MESABA ENERGY PROJECT

APPLICATION TO THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES

for

APPROPRIATION OF WATER FROM:

CANISTEO MINE PIT
HILL ANNEX MINE PIT COMPLEX
LIND MINE PIT
PRAIRIE RIVER

Prepared by

EXCELSIOR ENERGY

June 16, 2006

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Water Appropriation Permit Application

Mesaba Energy Project

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Table of Contents

Page

1.0 Introduction 1
1.1 Purpose 1
1.2 Project Applicant 1
1.3 Project Overview 1
1.3.1 Nomenclature 1
1.3.2 Site Location 2
1.3.3 Project Description 4
1.4 Water Appropriation Permit Application Requests: Summary 5
1.5 Mesaba One and Mesaba Two Water Needs Represent Solution to Existing Water Level Problems 6

2.0 Alternative Water Sources Considered 6
2.1 Mississippi River 6
2.2 Groundwater Wells 7

3.0 Description of Resources and Water Supply 7
3.1 Canisteo Mine Pit (CMP) 7
3.1.1 Historical Perspective 7
3.1.2 Current Use 7
3.1.3 Existing Studies and Data 8
3.1.4 Recharge Rates 9
3.1.5 Hill Annex Mine Pit (HAMP) 9
3.1.6 Historical Background 9
3.1.7 Current Use 10
3.1.8 Existing Studies and Data 11
3.1.9 Recharge Rates 11
3.2 Lind Mine Pit (LMP) 11
3.2.1 Existing Studies and Data 11
3.3 Prairie River 12
3.3.1 Existing Data 12
3.3.2 EPA Clean Water Act Rule 316(b) 13
3.3.3 Statistical Analysis 13
3.4 Blowdown 15

4.0 Water Management 16
4.1 Supply Availability 16
4.2 Supply Capability and Facility Needs 17
4.3 Canisteo Mine Pit Water Surface Elevation Modeling 22
4.4 Modeling Results 23

5.0 Construction Schedule and Phasing 30

6.0 Concurrent Permitting and Approvals 33

Table of Contents (Continued)

6.1 Minnesota Site and Route Permits Joint Application 33
6.2 State and Federal EIS 33
6.3 MPCA – NPDES 33
6.4 Wetlands 33

7.0 References 34

TABLES

Table 1 Supply Availability
Table 2 Supply Capability – Pumping Stations
Table 3 IGCC Power Station Water Need

FIGURES

Figure 1 Minnesota Taconite Tax Relief Area and General Site Location
Figure 2 Site Vicinity Map
Figure 3 Optioned Property, Relevant Infrastructure, and Water Resources
Figure 4 East End of Canisteo Mine Pit Facing West
Figure 5 Hill Annex from the East End of the Mine Facing Northwest
Figure 6 Greenway Mine Pit Facing East
Figure 7 Prairie River Average Monthly Flow Rate Rates
Figure 8 Dam at Prairie Lake
Figure 9 Canisteo Pump Station and Gross-Marble Pump Station Discharge Point
Figure 10 Gross-Marble Pump Station
Figure 11 Lind Pump Station and Prairie River Task Structure
Figure 12 Lind Pump Station Discharge Point
Figure 13 Canisteo Mine Pit Stage-Storage Best Fit Curve
Figure 14 Phase II Canisteo WSE-1-year Projection
Figure 15 Phase II Canisteo WSE-5-year Projection
Figure 16 Canisteo Mine Pit Operating Range
Figure 17 Gross-Marble Mine Pit Operating Ranges
Figure 18 Lind Mine Pit Operating Range and Prairie River Intake Structure
Figure 19 Mesaba One Process Water Supply
Figure 20 Mesaba One and Mesaba Two Process Water Supply

Table of Contents (Continued)

List of Appendices

Appendix A	Water Appropriation Permit Applications
Appendix B	Contacts
Appendix C	MDNR Lake Information Reports
Appendix D	Prairie River Data - Average Monthly Flow Rates
Appendix E	Memo - Canisteo Mine Pit and Hill Annex Mine Pit Recharge Rate
Appendix F	Memo - Prairie River: Q, 7, 10 Calculation
Appendix G	Canisteo Mine Pit Average Monthly Water Input
Appendix H	Average Monthly Water Use - Phase I and Phase II
Appendix I	Department of Natural Resources – Water Permit Application Fees

List of Attachments

Attachment A: Excelsior Water Management Plan with Conceptual Pump Station Drawings

