

$$K_L \text{ with wind} = K_L \text{ without wind} [1 + (0.2395 V_w^{1.643})] \quad \text{Equation 1}$$

V_w = wind velocity in meters per second

K_2 = reaeration in 1/day that does not account for wind effects. For Louisiana equation use $K_2 = 0.664/D$.

D = depth in meters

$K_L = K_2 * D$ (=oxygen transfer coefficient "a" in model)

Formula to correct wind speed for elevation (obtained from LDEQ):

$$V_{w@ \text{ height } z} = V_{w@ \text{ height } s} [(z/s)^{0.143}] \quad \text{Equation 2}$$

CALCULATIONS FOR CALIBRATION PERIOD:

Calibration Period: July 23 – August 20, 2002

Station	Average Wind Speed (mph)	Average Wind Speed (m/s)	Height of Wind Measurement (m)	Height for Calculating Wind-Aided K_L (m)	Wind Speed at Surface using Eqn 2 (m/s)	K_L without wind (m/day)	K_L with wind using Eqn 1 (m/day)
Alexandria, LA	3.9	1.8	10	0.1	0.9	0.664	0.80
Jackson, MS	3.8	1.7	10	0.1	0.9	0.664	0.79

DAILY WIND DATA FOR CALIBRATION PERIOD (miles per hour):

	Alex.	Jackson		Alex.	Jackson	
7/23/2002	2.6	1.1		8/7/2002	4.1	4.7
7/24/2002	3.8	2.1		8/8/2002	2.8	4.7
7/25/2002	4.0	3.1		8/9/2002	4.7	4.4
7/26/2002	3.8	4.1		8/10/2002	4.6	4.4
7/27/2002	5.4	4.3		8/11/2002	5.4	6.0
7/28/2002	4.9	4.5		8/12/2002	5.1	3.6
7/29/2002	4.3	3.6		8/13/2002	4.9	3.8
7/30/2002	4.3	3.6		8/14/2002	4.5	4.0
7/31/2002	5.0	2.5		8/15/2002	3.0	5.3
8/1/2002	2.9	2.6		8/16/2002	3.1	6.7
8/2/2002	3.6	2.7		8/17/2002	3.4	3.6
8/3/2002	4.0	2.8		8/18/2002	3.3	1.6
8/4/2002	3.6	4.3		8/19/2002	2.2	2.9
8/5/2002	5.1	7.2		8/20/2002	1.1	3.1
8/6/2002	4.3	3.8			Average =	3.9
						3.8 mph

APPENDIX G

Calculation of Inflow Rate for Calibration Period

Appendix G. Calculation of inflow rate for Lake Concordia during calibration period

Bayou des Glaises Diversion
Channel at Moreauville (07383500)
Drainage area = 270 mi²

	Date	Flow (cfs)
7383500	7/23/2002	39
7383500	7/24/2002	93
7383500	7/25/2002	171
7383500	7/26/2002	177
7383500	7/27/2002	283
7383500	7/28/2002	271
7383500	7/29/2002	199
7383500	7/30/2002	159
7383500	7/31/2002	150
7383500	8/1/2002	122
7383500	8/2/2002	89
7383500	8/3/2002	89
7383500	8/4/2002	94
7383500	8/5/2002	81
7383500	8/6/2002	69
7383500	8/7/2002	76
7383500	8/8/2002	74
7383500	8/9/2002	56
7383500	8/10/2002	46
7383500	8/11/2002	52
7383500	8/12/2002	36
7383500	8/13/2002	35
7383500	8/14/2002	54
7383500	8/15/2002	72
7383500	8/16/2002	142
7383500	8/17/2002	189
7383500	8/18/2002	270
7383500	8/19/2002	241
7383500	8/20/2002	178

Avg flow = 124 cfs

Avg flow per unit area = 0.46 cfs/mi²

According to Water Resources Data for LA, "Diversion channel carries natural flow of Bayou des Glaises except when operation of floodgates, 12 mi downstream from point of diversion, regulate flow into or out of bayou depending on stage in Red River and Old River overflow area." Based on this, low flow data such as July-August 2002 should represent natural flow (not diverted flow).

The drainage area for this gage has similar land use & topography as Lake Concordia drainage area.

Gage is located about 48-53 miles southwest of Lake Concordia.

Homochitto River at Eddiceton, MS (07291000)
Drainage area = 181 mi²

	Date	Flow (cfs)
7291000	7/23/2002	60
7291000	7/24/2002	52
7291000	7/25/2002	55
7291000	7/26/2002	287
7291000	7/27/2002	114
7291000	7/28/2002	88
7291000	7/29/2002	69
7291000	7/30/2002	63
7291000	7/31/2002	59
7291000	8/1/2002	177
7291000	8/2/2002	75
7291000	8/3/2002	60
7291000	8/4/2002	56
7291000	8/5/2002	54
7291000	8/6/2002	55
7291000	8/7/2002	51
7291000	8/8/2002	49
7291000	8/9/2002	46
7291000	8/10/2002	45
7291000	8/11/2002	44
7291000	8/12/2002	55
7291000	8/13/2002	67
7291000	8/14/2002	58
7291000	8/15/2002	60
7291000	8/16/2002	82
7291000	8/17/2002	56
7291000	8/18/2002	51
7291000	8/19/2002	48
7291000	8/20/2002	47

Avg flow = 72 cfs

Avg flow per unit area = 0.40 cfs/mi²

The drainage area for this gage is outside of the Mississippi Alluvial Plain ecoregion.

Gage is located about 43-46 miles east of Lake Concordia

Buffalo River near
Woodville, MS (07295000)
Drainage area = 180 mi²

	<u>Date</u>	<u>Flow (cfs)</u>
7295000	7/23/2002	47 e
7295000	7/24/2002	48 e
7295000	7/25/2002	60 e
7295000	7/26/2002	85 e
7295000	7/27/2002	77 e
7295000	7/28/2002	50 e
7295000	7/29/2002	43
7295000	7/30/2002	46
7295000	7/31/2002	90 e
7295000	8/1/2002	124 e
7295000	8/2/2002	105 e
7295000	8/3/2002	65 e
7295000	8/4/2002	44
7295000	8/5/2002	43
7295000	8/6/2002	62
7295000	8/7/2002	99
7295000	8/8/2002	57 e
7295000	8/9/2002	48
7295000	8/10/2002	46
7295000	8/11/2002	46
7295000	8/12/2002	44 e
7295000	8/13/2002	48 e
7295000	8/14/2002	60 e
7295000	8/15/2002	125 e
7295000	8/16/2002	155 e
7295000	8/17/2002	145 e
7295000	8/18/2002	120 e
7295000	8/19/2002	80 e
7295000	8/20/2002	63 e

Avg flow = 73 cfs
 Avg flow per unit area = 0.41 cfs/mi²

Average flow per unit area for
 3 gages = 0.42 cfs/mi²

The drainage area for this gage is
 outside of the Mississippi Alluvial
 Plain ecoregion.

Drainage area for Lake Concordia
 (excluding the lake surface area)
 = 7.16 mi²

Gage is located about 30-33 miles
 southeast of Lake Concordia

Estimated inflow to Lake
 Concordia during calibration
 period = 3.0 cfs
 = 0.085 m³/sec

APPENDIX H

Inflow Water Quality Data for Cropland Areas

Table H.1. DO data for streams in subsegments where at least 40% of the land cover is crops.

Data Source	Subseg. Number	Site Number	Site Name	Date of Measur.	DO (mg/L)
FTN survey	100406	272	Flat River at Highway 527	9/02/2005	2.87
FTN survey	100406	363	Flat River Airline Drive bridge	9/01/2005	5.16
FTN survey	100406	389	Flat River Drainage Canal at Swan Lake Road	9/01/2005	1.44
FTN survey	100406	390	Flat River at Deer Point Road	9/01/2005	0.37
FTN survey	100406	100406-A	Flat River at Swan Lake Bridge	8/31/2005	5.26
FTN survey	100601	278	Bayou Pierre nr Shreveport	8/31/2005	6.75
FTN survey	100601	1183	Bayou Pierre @ Ellerbee Rd	8/31/2005	3.65
FTN survey	100601	100601-A	Wallace Bayou	8/31/2005	5.92
FTN survey	100601	100601-B	Bayou Pierre	8/31/2005	4.87
FTN survey	101503	101503-A	Saline Bayou on Farm Road	9/09/2005	3.33
FTN survey	101604	101604-A	Bayou Cocodrie at Highway 65	9/09/2005	2.19
LDEQ survey	101601	BYCOC1	Bayou Cocodrie-at Fisherman Road	8/04/2004	5.68
LDEQ survey	101601	BYCOC2	Bayou Cocodrie-at Fisherman Road	8/04/2004	4.69
LDEQ survey	101601	BYCOC3	Bayou Cocodrie-at upstream side of LA Hwy 15	8/04/2004	1.64
LDEQ survey	101601	BYCOC4	Bayou Cocodrie-at downstream side of LA Hwy 15	8/04/2004	1.56
LDEQ survey	101601	BYCOC17	Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	8/04/2004	5.94
LDEQ survey	101601	BYCOC21	Bayou Cocodrie-Below Unnamed Canal	8/04/2004	4.42
LDEQ survey	101601	BYCOC22	Bayou Cocodrie-At Yakey Road	8/04/2004	4.00
LDEQ survey	101601	BYCOC26	Bayou Cocodrie-Below Dobbs Bay	8/04/2004	5.03
LDEQ survey	101601	BYCOC28	Bayou Cocodrie-Upstream of flood gates	8/04/2004	4.66
LDEQ survey	101601	UNT1	Unnamed Trib-Just above mixing zone with Bayou Cocodrie	8/04/2004	4.19
LDEQ survey	101601	GBC1	Grand Bayou Cutoff-Just above mixing zone with Bayou Cocodrie	8/04/2004	6.20
LDEQ survey	101601	BCC1	Bayou Cross Cocodrie-Just above confluence with Cocodrie Lake	8/04/2004	5.18
LDEQ survey	101601	WBY1	Worringer Bayou-0.5 miles south of confluence with Cocodrie Lake	8/04/2004	6.64
LDEQ survey	100202 / 100203	LR1	Little River-W of Spring Creek and NE of Marksville	8/18/2004	2.74
LDEQ survey	100202 / 100203	LR2	Little River-at Spring Bayou	8/18/2004	3.31
LDEQ survey	100202 / 100203	LR3	Little River-E of Petite Bayou Rouge	8/18/2004	3.72
LDEQ survey	100202 / 100203	LR4	Little River-E of Petite Bayou Bourbeux	8/18/2004	1.04
LDEQ survey	100202 / 100203	LR5	Little River-E of LCE1	8/18/2004	3.65
LDEQ survey	100202 / 100203	LR6	Little River-at bridge on NE end	8/18/2004	4.58
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	3.51
LDEQ survey	100202 / 100203	LR8	Little River-N of the weir	8/18/2004	5.87
LDEQ survey	100202 / 100203	BBB1	Bayou Bourbeux-connection to Little River	8/18/2004	0.64
LDEQ survey	100202 / 100203	BS-1	Baie Sec-	8/18/2004	5.92

Data Source	Subseg. Number	Site Number	Site Name	Date of Measur.	DO (mg/L)
LDEQ survey	101605	BYCOC5	Bayou Cocodrie-Near Boat Launch	9/01/2004	4.07
LDEQ survey	101605	BYCOC7	Bayou Cocodrie-Below Vidalia Canal	9/01/2004	3.05
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	2.70
LDEQ survey	101605	BYCOC10	Bayou Cocodrie-Below Plouden Bayou	9/01/2004	6.38
LDEQ survey	101605	BYCOC11	Bayou Cocodrie-Below Plouden Bayou	9/01/2004	6.97
LDEQ survey	101605	BYCOC12	Bayou Cocodrie-Below Wyches Bayou	9/01/2004	4.13
LDEQ survey	101605	BYCOC13	Bayou Cocodrie-At Pump #3	9/01/2004	3.42
LDEQ survey	101605	BYCOC14	Bayou Cocodrie-Below Wallace Bayou	9/01/2004	2.84
LDEQ survey	101605	BYCOC17	Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	9/01/2004	5.94
LDEQ survey	101605	BYCOC18	Bayou Cocodrie-Southwest of Weir (Upstream)	9/01/2004	4.15
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	3.91
LDEQ survey	101605	BCC2	Bayou Cross Cocodrie-Upstream from Bayou Cocodrie	9/01/2004	3.43
LDEQ survey	101605	FLB1	Flat Bayou-Upstream from Bayou Cocodrie	9/01/2004	2.56
LDEQ survey	101605	VC1	Vidalia Canal-Upstream from Bayou Cocodrie	9/01/2004	2.29
LDEQ survey	101605	WABY1	Wallace Bayou-Upstream from Bayou Cocodrie	9/01/2004	6.24
				Count	49
				Minimum	0.37
				Average	4.06
				Median	4.07
				Maximum	6.97

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Table H.2. Ammonia nitrogen data for streams in subsegments where at least 40% of the land cover is crops.

Data Source	Subseg. Number	Site Number	Site Name	Sampling Date	Ammonia as N (mg/L)
FTN survey	100406	363-1	Flat River Dr. Canal near Bossier City	9/01/2005	0.39
FTN survey	100406	363-2	Flat River Dr. Canal near Bossier City	9/01/2005	0.36
FTN survey	100601	278	Bayou Pierre near Shreveport	8/31/2005	0.13
FTN survey	100601	1183	Bayou Pierre at Ellerbee Rd.	8/31/2005	0.22
FTN survey	100601	100601-A-1	Wallace Bayou u/s of Bayou Pierre	8/31/2005	0.05 *
FTN survey	100601	100601-A-2	Wallace Bayou u/s of Bayou Pierre	8/31/2005	0.05 *
FTN survey	101503	101503-A	Saline Bayou southeast of Saline Lake	9/09/2005	0.58
LDEQ survey	101601	BYCOC1	Bayou Cocodrie-at Fisherman Road	8/04/2004	0.05 *
LDEQ survey	101601	BYCOC2	Bayou Cocodrie-at Fisherman Road	8/04/2004	0.05 *
LDEQ survey	101601	BYCOC3	Bayou Cocodrie-at upstream side of LA Hwy 15	8/04/2004	0.31
LDEQ survey	101601	BYCOC4	Bayou Cocodrie-at downstream side of LA Hwy 15	8/04/2004	0.32
LDEQ survey	101601	BYCOC17	Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	8/04/2004	0.17
LDEQ survey	101601	BYCOC21	Bayou Cocodrie-Below Unnamed Canal	8/04/2004	0.21
LDEQ survey	101601	BYCOC22	Bayou Cocodrie-At Yakey Road	8/04/2004	0.21
LDEQ survey	101601	BYCOC26	Bayou Cocodrie-Below Dobbs Bay	8/04/2004	0.13
LDEQ survey	101601	BYCOC28	Bayou Cocodrie-Upstream of flood gates	8/04/2004	0.11
LDEQ survey	101601	UNT1	Unnamed Trib-Just above mixing zone with Bayou Cocodrie	8/04/2004	0.23
LDEQ survey	101601	GBC1	Grand Bayou Cutoff-Just above mixing zone with Bayou Cocodrie	8/04/2004	0.12
LDEQ survey	101601	BCC1	Bayou Cross Cocodrie-Just above confluence with Cocodrie Lake	8/04/2004	0.05 *
LDEQ survey	101601	WBY1	Worringer Bayou-0.5 miles south of confluence with Cocodrie Lake	8/04/2004	0.05 *
LDEQ survey	100202 / 100203	LR1	Little River-W of Spring Creek and NE of Marksville	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR2	Little River-at Spring Bayou	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR3	Little River-E of Petite Bayou Rouge	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR4	Little River-E of Petite Bayou Bourbeux	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR5	Little River-E of LCE1	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR6	Little River-at bridge on NE end	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	LR8	Little River-N of the weir	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	BBB1	Bayou Bourbeux-connection to Little River	8/18/2004	0.05 *
LDEQ survey	100202 / 100203	BS-1	Baie Sec-	8/18/2004	0.05 *

Data Source	Subseg. Number	Site Number	Site Name	Sampling Date	Ammonia as N (mg/L)
LDEQ survey	101605	BYCOC5	Bayou Cocodrie-Near Boat Launch	9/01/2004	0.13
LDEQ survey	101605	BYCOC7	Bayou Cocodrie-Below Vidalia Canal	9/01/2004	0.19
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	0.05 *
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	0.19
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	0.22
LDEQ survey	101605	BYCOC10	Bayou Cocodrie-Below Plouden Bayou	9/01/2004	0.05 *
LDEQ survey	101605	BYCOC11	Bayou Cocodrie-Below Plouden Bayou	9/01/2004	0.05 *
LDEQ survey	101605	BYCOC12	Bayou Cocodrie-Below Wyches Bayou	9/01/2004	0.12
LDEQ survey	101605	BYCOC13	Bayou Cocodrie-At Pump #3	9/01/2004	0.15
LDEQ survey	101605	BYCOC14	Bayou Cocodrie-Below Wallace Bayou	9/01/2004	0.18
LDEQ survey	101605	BYCOC17	Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	9/01/2004	0.12
LDEQ survey	101605	BYCOC18	Bayou Cocodrie-Southwest of Weir (Upstream)	9/01/2004	0.12
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	0.05 *
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	0.05 *
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	0.05 *
LDEQ survey	101605	BCC2	Bayou Cross Cocodrie-Upstream from Bayou Cocodrie	9/01/2004	0.13
LDEQ survey	101605	FLB1	Flat Bayou-Upstream from Bayou Cocodrie	9/01/2004	0.18
LDEQ survey	101605	VC1	Vidalia Canal-Upstream from Bayou Cocodrie	9/01/2004	0.13
LDEQ survey	101605	WABY1	Wallace Bayou-Upstream from Bayou Cocodrie	9/01/2004	0.14
					Count 43
					Minimum 0.05
					Average 0.13
					Median 0.12
					Maximum 0.58

Notes: 1. Concentrations with asterisks are set equal to half of the detection limit of 0.1 mg/L.
2. Multiple values at same station on same day were averaged as a single value for statistics.

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Table H.3. TKN data for streams in subsegments where at least 40% of the land cover is crops.

Data Source	Subseg. Number	Site Number	Site Name	Sampling Date	TKN (mg/L)
FTN survey	100406	363-1	Flat River Dr. Canal nr Bossier City	9/01/2005	2.50
FTN survey	100406	363-2	Flat River Dr. Canal nr Bossier City	9/01/2005	2.20
FTN survey	100601	278	Bayou Pierre nr Shreveport	8/31/2005	1.40
FTN survey	100601	1183	Bayou Pierre at Ellerbee Rd.	8/31/2005	2.30
FTN survey	100601	100601-A-1	Wallace Bayou u/s B. Pierre	8/31/2005	1.60
FTN survey	100601	100601-A-2	Wallace Bayou u/s B. Pierre	8/31/2005	1.80
FTN survey	101503	101503-A	Saline Bayou SE of Saline L.	9/09/2005	2.20
LDEQ survey	101601	BYCOC1	Bayou Cocodrie-at Fisherman Road	8/04/2004	2.16
LDEQ survey	101601	BYCOC2	Bayou Cocodrie-at Fisherman Road	8/04/2004	2.52
LDEQ survey	101601	BYCOC3	Bayou Cocodrie-at upstream side of LA Hwy 15	8/04/2004	2.21
LDEQ survey	101601	BYCOC4	Bayou Cocodrie-at downstream side of LA Hwy 15	8/04/2004	2.11
LDEQ survey	101601	BYCOC17	Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	8/04/2004	2.09
LDEQ survey	101601	BYCOC21	Bayou Cocodrie-Below Unnamed Canal	8/04/2004	2.19
LDEQ survey	101601	BYCOC22	Bayou Cocodrie-At Yakey Road	8/04/2004	2.73
LDEQ survey	101601	BYCOC26	Bayou Cocodrie-Below Dobbs Bay	8/04/2004	2.06
LDEQ survey	101601	BYCOC28	Bayou Cocodrie-Upstream of flood gates	8/04/2004	1.89
LDEQ survey	101601	UNT1	Unnamed Trib-Just above mixing zone with Bayou Cocodrie	8/04/2004	2.00
LDEQ survey	101601	GBC1	Grand Bayou Cutoff-Just above mixing zone with Bayou Cocodrie	8/04/2004	1.18
LDEQ survey	101601	BCC1	Bayou Cross Cocodrie-Just above confluence with Cocodrie Lake	8/04/2004	1.04
LDEQ survey	101601	WBY1	Worringer Bayou-0.5 miles south of confluence with Cocodrie Lake	8/04/2004	0.73
LDEQ survey	100202 / 100203	LR1	Little River-W of Spring Creek and NE of Marksville	8/18/2004	1.64
LDEQ survey	100202 / 100203	LR2	Little River-at Spring Bayou	8/18/2004	1.28
LDEQ survey	100202 / 100203	LR3	Little River-E of Petite Bayou Rouge	8/18/2004	1.12
LDEQ survey	100202 / 100203	LR4	Little River-E of Petite Bayou Bourbeux	8/18/2004	1.11
LDEQ survey	100202 / 100203	LR5	Little River-E of LCE1	8/18/2004	1.24
LDEQ survey	100202 / 100203	LR6	Little River-at bridge on NE end	8/18/2004	1.06
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	0.13
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	1.43
LDEQ survey	100202 / 100203	LR7	Little River-immediately S of the Weir	8/18/2004	1.39
LDEQ survey	100202 / 100203	LR8	Little River-N of the weir	8/18/2004	1.31
LDEQ survey	100202 / 100203	BBB1	Bayou Bourbeux-connection to Little River	8/18/2004	1.38
LDEQ survey	100202 / 100203	BS-1	Baie Sec-	8/18/2004	1.22

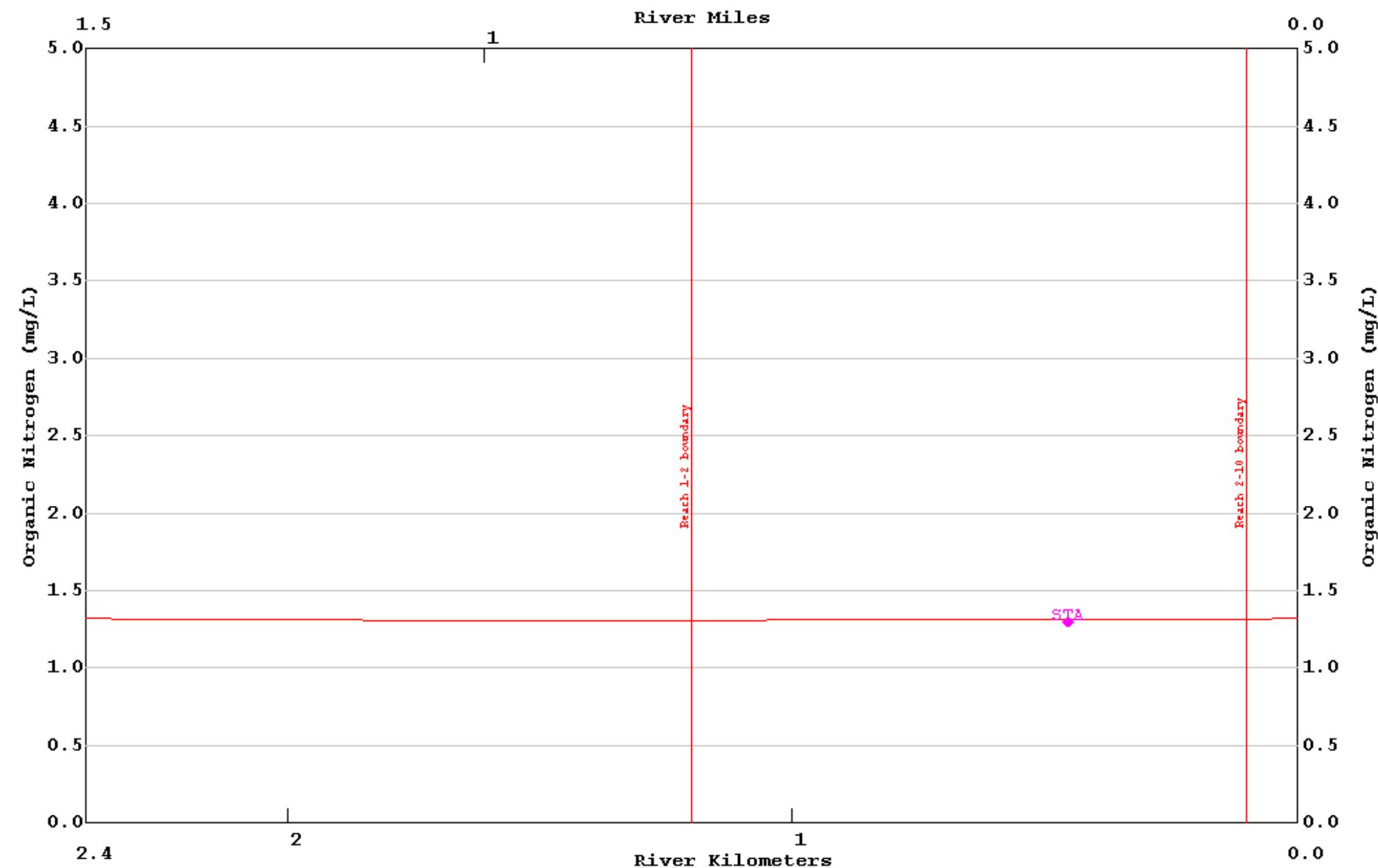
Data Source	Subseg. Number	Site Number	Site Name	Sampling Date	TKN (mg/L)
LDEQ survey	101605	BYCOC5	Bayou Cocodrie-Near Boat Launch	9/01/2004	1.14
LDEQ survey	101605	BYCOC7	Bayou Cocodrie-Below Vidalia Canal	9/01/2004	1.26
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	0.12
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	1.45
LDEQ survey	101605	BYCOC9	Bayou Cocodrie-At Pump #2	9/01/2004	1.45
LDEQ survey	101605	BYCOC10	Bayou Cocodrie-Below Plouden Bayou	9/01/2004	1.11
LDEQ survey	101605	BYCOC11	Bayou Cocodrie-Below Plouden Bayou	9/01/2004	1.13
LDEQ survey	101605	BYCOC12	Bayou Cocodrie-Below Wyches Bayou	9/01/2004	0.88
LDEQ survey	101605	BYCOC13	Bayou Cocodrie-At Pump #3	9/01/2004	1.25
LDEQ survey	101605	BYCOC14	Bayou Cocodrie-Below Wallace Bayou	9/01/2004	1.22
LDEQ survey	101605	BYCOC17	Bayou Cocodrie-at confluence with Wild Cow Bayou below Weir	9/01/2004	0.93
LDEQ survey	101605	BYCOC18	Bayou Cocodrie-Southwest of Weir (Upstream)	9/01/2004	1.04
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	0.05 *
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	0.67
LDEQ survey	101605	BYCOC19	Bayou Cocodrie-AT WQN Site 1228 @ Wild Cow Bayou Road Bridge	9/01/2004	0.62
LDEQ survey	101605	BCC2	Bayou Cross Cocodrie-Upstream from Bayou Cocodrie	9/01/2004	1.08
LDEQ survey	101605	FLB1	Flat Bayou-Upstream from Bayou Cocodrie	9/01/2004	1.05
LDEQ survey	101605	VC1	Vidalia Canal-Upstream from Bayou Cocodrie	9/01/2004	1.04
LDEQ survey	101605	WABY1	Wallace Bayou-Upstream from Bayou Cocodrie	9/01/2004	0.63
					Count 43
					Minimum 0.45
					Average 1.45
					Median 1.24
					Maximum 2.73

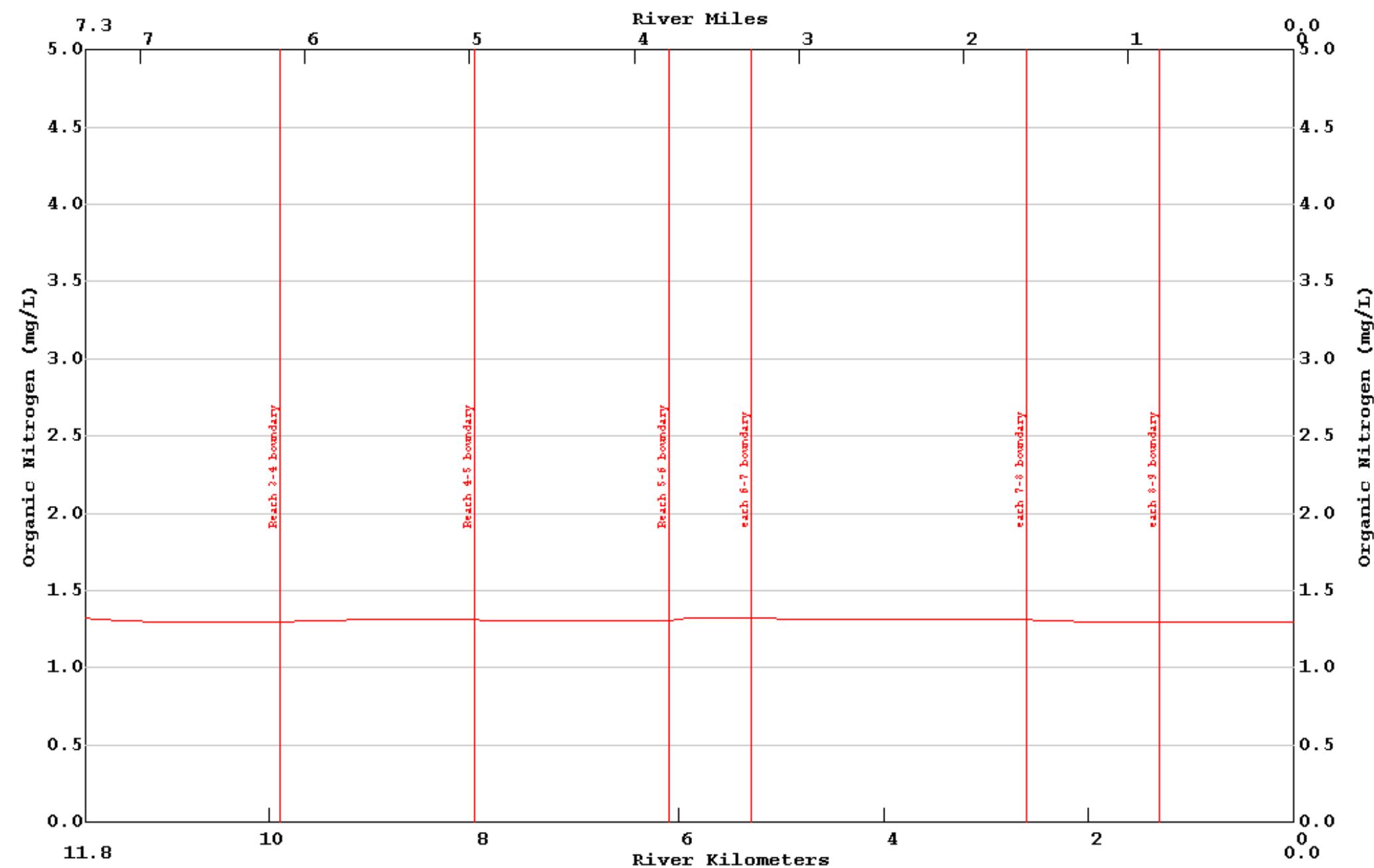
Notes: 1. Concentrations with asterisks are set equal to half of the detection limit of 0.1 mg/L.
2. Multiple values at same station on same day were averaged as a single value for statistics.

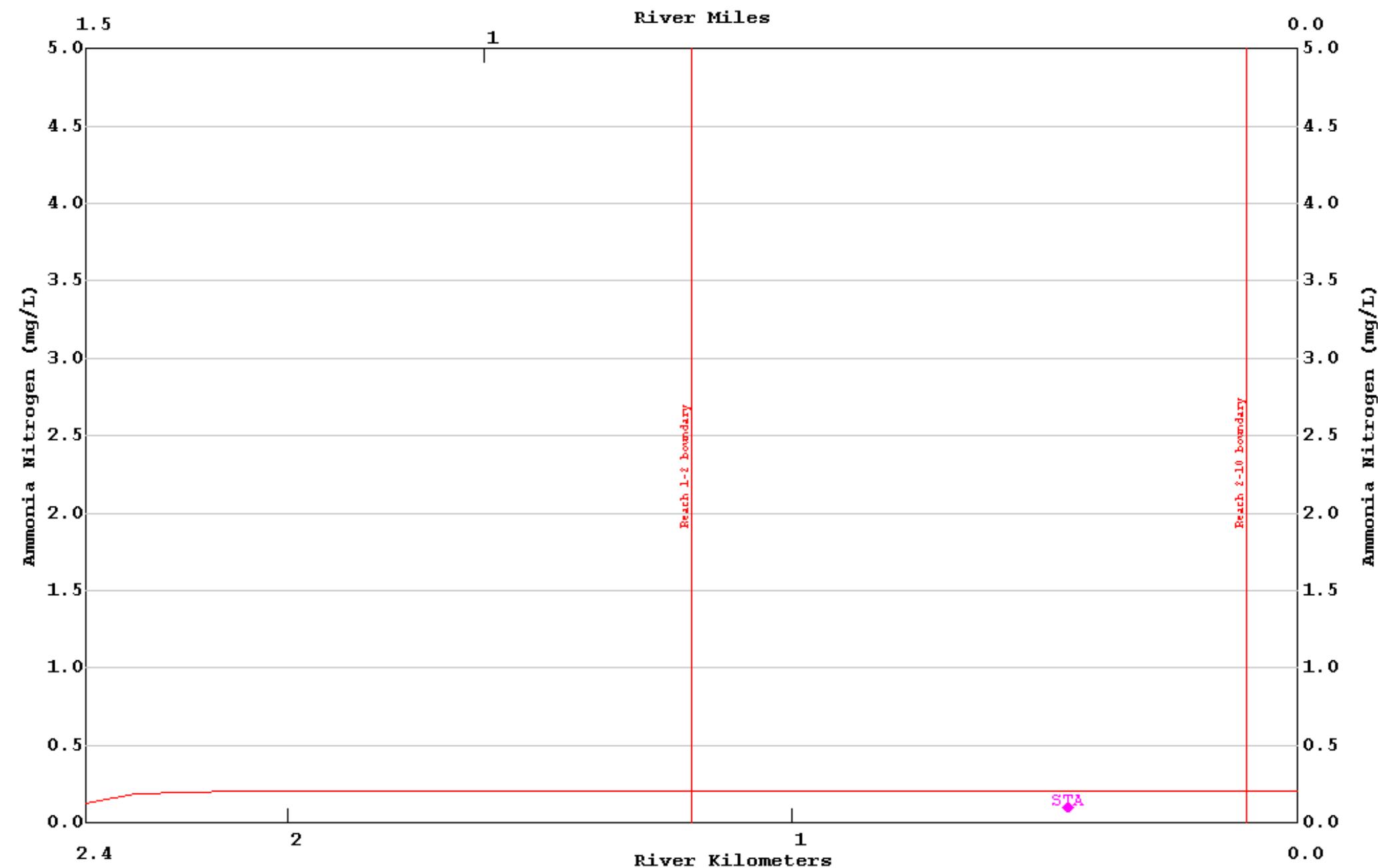
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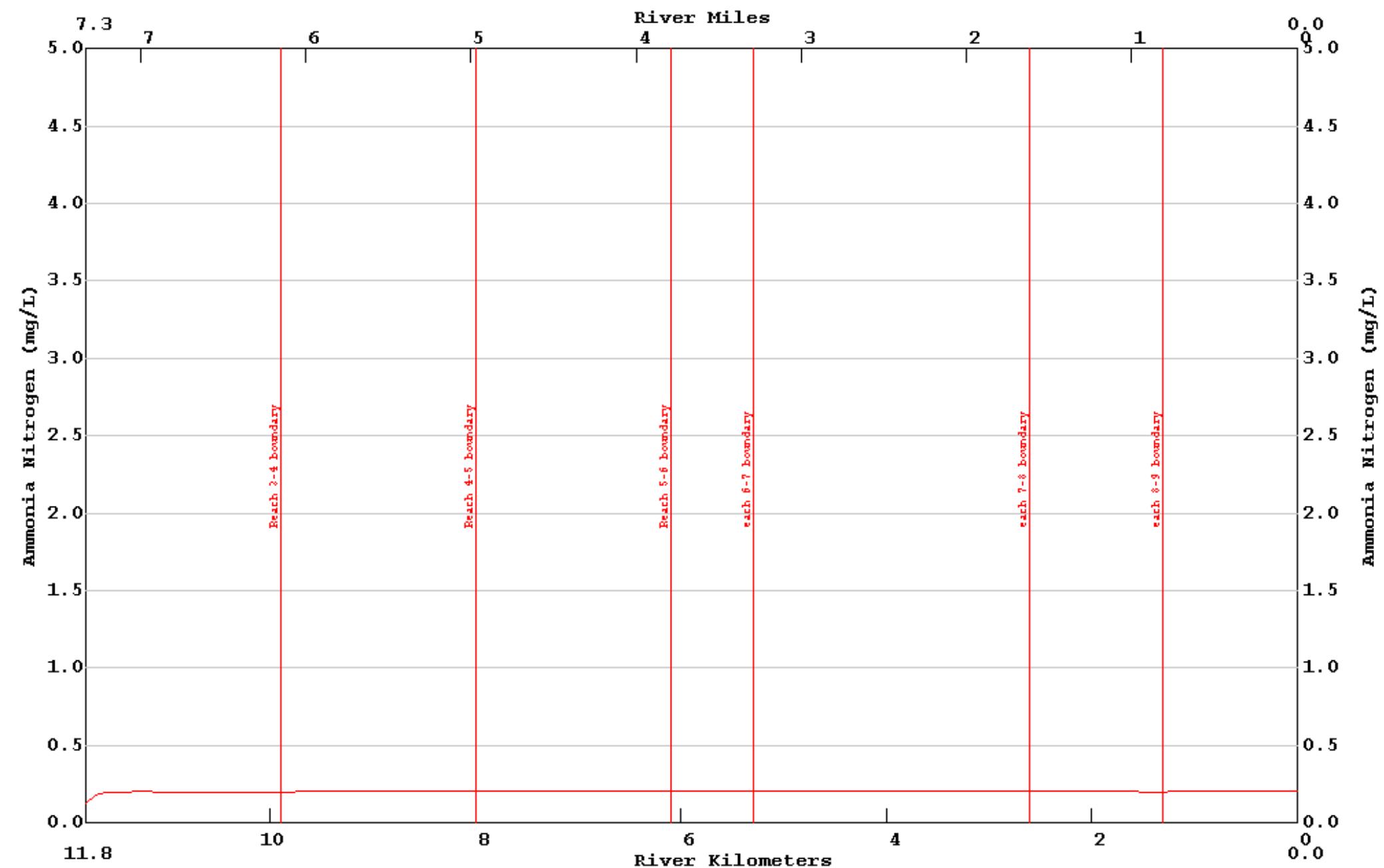
APPENDIX I

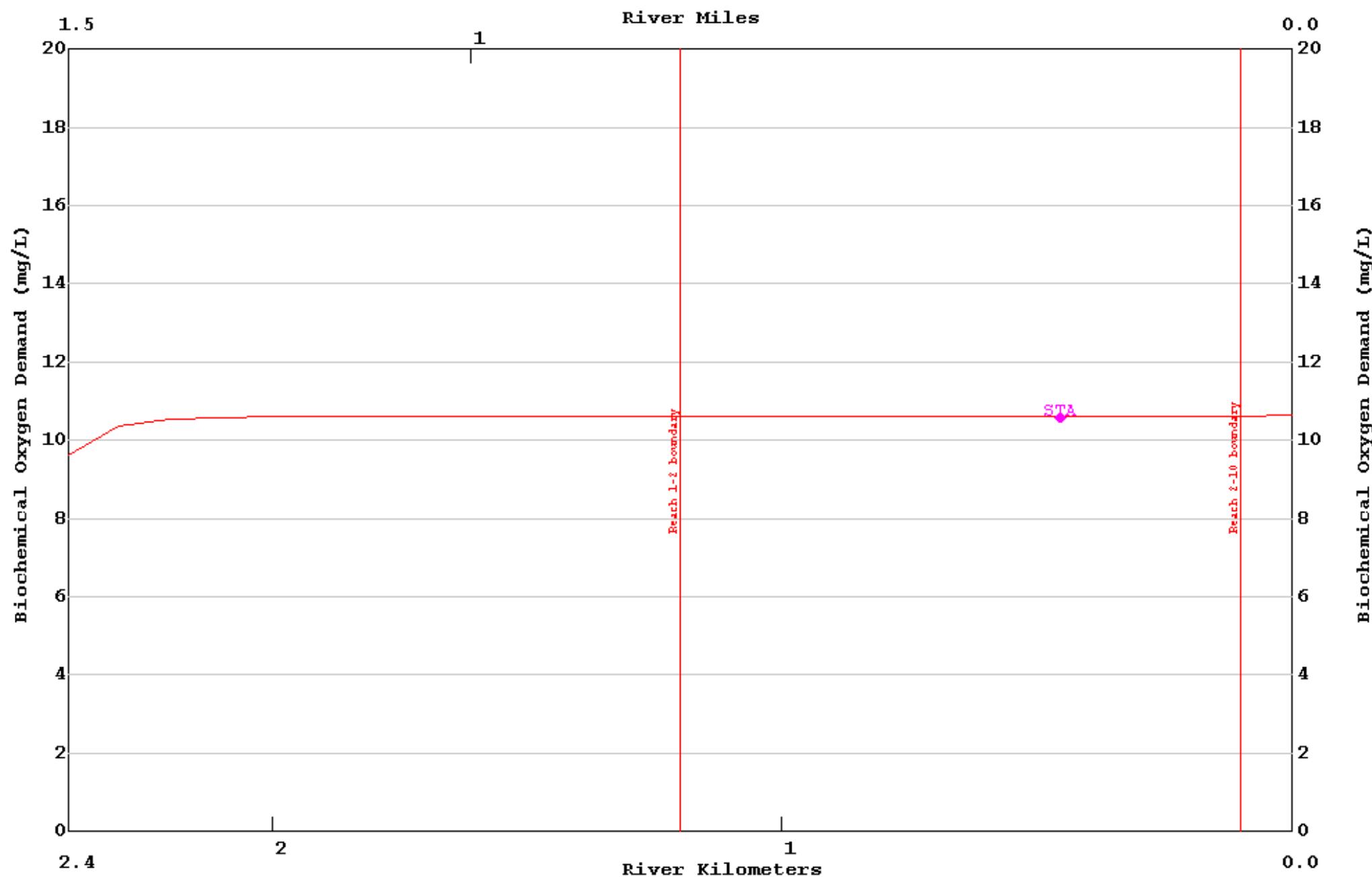
Plots of Predicted and Observed Water Quality

