



SCOPE OF WORK: TECHNICAL SUPPORT FOR GRAND FORKS' RAW WATER SUPPLY PLANNING

To: City of Grand Forks

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1 INTRODUCTION

The City of Grand Forks (City) has requested that Precision Water Resources Engineering provide support to the City in providing technical support for their raw water supply sources. Precision Water Resources Engineering (Precision) is pleased to provide this response to the City's request. First, a demonstration of Precision's qualifications to perform this work in the form of completed projects is provided, followed by a description of the work that will be undertaken in support of this request. Finally, a budget and proposed schedule are also provided.

2 PROJECT TASKS OVERVIEW

This section outlines each of the tasks to be performed as part of this scope of work (see Table 1).

Table 1: List of tasks described in this scope of work.

Task	Name
1	Project Management & Meetings
2	Red Lake River Yield Analysis
3	Red River Permit Yield Analysis Under Varying Bypass/Return Flow Assumptions
4	Grand Forks Demand and Water Supply Reliability Report
5	Technical Support for Thompson Acker Water Rights Administration Agreement
6	Miscellaneous
7	Travel & Presentation Preparation

2.1 TASK 1: PROJECT MANAGEMENT AND MEETINGS

The goal of Task 1 is to ensure the project adheres to the agreed upon scope, schedule, and budget outlined in this document. This includes the following:

- Conducting monthly Progress Meetings between the City and Precision.
- Tracking costs and schedule of the project.
- Managing work for Precision team members.

It is estimated that this task will require 72 hours.

2.2 TASK 2: RED LAKE RIVER YIELD ANALYSIS

The purpose of the analysis under Task 2 is to determine the firm yield of the City's Red Lake River Permit. Currently, there is no technical model that simulates the Red Lake River *and* operations of the Red Lake. The Red Lake is a USACE reservoir on the headwaters of the Red Lake River that significantly impacts the river flows in the Red Lake River, and it is not well understood how the operations at this reservoir would impact water supply under a severe (1930s level) drought.

Under this task, Precision will build a RiverWare® Model of the Red Lake River including the Red Lakes that will be used to estimate the yield of the City's Red Lake River permit. This model will simulate the Red Lake River system through the 1930s drought under contemporary demands and operational criteria.

A key step to ensuring that the information this model provides Grand Forks is accurate will be validation, which will require coordination with the various administrative organizations in the Red Lake Basin including (but not limited to) USACE, MN DNR, and the Red Lake Watershed District. Precision's ability to deliver reliable results for this Task will be contingent on these organizations' participation.

Table 2 provides a summary of the subtasks that comprise this task as well as the hours required to complete each one. Note, work on this Task was begun under the previous Task Order though only partially completed. The "Remaining Hours" column of Table 2 represent the hours that remain to be completed under the scope of work described in this document.

In total, it is estimated that this task will require 150 hours (under this Task Order) to complete.

Table 2: Summary of subtasks for Task 2 and required hours to complete task.

Task 2.1 - Data Gathering				
Item	Subtask Description	Total Hours	Remaining Hours	Description
2.1.1	Gather Known Data	20	10	Gather Red Lakes Elevation Volume Table, Hydrology Data, USACE Operational Data, Permit/Demand Data, and river loss data.
2.1.2	Confirm Thief River Assumptions	12	6	Discussion with MNDNR and/or USGS
2.1.3	Organize Permit/Demand Data	15	8	Organize permitted uses and demands by location on the Red Lake River and by use type in coordination with MNDNR.
2.1.4	Data Quality Control	10	6	Review Data
Task 2.2 - Model Building				
Item	Subtask Description	Total Hours	Remaining Hours	Description
2.2.1	Develop System Representation	12	7	Identify how to best represent Red Lake River water balance/physical structures in RiverWare
2.2.2	Implement System Representation In RiverWare	24	20	Implement Task 2.1 in RiverWare, and load data into the model.
2.2.3	Codify Red Lake Operations	32	26	Review Red Lake WCM and implement current Red Lake WCM Operations
Task 2.3 - Model Validation				
Item	Subtask Description	Total Hours	Remaining Hours	Description
2.3.1	QC Model	15	15	Develop output plotting and QC to ensure adequate model performance
2.3.2	Validate Results with Administrative Stakeholders	30	30	Meet with administrative organizations on Red Lake River (MN DNR, Red Lake Watershed District, USACE) to assess validity of modeled operations.
Task 2.4 - Results Presentation				
Item	Subtask Description	Total Hours	Remaining Hours	Description
2.4.1	Compile Results and Present to Grand Forks	22	22	Present results to Grand Forks.

2.3 TASK 3: RED RIVER PERMIT YIELD ANALYSIS UNDER VARYING RETURN FLOW ASSUMPTIONS

The purpose of this task is to assess the yield of the City’s Red River Permit under (1) varying Fargo return flow assumptions and/or (2) varying Fargo bypass requirements on the Red River. This analysis is designed to provide the City with the necessary technical information to make an informed agreement with Fargo regarding bypass requirements and return flows.