Attachment B: Pipeline Route Map Books

Attachment C: Legal Descriptions and Agreements

Attachment D: NPDES Permit Application

Water Appropriation Permit Application

Mesaba Energy Project

Mesaba One and Mesaba Two

1.0 Introduction

1.1 Purpose

In accordance with Minn. R. 6115.0660, Excelsior Energy Inc. ("Excelsior") respectfully submits this Application and hereby applies to the Minnesota Department of Natural Resources ("MDNR") for permits to appropriate waters from the Canisteo Mine Pit ("CMP"), the Hill-Annex Mine Pit Complex ("HAMP Complex"), the Lind Mine Pit ("LMP") and the Prairie River. This document and the forms and materials in Appendices A through H comprise the entirety of Excelsior's Water Appropriation Permit Application (the "Application") (See Joint Permit Application and Environmental Supplement).

1.2 Project Applicant

Excelsior is an energy development company based in Minnetonka, Minnesota that is proposing to construct and operate the first two units of the Mesaba Energy Project ("Mesaba One" and "Mesaba Two"), both Integrated Gasification Combined Cycle (IGCC) electric power generating stations nominally rated at peak to deliver a total of 1,212 megawatts(net) ("MW") of electricity to the bus bar of the high voltage switchyard located on site. Mesaba One and Mesaba Two will deliver 1,206 MW to the point of interconnection with the high voltage transmission grid.

Excelsior's offices are located at 11100 Wayzata Boulevard, Suite 305, Minnetonka, Minnesota 55305. Excelsior's contact with respect to all elements of the Application is as follows:

Mr. Robert S. Evans II
Vice President, Environmental Affairs
Telephone: (952) 847-2355
Facsimile: (952) 847-2373
Mobile Phone: (612) 859-1383
Email Address: BobEvans@excelsiorenergy.com

Excelsior has created MEP-I LLC and MEP-II LLC as the wholly-owned legal entities that will construct, own, and operate Mesaba One and Mesaba Two, respectively. Excelsior is authorized to submit this Application on behalf of MEP-I LLC and MEP-II LLC.

1.3 Project Overview

1.3.1 Nomenclature

In this Application, the terms "Project" or "Mesaba One" will be used synonymously with the phrases "Phase I IGCC Power Station" and "Phase I Development." The term "Mesaba Two" will be used synonymously with the phrases "Phase II IGCC Power Station" and "Phase II Development." The combined Phase I and Phase II Developments will be used synonymously with the term "Mesaba One and Mesaba Two" and the phrase "Phase I and II IGCC Power Station." The phrase "IGCC Power Station" or "Station" will be used where the context with respect to Mesaba One, Mesaba Two, or both is obvious. The phrase

"Station Footprint" will refer to the area serving the IGCC Power Station that includes all buildings, parking areas, stormwater controls, material handling/storage areas, rail loop and the interconnecting roadways between such features. The "Optioned Property" refers to approximately 1,260 acres of industrial property that Excelsior has optioned for the construction of Mesaba One and Mesaba Two. "Water Resources" will refer to water supplies and receiving waters required to support construction and operation of Mesaba One and Mesaba Two. Finally, the term "Site" will include the Optioned Property and other land needed for the Station's associated facilities, the purpose of which is to interconnect the Station with existing transportation (railroad and highway) infrastructure and provide use of Water Resources and other essential utilities.

1.3.2 Site Location

The Site is located in the Taconite Tax Relief Area ("TTRA") of Northeastern Minnesota in conformance with Minn. Stat. § 216B.1694. Figure 1 shows the boundary of the TTRA and the general location of the Site. A Site vicinity map showing the Optioned Property is provided as Figure 2.

The Optioned Property is currently undeveloped and unoccupied. The Site is located in the immediate vicinity of former iron ore mining operations and contains, is contiguous with, or is in immediate proximity to critical infrastructure. The Optioned Property is located completely within Iron Range Township (4th Principal Meridian, T56N, R24W) in Itasca County.

Figure 3 is an aerial photograph showing the Station Footprint, Optioned Property and infrastructure relevant to this Application. Excelsior will be required to obtain easements or other rights for infrastructure that crosses public and private lands.