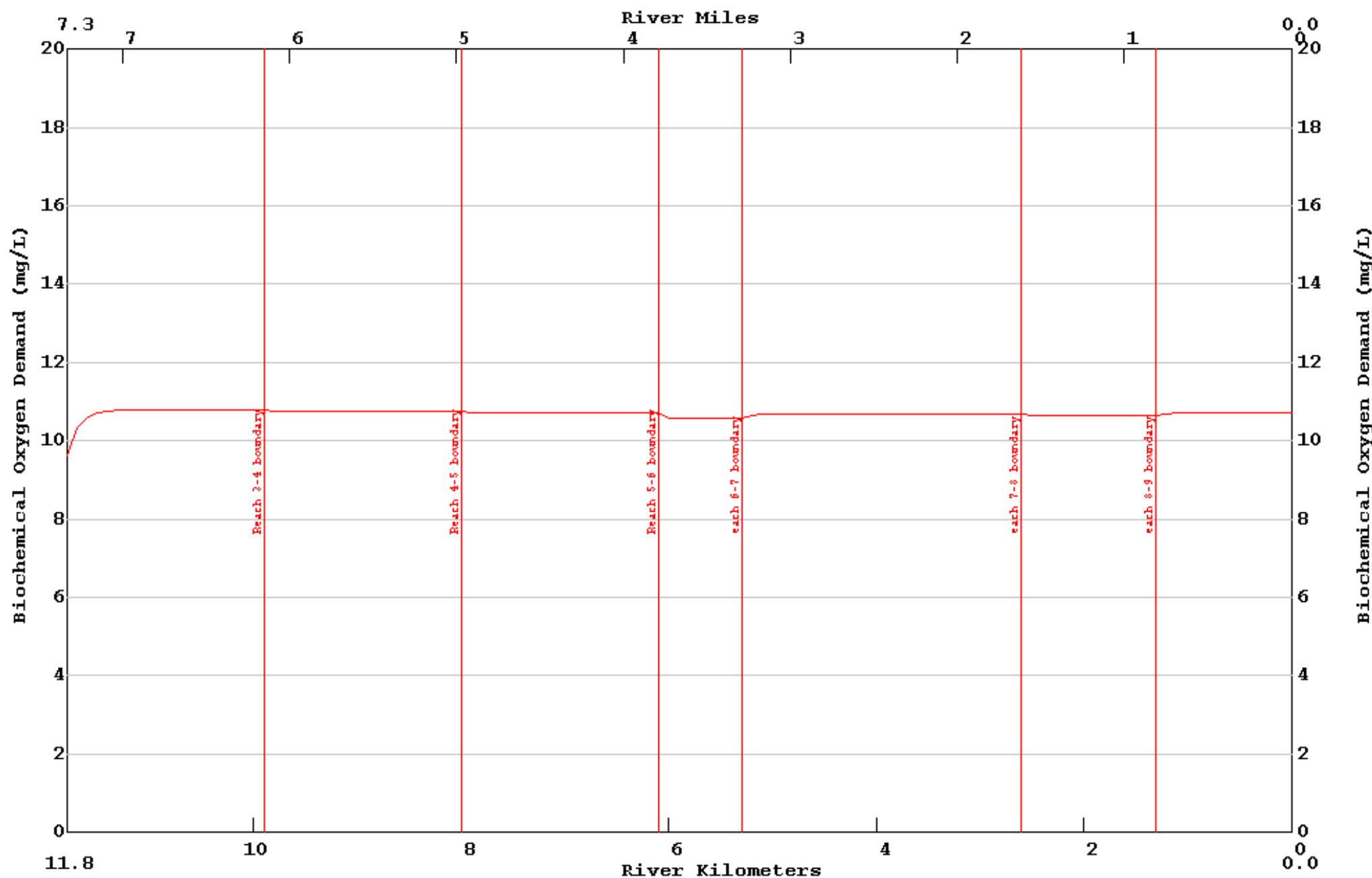


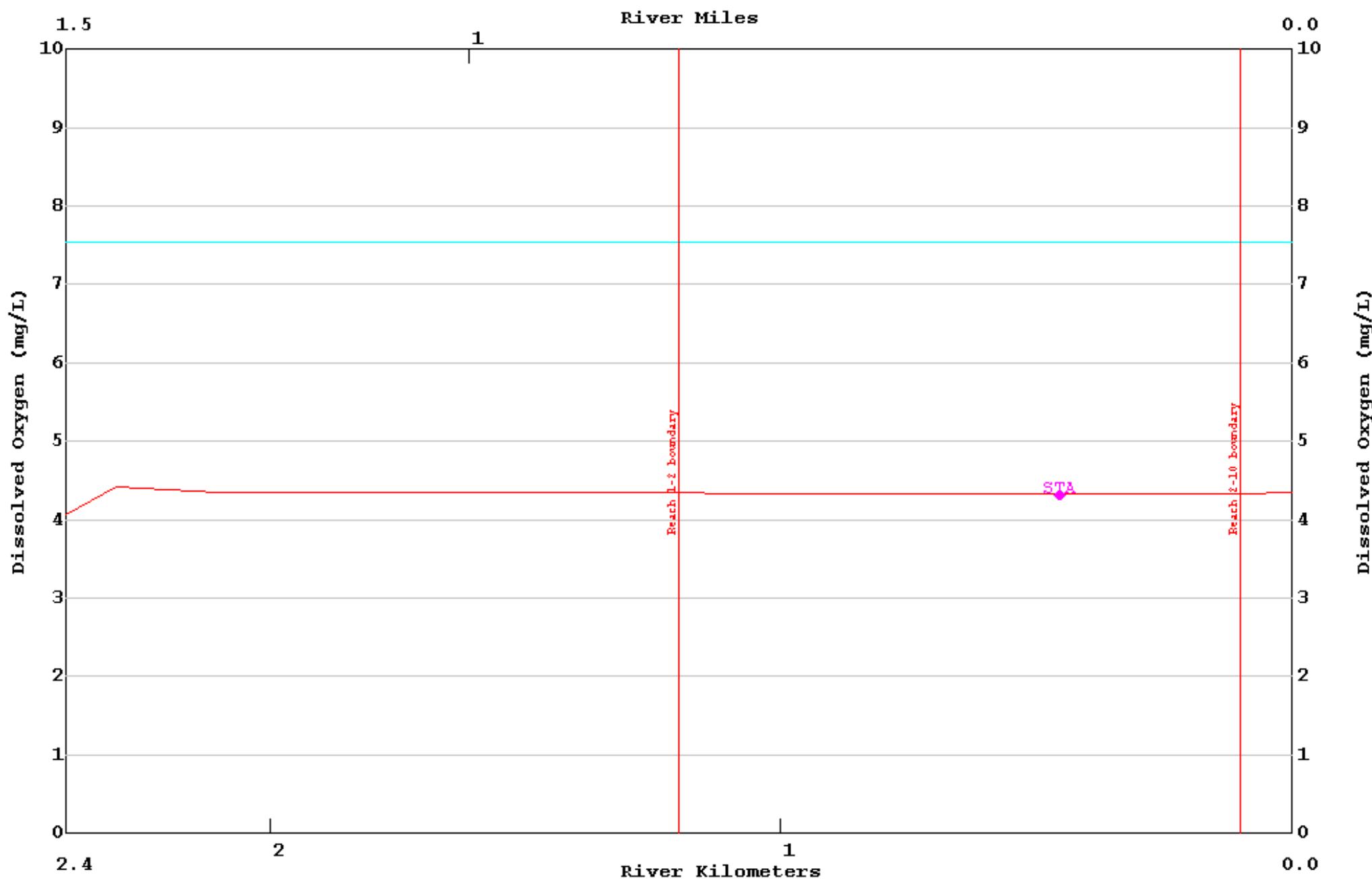


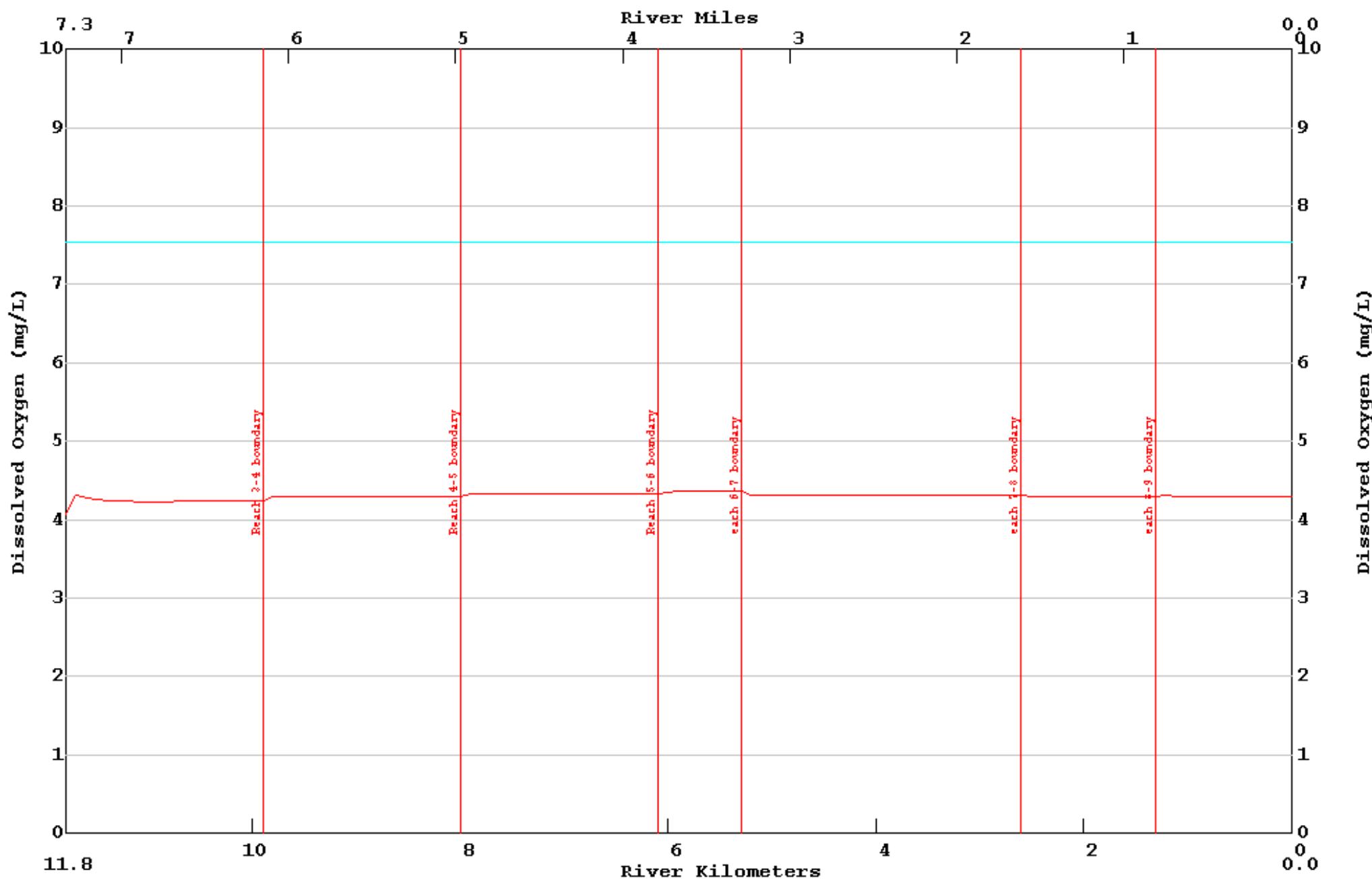












APPENDIX J

Printout of Model Output for Calibration

LA-QUAL Version 8.00

Louisiana Department of Environmental Quality

Input file is D:\comp_models\LA-QUAL_8\Lake_Con_Calib.txt
Output produced at 09:18 on 05/24/2007

\$\$\$ DATA TYPE 1 (TITLES AND CONTROL CARDS) \$\$\$

CARD TYPE CONTROL TITLES

TITLE01	LA-QUAL calibration for Lake Concordia		
TITLE02	LDEQ data calibration		
CNIROL03	NO	SEQU	<Warning: legacy control - line ignored>
CNIROL04	YES	MEIR	
CNIROL05	YES	OXYG	<Warning: legacy control - line ignored>
ENDATA01			

\$\$\$ DATA TYPE 2 (MODEL OPTIONS) \$\$\$

CARD TYPE MODEL OPTION

MODOPT01	NO	TEMP
MODOPT02	NO	SALI
MODOPT03	NO	CONSERVATIVE MATERIAL
MODOPT04	NO	CONSERVATIVE MATERIAL II
MODOPT05	YES	DISS
MODOPT06	YES	BIOC
MODOPT07	YES	NITR
MODOPT08	NO	PHOS
MODOPT09	NO	CHLO
MODOPT10	NO	MACR
MODOPT11	NO	COLI
MODOPT12	NO	NONC
ENDATA02		

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

PROGRAM	HYDRAULIC CALCULATION METHOD	=	2.00000 (widths and depths)
PROGRAM	MAXIMUM ITERATION LIMIT	=	500.00000
PROGRAM	ALGAE OXYGEN PROD	=	0.02600 mg O ₂ /ug chl a/day
ENDATA03			

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE RATE CODE THETA VALUE

THETA	NH3 DECA	1.07000
ENDATA04		

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA05

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA06

\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH	END REACH	ELEM LENGTH	REACH LENGTH	ELEMS PER RCH	BEGIN ELEM	END ELEM	
				km	km	km	km	NUM	NUM		
REACH ID	1	LC	Lake Concordia South	2.40	TO	1.20	0.1000	1.20	12	1	12
REACH ID	2	LC	Lake Concordia South	1.20	TO	0.10	0.1000	1.10	11	13	23
REACH ID	3	LC	Lake Concordia North	11.80	TO	9.90	0.1000	1.90	19	24	42
REACH ID	4	LC	Lake Concordia North	9.90	TO	8.00	0.1000	1.90	19	43	61
REACH ID	5	LC	Lake Concordia North	8.00	TO	6.10	0.1000	1.90	19	62	80
REACH ID	6	LC	Lake Concordia North	6.10	TO	5.30	0.1000	0.80	8	81	88
REACH ID	7	LC	Lake Concordia North	5.30	TO	2.60	0.1000	2.70	27	89	115
REACH ID	8	LC	Lake Concordia North	2.60	TO	1.30	0.1000	1.30	13	116	128
REACH ID	9	LC	Lake Concordia North	1.30	TO	0.00	0.1000	1.30	13	129	141
REACH ID	10	BC	Lake Concorida Junct	0.10	TO	0.00	0.1000	0.10	1	142	142

ENDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	LC	0.000	0.000	283.000	0.000	0.000	2.850	0.00000	0.000
HYDR-1	2	LC	0.000	0.000	289.000	0.000	0.000	4.120	0.00000	0.000
HYDR-1	3	LC	0.000	0.000	310.000	0.000	0.000	1.340	0.00000	0.000
HYDR-1	4	LC	0.000	0.000	387.000	0.000	0.000	2.290	0.00000	0.000
HYDR-1	5	LC	0.000	0.000	304.000	0.000	0.000	2.920	0.00000	0.000
HYDR-1	6	LC	0.000	0.000	342.000	0.000	0.000	5.530	0.00000	0.000
HYDR-1	7	LC	0.000	0.000	347.000	0.000	0.000	2.850	0.00000	0.000
HYDR-1	8	LC	0.000	0.000	360.000	0.000	0.000	3.560	0.00000	0.000
HYDR-1	9	LC	0.000	0.000	313.000	0.000	0.000	4.710	0.00000	0.000

HYDR-1 10 BC 0.000 0.000 289.000 0.000 0.000 4.120 0.00000 0.000
ENDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
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ENDATA10

\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	2	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	3	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	4	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	5	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	6	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	7	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	8	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	9	LC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	10	BC	30.20	0.00	4.30	0.10	0.00	0.00	49.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2	K2	K2	BKGND	BOD	BOD	ANAER	BOD2	BOD2	BOD2	ANAER
				"A"	"B"	"C"	SOD g/m ² /d	DECAY per day	SETT m/d	TO SOD	CONV	BOD2	DECAY per day	SETT m/d
COEFF-1	1	LC	20 K2=a/D	0.800	0.000	0.000	2.180	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	2	LC	20 K2=a/D	0.800	0.000	0.000	2.430	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	3	LC	20 K2=a/D	0.800	0.000	0.000	1.920	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	4	LC	20 K2=a/D	0.800	0.000	0.000	2.070	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	5	LC	20 K2=a/D	0.800	0.000	0.000	2.170	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	6	LC	20 K2=a/D	0.800	0.000	0.000	2.700	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	7	LC	20 K2=a/D	0.800	0.000	0.000	2.180	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	8	LC	20 K2=a/D	0.800	0.000	0.000	2.330	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	9	LC	20 K2=a/D	0.800	0.000	0.000	2.530	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	10	BC	20 K2=a/D	0.800	0.000	0.000	2.400	0.090	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	ORG-N DECA	ORG-N SETT	ORG-N CONV TO NH3 SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
COEFF-2	1	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000

COEFF-2	2	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	3	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	4	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	5	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	6	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	7	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	8	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	9	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	10	BC	0.020	0.000	1.000	0.090	0.000	0.000	0.000

ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP
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ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECAY	NCM SETT	NCM CONV TO SOD
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ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
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ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	ORG-N	NH3-N	NO3-N	BOD#2
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ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
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ENDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	ORG-N	COLI	NCM	DO	BOD#2
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NONPOINT	1	LC	1475.00	31.00	0.00	0.00	0.00	0.00
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NONPOINT	2	LC	2000.00	42.00	0.00	0.00	0.00	0.00
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NONPOINT	3	LC	1225.00	25.00	0.00	0.00	0.00	0.00
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NONPOINT	4	LC	2600.00	54.00	0.00	0.00	0.00	0.00
NONPOINT	5	LC	2600.00	54.00	0.00	0.00	0.00	0.00
NONPOINT	6	LC	2300.00	49.00	0.00	0.00	0.00	0.00
NONPOINT	7	LC	4100.00	86.00	0.00	0.00	0.00	0.00
NONPOINT	8	LC	2550.00	53.00	0.00	0.00	0.00	0.00
NONPOINT	9	LC	2950.00	61.00	0.00	0.00	0.00	0.00
NONPOINT	10	BC	182.00	4.00	0.00	0.00	0.00	0.00

ENDATA19

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m ³ /s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I	CM-II
HDWIR-1	1	Lake Concordia South	0	0.04300	1.518	30.20	0.00	0.000	0.000
HDWIR-1	24	Lake Concordia North	0	0.04300	1.518	30.20	0.00	0.000	0.000

ENDATA20

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	BOD#2 mg/L
HDWIR-2	1	Lake Concordia South	4.06	9.62	1.32	0.13	0.00	0.00
HDWIR-2	24	Lake Concordia North	4.06	9.62	1.32	0.13	0.00	0.00

ENDATA21

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NOM mg/L
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ENDATA22

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
JUNCTION	142	23	0.10	North and South Lake Concordia

ENDATA23

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m ³ /s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I	CM-II
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ENDATA24

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD mg/L	% BOD RMVL	ORG-N mg/L	NH3-N mg/L	% NITRIF	NO3-N mg/L	BOD#2 mg/L
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ENDATA25

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
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ENDATA26

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
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ENDATA27

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
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ENDATA28

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
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ENDATA29

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

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NUMBER OF PLOTS = 2
NUMBER OF REACHES IN PLOT 1 = 3
PLOT RCH 1 2 10
NUMBER OF REACHES IN PLOT 2 = 7
PLOT RCH 3 4 5 6 7 8 9
ENDATA30

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\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$

OVERLAY 1 Con_South.ovl	:Lake Concordia South
OVERLAY 2 Con_North.ovl	:Lake Concordia North

ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA
HYDRAULIC CALCULATIONS COMPLETED
TRIDIAGONAL MATRIX TERMS INITIALIZED
OXYGEN DEPENDENT RATES CONVERGENT IN 1 ITERATIONS
CONSTITUENT CALCULATIONS COMPLETED
 ***** WARNING: NEGATIVE CONCENTRATIONS SET TO ZERO FOR Nitrate+Nitrite Nitrogen
GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11
GRAPHICS DATA FOR PLOT 2 WRITTEN TO UNIT 12

SPECIAL REPORT: Lake Concordia South
WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	2.300	30.20	0.0	0.0	0.0	4.42	10.36	0.00	10.36	0.00	1.32	0.19	0.00	1.50	0.00	49.0	0.0	0.	0.00
2	2.200	30.20	0.0	0.0	0.0	4.38	10.54	0.00	10.54	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
3	2.100	30.20	0.0	0.0	0.0	4.35	10.59	0.00	10.59	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
4	2.000	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
5	1.900	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
6	1.800	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
7	1.700	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
8	1.600	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
9	1.500	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
10	1.400	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
11	1.300	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
12	1.200	30.20	0.0	0.0	0.0	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
13	1.100	30.20	0.0	0.0	0.0	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
14	1.000	30.20	0.0	0.0	0.0	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
15	0.900	30.20	0.0	0.0	0.0	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
16	0.800	30.20	0.0	0.0	0.0	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
17	0.700	30.20	0.0	0.0	0.0	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
18	0.600	30.20	0.0	0.0	0.0	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
19	0.500	30.20	0.0	0.0	0.0	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
20	0.400	30.20	0.0	0.0	0.0	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
21	0.300	30.20	0.0	0.0	0.0	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
22	0.200	30.20	0.0	0.0	0.0	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
23	0.100	30.20	0.0	0.0	0.0	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.0	0.0	0.	0.00
142	0.000	30.20	0.0	0.0	0.0	4.36	10.64	0.00	10.64	0.00	1.32	0.20	0.00	1.53	0.00	49.0	0.0	0.	0.00

SPECIAL REPORT: Lake Concordia North
WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
24	11.700	30.20	0.0	0.0	0.0	4.31	10.34	0.00	10.34	0.00	1.31	0.18	0.00	1.49	0.00	49.0	0.0	0.	0.00
25	11.600	30.20	0.0	0.0	0.0	4.28	10.62	0.00	10.62	0.00	1.31	0.19	0.00	1.50	0.00	49.0	0.0	0.	0.00

126	1.500	30.20	0.0	0.0	0.0	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
127	1.400	30.20	0.0	0.0	0.0	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
128	1.300	30.20	0.0	0.0	0.0	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
129	1.200	30.20	0.0	0.0	0.0	4.30	10.70	0.00	10.70	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
130	1.100	30.20	0.0	0.0	0.0	4.30	10.70	0.00	10.70	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
131	1.000	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
132	0.900	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
133	0.800	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
134	0.700	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
135	0.600	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
136	0.500	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
137	0.400	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
138	0.300	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
139	0.200	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
140	0.100	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00
141	0.000	30.20	0.0	0.0	0.0	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.0	0.0	0.	0.00

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ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#1 SETT 1/da	BOD#2 DECAY 1/da	ABOD#2 SOD 1/da	FULL *	CORR *	ORG-N DECAY 1/da	ORG-N SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
1	2.300	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
2	2.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
3	2.100	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
4	2.000	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
5	1.900	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
6	1.800	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
7	1.700	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
8	1.600	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
9	1.500	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
10	1.400	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
11	1.300	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
12	1.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
13	1.100	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
14	1.000	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
15	0.900	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
16	0.800	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
17	0.700	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
18	0.600	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
19	0.500	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
20	0.400	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
21	0.300	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
22	0.200	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
23	0.100	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
142	0.000	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.56	4.56	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00

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116	2.500	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
117	2.400	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
118	2.300	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
119	2.200	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
120	2.100	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
121	2.000	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
122	1.900	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
123	1.800	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
124	1.700	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
125	1.600	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
126	1.500	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
127	1.400	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
128	1.300	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
129	1.200	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
130	1.100	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
131	1.000	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
132	0.900	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
133	0.800	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
134	0.700	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
135	0.600	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
136	0.500	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
137	0.400	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
138	0.300	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
139	0.200	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
140	0.100	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
141	0.000	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00

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ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	2.40	2.30	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
2	2.30	2.20	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
3	2.20	2.10	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
4	2.10	2.00	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
5	2.00	1.90	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
6	1.90	1.80	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
7	1.80	1.70	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
8	1.70	1.60	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
9	1.60	1.50	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
10	1.50	1.40	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
11	1.40	1.30	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
12	1.30	1.20	0.0430	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
13	1.20	1.10	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
14	1.10	1.00	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
15	1.00	0.90	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000

16	0.90	0.80	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
17	0.80	0.70	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
18	0.70	0.60	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
19	0.60	0.50	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
20	0.50	0.40	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
21	0.40	0.30	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
22	0.30	0.20	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
23	0.20	0.10	0.0430	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
142	0.10	0.00	0.0860	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000

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HYDRAULIC PARAMETER VALUES

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m ³ /s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m ³	SURFACE AREA m ²	X-SECT AREA m ²	TIDAL PRISM m ³	TIDAL VELO m/s	DISPRSN m ² /s	MEAN VELO m/s
	24	11.80	11.70	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000
25	11.70	11.60	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
26	11.60	11.50	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
27	11.50	11.40	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
28	11.40	11.30	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
29	11.30	11.20	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
30	11.20	11.10	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
31	11.10	11.00	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
32	11.00	10.90	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
33	10.90	10.80	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
34	10.80	10.70	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
35	10.70	10.60	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
36	10.60	10.50	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
37	10.50	10.40	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
38	10.40	10.30	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
39	10.30	10.20	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
40	10.20	10.10	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
41	10.10	10.00	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
42	10.00	9.90	0.0430	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
43	9.90	9.80	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
44	9.80	9.70	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
45	9.70	9.60	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
46	9.60	9.50	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
47	9.50	9.40	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
48	9.40	9.30	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
49	9.30	9.20	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
50	9.20	9.10	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
51	9.10	9.00	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
52	9.00	8.90	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
53	8.90	8.80	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
54	8.80	8.70	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
55	8.70	8.60	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000

56	8.60	8.50	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
57	8.50	8.40	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
58	8.40	8.30	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
59	8.30	8.20	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
60	8.20	8.10	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
61	8.10	8.00	0.0430	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
62	8.00	7.90	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
63	7.90	7.80	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
64	7.80	7.70	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
65	7.70	7.60	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
66	7.60	7.50	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
67	7.50	7.40	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
68	7.40	7.30	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
69	7.30	7.20	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
70	7.20	7.10	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
71	7.10	7.00	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
72	7.00	6.90	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
73	6.90	6.80	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
74	6.80	6.70	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
75	6.70	6.60	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
76	6.60	6.50	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
77	6.50	6.40	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
78	6.40	6.30	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
79	6.30	6.20	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
80	6.20	6.10	0.0430	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
81	6.10	6.00	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
82	6.00	5.90	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
83	5.90	5.80	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
84	5.80	5.70	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
85	5.70	5.60	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
86	5.60	5.50	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
87	5.50	5.40	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
88	5.40	5.30	0.0430	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
89	5.30	5.20	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
90	5.20	5.10	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
91	5.10	5.00	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
92	5.00	4.90	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
93	4.90	4.80	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
94	4.80	4.70	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
95	4.70	4.60	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
96	4.60	4.50	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
97	4.50	4.40	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
98	4.40	4.30	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
99	4.30	4.20	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
100	4.20	4.10	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
101	4.10	4.00	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
102	4.00	3.90	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
103	3.90	3.80	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
104	3.80	3.70	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
105	3.70	3.60	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000

106	3.60	3.50	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
107	3.50	3.40	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
108	3.40	3.30	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
109	3.30	3.20	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
110	3.20	3.10	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
111	3.10	3.00	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
112	3.00	2.90	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
113	2.90	2.80	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
114	2.80	2.70	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
115	2.70	2.60	0.0430	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000
116	2.60	2.50	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
117	2.50	2.40	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
118	2.40	2.30	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
119	2.30	2.20	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
120	2.20	2.10	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
121	2.10	2.00	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
122	2.00	1.90	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
123	1.90	1.80	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
124	1.80	1.70	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
125	1.70	1.60	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
126	1.60	1.50	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
127	1.50	1.40	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
128	1.40	1.30	0.0430	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000
129	1.30	1.20	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
130	1.20	1.10	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
131	1.10	1.00	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
132	1.00	0.90	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
133	0.90	0.80	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
134	0.80	0.70	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
135	0.70	0.60	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
136	0.60	0.50	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
137	0.50	0.40	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
138	0.40	0.30	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
139	0.30	0.20	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
140	0.20	0.10	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000
141	0.10	0.00	0.0430	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000

FINAL REPORT LA-QUAL calibration for Lake Concordia
REACH NO. 1 LDEQ data calibration

REACH INPUTS

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS µg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWIR	0.04300	30.20	0.00	0.00	0.00	4.06	9.62	0.00	9.62	0.00	1.32	0.13	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCIV VELO	TRAVEL TIME	DEPTH days	WIDTH m	VOLUME m³	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
	km	km	m³/s	m/s	days	m	m³	m²	m²	m³	m/s	m²/s	m/s	m/s	
1	2.40	2.30	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
2	2.30	2.20	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
3	2.20	2.10	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
4	2.10	2.00	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
5	2.00	1.90	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
6	1.90	1.80	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
7	1.80	1.70	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
8	1.70	1.60	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
9	1.60	1.50	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
10	1.50	1.40	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
11	1.40	1.30	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
12	1.30	1.20	0.04300	0.0	0.00005	21.71	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
TOT						260.51			967860.00		339600.00				
AVG						0.0001			2.85	283.00					
CUM						260.51					806.55				

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O.	REAER	BOD#1 RATE	BOD#1 DECAY	ABOD#1 SETT	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NOM DECAY	NOM SETT
	mg/L	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	*	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
1	2.300	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
2	2.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
3	2.100	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
4	2.000	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
5	1.900	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
6	1.800	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
7	1.700	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
8	1.600	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
9	1.500	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
10	1.400	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
11	1.300	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
12	1.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
Avg 20 DEG C RATE			0.28	0.09	0.00	0.00	0.00	2.18				0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI	NOM
																		#/100mL	
1	2.300	30.20	0.00	0.00	0.00	4.42	10.36	0.00	10.36	0.00	1.32	0.19	0.00	1.50	0.00	49.00	0.00	0.	0.00
2	2.200	30.20	0.00	0.00	0.00	4.38	10.54	0.00	10.54	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
3	2.100	30.20	0.00	0.00	0.00	4.35	10.59	0.00	10.59	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
4	2.000	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
5	1.900	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
6	1.800	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
7	1.700	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
8	1.600	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
9	1.500	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
10	1.400	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
11	1.300	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
12	1.200	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00

FINAL REPORT
REACH NO. 2 Lake Concordia South

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW deg C	TEMP ppt	SALN	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI	NOM
																	#/100mL	
13	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.34	10.60	0.00	10.60	0.00	1.31	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH days	WIDTH m	VOLUME m³	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO			
13	1.20	1.10	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
14	1.10	1.00	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
15	1.00	0.90	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
16	0.90	0.80	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
17	0.80	0.70	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
18	0.70	0.60	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
19	0.60	0.50	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
20	0.50	0.40	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
21	0.40	0.30	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
22	0.30	0.20	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
23	0.20	0.10	0.04300	0.0	0.00004	32.05	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000	0.000	0.000	
TOT						352.54			1309747.88	317900.00								
Avg						0.0000			4.12	289.00				1190.68				
Cum						613.05												

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
13	1.100	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
14	1.000	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
15	0.900	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
16	0.800	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
17	0.700	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
18	0.600	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
19	0.500	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
20	0.400	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
21	0.300	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
22	0.200	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
23	0.100	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.62	4.62	4.62	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
Avg	20	deg C	Rate	0.19	0.09	0.00	0.00	0.00	0.00	2.43			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
13	1.100	30.20	0.00	0.00	0.00	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
14	1.000	30.20	0.00	0.00	0.00	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
15	0.900	30.20	0.00	0.00	0.00	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
16	0.800	30.20	0.00	0.00	0.00	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
17	0.700	30.20	0.00	0.00	0.00	4.33	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
18	0.600	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
19	0.500	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
20	0.400	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
21	0.300	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
22	0.200	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
23	0.100	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia South
REACH NO. 10 Lake Concorida Junct

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM

NO.		deg C		ppt		mg/L		mg/L		mg/L		mg/L		mg/L		#/100mL		
142	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.32	10.62	0.00	10.62	0.00	1.31	0.20	0.00	0.00	49.00	0.00	0.00
142	TRIB	0.04300	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPNSN	MEAN VELO
	km	km			m/s	days	m	m	m³	m²	m²	m³	m/s	m²/s	m/s
142	0.10	0.00	0.08600	0.0	0.00007	16.02	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000
TOT						16.02			119067.99	28900.00					
AVG					0.0001		4.12	289.00			1190.68				
CUM						629.08									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER	BOD#1 RATE 1/d	BOD#1 DECAY 1/d	ABOD#1 SETT 1/d	BOD#2 DECAY 1/d	BOD#2 SETT 1/d	ABOD#2 DECAY 1/d	BKGD SOD *	FULL SOD *	CORR SOD *	ORG DECAY 1/d	ORG SETT 1/d	NH3 DECAY 1/d	NH3 SRCE *	DENIT RATE 1/d	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/d	NOM SETT 1/d
142	0.000	7.53	0.23	0.14	0.00	0.00	0.00	0.00	0.00	4.56	4.56	4.56	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
Avg	20	deg C RATE	0.19	0.09	0.00	0.00	0.00	0.00	2.40				0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*	g/m²/d		**	mg/L/day																		

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NOM
142	0.000	30.20	0.00	0.00	0.00	4.36	10.64	0.00	10.64	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00

STREAM SUMMARY
Lake Concordia South

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

TRAVEL TIME = 629.08 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW = 0.04300 TO 0.08600 m³/s
DISPERSION = 0.0000 TO 0.0000 m²/s

VELOCITY = 0.00004 TO 0.00007 m/s
 DEPTH = 2.85 TO 4.12 m
 WIDTH = 283.00 TO 289.00 m

 BOD DECAY = 0.14 TO 0.14 per day
 NH3 DECAY = 0.16 TO 0.16 per day
 SOD = 4.14 TO 4.62 g/m²/d
 NH3 SOURCE = 0.00 TO 0.00 g/m²/d
 REAERATION = 0.23 TO 0.34 per day
 BOD SETTLING = 0.00 TO 0.00 per day
 ORG-N DECAY = 0.02 TO 0.02 per day
 ORG-N SETTLING = 0.00 TO 0.00 per day

 TEMPERATURE = 30.20 TO 30.20 deg C
 DISSOLVED OXYGEN = 4.32 TO 4.42 mg/L

FINAL REPORT Lake Concordia North
 REACH NO. 3 Lake Concordia North LA-QUAL calibration for Lake Concordia
 LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALIN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
24	HDWIR	0.04300	30.20	0.00	0.00	0.00	4.06	9.62	0.00	9.62	0.00	1.32	0.13	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m ³ /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m ³	SURFACE AREA m ²	X-SECT AREA m ²	TIDAL PRISM m ³	TIDAL VELO m/s	DISPRSN m ² /s	MEAN VELO m/s
24	11.80	11.70	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
25	11.70	11.60	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
26	11.60	11.50	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
27	11.50	11.40	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
28	11.40	11.30	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
29	11.30	11.20	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
30	11.20	11.10	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
31	11.10	11.00	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
32	11.00	10.90	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
33	10.90	10.80	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
34	10.80	10.70	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
35	10.70	10.60	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
36	10.60	10.50	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
37	10.50	10.40	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
38	10.40	10.30	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000

39	10.30	10.20	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
40	10.20	10.10	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
41	10.10	10.00	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
42	10.00	9.90	0.04300	0.0	0.00010	11.18	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000

TOT				212.44		789260.06	589000.00								
AVG				0.0001		1.34	310.00								
CUM				212.44											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
24	11.700	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
25	11.600	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
26	11.500	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
27	11.400	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
28	11.300	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
29	11.200	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
30	11.100	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
31	11.000	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
32	10.900	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
33	10.800	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
34	10.700	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
35	10.600	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
36	10.500	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
37	10.400	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
38	10.300	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
39	10.200	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
40	10.100	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
41	10.000	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00
42	9.900	7.53	0.72	0.14	0.00	0.00	0.00	0.00	0.00	3.65	3.65	3.65	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00

Avg 20 DEG C RATE	0.60	0.09	0.00	0.00	0.00	0.00	1.92			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
24	11.700	30.20	0.00	0.00	0.00	4.31	10.34	0.00	10.34	0.00	1.31	0.18	0.00	1.49	0.00	49.00	0.00	0.	0.00
25	11.600	30.20	0.00	0.00	0.00	4.28	10.62	0.00	10.62	0.00	1.31	0.19	0.00	1.50	0.00	49.00	0.00	0.	0.00
26	11.500	30.20	0.00	0.00	0.00	4.25	10.73	0.00	10.73	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
27	11.400	30.20	0.00	0.00	0.00	4.24	10.77	0.00	10.77	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00

28	11.300	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
29	11.200	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
30	11.100	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
31	11.000	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
32	10.900	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
33	10.800	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
34	10.700	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
35	10.600	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
36	10.500	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
37	10.400	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
38	10.300	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
39	10.200	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
40	10.100	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
41	10.000	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	1.49	0.00	49.00	0.00	0.	0.00
42	9.900	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	1.49	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 4 Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALIN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
43	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.23	10.79	0.00	10.79	0.00	1.29	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCIV VELO	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
43	9.90	9.80	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
44	9.80	9.70	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
45	9.70	9.60	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
46	9.60	9.50	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
47	9.50	9.40	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
48	9.40	9.30	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
49	9.30	9.20	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
50	9.20	9.10	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
51	9.10	9.00	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
52	9.00	8.90	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
53	8.90	8.80	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
54	8.80	8.70	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
55	8.70	8.60	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
56	8.60	8.50	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
57	8.50	8.40	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000

58	8.40	8.30	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
59	8.30	8.20	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
60	8.20	8.10	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
61	8.10	8.00	0.04300	0.0	0.00005	23.85	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000

TOT				453.23		1683837.00	735300.00								
Avg				0.0000		2.29	387.00								
Cum				665.67											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
43	9.800	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
44	9.700	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
45	9.600	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
46	9.500	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
47	9.400	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
48	9.300	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
49	9.200	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
50	9.100	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
51	9.000	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
52	8.900	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
53	8.800	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
54	8.700	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
55	8.600	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
56	8.500	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
57	8.400	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
58	8.300	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
59	8.200	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
60	8.100	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00
61	8.000	7.53	0.42	0.14	0.00	0.00	0.00	0.00	0.00	3.93	3.93	3.93	0.02	0.00	0.16	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00

Avg 20 DEG C RATE	0.35	0.09	0.00	0.00	0.00	0.00	2.07			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
43	9.800	30.20	0.00	0.00	0.00	4.29	10.75	0.00	10.75	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
44	9.700	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.30	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
45	9.600	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00

46	9.500	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
47	9.400	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
48	9.300	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
49	9.200	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
50	9.100	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
51	9.000	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
52	8.900	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
53	8.800	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
54	8.700	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
55	8.600	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
56	8.500	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
57	8.400	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
58	8.300	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
59	8.200	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
60	8.100	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
61	8.000	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 5 Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALIN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
62	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.29	10.74	0.00	10.74	0.00	1.31	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
62	8.00	7.90	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
63	7.90	7.80	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
64	7.80	7.70	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
65	7.70	7.60	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
66	7.60	7.50	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
67	7.50	7.40	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
68	7.40	7.30	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
69	7.30	7.20	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
70	7.20	7.10	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
71	7.10	7.00	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
72	7.00	6.90	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
73	6.90	6.80	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
74	6.80	6.70	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
75	6.70	6.60	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000

76	6.60	6.50	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
77	6.50	6.40	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
78	6.40	6.30	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
79	6.30	6.20	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
80	6.20	6.10	0.04300	0.0	0.00005	23.89	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000

TOT				453.97		1686592.12	577600.00
Avg			0.0000		2.92	304.00	887.68
Cum			1119.64				

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/day	BOD#1 DECAY 1/day	BOD#1 SETT 1/day	ABOD#1 DECAY 1/day	BOD#2 DECAY 1/day	BOD#2 SETT 1/day	ABOD#2 DECAY 1/day	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/day	ORGN SETT 1/day	NH3 DECAY 1/day	NH3 SRCE *	DENIT RATE 1/day	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/day	NCM DECAY 1/day	NCM SETT 1/day	
62	7.900	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
63	7.800	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
64	7.700	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
65	7.600	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
66	7.500	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
67	7.400	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
68	7.300	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
69	7.200	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
70	7.100	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
71	7.000	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
72	6.900	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
73	6.800	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
74	6.700	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
75	6.600	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
76	6.500	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
77	6.400	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
78	6.300	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
79	6.200	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
80	6.100	7.53	0.33	0.14	0.00	0.00	0.00	0.00	4.13	4.13	4.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	
Avg	20	DEG C	RATE	0.27	0.09	0.00	0.00	0.00	0.00	2.17			0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
62	7.900	30.20	0.00	0.00	0.00	4.33	10.73	0.00	10.73	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
63	7.800	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
64	7.700	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00

65	7.600	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
66	7.500	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
67	7.400	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
68	7.300	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
69	7.200	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
70	7.100	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
71	7.000	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
72	6.900	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
73	6.800	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
74	6.700	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
75	6.600	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
76	6.500	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
77	6.400	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
78	6.300	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
79	6.200	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
80	6.100	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 6 Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALIN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
81	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.33	10.72	0.00	10.72	0.00	1.31	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s	
81	6.10	6.00	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
82	6.00	5.90	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
83	5.90	5.80	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
84	5.80	5.70	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
85	5.70	5.60	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
86	5.60	5.50	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
87	5.50	5.40	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
88	5.40	5.30	0.04300	0.0	0.00002	50.91	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
TOT						407.25			1513008.12		273600.00					
AVG						0.0000			5.53	342.00		1891.26				
CUM						1526.89										

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
81	6.000	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
82	5.900	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
83	5.800	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
84	5.700	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
85	5.600	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
86	5.500	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
87	5.400	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
88	5.300	7.53	0.17	0.14	0.00	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
Avg 20	DEG C	RATE		0.14	0.09	0.00	0.00	0.00	0.00	2.70			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP deg C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTIN	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
81	6.000	30.20	0.00	0.00	0.00	4.35	10.59	0.00	10.59	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
82	5.900	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
83	5.800	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00
84	5.700	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00
85	5.600	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00
86	5.500	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00
87	5.400	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00
88	5.300	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	1.53	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 7 Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A μg/L	COLI #/100mL	NCM
89	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.36	10.57	0.00	10.57	0.00	1.32	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
	km	km					m	m	m³	m²	m²	m³	m/s	m²/s	m/s
89	5.30	5.20	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
90	5.20	5.10	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
91	5.10	5.00	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
92	5.00	4.90	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
93	4.90	4.80	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
94	4.80	4.70	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
95	4.70	4.60	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
96	4.60	4.50	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
97	4.50	4.40	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
98	4.40	4.30	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
99	4.30	4.20	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
100	4.20	4.10	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
101	4.10	4.00	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
102	4.00	3.90	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
103	3.90	3.80	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
104	3.80	3.70	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
105	3.70	3.60	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
106	3.60	3.50	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
107	3.50	3.40	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
108	3.40	3.30	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
109	3.30	3.20	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
110	3.20	3.10	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
111	3.10	3.00	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
112	3.00	2.90	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
113	2.90	2.80	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
114	2.80	2.70	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
115	2.70	2.60	0.04300	0.0	0.00004	26.62	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000
TOT						718.71			2670164.75	936900.00					
Avg						0.0000			2.85	347.00			988.95		
CUM						2245.60									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE	DENIT RATE 1/da	PO4 SRCE	ALG PROD 1/da	MAC PROD **	COLI DECAY 1/da	NCM SETT 1/da
89	5.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
90	5.100	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
91	5.000	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
92	4.900	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
93	4.800	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
94	4.700	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00
95	4.600	7.53	0.34	0.14	0.00	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00