This analysis will use the StateMod Baseline **Project** Scenario to simulate the system under different assumptions for Fargo return flow and Red River bypass requirements. Precision will utilize the results from these simulations to conservatively analyze what

the minimum bypass requirements past Fargo on the Red River and Fargo return flow requirements must be to ensure that the City's demand is met. This analysis can then be used to inform the terms of the Agreement between Fargo and the City.

It is estimated that this task will require 100 hours to complete.

2.4 TASK 4: GRAND FORKS WATER SUPPLY RELIABILITY REPORT

The purpose of this task is to combine the results from Task 2, Task 3 from this Task Order and work completed under the previous Task Order into a single technical report that summarizes the City's supplies and demands, and quantifies any imbalance that will need to be addressed by a return flow/bypass agreement with Fargo and a nomination in the RRVWSP.

It is estimated that this task will require 125 hours.

2.5 TASK 5: TECHNICAL SUPPORT FOR THOMPSON ACKER WATER RIGHTS ADMINISTRATION AGREEMENT

The purpose of this task is to provide the City with technical support in developing a proposed administrative plan for the priority-based administration of Thompson Acker accounts in Lake Ashtabula. The plan would be submitted to ND DWR per their request to communicate the City's position as to how these accounts should be administered by the State going forward. Under this task, Precision would provide the City with a report summarizing the underlying technical concepts of prioritized administration of the Thompson Acker accounts that are needed to ensure that the City's TA account in Ashtabula is administered according to Prior Appropriation doctrine and that the City can rely upon this water under drought. The concepts proposed in this report would be taken from other basins in which entities have storage rights on major (USACE) reservoirs and how these accounts are administered there.

It is estimated that this task will require 100 hours.

2.6 TASK 6: MISCELLANEOUS

Under the previous scope of work, a "Miscellaneous" task was added to the project to allow for Precision to respond to the City's evolving technical support needs. This Task will allow Precision to respond to the City's requests for technical review/support that are not under Tasks 1-5.

Precision recommends budgeting 150 hours for this task and would only perform work under this task when the City requests/approves work on items that do not fall under Tasks 1-5.

2.7 TASK 7: TRAVEL AND PRESENTATION PREPARATION

- Up to 4 trips to Grand Forks for 2 days (\$6,000)
- Preparation and delivery of up to 6 presentations to communicate progress and findings (\$6,400)

It is estimated that this task will require \$12,400

2.8 DELIVERABLES

The following deliverables will be compiled and provided to the City for the above tasks:

- A detailed technical report summarizing Grand Forks’ projected demand and the reliability of Grand Forks water supply sources (Task 4).
- A technical report summarizing concepts of prioritized administration of Thompson Acker accounts in Lake Ashtabula.
- Up to six presentations to be delivered to City staff and other invited parties describing findings and progress throughout the period of performance.

3 BUDGET

Table 2 provides a simple breakdown of Precision’s billing rates. The composite rate is a single rate for the purpose of a cost estimate that is developed by taking the expected portion of total project time that will come from each labor category.

Table 3 - Precision Billing Rates by Labor Category

Labor Category	Hourly Rate (\$/hr)	Estimated Portion
Principal	\$239.20	25%
Water Resources Engineer	\$171.60	55%
Jr. Engineer	\$140.40	20%
Composite Rate	\$182.26	

Table 4 provides a cost estimate by task for completing the project.

Table 4 - Cost Estimate by Task

Task	Name	Hours	Rate (\$/hr)	Cost (\$)
1	Project Management & Meetings	72	\$182.26	\$13,122.72
2	Red Lake River Yield Analysis	150	\$182.26	\$27,339.00
3	Red River Permit Yield Analysis Under Varying Bypass/Return Flow Assumptions	100	\$182.26	\$18,226.00
4	Grand Forks Demand and Water Supply Reliability Report	125	\$182.26	\$22,782.50
5	Technical Support for Thompson Acker Water Rights Administration Agreement	100	\$182.26	\$18,226.00
6	Miscellaneous	150	\$182.26	\$27,339.00
7	Travel & Presentation Preparation			\$12,400.00
Totals		697		\$139,435.22

4 SCHEDULE

It is expected that this project will begin in July 2025 and be completed by the end of December 2025 for a total of 6 months. The approximate timeframe for completion of each task is in Table 5.

Table 5: Project Schedule

Task	Name	Hours	Start Date	End Date
1	Project Management & Meetings	72	Jul-25	Dec-25
2	Red Lake River Yield Analysis	150	Jul-25	Aug-25
3	Red River Permit Yield Analysis Under Varying Bypass/Return Flow Assumptions	150	Jul-25	Aug-25
4	Grand Forks Demand and Water Supply Reliability Report	125	Sep-25	Dec-25
5	Technical Support for Thompson Acker Water Rights Administration Agreement	100	Jul-25	Oct-25
6	Miscellaneous	150	Jul-25	Dec-25
7	Travel & Presentation Preparation		Jul-25	Dec-25

5 CONCLUSION

Precision is grateful for the opportunity to provide water management technical services for the Grand Forks. We look forward to the opportunity of a continued partnership with Grand Forks to enhance their water supply security and resiliency.