More specifically, Excelsior will obtain easements or other rights across private and public land to provide Excelsior with riparian rights to appropriate water from the water supply sources and convey the water by pipelines to the Station Footprint. In addition to Excelsior's option rights, the Itasca County Board of Commissioners and Arbo Township have approved resolutions evidencing their intent to provide Excelsior with rights for project infrastructure across county/township owned or administered land, subject to reaching mutually agreeable terms. Excelsior has also identified all other current land holders along potential water pipeline routes and will obtain necessary rights across affected lands prior to the construction of pipelines on those lands.

While the requested permits would be issued to MEP-1 and MEP-II LLC, the various pipeline and other infrastructure required to deliver the appropriated water to the Site may be owned and constructed by municipalities or municipal utilities located within the vicinity of the Site, with the Applicant's contracting with such entities for water delivery services.

Figure 1: Minnesota Taconite Tax Relief Area and General Site Location

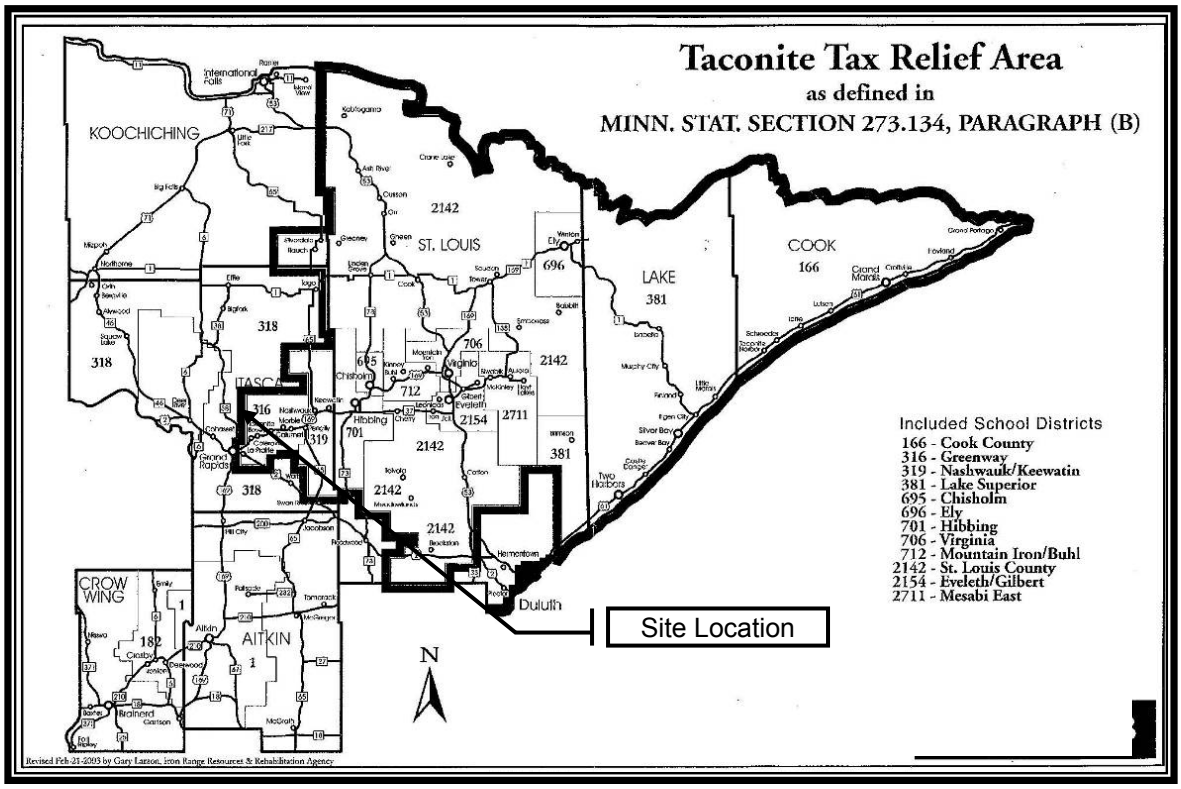


Figure 2: Site Vicinity Map

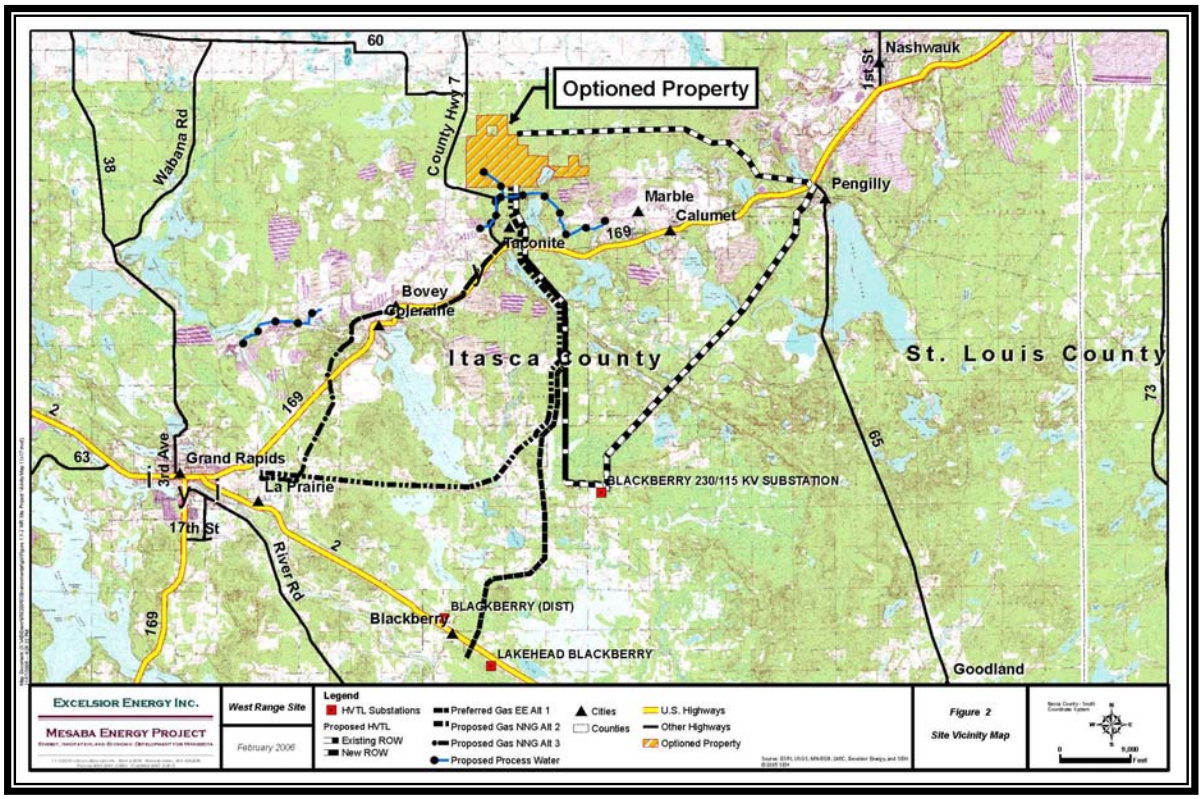
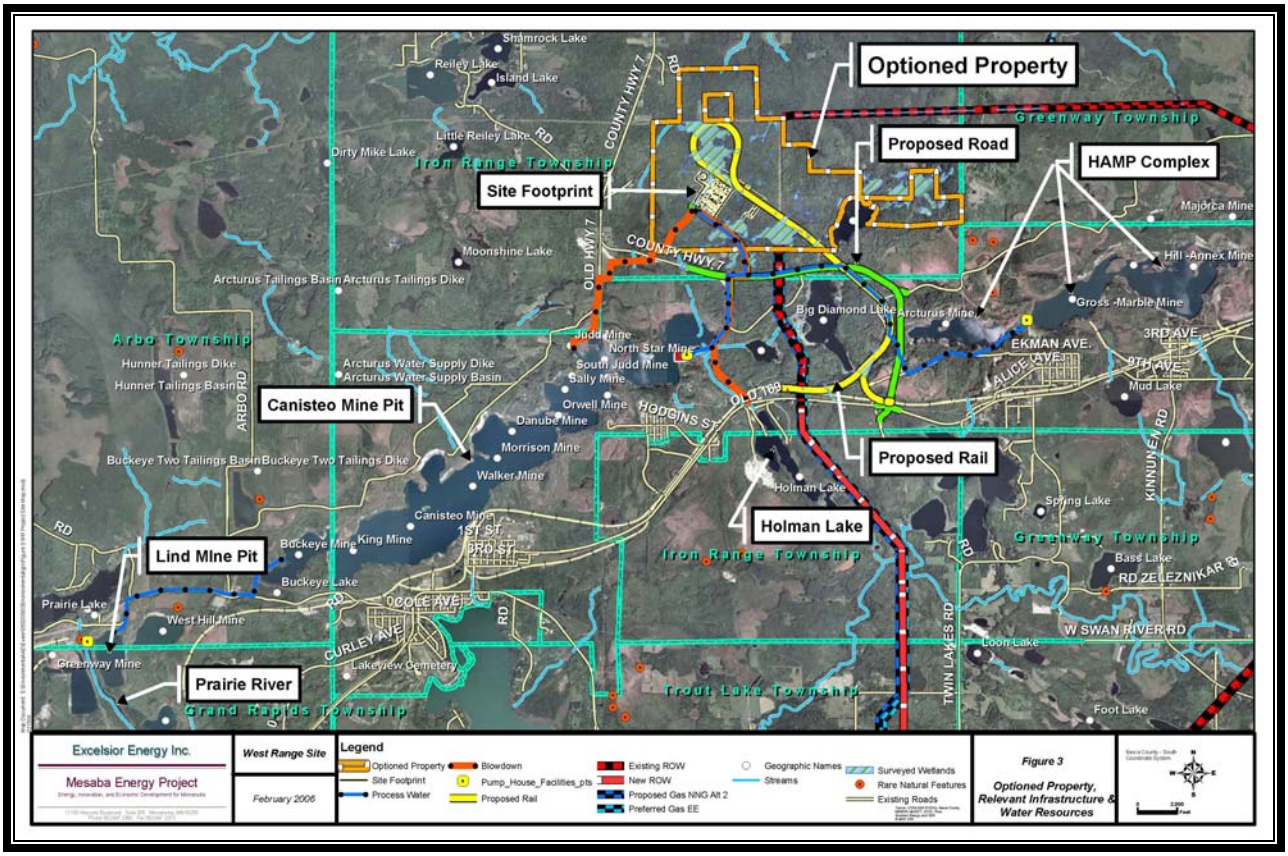