96	4.500	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
97	4.400	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
98	4.300	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
99	4.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
100	4.100	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
101	4.000	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
102	3.900	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
103	3.800	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
104	3.700	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
105	3.600	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
106	3.500	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
107	3.400	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
108	3.300	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
109	3.200	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
110	3.100	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
111	3.000	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
112	2.900	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
113	2.800	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
114	2.700	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
115	2.600	7.53	0.34	0.14	0.00	0.00	0.00	0.00	4.14	4.14	4.14	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00	
AVG 20 DEG C RATE				0.28	0.09	0.00	0.00	0.00	2.18				0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NOM
89	5.200	30.20	0.00	0.00	0.00	4.32	10.66	0.00	10.66	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
90	5.100	30.20	0.00	0.00	0.00	4.31	10.67	0.00	10.67	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
91	5.000	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
92	4.900	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
93	4.800	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
94	4.700	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
95	4.600	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
96	4.500	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
97	4.400	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
98	4.300	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
99	4.200	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
100	4.100	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
101	4.000	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
102	3.900	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
103	3.800	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
104	3.700	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
105	3.600	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
106	3.500	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
107	3.400	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00

108	3.300	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
109	3.200	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
110	3.100	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
111	3.000	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
112	2.900	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
113	2.800	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
114	2.700	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00
115	2.600	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	1.52	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 8 Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
116	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.30	10.68	0.00	10.68	0.00	1.32	0.20	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s		
116	2.60	2.50	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
117	2.50	2.40	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
118	2.40	2.30	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
119	2.30	2.20	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
120	2.20	2.10	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
121	2.10	2.00	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
122	2.00	1.90	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
123	1.90	1.80	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
124	1.80	1.70	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
125	1.70	1.60	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
126	1.60	1.50	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
127	1.50	1.40	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
128	1.40	1.30	0.04300	0.0	0.00003	34.50	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
TOT						448.45			1666080.00		468000.00						
Avg						0.0000			3.56	360.00		1281.60					
CUM						2694.05											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER	BOD#1 RATE 1/day	BOD#1 DECAY 1/day	ABOD#1 SETT 1/day	BOD#2 DECAY 1/day	BOD#2 SETT 1/day	ABOD#2 DECAY 1/day	BKGD *	FULL *	CORR *	ORGN DECAY 1/day	ORGN SETT 1/day	NH3 DECAY 1/day	NH3 SRCE *	DENIT RATE 1/day	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/day	NOM DECAY 1/day	NOM SETT 1/day
116	2.500	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
117	2.400	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
118	2.300	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
119	2.200	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
120	2.100	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
121	2.000	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
122	1.900	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
123	1.800	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
124	1.700	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
125	1.600	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
126	1.500	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
127	1.400	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
128	1.300	7.53	0.27	0.14	0.00	0.00	0.00	0.00	0.00	4.43	4.43	4.43	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
Avg	20	DEG C RATE		0.22	0.09	0.00	0.00	0.00	0.00	2.33			0.02	0.00	0.09	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NOM
116	2.500	30.20	0.00	0.00	0.00	4.29	10.65	0.00	10.65	0.00	1.31	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
117	2.400	30.20	0.00	0.00	0.00	4.30	10.65	0.00	10.65	0.00	1.30	0.20	0.00	1.51	0.00	49.00	0.00	0.	0.00
118	2.300	30.20	0.00	0.00	0.00	4.30	10.65	0.00	10.65	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
119	2.200	30.20	0.00	0.00	0.00	4.30	10.65	0.00	10.65	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
120	2.100	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
121	2.000	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
122	1.900	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
123	1.800	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
124	1.700	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
125	1.600	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
126	1.500	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
127	1.400	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
128	1.300	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 9 Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

***** REACH INPUTS *****

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NOM

NO.		deg C	ppt		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL	
129	UPR RCH	0.04300	30.20	0.00	0.00	0.00	4.30	10.64	0.00	10.64	0.00	1.30	0.20	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPNSN	MEAN VELO
	km	km	m³/s	m/s	days	m	m	m³	m²	m²	m³	m/s	m²/s	m/s	
129	1.30	1.20	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
130	1.20	1.10	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
131	1.10	1.00	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
132	1.00	0.90	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
133	0.90	0.80	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
134	0.80	0.70	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
135	0.70	0.60	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
136	0.60	0.50	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
137	0.50	0.40	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
138	0.40	0.30	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
139	0.30	0.20	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
140	0.20	0.10	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
141	0.10	0.00	0.04300	0.0	0.00003	39.68	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
TOT						515.85			1916499.00		406900.00				
AVG						0.0000			4.71		313.00				
CUM						3209.91					1474.23				

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER	BOD#1 RATE 1/da	BOD#1 DECAY 1/da	ABOD#1 SETT 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT DECAY 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
129	1.200	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
130	1.100	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
131	1.000	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
132	0.900	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
133	0.800	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
134	0.700	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
135	0.600	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
136	0.500	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
137	0.400	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
138	0.300	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
139	0.200	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
140	0.100	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00
141	0.000	7.53	0.21	0.14	0.00	0.00	0.00	0.00	0.00	4.81	4.81	4.81	0.02	0.00	0.16	0.00	0.00	0.00	2.04	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE	0.17	0.09	0.00	0.00	0.00	0.00	2.53	0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00
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* g/m²/d

** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
129	1.200	30.20	0.00	0.00	0.00	4.30	10.70	0.00	10.70	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
130	1.100	30.20	0.00	0.00	0.00	4.30	10.70	0.00	10.70	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
131	1.000	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
132	0.900	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
133	0.800	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
134	0.700	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
135	0.600	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
136	0.500	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
137	0.400	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
138	0.300	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
139	0.200	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
140	0.100	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00
141	0.000	30.20	0.00	0.00	0.00	4.30	10.71	0.00	10.71	0.00	1.30	0.20	0.00	1.50	0.00	49.00	0.00	0.	0.00

STREAM SUMMARY

Lake Concordia North

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

TRAVEL TIME = 3209.91 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW = 0.04300 TO 0.04300 m³/s

DISPERSION = 0.0000 TO 0.0000 m²/s

VELOCITY = 0.00002 TO 0.00010 m/s

DEPTH = 1.34 TO 5.53 m

WIDTH = 304.00 TO 387.00 m

BOD DECAY = 0.14 TO 0.14 per day

NH3 DECAY = 0.16 TO 0.16 per day

SOD = 3.65 TO 5.13 g/m²/d

NH3 SOURCE = 0.00 TO 0.00 g/m²/d

REAERATION = 0.17 TO 0.72 per day

BOD SETTLING = 0.00 TO 0.00 per day

ORG-N DECAY = 0.02 TO 0.02 per day

ORG-N SETTLING = 0.00 TO 0.00 per day

TEMPERATURE = 30.20 TO 30.20 deg C

DISSOLVED OXYGEN = 4.23 TO 4.36 mg/L

LA-QUAL calibration for Lake Concordia
LDEQ data calibration

INPUT/OUTPUT LOADING SUMMARY

	FLOW m³/s	DO kg/d	BOD#1 kg/d	BOD#2 kg/d	ORG-N kg/d	NH3-N kg/d	NO3-N kg/d	PHOS kg/d	CHL A	NCM
HEADWATER FLOW	0.086	30.2	71.5	0.0	9.8	1.0	0.0	0.0	0.0	0.0
INCREMENTAL INFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCREMENTAL OUTFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTELOADS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WITHDRAWLS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLOW THRU LOWER BNDRY	-0.086	-32.4	-79.1	0.0	-9.8	-1.5	0.0	0.0	0.0	0.0
DISPERSION THRU LOWER BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DISPERSION THRU HDWTR BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NON-POINT INPUT		0.0	21982.0	0.0	459.0					0.0
NATURAL REAERATION		14561.8								
DAM REAERATION		0.0								
BACKGROUND SOD		-19749.9								
BOD#1 DECAY		-21974.4	-21974.4							
BOD#1 SETTLING		0.0	0.0							
ANAEROBIC BOD#1 DECAY			0.0							
BOD#2 DECAY		0.0		0.0						
BOD#2 SETTLING		0.0		0.0						
ANAEROBIC BOD#2 DECAY				0.0						
ORG-N DECAY		0.0			-459.0	459.0				
ORG-N SETTLING					0.0	0.0				
NH3 DECAY		-1985.7				-458.6	458.6			
BACKGROUND NH3 SOURCE						0.0				
OTHER DENITRIFICATION							0.0			
PHOSPHORUS SOURCE								0.0		
ALGAE PHOTOSYNTHESIS		29149.6				0.0	-2802.9	0.0	0.0	
ALGAE RESPIRATION		0.0				0.0		0.0	0.0	
ALGAE SETTLING		0.0							0.0	
MACRO PHOTOSYNTHESIS		0.0				0.0	0.0	0.0		
NCM DECAY		0.0							0.0	
NCM SETTLING		0.0							0.0	
TOTAL INPUTS	0.086	43741.6	22053.5	0.0	468.8	459.9	458.6	0.0	0.0	0.0
TOTAL OUTPUTS	-0.086	-43742.4	-22053.5	0.0	-468.8	-460.1	-2802.9	0.0	0.0	0.0
NET CONVERGENCE ERROR	0.000	-0.8	0.0	0.0	0.0	-0.2	-2344.3	0.0	0.0	0.0

.....EXECUTION COMPLETED

APPENDIX K

90th Percentile Temperature Calculations

Table K.1. Summary of water temperature data for Lake Bruin.

Stn	Descrip	Period of Record	Statistics					90th Perc temps	
			Count	Min	Mean	Median	Max	Summer	Winter
140	Lake Bruin at North end near Newellton	Nov 18, 1985-Oct 4, 2005	124	6.9	21.4	22.1	33.8	31.9	20.2
141	Lake Bruin at Lake Bruin State Park, near St. Joseph	Nov 18, 1985-Apr 13, 1998	103	7.7	20.6	19.7	32.0	31.0	19.2
					Average =		31.5	19.7	

FILE: R:\PROJECTS\2110-616\TECH\90TH PERC TEMPS\LAKE BRUIN STATIONS 140 AND 141.XLS

Table K.2. 90th percentile temperature calculations for Lake Bruin at north end near Newellton (station 140)

Summer 90th percentile = 31.93 C, interpolated from values highlighted below
 Winter 90th percentile = 20.23 C, interpolated from values highlighted below

<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>	<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>
12-Oct-87	21.20	summer	0.81	11-Jan-88	6.90	winter	0.81
10-Oct-89	22.50	summer	2.42	09-Jan-90	7.70	winter	2.42
09-May-88	22.60	summer	4.03	08-Feb-88	8.20	winter	4.03
09-May-89	22.60	summer	5.65	13-Jan-86	8.90	winter	5.65
09-Oct-95	22.70	summer	7.26	12-Feb-96	9.00	winter	7.26
11-Oct-88	22.90	summer	8.87	12-Jan-87	9.41	winter	8.87
12-Oct-92	22.90	summer	10.48	05-Jan-99	10.20	winter	10.48
10-Oct-94	23.00	summer	12.10	13-Feb-95	10.30	winter	12.10
14-Oct-91	23.20	summer	13.71	14-Feb-89	10.60	winter	13.71
14-Oct-96	23.40	summer	15.32	10-Feb-92	11.00	winter	15.32
10-May-05	23.45	summer	16.94	12-Dec-89	11.10	winter	16.94
11-Oct-93	23.60	summer	18.55	17-Feb-86	11.40	winter	18.55
13-Jun-94	23.60	summer	20.16	12-Dec-88	11.60	winter	20.16
05-Oct-99	23.80	summer	21.77	17-Feb-97	11.60	winter	21.77
13-Oct-86	24.02	summer	23.39	09-Feb-98	11.70	winter	23.39
04-May-99	24.10	summer	25.00	10-Jan-89	12.00	winter	25.00
16-Oct-90	24.80	summer	26.61	16-Feb-87	12.28	winter	26.61
11-May-87	24.90	summer	28.23	14-Dec-92	12.30	winter	28.23
12-May-86	25.49	summer	29.84	15-Feb-05	12.47	winter	29.84
13-Oct-97	25.80	summer	31.45	05-Feb-91	12.66	winter	31.45
13-Sep-88	26.80	summer	33.06	08-Feb-93	12.70	winter	33.06
04-Oct-05	27.27	summer	34.68	07-Feb-94	12.80	winter	34.68
12-Jun-95	27.30	summer	36.29	11-Dec-95	13.20	winter	36.29
10-Jun-96	27.40	summer	37.90	14-Mar-89	13.40	winter	37.90
10-Jun-91	27.50	summer	39.52	14-Mar-88	13.50	winter	39.52
13-Jun-88	27.80	summer	41.13	08-Dec-97	13.50	winter	41.13
09-Jun-97	27.80	summer	42.74	15-Dec-93	13.60	winter	42.74
01-Jun-99	27.80	summer	44.35	02-Feb-99	14.00	winter	44.35
14-Sep-87	28.20	summer	45.97	12-Jan-05	14.26	winter	45.97
13-Jun-89	28.20	summer	47.58	13-Feb-90	14.50	winter	47.58
08-Sep-86	28.26	summer	49.19	09-Dec-86	14.80	winter	49.19
09-Jun-86	28.80	summer	50.81	14-Dec-87	14.90	winter	50.81
11-Jul-88	28.80	summer	52.42	10-Dec-91	15.00	winter	52.42
15-Jun-92	28.96	summer	54.03	09-Dec-96	15.00	winter	54.03
08-Jun-87	29.00	summer	55.65	11-Dec-90	15.30	winter	55.65
15-Aug-89	29.10	summer	57.26	09-Mar-87	15.48	winter	57.26
07-Jun-05	29.49	summer	58.87	09-Dec-85	15.70	winter	58.87
11-Aug-86	29.55	summer	60.48	12-Dec-94	15.80	winter	60.48
12-Sep-89	29.80	summer	62.10	02-Mar-99	15.80	winter	62.10
11-Sep-90	29.90	summer	63.71	29-Mar-05	16.07	winter	63.71
14-Sep-05	29.97	summer	65.32	08-Apr-96	16.20	winter	65.32
08-Aug-94	30.00	summer	66.94	11-Apr-89	16.30	winter	66.94
13-Jul-87	30.10	summer	68.55	30-Nov-99	17.00	winter	68.55
14-Jun-93	30.10	summer	70.16	12-Apr-93	17.10	winter	70.16
12-Aug-96	30.10	summer	71.77	14-Apr-87	17.20	winter	71.77
14-Aug-90	30.30	summer	73.39	06-Apr-92	17.20	winter	73.39

<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>	<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>
10-Aug-87	30.40	summer	75.00	14-Apr-97	17.70	winter	75.00
09-Aug-93	30.50	summer	76.61	17-Nov-86	17.80	winter	76.61
15-Jul-86	31.25	summer	78.23	12-Apr-88	18.42	winter	78.23
11-Jul-89	31.50	summer	79.84	15-Nov-88	19.00	winter	79.84
12-Aug-91	31.60	summer	81.45	14-Nov-90	19.16	winter	81.45
07-Sep-99	31.60	summer	83.06	18-Nov-85	19.50	winter	83.06
16-Aug-05	31.66	summer	84.68	17-Mar-86	19.62	winter	84.68
28-Jun-05	31.74	summer	86.29	04-Apr-95	19.80	winter	86.29
10-Aug-92	31.80	summer	87.90	13-Apr-98	19.80	winter	87.90
08-Aug-88	31.90	summer	89.52	02-Nov-99	20.20	winter	89.52
11-Aug-97	32.00	summer	91.13	13-Mar-90	20.30	winter	91.13
09-Jul-90	32.40	summer	92.74	11-Apr-94	20.40	winter	92.74
06-Jul-99	32.90	summer	94.35	14-Nov-89	20.60	winter	94.35
03-Aug-99	32.90	summer	95.97	06-Apr-99	20.60	winter	95.97
14-Aug-95	33.10	summer	97.58	15-Apr-91	21.72	winter	97.58
26-Jul-05	33.82	summer	99.19	19-Apr-05	22.48	winter	99.19

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Table K.3. 90th percentile temperature calculations for Lake Bruin near St. Joseph (station 141)

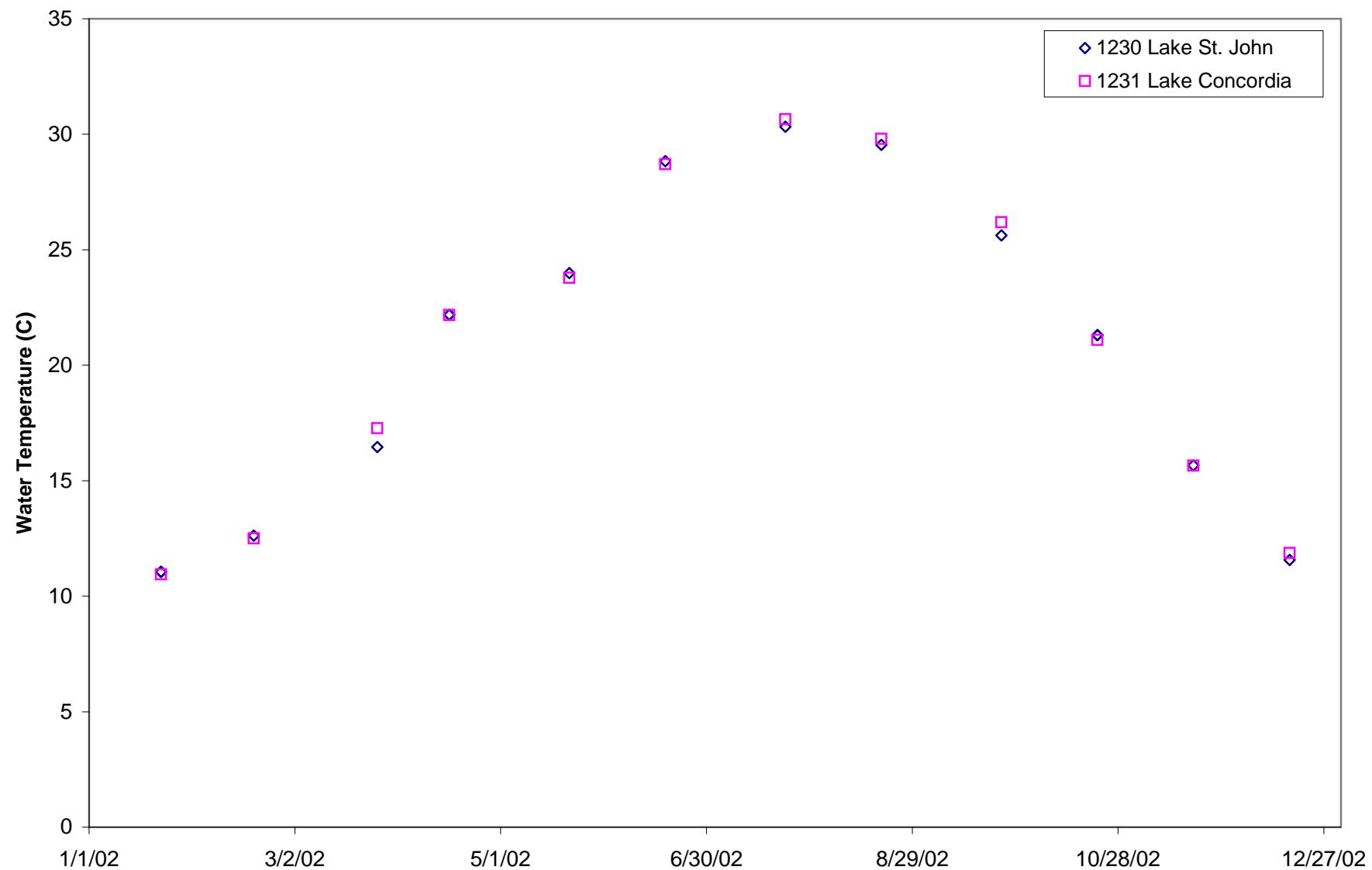
Summer 90th percentile = 31.03 C, interpolated from values highlighted below
 Winter 90th percentile = 19.24 C, interpolated from values highlighted below

<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>	<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>
12-Oct-87	21.10	summer	1.02	11-Jan-88	7.70	winter	0.93
09-May-89	21.80	summer	3.06	08-Feb-88	8.40	winter	2.78
09-May-88	22.00	summer	5.10	09-Jan-90	8.70	winter	4.63
11-Oct-88	22.60	summer	7.14	13-Jan-86	8.80	winter	6.48
10-Oct-89	22.80	summer	9.18	12-Feb-96	9.10	winter	8.33
12-Oct-92	22.90	summer	11.22	12-Dec-89	9.30	winter	10.19
13-Jun-94	23.00	summer	13.27	12-Jan-87	9.71	winter	12.04
10-Oct-94	23.00	summer	15.31	13-Feb-95	10.40	winter	13.89
14-Oct-91	23.40	summer	17.35	14-Feb-89	10.70	winter	15.74
09-Oct-95	23.40	summer	19.39	17-Feb-97	11.20	winter	17.59
11-Oct-93	23.50	summer	21.43	17-Feb-86	11.60	winter	19.44
14-Oct-96	23.80	summer	23.47	10-Feb-92	11.70	winter	21.30
13-Oct-86	24.25	summer	25.51	16-Feb-87	11.75	winter	23.15
16-Oct-90	24.40	summer	27.55	14-Mar-89	11.90	winter	25.00
13-Oct-97	24.60	summer	29.59	12-Dec-88	12.30	winter	26.85
11-May-87	24.70	summer	31.63	07-Feb-94	12.30	winter	28.70
09-Jun-97	25.90	summer	33.67	10-Jan-89	12.40	winter	30.56
12-May-86	26.77	summer	35.71	09-Feb-98	12.50	winter	32.41
12-Jun-95	27.60	summer	37.76	11-Dec-95	12.60	winter	34.26
13-Sep-88	27.70	summer	39.80	05-Feb-91	12.63	winter	36.11
13-Jun-89	27.70	summer	41.84	14-Dec-92	12.70	winter	37.96
13-Jun-88	27.80	summer	43.88	08-Feb-93	12.90	winter	39.81
10-Jun-96	27.80	summer	45.92	15-Dec-93	13.00	winter	41.67
10-Jun-91	27.90	summer	47.96	08-Dec-97	13.40	winter	43.52
15-Jun-92	28.03	summer	50.00	14-Mar-88	13.70	winter	45.37
11-Jul-88	28.40	summer	52.04	13-Feb-90	13.70	winter	47.22
08-Sep-86	28.62	summer	54.08	09-Mar-87	14.00	winter	49.07
09-Jun-86	28.77	summer	56.12	09-Dec-86	14.70	winter	50.93
14-Sep-87	29.00	summer	58.16	11-Dec-90	14.80	winter	52.78
08-Jun-87	29.30	summer	60.20	10-Dec-91	14.80	winter	54.63
15-Aug-89	29.60	summer	62.24	14-Dec-87	14.90	winter	56.48
11-Sep-90	29.70	summer	64.29	12-Dec-94	15.10	winter	58.33
11-Aug-86	29.75	summer	66.33	09-Dec-96	15.10	winter	60.19
11-Jul-89	29.80	summer	68.37	09-Dec-85	15.80	winter	62.04
08-Aug-94	29.80	summer	70.41	14-Apr-87	15.80	winter	63.89
13-Jul-87	30.20	summer	72.45	11-Apr-89	16.10	winter	65.74
12-Aug-96	30.20	summer	74.49	12-Apr-93	16.20	winter	67.59
14-Jun-93	30.30	summer	76.53	08-Apr-96	16.30	winter	69.44
12-Sep-89	30.50	summer	78.57	16-Nov-87	16.70	winter	71.30
11-Aug-97	30.50	summer	80.61	06-Apr-92	17.10	winter	73.15
10-Aug-87	30.70	summer	82.65	10-Apr-90	17.30	winter	75.00
14-Aug-90	30.90	summer	84.69	13-Mar-90	17.50	winter	76.85
14-Aug-95	30.90	summer	86.73	14-Apr-97	17.60	winter	78.70
15-Jul-86	30.93	summer	88.78	04-Apr-95	17.80	winter	80.56
12-Aug-91	31.10	summer	90.82	17-Nov-86	18.24	winter	82.41
08-Aug-88	31.50	summer	92.86	11-Apr-94	18.30	winter	84.26

<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>	<u>Date</u>	<u>Water temp</u>	<u>Season</u>	<u>Percentile</u>
09-Jul-90	31.70	summer	94.90	13-Apr-98	18.60	winter	86.11
10-Aug-92	31.80	summer	96.94	11-Apr-88	19.10	winter	87.96
09-Aug-93	32.00	summer	98.98	15-Nov-88	19.20	winter	89.81
				14-Nov-90	19.58	winter	91.67
				17-Mar-86	19.60	winter	93.52
				18-Nov-85	19.70	winter	95.37
				14-Nov-89	19.90	winter	97.22
				15-Apr-91	20.66	winter	99.07

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Figure K.1. Comparison of Lake Concordia and Lake St. John Water Temperatures



APPENDIX L

Headwater DO Calculations for Projections

INFLOW DO CALCULATIONS FOR LAKE CONCORDIA PROJECTIONS

ASSUMPTIONS: % saturation from calibration represents no reduction of NPS loads
 100% saturation represents complete reduction of NPS loads

METHODOLOGY: First determine % saturation for calibration conditions, then calculate % saturation for projection conditions based on the assumptions above and the percent reductions specified for that projection. Then convert each % saturation to mg/L based on the projection temperature.

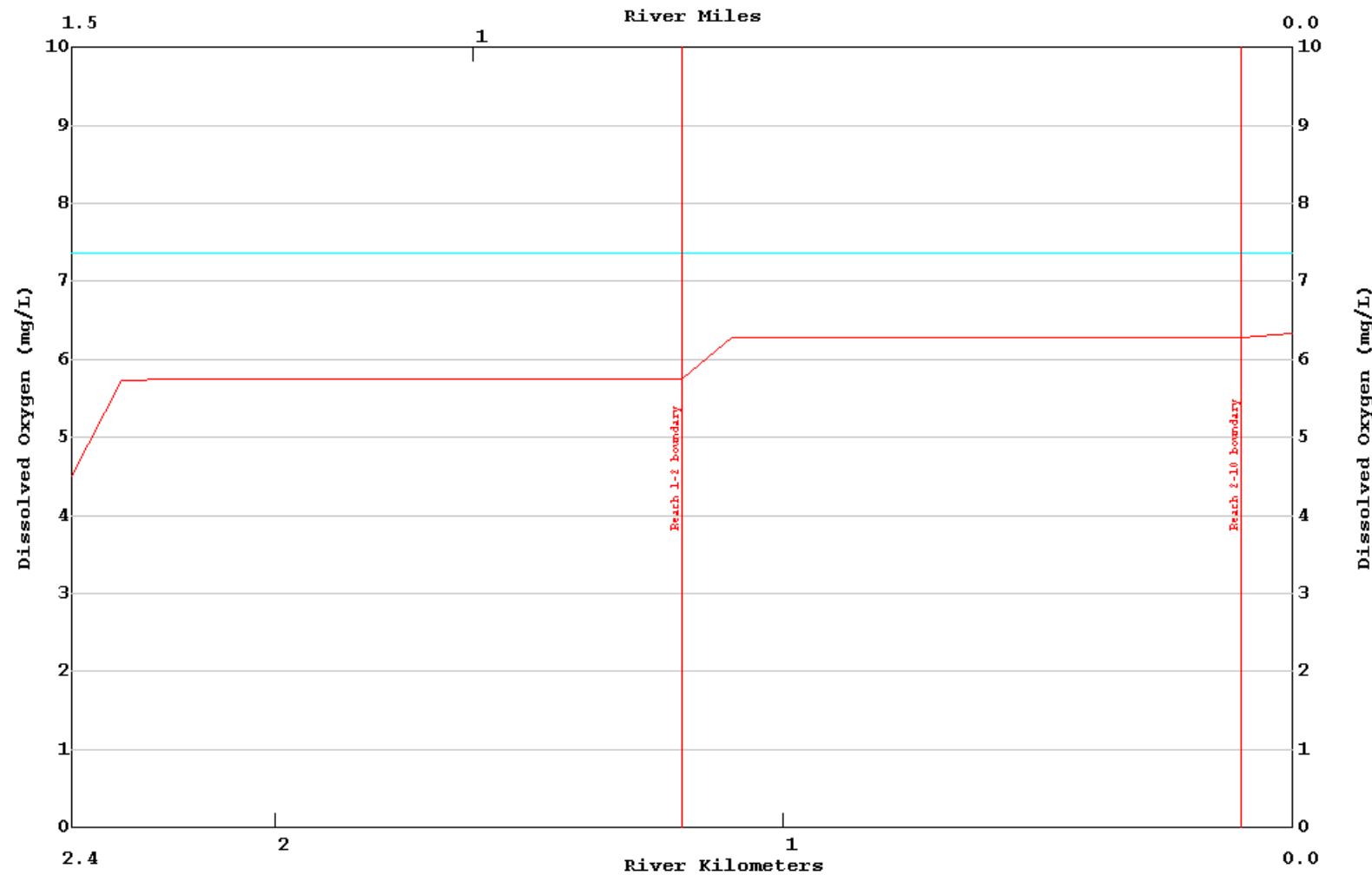
NPS REDUCTIONS: 16% for summer
 13% for winter

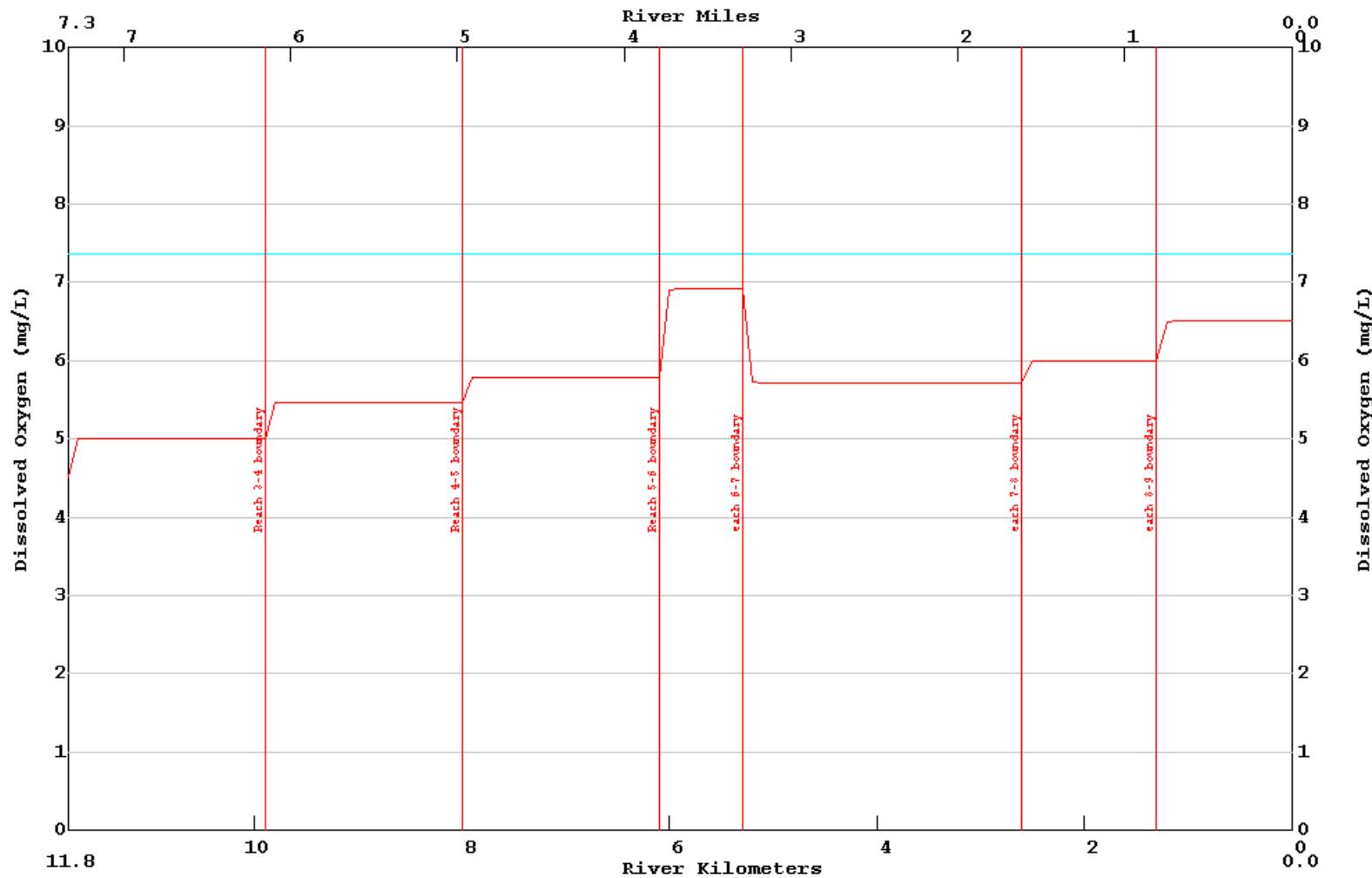
	Calib. Temp <u>(C)</u>	Calib. DO <u>(mg/L)</u>	DO at 100% sat. <u>(mg/L)</u>	% sat for <u>calib.</u>
<u>Calibration:</u> Headwater inflow	30.2	4.06	7.53	53.9%
<u>Summer projection:</u> Headwater inflow	% sat <u>for proj.</u> 61.3%	Proj. temp <u>(C)</u> 31.5	DO at 100% sat. <u>(mg/L)</u> 7.36	Proj. input DO <u>(mg/L)</u> 4.51
<u>Winter projection:</u> Headwater inflow	% sat <u>for proj.</u> 60.1%	Proj. temp <u>(C)</u> 19.7	DO at 100% sat. <u>(mg/L)</u> 9.15	Proj. input DO <u>(mg/L)</u> 5.50

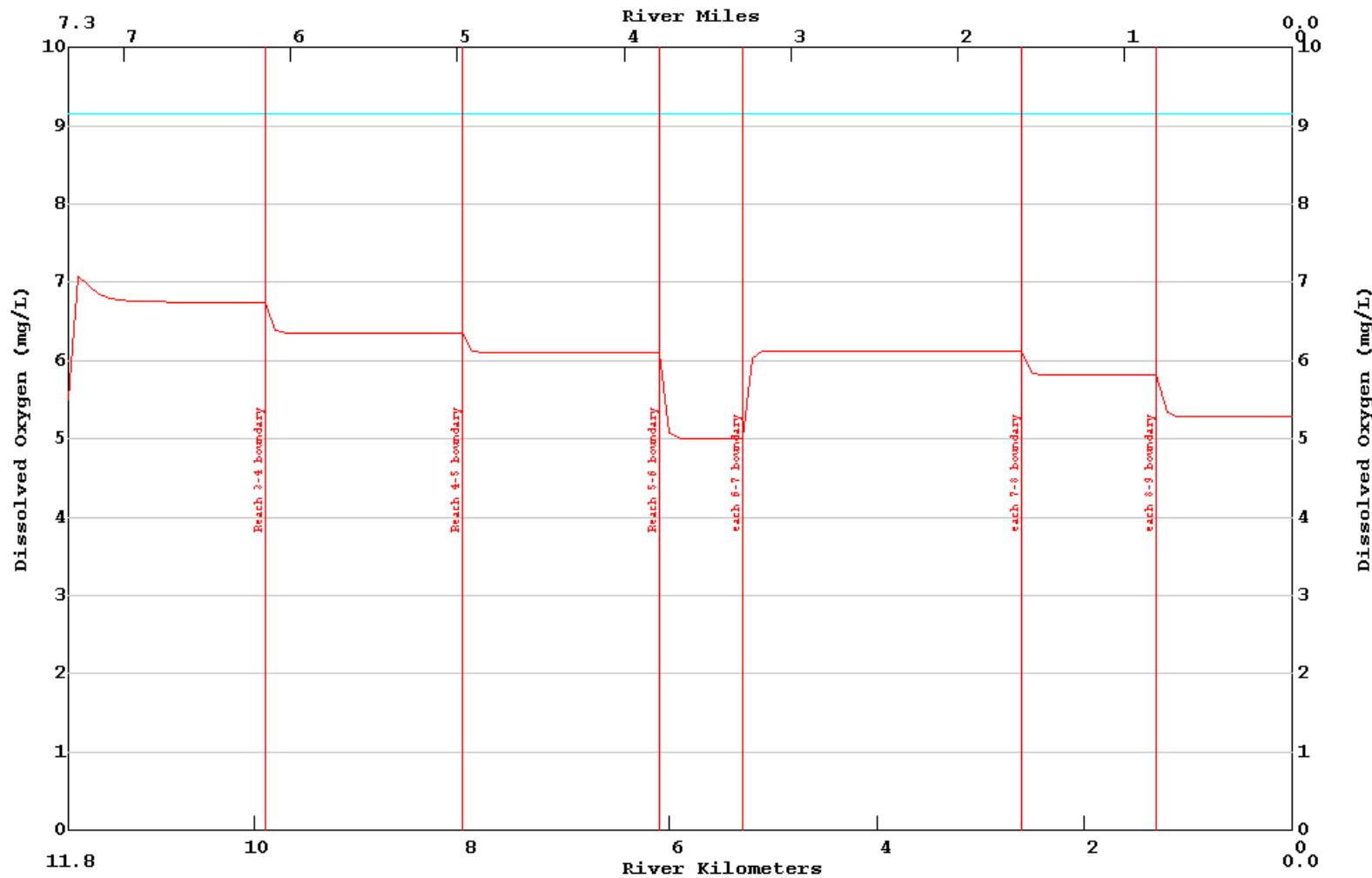
FILE: R:\PROJECTS\2110-616\TECH\LA-QUAL\LAKE CONCORDIA\PROJ\INFLOW_DO.XLS

APPENDIX M

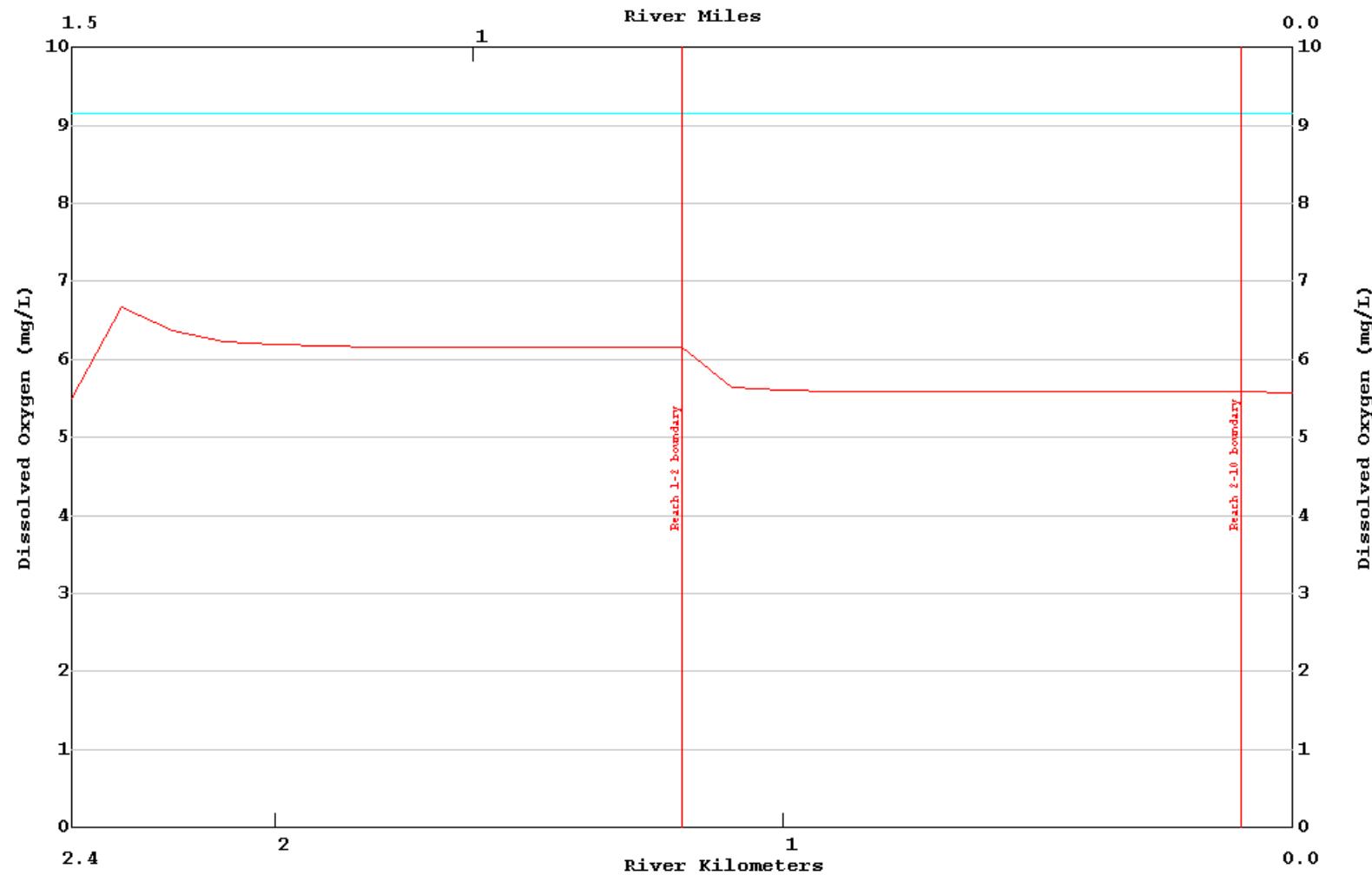
Model Output for Projection Simulations







LA-QUAL Version 8.00 Run at 14:47 on 05/24/2007 File D:\comp_models\LA-QUAL_8\Lake_Con_wint.txt
Winter Projection
Lake Concordia South



LA-QUAL Version 8.00

Louisiana Department of Environmental Quality

Input file is D:\comp_models\LA-QUAL_8\Lake_Con_sum.txt
Output produced at 14:46 on 05/24/2007

\$\$\$ DATA TYPE 1 (TITLES AND CONTROL CARDS) \$\$\$

CARD TYPE CONTROL TITLES

TITLE01	LA-QUAL calibration for Lake Concordia		
TITLE02	Summer Projection		
CNIROL03	NO	SEQU	<Warning: legacy control - line ignored>
CNIROL04	YES	METR	
CNIROL05	YES	OXYG	<Warning: legacy control - line ignored>
ENDATA01			

\$\$\$ DATA TYPE 2 (MODEL OPTIONS) \$\$\$

CARD TYPE MODEL OPTION

MODOPT01	NO	TEMP
MODOPT02	NO	SALI
MODOPT03	NO	CONSERVATIVE MATERIAL
MODOPT04	NO	CONSERVATIVE MATERIAL II
MODOPT05	YES	DISS
MODOPT06	YES	BIOC
MODOPT07	YES	NITR
MODOPT08	NO	PHOS
MODOPT09	NO	CHLO
MODOPT10	NO	MACR
MODOPT11	NO	COLI
MODOPT12	NO	NONC
ENDATA02		

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

PROGRAM	HYDRAULIC CALCULATION METHOD	=	2.00000 (widths and depths)
PROGRAM	MAXIMUM ITERATION LIMIT	=	500.00000
PROGRAM	ALGAE OXYGEN PROD	=	0.02600 mg O ₂ /ug chl a/day
ENDATA03			