Figure 3: Optioned Property, Relevant Infrastructure, and Water Resources



1.3.3 Project Description

The IGCC facility to be constructed by the Applicant includes the deployment of gasification technology to convert solid feedstock to synthetic natural gas ("syngas") to supply fuel to its combined cycle power station. The gasification process that Excelsior will use is the ConocoPhillips E-Gas™ technology. In the E-Gas™ process, coal, petroleum coke, or blends of coal and petroleum coke are crushed, slurried with water, and pumped into a pressurized vessel (the gasifier) along with sub-stoichiometric amounts of purified oxygen. In the gasifier, controlled reactions take place, thermally converting feedstock materials into a gaseous fuel known as or syngas. The syngas is cooled, cleaned of contaminants, and then combusted in a combustion turbine, which is directly connected to an electric generator. The assembly of the combustion turbine and generator is known as a combustion turbine generator ("CTG"). The expansion of hot combustion gases inside the combustion turbine creates rotational energy that spins the generator and produces electricity. The hot exhaust gases exiting the CTG pass through a heat recovery steam generator ("HRSG"), a type of boiler, where steam is produced. The resulting steam is piped to a steam turbine that is connected to an electric generator. The expansion of steam inside the steam turbine spins the generator to produce additional electricity. When a CTG and a steam turbine generator ("STG") are operated in tandem at one location to produce electricity, the combination of equipment is referred to as a combined cycle electric power plant. Combining the gasification process with the combined cycle power plant is known as IGCC, an inherently lower polluting technology to produce electricity from solid feedstocks.

Excelsior is proposing to construct and operate fuel flexible IGCC Power Stations that can interchangeably use the following feedstocks:

- Coal (including, but not limited to, Powder River Basin sub-bituminous coal and Illinois No. 6 bituminous coal)
- Petroleum coke
- Blends of coals and petroleum coke.

1.4 Water Appropriation Permit Application Requests: Summary

Excelsior is submitting this Application to obtain water appropriation permits for Mesaba One and Mesaba Two. On an annual average basis, Mesaba One will require approximately 4,400 gallons of process water per minute; Mesaba One and Mesaba Two will require a total water appropriation of 10,300 gpm. Peak utilization rates would occur on hot, humid days and could reach 6,500 gpm for Mesaba One and 15,200 gpm total for Mesaba One and Mesaba Two.

Water supplies for Mesaba One and Mesaba Two will come from three abandoned mine pits and the Prairie River. Three pumping stations – one to serve each mine pit – and an engineered intake structure to accept water from the Prairie River will be required to appropriate necessary amounts of water.