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE RATE CODE THETA VALUE

THETA	NH3 DECA	1.07000
ENDATA04		

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA05

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA06

\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH	END REACH	ELEM LENGTH	REACH LENGTH	ELEMS PER RCH	BEGIN ELEM	END ELEM	
				km	km	km	km	NUM	NUM		
REACH ID	1	LC	Lake Concordia South	2.40	TO	1.20	0.1000	1.20	12	1	12
REACH ID	2	LC	Lake Concordia South	1.20	TO	0.10	0.1000	1.10	11	13	23
REACH ID	3	LC	Lake Concordia North	11.80	TO	9.90	0.1000	1.90	19	24	42
REACH ID	4	LC	Lake Concordia North	9.90	TO	8.00	0.1000	1.90	19	43	61
REACH ID	5	LC	Lake Concordia North	8.00	TO	6.10	0.1000	1.90	19	62	80
REACH ID	6	LC	Lake Concordia North	6.10	TO	5.30	0.1000	0.80	8	81	88
REACH ID	7	LC	Lake Concordia North	5.30	TO	2.60	0.1000	2.70	27	89	115
REACH ID	8	LC	Lake Concordia North	2.60	TO	1.30	0.1000	1.30	13	116	128
REACH ID	9	LC	Lake Concordia North	1.30	TO	0.00	0.1000	1.30	13	129	141
REACH ID	10	BC	Lake Concorida Junct	0.10	TO	0.00	0.1000	0.10	1	142	142

ENDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	LC	0.000	0.000	283.000	0.000	0.000	2.850	0.00000	0.000
HYDR-1	2	LC	0.000	0.000	289.000	0.000	0.000	4.120	0.00000	0.000
HYDR-1	3	LC	0.000	0.000	310.000	0.000	0.000	1.340	0.00000	0.000
HYDR-1	4	LC	0.000	0.000	387.000	0.000	0.000	2.290	0.00000	0.000
HYDR-1	5	LC	0.000	0.000	304.000	0.000	0.000	2.920	0.00000	0.000
HYDR-1	6	LC	0.000	0.000	342.000	0.000	0.000	5.530	0.00000	0.000
HYDR-1	7	LC	0.000	0.000	347.000	0.000	0.000	2.850	0.00000	0.000
HYDR-1	8	LC	0.000	0.000	360.000	0.000	0.000	3.560	0.00000	0.000
HYDR-1	9	LC	0.000	0.000	313.000	0.000	0.000	4.710	0.00000	0.000

HYDR-1 10 BC 0.000 0.000 289.000 0.000 0.000 4.120 0.00000 0.000
ENDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
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ENDATA10

\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	2	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	3	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	4	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	5	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	6	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	7	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	8	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	9	LC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	10	BC	31.50	0.00	4.30	0.10	0.00	0.00	49.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2	K2	K2	BKGND	BOD	BOD	ANAER	BOD2	BOD2	BOD2	ANAER
				"A"	"B"	"C"	SOD g/m ² /d	DECAY per day	SETT m/d	TO SOD	CONV	BOD2	DECAY per day	SETT m/d
COEFF-1	1	LC	20 K2=a/D	0.800	0.000	0.000	1.830	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	2	LC	20 K2=a/D	0.800	0.000	0.000	2.040	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	3	LC	20 K2=a/D	0.800	0.000	0.000	1.610	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	4	LC	20 K2=a/D	0.800	0.000	0.000	1.740	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	5	LC	20 K2=a/D	0.800	0.000	0.000	1.820	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	6	LC	20 K2=a/D	0.800	0.000	0.000	2.270	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	7	LC	20 K2=a/D	0.800	0.000	0.000	1.830	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	8	LC	20 K2=a/D	0.800	0.000	0.000	1.960	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	9	LC	20 K2=a/D	0.800	0.000	0.000	2.130	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	10	BC	20 K2=a/D	0.800	0.000	0.000	2.020	0.090	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	ORG-N DECA	ORG-N SETT	ORG-N CONV TO NH3 SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
COEFF-2	1	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000

COEFF-2	2	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	3	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	4	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	5	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	6	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	7	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	8	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	9	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	10	BC	0.020	0.000	1.000	0.090	0.000	0.000	0.000

ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP
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ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECAY	NCM SETT	NCM CONV TO SOD
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ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
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ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	ORG-N	NH3-N	NO3-N	BOD#2
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ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
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ENDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	ORG-N	COLI	NCM	DO	BOD#2
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NONPOINT	1	LC	1239.00	26.00	0.00	0.00	0.00	0.00
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NONPOINT	2	LC	1680.00	35.00	0.00	0.00	0.00	0.00
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NONPOINT	3	LC	1029.00	21.00	0.00	0.00	0.00	0.00
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NONPOINT	4	LC	2184.00	45.00	0.00	0.00	0.00	0.00
NONPOINT	5	LC	2184.00	45.00	0.00	0.00	0.00	0.00
NONPOINT	6	LC	1932.00	41.00	0.00	0.00	0.00	0.00
NONPOINT	7	LC	3444.00	72.00	0.00	0.00	0.00	0.00
NONPOINT	8	LC	2142.00	45.00	0.00	0.00	0.00	0.00
NONPOINT	9	LC	2478.00	51.00	0.00	0.00	0.00	0.00
NONPOINT	10	BC	153.00	3.00	0.00	0.00	0.00	0.00

ENDATA19

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m³/s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I	CM-II
HDWIR-1	1	Lake Concordia South	0	0.00300	0.106	31.50	0.00	0.000	0.000
HDWIR-1	24	Lake Concordia North	0	0.00300	0.106	31.50	0.00	0.000	0.000

ENDATA20

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	BOD#2 mg/L
HDWIR-2	1	Lake Concordia South	4.51	8.08	1.11	0.11	0.00	0.00
HDWIR-2	24	Lake Concordia North	4.51	8.08	1.11	0.11	0.00	0.00

ENDATA21

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NOM mg/L
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ENDATA22

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
JUNCTION	142	23	0.10	North and South Lake Concordia

ENDATA23

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m³/s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I	CM-II
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ENDATA24

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD mg/L	% BOD RMVL	ORG-N mg/L	NH3-N mg/L	% NITRIF	NO3-N mg/L	BOD#2 mg/L
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ENDATA25

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
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ENDATA26

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
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ENDATA27

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
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ENDATA28

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
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ENDATA29

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

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NUMBER OF PLOTS = 2
NUMBER OF REACHES IN PLOT 1 = 3
PLOT RCH 1 2 10
NUMBER OF REACHES IN PLOT 2 = 7
PLOT RCH 3 4 5 6 7 8 9
ENDATA30

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\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$

OVERLAY 1 Con_Sou_pro.ovl	:Lake Concordia South
OVERLAY 2 Con_North.ovl	:Lake Concordia North

ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA
HYDRAULIC CALCULATIONS COMPLETED
TRIDIAGONAL MATRIX TERMS INITIALIZED
OXYGEN DEPENDENT RATES CONVERGENT IN 5 ITERATIONS
CONSTITUENT CALCULATIONS COMPLETED
 ***** WARNING: NEGATIVE CONCENTRATIONS SET TO ZERO FOR Nitrate+Nitrite Nitrogen
GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11
GRAPHICS DATA FOR PLOT 2 WRITTEN TO UNIT 12

SPECIAL REPORT: Lake Concordia South
WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	2.300	31.50	0.0	0.0	0.0	5.74	8.38	0.00	8.38	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
2	2.200	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
3	2.100	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
4	2.000	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
5	1.900	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
6	1.800	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
7	1.700	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
8	1.600	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
9	1.500	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
10	1.400	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
11	1.300	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
12	1.200	31.50	0.0	0.0	0.0	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
13	1.100	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
14	1.000	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
15	0.900	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
16	0.800	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
17	0.700	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
18	0.600	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
19	0.500	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
20	0.400	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
21	0.300	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
22	0.200	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
23	0.100	31.50	0.0	0.0	0.0	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.0	0.0	0.	0.00
142	0.000	31.50	0.0	0.0	0.0	6.34	8.42	0.00	8.42	0.00	1.01	0.14	0.00	1.15	0.00	49.0	0.0	0.	0.00

SPECIAL REPORT: Lake Concordia North
WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
24	11.700	31.50	0.0	0.0	0.0	5.01	8.52	0.00	8.52	0.00	1.07	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
25	11.600	31.50	0.0	0.0	0.0	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.0	0.0	0.	0.00

126	1.500	31.50	0.0	0.0	0.0	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
127	1.400	31.50	0.0	0.0	0.0	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
128	1.300	31.50	0.0	0.0	0.0	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.0	0.0	0.	0.00
129	1.200	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
130	1.100	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
131	1.000	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
132	0.900	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
133	0.800	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
134	0.700	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
135	0.600	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
136	0.500	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
137	0.400	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
138	0.300	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
139	0.200	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
140	0.100	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00
141	0.000	31.50	0.0	0.0	0.0	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.0	0.0	0.	0.00

SPECIAL REPORT: Lake Concordia South
BIOLOGICAL AND PHYSICAL COEFFICIENTS

ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	FULL SOD *	CORR SOD *	ORG-N DECAY 1/da	ORG-N SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
1	2.300	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
2	2.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
3	2.100	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
4	2.000	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
5	1.900	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
6	1.800	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
7	1.700	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
8	1.600	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
9	1.500	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
10	1.400	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
11	1.300	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
12	1.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
13	1.100	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
14	1.000	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
15	0.900	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
16	0.800	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
17	0.700	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
18	0.600	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
19	0.500	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
20	0.400	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
21	0.300	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
22	0.200	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
23	0.100	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
142	0.000	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.17	4.17	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00

SPECIAL REPORT: Lake Concordia North BIOLOGICAL AND PHYSICAL COEFFICIENTS

116	2.500	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
117	2.400	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
118	2.300	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
119	2.200	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
120	2.100	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
121	2.000	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
122	1.900	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
123	1.800	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
124	1.700	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
125	1.600	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
126	1.500	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
127	1.400	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
128	1.300	7.37	0.28	0.15	0.00	0.00	0.00	0.00	0.00	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
129	1.200	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
130	1.100	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
131	1.000	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
132	0.900	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
133	0.800	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
134	0.700	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
135	0.600	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
136	0.500	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
137	0.400	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
138	0.300	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
139	0.200	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
140	0.100	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
141	0.000	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00

SPECIAL REPORT: Lake Concordia South
HYDRAULIC PARAMETER VALUES

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	2.40	2.30	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
2	2.30	2.20	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
3	2.20	2.10	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
4	2.10	2.00	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
5	2.00	1.90	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
6	1.90	1.80	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
7	1.80	1.70	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
8	1.70	1.60	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
9	1.60	1.50	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
10	1.50	1.40	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
11	1.40	1.30	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
12	1.30	1.20	0.0030	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
13	1.20	1.10	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
14	1.10	1.00	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
15	1.00	0.90	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000

16	0.90	0.80	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
17	0.80	0.70	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
18	0.70	0.60	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
19	0.60	0.50	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
20	0.50	0.40	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
21	0.40	0.30	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
22	0.30	0.20	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
23	0.20	0.10	0.0030	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
142	0.10	0.00	0.0060	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000

SPECIAL REPORT: Lake Concordia North

HYDRAULIC PARAMETER VALUES

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m ³ /s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m ³	SURFACE AREA m ²	X-SECT AREA m ²	TIDAL PRISM m ³	TIDAL VELO m/s	DISPRSN m ² /s	MEAN VELO m/s
	24	11.80	11.70	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000
25	11.70	11.60	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
26	11.60	11.50	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
27	11.50	11.40	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
28	11.40	11.30	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
29	11.30	11.20	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
30	11.20	11.10	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
31	11.10	11.00	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
32	11.00	10.90	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
33	10.90	10.80	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
34	10.80	10.70	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
35	10.70	10.60	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
36	10.60	10.50	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
37	10.50	10.40	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
38	10.40	10.30	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
39	10.30	10.20	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
40	10.20	10.10	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
41	10.10	10.00	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
42	10.00	9.90	0.0030	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
43	9.90	9.80	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
44	9.80	9.70	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
45	9.70	9.60	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
46	9.60	9.50	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
47	9.50	9.40	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
48	9.40	9.30	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
49	9.30	9.20	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
50	9.20	9.10	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
51	9.10	9.00	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
52	9.00	8.90	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
53	8.90	8.80	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
54	8.80	8.70	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
55	8.70	8.60	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000

56	8.60	8.50	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
57	8.50	8.40	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
58	8.40	8.30	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
59	8.30	8.20	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
60	8.20	8.10	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
61	8.10	8.00	0.0030	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
62	8.00	7.90	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
63	7.90	7.80	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
64	7.80	7.70	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
65	7.70	7.60	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
66	7.60	7.50	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
67	7.50	7.40	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
68	7.40	7.30	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
69	7.30	7.20	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
70	7.20	7.10	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
71	7.10	7.00	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
72	7.00	6.90	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
73	6.90	6.80	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
74	6.80	6.70	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
75	6.70	6.60	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
76	6.60	6.50	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
77	6.50	6.40	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
78	6.40	6.30	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
79	6.30	6.20	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
80	6.20	6.10	0.0030	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
81	6.10	6.00	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
82	6.00	5.90	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
83	5.90	5.80	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
84	5.80	5.70	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
85	5.70	5.60	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
86	5.60	5.50	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
87	5.50	5.40	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
88	5.40	5.30	0.0030	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
89	5.30	5.20	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
90	5.20	5.10	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
91	5.10	5.00	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
92	5.00	4.90	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
93	4.90	4.80	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
94	4.80	4.70	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
95	4.70	4.60	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
96	4.60	4.50	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
97	4.50	4.40	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
98	4.40	4.30	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
99	4.30	4.20	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
100	4.20	4.10	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
101	4.10	4.00	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
102	4.00	3.90	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
103	3.90	3.80	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
104	3.80	3.70	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
105	3.70	3.60	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000

106	3.60	3.50	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
107	3.50	3.40	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
108	3.40	3.30	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
109	3.30	3.20	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
110	3.20	3.10	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
111	3.10	3.00	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
112	3.00	2.90	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
113	2.90	2.80	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
114	2.80	2.70	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
115	2.70	2.60	0.0030	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
116	2.60	2.50	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
117	2.50	2.40	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
118	2.40	2.30	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
119	2.30	2.20	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
120	2.20	2.10	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
121	2.10	2.00	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
122	2.00	1.90	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
123	1.90	1.80	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
124	1.80	1.70	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
125	1.70	1.60	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
126	1.60	1.50	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
127	1.50	1.40	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
128	1.40	1.30	0.0030	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
129	1.30	1.20	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
130	1.20	1.10	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
131	1.10	1.00	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
132	1.00	0.90	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
133	0.90	0.80	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
134	0.80	0.70	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
135	0.70	0.60	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
136	0.60	0.50	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
137	0.50	0.40	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
138	0.40	0.30	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
139	0.30	0.20	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
140	0.20	0.10	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
141	0.10	0.00	0.0030	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000

FINAL REPORT Lake Concordia South
 REACH NO. 1 Lake Concordia South

LA-QUAL calibration for Lake Concordia
 Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM
			deg C	ppt			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL	
1	HDWIR	0.00300	31.50	0.00	0.00	0.00	4.51	8.08	0.00	8.08	0.00	1.11	0.11	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
	km	km	m³/s	m/s	days	m	m	m³	m²	m²	m³	m/s	m²/s	m/s	m/s
1	2.40	2.30	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
2	2.30	2.20	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
3	2.20	2.10	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
4	2.10	2.00	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
5	2.00	1.90	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
6	1.90	1.80	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
7	1.80	1.70	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
8	1.70	1.60	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
9	1.60	1.50	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
10	1.50	1.40	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
11	1.40	1.30	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
12	1.30	1.20	0.00300	0.0	0.00000	311.17	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
TOT						3734.03			967860.00		339600.00				
Avg						0.0000			2.85		283.00				
CUM						3734.03						806.55			

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O.	REAER	BOD#1 RATE	BOD#1 DECAY	ABOD#1 SETT	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NOM DECAY	NOM SETT
	mg/L	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	*	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
1	2.300	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
2	2.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
3	2.100	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
4	2.000	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
5	1.900	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
6	1.800	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
7	1.700	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
8	1.600	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
9	1.500	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
10	1.400	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
11	1.300	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
12	1.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
Avg	20	DEG C RATE		0.28	0.09	0.00	0.00	0.00	1.83			0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NOM
1	2.300	31.50	0.00	0.00	0.00	5.74	8.38	0.00	8.38	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
2	2.200	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
3	2.100	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
4	2.000	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
5	1.900	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
6	1.800	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
7	1.700	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
8	1.600	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
9	1.500	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
10	1.400	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
11	1.300	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
12	1.200	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00

FINAL REPORT
REACH NO. 2 Lake Concordia South

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW deg C	TEMP ppt	SALN	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
13	UPR RCH	0.00300	31.50	0.00	0.00	0.00	5.75	8.39	0.00	8.39	0.00	1.07	0.15	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH days	WIDTH m	VOLUME m³	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN m²/s	MEAN VELO		
13	1.20	1.10	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
14	1.10	1.00	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
15	1.00	0.90	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
16	0.90	0.80	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
17	0.80	0.70	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
18	0.70	0.60	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
19	0.60	0.50	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
20	0.50	0.40	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
21	0.40	0.30	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
22	0.30	0.20	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
23	0.20	0.10	0.00300	0.0	0.00000	459.37	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000		
TOT						5053.04			1309747.88	317900.00							
Avg						0.0000			4.12	289.00			1190.68				
Cum						8787.07											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
13	1.100	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
14	1.000	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
15	0.900	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
16	0.800	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
17	0.700	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
18	0.600	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
19	0.500	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
20	0.400	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
21	0.300	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
22	0.200	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
23	0.100	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	4.21	4.21	4.21	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
Avg	20	deg C	Rate	0.19	0.09	0.00	0.00	0.00	0.00	2.04			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
13	1.100	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
14	1.000	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
15	0.900	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
16	0.800	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
17	0.700	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
18	0.600	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
19	0.500	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
20	0.400	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
21	0.300	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
22	0.200	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00
23	0.100	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	1.21	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia South
REACH NO. 10 Lake Concorida Junct

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM

NO.		deg C	ppt		mg/L	μg/L	#/100mL								
142	UPR RCH	0.00300	31.50	0.00	0.00	0.00	6.28	8.40	0.00	8.40	0.00	1.06	0.14	0.00	0.00
142	TRIB	0.00300	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPNSN m²/s	MEAN VELO m/s
142	0.10	0.00	0.00600	0.0	0.00001	229.68	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000
TOT						229.68			119067.99	28900.00					
AVG						0.0000			4.12	289.00					
CUM						9016.75									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST mg/L	SAT D.O. mg/L	REAER RATE 1/d	BOD#1 DECAY 1/d	BOD#1 SETT 1/d	ABOD#1 DECAY 1/d	BOD#2 DECAY 1/d	BOD#2 SETT 1/d	ABOD#2 DECAY 1/d	BKGD SOD *	FULL SOD *	CORR SOD *	ORG DECAY 1/d	ORG SETT 1/d	NH3 DECAY 1/d	NH3 SRCE *	DENIT RATE 1/d	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/d	NOM SETT 1/d	
142	0.000	7.37	0.24	0.15	0.00	0.00	0.00	0.00	0.00	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	0.00	0.00
Avg	20	DEG C RATE	0.19	0.09	0.00	0.00	0.00	0.00	2.02				0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST mg/L	TEMP DEG C	SALN PPT	CM-I DO mg/L	CM-II BOD#1 mg/L	DO BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m³	COLI #/100mL	NOM		
142	0.000	31.50	0.00	0.00	0.00	6.34	8.42	0.00	8.42	0.00	1.01	0.14	0.00	1.15	0.00	49.00	0.00	0.	0.00

STREAM SUMMARY
Lake Concordia South

LA-QUAL calibration for Lake Concordia
Summer Projection

TRAVEL TIME = 9016.75 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW = 0.00300 TO 0.00600 m³/s
DISPERSION = 0.0000 TO 0.0000 m²/s
VELOCITY = 0.00000 TO 0.00001 m/s

DEPTH	=	2.85	TO	4.12	m
WIDTH	=	283.00	TO	289.00	m
BOD DECAY	=	0.15	TO	0.15	per day
NH3 DECAY	=	0.18	TO	0.19	per day
SOD	=	3.78	TO	4.21	g/m ² /d
NH3 SOURCE	=	0.00	TO	0.00	g/m ² /d
REAERATION	=	0.24	TO	0.35	per day
BOD SETTLING	=	0.00	TO	0.00	per day
ORG-N DECAY	=	0.03	TO	0.03	per day
ORG-N SETTLING	=	0.00	TO	0.00	per day
TEMPERATURE	=	31.50	TO	31.50	deg C
DISSOLVED OXYGEN	=	5.74	TO	6.34	mg/L

FINAL REPORT Lake Concordia North
REACH NO. 3 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALIN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
24	HDWIR	0.00300	31.50	0.00	0.00	0.00	4.51	8.08	0.00	8.08	0.00	1.11	0.11	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m ³ /s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m ³	SURFACE AREA m ²	X-SECT AREA m ²	TIDAL PRISM m ³	TIDAL VELO m/s	DISPRSN m ² /s	MEAN VELO m/s
24	11.80	11.70	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
25	11.70	11.60	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
26	11.60	11.50	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
27	11.50	11.40	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
28	11.40	11.30	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
29	11.30	11.20	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
30	11.20	11.10	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
31	11.10	11.00	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
32	11.00	10.90	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
33	10.90	10.80	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
34	10.80	10.70	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
35	10.70	10.60	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
36	10.60	10.50	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
37	10.50	10.40	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
38	10.40	10.30	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
39	10.30	10.20	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000

40	10.20	10.10	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
41	10.10	10.00	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
42	10.00	9.90	0.00300	0.0	0.00001	160.26	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000

TOT				3044.99		789260.06	589000.00								
AVG				0.0000		1.34	310.00			415.40					
CUM				3044.99											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NOM DECAY 1/da	NOM SETT 1/da
24	11.700	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
25	11.600	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
26	11.500	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
27	11.400	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
28	11.300	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
29	11.200	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
30	11.100	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
31	11.000	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
32	10.900	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
33	10.800	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
34	10.700	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
35	10.600	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
36	10.500	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
37	10.400	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
38	10.300	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
39	10.200	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
40	10.100	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
41	10.000	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
42	9.900	7.37	0.74	0.15	0.00	0.00	0.00	0.00	0.00	3.32	3.32	3.32	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00

Avg 20 DEG C RATE	0.60	0.09	0.00	0.00	0.00	0.00	1.61			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NOM
24	11.700	31.50	0.00	0.00	0.00	5.01	8.52	0.00	8.52	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
25	11.600	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
26	11.500	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
27	11.400	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
28	11.300	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00

29	11.200	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
30	11.100	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
31	11.000	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
32	10.900	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
33	10.800	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
34	10.700	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
35	10.600	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
36	10.500	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
37	10.400	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
38	10.300	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
39	10.200	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
40	10.100	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
41	10.000	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
42	9.900	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 4 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW deg C	TEMP ppt	SALN	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
43	UPR RCH	0.00300	31.50	0.00	0.00	0.00	5.01	8.54	0.00	8.54	0.00	1.06	0.15	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
43	9.90	9.80	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
44	9.80	9.70	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
45	9.70	9.60	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
46	9.60	9.50	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
47	9.50	9.40	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
48	9.40	9.30	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
49	9.30	9.20	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
50	9.20	9.10	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
51	9.10	9.00	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
52	9.00	8.90	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
53	8.90	8.80	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
54	8.80	8.70	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
55	8.70	8.60	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
56	8.60	8.50	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
57	8.50	8.40	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
58	8.40	8.30	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000

59	8.30	8.20	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
60	8.20	8.10	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
61	8.10	8.00	0.00300	0.0	0.00000	341.91	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000

TOT				6496.28		1683837.00	735300.00								
AVG				0.0000		2.29	387.00								
CUM				9541.27											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NOM DECAY 1/da	NOM SETT 1/da
43	9.800	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
44	9.700	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
45	9.600	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
46	9.500	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
47	9.400	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
48	9.300	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
49	9.200	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
50	9.100	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
51	9.000	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
52	8.900	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
53	8.800	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
54	8.700	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
55	8.600	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
56	8.500	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
57	8.400	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
58	8.300	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
59	8.200	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
60	8.100	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
61	8.000	7.37	0.43	0.15	0.00	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00

Avg 20 DEG C RATE	0.35	0.09	0.00	0.00	0.00	0.00	1.74			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NOM
43	9.800	31.50	0.00	0.00	0.00	5.46	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
44	9.700	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
45	9.600	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
46	9.500	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
47	9.400	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00

48	9.300	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
49	9.200	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
50	9.100	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
51	9.000	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
52	8.900	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
53	8.800	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
54	8.700	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
55	8.600	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
56	8.500	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
57	8.400	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
58	8.300	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
59	8.200	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
60	8.100	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
61	8.000	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 5 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW deg C	TEMP ppt	SALN	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
62	UPR RCH	0.00300	31.50	0.00	0.00	0.00	5.47	8.50	0.00	8.50	0.00	1.06	0.15	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
62	8.00	7.90	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
63	7.90	7.80	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
64	7.80	7.70	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
65	7.70	7.60	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
66	7.60	7.50	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
67	7.50	7.40	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
68	7.40	7.30	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
69	7.30	7.20	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
70	7.20	7.10	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
71	7.10	7.00	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
72	7.00	6.90	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
73	6.90	6.80	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
74	6.80	6.70	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
75	6.70	6.60	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
76	6.60	6.50	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
77	6.50	6.40	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000

78	6.40	6.30	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
79	6.30	6.20	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
80	6.20	6.10	0.00300	0.0	0.00000	342.47	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
TOT						6506.92			1686592.12	577600.00					
AVG					0.0000		2.92	304.00			887.68				
CUM						16048.18									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NOM DECAY 1/da	NOM SETT 1/da
62	7.900	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
63	7.800	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
64	7.700	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
65	7.600	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
66	7.500	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
67	7.400	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
68	7.300	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
69	7.200	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
70	7.100	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
71	7.000	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
72	6.900	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
73	6.800	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
74	6.700	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
75	6.600	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
76	6.500	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
77	6.400	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
78	6.300	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
79	6.200	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
80	6.100	7.37	0.34	0.15	0.00	0.00	0.00	0.00	0.00	3.75	3.75	3.75	0.03	0.00	0.18	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
Avg 20 DEG C RATE			0.27	0.09	0.00	0.00	0.00	0.00	1.82				0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NOM
62	7.900	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
63	7.800	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
64	7.700	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
65	7.600	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
66	7.500	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00

67	7.400	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
68	7.300	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
69	7.200	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
70	7.100	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
71	7.000	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
72	6.900	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
73	6.800	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
74	6.700	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
75	6.600	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
76	6.500	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
77	6.400	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
78	6.300	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
79	6.200	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00
80	6.100	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	1.21	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 6 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
81	UPR RCH	0.00300	31.50	0.00	0.00	0.00	5.78	8.48	0.00	8.48	0.00	1.06	0.15	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s	
81	6.10	6.00	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
82	6.00	5.90	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
83	5.90	5.80	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
84	5.80	5.70	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
85	5.70	5.60	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
86	5.60	5.50	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
87	5.50	5.40	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
88	5.40	5.30	0.00300	0.0	0.00000	729.65	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
TOT						5837.22			1513008.12	273600.00						
Avg						0.0000			5.53	342.00		1891.26				
CUM						21885.40										

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM	ENDING	SAT	REAER	BOD#1	BOD#1	ABOD#1	BOD#2	BOD#2	ABOD#2	BKGD	FULL	CORR	ORGN	ORGN	NH3	NH3	DENIT	PO4	ALG	MAC	COLI	NOM	NOM
NO.	DIST	D.O.	RATE	DECAY	SETT	DECAY	DECAY	SETT	DECAY	SOD	SOD	SOD	DECAY	SETT	DECAY	SRCE	RATE	SRCE	PROD	PROD	DECAY	DECAY	SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	*	1/da	1/da	*	1/da	1/da	*	**	**	1/da	1/da	1/da
81	6.000	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
82	5.900	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
83	5.800	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
84	5.700	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
85	5.600	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
86	5.500	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
87	5.400	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
88	5.300	7.37	0.18	0.15	0.00	0.00	0.00	0.00	4.68	4.68	4.68	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
Avg	20	DEG C RATE		0.14	0.09	0.00	0.00	0.00	0.00	2.27			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM	ENDING	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	TOIN	PHOS	CHL A	MACRO	COLI	NOM
NO.	DIST	deg C	PPT			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	g/m ³	#/100mL	
81	6.000	31.50	0.00	0.00	0.00	6.91	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
82	5.900	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
83	5.800	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
84	5.700	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
85	5.600	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
86	5.500	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
87	5.400	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00
88	5.300	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	1.22	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 7 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NOM
NO.			deg C	PPT			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL	
89	UPR RCH	0.00300	31.50	0.00	0.00	0.00	6.92	8.37	0.00	8.37	0.00	1.08	0.14	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM	BEGIN	ENDING	FLOW	PCT	ADVCTV	TRAVEL	DEPTH	WIDTH	VOLUME	SURFACE	X-SECT	TIDAL	TIDAL	DISPRSN	MEAN
NO.	DIST	DIST	m ³ /s	EFF	VELO	TIME	m	m	m ³	AREA	AREA	PRISM	VELO	m ² /s	VELO
	km	km			m/s	days				m ²	m ²	m ³	m/s		m/s

89	5.30	5.20	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
90	5.20	5.10	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
91	5.10	5.00	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
92	5.00	4.90	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
93	4.90	4.80	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
94	4.80	4.70	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
95	4.70	4.60	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
96	4.60	4.50	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
97	4.50	4.40	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
98	4.40	4.30	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
99	4.30	4.20	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
100	4.20	4.10	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
101	4.10	4.00	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
102	4.00	3.90	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
103	3.90	3.80	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
104	3.80	3.70	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
105	3.70	3.60	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
106	3.60	3.50	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
107	3.50	3.40	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
108	3.40	3.30	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
109	3.30	3.20	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
110	3.20	3.10	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
111	3.10	3.00	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
112	3.00	2.90	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
113	2.90	2.80	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
114	2.80	2.70	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
115	2.70	2.60	0.00300	0.0	0.00000	381.54	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
TOT						10301.56			2670164.75		936900.00					
AVG						0.0000			2.85		347.00					
CUM						32186.95					988.95					

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	EKGD *	FULL *	CORR *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 SRCE *	NH3 DECAY 1/da	DENIT SRCE *	PO4 RATE 1/da	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
89	5.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
90	5.100	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
91	5.000	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
92	4.900	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
93	4.800	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
94	4.700	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
95	4.600	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
96	4.500	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
97	4.400	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00
98	4.300	7.37	0.35	0.15	0.00	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00

99	4.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
100	4.100	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
101	4.000	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
102	3.900	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
103	3.800	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
104	3.700	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
105	3.600	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
106	3.500	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
107	3.400	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
108	3.300	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
109	3.200	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
110	3.100	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
111	3.000	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
112	2.900	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
113	2.800	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
114	2.700	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
115	2.600	7.37	0.35	0.15	0.00	0.00	0.00	0.00	3.78	3.78	3.78	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE				0.28	0.09	0.00	0.00	0.00	1.83			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
89	5.200	31.50	0.00	0.00	0.00	5.73	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
90	5.100	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
91	5.000	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
92	4.900	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
93	4.800	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
94	4.700	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
95	4.600	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
96	4.500	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
97	4.400	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
98	4.300	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
99	4.200	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
100	4.100	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
101	4.000	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
102	3.900	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
103	3.800	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
104	3.700	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
105	3.600	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
106	3.500	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
107	3.400	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
108	3.300	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
109	3.200	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
110	3.100	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00

111	3.000	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
112	2.900	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
113	2.800	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
114	2.700	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
115	2.600	31.50	0.00	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 8 Lake Concordia North LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
116	UPR RCH	0.00300	31.50	0.00	0.00	5.72	8.45	0.00	8.45	0.00	1.07	0.15	0.00	0.00	49.00	0.00	0.00	

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s		
116	2.60	2.50	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
117	2.50	2.40	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
118	2.40	2.30	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
119	2.30	2.20	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
120	2.20	2.10	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
121	2.10	2.00	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
122	2.00	1.90	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
123	1.90	1.80	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
124	1.80	1.70	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
125	1.70	1.60	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
126	1.60	1.50	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
127	1.50	1.40	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
128	1.40	1.30	0.00300	0.0	0.00000	494.44	3.56	360.00	128160.00	36000.00	1281.60	0.00	0.000	0.000	0.000		
TOT						6427.78			1666080.00		468000.00						
AVG						0.0000			3.56		360.00			1281.60			
CUM						38614.74											

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE mg/L	BOD#1 DECAY 1/d	BOD#1 SETT 1/d	ABOD#1 1/d	BOD#2 DECAY 1/d	BOD#2 SETT 1/d	ABOD#2 1/d	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/d	ORGN SETT 1/d	NH3 DECAY 1/d	NH3 SRCE *	DENIT RATE 1/d	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/d	NCM DECAY 1/d	NCM SETT 1/d

116	2.500	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
117	2.400	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
118	2.300	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
119	2.200	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
120	2.100	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
121	2.000	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
122	1.900	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
123	1.800	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
124	1.700	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
125	1.600	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
126	1.500	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
127	1.400	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
128	1.300	7.37	0.28	0.15	0.00	0.00	0.00	0.00	4.04	4.04	4.04	0.03	0.00	0.18	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	
AVG 20 DEG C RATE				0.22	0.09	0.00	0.00	0.00	0.00	1.96			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NCM
116	2.500	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
117	2.400	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
118	2.300	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
119	2.200	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
120	2.100	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
121	2.000	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
122	1.900	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
123	1.800	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
124	1.700	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
125	1.600	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
126	1.500	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
127	1.400	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00
128	1.300	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	1.22	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 9 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
129	UPR RCH	0.00300	31.50	0.00	0.00	0.00	6.00	8.42	0.00	8.42	0.00	1.08	0.15	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
	km	km	m³/s	m/s	days	m	m	m³	m²	m²	m³	m/s	m²/s	m/s	
129	1.30	1.20	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
130	1.20	1.10	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
131	1.10	1.00	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
132	1.00	0.90	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
133	0.90	0.80	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
134	0.80	0.70	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
135	0.70	0.60	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
136	0.60	0.50	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
137	0.50	0.40	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
138	0.40	0.30	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
139	0.30	0.20	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
140	0.20	0.10	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
141	0.10	0.00	0.00300	0.0	0.00000	568.76	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
TOT					7393.90				1916499.00		406900.00				
Avg					0.0000				4.71	313.00			1474.23		
CUM					46008.64										

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER	BOD#1 RATE 1/d	BOD#1 DECAY 1/d	ABOD#1 SETT 1/d	BOD#2 DECAY 1/d	BOD#2 SETT 1/d	ABOD#2 DECAY 1/d	BKGD	FULL SOD *	CORR SOD *	ORGN DECAY 1/d	ORGN SETT 1/d	NH3 DECAY 1/d	NH3 SRCE *	DENIT RATE 1/d	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/d	NCM DECAY 1/d	NCM SETT 1/d
129	1.200	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
130	1.100	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
131	1.000	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
132	0.900	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
133	0.800	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
134	0.700	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
135	0.600	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
136	0.500	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
137	0.400	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
138	0.300	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
139	0.200	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
140	0.100	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
141	0.000	7.37	0.21	0.15	0.00	0.00	0.00	0.00	0.00	4.39	4.39	4.39	0.03	0.00	0.19	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00
Avg 20 DEG C RATE			0.17	0.09	0.00	0.00	0.00	0.00	2.13				0.02	0.00	0.09	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d

** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NOM
129	1.200	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
130	1.100	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
131	1.000	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
132	0.900	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
133	0.800	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
134	0.700	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
135	0.600	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
136	0.500	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
137	0.400	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
138	0.300	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
139	0.200	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
140	0.100	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00
141	0.000	31.50	0.00	0.00	0.00	6.50	8.47	0.00	8.47	0.00	1.06	0.14	0.00	1.20	0.00	49.00	0.00	0.	0.00

STREAM SUMMARY
Lake Concordia North

LA-QUAL calibration for Lake Concordia
Summer Projection

TRAVEL TIME = 46008.64 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW = 0.00300 TO 0.00300 m³/s

DISPERSION = 0.0000 TO 0.0000 m²/s

VELOCITY = 0.00000 TO 0.00001 m/s

DEPTH = 1.34 TO 5.53 m

WIDTH = 304.00 TO 387.00 m

BOD DECAY = 0.15 TO 0.15 per day

NH3 DECAY = 0.18 TO 0.19 per day

SOD = 3.32 TO 4.68 g/m²/d

NH3 SOURCE = 0.00 TO 0.00 g/m²/d

REAERATION = 0.18 TO 0.74 per day

BOD SETTLING = 0.00 TO 0.00 per day

ORG-N DECAY = 0.03 TO 0.03 per day

ORG-N SETTLING = 0.00 TO 0.00 per day

TEMPERATURE = 31.50 TO 31.50 deg C

DISSOLVED OXYGEN = 5.01 TO 6.92 mg/L

LA-QUAL calibration for Lake Concordia
Summer Projection

INPUT/OUTPUT LOADING SUMMARY

	FLOW m³/s	DO kg/d	BOD#1 kg/d	BOD#2 kg/d	ORG-N kg/d	NH3-N kg/d	NO3-N kg/d	PHOS kg/d	CHL A	NCM
HEADWATER FLOW	0.006	2.3	4.2	0.0	0.6	0.1	0.0	0.0	0.0	0.0
INCREMENTAL INFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCREMENTAL OUTFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTELOADS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WITHDRAWLS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLOW THRU LOWER BNDRY	-0.006	-3.3	-4.4	0.0	-0.5	-0.1	0.0	0.0	0.0	0.0
DISPERSION THRU LOWER BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DISPERSION THRU HDWTR BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NON-POINT INPUT		0.0	18465.0	0.0	384.0					0.0
NATURAL REAERATION		7190.0								
DAM REAERATION		0.0								
BACKGROUND SOD		-18004.4								
BOD#1 DECAY		-18464.8	-18464.8							
BOD#1 SETTLING		0.0	0.0							
ANAEROBIC BOD#1 DECAY			0.0							
BOD#2 DECAY		0.0		0.0						
BOD#2 SETTLING		0.0		0.0						
ANAEROBIC BOD#2 DECAY				0.0						
ORG-N DECAY		0.0			-384.1	384.1				
ORG-N SETTLING					0.0	0.0				
NH3 DECAY		-1669.4				-385.5	385.5			
BACKGROUND NH3 SOURCE						0.0				
OTHER DENITRIFICATION							0.0			
PHOSPHORUS SOURCE								0.0		
ALGAE PHOTOSYNTHESIS		30943.1				0.0	-2975.3	0.0	0.0	
ALGAE RESPIRATION		0.0				0.0		0.0	0.0	
ALGAE SETTLING		0.0							0.0	
MACRO PHOTOSYNTHESIS		0.0				0.0	0.0	0.0		
NCM DECAY		0.0							0.0	
NCM SETTLING		0.0							0.0	
TOTAL INPUTS	0.006	38135.4	18469.2	0.0	384.6	384.1	385.5	0.0	0.0	0.0
TOTAL OUTPUTS	-0.006	-38142.0	-18469.2	0.0	-384.6	-385.6	-2975.3	0.0	0.0	0.0
NET CONVERGENCE ERROR	0.000	-6.5	0.0	0.0	0.0	-1.5	-2589.7	0.0	0.0	0.0

.....EXECUTION COMPLETED

LA-QUAL Version 8.00

Louisiana Department of Environmental Quality

Input file is D:\comp_models\LA-QUAL_8\Lake_Con_win.txt
Output produced at 14:47 on 05/24/2007

\$\$\$ DATA TYPE 1 (TITLES AND CONTROL CARDS) \$\$\$

CARD TYPE CONTROL TITLES

TITLE01	LA-QUAL calibration for Lake Concordia		
TITLE02	Winter Projection		
CNIROL03	NO	SEQU	<Warning: legacy control - line ignored>
CNIROL04	YES	MEIR	
CNIROL05	YES	OXYG	<Warning: legacy control - line ignored>
ENDATA01			

\$\$\$ DATA TYPE 2 (MODEL OPTIONS) \$\$\$

CARD TYPE MODEL OPTION

MODOPT01	NO	TEMP
MODOPT02	NO	SALI
MODOPT03	NO	CONSERVATIVE MATERIAL
MODOPT04	NO	CONSERVATIVE MATERIAL II
MODOPT05	YES	DISS
MODOPT06	YES	BIOC
MODOPT07	YES	NITR
MODOPT08	NO	PHOS
MODOPT09	NO	CHLO
MODOPT10	NO	MACR
MODOPT11	NO	COLI
MODOPT12	NO	NONC
ENDATA02		

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

PROGRAM	HYDRAULIC CALCULATION METHOD	=	2.00000 (widths and depths)
PROGRAM	MAXIMUM ITERATION LIMIT	=	500.00000
PROGRAM	ALGAE OXYGEN PROD	=	0.02600 mg O ₂ /ug chl a/day
ENDATA03			

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE RATE CODE THETA VALUE

THETA	NH3 DECA	1.07000
ENDATA04		

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA05

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA06

\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH	END REACH	ELEM LENGTH	REACH LENGTH	ELEMS PER RCH	BEGIN ELEM	END ELEM	
				km	km	km	km	NUM	NUM		
REACH ID	1	LC	Lake Concordia South	2.40	TO	1.20	0.1000	1.20	12	1	12
REACH ID	2	LC	Lake Concordia South	1.20	TO	0.10	0.1000	1.10	11	13	23
REACH ID	3	LC	Lake Concordia North	11.80	TO	9.90	0.1000	1.90	19	24	42
REACH ID	4	LC	Lake Concordia North	9.90	TO	8.00	0.1000	1.90	19	43	61
REACH ID	5	LC	Lake Concordia North	8.00	TO	6.10	0.1000	1.90	19	62	80
REACH ID	6	LC	Lake Concordia North	6.10	TO	5.30	0.1000	0.80	8	81	88
REACH ID	7	LC	Lake Concordia North	5.30	TO	2.60	0.1000	2.70	27	89	115
REACH ID	8	LC	Lake Concordia North	2.60	TO	1.30	0.1000	1.30	13	116	128
REACH ID	9	LC	Lake Concordia North	1.30	TO	0.00	0.1000	1.30	13	129	141
REACH ID	10	BC	Lake Concorida Junct	0.10	TO	0.00	0.1000	0.10	1	142	142

ENDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	LC	0.000	0.000	283.000	0.000	0.000	2.850	0.00000	0.000
HYDR-1	2	LC	0.000	0.000	289.000	0.000	0.000	4.120	0.00000	0.000
HYDR-1	3	LC	0.000	0.000	310.000	0.000	0.000	1.340	0.00000	0.000
HYDR-1	4	LC	0.000	0.000	387.000	0.000	0.000	2.290	0.00000	0.000
HYDR-1	5	LC	0.000	0.000	304.000	0.000	0.000	2.920	0.00000	0.000
HYDR-1	6	LC	0.000	0.000	342.000	0.000	0.000	5.530	0.00000	0.000
HYDR-1	7	LC	0.000	0.000	347.000	0.000	0.000	2.850	0.00000	0.000
HYDR-1	8	LC	0.000	0.000	360.000	0.000	0.000	3.560	0.00000	0.000
HYDR-1	9	LC	0.000	0.000	313.000	0.000	0.000	4.710	0.00000	0.000

HYDR-1 10 BC 0.000 0.000 289.000 0.000 0.000 4.120 0.00000 0.000
 ENDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
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ENDATA10

\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	2	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	3	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	4	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	5	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	6	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	7	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	8	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	9	LC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00
INITIAL	10	BC	19.70	0.00	4.30	0.10	0.00	0.00	49.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2	K2	K2	BKGND	BOD	BOD	ANAER	BOD2	BOD2	BOD2	ANAER
				"A"	"B"	"C"	SOD g/m ² /d	DECAY per day	SETT m/d	TO SOD	CONV	BOD2	DECAY per day	SETT m/d
COEFF-1	1	LC	20 K2=a/D	0.800	0.000	0.000	1.890	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	2	LC	20 K2=a/D	0.800	0.000	0.000	2.100	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	3	LC	20 K2=a/D	0.800	0.000	0.000	1.660	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	4	LC	20 K2=a/D	0.800	0.000	0.000	1.790	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	5	LC	20 K2=a/D	0.800	0.000	0.000	1.880	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	6	LC	20 K2=a/D	0.800	0.000	0.000	2.340	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	7	LC	20 K2=a/D	0.800	0.000	0.000	1.890	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	8	LC	20 K2=a/D	0.800	0.000	0.000	2.020	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	9	LC	20 K2=a/D	0.800	0.000	0.000	2.190	0.090	0.000	0.000	0.000	0.000	0.000	0.000
COEFF-1	10	BC	20 K2=a/D	0.800	0.000	0.000	2.080	0.090	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	ORG-N DECA	ORG-N SETT	ORG-N CONV TO NH3 SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
COEFF-2	1	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000

COEFF-2	2	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	3	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	4	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	5	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	6	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	7	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	8	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	9	LC	0.020	0.000	1.000	0.090	0.000	0.000	0.000
COEFF-2	10	BC	0.020	0.000	1.000	0.090	0.000	0.000	0.000

ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP
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ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECAY	NCM SETT	NCM CONV TO SOD
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ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
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ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	ORG-N	NH3-N	NO3-N	BOD#2
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ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
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ENDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	ORG-N	COLI	NCM	DO	BOD#2
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NONPOINT	1	LC	1277.00	27.00	0.00	0.00	0.00	0.00
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NONPOINT	2	LC	1732.00	36.00	0.00	0.00	0.00	0.00
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NONPOINT	3	LC	1061.00	22.00	0.00	0.00	0.00	0.00
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NONPOINT	4	LC	2252.00	47.00	0.00	0.00	0.00	0.00
NONPOINT	5	LC	2252.00	47.00	0.00	0.00	0.00	0.00
NONPOINT	6	LC	1992.00	42.00	0.00	0.00	0.00	0.00
NONPOINT	7	LC	3551.00	74.00	0.00	0.00	0.00	0.00
NONPOINT	8	LC	2208.00	46.00	0.00	0.00	0.00	0.00
NONPOINT	9	LC	2555.00	53.00	0.00	0.00	0.00	0.00
NONPOINT	10	BC	158.00	3.00	0.00	0.00	0.00	0.00

ENDATA19

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m³/s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I	CM-II
HDWIR-1	1	Lake Concordia South	0	0.02800	0.989	19.70	0.00	0.000	0.000
HDWIR-1	24	Lake Concordia North	0	0.02800	0.989	19.70	0.00	0.000	0.000

ENDATA20

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	BOD#2 mg/L
HDWIR-2	1	Lake Concordia South	5.50	8.33	1.14	0.11	0.00	0.00
HDWIR-2	24	Lake Concordia North	5.50	8.33	1.14	0.11	0.00	0.00

ENDATA21

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
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ENDATA22

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
JUNCTION	142	23	0.10	North and South Lake Concordia

ENDATA23

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m³/s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I	CM-II
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ENDATA24

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD mg/L	% BOD RMVL	ORG-N mg/L	NH3-N mg/L	% NITRIF	NO3-N mg/L	BOD#2 mg/L
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ENDATA25

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
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ENDATA26

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
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ENDATA27

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
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ENDATA28

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
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ENDATA29

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

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NUMBER OF PLOTS = 2
NUMBER OF REACHES IN PLOT 1 = 3
PLOT RCH 1 2 10
NUMBER OF REACHES IN PLOT 2 = 7
PLOT RCH 3 4 5 6 7 8 9
ENDATA30

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\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$

OVERLAY 1 Con_Sou_pro.ovl	:Lake Concordia South
OVERLAY 2 Con_North.ovl	:Lake Concordia North

ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA
HYDRAULIC CALCULATIONS COMPLETED
TRIDIAGONAL MATRIX TERMS INITIALIZED
OXYGEN DEPENDENT RATES CONVERGENT IN 2 ITERATIONS
CONSTITUENT CALCULATIONS COMPLETED
 ***** WARNING: NEGATIVE CONCENTRATIONS SET TO ZERO FOR Nitrate+Nitrite Nitrogen
GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11
GRAPHICS DATA FOR PLOT 2 WRITTEN TO UNIT 12

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WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
1	2.300	19.70	0.0	0.0	0.0	6.67	13.21	0.00	13.21	0.00	1.24	0.25	0.00	1.50	0.00	49.0	0.0	0.	0.00
2	2.200	19.70	0.0	0.0	0.0	6.37	14.45	0.00	14.45	0.00	1.31	0.30	0.00	1.61	0.00	49.0	0.0	0.	0.00
3	2.100	19.70	0.0	0.0	0.0	6.23	14.76	0.00	14.76	0.00	1.35	0.32	0.00	1.67	0.00	49.0	0.0	0.	0.00
4	2.000	19.70	0.0	0.0	0.0	6.18	14.84	0.00	14.84	0.00	1.37	0.33	0.00	1.70	0.00	49.0	0.0	0.	0.00
5	1.900	19.70	0.0	0.0	0.0	6.17	14.86	0.00	14.86	0.00	1.38	0.34	0.00	1.72	0.00	49.0	0.0	0.	0.00
6	1.800	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.39	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
7	1.700	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.74	0.00	49.0	0.0	0.	0.00
8	1.600	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.74	0.00	49.0	0.0	0.	0.00
9	1.500	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.74	0.00	49.0	0.0	0.	0.00
10	1.400	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.75	0.00	49.0	0.0	0.	0.00
11	1.300	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.75	0.00	49.0	0.0	0.	0.00
12	1.200	19.70	0.0	0.0	0.0	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.75	0.00	49.0	0.0	0.	0.00
13	1.100	19.70	0.0	0.0	0.0	5.65	14.89	0.00	14.89	0.00	1.39	0.34	0.00	1.74	0.00	49.0	0.0	0.	0.00
14	1.000	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.39	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
15	0.900	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.39	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
16	0.800	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
17	0.700	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
18	0.600	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
19	0.500	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
20	0.400	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
21	0.300	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
22	0.200	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
23	0.100	19.70	0.0	0.0	0.0	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
142	0.000	19.70	0.0	0.0	0.0	5.58	14.95	0.00	14.95	0.00	1.35	0.34	0.00	1.69	0.00	49.0	0.0	0.	0.00

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WATER QUALITY CONSTITUENT VALUES

ELEM NO.	ENDING km	TEMP deg C	SALN ppt	CM-I *	CM-II *	DO mg/L	BOD1 mg/L	BOD2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORG-N mg/L	NH3-N mg/L	NO3-N mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO **	COLI #/100mL	NCM *
24	11.700	19.70	0.0	0.0	0.0	7.07	12.44	0.00	12.44	0.00	1.21	0.22	0.00	1.42	0.00	49.0	0.0	0.	0.00
25	11.600	19.70	0.0	0.0	0.0	6.96	14.07	0.00	14.07	0.00	1.26	0.27	0.00	1.52	0.00	49.0	0.0	0.	0.00

126	1.500	19.70	0.0	0.0	0.0	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
127	1.400	19.70	0.0	0.0	0.0	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
128	1.300	19.70	0.0	0.0	0.0	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.0	0.0	0.	0.00
129	1.200	19.70	0.0	0.0	0.0	5.34	15.00	0.00	15.00	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
130	1.100	19.70	0.0	0.0	0.0	5.29	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
131	1.000	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
132	0.900	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
133	0.800	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
134	0.700	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
135	0.600	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
136	0.500	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
137	0.400	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
138	0.300	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
139	0.200	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
140	0.100	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00
141	0.000	19.70	0.0	0.0	0.0	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.0	0.0	0.	0.00

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ELEM NO.	ENDING DIST km	SAT D.O. mg/L	REAER RATE 1/d/a	BOD#1 DECAY 1/d/a	BOD#1 SETT 1/d/a	ABOD#1 DECAY 1/d/a	BOD#2 SETT 1/d/a	ABOD#2 DECAY 1/d/a	FULL SOD *	CORR SOD *	ORG-N DECAY 1/d/a	ORG-N SETT 1/d/a	NH3 DECAY 1/d/a	NH3 SRCE *	DENIT RATE 1/d/a	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/d/a	NCM DECAY 1/d/a	NCM SETT 1/d/a	
1	2.300	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
2	2.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
3	2.100	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
4	2.000	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
5	1.900	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
6	1.800	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
7	1.700	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
8	1.600	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
9	1.500	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
10	1.400	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
11	1.300	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
12	1.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	*	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
13	1.100	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
14	1.000	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
15	0.900	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
16	0.800	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
17	0.700	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
18	0.600	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
19	0.500	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
20	0.400	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
21	0.300	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
22	0.200	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
23	0.100	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00
142	0.000	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	*	2.04	2.04	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00

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116	2.500	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
117	2.400	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
118	2.300	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
119	2.200	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
120	2.100	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
121	2.000	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
122	1.900	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
123	1.800	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
124	1.700	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
125	1.600	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
126	1.500	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
127	1.400	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
128	1.300	9.15	0.22	0.09	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
129	1.200	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
130	1.100	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
131	1.000	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
132	0.900	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
133	0.800	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
134	0.700	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
135	0.600	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
136	0.500	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
137	0.400	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
138	0.300	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
139	0.200	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
140	0.100	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
141	0.000	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00

SPECIAL REPORT: Lake Concordia South
HYDRAULIC PARAMETER VALUES

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	2.40	2.30	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
2	2.30	2.20	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
3	2.20	2.10	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
4	2.10	2.00	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
5	2.00	1.90	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
6	1.90	1.80	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
7	1.80	1.70	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
8	1.70	1.60	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
9	1.60	1.50	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
10	1.50	1.40	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
11	1.40	1.30	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
12	1.30	1.20	0.0280	0.000	2.85	283.0	80655.	28300.0	806.5	0.	0.000	0.000	0.000
13	1.20	1.10	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
14	1.10	1.00	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
15	1.00	0.90	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000

16	0.90	0.80	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
17	0.80	0.70	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
18	0.70	0.60	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
19	0.60	0.50	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
20	0.50	0.40	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
21	0.40	0.30	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
22	0.30	0.20	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
23	0.20	0.10	0.0280	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000
142	0.10	0.00	0.0560	0.000	4.12	289.0	119068.	28900.0	1190.7	0.	0.000	0.000	0.000

SPECIAL REPORT: Lake Concordia North

HYDRAULIC PARAMETER VALUES

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m ³ /s	ADVCTV VELO m/s	DEPTH m	WIDTH m	VOLUME m ³	SURFACE AREA m ²	X-SECT AREA m ²	TIDAL PRISM m ³	TIDAL VELO m/s	DISPRSN m ² /s	MEAN VELO m/s
	km	km	m ³ /s	m/s	m	m	m ³	m ²	m ²	m ³	m/s	m ² /s	m/s
24	11.80	11.70	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
25	11.70	11.60	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
26	11.60	11.50	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
27	11.50	11.40	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
28	11.40	11.30	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
29	11.30	11.20	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
30	11.20	11.10	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
31	11.10	11.00	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
32	11.00	10.90	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
33	10.90	10.80	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
34	10.80	10.70	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
35	10.70	10.60	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
36	10.60	10.50	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
37	10.50	10.40	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
38	10.40	10.30	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
39	10.30	10.20	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
40	10.20	10.10	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
41	10.10	10.00	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
42	10.00	9.90	0.0280	0.000	1.34	310.0	41540.	31000.0	415.4	0.	0.000	0.000	0.000
43	9.90	9.80	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
44	9.80	9.70	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
45	9.70	9.60	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
46	9.60	9.50	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
47	9.50	9.40	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
48	9.40	9.30	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
49	9.30	9.20	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
50	9.20	9.10	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
51	9.10	9.00	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
52	9.00	8.90	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
53	8.90	8.80	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
54	8.80	8.70	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
55	8.70	8.60	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000

56	8.60	8.50	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
57	8.50	8.40	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
58	8.40	8.30	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
59	8.30	8.20	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
60	8.20	8.10	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
61	8.10	8.00	0.0280	0.000	2.29	387.0	88623.	38700.0	886.2	0.	0.000	0.000	0.000
62	8.00	7.90	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
63	7.90	7.80	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
64	7.80	7.70	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
65	7.70	7.60	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
66	7.60	7.50	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
67	7.50	7.40	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
68	7.40	7.30	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
69	7.30	7.20	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
70	7.20	7.10	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
71	7.10	7.00	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
72	7.00	6.90	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
73	6.90	6.80	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
74	6.80	6.70	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
75	6.70	6.60	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
76	6.60	6.50	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
77	6.50	6.40	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
78	6.40	6.30	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
79	6.30	6.20	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
80	6.20	6.10	0.0280	0.000	2.92	304.0	88768.	30400.0	887.7	0.	0.000	0.000	0.000
81	6.10	6.00	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
82	6.00	5.90	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
83	5.90	5.80	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
84	5.80	5.70	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
85	5.70	5.60	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
86	5.60	5.50	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
87	5.50	5.40	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
88	5.40	5.30	0.0280	0.000	5.53	342.0	189126.	34200.0	1891.3	0.	0.000	0.000	0.000
89	5.30	5.20	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
90	5.20	5.10	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
91	5.10	5.00	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
92	5.00	4.90	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
93	4.90	4.80	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
94	4.80	4.70	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
95	4.70	4.60	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
96	4.60	4.50	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
97	4.50	4.40	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
98	4.40	4.30	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
99	4.30	4.20	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
100	4.20	4.10	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
101	4.10	4.00	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
102	4.00	3.90	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
103	3.90	3.80	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
104	3.80	3.70	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
105	3.70	3.60	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000

106	3.60	3.50	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
107	3.50	3.40	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
108	3.40	3.30	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
109	3.30	3.20	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
110	3.20	3.10	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
111	3.10	3.00	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
112	3.00	2.90	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
113	2.90	2.80	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
114	2.80	2.70	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
115	2.70	2.60	0.0280	0.000	2.85	347.0	98895.	34700.0	988.9	0.	0.000	0.000	0.000
116	2.60	2.50	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
117	2.50	2.40	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
118	2.40	2.30	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
119	2.30	2.20	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
120	2.20	2.10	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
121	2.10	2.00	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
122	2.00	1.90	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
123	1.90	1.80	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
124	1.80	1.70	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
125	1.70	1.60	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
126	1.60	1.50	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
127	1.50	1.40	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
128	1.40	1.30	0.0280	0.000	3.56	360.0	128160.	36000.0	1281.6	0.	0.000	0.000	0.000
129	1.30	1.20	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
130	1.20	1.10	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
131	1.10	1.00	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
132	1.00	0.90	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
133	0.90	0.80	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
134	0.80	0.70	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
135	0.70	0.60	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
136	0.60	0.50	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
137	0.50	0.40	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
138	0.40	0.30	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
139	0.30	0.20	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
140	0.20	0.10	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000
141	0.10	0.00	0.0280	0.000	4.71	313.0	147423.	31300.0	1474.2	0.	0.000	0.000	0.000

FINAL REPORT Lake Concordia South
REACH NO. 1 Lake Concordia South

LA-QUAL calibration for Lake Concordia Winter Projection

REACH INPUTS

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
1	HDWIR	0.02800	19.70	0.00	0.00	0.00	5.50	8.33	0.00	8.33	0.00	1.14	0.11	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCIV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
	km	km	m³/s	m/s	days	m	m	m³	m²	m²	m³	m/s	m²/s	m/s	m/s
1	2.40	2.30	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
2	2.30	2.20	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
3	2.20	2.10	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
4	2.10	2.00	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
5	2.00	1.90	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
6	1.90	1.80	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
7	1.80	1.70	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
8	1.70	1.60	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
9	1.60	1.50	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
10	1.50	1.40	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
11	1.40	1.30	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
12	1.30	1.20	0.02800	0.0	0.00003	33.34	2.85	283.00	80655.00	28300.00	806.55	0.00	0.000	0.000	0.000
TOT						400.07			967860.00		339600.00				
AVG						0.0000			2.85	283.00		806.55			
CUM						400.07									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O.	REAER	BOD#1 RATE	BOD#1 DECAY	ABOD#1 SETT	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NOM DECAY	NOM SETT
	mg/L	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	*	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
1	2.300	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
2	2.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
3	2.100	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
4	2.000	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
5	1.900	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
6	1.800	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
7	1.700	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
8	1.600	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
9	1.500	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
10	1.400	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
11	1.300	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
12	1.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00
Avg 20 DEG C RATE			0.28	0.09	0.00	0.00	0.00	0.00	1.89			0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I		DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
				CM-II															
1	2.300	19.70	0.00	0.00	0.00	6.67	13.21	0.00	13.21	0.00	1.24	0.25	0.00	1.50	0.00	49.00	0.00	0.	0.00
2	2.200	19.70	0.00	0.00	0.00	6.37	14.45	0.00	14.45	0.00	1.31	0.30	0.00	1.61	0.00	49.00	0.00	0.	0.00
3	2.100	19.70	0.00	0.00	0.00	6.23	14.76	0.00	14.76	0.00	1.35	0.32	0.00	1.67	0.00	49.00	0.00	0.	0.00
4	2.000	19.70	0.00	0.00	0.00	6.18	14.84	0.00	14.84	0.00	1.37	0.33	0.00	1.70	0.00	49.00	0.00	0.	0.00
5	1.900	19.70	0.00	0.00	0.00	6.17	14.86	0.00	14.86	0.00	1.38	0.34	0.00	1.72	0.00	49.00	0.00	0.	0.00
6	1.800	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
7	1.700	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
8	1.600	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
9	1.500	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
10	1.400	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
11	1.300	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
12	1.200	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00

FINAL REPORT
REACH NO. 2 Lake Concordia South

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW deg C	TEMP ppt	CM-I		CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
				CM-I	CM-II													
13	UPR RCH	0.02800	19.70	0.00	0.00	0.00	6.16	14.86	0.00	14.86	0.00	1.40	0.34	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m³/s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO			
																km	km	m/s
13	1.20	1.10	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
14	1.10	1.00	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
15	1.00	0.90	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
16	0.90	0.80	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
17	0.80	0.70	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
18	0.70	0.60	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
19	0.60	0.50	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
20	0.50	0.40	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
21	0.40	0.30	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
22	0.30	0.20	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
23	0.20	0.10	0.02800	0.0	0.00002	49.22	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000			
TOT						541.40			1309747.88	317900.00								
Avg						0.0000			4.12	289.00				1190.68				
Cum						941.47												

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
13	1.100	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
14	1.000	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
15	0.900	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
16	0.800	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
17	0.700	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
18	0.600	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
19	0.500	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
20	0.400	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
21	0.300	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
22	0.200	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
23	0.100	9.15	0.19	0.09	0.00	0.00	0.00	0.00	0.00	2.06	2.06	2.06	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
Avg	20	deg C	Rate	0.19	0.09	0.00	0.00	0.00	0.00	2.10			0.02	0.00	0.09	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
13	1.100	19.70	0.00	0.00	0.00	5.65	14.89	0.00	14.89	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
14	1.000	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
15	0.900	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
16	0.800	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
17	0.700	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
18	0.600	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
19	0.500	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
20	0.400	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
21	0.300	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
22	0.200	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
23	0.100	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia South
REACH NO. 10 Lake Concorida Junct

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM

NO.		deg C	ppt		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	μg/L	#/100mL
142	UPR RCH	0.02800	19.70	0.00	0.00	0.00	5.60	14.90	0.00	14.90	0.00	1.38	0.34	0.00	0.00
142	TRIB	0.02800	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPNSN m²/s	MEAN VELO m/s
142	0.10	0.00	0.05600	0.0	0.00005	24.61	4.12	289.00	119067.99	28900.00	1190.68	0.00	0.000	0.000	0.000
TOT						24.61			119067.99	28900.00					
AVG					0.0000		4.12	289.00			1190.68				
CUM						966.08									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST mg/L	SAT D.O. 1/d	REAER RATE 1/d	BOD#1 DECAY 1/d	BOD#1#1 SETT 1/d	ABOD#1 DECAY 1/d	BOD#2 DECAY 1/d	BOD#2#2 SETT 1/d	ABOD#2 DECAY 1/d	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/d	ORGN SETT 1/d	NH3 DECAY 1/d	NH3 SRCE *	DENIT RATE 1/d	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/d	NOM SETT 1/d		
142	0.000	9.15	0.19	0.09	0.00	0.00	0.00	0.00	2.04	2.04	2.04	2.04	0.02	0.00	0.08	0.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00	
Avg	20	DEG C RATE	0.19	0.09	0.00	0.00	0.00	0.00	2.08				0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST mg/L	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m³	COLI #/100mL	NOM
142	0.000	19.70	0.00	0.00	0.00	5.58	14.95	0.00	14.95	0.00	1.35	0.34	0.00	1.69	0.00	49.00	0.00	0.	0.00

STREAM SUMMARY
Lake Concordia South

LA-QUAL calibration for Lake Concordia
Winter Projection

TRAVEL TIME = 966.08 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW = 0.02800 TO 0.05600 m³/s
DISPERSION = 0.0000 TO 0.0000 m²/s
VELOCITY = 0.00002 TO 0.00005 m/s

DEPTH = 2.85 TO 4.12 m
 WIDTH = 283.00 TO 289.00 m

 BOD DECAY = 0.09 TO 0.09 per day
 NH3 DECAY = 0.08 TO 0.08 per day
 SOD = 1.85 TO 2.06 g/m²/d
 NH3 SOURCE = 0.00 TO 0.00 g/m²/d
 REAERATION = 0.19 TO 0.28 per day
 BOD SETTLING = 0.00 TO 0.00 per day
 ORG-N DECAY = 0.02 TO 0.02 per day
 ORG-N SETTLING = 0.00 TO 0.00 per day

 TEMPERATURE = 19.70 TO 19.70 deg C
 DISSOLVED OXYGEN = 5.58 TO 6.67 mg/L

FINAL REPORT Lake Concordia North
 REACH NO. 3 Lake Concordia North

LA-QUAL calibration for Lake Concordia
 Winter Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1	BOD#2	EBO#1	EBO#2	ORGN	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
								mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL	NOM	
24	HDWIR	0.02800	19.70	0.00	0.00	0.00	5.50	8.33	0.00	8.33	0.00	1.14	0.11	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW	PCT EFF	ADVCIV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
	km	km	m ³ /s		m/s	days	m	m	m ³	m ²	m ²	m ³	m/s	m ² /s	m/s
24	11.80	11.70	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
25	11.70	11.60	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
26	11.60	11.50	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
27	11.50	11.40	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
28	11.40	11.30	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
29	11.30	11.20	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
30	11.20	11.10	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
31	11.10	11.00	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
32	11.00	10.90	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
33	10.90	10.80	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
34	10.80	10.70	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
35	10.70	10.60	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
36	10.60	10.50	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
37	10.50	10.40	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
38	10.40	10.30	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
39	10.30	10.20	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000

40	10.20	10.10	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
41	10.10	10.00	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000
42	10.00	9.90	0.02800	0.0	0.00007	17.17	1.34	310.00	41540.00	31000.00	415.40	0.00	0.000	0.000	0.000

TOT					326.25		789260.06	589000.00							
AVG					0.0001		1.34	310.00			415.40				
CUM					326.25										

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NOM DECAY 1/da	NOM SETT 1/da
24	11.700	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
25	11.600	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
26	11.500	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
27	11.400	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
28	11.300	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
29	11.200	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
30	11.100	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
31	11.000	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
32	10.900	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
33	10.800	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
34	10.700	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
35	10.600	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
36	10.500	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
37	10.400	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
38	10.300	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
39	10.200	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
40	10.100	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
41	10.000	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
42	9.900	9.15	0.59	0.09	0.00	0.00	0.00	0.00	0.00	1.63	1.63	1.63	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE	0.60	0.09	0.00	0.00	0.00	0.00	1.66			0.02	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NOM
24	11.700	19.70	0.00	0.00	0.00	7.07	12.44	0.00	12.44	0.00	1.21	0.22	0.00	1.42	0.00	49.00	0.00	0.	0.00
25	11.600	19.70	0.00	0.00	0.00	6.96	14.07	0.00	14.07	0.00	1.26	0.27	0.00	1.52	0.00	49.00	0.00	0.	0.00
26	11.500	19.70	0.00	0.00	0.00	6.85	14.72	0.00	14.72	0.00	1.29	0.29	0.00	1.59	0.00	49.00	0.00	0.	0.00
27	11.400	19.70	0.00	0.00	0.00	6.80	14.98	0.00	14.98	0.00	1.32	0.31	0.00	1.63	0.00	49.00	0.00	0.	0.00
28	11.300	19.70	0.00	0.00	0.00	6.77	15.08	0.00	15.08	0.00	1.34	0.32	0.00	1.66	0.00	49.00	0.00	0.	0.00

29	11.200	19.70	0.00	0.00	0.00	6.76	15.12	0.00	15.12	0.00	1.36	0.33	0.00	1.68	0.00	49.00	0.00	0.	0.00
30	11.100	19.70	0.00	0.00	0.00	6.76	15.13	0.00	15.13	0.00	1.37	0.33	0.00	1.70	0.00	49.00	0.00	0.	0.00
31	11.000	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.38	0.33	0.00	1.71	0.00	49.00	0.00	0.	0.00
32	10.900	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.38	0.33	0.00	1.72	0.00	49.00	0.00	0.	0.00
33	10.800	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.39	0.34	0.00	1.72	0.00	49.00	0.00	0.	0.00
34	10.700	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
35	10.600	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
36	10.500	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
37	10.400	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
38	10.300	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
39	10.200	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
40	10.100	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
41	10.000	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
42	9.900	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 4 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
43	UPR RCH	0.02800	19.70	0.00	0.00	0.00	6.75	15.14	0.00	15.14	0.00	1.40	0.34	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s		
43	9.90	9.80	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
44	9.80	9.70	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
45	9.70	9.60	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
46	9.60	9.50	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
47	9.50	9.40	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
48	9.40	9.30	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
49	9.30	9.20	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
50	9.20	9.10	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
51	9.10	9.00	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
52	9.00	8.90	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
53	8.90	8.80	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
54	8.80	8.70	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
55	8.70	8.60	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
56	8.60	8.50	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
57	8.50	8.40	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	
58	8.40	8.30	0.02800	0.0	0.00003		36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000	

59	8.30	8.20	0.02800	0.0	0.00003	36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
60	8.20	8.10	0.02800	0.0	0.00003	36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
61	8.10	8.00	0.02800	0.0	0.00003	36.63	2.29	387.00	88623.00	38700.00	886.23	0.00	0.000	0.000	0.000
TOT						696.03			1683837.00	735300.00					
AVG					0.0000		2.29	387.00			886.23				
CUM						1022.28									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NOM DECAY 1/da	NOM SETT 1/da
43	9.800	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
44	9.700	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
45	9.600	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
46	9.500	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
47	9.400	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
48	9.300	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
49	9.200	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
50	9.100	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
51	9.000	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
52	8.900	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
53	8.800	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
54	8.700	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
55	8.600	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
56	8.500	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
57	8.400	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
58	8.300	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
59	8.200	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
60	8.100	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
61	8.000	9.15	0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.76	1.76	1.76	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
Avg 20 DEG C RATE			0.35	0.09	0.00	0.00	0.00	0.00	0.00	1.79			0.02	0.00	0.09	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NOM
43	9.800	19.70	0.00	0.00	0.00	6.38	15.08	0.00	15.08	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
44	9.700	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
45	9.600	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
46	9.500	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
47	9.400	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00

48	9.300	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
49	9.200	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
50	9.100	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
51	9.000	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
52	8.900	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
53	8.800	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
54	8.700	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
55	8.600	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
56	8.500	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
57	8.400	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
58	8.300	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
59	8.200	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
60	8.100	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
61	8.000	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 5 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
62	UPR RCH	0.02800	19.70	0.00	0.00	0.00	6.36	15.07	0.00	15.07	0.00	1.40	0.34	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
62	8.00	7.90	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
63	7.90	7.80	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
64	7.80	7.70	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
65	7.70	7.60	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
66	7.60	7.50	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
67	7.50	7.40	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
68	7.40	7.30	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
69	7.30	7.20	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
70	7.20	7.10	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
71	7.10	7.00	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
72	7.00	6.90	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
73	6.90	6.80	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
74	6.80	6.70	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
75	6.70	6.60	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
76	6.60	6.50	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
77	6.50	6.40	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000

78	6.40	6.30	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
79	6.30	6.20	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
80	6.20	6.10	0.02800	0.0	0.00003	36.69	2.92	304.00	88768.01	30400.00	887.68	0.00	0.000	0.000	0.000
TOT						697.17			1686592.12	577600.00					
AVG					0.0000		2.92	304.00			887.68				
CUM						1719.45									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NOM DECAY 1/da	NOM SETT 1/da
62	7.900	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
63	7.800	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
64	7.700	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
65	7.600	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
66	7.500	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
67	7.400	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
68	7.300	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
69	7.200	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
70	7.100	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
71	7.000	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
72	6.900	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
73	6.800	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
74	6.700	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
75	6.600	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
76	6.500	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
77	6.400	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
78	6.300	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
79	6.200	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
80	6.100	9.15	0.27	0.09	0.00	0.00	0.00	0.00	0.00	1.84	1.84	1.84	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
Avg 20 DEG C RATE			0.27	0.09	0.00	0.00	0.00	0.00	1.88				0.02	0.00	0.09	0.00	0.00	0.00			0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NOM
62	7.900	19.70	0.00	0.00	0.00	6.12	15.05	0.00	15.05	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
63	7.800	19.70	0.00	0.00	0.00	6.10	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
64	7.700	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
65	7.600	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
66	7.500	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00

67	7.400	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
68	7.300	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
69	7.200	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
70	7.100	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
71	7.000	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
72	6.900	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
73	6.800	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
74	6.700	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
75	6.600	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
76	6.500	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
77	6.400	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
78	6.300	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
79	6.200	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00
80	6.100	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	1.75	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 6 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
81	UPR RCH	0.02800	19.70	0.00	0.00	0.00	6.09	15.04	0.00	15.04	0.00	1.40	0.34	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCIV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s	
81	6.10	6.00	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
82	6.00	5.90	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
83	5.90	5.80	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
84	5.80	5.70	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
85	5.70	5.60	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
86	5.60	5.50	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
87	5.50	5.40	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
88	5.40	5.30	0.02800	0.0	0.00001	78.18	5.53	342.00	189126.02	34200.00	1891.26	0.00	0.000	0.000	0.000	
TOT						625.42			1513008.12	273600.00						
Avg						0.0000			5.53	342.00			1891.26			
CUM						2344.86										

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM	ENDING	SAT	REAER	BOD#1	BOD#1	ABOD#1	BOD#2	BOD#2	ABOD#2	BKGD	FULL	CORR	ORGN	ORGN	NH3	NH3	DENIT	PO4	ALG	MAC	COLI	NCM	NCM
NO.	DIST	D.O.		RATE	DECAY	SETT	DECAY	DECAY	SETT	SOD	SOD	SOD	DECAY	SETT	DECAY	SRCE	RATE	SRCE	PROD	PROD	DECAY	DECAY	SETT
		mg/L		1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	*	1/da	1/da	*	**	**	1/da	1/da	1/da
81	6.000	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
82	5.900	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
83	5.800	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
84	5.700	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
85	5.600	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
86	5.500	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
87	5.400	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
88	5.300	9.15	0.14	0.09	0.00	0.00	0.00	0.00	2.30	2.30	2.30	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
Avg	20	DEG C RATE		0.14	0.09	0.00	0.00	0.00	2.34			0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM	ENDING	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	TOIN	PHOS	CHL A	MACRO	COLI	NCM
NO.	DIST	deg C	PPT			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	g/m ³	#/100mL	
81	6.000	19.70	0.00	0.00	0.00	5.08	14.86	0.00	14.86	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
82	5.900	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
83	5.800	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
84	5.700	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
85	5.600	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
86	5.500	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
87	5.400	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00
88	5.300	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	1.75	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 7 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM
NO.			deg C	PPT			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL	
89	UPR RCH	0.02800	19.70	0.00	0.00	0.00	5.01	14.83	0.00	14.83	0.00	1.40	0.35	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM	BEGIN	ENDING	FLOW	PCT	ADVCTV	TRAVEL	DEPTH	WIDTH	VOLUME	SURFACE	X-SECT	TIDAL	TIDAL	DISPRSN	MEAN
NO.	DIST	DIST	m ³ /s	EFF	VELO	TIME	m	m	m ³	AREA	AREA	PRISM	VELO	m ² /s	VELO
	km	km			m/s	days				m ²	m ²	m ³	m/s	m ² /s	m/s

89	5.30	5.20	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
90	5.20	5.10	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
91	5.10	5.00	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
92	5.00	4.90	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
93	4.90	4.80	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
94	4.80	4.70	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
95	4.70	4.60	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
96	4.60	4.50	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
97	4.50	4.40	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
98	4.40	4.30	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
99	4.30	4.20	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
100	4.20	4.10	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
101	4.10	4.00	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
102	4.00	3.90	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
103	3.90	3.80	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
104	3.80	3.70	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
105	3.70	3.60	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
106	3.60	3.50	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
107	3.50	3.40	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
108	3.40	3.30	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
109	3.30	3.20	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
110	3.20	3.10	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
111	3.10	3.00	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
112	3.00	2.90	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
113	2.90	2.80	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
114	2.80	2.70	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
115	2.70	2.60	0.02800	0.0	0.00003	40.88	2.85	347.00	98894.99	34700.00	988.95	0.00	0.000	0.000	0.000	
TOT						1103.74				2670164.75	936900.00					
AVG						0.0000				2.85	347.00					
CUM						3448.60						988.95				

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD *	FULL *	CORR *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 SRCE *	NH3 SRCE 1/da	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da
89	5.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
90	5.100	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
91	5.000	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
92	4.900	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
93	4.800	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
94	4.700	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
95	4.600	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
96	4.500	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
97	4.400	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
98	4.300	9.15	0.28	0.09	0.00	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00

99	4.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
100	4.100	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
101	4.000	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
102	3.900	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
103	3.800	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
104	3.700	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
105	3.600	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
106	3.500	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
107	3.400	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
108	3.300	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
109	3.200	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
110	3.100	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
111	3.000	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
112	2.900	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
113	2.800	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
114	2.700	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
115	2.600	9.15	0.28	0.09	0.00	0.00	0.00	0.00	1.85	1.85	1.85	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
AVG 20 DEG C RATE				0.28	0.09	0.00	0.00	0.00	1.89			0.02	0.00	0.09	0.00	0.00	0.00				0.00	0.00	0.00

* g/m²/d ** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TON mg/L	PHOS mg/L	CHL A μg/L	MACRO g/m ³	COLI #/100mL	NCM
89	5.200	19.70	0.00	0.00	0.00	6.04	14.95	0.00	14.95	0.00	1.40	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
90	5.100	19.70	0.00	0.00	0.00	6.12	14.97	0.00	14.97	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
91	5.000	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
92	4.900	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
93	4.800	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
94	4.700	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
95	4.600	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
96	4.500	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
97	4.400	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
98	4.300	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
99	4.200	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
100	4.100	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
101	4.000	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
102	3.900	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
103	3.800	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
104	3.700	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
105	3.600	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
106	3.500	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
107	3.400	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
108	3.300	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
109	3.200	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
110	3.100	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00

111	3.000	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
112	2.900	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
113	2.800	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
114	2.700	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00
115	2.600	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	1.74	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North LA-QUAL calibration for Lake Concordia
REACH NO. 8 Lake Concordia North Winter Projection

REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALIN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NOM
116	UPR RCH	0.02800	19.70	0.00	0.00	0.00	6.12	14.98	0.00	14.98	0.00	1.39	0.34	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM	ENDING	SAT	REAER	BOD#1	BOD#1	ABOD#1	BOD#2	BOD#2	ABOD#2	BKGD	FULL	CORR	ORGN	ORGN	NH3	NH3	DENIT	PO4	ALG	MAC	COLI	NCM	NCM
NO.	DIST	D.O.	RATE	DECAY	SETT	DECAY	DECAY	SETT	DECAY	SOD	SOD	SOD	DECAY	SETT	DECAY	SRCE	RATE	SRCE	PROD	PROD	DECAY	DECAY	SETT
	mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da	1/da

116	2.500	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
117	2.400	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
118	2.300	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
119	2.200	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
120	2.100	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
121	2.000	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
122	1.900	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
123	1.800	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
124	1.700	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
125	1.600	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
126	1.500	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
127	1.400	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
128	1.300	9.15	0.22	0.09	0.00	0.00	0.00	1.98	1.98	1.98	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE				0.22	0.09	0.00	0.00	0.00	2.02		0.02	0.00	0.09	0.00	0.00	0.00		0.00	0.00	0.00	

* g/m²/d

** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m ³	COLI #/100mL	NCM
116	2.500	19.70	0.00	0.00	0.00	5.83	14.94	0.00	14.94	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
117	2.400	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
118	2.300	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
119	2.200	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
120	2.100	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
121	2.000	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
122	1.900	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
123	1.800	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
124	1.700	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
125	1.600	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
126	1.500	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
127	1.400	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00
128	1.300	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	1.73	0.00	49.00	0.00	0.	0.00

FINAL REPORT Lake Concordia North
REACH NO. 9 Lake Concordia North

LA-QUAL calibration for Lake Concordia
Winter Projection

***** REACH INPUTS *****

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
129	UPR RCH	0.02800	19.70	0.00	0.00	0.00	5.81	14.93	0.00	14.93	0.00	1.39	0.34	0.00	0.00	49.00	0.00	0.00

***** HYDRAULIC PARAMETER VALUES *****

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW m ³ /s	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
	km	km	m/s	m/s	days	m	m	m ³	m ²	m ²	m ³	m/s	m ² /s	m/s	
129	1.30	1.20	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
130	1.20	1.10	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
131	1.10	1.00	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
132	1.00	0.90	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
133	0.90	0.80	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
134	0.80	0.70	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
135	0.70	0.60	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
136	0.60	0.50	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
137	0.50	0.40	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
138	0.40	0.30	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
139	0.30	0.20	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
140	0.20	0.10	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
141	0.10	0.00	0.02800	0.0	0.00002	60.94	4.71	313.00	147423.00	31300.00	1474.23	0.00	0.000	0.000	0.000
TOT						792.20			1916499.00		406900.00				
AVG					0.0000		4.71	313.00			1474.23				
CUM						4929.50									

***** BIOLOGICAL AND PHYSICAL COEFFICIENTS *****

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER	BOD#1	BOD#1	ABOD#1	BOD#2	BOD#2	ABOD#2	BKGD	FULL	CORR	ORGN	ORGN	NH3	NH3	DENIT	PO4	ALG	MAC	COLI	NCM	NCM	SETT
	1/da	1/da	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	*	1/da	1/da	*	1/da	PROD	PROD	1/da	1/da	1/da
129	1.200	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
130	1.100	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
131	1.000	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
132	0.900	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
133	0.800	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
134	0.700	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
135	0.600	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
136	0.500	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
137	0.400	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
138	0.300	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
139	0.200	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
140	0.100	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
141	0.000	9.15	0.17	0.09	0.00	0.00	0.00	0.00	0.00	2.15	2.15	2.15	0.02	0.00	0.08	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	
Avg 20 DEG C RATE			0.17	0.09	0.00	0.00	0.00	0.00	2.19				0.02	0.00	0.09	0.00	0.00	0.00			0.00	0.00	0.00	

* g/m²/d

** mg/L/day

***** WATER QUALITY CONSTITUENT VALUES *****

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I	CM-II	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOIN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NOM
129	1.200	19.70	0.00	0.00	0.00	5.34	15.00	0.00	15.00	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
130	1.100	19.70	0.00	0.00	0.00	5.29	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
131	1.000	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
132	0.900	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
133	0.800	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
134	0.700	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
135	0.600	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
136	0.500	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
137	0.400	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
138	0.300	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
139	0.200	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
140	0.100	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00
141	0.000	19.70	0.00	0.00	0.00	5.28	15.02	0.00	15.02	0.00	1.39	0.35	0.00	1.74	0.00	49.00	0.00	0.	0.00

STREAM SUMMARY
Lake Concordia North

LA-QUAL calibration for Lake Concordia
Winter Projection

TRAVEL TIME = 4929.50 DAYS

MAXIMUM EFFLUENT = 0.00 PERCENT

FLOW = 0.02800 TO 0.02800 m³/s

DISPERSION = 0.0000 TO 0.0000 m²/s

VELOCITY = 0.00001 TO 0.00007 m/s

DEPTH = 1.34 TO 5.53 m

WIDTH = 304.00 TO 387.00 m

BOD DECAY = 0.09 TO 0.09 per day

NH3 DECAY = 0.08 TO 0.08 per day

SOD = 1.63 TO 2.30 g/m²/d

NH3 SOURCE = 0.00 TO 0.00 g/m²/d

REAERATION = 0.14 TO 0.59 per day

BOD SETTLING = 0.00 TO 0.00 per day

ORG-N DECAY = 0.02 TO 0.02 per day

ORG-N SETTLING = 0.00 TO 0.00 per day

TEMPERATURE = 19.70 TO 19.70 deg C

DISSOLVED OXYGEN = 5.01 TO 7.07 mg/L

LA-QUAL calibration for Lake Concordia
Winter Projection

INPUT/OUTPUT LOADING SUMMARY

	FLOW m³/s	DO kg/d	BOD#1 kg/d	BOD#2 kg/d	ORG-N kg/d	NH3-N kg/d	NO3-N kg/d	PHOS kg/d	CHL A	NCM
HEADWATER FLOW	0.056	26.6	40.3	0.0	5.5	0.5	0.0	0.0	0.0	0.0
INCREMENTAL INFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCREMENTAL OUTFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTELOADS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WITHDRAWLS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FLOW THRU LOWER BNDRY	-0.056	-27.0	-72.3	0.0	-6.5	-1.6	0.0	0.0	0.0	0.0
DISPERSION THRU LOWER BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DISPERSION THRU HDWTR BNDRY		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NON-POINT INPUT		0.0	19038.0	0.0	397.0					0.0
NATURAL REAERATION		11548.0								
DAM REAERATION		0.0								
BACKGROUND SOD		-8828.4								
BOD#1 DECAY		-19006.0	-19006.0							
BOD#1 SETTLING		0.0	0.0							
ANAEROBIC BOD#1 DECAY			0.0							
BOD#2 DECAY		0.0		0.0						
BOD#2 SETTLING		0.0		0.0						
ANAEROBIC BOD#2 DECAY				0.0						
ORG-N DECAY		0.0			-396.0	396.0				
ORG-N SETTLING					0.0	0.0				
NH3 DECAY		-1725.4				-398.5	398.5			
BACKGROUND NH3 SOURCE						0.0				
OTHER DENITRIFICATION							0.0			
PHOSPHORUS SOURCE								0.0		
ALGAE PHOTOSYNTHESIS		17996.7				0.0	-1730.4	0.0	0.0	
ALGAE RESPIRATION		0.0				0.0		0.0	0.0	
ALGAE SETTLING		0.0							0.0	
MACRO PHOTOSYNTHESIS		0.0				0.0	0.0	0.0		
NCM DECAY		0.0							0.0	
NCM SETTLING		0.0							0.0	
TOTAL INPUTS	0.056	29571.3	19078.3	0.0	402.5	396.5	398.5	0.0	0.0	0.0
TOTAL OUTPUTS	-0.056	-29586.7	-19078.3	0.0	-402.5	-400.1	-1730.4	0.0	0.0	0.0
NET CONVERGENCE ERROR	0.000	-15.5	0.0	0.0	0.0	-3.6	-1332.0	0.0	0.0	0.0

.....EXECUTION COMPLETED

APPENDIX N

Input and Output for TMDL Calculation Program

SUMMARY OF TMDL CALCULATIONS FOR DO TMDLs IN RED AND SABINE BASINS

Total maximum daily load (TMDL) is sum of these six components:

- Wasteload allocations (WLA) for point sources
- Margin of safety (MOS) for point sources
- Future growth (FG) for point sources
- Load allocations (LA) for nonpoint sources
- Margin of safety (MOS) for nonpoint sources
- Future growth (FG) for nonpoint sources

Point sources:

- For this analysis, all effluent flows are set to 125% of design or expected flow (for both simulated point sources and minor point sources)
- Each load calculated as: $\text{Load, kg/day} = (\text{Flow, m}^3/\text{sec}) \times (\text{Concentration, mg/L}) \times 86.4$
- Oxygen demand from ammonia and organic nitrogen = nitrogen load $\times 4.33$
- Total point source load = sum of point source loads simulated in model + sum of minor point source loads calculated in spreadsheet
- MOS for all point sources = $10\% \times \text{total point source load}$
- FG for all point sources = $10\% \times \text{total point source load}$
- WLA for each simulated point source = $80\% \times \text{simulated load for that point source}$
- WLA for all minor point sources = $80\% \times \text{total load for minor point sources}$

Nonpoint sources:

- This includes headwaters, tributaries, incremental inflow, sediment oxygen demand, benthic ammonia loads, mass loads of CBOD_u, and mass loads of organic nitrogen.
- Each load for headwaters, tributaries, and incremental inflow is calculated as:
 $\text{Load, kg/day} = (\text{Flow, m}^3/\text{sec}) \times (\text{Concentration, mg/L}) \times 86.4$
- For this analysis, the sediment oxygen demand (SOD) is corrected for temperature by multiplying the model input values times $1.065^{\wedge}(\text{Temperature, } ^\circ\text{C} - 20)$
- Loads from SOD and benthic ammonia are calculated as:
 $\text{Load, kg/day} = (\text{rate per unit area, g/m}^2/\text{day}) \times (\text{stream bottom area, m}^2) \times 0.001$
- Oxygen demand from ammonia and organic nitrogen = nitrogen load $\times 4.33$
- MOS for nonpoint sources = $10\% \times \text{sum of all nonpoint source loads}$
- FG for nonpoint sources = $10\% \times \text{sum of all nonpoint source loads}$
- LA for nonpoint sources = $80\% \times \text{sum of all nonpoint source loads}$

Input for TMDL program for summer

"101604"	Subsegment number for this TMDL
"Lake Concordia"	Subsegment name (max 50 chars)
"Con_sum.out"	Name of LA-QUAL output file
10	Total number of reaches in the model
"101604"	Subsegment that reach 1 is in
"101604"	Subsegment that reach 2 is in
"101604"	Subsegment that reach 3 is in
"101604"	Subsegment that reach 4 is in
"101604"	Subsegment that reach 5 is in
"101604"	Subsegment that reach 6 is in
"101604"	Subsegment that reach 7 is in
"101604"	Subsegment that reach 8 is in
"101604"	Subsegment that reach 9 is in
"101604"	Subsegment that reach 10 is in
10	point source margin of safety (%)
10	point source Future Gorwth (%)
10	NPS margin of safety (%)
10	NPS Future Growth (%)
4.33	Ratio of oxygen demand to nitrogen
0	Number of minor point sources
NO	Nutrient TMDL needed?
-999	Natural ratio of total N to total P

Input for TMDL program for winter

"101604"	Subsegment number for this TMDL
"Lake Concordia"	Subsegment name (max 50 chars)
"Con_win.out"	Name of LA-QUAL output file
10	Total number of reaches in the model
"101604"	Subsegment that reach 1 is in
"101604"	Subsegment that reach 2 is in
"101604"	Subsegment that reach 3 is in
"101604"	Subsegment that reach 4 is in
"101604"	Subsegment that reach 5 is in
"101604"	Subsegment that reach 6 is in
"101604"	Subsegment that reach 7 is in
"101604"	Subsegment that reach 8 is in
"101604"	Subsegment that reach 9 is in
"101604"	Subsegment that reach 10 is in
10	point source margin of safety (%)
10	point source Future Gorwth (%)
10	NPS margin of safety (%)
10	NPS Future Growth (%)
4.33	Ratio of oxygen demand to nitrogen
0	Number of minor point sources
NO	Nutrient TMDL needed?
-999	Natural ratio of total N to total P

TMDL Program output file for Summer

TMDL CALCULATIONS FOR SUBSEGMENT: 101604 Lake Concordia
FTN ASSOCIATES, LTD.
Program:TMDL20m7

INFO FOR INPUT FILE WITH USER SPECIFIED DATA AND OPTIONS:
File name:tmdl_sum.inp

INFO FOR LA-QUAL OUTPUT FILE:
File name:Con_sum.out
Date/Time:Output produced at 14:46 on 05/24/2007
LA-QUAL Version 8.00

LIST OF ALL REACHES IN IMPAIRED SUBSEGMENT IN LA-QUAL OUTPUT FILE

Reach 1	(Elements 1 - 12)	is in subsegment	1	Lake Concordia
Reach 2	(Elements 13 - 23)	is in subsegment	2	Lake Concordia
Reach 3	(Elements 24 - 42)	is in subsegment	3	Lake Concordia
Reach 4	(Elements 43 - 61)	is in subsegment	4	Lake Concordia
Reach 5	(Elements 62 - 80)	is in subsegment	5	Lake Concordia
Reach 6	(Elements 81 - 88)	is in subsegment	6	Lake Concordia
Reach 7	(Elements 89 - 115)	is in subsegment	7	Lake Concordia
Reach 8	(Elements 116 - 128)	is in subsegment	8	Lake Concordia
Reach 9	(Elements 129 - 141)	is in subsegment	9	Lake Concordia
Reach 10	(Elements 142 - 142)	is in subsegment	10	Lake Concordia

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CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, TRIBUTARIES, AND INCREMENTAL INFLOW):

Equation used: (Load, kg/day) = (Inflow rate, m³/sec) * (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m³ * 86400 sec/day

Values from LA-QUAL output:

Element number	Inflow rate (m ³ /sec)	CBOD _u conc. (mg/L)	Organic N conc. (mg/L)	Ammonia N conc. (mg/L)	NO ₂ +NO ₃ N conc. (mg/L)	Name of inflow
1	0.00300	8.08	1.11	0.11	0.00	Lake Concordia South
24	0.00300	8.08	1.11	0.11	0.00	Lake Concordia North

Incremental flow data

Calculated values:

Element number	CBOD _u load (kg/day)	Organic N load (kg/day)	Ammonia N load (kg/day)	NO ₂ +NO ₃ N load (kg/day)
1	2.09	0.29	0.03	0.00
24	2.09	0.29	0.03	0.00

Incremental inflow loads

Subsegment totals:	4.18	0.58	0.06	0.00
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TMDL Program output file for Summer

CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TYPE 19:

Values from LA-QUAL output:

Reach number	CBOD _u mass load (kg/day)	Organic N mass load (kg/day)
1	1239.00	26.00
2	1680.00	35.00
3	1029.00	21.00
4	2184.00	45.00
5	2184.00	45.00
6	1932.00	41.00
7	3444.00	72.00
8	2142.00	45.00
9	2478.00	51.00
10	153.00	3.00
Subsegment totals	18465.00	384.00

CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:

SOD temperature correction factor used in LA-QUAL model: 1.065 (default)

Equations used: SOD temp. corrected = (SOD at 20 C) * 1.065^(Water temp - 20 C)

SOD load = (SOD temp. corrected, g/m²/day) * (Surface area, m²) * 1.0E-3 kg/g

Benthic NH₃-N load = (Benthic ammonia N, g/m²/day) * (Surface area, m²) * 1.0E-3 kg/g

Reach number	Element number	Values from LA-QUAL output:				Calculated values:		
		Water temp. (deg C)	Surface area (m ²)	SOD at 20 C (g/m ² /day)	Benthic ammonia N (g/m ² /day)	SOD temp. corrected (g/m ² /day)	SOD load (kg/day)	Benthic NH ₃ -N load (kg/day)
1	1	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	2	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	3	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	4	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	5	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	6	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	7	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	8	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	9	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	10	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	11	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
1	12	31.50	28300.0	1.830	0.00	3.775	106.85	0.00
2	13	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	14	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	15	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	16	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	17	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	18	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	19	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	20	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	21	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	22	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
2	23	31.50	28900.0	2.040	0.00	4.209	121.63	0.00
3	24	31.50	31000.0	1.610	0.00	3.322	102.97	0.00
3	25	31.50	31000.0	1.610	0.00	3.322	102.97	0.00
3	26	31.50	31000.0	1.610	0.00	3.322	102.97	0.00
3	27	31.50	31000.0	1.610	0.00	3.322	102.97	0.00
3	28	31.50	31000.0	1.610	0.00	3.322	102.97	0.00
3	29	31.50	31000.0	1.610	0.00	3.322	102.97	0.00
3	30	31.50	31000.0	1.610	0.00	3.322	102.97	0.00

TMDL Program output file for Summer

TMDL Program output file for Summer

7	99	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	100	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	101	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	102	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	103	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	104	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	105	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	106	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	107	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	108	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	109	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	110	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	111	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	112	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	113	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	114	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
7	115	31.50	34700.0	1.830	0.00	3.775	131.01	0.00
8	116	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	117	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	118	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	119	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	120	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	121	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	122	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	123	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	124	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	125	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	126	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	127	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
8	128	31.50	36000.0	1.960	0.00	4.044	145.57	0.00
9	129	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	130	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	131	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	132	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	133	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	134	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	135	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	136	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	137	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	138	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	139	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	140	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
9	141	31.50	31300.0	2.130	0.00	4.394	137.54	0.00
10	142	31.50	28900.0	2.020	0.00	4.167	120.44	0.00

----- -----
Subsegment totals: 18004.45 0.00

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EXPLICITLY MODELED:

For this subsegment, there are no point source discharges explicitly modeled.

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NOT EXPLICITLY MODELED:

For this subsegment, there are no point source discharges not explicitly modeled.

TMDL Program output file for Summer

SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT:

Equations used: Organic N oxygen demand, kg/day = 4.3300 * Organic N load, kg/day of N
Ammonia N oxygen demand, kg/day = 4.3300 * Ammonia N load, kg/day of N
Margin of safety = 10.0% * nonpoint source load
Future Growth = 10.0% * nonpoint source load
Load Allocation = 80.0% * nonpoint source load

Values from calculations above

	Nitrogen loads (kg/day of N):				
	SOD (kg/day)	CBODu (kg/day)	Organic (kg/day)	Ammonia (kg/day)	NO ₂ +NO ₃ N (kg/day)
NPS inflows	N/A	4.18	0.58	0.06	0.00
Mass LOads (data type 19)	N/A	18465.00	384.00	N/A	N/A
SOD and Benthic	18004.45	N/A	N/A	0.00	N/A

Calculated loads of oxygen demand:

	Oxygen demand loads:				Total Oxygen demand (kg/day)
	SOD (kg/day)	CBODu (kg/day)	Organic (kg/day)	Ammonia (kg/day)	
NPS inflows	N/A	4.18	2.51	0.26	6.95
Mass LOads (data type 19)	N/A	18465.00	1662.72	N/A	20127.72
SOD and Benthic	18004.45	N/A	N/A	0.00	18004.45
Total for all NPS loads	18004.45	18469.18	1665.23	0.26	38139.12
NPS future growth (10.0%)	1800.44	1846.92	166.52	0.03	3813.91
NPS margin of safety (10.0%)	1800.44	1846.92	166.52	0.03	3813.91
NPS load allocation (80.0%)	14403.57	14775.34	1332.19	0.20	30511.30

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SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT

For this subsegment, there are no point source discharges either modeled or unmodeled in this subsegment.

TMDL Program output file for Winter

TMDL CALCULATIONS FOR SUBSEGMENT: 101604 Lake Concordia
FTN ASSOCIATES, LTD.
Program:TMDL20m7

INFO FOR INPUT FILE WITH USER SPECIFIED DATA AND OPTIONS:
File name:tmdl_win.inp

INFO FOR LA-QUAL OUTPUT FILE:
File name:Con_win.out
Date/Time:Output produced at 14:47 on 05/24/2007
LA-QUAL Version 8.00

LIST OF ALL REACHES IN IMPAIRED SUBSEGMENT IN LA-QUAL OUTPUT FILE

Reach 1	(Elements 1 - 12)	is in subsegment	1	Lake Concordia
Reach 2	(Elements 13 - 23)	is in subsegment	2	Lake Concordia
Reach 3	(Elements 24 - 42)	is in subsegment	3	Lake Concordia
Reach 4	(Elements 43 - 61)	is in subsegment	4	Lake Concordia
Reach 5	(Elements 62 - 80)	is in subsegment	5	Lake Concordia
Reach 6	(Elements 81 - 88)	is in subsegment	6	Lake Concordia
Reach 7	(Elements 89 - 115)	is in subsegment	7	Lake Concordia
Reach 8	(Elements 116 - 128)	is in subsegment	8	Lake Concordia
Reach 9	(Elements 129 - 141)	is in subsegment	9	Lake Concordia
Reach 10	(Elements 142 - 142)	is in subsegment	10	Lake Concordia

=====

CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, TRIBUTARIES, AND INCREMENTAL INFLOW):

Equation used: (Load, kg/day) = (Inflow rate, m³/sec) * (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m³ * 86400 sec/day

Values from LA-QUAL output:

Element number	Inflow rate (m ³ /sec)	CBOD _U conc. (mg/L)	Organic N conc. (mg/L)	Ammonia N conc. (mg/L)	NO ₂ +NO ₃ N conc. (mg/L)	Name of inflow
1	0.02800	8.33	1.14	0.11	0.00	Lake Concordia South
24	0.02800	8.33	1.14	0.11	0.00	Lake Concordia North

Incremental flow data

Calculated values:

Element number	CBOD _U load (kg/day)	Organic N load (kg/day)	Ammonia N load (kg/day)	NO ₂ +NO ₃ N load (kg/day)
1	20.15	2.76	0.27	0.00
24	20.15	2.76	0.27	0.00

Incremental inflow loads

Subsegment totals:	40.30	5.52	0.54	0.00
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TMDL Program output file for Winter

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CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TYPE 19:

Values from LA-QUAL output:

Reach number	CBOD _u mass load (kg/day)	Organic N mass load (kg/day)
1	1277.00	27.00
2	1732.00	36.00
3	1061.00	22.00
4	2252.00	47.00
5	2252.00	47.00
6	1992.00	42.00
7	3551.00	74.00
8	2208.00	46.00
9	2555.00	53.00
10	158.00	3.00
Subsegment totals	19038.00	397.00

=====

CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:

SOD temperature correction factor used in LA-QUAL model: 1.065 (default)

Equations used: SOD temp. corrected = (SOD at 20 C) * 1.065^(Water temp - 20 C)

SOD load = (SOD temp. corrected, g/m²/day) * (Surface area, m²) * 1.0E-3 kg/g

Benthic NH₃-N load = (Benthic ammonia N, g/m²/day) * (Surface area, m²) * 1.0E-3 kg/g

Reach number	Element number	Values from LA-QUAL output:				Calculated values:		
		Water temp. (deg C)	Surface area (m ²)	SOD at 20 C (g/m ² /day)	Benthic ammonia N (g/m ² /day)	SOD temp. corrected (g/m ² /day)	SOD load (kg/day)	Benthic NH ₃ -N load (kg/day)
1	1	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	2	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	3	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	4	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	5	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	6	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	7	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	8	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	9	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	10	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	11	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
1	12	19.70	28300.0	1.890	0.00	1.855	52.49	0.00
2	13	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	14	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	15	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	16	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	17	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	18	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	19	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	20	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	21	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	22	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
2	23	19.70	28900.0	2.100	0.00	2.061	59.55	0.00
3	24	19.70	31000.0	1.660	0.00	1.629	50.50	0.00
3	25	19.70	31000.0	1.660	0.00	1.629	50.50	0.00
3	26	19.70	31000.0	1.660	0.00	1.629	50.50	0.00
3	27	19.70	31000.0	1.660	0.00	1.629	50.50	0.00
3	28	19.70	31000.0	1.660	0.00	1.629	50.50	0.00

TMDL Program output file for Winter

TMDL Program output file for Winter

7	97	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	98	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	99	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	100	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	101	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	102	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	103	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	104	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	105	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	106	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	107	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	108	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	109	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	110	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	111	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	112	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	113	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	114	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
7	115	19.70	34700.0	1.890	0.00	1.855	64.36	0.00
8	116	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	117	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	118	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	119	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	120	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	121	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	122	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	123	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	124	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	125	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	126	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	127	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
8	128	19.70	36000.0	2.020	0.00	1.982	71.36	0.00
9	129	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	130	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	131	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	132	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	133	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	134	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	135	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	136	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	137	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	138	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	139	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	140	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
9	141	19.70	31300.0	2.190	0.00	2.149	67.26	0.00
10	142	19.70	28900.0	2.080	0.00	2.041	58.99	0.00

Subsegment totals: 8828.42 0.00

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EXPLICITLY MODELED:

For this subsegment, there are no point source discharges explicitly modeled.

=====

CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NOT EXPLICITLY MODELED:

For this subsegment, there are no point source discharges not explicitly modeled.

=====

TMDL Program output file for Winter

SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT:

Equations used: Organic N oxygen demand, kg/day = 4.3300 * Organic N load, kg/day of N
Ammonia N oxygen demand, kg/day = 4.3300 * Ammonia N load, kg/day of N
Margin of safety = 10.0% * nonpoint source load
Future Growth = 10.0% * nonpoint source load
Load Allocation = 80.0% * nonpoint source load

Values from calculations above

	Nitrogen loads (kg/day of N):			
	SOD (kg/day)	CBOD _u (kg/day)	Organic (kg/day)	Ammonia (kg/day)
NPS inflows	N/A	40.30	5.52	0.54
Mass LOads (data type 19)	N/A	19038.00	397.00	N/A
SOD and Benthic	8828.42	N/A	N/A	0.00

Calculated loads of oxygen demand:

	Oxygen demand loads:				Total Oxygen demand (kg/day)
	SOD (kg/day)	CBOD _u (kg/day)	Organic (kg/day)	Ammonia (kg/day)	
NPS inflows	N/A	40.30	23.90	2.34	66.54
Mass LOads (data type 19)	N/A	19038.00	1719.01	N/A	20757.01
SOD and Benthic	8828.42	N/A	N/A	0.00	8828.42
Total for all NPS loads	8828.42	19078.30	1742.91	2.34	29651.96
NPS future growth (10.0%)	882.84	1907.83	174.29	0.23	2965.20
NPS margin of safety (10.0%)	882.84	1907.83	174.29	0.23	2965.20
NPS load allocation (80.0%)	7062.74	15262.64	1394.33	1.88	23721.56

=====

SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT

For this subsegment, there are no point source discharges either modeled or unmodeled in this subsegment.

APPENDIX O

Source Code for TMDL Calculation Program

```

      program tmdl20m7
C**** For this program to work the echo of the input and final report must be turned on:
C   1) The echo of the input provides MAJORITY of the information for the calculations,
C   2) The Hydraulic data (needed for surface area for the SOD) is found in the final report
C   reach summary.

C   Printing:
C   This is printed in MSWord or VSlick by setting the left and right margins to 0.3 and 0.38
C   and setting the font to Courier New 9 pt normal text.

C*   This model will let you tell the program WHAT reaches to include in the TMDL program calculations
C*****Search program (part 1)*****
C This whole program is written by Richard R. Bennett on 5/2/07 for LA-QUAL version 8.0
C Every variable is used in this program

      INTEGER imp,i,a,b,c,d,e,f,g,h,j,k,l,m,n,o,q,k1
      Character*132 line,stream_id
      Character*8 target
      character*21 target2
      character*15 target3
      character*16 target3b,target4,target5,target5b,target5c,target6,t
      &target7,target8,target9,target10

C*****All arrays are entered in the order in which they occur in the program
C*****Input REAL arrays

      integer total_elem,imp_reach(1:100),reach_subseg_num(1:100),subseg
      &number,num_imp_reach,elem_number,TOTAL_ELEM_REACH(1:100)
      REAL C1B_SOD(1:100),C2_NH3SR(1:100),incr_inflow(1:100),incr_outfl
      &ow(1:100),
      &incr2_CBODu_con(1:100),incr2_Org_N_con(1:100), incr2_Amm_N_con(1:
      &100),incr2_Nitrate_con(1:100), NP_BOD(1:100),NP_ORG(1:100),

      & HDWT1_Flow(1:100)
      INTEGER HDWT1_elem(1:100),incr_reach(1:100)
      REAL HDWT2_BOD(1:100),HDWT2_ORG(1:100),HDWT2_NH3(1:100),
      & HDWT2_NO3(1:100),nps_FG_summary_org
      REAL WSTLD_Flow(1:100),Elem_end(1:100),Elem_begin(1:100)
      character NPS_wstld_name(1:100)*25,PS_Wstld_name(1:100)*20
      REAL WSTLD2_BOD(1:100),WSTLD2_ORG(1:100),WSTLD2
      &_NH3(1:100), WSTLD2_NO3(1:100)
      REAL nps_WSTLD_Flow(1:100),nps_elem_wstld(1:100)
      REAL NPS_WSTLD2_BOD(1:100),NPS_WSTLD2_ORG(1:100),NPS_WSTLD2
      &_NH3(1:100),NPS_WSTLD2_NO3(1:100)
      REAL PS_WSTLD_Flow(1:100),ps_elem_wstld(1:100)
      REAL ps_WSTLD2_BOD(1:100),ps_WSTLD2_ORG(1:100),ps_WSTLD2
      &_NH3(1:100),ps_WSTLD2_NO3(1:100)

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Integer NP_reach(1:100),elem_wstld(1:100),num,num_pt_sour
real ps_mos,ps_mos_per,nps_mos,nps_mos_per
real ps_FG,ps_FG_per,nps_FG,nps_FG_per
Real S_Area(1:1000),Temp(1:100),elem_col_int(1:1000),
&elem_col(1:1000),S_area_int(1:1000)
character source_type(1:100)*3,reach_name(1:100)*15,wstld_name(1:
&100)*20, hdwtl_name(1:100)*25,
&permit_number(1:100)*20,outfall_num(1:100)*20,comment(1:100)*40,
&comment_con(1:100)*40,nut_tmdl_need*4
Real perm_flow(1:100),CBOD5_Per(1:100), cod_perm(1:100),ammon_pe
&rm(1:100),nat_rat,ammoxy_rat
integer reach_number

C*****Character Search Strings
target = 'CNTROL04'
target2= 'THETA      BENTHAL'
target3= '$$$ DATA TYPE 8'
target3b='$$$ DATA TYPE 11'
target4= '$$$ DATA TYPE 12'
target5= '$$$ DATA TYPE 13'
target5b= '$$$ DATA TYPE 16'
target5c= '$$$ DATA TYPE 17'
target6= '$$$ DATA TYPE 19'
target7= '$$$ DATA TYPE 20'
Target8= '$$$ DATA TYPE 21'
Target9= '$$$ DATA TYPE 24'
target10= '$$$ DATA TYPE 25'

C*****Array counters
num=0
num_incr=0
num_hdwt=0
num_wstld=0
nps_num_wstld=0
ps_num_wstld=0
a=0
aa=0
b=0
b1=0
b2=0
b3=0
b4=0
cir=0
c=0
d=0
e=0
f=0
g=0
h=0
j=0

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k=0
k1=0
l=0
m=0
nps=1
ps=1
n=0
o=0
q=0
total_elem=0

Character*70 userfilename,Laqualfilename,subsegname,
&pertime,LAQUAL_version,laqualfileoutput

print*, 'Enter user input filename: '
read*,userfilename

imp=1000000

IRC=0
C*Read input file
OPEN(UNIT=12, FILE=userfilename, STATUS='OLD')
Open (unit=11, FILE='tmdl-res.txt', Status='UNKNOWN')
OPEN (UNIT=13, FILE='inter-res.txt', Status='UNKNOWN')
READ(12,*)subsegnr
READ(12,*)subsegname
read(12,*)laqualfileoutput
read(12,*)usernum
do I=1,usernum
  read(12,*)reach_subseg_num(I)
  if (reach_subseg_num(I).EQ.subsegnr) then
    IRC=IRC+1
    imp_reach(IRC)=I
    num_imp_reach=IRC
  end if
end do
read(12,*)ps_mos_per
read(12,*)ps_FG_per
read(12,*)nps_mos_per
read(12,*)nps_FG_per
READ(12,*)ammoxy_rat
read(12,*)num_pt_sour
do I=1,num_pt_sour
  read(12,*)
  read(12,*)permit_number(I)
  read(12,*)outfall_num(I)
  read(12,*)perm_flow(I)
  read(12,*)comment(I)
  read(12,*)cbod5_perm(I)
  read(12,*)COD_perm(I)

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        read(12,* ) ammon_perm(I)
        read(12,* ) comment_con(I)
    end do
    read(12,* ) nut_tmdl_need
    read(12,* ) nat_rat

    ps_mos=ps_mos_per/100.000
    ps_FG=ps_FG_per/100.000
    nps_mos=nps_mos_per/100.000
    nps_FG=nps_FG_per/100.000

    laqualfilename=laqualfileoutput
    OPEN(UNIT=10, FILE=Laqualfilename, STATUS='OLD')

1030  FORMAT(A35,3X,A25)
    DO 100 i=1,imp
    READ(10,'(A132)') line

C*****Are we at the end of the file?
    if(line(11:29).EQ.'EXECUTION COMPLETED')GO TO 900

C***** read LA-QUAL version
    if (i .EQ. 1) then
        read (line(1:32),'(A32)') LAQUAL_version
    end if

C*****when was the LA-QUAL file made and metric units
    if (line (1:6) .EQ. 'Output') then
        read(line(1:38),'(A38)') pertime
    else IF (line(1:8).EQ. target) then
1020    FORMAT (A35,3X,A10,3X,A10)

C*****Look for theta Benthal
    else IF (line(1:21).EQ. target2) then
1040    Format (A36,5X,A40)

C*****Data T8,Count number of reaches
    else IF (line (1:15) .EQ. target3) then
        Read (10,*)
        Read (10,*)
        Read (10,*)
        Read (10,*)
105     Read (10, '(A132)') stream_id
        if (stream_id(1:8).EQ. 'REACH ID') then
            num=num+1
            read(stream_id(13:15),)reach_number
            DO X=1,num_imp_reach
                if (reach_number.EQ.imp_reach(X)) then

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        read(stream_ID(23:48),'(A15)')reach_name(X)
        read(stream_ID(109:111),)elem_begin(X)
        read(stream_ID(116:118),)elem_end(X)
        total_elem=total_elem+(elem_end(X)-Elem_begin(X)+1)
        end if
        end DO
        go to 105
    end if

C*****Data T11, read temp
else IF (line (1:16).EQ. target3b) then
    READ (10,*)
    READ (10,*)
    READ (10,*)
107    READ (10,'(A132)') stream_id
    if (stream_id(1:7) .EQ. 'INITIAL') then
        read(stream_id(17:19),)reach_number
        DO X=1,num_imp_reach
            if (reach_number.EQ.imp_reach(X)) then
                q=q+1
                READ(stream_id(32:36),'(F5)')temp(q)
            end if
        end DO
        go to 107
    end if

C*****Data T12,(read COEF-1 Bckgrd SOD)
else IF (line (1:16) .EQ. target4) then
    Read (10,*)
    Read (10,*)
    Read (10,*)
    Read (10,*)
    Read (10,*)
110    Read (10, '(A132)') stream_id
    if (stream_id(1:7).EQ. 'COEFF-1') then
        read(stream_id(10:12),)reach_number
        DO X=1,num_imp_reach
            if (reach_number.EQ.imp_reach(X)) then
                a=a+1
                READ(stream_id(66:74),'(F9)')C1B_SOD(a)
            end if
        end DO

1060    FORMAT (A35,5X,A10,5X,A10)
    GO TO 110
    end if

C*****DATA T13,(read COEF NH3SR)
else IF (line (1:16) .EQ. target5) then
    Read (10,*)

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Read (10,*)
Read (10,*)
Read (10,*)
115    Read (10, '(A132)') stream_id
      if (stream_id(1:7).EQ. 'COEFF-2') then
        read(stream_id(17:19),)reach_number
          DO X=1,num_imp_reach
            if (reach_number.EQ.imp_reach(X)) then
              b=b+1
              READ(stream_id(69:78),'(F10)') C2_NH3SR (b)
            end if
          end DO

        GO TO 115
      end if

C*****Data Type (incremenatal flow data part1)
else if (line(1:16) .EQ. target5b) then
  read(10,*)
  read(10,*)
  read(10,*)
117    read(10,'(A132)')stream_id
      if (stream_id(1:6) .EQ. 'INCR-1') then
        read(stream_id(17:19),)reach_number
          write(13,*)reach_number
          write(13,*)" "
          DO X=1,num_imp_reach
            if (reach_number.EQ.imp_reach(X)) then
              num_incr=num_incr+1
              b1=b1+1
              read(stream_id(17:19),'(I3)') incr_reach(b1)
              read(stream_id(32:38),'(F7)') incr_outflow(b1)
              read(stream_id(44:50),'(F7)') incr_inflow(b1)
              write(13,*)X,reach_number,imp_reach(X)
            end if
          end DO

        go to 117
      end if

C*****Data Tyoe (incremental flow part 2)
else if (line(1:16) .EQ. target5c) then
  read(10,*)
  read(10,*)
  read(10,*)
118    read(10,'(A132)')stream_id
      if (stream_id(1:6) .EQ. 'INCR-2') then
        b2=b2+1
        b3=b3+1
        b4=b4+1

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        b5=b5+1
        read(stream_id(17:19),)reach_number
          DO X=1,num_imp_reach
            if (reach_number.EQ.imp_reach(X)) then
              read(stream_id(37:46),'(F10)') incr2_CBODu_con(X)
              read(stream_id(47:56),'(F10)') incr2_Org_N_con(X)
              read(stream_id(57:66),'(F10)') incr2_Amm_N_con(X)
              read(stream_id(67:76),'(F10)') incr2_Nitrate_con(X)
            end if
          end DO

        go to 118
      end if

C*****Data T19(reads BOD and ORG-N)
else IF (line (1:16) .EQ. target6) then
  Read (10,*)
  Read (10,*)
  READ (10,*)
120   Read (10, '(A132)') stream_id
    if (stream_id(1:8).EQ. 'NONPOINT') then
      c=c+1
      d=d+1
      read(stream_id(17:19),)reach_number
        DO X=1,num_imp_reach
          if (reach_number.EQ.imp_reach(X)) then
            read(stream_ID(17:19),'(I3)')NP_reach(X)
            READ(stream_id(28:36),'(F10)')NP_BOD(X)
            READ(stream_id(38:46),'(F8)')NP_ORG(X)
          end if
        end DO

1080   Format (A35,5X,A10,2X,A10,2X,A10)
  GO TO 120
end if

C*****DATA T20(reads flow for HDWTR-1)
else IF (line (1:16) .EQ. target7) then
  Read (10,*)
  READ (10,*)
  Read (10,*)
  REad (10,*)
123   X=1
124   Read (10, '(A132)') stream_id
    if (stream_id(1:7).EQ. 'HDWTR-1') then
      read(stream_id(17:19),*)elem_number
125   if (elem_number.GE.elem_begin(X).AND.elem_number.LE.elem_end(X)) t
&hen

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num_hdwt=num_HDwt+1
e=e+1
Read(stream_id(17:19),'(I3)')HDWT1_elem(e)
read(stream_id(25:44),'(A20)')hdwt1_name(e)
READ(stream_id(53:59),'(F8)') HDWT1_Flow(e)
go to 124
else
X=X+1
    if(X.GT.num_imp_reach) then
        go to 123
    end if
go to 125
end if
end if

C*****DATA T21(read BOD,ORG-N,NH3,NO3+2 for HDWTR-2)
else IF (line (1:16) .EQ. target8) then
    Read (10,*)
    Read (10,*)
    READ (10,*)
    Read (10,*)
128    X=1
130    Read (10, '(A132)') stream_id
        if (stream_id(1:7).EQ. 'HDWTR-2') then
            read(stream_id(17:19),*)elem_number
131    if (elem_number.GE.elem_begin(X).AND.elem_number.LE.elem_end(X)) t
&hen
        f=f+1
        g=g+1
        h=h+1
        j=j+1
        READ(stream_id(58:66),'(F9.0)') HDWT2_BOD(f)
        READ(stream_id(68:76),'(F9.0)') HDWT2_ORG(g)
        READ(stream_id(78:86),'(F9.0)') HDWT2_NH3(h)
        READ(stream_id(88:96),'(F9.0)') HDWT2_NO3(j)
1090    Format (A35,5X,A5,5X,A5,5X,A5,5X,A5)
        GO TO 130
    else
        X=X+1
            if(X.GT.num_imp_reach) then
                go to 128
            end if
        go to 131
    end if
end if

C*****DATA T24(flow for WSTLD-1)
ps=1
nps=1
else IF (line (1:16) .EQ. target9) then

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```

        Read (10,*)
        Read (10,*)
        Read (10,*)
        READ (10,*)
133      X=1
135      Read (10, '(A132)') stream_id
         if (stream_id(1:7).EQ. 'WSTLD-1') then
137    if (elem_number.GE.elem_begin(X).AND.elem_number.LE.elem_end(X)) t
&hen
         num_wstld=num_wstld+1
         k=k+1
         READ(stream_id(52:59),'(F8.5}')WSTLD_Flow(k)
         read(stream_id(13:16),'(I4)')elem_wstld(k)
         read(stream_id(30:47),'(A18)')wstld_name(k)
         if (stream_id(30:32).EQ.'NPS') then
             nps_num_wstld=nps_num_wstld+1
             NPS_wstld_name(nps) = wstld_name(K)
             NPS_elem_wstld(nps) = elem_wstld(K)
             NPS_wstld_flow(nps) = wstld_flow(K)
             nps=nps+1
         else
             ps_num_wstld=ps_num_wstld+1
             PS_wstld_name(ps) = wstld_name(K)
             PS_elem_wstld(ps) = elem_wstld(K)
             PS_wstld_flow(ps) = wstld_flow(K)
             ps=ps+1
         end if
         GO TO 135
     else
         X=X+1
         if(X.GT.num_imp_reach) then
             go to 133
         end if
         go to 137
     end if
end if

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C*****DATA T25(BOD,ORG-N,NH3,NO3+2) for WSTLD-2
ps=1
nps=1
else IF (line (1:16) .EQ. target10) then
    Read (10,*)
    Read (10,*)
    READ (10,*)
    READ (10,*)
138      X=1
140      Read (10, '(A132)') stream_id
         if (stream_id(1:7).EQ. 'WSTLD-2') then
142    if (elem_number.GE.elem_begin(X).AND.elem_number.LE.elem_end(X)) t

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&hen
l=l+1
m=m+1
n=n+1
o=o+1
k1=k1+1
READ(stream_id(25:27),'(A3)')source_type(k1)
READ(stream_id(57:66),'(F10.2)')WSTLD2_BOD(l)
READ(stream_id(77:86),'(F10.3)')WSTLD2_ORG(m)
READ(stream_id(87:96),'(F10.3)')WSTLD2_NH3(n)
READ(stream_id(107:116),'(F10.3)')WSTLD2_NO3(o)
if (source_type(K1).EQ.'NPS') then
    nps_wstld2_bod(nps) = wstld2_bod(l)
    nps_wstld2_org(nps) = wstld2_org(m)
    nps_wstld2_nh3(nps) = WSTLD2_NH3(N)
    nps_wstld2_no3(nps) = wstld2_no3(o)
    nps=nps+1
else
    ps_wstld2_bod(ps) = wstld2_bod(l)
    ps_wstld2_org(ps) = wstld2_org(m)
    ps_wstld2_nh3(ps) = WSTLD2_NH3(N)
    ps_wstld2_no3(ps) = wstld2_no3(o)
    ps=ps+1
end if
c must have blank space after else or the else will only apply to the first statement and NOT
c to all of them

1095      Format (A35,6X,A5,2X,A5,2X,A5,2X,A5,2X,A5)
GO TO 140
else
    X=X+1
    if(X.GT.num_imp_reach) then
        go to 138
    end if
    go to 142
end if
end if

C*****SPECIAL REPORT, hydraulics parameter
else IF (line (1:62) .EQ. ' ****')
&***** HYDRAULIC') then
    Read (10,*)
    READ (10,*)
    READ (10,*)
    READ (10,*)
    READ (10,*)

145      X=1 !come here to reset X to the first impaired reach when the last element of a reach has been found
    Read (10, '(A132)') stream_id
    if (stream_id(3:5).NE. ' ') then
        read(stream_ID(3:5),*)elem_number

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147  if (elem_number.GE.elem_begin(X).AND.elem_number.LE.elem_end(X)) t
    &hen
C* these numbers are NOT in numerical order, they are in Branch (ie model layout) order
    aa=aa+1 !variable a already taken adn must haev aa = 0 outside fo loop to prevent it being reset and ten overwritting
various values
    read(stream_id(3:5),'(I3)')elem_col_int(aa)
    READ(stream_id(84:92),'(F10.1)')S_Area_int(aa)
    GO TO 145
    else
        X=X+1 !this spot is reached when an element has been checked against every elemnt ina reach so we need to go to the
next reach
        if(X.GT.num_imp_reach) then !we do not need to check for all reaches, just the impaired ones
            go to 145
            end if
        GO TO 147
        end if

        end if
1200 FORMAT (A35,5X,I4)
END IF
100 Continue
900 CONTINUE
Print*,'Program has finished reading the inputs!!!'

Rewind (UNIT=10)

DO I=2,num_imp_reach ! must start with 2 since we are comparing
C* this loop will look for "tribs" that are really modeled branch inflows
if (imp_reach(I)-imp_reach(I-1).NE.1) then
    DO K=1,1000000
150    READ(10,'(A132)')line(1:132)
    if(line(11:29).EQ.'EXECUTION COMPLETED')GO TO 155
    if (line(8:11).EQ.'TRIB') then
        read(line(3:5),'(I3)')trib_elem
        if (trib_elem.EQ.elem_begin(I)) then
            num_hdwt=num_hdwt+1
            HDWT1_elem(num_hdwt)=trib_elem
            hdwt1_name(num_hdwt)='Trib'
            read(line(17:24),'(F8.3)')HDWT1_Flow(num_hdwt)
            READ(line(67:73),'(F7.3)') HDWT2_BOD(num_hdwt)
            READ(line(95:101),'(F7.3)') HDWT2_ORG(num_hdwt)
            READ(line(102:108),'(F7.3)') HDWT2_NH3(num_hdwt)
            READ(line(109:115),'(F7.3)') HDWT2_NO3(num_hdwt)
        else
            go to 150
        end if

    end if
end do

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end if
end DO

155 continue

Rewind (Unit=10)

DO I=2,num_imp_reach ! must start with 2 since we are comparing
if (imp_reach(I)-imp_reach(I-1).NE.1) then
  DO K=1,1000000
156  READ(10,'(A132)')line(1:132)
    if(line(11:29).EQ.'EXECUTION COMPLETED')GO TO 157
    if (line(8:14).EQ.'UPR RCH') then
      read(line(3:5),'(I3)')trib_elem

      if (trib_elem.EQ.elem_begin(I)) then
        num_hdwt=num_hdwt+1
        HDWT1_elem(num_hdwt)=trib_elem
        hdwt1_name(num_hdwt)='int HDW'
        read(line(17:24),'(F8.3)')HDWT1_Flow(num_hdwt)
        READ(line(67:73),'(F7.3)') HDWT2_BOD(num_hdwt)
        READ(line(95:101),'(F7.3)') HDWT2_ORG(num_hdwt)
        READ(line(102:108),'(F7.3)') HDWT2_NH3(num_hdwt)
        READ(line(109:115),'(F7.3)') HDWT2_NO3(num_hdwt)
      else
        go to 156
      end if

    end if
  end do

end if
end DO

157 continue

diff=0
DO I=2,num_imp_reach
  diff=diff+imp_reach(I)-imp_reach(I-1)
end DO

if (diff/(num_imp_reach-1).EQ.1) then
  READ(10,'(A132)')line(1:132)
  if(line(11:29).EQ.'EXECUTION COMPLETED')GO TO 159
  if (line(8:14).EQ.'UPR RCH') then
    read(line(3:5),'(I3)')trib_elem
    if (trib_elem.EQ.elem_begin(1)) then

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num_hdwt=num_hdwt+1
HDWT1_elem(num_hdwt)=trib_elem
hdwt1_name(num_hdwt)='int HDW'
read(line(17:24),'(F8.3')')HDWT1_Flow(num_hdwt)
READ(line(67:73),'(F7.3')') HDWT2_BOD(num_hdwt)
READ(line(95:101),'(F7.3')') HDWT2_ORG(num_hdwt)
READ(line(102:108),'(F7.3')') HDWT2_NH3(num_hdwt)
READ(line(109:115),'(F7.3')') HDWT2_NO3(num_hdwt)
else
go to 158
end if
else
go to 158
end if
end if

159 Continue
C* the loop above will look for internal headwaters

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*****PART 2*****
C*****Calculations
real con3,con4
real mldt19_tot_cbodu, mldt19_tot_org
real incr_CBODu(1:100), incr_Org_N(1:100), incr_Amm_N(1:100),
&incr_NItrate(1:100)
real incr_CBODu_tot, incr_Org_N_tot, incr_Amm_N_tot,incr_NItrate_t
&t
real WSTLD2_BOD_con(1:100),WSTLD2_ORG_con(1:100),WSTLD2_NH3_con
&(1:100),WSTLD2_NO3_con(1:100)
real WSTLD2_BOD_cal(1:100),WSTLD2_Org_cal(1:100),WSTLD2_NH3_cal
&(1:100),WSTLD2_NO3_cal(1:100)
real WSTLD2_BOD_cal_tot,WSTLD2_Org_cal_tot,WSTLD2_NH3_cal_tot,
&WSTLD2_NO3_cal_tot
real ps_WSTLD2_BOD_con(1:100),ps_WSTLD2_ORG_con(1:100),ps_WSTLD2_N
&H3_con(1:100),ps_WSTLD2_NO3_con(1:100)
real ps_WSTLD2_BOD_cal(1:100),ps_WSTLD2_Org_cal(1:100),ps_WSTLD2_N
&H3_cal(1:100),ps_WSTLD2_NO3_cal(1:100)
real ps_WSTLD2_BOD_cal_tot, ps_WSTLD2_Org_cal_tot, ps_WSTLD2_NH3_c
&al_tot,ps_WSTLD2_NO3_cal_tot
real nps_WSTLD2_BOD_con(1:100),nps_WSTLD2_ORG_con(1:100),nps_WSTLD
&2_NH3_con(1:100),nps_WSTLD2_NO3_con(1:100)
real nps_WSTLD2_BOD_cal(1:100),nps_WSTLD2_Org_cal(1:100),nps_WSTLD
&2_NH3_cal(1:100),nps_WSTLD2_NO3_cal(1:100)
real nps_WSTLD2_BOD_cal_tot,nps_WSTLD2_Org_cal_tot, nps_WSTLD2_NH3
&_cal_tot,nps_WSTLD2_NO3_cal_tot
real nps_BOD_tot,nps_Org_N_tot,nps_NH3_N_tot,nps_NO3_tot
real HDWT2_BOD_con(1:100),HDWT2_ORG_con(1:100), HDWT2_NH3_con(1:10
&0), HDWT2_NO3_con(1:100)

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real HDWT_BOD_cal(1:100), HDWT_Org_cal(1:100), HDWT_NH3_cal(1:100)
&, HDWT_NO3_cal(1:100)
real HDWT_BOD_cal_tot, HDWT_Org_cal_tot, HDWT_NH3_cal_tot,
&HDWT_NO3_cal_tot
real elem_benthis(1:1000), elem_sod(1:1000), elem_temp(1:1000), sod
&temp_cor(1:1000), sod_load(1:1000), benthic(1:1000)
real nps_sod_load_tot, nps_benthic_tot, fac_mos_FG
real tmdl_cal_flow(1:100)
real cbodu_tmdl_val(1:100), org_N_tmdl_val(1:100), ammon_tmdl_val(1
&:100), no3_tmdl_val(1:100)
real cbodu_tmdl_cal(1:100), org_N_tmdl_cal(1:100), ammon_tmdl_cal(
&1:100), no3_tmdl_cal(1:100)
real cbodu_tmdl_tot, org_N_tmdl_tot, ammon_tmdl_tot, no3_tmdl_tot
real nps_summary_cbodu, nps_summary_org, nps_summary_ammon
real oxy_dem_nps_org_N_tot, oxy_dem_nps_nh3_tot
real nps_mos_sod_load_tot, nps_mos_summary_cbodu, nps_mos_summary_or
&g, nps_mos_summary_ammon, nps_mos_nps_NO3_tot
real nps_FG_sod_load_tot, nps_FG_summary_cbodu
&, nps_FG_summary_ammon, nps_FG_nps_NO3_tot
real nps_LA_sod_load_tot, nps_LA_summary_cbodu, nps_LA_summary_org, n
&ps_LA_summary_ammon, nps_LA_nps_NO3_tot
real ps_summary_cbodu, ps_summary_org, ps_summary_nh3_n
real mos_ps_summary_cbodu, mos_ps_summary_org, mos_ps_summary_nh3_n
real FG_ps_summary_cbodu, FG_ps_summary_org, FG_ps_summary_nh3_n
real wla_ps_cbodu_tmdl_tot, wla_ps_org_N_tmdl_tot, wla_ps_ammon_tmd
&l_tot
real wla_ps_WSTLD2_BOD_cal(1:100), wla_ps_WSTLD2_ORG_cal(1:100), wla
&_ps_WSTLD2_NH3_cal(1:100)
real oxy_dem_mldt19_tot_org, nps_inflows_tot_oxy_demand,
&mldt19_tot_oxy_dem, tot_oxy_dem_sod_ben
real oxy_dem_ps_WSTLD2_Bod_cal(1:100), oxy_dem_ps_WSTLD2_ORG_cal(1:
&100), oxy_dem_ps_WSTLD2_Nh3_cal(1:100), tot_oxy_dem_nps,
&wla_min_ps_summary_tot
real oxy_dem_ps_WSTLD2_Org_cal_tot, oxy_dem_ps_WSTLD2_NH3_cal_tot
real nps_mos_tot_oxy_dem, nps_FG_tot_oxy_dem, nps_LA_tot_oxy_dem
real oxy_dem_org_N_tmdl, oxy_dem_ammon_tmdl, min_ps_summary_tot,
&mod_tot_oxy_dem_ps(1:100), mos_tot_oxy_dem_summary, wla_mod_tot_oxy_
&dem_ps(1:100)
real nut_tmdl_nps_org_N_tot, nps_tot_nitrogen_load, nps_total_P
real ps_nut_tmdl_summary_org_N_tot, ps_nut_tmdl_summary_nh3_N_tot,
&ps_nut_tmdl_summary_no3_N_tot, ps_tot_nitrogen_final_load, ps_tot_P_
&final, ps_tot_sum_total_nitrogen_load, ps_tot_sum_total_P
real mos_ps_nut_tmdl_sum_org_N_tot,
&mos_ps_nut_tmdl_sum_nh3_N_tot,
&mos_ps_nut_tmdl_sum_no3_N_tot,
&mos_ps_tot_nitrogen_final_load,
&mos_ps_tot_P_final
real FG_ps_nut_tmdl_sum_org_N_tot,
&FG_ps_nut_tmdl_sum_nh3_N_tot,
&FG_ps_nut_tmdl_sum_no3_N_tot,

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&FG_ps_tot_nitrogen_final_load,
&FG_ps_tot_P_final
  real wla_min_ps_nut_tmdl_sum_org,
&wla_min_ps_nut_tmdl_sum_nh3,
&wla_min_ps_nut_tmdl_sum_no3,
&wla_min_ps_nitrogen_final_load,
&wla_min_ps_P_final
  real wla_ps_WSTLD2_org_cal_sum(1:100),wla_ps_WSTLD2_NH3_cal_sum(1:
&100),wla_ps_WSTLD2_NO3_cal_sum(1:100)
  real wla_ps_total_nitrogen_load(1:100), wla_ps_total_P(1:100)
  real nps_mos_nut_tmdl_nps_Org_N_tot,nps_mos_nps_nh3_n_tot,
&nps_mos_tot_nitrogen_load,nps_mos_total_p
  real nps_FG_nut_tmdl_nps_Org_N_tot,nps_FG_nps_nh3_n_tot,
&nps_FG_tot_nitrogen_load,nps_FG_total_p
  real nps_la_nut_tmdl_nps_Org_N_tot,nps_la_nps_nh3_n_tot,
&nps_la_tot_nitrogen_load,nps_la_total_p
  real min_ps_total_nitrogen_load,min_ps_total_P
  real ps_total_nitrogen_load(1:100),ps_total_P(1:100)

if (usernum.NE.num) then
  print*, 'Usernum does not equal num, there has been a read failure
&e!',num,usernum
  Write(11,*)'This output is NOT correct!'
  end if

mldt19_tot_cbodu=0
mldt19_tot_org=0

incr_CBODu_tot=0
incr_Org_N_tot=0
incr_Amm_N_tot=0
incr_Nitrate_tot=0

ps_WSTLD2_BOD_cal_tot=0
ps_WSTLD2_Org_cal_tot=0
ps_WSTLD2_NH3_cal_tot=0

nps_WSTLD2_BOD_cal_tot=0
nps_WSTLD2_Org_cal_tot=0
nps_WSTLD2_NH3_cal_tot=0

WSTLD2_BOD_cal_tot=0
WSTLD2_Org_cal_tot=0
WSTLD2_NH3_cal_tot=0
HDWT_BOD_cal_tot=0
HDWT_Org_cal_tot=0
HDWT_NH3_cal_tot=0
HDWT_NO3_cal_tot=0

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nps_sod_load_tot=0
nps_benthic_tot=0

cbodu_tmdl_tot=0
org_N_tmdl_tot=0
ammon_tmdl_tot=0
no3_tmdl_tot=0

fac_mos_FG=1/(1-(ps_mos+ps_FG))
con3 = 1.00/1000000.00*1000.00*86400.00
con4 = 3.7850000000

do I=1,num
mldt19_tot_cbodu=mldt19_tot_cbodu+NP_bod(I)
mldt19_tot_org= mldt19_tot_org+NP_org(I)
end do

a=0
DO 170 X=1,num_imp_reach
total_elem_reach(X)=elem_end(X)-elem_begin(X)+1
DO 160 I=1,total_elem_reach(X)
a=a+1
if(I.EQ.1) then
elem_col(a) = elem_begin(X)
else
elem_col(a) = elem_col(a-1) + 1
end if
160 continue
170 continue

do I=1,total_elem
end do

DO 185 I=1,total_elem

if (elem_col(I).EQ.elem_col_int(I)) then
S_Area(I) = S_Area_int(I)
else

DO 184 R=1,total_elem !go through the list until we get a match
if (Elem_col(I).EQ.Elem_col_int(R)) then
S_Area(I) = S_Area_int(R)
else
end if
184 continue
end if
185 continue

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```

cir=num_incr
DO cirr=1,cir

incr_CBODu(cirr)=incr_inflow(cirr)*incr2_CBODu_con(cirr)*con3
incr_Org_N(cirr)=incr_inflow(cirr)*incr2_Org_N_con(cirr)*con3
incr_Amm_N(cirr)=incr_inflow(cirr)*incr2_Amm_N_con(cirr)*con3
incr_NItrate(cirr)=incr_inflow(cirr)*incr2_Nitrate_con(cirr)*con3

incr_CBODu_tot=incr_CBODu_tot+incr_CBODu(cirr)
incr_Org_N_tot=incr_Org_N_tot+incr_Org_N(cirr)
incr_Amm_N_tot=incr_Amm_N_tot+incr_Amm_N(cirr)
incr_Nitrate_tot=incr_Nitrate_tot+incr_Nitrate(cirr)
end do

C***** calcualtiond for point soucers EXPLICITLY modeled
cir=ps_num_wstld
DO cirr=1,cir
ps_WSTLD2_BOD_con(cirr)=ps_wstld2_bod(cirr)
ps_WSTLD2_ORG_con(cirr)=ps_wstld2_org(cirr)
ps_WSTLD2_NH3_con(cirr)=ps_wstld2_nh3(cirr)
ps_WSTLD2_NO3_con(cirr)=ps_wstld2_no3(cirr)

ps_WSTLD2_BOD_cal(cirr)=ps_WSTLD_Flow(cirr)*ps_WSTLD2_BOD_con(cirr
*)&*con3
ps_WSTLD2_Org_cal(cirr)=ps_WSTLD_Flow(cirr)*ps_WSTLD2_Org_con(cirr
*)&*con3
ps_WSTLD2_NH3_cal(cirr)=ps_WSTLD_Flow(cirr)*ps_WSTLD2_NH3_con(cirr
*)&*con3
ps_WSTLD2_NO3_cal(cirr)=ps_WSTLD_Flow(cirr)*ps_WSTLD2_NO3_con(cirr
*)&*con3

wla_ps_WSTLD2_org_cal_sum(cirr)=ps_WSTLD2_org_cal(cirr)*(1-ps_mos-
&ps_FG)
wla_ps_WSTLD2_NH3_cal_sum(cirr)=ps_WSTLD2_NH3_cal(cirr)*(1-ps_mos-
&ps_FG)
wla_ps_WSTLD2_NO3_cal_sum(cirr)=ps_WSTLD2_NO3_cal(cirr)*(1-ps_mos-
&ps_FG)

ps_WSTLD2_BOD_cal_tot=ps_WSTLD2_BOD_cal_tot+ps_WSTLD2_BOD_cal(cirr
&)
ps_WSTLD2_Org_cal_tot=ps_WSTLD2_Org_cal_tot+ps_WSTLD2_Org_cal(cirr
&)
ps_WSTLD2_NH3_cal_tot=ps_WSTLD2_NH3_cal_tot+ps_WSTLD2_NH3_cal(cirr
&)
ps_WSTLD2_NO3_cal_tot=ps_WSTLD2_NO3_cal_tot+ps_WSTLD2_NO3_cal(cirr
&)

oxy_dem_ps_wstld2_bod_cal(cirr)=1*ps_WSTLD2_BOD_cal(cirr
&)
oxy_dem_ps_wstld2_org_cal(cirr)=ammoxy_rat*ps_wstld2_org_cal(cirr

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&
oxy_dem_ps_wstld2_nh3_cal(cirr)=ammoxy_rat*ps_wstld2_nh3_cal(cirr
&
mod_tot_oxy_dem_ps(cirr)=oxy_dem_ps_wstld2_bod_cal(cirr)+oxy_dem_
&ps_wstld2_org_cal(cirr)+ oxy_dem_ps_wstld2_nh3_cal(cirr)

wla_ps_wstld2_bod_cal(cirr)=wla_ps_wstld2_bod_cal(cirr)*100
wla_ps_wstld2_bod_cal(cirr)=anint(wla_ps_wstld2_bod_cal(cirr))
wla_ps_wstld2_bod_cal(cirr)=wla_ps_wstld2_bod_cal(cirr)/100

wla_ps_wstld2_org_cal(cirr)=wla_ps_wstld2_org_cal(cirr)*100
wla_ps_wstld2_org_cal(cirr)=anint(wla_ps_wstld2_org_cal(cirr))
wla_ps_wstld2_org_cal(cirr)=wla_ps_wstld2_org_cal(cirr)/100

wla_ps_wstld2_nh3_cal(cirr)=wla_ps_wstld2_nh3_cal(cirr)*100
wla_ps_wstld2_nh3_cal(cirr)=anint(wla_ps_wstld2_nh3_cal(cirr))
wla_ps_wstld2_nh3_cal(cirr)=wla_ps_wstld2_nh3_cal(cirr)/100

wla_mod_tot_oxy_dem_ps(cirr)=wla_mod_tot_oxy_dem_ps(cirr)*100
wla_mod_tot_oxy_dem_ps(cirr)=anint(wla_mod_tot_oxy_dem_ps(cirr))
wla_mod_tot_oxy_dem_ps(cirr)=wla_mod_tot_oxy_dem_ps(cirr)/100

end do
C***** nps wasteload calculations

do cirr=1,nps_num_wstld
nps_WSTLD2_BOD_con(cirr)=nps_wstld2_bod(cirr)
nps_WSTLD2_ORG_con(cirr)=nps_wstld2_org(cirr)
nps_WSTLD2_NH3_con(cirr)=nps_wstld2_nh3(cirr)
nps_WSTLD2_NO3_con(cirr)=nps_wstld2_no3(cirr)

nps_WSTLD2_BOD_cal(cirr)=nps_WSTLD_Flow(cirr)*nps_WSTLD2_BOD_con(c
&irr)*con3
nps_WSTLD2_Org_cal(cirr)=nps_WSTLD_Flow(cirr)*nps_WSTLD2_Org_con(c
&irr)*con3
nps_WSTLD2_NH3_cal(cirr)=nps_WSTLD_Flow(cirr)*nps_WSTLD2_NH3_con(c
&irr)*con3
nps_WSTLD2_NO3_cal(cirr)=nps_WSTLD_Flow(cirr)*nps_WSTLD2_NO3_con(c
&irr)*con3

nps_WSTLD2_BOD_cal_tot=nps_WSTLD2_BOD_cal_tot+nps_WSTLD2_BOD_cal(c
&irr)
nps_WSTLD2_Org_cal_tot=nps_WSTLD2_Org_cal_tot+nps_WSTLD2_Org_cal(c
&irr)
nps_WSTLD2_NH3_cal_tot=nps_WSTLD2_NH3_cal_tot+nps_WSTLD2_NH3_cal(c
&irr)
nps_WSTLD2_NO3_cal_tot=nps_WSTLD2_NO3_cal_tot+nps_WSTLD2_NO3_cal(c
&irr)

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nps_WSTLD2_BOD_cal_tot=nps_WSTLD2_BOD_cal_tot*100
nps_WSTLD2_BOD_cal_tot=anint(nps_WSTLD2_BOD_cal_tot)
nps_WSTLD2_BOD_cal_tot=nps_WSTLD2_BOD_cal_tot/100

nps_WSTLD2_Org_cal_tot=nps_WSTLD2_Org_cal_tot*100
nps_WSTLD2_Org_cal_tot=anint(nps_WSTLD2_Org_cal_tot)
nps_WSTLD2_Org_cal_tot=nps_WSTLD2_Org_cal_tot/100

nps_WSTLD2_NH3_cal_tot=nps_WSTLD2_NH3_cal_tot*100
nps_WSTLD2_NH3_cal_tot=anint(nps_WSTLD2_NH3_cal_tot)
nps_WSTLD2_NH3_cal_tot=nps_WSTLD2_NH3_cal_tot/100

nps_WSTLD2_NO3_cal_tot=nps_WSTLD2_NO3_cal_tot*100
nps_WSTLD2_NO3_cal_tot=anint(nps_WSTLD2_NO3_cal_tot)
nps_WSTLD2_NO3_cal_tot=nps_WSTLD2_NO3_cal_tot/100

*****only wasteloads can be divided into point source and non point sources
end do

do cirr= 1, num_wstld
WSTLD2_BOD_con(cirr)=WSTLD2_BOD(cirr)
WSTLD2_ORG_con(cirr)=WSTLD2_Org(cirr)
WSTLD2_NH3_con(cirr)=WSTLD2_NH3(cirr)
WSTLD2_NO3_con(cirr)=WSTLD2_NO3(cirr)

WSTLD2_BOD_cal(cirr)=WSTLD_Flow(cirr)*WSTLD2_BOD_con(cirr)*con3
WSTLD2_Org_cal(cirr)=WSTLD_Flow(cirr)*WSTLD2_Org_con(cirr)*con3
WSTLD2_NH3_cal(cirr)=WSTLD_Flow(cirr)*WSTLD2_NH3_con(cirr)*con3
WSTLD2_NO3_cal(cirr)=WSTLD_Flow(cirr)*WSTLD2_NO3_con(cirr)*con3

WSTLD2_BOD_cal_tot=WSTLD2_BOD_cal_tot+WSTLD2_BOD_cal(cirr)
WSTLD2_Org_cal_tot=WSTLD2_Org_cal_tot+WSTLD2_Org_cal(cirr)
WSTLD2_NH3_cal_tot=WSTLD2_NH3_cal_tot+WSTLD2_NH3_cal(cirr)
WSTLD2_NO3_cal_tot=WSTLD2_NO3_cal_tot+WSTLD2_NO3_cal(cirr)

wstld2_bod_cal_tot=wstld2_bod_cal_tot*100
wstld2_bod_cal_tot=anint(wstld2_bod_cal_tot)
wstld2_bod_cal_tot=wstld2_bod_cal_tot/100

wstld2_org_cal_tot=wstld2_org_cal_tot*100
wstld2_org_cal_tot=anint(wstld2_org_cal_tot)
wstld2_org_cal_tot=wstld2_org_cal_tot/100

wstld2_NH3_cal_tot=wstld2_NH3_cal_tot*100
wstld2_NH3_cal_tot=anint(wstld2_NH3_cal_tot)
wstld2_NH3_cal_tot=wstld2_NH3_cal_tot/100

wstld2_NO3_cal_tot=wstld2_NO3_cal_tot*100
wstld2_NO3_cal_tot=anint(wstld2_NO3_cal_tot)
wstld2_NO3_cal_tot=wstld2_NO3_cal_tot/100

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end do

cir=num_hdwt

DO cirr=1,cir
HDWT2_BOD_con(cirr)=HDWT2_BOD(cirr)
HDWT2_Org_con(cirr)=HDWT2_ORG(cirr)
HDWT2_NH3_con(cirr)=HDWT2_NH3(cirr)
HDWT2_NO3_con(cirr)=HDWT2_NO3(cirr)

HDWT_BOD_cal(cirr)=HDWT1_Flow(cirr)*HDWT2_BOD_con(cirr)*con3
HDWT_Org_cal(cirr)=HDWT1_Flow(cirr)*HDWT2_Org_con(cirr)*con3
HDWT_NH3_cal(cirr)=HDWT1_Flow(cirr)*HDWT2_NH3_con(cirr)*con3
HDWT_NO3_cal(cirr)=HDWT1_Flow(cirr)*HDWT2_NO3_con(cirr)*con3

HDWT_BOD_cal_tot=HDWT_BOD_cal_tot+HDWT_BOD_cal(cirr)
HDWT_Org_cal_tot=HDWT_Org_cal_tot+HDWT_Org_cal(cirr)
HDWT_NH3_cal_tot=HDWT_NH3_cal_tot+HDWT_NH3_cal(cirr)
HDWT_NO3_cal_tot=HDWT_NO3_cal_tot+HDWT_NO3_cal(cirr)

HDWT_bod_cal_tot=HDWT_bod_cal_tot*100
HDWT_bod_cal_tot=anint(HDWT_bod_cal_tot)
HDWT_bod_cal_tot=HDWT_bod_cal_tot/100

HDWT_org_cal_tot=HDWT_org_cal_tot*100
HDWT_org_cal_tot=anint(HDWT_org_cal_tot)
HDWT_org_cal_tot=HDWT_org_cal_tot/100

HDWT_NH3_cal_tot=HDWT_NH3_cal_tot*100
HDWT_NH3_cal_tot=anint(HDWT_NH3_cal_tot)
HDWT_NH3_cal_tot=HDWT_NH3_cal_tot/100

HDWT_NO3_cal_tot=HDWT_NO3_cal_tot*100
HDWT_NO3_cal_tot=anint(HDWT_NO3_cal_tot)
HDWT_NO3_cal_tot=HDWT_NO3_cal_tot/100

end do

***** total up NPS values from incremental flow, trib and headwaters
nps_BOD_tot=incr_CBODu_tot+nps_WSTLD2_BOD_cal_tot+
&HDWT_BOD_cal_tot
nps_Org_N_tot=incr_Org_N_tot+nps_WSTLD2_Org_cal_tot+
&HDWT_Org_cal_tot
nps_NH3_N_tot=incr_Amm_N_tot+nps_WSTLD2_NH3_cal_tot+HDWT_NH3
&_cal_tot
nps_NO3_tot=incr_Nitrate_tot+nps_WSTLD2_NO3_cal_tot+HDWT_NO3_cal_t
&ot

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***** total up oxygen demand for NPS
oxy_dem_nps_org_N_tot=ammoxy_rat*nps_org_N_tot
oxy_dem_nps_nh3_tot=ammoxy_rat*nps_nh3_N_tot
oxy_dem_mldt19_tot_org=ammoxy_rat*mldt19_tot_org

***** create the element and reach column, as well as other columns for
***** for SOD and benthic ammonia
a=0
DO 201 I=1,num_imp_reach
    DO 200 J=1,total_elem_reach(I)
        a=a+1
        elem_benthis(a)= C2_NH3SR(I)
        elem_sod(a)=C1B_SOD(I)
        elem_temp(a)=temp(I)
200    continue
201   continue

do I=1,total_elem
    sod_temp_cor(I)=elem_sod(I)*1.065** (elem_temp(I)-20)
    sod_load(I)=sod_temp_cor(I)*S_area(I)*1.00/1000.00
    benthic(I)=elem_benthis(I)*S_area(I)*1.00/1000.00
    nps_sod_load_tot=nps_sod_load_tot+sod_load(I)
    nps_benthic_tot=nps_benthic_tot+benthic(I)
end do

*****calculate values for PS and NPS summary sections
oxy_dem_nps_benthic_tot=ammoxy_rat*nps_benthic_tot

nps_inflows_tot_oxy_demand=nps_BOD_tot+oxy_dem_nps_org_N_tot+oxy_d
&em_nps_nh3_tot
mldt19_tot_oxy_dem=mldt19_tot_cbodu+oxy_dem_mldt19_tot_org
tot_oxy_dem_sod_ben=nps_sod_load_tot+oxy_dem_nps_benthic_tot

tot_oxy_dem_nps=nps_inflows_tot_oxy_demand+mldt19_tot_oxy_dem+tot_
&oxy_dem_sod_ben

oxy_dem_ps_WSTLD2_Org_cal_tot=ps_WSTLD2_Org_cal_tot*ammoxy_rat
oxy_dem_ps_WSTLD2_NH3_cal_tot=ps_WSTLD2_NH3_cal_tot*ammoxy_rat

nps_summary_cbodu=nps_bod_tot+mldt19_tot_cbodu
nps_summary_org=oxy_dem_nps_org_N_tot+oxy_dem_mldt19_tot_org
nps_summary_ammon=oxy_dem_nps_nh3_tot+oxy_dem_nps_benthic_tot

nps_mos_sod_load_tot=nps_sod_load_tot*nps_mos
nps_mos_sod_load_tot=nps_mos_sod_load_tot*100
nps_mos_sod_load_tot=anint(nps_mos_sod_load_tot)/100

```

```

nps_mos_summary_cbodu=nps_summary_cbodu*nps_mos
nps_mos_summary_cbodu=nps_mos_summary_cbodu*100
nps_mos_summary_cbodu=anint(nps_mos_summary_cbodu)/100

nps_mos_summary_org=nps_summary_org*nps_mos
nps_mos_summary_org=nps_mos_summary_org*100
nps_mos_summary_org=anint(nps_mos_summary_org)/100

nps_mos_summary_ammon=nps_summary_ammon*nps_mos
nps_mos_summary_ammon=nps_mos_summary_ammon*100
nps_mos_summary_ammon=anint(nps_mos_summary_ammon)/100

nps_FG_sod_load_tot=nps_sod_load_tot*nps_FG
nps_FG_sod_load_tot=nps_FG_sod_load_tot*100
nps_FG_sod_load_tot=anint(nps_FG_sod_load_tot)/100

nps_FG_summary_cbodu=nps_summary_cbodu*nps_FG
nps_FG_summary_cbodu=nps_FG_summary_cbodu*100
nps_FG_summary_cbodu=anint(nps_FG_summary_cbodu)/100

nps_FG_summary_org=nps_summary_org*nps_FG
nps_FG_summary_org=nps_FG_summary_org*100
nps_FG_summary_org=anint(nps_FG_summary_org)/100

nps_FG_summary_ammon=nps_summary_ammon*nps_FG
nps_FG_summary_ammon=nps_FG_summary_ammon*100
nps_FG_summary_ammon=anint(nps_FG_summary_ammon)/100

nps_mos_tot_oxy_dem=tot_oxy_dem_nps*nps_mos
nps_mos_tot_oxy_dem=nps_mos_tot_oxy_dem*100
nps_mos_tot_oxy_dem=anint(nps_mos_tot_oxy_dem)/100

nps_FG_tot_oxy_dem=tot_oxy_dem_nps*nps_FG
nps_FG_tot_oxy_dem=nps_FG_tot_oxy_dem*100
nps_FG_tot_oxy_dem=anint(nps_FG_tot_oxy_dem)/100

nps_mos_nps_NO3_tot=nps_NO3_tot*nps_mos
nps_mos_nps_NO3_tot=nps_mos_nps_NO3_tot*100
nps_mos_nps_NO3_tot=anint(nps_mos_nps_NO3_tot)/100

nps_FG_nps_NO3_tot=nps_NO3_tot*nps_FG
nps_FG_nps_NO3_tot=nps_FG_nps_NO3_tot*100
nps_FG_nps_NO3_tot=anint(nps_FG_nps_NO3_tot)/100

```

```

nps_LA_sod_load_tot=nps_sod_load_tot-nps_MOS_sod_load_tot-nps_FG_s
&od_load_tot
nps_LA_summary_cbodu=nps_summary_cbodu-nps_MOS_summary_cbodu-nps_F
&G_summary_cbodu
nps_LA_summary_org=nps_summary_org-nps_MOS_summary_org-nps_FG_summ
&ary_org
nps_LA_summary_ammon=nps_summary_ammon-nps_MOS_summary_ammon-nps_F
&G_summary_ammon
nps_LA_nps_NO3_tot=nps_NO3_tot-nps_MOS_NO3_tot-nps_FG_tot

nps_LA_tot_oxy_dem=tot_oxy_dem_nps-nps_mos_tot_oxy_dem-nps_FG_tot_
&oxy_dem

c these values are from reading data from La_qual output (and thus ARE NOT minor point sources)
ps_BOD_tot=ps_WSTLD2_BOD_cal_tot
ps_Org_N_tot=ps_WSTLD2_Org_cal_tot
ps_NH3_N_tot=ps_WSTLD2_NH3_cal_tot
ps_NO3_tot=ps_WSTLD2_NO3_cal_tot

c this produces the "values for tmdl calculations table"
do 204 I =1, num_pt_sour
    cbodu_tmdl_val(I)=2.30*cbod5_perm(I)
    if (CBOD5_perm(I).EQ.0.OR.CBOD5_perm(I).EQ.-999)then
        cbodu_tmdl_val(I)=1.00*cod_perm(I)
        if (cod_perm(I).EQ.0.OR.Cod_perm(I).EQ.-999)then
            cbodu_tmdl_val(I)=0
        end if
    end if

    ammon_tmdl_val(I)=ammon_perm(I)
    if (ammon_perm(I) .EQ.-999) then
        ammon_tmdl_val(I)=2*cbod5_perm(I)
        if (cbod5_perm(I).EQ.-999) then
            ammon_tmdl_val(I)=0
        end if
    end if

    no3_tmdl_val(I) = 10

    org_N_tmdl_val(I)=ammon_tmdl_val(I)*2.00

    if (cbod5_perm(I).EQ.0.AND.ammon_perm(I).EQ.0) then
        org_N_tmdl_val(I)=0
        ammon_tmdl_val(I)=0
        no3_tmdl_val(I) = 0
    end if

```

204 continue

```

c *** calculate tmdl vlues for tmdl load chart
do I=1,num_pt_sour
  tmdl_cal_flow(I)=perm_flow(I)*1.25
  cbodu_tmdl_cal(I) = tmdl_cal_flow(I)*cbodu_tmdl_val(I)*con4
  org_N_tmdl_cal(I) = tmdl_cal_flow(I)*org_N_tmdl_val(I)*con4
  ammon_tmdl_cal(I) = tmdl_cal_flow(I)*ammon_tmdl_val(I)*con4
  no3_tmdl_cal(I) = tmdl_cal_flow(I)*no3_tmdl_val(I) *con4

  cbodu_tmdl_tot=cbodu_tmdl_tot+cbodu_tmdl_cal(I)
  org_N_tmdl_tot=org_N_tmdl_tot+org_N_tmdl_cal(I)
  ammon_tmdl_tot=ammon_tmdl_tot+ammon_tmdl_cal(I)
  no3_tmdl_tot=no3_tmdl_tot+no3_tmdl_cal(I)

  oxy_dem_org_N_tmdl= org_N_tmdl_tot*ammoxy_rat
  oxy_dem_ammon_tmdl= ammon_tmdl_tot*ammoxy_rat
end do

c*****calculate tmdl values for summary chart (using ammox multiplier

c first term is read in from La-qual second is from User supplied data
c more summary calculations
  ps_summary_cbodu=ps_bod_tot+cbodu_tmdl_tot
  ps_summary_org= oxy_dem_ps_wstld2_org_cal_tot+ oxy_dem_org_N_tmdl

  ps_summary_nh3_n=oxy_dem_ps_WSTLD2_NH3_cal_tot+oxy_dem_ammon_tmdl

  tot_oxy_dem_summary=ps_summary_cbodu+ps_summary_org+ps_summary_nh3
&_n

  mos_ps_summary_cbodu=ps_summary_cbodu*ps_mos
  mos_ps_summary_org=ps_summary_org*ps_mos
  mos_ps_summary_nh3_n= ps_summary_nh3_n*ps_mos

  FG_ps_summary_cbodu=ps_summary_cbodu*ps_FG
  FG_ps_summary_org=ps_summary_org*ps_FG
  FG_ps_summary_nh3_n= ps_summary_nh3_n*ps_FG

  min_ps_summary_tot=cbodu_tmdl_tot+oxy_dem_org_N_tmdl+oxy_dem_ammon
&_tmdl

  mos_tot_oxy_dem_summary=tot_oxy_dem_summary*ps_mos
  FG_tot_oxy_dem_summary=tot_oxy_dem_summary*ps_FG

c WLA for minor point sources
  wla_ps_cbodu_tmdl_tot=cbodu_tmdl_tot*(1-ps_mos-ps_FG)
  wla_ps_org_N_tmdl_tot=oxy_dem_org_N_tmdl*(1-ps_mos-ps_FG)

```

```

wla_ps_ammon_tmdl_tot=oxy_dem_ammon_tmdl*(1-ps_mos-ps_FG)
wla_min_ps_summary_tot=min_ps_summary_tot*(1-ps_mos-ps_FG)

***** Nutrient TMDL calucaltions (a lot of the NPS calcualtiosn are done above
***** in lines 677-684
C just need to take nps_org_N_tot from
C the first equtaion (which has org_N from heads, tribs and increments)
C and add mass loads data type 19
C (seen in last term),

***** the loop below should be with the section "calcualtions for point sources explicitly modeled
C*since the loop below is all PS stuff but oh well I do not want to risk moving it

if (ps_num_wstld .EQ.0) then
go to 207
end if

do cir=1,ps_num_wstld
  ps_total_nitrogen_load(cir)=ps_WSTLD2_ORG_cal(cir)+ps_WSTLD
&2_Nh3_cal(cir)+ps_WSTLD2_NO3_cal(cir)
  ps_total_P(cir)=ps_total_nitrogen_load(cir)/nat_rat

  ps_tot_sum_total_nitrogen_load=ps_tot_sum_total_nitrogen_lo
&ad+ps_total_nitrogen_load(cir)
  ps_tot_sum_total_P=ps_tot_sum_total_P+ps_total_P(cir)

  wla_ps_total_nitrogen_load(cir)=ps_total_nitrogen_load(cir)
&*(1-ps_mos-ps_FG)
  wla_ps_total_P(cir)=ps_total_P(cir)*(1-ps_mos-ps_FG)
end do

207  nut_tmdl_nps_Org_N_tot=nps_org_N_tot+mldt19_tot_org
  nps_tot_nitrogen_load= nut_tmdl_nps_org_N_tot+nps_nh3_n_tot+
&nps_NO3_tot

  nps_total_P=nps_tot_nitrogen_load/nat_rat

  nps_mos_nut_tmdl_nps_Org_N_tot=nut_tmdl_nps_Org_N_tot*nps_mos
  nps_mos_nps_nh3_n_tot=nps_nh3_n_tot*nps_mos
  nps_mos_nps_NO3_tot=nps_NO3_tot*nps_mos
  nps_mos_tot_nitrogen_load=nps_tot_nitrogen_load*nps_mos
  nps_mos_total_p=NPS_total_p*nps_mos

```

```

nps_FG_nut_tmdl_nps_Org_N_tot=nut_tmdl_nps_Org_N_tot*nps_FG
nps_FG_nps_nh3_n_tot=nps_nh3_n_tot*nps_FG
nps_FG_nps_NO3_tot=nps_NO3_tot*nps_FG
nps_FG_tot_nitrogen_load=nps_tot_nitrogen_load*nps_FG
nps_FG_total_p=NPS_total_p*nps_FG

nps_la_nut_tmdl_nps_Org_N_tot=nut_tmdl_nps_Org_N_tot*(1-nps_mos-np
&s_FG)
nps_la_nps_nh3_n_tot=nps_nh3_n_tot*(1-nps_mos)
nps_la_nps_NO3_tot=nps_NO3_tot*(1-nps_mos)
nps_la_tot_nitrogen_load=nps_tot_nitrogen_load*(1-nps_mos)
nps_la_total_p=npS_total_p*(1-nps_mos)

min_ps_total_nitrogen_load=org_N_tmdl_tot+ammon_tmdl_tot+no3_tmdl_
&tot
min_ps_total_P=min_ps_total_nitrogen_load/nat_rat

ps_nut_tmdl_summary_org_N_tot=ps_WSTLD2_Org_cal_tot+org_N_tmdl_tot
ps_nut_tmdl_summary_nh3_N_tot=ps_WSTLD2_NH3_cal_tot+ammon_tmdl_tot
ps_nut_tmdl_summary_no3_N_tot=ps_WSTLD2_NO3_cal_tot+no3_tmdl_tot

ps_tot_nitrogen_final_load=min_ps_total_nitrogen_load+ps_tot_sum_t
&total_nitrogen_load
ps_tot_P_final=min_ps_total_P+ps_tot_sum_total_P

mos_ps_nut_tmdl_sum_org_N_tot=ps_nut_tmdl_summary_org_N_tot*ps_mos
mos_ps_nut_tmdl_sum_nh3_N_tot=ps_nut_tmdl_summary_nh3_N_tot*ps_mos
mos_ps_nut_tmdl_sum_no3_N_tot=ps_nut_tmdl_summary_no3_N_tot*ps_mos

FG_ps_nut_tmdl_sum_org_N_tot=ps_nut_tmdl_summary_org_N_tot*ps_FG
FG_ps_nut_tmdl_sum_nh3_N_tot=ps_nut_tmdl_summary_nh3_N_tot*ps_FG
FG_ps_nut_tmdl_sum_no3_N_tot=ps_nut_tmdl_summary_no3_N_tot*ps_FG

mos_ps_tot_nitrogen_final_load=ps_tot_nitrogen_final_load*ps_mos
mos_ps_tot_P_final=ps_tot_P_final*ps_mos

FG_ps_tot_nitrogen_final_load=ps_tot_nitrogen_final_load*ps_FG
FG_ps_tot_P_final=ps_tot_P_final*ps_FG

wla_min_ps_nut_tmdl_sum_org=org_N_tmdl_tot*(1-ps_mos-ps_FG)
wla_min_ps_nut_tmdl_sum_nh3=ammon_tmdl_tot*(1-ps_mos-ps_FG)
wla_min_ps_nut_tmdl_sum_no3=no3_tmdl_tot*(1-ps_mos-ps_FG)

wla_min_ps_nitrogen_final_load=min_ps_total_nitrogen_load*(1-p
&s_mos-ps_FG)
wla_min_ps_P_final=min_ps_total_P*(1-ps_mos-ps_FG)

c590  write(11,6090)'Calculated load for minor point sources  ',org_N_t
c    &mdl_tot,ammon_tmdl_tot,no3_tmdl_tot,min_ps_total_nitrogen_load,min
c    &ps_total_P

```

```

c      write(11,6090)'Total for all point source loads           ',ps_n
c      &ut_tmdl_summary_org_N_tot,ps_nut_tmdl_summary_nh3_N_tot,ps_nut_tmd
c      &l_summary_no3_N_tot,ps_tot_nitrogen_final_load,ps_tot_P_final

C*****Output File Write Statements

C*****SECTION: "TMDL CALCULATIONS FOR SUBSEGMENT:"

990  format(A34,2x,I6,2x,A20)
      Write (11,990)'TMDL CALCULATIONS FOR SUBSEGMENT:',subsegnumber,sub
      &segname
      Write(11,*)"FTN ASSOCIATES, LTD.'
      Write(11,*)"Program:TMDL20m7'
      Write(11,*)"'
      Write(11,*)"INFO FOR INPUT FILE WITH USER SPECIFIED DATA AND OPTIO
      &NS:'
      Write(11,*)"File name:",userfilename
      write(11,*)"'
      write(11,*)"INFO FOR LA-QUAL OUTPUT FILE:'
      Write(11,*)"File name:",laqualfilename
      Write(11,*)"Date/Time:",pertime
      write(11,*)LAQUAL_version
      write(11,*)"'
      Write(11,*)"LIST OF ALL REACHES IN IMPAIRED SUBSEGMENT IN LA-QUAL
      &OUTPUT FILE'
      DO 209 numm=1, num_imp_reach
1000      Format(A7,1x,I3,1x,A10,1x,I3,1x,A1,1x,I3,A18,2x,I6,1x,A15)
209      WRITE(11,1000)'Reach',imp_Reach(numm),'(Elements',Elem_begin(n
      &umm),'-',elem_end(umm),') is in subsegment',imp_reach(numm
      &),reach_name(umm)
      write(11,*)"'

C***** SECTION:"CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, TRIBUTARIES, AND INCREMENTAL INFLOW):"

      Write(11,3030)
      write(11,*)"'
3030  FORMAT(102('='))
      Write(11,*)"CALCULATIONS FOR LOADS FROM NPS INFLOWS (HEADWATERS, T
      &RIBUTARIES, AND INCREMENTAL INFLOW):'
      Write(11,*)"'
      write(11,*)"Equation used: (Load, kg/day) = (Inflow rate, m3/sec)
      &* (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m3 *'
      write(11,*)"'
      &                               86400 sec/day'
      write(11,*)"'

```

```

        Write(11,*)"Values from LA-QUAL output:"
        write(11,*)"'
        Write(11,*)"           Inflow      CBODu      Organic N   Ammonia N
&          NO2+NO3 N'
        write(11,*)"Element      rate      conc.      conc.      conc.
&          conc.'
        write(11,*)"number      (m3/sec)    (mg/L)     (mg/L)     (mg/L)
&          (mg/L)      Name of inflow'
        write(11,*)"-----  -----  -----  -----  -----"
&          -----  -----
3050 Format(I3,5x,f10.5,4x,f8.2,4x,f8.2,4x,f8.2,8x,f8.2,5x,A25)
        do 210 cir=1,num_hdwt
210         write(11,3050) HDWT1_elem(cir), HDWT1_Flow(cir), HDWT2_BOD_con(
&cir), HDWT2_ORG_con(cir), HDWT2_NH3_con(cir), HDWT2_NO3_con(cir),
&hdwt1_name(cir)
        do 220 cir=1,nps_num_wstld
220         write(11,3050)nps_elem_wstld(cir),nps_WSTLD_Flow(cir), nps_WSTL
&D2_BOD_con(cir),nps_WSTLD2_ORG_con(cir), nps_WSTLD2_NH3_con(cir),
&nps_WSTLD2_NO3_con(cir),NPS_wstld_name(cir)
         write(11,*)"Incremental flow data"
        do 222 cir=1,num_incr
222         write(11,3050)incr_reach(cir),incr_inFlow(cir), incr2_CBODu_con(ci
&r),incr2_ORG_N_con(cir),incr2_Amm_N_con(cir),incr2_Nitrate_con(cir
&)
        write(11,*)"'

c         write(11,*)"-----  -----  -----  -----  -----"
c &          -----  -----
write(11,*)"'
write(11,*)"Calculated values:"
write(11,*)"'
write(11,*)"           CBODu      Organic N   Ammonia
&N NO2+NO3 N'
        write(11,*)"Element      load      load      load
&          load'
        write(11,*)"number      (kg/day)   (kg/day)   (kg/day)
&)      (kg/day)'
        write(11,*)"-----  -----  -----  -----  -----"
&          -----
3060 Format(13x,I3,5x,f10.2,2x,f10.2,1x,f10.2,2x,f10.2)
        cir=num_hdwt
        do 224 cirr=1,cir
224         write(11,3060) HDWT1_elem(cirr), HDWT_BOD_cal(cirr),
&HDWT_ORG_cal(cirr),HDWT_NH3_cal(cirr), HDWT_NO3_
&cal(cirr)
        cir=nps_num_wstld
        do 226 cirr=1,cir
226         write(11,3060)nps_elem_wstld(cirr),nps_WSTLD2_BOD_cal(cirr)
&, nps_WSTLD2_ORG_cal(cirr), nps_WSTLD2_NH3_cal(cirr), nps_WSTLD2_N
&O3_cal(cirr)

```

```

        write(11,*)"Incremental inflow loads"
228      do 228 cirr=1,num_incr
         write(11,3060)incr_reach(cirr),incr_CBODu(cirr)
&, incr_Org_N(cirr), incr_Amm_N(cirr),incr_NITrate(cirr)
         write(11,*)"----- ----- ----- -----"
&      -----
3070     Format(A19,f12.2,2x,f10.2,1x,f10.2,2x,f10.2)
         write(11,3070)'Subsegment totals:',nps_BOD_tot,nps_Org_N_tot,nps_
&NH3_N_tot,nps_NO3_tot
         write(11,*)""

```

C***** SECTION:"CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TYPE 19:"

```

        Write(11,3030)
        write(11,*)""
        write(11,*)"CALCULATIONS FOR NONPOINT SOURCE MASS LOADS IN DATA TY
&PE 19:"
        write(11,*)""
        write(11,*)"Values from LA-QUAL output:"
        write(11,*)""
        write(11,*)' CBODu      Orga
&nec N'
        write(11,*)'          Reach      mass load      mass
& load'
        write(11,*)'          number      (kg/day)      (kg
&/day)'
        write(11,*)'          -----      -----      -----'
&-----'
        DO 230 numm=1,num_imp_reach
3080     Format(26X,I3,6x,F10.2,5x,F10.2)
230      Write(11,3080)imp_reach(numm),NP_BOD(numm), NP_Org(numm)
        write(11,*)"----- ----- -----"
&-----'
3090     format(A33,F12.2,3x,F12.2)
        write(11,3090)'Subsegment totals           ',MLDT19_tot_CBODu
&,MLDT19_tot_org
        write(11,*)""

```

```

do I=1,total_elem
end do

```

C***** SECTION:"CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:"

```

        write(11,3030)
        write(11,*)""
        write(11,*)"CALCULATIONS FOR LOADS FROM SOD AND BENTHIC AMMONIA:"
        write(11,*)""
        write(11,*)"SOD temperature correction factor used in LA-QUAL mode"

```

```

&l: 1.065 (default)'
write(11,*)
write(11,*)"Equations used: SOD temp. corrected = (SOD at 20 C) *
&1.065^(Water temp - 20 C)'
write(11,*)           SOD load = (SOD temp. corrected, g/m2/
&day) * (Surface area, m2) * 1.0E-3 kg/g'
write(11,*)           Benthic NH3-N load = (Benthic ammonia
&N, g/m2/day) * (Surface area, m2) * 1.0E-3 kg/g'
write(11,*)
write(11,*)
write(11,*)           Values from LA-QUAL output
&:           Calculated values:'
write(11,*)           -----
&----- -----
write(11,*)           Water      Surface      SOD at
&Benthic      SOD temp.      SOD      Benthic'
write(11,*)"Reach   Element      temp.      area      20 C
&ammonia N    corrected      load      NH3-N load'
write(11,*)'number   number      (deg C)      (m2)      (g/m2/day)
&(g/m2/day)  (g/m2/day)  (kg/day)  (kg/day)'
write(11,*)'----- ----- ----- -----'
&----- -----
ctr=1
DO 300 cir=1,total_elem
4001 if (elem_col(cir).LT.elem_begin(ctrl)) then
ctrl=ctrl-1
go to 4001
end if

4002 if (elem_col(cir).GT.elem_end(ctrl)) then
ctrl=ctrl+1
go to 4002
end if

c4009 FORMAT(I3,2x,I3,2x,I3,2x,F6.2,2x,I3,2x,I3,2x,F8.4)
c     write(13,4009)cir,elem_begin(ctrl),elem_end(ctrl),elem_col(cir),ctrl,
c     &np_reach(ctrl),elem_sod(cir)

4000 format(I3,7x,I3,4x,f10.2,1x,f10.3,1x,f10.2,5x,f6.3,3x,f10.2
&,6x,f6.2)
write (11,4000)imp_reach(ctrl), elem_col(cir),elem_temp(cir),
&s_area(cir),elem_sod(cir), elem_benthic(cir),sod_temp_cor(cir),
&sod_load(cir),benthic(cir)

300  continue
write(11,*)
&           -----
4010 format(A60,16x,F10.2,2x,f10.2)
write(11,4010)'Subsegment totals:',nps_sod_load_tot,nps_benthic_to
&t

```

```

write(11,' '
C***** SECTION:"CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EXPLICITLY MODELED:"

write(11,3030)
write(11,' ')
write(11,*)"CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES EX
&PLICITLY MODELED:"
write(11,' ')
if (ps_num_wstld.EQ.0) then
  WRITE(11,*)"For this subsegment, there are no point source dischar
&ges explicitly modeled."
  go to 335
end if
write(11,*)"Equation used: (Load, kg/day) = (Inflow rate, m3/sec)
&* (Conc., mg/L) * 1.0E-6 kg/mg * 1.0E3 L/m3 *"
write(11,*)"'
&                                86400 sec/day'

write(11,' ')
write(11,*)"Values from LA-QUAL output:"
write(11,' ')
write(11,*)'           Inflow      CBODu      Organic N    Ammonia N
& NO2+NO3 N'
write(11,*)'Element      rate      conc.      conc.      conc.
& conc.'
write(11,*)'number      (m3/sec)    (mg/L)     (mg/L)     (mg/L)
& (mg/L)      Name of discharge'
write(11,*)'-----  -----  -----  -----  -----'
& -----  -----
DO 330 cir=1,ps_num_wstld
4020 Format(I3,5x,f10.5,5x,f7.3,5x,f7.3,5x,f7.3,5x,f7.3,6x,A20)
  write(11,4020)ps_elem_wstld(cir),ps_WSTLD_Flow(cir), ps_WSTL
  &D2_BOD_con(cir),ps_WSTLD2_ORG_con(cir), ps_WSTLD2_NH3_con(cir),
  &ps_WSTLD2_NO3_con(cir),PS_wstld_name(cir)
330 continue
write(11,' ')
write(11,' ')
write(11,' ')
write(11,*)"Calculated values:"
write(11,*)' '
write(11,*)' '
write(11,*)'           CBODu      Organic N    Ammonia N
& NO2+NO3 N'
write(11,*)'Element      load      load      load
& load'
write(11,*)'number      (kg/day)    (kg/day)    (kg/day)
& (kg/day)'
write(11,*)'-----  -----  -----  -----'
& -----  -

```

```

cir=ps_num_wstld
if (ps_num_wstld .EQ.0) then
  write(11,*)'           NONE          0.00      0.00      0.00
&           0.00'
  go to 342
end if
do 340 cirr=1,cirr
4030 Format(13x,I3,4x,f10.2,4x,f8.2,4x,f8.2,4x,f8.2)
340   write(11,4030)ps_elem_wstld(cirr),ps_WSTLD2_BOD_cal(cirr)
&, ps_WSTLD2_ORG_cal(cirr), ps_WSTLD2_NH3_cal(cirr), ps_WSTLD2_N
&O3_cal(cirr)
342   write(11,*)'----- ----- ----- ----- -----
& -----'
4040 Format(A16,4x,f10.2,2x,f10.2,2x,f10.2,2x, f10.2)
  write(11,4040)'Subsegment totals:',ps_BOD_tot,ps_Org_N_tot,ps_
&NH3_N_tot,ps_NO3_tot
  write(11,*)' '
  write(11,*)' '

```

C*****SECTION:"CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NOT EXPLICITLY MODELED:"

```

335  write(11,3030)
  write(11,*)' '
  write(11,*)' '
  write(11,*)"CALCULATIONS FOR LOADS FROM POINT SOURCE DISCHARGES NO
&T EXPLICITLY MODELED:"
  write(11,*)' '
  if (num_pt_sour .EQ.0) THEN
    WRITE(11,*)"For this subsegment, there are no point source disc
&charges not explicitly modeled."
    write(11,*)' '
    GO TO 431
  END IF
4045 format (A62,f6.3,A33)
  write(11,4045)'Equations used: Flow rate from TMDL calcs = Permit
&flow rate * ',fac_mos_FG,' (to incorporate MOS and FG) '
  write(11,*)'           (Load, kg/day) = (Flow rate, MGD) * (C
&onc., mg/L) * 3.785 L/gal * 1.0E6 gal/MG * 1.0E-6 kg/mg'
  write(11,*)' '
  write(11,*)' '
  write(11,*)"Assumptions: Ratio of CBODU to CBOD5 for point source
& discharges = 2.3 (guidance from LTP)."
  write(11,*)'           For permits with BOD or ammonia limits, N
&O2+NO3 = 10 mg/L (drinking water criteria).'
  write(11,*)'           For permits with COD limits, assume that
&CBODU is about the same magnitude as COD and'
  write(11,*)'           that discharges of nitrogen (o
&organic, ammonia, and NO2+NO3) are negligible.'
  write(11,*)' '

```

```

      write(11,'  ')
      write(11,'          Permit     Factor to     Flow
&'                                flow     incorporate     rate fo
      write(11,*)"NPDES
&r'
      write(11,*)"permit      Outfall      rate      MOS and FG      TMDL ca
&lcs
      write(11,*)"number      number      (MGD)      into flow      (MG)
&D      Comments'
      write(11,*)'-----  -----  -----  -----  -----'
&--  -----
      do 400 I= 1,num_pt_sour
        tmdl_cal_flow(I)=perm_flow(I)*fac_mos_FG
4050    Format(A10,4x,A3,5x,F10.3,3x,F6.3,4x,f10.3,5x,A40)
        write (11,4050)permit_number(I), outfall_num(I),perm_flow(I),fa
&c_mos_FG,tmel_cal_flow(I), comment(I)
400    continue
      write(11,*)"  "
      write(11,*)"  "
      write(11,*)"  "
      write(11,*)"  "                                User specified permit limits
&:'
      write(11,*)" NPDES
&-
      write(11,*)" permit      Outfall      CBOD5      COD      Ammoni
&a'
      write(11,*)" number      number      (mg/L)      (mg/L)      (mg/L)
&)      Comments'
      write(11,*)'-----  -----  -----  -----  -----'
&--  -----
      do 410 I= 1,num_pt_sour
4060    Format(A10,4x,A3,5x,F10.1,2x,F10.1,2x,F10.1,4x,A40)
410    write (11,4060)permit_number(I), outfall_num(I),CBOD5_perm(I),
&COD_perm(I), ammon_perm(I),comment_con(I)
      write(11,*)"  "
      write(11,*)"  "
      write(11,*)"  "
      write(11,*)"  "                                Values for TMDL calcul
&ations:
      write(11,*)" NPDES
&-----
      write(11,*)" permit      Outfall      CBODu      Organic N      Ammonia
& N      NO2+NO3 N'
      write(11,*)" number      number      (mg/L)      (mg/L)      (mg/
&L)      (mg/L)      Comments'
      write(11,*)'-----  -----  -----  -----  -----'
&--  -----
      do 420 I= 1,num_pt_sour
        tmdl_cal_flow(I)=perm_flow(I)*1.25
4070    Format(A10,4x,A3,5x,F10.2,2x,F10.2,2x,F10.2,2x,F10.2)

```

C*****SECTION: "SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT:"

```

431    write(11,3030)
        write(11,'')
        write(11,*)'SUMMARY OF NONPOINT SOURCE OXYGEN DEMAND FOR THIS SUBS
&EGEMENT:'
        write(11,'')
        write(11,'')
4093   format(A52,f6.4,A30)
        write(11,4093)'Equations used: Organic N oxygen demand, kg/day =
&',ammoxy_rat,' * Organic N load, kg/day of N'
4094   format(A52,F6.4,A30)
        write(11,4094)'                               Ammonia N oxygen demand, kg/day =
&',ammoxy_rat,' * Ammonia N load, kg/day of N'
4095   format(A37,f4.1,A24)
        write(11,4095)'                               Margin of safety = ',nps_mos_per,'
&% * nonpoint source load'
4097   format(A34,f4.1,A24)
        write(11,4097)'                               Future Growth = ',nps_FG_per,'% *
&nonpoint source load'
4099   format(A36,f4.1,A24)
        write(11,4099)'                               Load Allocation = ',100-nps_mos_pe
&r-ps_FG_per,'% * nonpoint source load'

```

```

write(11,*)
write(11,*)"Values from calculations above"
write(11,*)
write(11,*)
&    Nitrogen loads (kg/day of N):
write(11,*)
&-----
write(11,*)'                                     SOD      CBODu
&Organic      Ammonia      NO2+NO3 N'          (kg/day)   (kg/day)  (
&kg/day)     (kg/day)     (kg/day)'           -----  -----  -
write(11,*)
&-----  -----  -----
5000  format(A36,4x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5000)'NPS inflows                  N/A ',nps_bod_tot,n
&ps_org_N_tot,nps_nh3_n_tot,nps_NO3_tot
5010  format(A36,4x,f10.2,1x,f10.2,4x,A20)
      write(11,5010)'Mass LOads (data type 19)      N/A ',mldt19_tot_cb
&odu,mldt19_tot_org,'N/A'                   N/A'
5020  format(A15,13x,f10.2,1x,A20,5x,f10.2,7x,A4)
      write(11,5020)'SOD and Benthic ammonia',nps_sod_load_tot,'N/A
&  N/A',nps_benthic_tot,'N/A'
c      write(11,*)'                                     -----  -----  -
c  &-----  -----  -----
c      write(11,*)' '
c      write(11,*)"Calculated loads of oxygen demand:"
c      write(11,*)'
& Oxygen demand loads:      Total'
write(11,*)
& -----
Oxygen'
write(11,*)'                                     SOD      CBODu
&Organic      Ammonia      demand'          (kg/day)   (kg/day)  (
&kg/day)     (kg/day)     (kg/day)'           -----  -----  -
&-----  -----  -----
c5000  format(A36,4x,f10.5,2x,f10.5,2x,f10.5,3x,f10.5)

      write(11,5000)'NPS inflows                  N/A ',nps_bod_tot,
&oxy_dem_nps_org_N_tot,oxy_dem_nps_nh3_tot,nps_inflows_tot_oxy_dema
&nd
5011  format(A36,4x,f10.2,1x,f10.2,8x,A3,6x,f10.2)
      write(11,5011)'Mass LOads (data type 19)      N/A ',mldt19_tot_cb
&odu,oxy_dem_mldt19_tot_org,'N/A',mldt19_tot_oxy_dem
5021  format(A15,13x,f10.2,1x,A20,5x,f10.2,4x,f10.2)
      write(11,5021)'SOD and Benthic ammonia',nps_sod_load_tot,'N/A
&  N/A',oxy_dem_nps_benthic_tot,tot_oxy_dem_sod_ben
      write(11,*)'
5030  format(A23,5x,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
      write(11,5030)'Total for all NPS loads',nps_sod_load_tot,nps_summa

```

```

&ry_cbodu,nps_summary_org,nps_summary_ammon, tot_oxy_dem_nps
  write(11,*)
5035 format(A22,f4.1,A2,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
  write(11,5035)'NPS future growth (' ,nps_FG_per,'% ) ',nps_FG_
&sod_load_tot,nps_FG_summary_cbodu,nps_FG_summary_org,nps_FG_s
&summary_ammon,nps_FG_tot_oxy_dem
5040 format(A22,f4.1,A2,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
  write(11,5040)'NPS margin of safety (' ,nps_mos_per,'% ) ',nps_mo
&s_sod_load_tot,nps_mos_summary_cbodu,nps_mos_summary_org,nps_mos_s
&summary_ammon,nps_mos_tot_oxy_dem
5050 format(A22,f4.1,A2,f10.2,2x,f10.2,1x,f10.2,3x,f10.2,4x,f10.2)
  write(11,5050)'NPS load allocation (' ,100-nps_MOS_PER-nps_FG_PER
&,'%',npS_LA_sod_load_tot,nps_LA_summary_cbodu,nps_LA_summary
&_org,nps_LA_summary_ammon,nps_LA_tot_oxy_dem
  write(11,*)
  write(11,*)

```

C*****SECTION:"SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGEMENT"

```

write(11,3030)
write(11,*)
Write(11,*)"SUMMARY OF POINT SOURCE OXYGEN DEMAND FOR THIS SUBSEGE
&MENT'
write(11,*)
if (num_pt_sour+ps_num_wstld.EQ.0) THEN
  WRITE(11,*)"For this subsegment, there are no point source disc
&harges either modeled or unmodeled in this subsegment.'
  write(11,*)
  GO TO 561
  end if
write(11,*)
write(11,4093)' Equations used: Organic N oxygen demand, kg/day =
& ',ammoxy_rat,' * Organic N load, kg/day of N'
  write(11,4093)'           Ammonia N oxygen demand, kg/day =
& ',ammoxy_rat,' * Ammonia N load, kg/day of N'
5052 format(A36,f4.1,A21)
  write(11,5052)'           Margin of Safety = ',ps_mos_per,'%
& * point source load'
5053 format(A33,F4.1,A24)
  write(11,5053)'           Future Growth = ',nps_FG_per,'% *
&nonpoint source load'
5054 format(A71,f4.1,A16)
  write(11,5054)'           Wasteload Allocation (WLA) for mod
&eled point source = ',100-ps_mos_per-ps_FG_per,'% * modeled load'
5056 format(A70,f4.1,A19)
  write(11,5056)'           Wasteload Allocation (WLA) for min
&or point sources = ',100-ps_mos_per-ps_FG_per,'% * calculated load
&
  write(11,*)

```

```

      write(11,*)"Values from calculations above"
      write(11,*)""
      & Nitrogen loads (kg/day of N):'
      write(11,*)""
      &-----
      write(11,*)""
      &organic N Ammonia N NO3+NO2' CBODu O
      write(11,*)""
      &(kg/day) (kg/day) (kg/day) (kg/day)
      write(11,*)"----- ----- -"
      &----- ----- -----
      if (ps_num_wstld .EQ.0) then
      go to 470
      end if
      DO 450 cir=1,ps_num_wstld
5060 Format(A17,1x,A20,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5060)'Modeled load for:', ps_wstld_name(cir),
      &ps_WSTLD2_Bod_cal(cir),ps_WSTLD2_ORG_cal(cir), ps_WSTLD2_N
      &h3_cal(cir),ps_WSTLD2_NO3_cal(cir)
450 continue
5080 format(A38,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
470 write(11,5080)'Calculated load for minor point sources ',cbodu_t
      &mdl_tot,org_N_tmdl_tot,ammon_tmdl_tot,no3_tmdl_tot
      write(11,*)""
      write(11,*)""
      write(11,*)"Calculated loads of oxygen demand"
      write(11,*)""
      write(11,*)""
      & Oxygen demand loads: Total'
      write(11,*)""
      & ----- Oxygen' CBODu O
      &organic N Ammonia N demand' (kg/day)
      write(11,*)""
      &(kg/day) (kg/day) (kg/day) (kg/day)
      write(11,*)"----- ----- -"
      &----- ----- -----
      if (ps_num_wstld .EQ.0) then
      go to 540
      end if
      DO 490 cir=1,ps_num_wstld
      write(11,5060)'Modeled load for:', ps_wstld_name(cir),
      &oxy_dem_ps_WSTLD2_Bod_cal(cir),oxy_dem_ps_WSTLD2_ORG_cal(cir),oxy_
      &dem_ps_WSTLD2_Nh3_cal(cir),mod_tot_oxy_dem_ps(cir)
490 continue
540 write(11,5080)'Calculated load for minor point sources ',cbodu_t
      &mdl_tot,oxy_dem_org_N_tmdl, oxy_dem_ammon_tmdl,min_ps_summary_tot
      write(11,5080)'Total for all point source loads ',ps_s
      &summary_cbodu, ps_summary_org,ps_summary_nh3_n,tot_oxy_dem_summary
      write(11,*)""

```

```

5090 Format(A31,f4.1,A3,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5090)'MOS for all point Sources      (' ,ps_mos_per,'%)   ',
&mos_ps_summary_cbodu, mos_ps_summary_org,mos_ps_summary_nh3_n,mos_
&tot_oxy_dem_summary
5092 Format(A31,f4.1,A3,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5092)'FG for all point Sources      (' ,ps_FG_per,'%)   ',
&FG_ps_summary_cbodu,FG_ps_summary_org,FG_ps_summary_nh3_n,FG_
&tot_oxy_dem_summary

      if (ps_num_wstld .EQ.0) then
      go to 560
      end if
      DO 550 cir=1,ps_num_wstld
5095 Format(A8,1x,A21,A1,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,5095)'WLA for:',ps_wstld_name(cir), '(' ,100-ps_mos_per-ps_
&FG_per,'%) ',wla_ps_WSTLD2_BOD_cal(cir),wla_ps_WSTLD2_ORG_cal(cir),
&wla_ps_WSTLD2_nH3_cal(cir),wla_mod_tot_oxy_dem_ps(cir)
550  continue
6000 format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
560  write(11,6000)'WLA for minor point sources (' ,100-ps_mos_per-ps_
&FG_per,'%) ',wla_ps_cbodu_tmdl_tot,wla_ps_org_N_tmdl_tot, wla_ps
&_ammon_tmdl_tot,wla_min_ps_summary_tot

561  if (nut_tmdl_need .EQ. 'NO') then
      go to 606
      end if

```

C*****SECTION:"NUTRIENT TMDL CALCULATIONS:"

```

      write(11,3030)
      write(11,*)' '
      write(11,*)' '
      write(11,*)"NUTRIENT TMDL CALCULATIONS:"
      write(11,*)' '
      write(11,*)"Assumptions: Naturally occurring ratio of total N to t
&total P = ',nat_rat
      write(11,*)' '
      write(11,*)"Equations used: Total N = (Organic N) + (Ammonia N) +
&(NO2+NO3 N)'
      write(11,*)"           Total P = (Total N) / (Naturally occur
&ring ratio of total N to total P)"
6010 format(A39,f4.1,A24)
      write(11,6010)'          NPS margin of safety = ',nps_mos_per,
      &% * nonpoint source load'
6015 format(A36,f4.1,A24)
      write(11,6015)'          NPS Future Growth = ',nps_FG_per,
      &% * nonpoint source load'
6020 format(A38,f4.1,A24)
      write(11,6020)'          NPS load allocation = ',100-nps_mos

```

```

&_per-nps_FG_per,'% * nonpoint source load'
6030 format(A57,f4.1,A27)
      write(11,6030)' Margin of safety for all point sour
&ces = ',ps_mos_per,'% * total point source load'
6035 format(A53,F4.1,A24)
      write(11,6035)' Future Growth for all point soures
      &= ',nps_FG_per,'% * nonpoint source load'
6040 format(A70,f4.1,A16)
      write(11,6040)' Wasteload allocation (WLA) for mode
      &led point source = ',100-ps_mos_per-ps_FG_per,'% * modeled load'
6050 format(A69,f4.1,A19)
      write(11,6050)' Wasteload allocation (WLA) for mino
      &r point sources = ',100-ps_mos_per-ps_FG_per,'% * calculated load'
      write(11,*)' '
      write(11,*)' '
      write(11,*)'Nonpoint sources:'
      write(11,*)' '
      &Ammonia N    NO2+NO3 N    Total N    Total P'          Organic N
      write(11,*)' '
      & (kg/day)   (kg/day)   (kg/day)   (kg/day)'          (kg/day)
      write(11,*)' '
      & -----  -----  -----  -----'
5060 format(A25,16x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6060)'Total for all NPS loads           ',nut_tm
      &dl_nps_org_N_tot,nps_nh3_n_tot,nps_NO3_tot,nps_tot_nitrogen_load,n
      &ps_total_P
      write(11,*)' '
5070 format(A22,f4.1,A2,13x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6070)'NPS margin of safety (' ,nps_mos_per,'%)   ',nps_mo
      &s_nut_tmdl_nps_Org_N_tot,nps_mos_nps_nh3_n_tot,nps_mos_nps_NO3_tot
      &,nps_mos_tot_nitrogen_load,nps_mos_total_p
5075 format(A22,f4.1,A2,13x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6075)'NPS Future Growth   (' ,nps_mos_per,'%)   ',nps_FG
      &_nut_tmdl_nps_Org_N_tot,nps_FG_nps_nh3_n_tot,nps_FG_nps_NO3_tot
      &,nps_FG_tot_nitrogen_load,nps_FG_total_p
5080 format(A22,f4.1,A2,13x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6080)'NPS load allocation  (' ,100-nps_mos_per-nps_FG_per,
      &%)'   ',nps_la_nut_tmdl_nps_Org_N_tot,nps_la_nps_nh3_n_tot,nps_la
      &nps_NO3_tot,nps_la_tot_nitrogen_load,nps_la_total_p
      write(11,*)' '
      write(11,*)' '
      write(11,*)'Point sources:'
      write(11,*)' '
      write(11,*)' '
      &Ammonia N    NO2+NO3 N    Total N    Total P'          Organic N
      write(11,*)' '
      & (kg/day)   (kg/day)   (kg/day)   (kg/day)'          (kg/day)
      write(11,*)' '
      & -----  -----  -----  -----'
      if (ps_num_wstld .EQ.0) then

```

```

go to 590
end if
DO 585 cir=1,ps_num_wstld
6085 Format(A17,1x,A14,8x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,6085)'Modeled load for:',ps_wstld_name(cir),
      &ps_WSTLD2_ORG_cal(cir),ps_WSTLD2_NH3_cal(cir),ps_WSTLd2_NO3_cal(c
      &ir),ps_total_nitrogen_load(cir),ps_total_P(cir)

585   continue
c5080  format(A38,2x,f10.5,2x,f10.5,2x,f10.5,2x,f10.5)
6090  format(A38,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
590   write(11,6090)'Calculated load for minor point sources ',org_N_t
      &mdl_tot,ammon_tmdl_tot,no3_tmdl_tot,min_ps_total_nitrogen_load,min
      &ps_total_P
      write(11,'*') '
      & -----'
      & -----'-----'
      write(11,6090)'Total for all point source loads ',ps_n
      &ut_tmdl_summary_org_N_tot,ps_nut_tmdl_summary_nh3_N_tot,ps_nut_tmd
      &l_summary_no3_N_tot,ps_tot_nitrogen_final_load,ps_tot_P_final
      write(11,'*')

7000  Format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,7000)'MOS for all point Sources (' ,ps_mos_per, '%)',
      &mos_ps_nut_tmdl_sum_org_N_tot,mos_ps_nut_tmdl_sum_nh3_N_tot,
      &mos_ps_nut_tmdl_sum_no3_N_tot,mos_ps_tot_nitrogen_final_load,
      &mos_ps_tot_P_final
7005  Format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)
      write(11,7005)'FG for all point Sources (' ,ps_mos_p
      &er, '%)',FG_ps_nut_tmdl_sum_org_N_tot,FG_ps_nut_tmdl_sum_nh3_N_to
      &t,FG_ps_nut_tmdl_sum_no3_N_tot,FG_ps_tot_nitrogen_final_load,
      &FG_ps_tot_P_final
      if (ps_num_wstld .EQ.0) then
      go to 610
      end if
      DO 600 cir=1,ps_num_wstld
7010  Format(A9,1x,A20,A1,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2
      &x,f10.2)
600   write(11,7010)'WLA for: ',ps_wstld_name(cir), '(' ,100-ps_mos_per-ps
      &_FG_per, '%)',wla_ps_WSTLD2_ORG_cal_sum(cir),wla_ps_WSTLd2_nH3_cal_
      &sum(cir),wla_ps_wstLD2_NO3_cal_sum(cir),wla_ps_total_nitrogen_load
      &(cir),wla_ps_total_P(cir)
610   continue
7020  format(A31,f4.1,A2,3x,f10.2,2x,f10.2,2x,f10.2,2x,f10.2)

      write(11,7020)'WLA for minor point sources (' ,100-ps_mos_per-ps_
      &FG_per, '%)',wla_min_ps_nut_tmdl_sum_org,wla_min_ps_nut_tmdl_sum
      &_nh3,wla_min_ps_nut_tmdl_sum_no3,wla_min_ps_nitrogen_final_load
      &,wla_min_ps_P_final

606   Print*, 'Program has made the output file!!!'
      Print*, 'Program completed!!!'

```

STOP
END

APPENDIX P

Ammonia Toxicity Calculations

SUMMER AMMONIA TOXICITY CALCULATIONS FOR LAKE CONCORDIA (SUBSEGMENT 101604)

Equations from 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, Dec. 1999.

Use chronic criterion when fish early life stages are present (as mentioned on page 88, this is the same as CCC for early life stages absent when temp > 15°C)

$$\text{CCC, in mg N/L} = [0.0577/(1+10^{7.688-\text{pH}}) + 2.487/(1+10^{\text{pH}-7.688})] * \text{MIN}[2.85, 1.45*10^{0.028*(25-T)}]$$

Note: CCC is the Chronic Criterion Concentration

pH values below are the average of the measurements on Lake Concordia from the LDEQ data.
Temperature values below are the critical temperature used in the projection simulation.

Model Element	Average pH during calibration period	Temperature in projection run (°C)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
1	7.9	31.5	0.9	0.15	No
2	7.9	31.5	0.9	0.15	No
3	7.9	31.5	0.9	0.15	No
4	7.9	31.5	0.9	0.15	No
5	7.9	31.5	0.9	0.15	No
6	7.9	31.5	0.9	0.15	No
7	7.9	31.5	0.9	0.15	No
8	7.9	31.5	0.9	0.15	No
9	7.9	31.5	0.9	0.15	No
10	7.9	31.5	0.9	0.15	No
11	7.9	31.5	0.9	0.15	No
12	7.9	31.5	0.9	0.15	No
13	7.9	31.5	0.9	0.14	No
14	7.9	31.5	0.9	0.14	No
15	7.9	31.5	0.9	0.14	No
16	7.9	31.5	0.9	0.14	No
17	7.9	31.5	0.9	0.14	No
18	7.9	31.5	0.9	0.14	No
19	7.9	31.5	0.9	0.14	No
20	7.9	31.5	0.9	0.14	No
21	7.9	31.5	0.9	0.14	No
22	7.9	31.5	0.9	0.14	No
23	7.9	31.5	0.9	0.14	No
24	7.9	31.5	0.9	0.15	No
25	7.9	31.5	0.9	0.15	No
26	7.9	31.5	0.9	0.15	No
27	7.9	31.5	0.9	0.15	No
28	7.9	31.5	0.9	0.15	No
29	7.9	31.5	0.9	0.15	No
30	7.9	31.5	0.9	0.15	No
31	7.9	31.5	0.9	0.15	No
32	7.9	31.5	0.9	0.15	No
33	7.9	31.5	0.9	0.15	No
34	7.9	31.5	0.9	0.15	No
35	7.9	31.5	0.9	0.15	No
36	7.9	31.5	0.9	0.15	No
37	7.9	31.5	0.9	0.15	No
38	7.9	31.5	0.9	0.15	No
39	7.9	31.5	0.9	0.15	No
40	7.9	31.5	0.9	0.15	No
41	7.9	31.5	0.9	0.15	No
42	7.9	31.5	0.9	0.15	No
43	7.9	31.5	0.9	0.15	No
44	7.9	31.5	0.9	0.15	No
45	7.9	31.5	0.9	0.15	No
46	7.9	31.5	0.9	0.15	No
47	7.9	31.5	0.9	0.15	No
48	7.9	31.5	0.9	0.15	No
49	7.9	31.5	0.9	0.15	No

Model Element	Average pH during calibration period	Temperature in projection run (°C)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
50	7.9	31.5	0.9	0.15	No
51	7.9	31.5	0.9	0.15	No
52	7.9	31.5	0.9	0.15	No
53	7.9	31.5	0.9	0.15	No
54	7.9	31.5	0.9	0.15	No
55	7.9	31.5	0.9	0.15	No
56	7.9	31.5	0.9	0.15	No
57	7.9	31.5	0.9	0.15	No
58	7.9	31.5	0.9	0.15	No
59	7.9	31.5	0.9	0.15	No
60	7.9	31.5	0.9	0.15	No
61	7.9	31.5	0.9	0.15	No
62	7.9	31.5	0.9	0.15	No
63	7.9	31.5	0.9	0.15	No
64	7.9	31.5	0.9	0.15	No
65	7.9	31.5	0.9	0.15	No
66	7.9	31.5	0.9	0.15	No
67	7.9	31.5	0.9	0.15	No
68	7.9	31.5	0.9	0.15	No
69	7.9	31.5	0.9	0.15	No
70	7.9	31.5	0.9	0.15	No
71	7.9	31.5	0.9	0.15	No
72	7.9	31.5	0.9	0.15	No
73	7.9	31.5	0.9	0.15	No
74	7.9	31.5	0.9	0.15	No
75	7.9	31.5	0.9	0.15	No
76	7.9	31.5	0.9	0.15	No
77	7.9	31.5	0.9	0.15	No
78	7.9	31.5	0.9	0.15	No
79	7.9	31.5	0.9	0.15	No
80	7.9	31.5	0.9	0.15	No
81	7.9	31.5	0.9	0.14	No
82	7.9	31.5	0.9	0.14	No
83	7.9	31.5	0.9	0.14	No
84	7.9	31.5	0.9	0.14	No
85	7.9	31.5	0.9	0.14	No
86	7.9	31.5	0.9	0.14	No
87	7.9	31.5	0.9	0.14	No
88	7.9	31.5	0.9	0.14	No
89	7.9	31.5	0.9	0.15	No
90	7.9	31.5	0.9	0.15	No
91	7.9	31.5	0.9	0.15	No
92	7.9	31.5	0.9	0.15	No
93	7.9	31.5	0.9	0.15	No
94	7.9	31.5	0.9	0.15	No
95	7.9	31.5	0.9	0.15	No
96	7.9	31.5	0.9	0.15	No
97	7.9	31.5	0.9	0.15	No
98	7.9	31.5	0.9	0.15	No
99	7.9	31.5	0.9	0.15	No
100	7.9	31.5	0.9	0.15	No
101	7.9	31.5	0.9	0.15	No
102	7.9	31.5	0.9	0.15	No
103	7.9	31.5	0.9	0.15	No
104	7.9	31.5	0.9	0.15	No
105	7.9	31.5	0.9	0.15	No
106	7.9	31.5	0.9	0.15	No
107	7.9	31.5	0.9	0.15	No
108	7.9	31.5	0.9	0.15	No
109	7.9	31.5	0.9	0.15	No
110	7.9	31.5	0.9	0.15	No
111	7.9	31.5	0.9	0.15	No
112	7.9	31.5	0.9	0.15	No
113	7.9	31.5	0.9	0.15	No

Model Element	Average pH during calibration period	Temperature in projection run (°C)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
114	7.9	31.5	0.9	0.15	No
115	7.9	31.5	0.9	0.15	No
116	7.9	31.5	0.9	0.15	No
117	7.9	31.5	0.9	0.15	No
118	7.9	31.5	0.9	0.15	No
119	7.9	31.5	0.9	0.15	No
120	7.9	31.5	0.9	0.15	No
121	7.9	31.5	0.9	0.15	No
122	7.9	31.5	0.9	0.15	No
123	7.9	31.5	0.9	0.15	No
124	7.9	31.5	0.9	0.15	No
125	7.9	31.5	0.9	0.15	No
126	7.9	31.5	0.9	0.15	No
127	7.9	31.5	0.9	0.15	No
128	7.9	31.5	0.9	0.15	No
129	7.9	31.5	0.9	0.14	No
130	7.9	31.5	0.9	0.14	No
131	7.9	31.5	0.9	0.14	No
132	7.9	31.5	0.9	0.14	No
133	7.9	31.5	0.9	0.14	No
134	7.9	31.5	0.9	0.14	No
135	7.9	31.5	0.9	0.14	No
136	7.9	31.5	0.9	0.14	No
137	7.9	31.5	0.9	0.14	No
138	7.9	31.5	0.9	0.14	No
139	7.9	31.5	0.9	0.14	No
140	7.9	31.5	0.9	0.14	No
141	7.9	31.5	0.9	0.14	No
142	7.9	31.5	0.9	0.14	No

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WINTER AMMONIA TOXICITY CALCULATIONS FOR LAKE CONCORDIA (SUBSEGMENT 101204)

Equations from 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, Dec. 1999.

Use chronic criterion when fish early life stages are present (as mentioned on page 88, this is the same as CCC for early life stages absent when temp > 15°C)

$$\text{CCC, in mg N/L} = [0.0577/(1+10^{7.688-\text{pH}}) + 2.487/(1+10^{\text{pH}-7.688})] * \text{MIN}[2.85, 1.45*10^{0.028*(25-T)}]$$

Note: CCC is the Chronic Criterion Concentration

pH values below are the average of the measurements on Lake Concordia from the LDEQ data.
Temperature values below are the critical temperature used in the projection simulation.

Model Element	Average pH during calibration period	Temperature in projection run (°C)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
1	7.9	19.7	1.9	0.25	No
2	7.9	19.7	1.9	0.30	No
3	7.9	19.7	1.9	0.32	No
4	7.9	19.7	1.9	0.33	No
5	7.9	19.7	1.9	0.34	No
6	7.9	19.7	1.9	0.34	No
7	7.9	19.7	1.9	0.34	No
8	7.9	19.7	1.9	0.34	No
9	7.9	19.7	1.9	0.34	No
10	7.9	19.7	1.9	0.34	No
11	7.9	19.7	1.9	0.34	No
12	7.9	19.7	1.9	0.34	No
13	7.9	19.7	1.9	0.34	No
14	7.9	19.7	1.9	0.34	No
15	7.9	19.7	1.9	0.34	No
16	7.9	19.7	1.9	0.34	No
17	7.9	19.7	1.9	0.34	No
18	7.9	19.7	1.9	0.34	No
19	7.9	19.7	1.9	0.34	No
20	7.9	19.7	1.9	0.34	No
21	7.9	19.7	1.9	0.34	No
22	7.9	19.7	1.9	0.34	No
23	7.9	19.7	1.9	0.34	No
24	7.9	19.7	1.9	0.22	No
25	7.9	19.7	1.9	0.27	No
26	7.9	19.7	1.9	0.29	No
27	7.9	19.7	1.9	0.31	No
28	7.9	19.7	1.9	0.32	No
29	7.9	19.7	1.9	0.33	No
30	7.9	19.7	1.9	0.33	No
31	7.9	19.7	1.9	0.33	No
32	7.9	19.7	1.9	0.33	No
33	7.9	19.7	1.9	0.34	No
34	7.9	19.7	1.9	0.34	No
35	7.9	19.7	1.9	0.34	No
36	7.9	19.7	1.9	0.34	No
37	7.9	19.7	1.9	0.34	No
38	7.9	19.7	1.9	0.34	No
39	7.9	19.7	1.9	0.34	No
40	7.9	19.7	1.9	0.34	No
41	7.9	19.7	1.9	0.34	No
42	7.9	19.7	1.9	0.34	No
43	7.9	19.7	1.9	0.34	No
44	7.9	19.7	1.9	0.34	No
45	7.9	19.7	1.9	0.34	No
46	7.9	19.7	1.9	0.34	No
47	7.9	19.7	1.9	0.34	No
48	7.9	19.7	1.9	0.34	No
49	7.9	19.7	1.9	0.34	No

Model Element	Average pH during calibration period	Temperature in projection run (°C)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
50	7.9	19.7	1.9	0.34	No
51	7.9	19.7	1.9	0.34	No
52	7.9	19.7	1.9	0.34	No
53	7.9	19.7	1.9	0.34	No
54	7.9	19.7	1.9	0.34	No
55	7.9	19.7	1.9	0.34	No
56	7.9	19.7	1.9	0.34	No
57	7.9	19.7	1.9	0.34	No
58	7.9	19.7	1.9	0.34	No
59	7.9	19.7	1.9	0.34	No
60	7.9	19.7	1.9	0.34	No
61	7.9	19.7	1.9	0.34	No
62	7.9	19.7	1.9	0.34	No
63	7.9	19.7	1.9	0.34	No
64	7.9	19.7	1.9	0.34	No
65	7.9	19.7	1.9	0.34	No
66	7.9	19.7	1.9	0.34	No
67	7.9	19.7	1.9	0.34	No
68	7.9	19.7	1.9	0.34	No
69	7.9	19.7	1.9	0.34	No
70	7.9	19.7	1.9	0.34	No
71	7.9	19.7	1.9	0.34	No
72	7.9	19.7	1.9	0.34	No
73	7.9	19.7	1.9	0.34	No
74	7.9	19.7	1.9	0.34	No
75	7.9	19.7	1.9	0.34	No
76	7.9	19.7	1.9	0.34	No
77	7.9	19.7	1.9	0.34	No
78	7.9	19.7	1.9	0.34	No
79	7.9	19.7	1.9	0.34	No
80	7.9	19.7	1.9	0.34	No
81	7.9	19.7	1.9	0.35	No
82	7.9	19.7	1.9	0.35	No
83	7.9	19.7	1.9	0.35	No
84	7.9	19.7	1.9	0.35	No
85	7.9	19.7	1.9	0.35	No
86	7.9	19.7	1.9	0.35	No
87	7.9	19.7	1.9	0.35	No
88	7.9	19.7	1.9	0.35	No
89	7.9	19.7	1.9	0.34	No
90	7.9	19.7	1.9	0.34	No
91	7.9	19.7	1.9	0.34	No
92	7.9	19.7	1.9	0.34	No
93	7.9	19.7	1.9	0.34	No
94	7.9	19.7	1.9	0.34	No
95	7.9	19.7	1.9	0.34	No
96	7.9	19.7	1.9	0.34	No
97	7.9	19.7	1.9	0.34	No
98	7.9	19.7	1.9	0.34	No
99	7.9	19.7	1.9	0.34	No
100	7.9	19.7	1.9	0.34	No
101	7.9	19.7	1.9	0.34	No
102	7.9	19.7	1.9	0.34	No
103	7.9	19.7	1.9	0.34	No
104	7.9	19.7	1.9	0.34	No
105	7.9	19.7	1.9	0.34	No
106	7.9	19.7	1.9	0.34	No
107	7.9	19.7	1.9	0.34	No
108	7.9	19.7	1.9	0.34	No
109	7.9	19.7	1.9	0.34	No
110	7.9	19.7	1.9	0.34	No
111	7.9	19.7	1.9	0.34	No
112	7.9	19.7	1.9	0.34	No
113	7.9	19.7	1.9	0.34	No

Model Element	Average pH during calibration period	Temperature in projection run (°C)	Calculated CCC (mg N/L)	Predicted NH3-N conc. in projection (mg N/L)	Toxic ?
114	7.9	19.7	1.9	0.34	No
115	7.9	19.7	1.9	0.34	No
116	7.9	19.7	1.9	0.34	No
117	7.9	19.7	1.9	0.34	No
118	7.9	19.7	1.9	0.34	No
119	7.9	19.7	1.9	0.34	No
120	7.9	19.7	1.9	0.34	No
121	7.9	19.7	1.9	0.34	No
122	7.9	19.7	1.9	0.34	No
123	7.9	19.7	1.9	0.34	No
124	7.9	19.7	1.9	0.34	No
125	7.9	19.7	1.9	0.34	No
126	7.9	19.7	1.9	0.34	No
127	7.9	19.7	1.9	0.34	No
128	7.9	19.7	1.9	0.34	No
129	7.9	19.7	1.9	0.35	No
130	7.9	19.7	1.9	0.35	No
131	7.9	19.7	1.9	0.35	No
132	7.9	19.7	1.9	0.35	No
133	7.9	19.7	1.9	0.35	No
134	7.9	19.7	1.9	0.35	No
135	7.9	19.7	1.9	0.35	No
136	7.9	19.7	1.9	0.35	No
137	7.9	19.7	1.9	0.35	No
138	7.9	19.7	1.9	0.35	No
139	7.9	19.7	1.9	0.35	No
140	7.9	19.7	1.9	0.35	No
141	7.9	19.7	1.9	0.35	No
142	7.9	19.7	1.9	0.34	No

FILE: R:\PROJECTS\2110-616\TECHLA-QUAL\LAKE CONCORDIA\PROJ\WINTER\NH3_TOXICITY_WINTER.XLS