A copy of the Water Management Plan for the Phase I and II IGCC Power Station is included in Attachment A. The following provides a brief summary of that plan:

Phase I

- Water from the Hill-Trumbull/Hill Annex Mine Pit ("HAMP") Complex will be pumped via a pump station in the Gross-Marble Mine Pit ("GMMP") to the Canisteo Mine Pit ("CMP").
- The CMP pump station will then pump water to the IGCC Power Station.

Phase II

- Water from the HAMP Complex will be pumped via a pump station in the GMMP to the CMP. Existing pumps in the HAMP will likely be required to pump water in the HAMP to the GMMP when water elevations are lowered to increase inflow rates.
- An engineered intake structure will be installed on the Prairie River allowing water to flow by gravity into the LMP. A pumping station in the LMP will pump water to the CMP.
- A pump station on the CMP will pump water to the IGCC Power Station.
- Water levels in the three pits and related pumping equipment will be managed during Phase I and Phase I and II to allow for the following:
    - Immediate lowering of water levels in the CMP
    - Continued pumping of the HAMP Complex
    - Adequate redundancy to supply daily peak and average needs in the event of a catastrophic failure of a major pump station
    - Retention of water in years of excess rainfall
    - Delivery of retained water in years of low rainfall
    - Emergency discharge of water from mine pits in the event of extreme rainfall

Based on water availability and need, the Applicant requests the following:

- A water appropriation permit at the GMMP for 3,500 gpm annual average rate, 7,000 gpm peak rate, and an operating range of 1,100 to 1,245 feet msl.
- A water appropriation permit at the LMP for 4,270 gpm annual average rate, 7,000 gpm peak rate, and an operating range of 1,190 to 1,250 feet msl.
- A water appropriation permit at the Prairie River for 2,470 gpm (5.5 cfs) annual average.
- A water appropriation permit at the CMP for 10,300 gpm annual average rate, 15,200 gpm peak rate, and an operating range of 1,250 to 1,300 feet msl.

Water Appropriation Permit applications are included in Appendix A. A list of project contacts is included in Appendix B.

1.5 Mesaba One and Mesaba Two Water Needs Represent Solution to Existing Water Level Problems

Mesaba One and Mesaba Two require process water to: condense steam used in the power cycle (the water from which the steam in the power cycle originates will be of very high quality and, for economic reasons, cannot simply be vented to the atmosphere as low grade steam); for slurrying coal fed to the gasifier; and for various other contact and non-contact cooling purposes.

Water appropriation is dependent, in part, upon the chemistry of the waters involved. For example, if water is relatively low in total dissolved solids, the cycles of concentration in the IGCC Power Station's cooling towers can be increased, thereby decreasing the appropriation rate.

Process water demands presented in this report are based on recent water quality sampling and analyses of source waters. Testing results are summarized in Appendix B of the NPDES permit (the NPDES permit is incorporated by reference into this Water Appropriation Permit Application and is included as Attachment D).

The IGCC Power Station's water management program is designed to maintain water levels in the CMP and HAMP Complex that will eliminate potential flooding problems associated with rising water levels therein. As water levels rise in the CMP, the risk of an uncontrolled overflow and associated flooding increases. Although rising water levels have recently slowed, if nothing is done at the CMP, water could eventually overflow and cause flooding, stream erosion, and other problems along the overflow route(s). In addition to the flood hazard, high water levels in the CMP will also continue to cause slope failures of the pit walls, which will jeopardize infrastructure nearby. One example of this is an existing Canadian National Railway Company railroad track that is approximately 30 feet from the edge of an actively eroding portion of the pit wall. Safety concerns forced the cessation of rail operations in February of 2004.

Rising water levels in the HAMP Complex are currently controlled by seasonal pumping efforts undertaken at significant expense by the MDNR to avoid the flooding of Hill-Annex State Park. In this instance, Mesaba One and Mesaba Two would represent a long term solution to flooding and a means by which the MDNR could eliminate ongoing operating and maintenance expenses associated with the seasonal pumping of pit waters.

2.0 Alternative Water Sources Considered

2.1 Mississippi River

The Mississippi River was considered a potential water source for the supply of water to Mesaba One and Mesaba Two. However, the pipeline would be over 10 miles long and require several pump stations, electrical facilities, support structures, and land acquisitions in order to provide adequate water supplies for

the plant. This alternative was not deemed to be as desirable from an economic viewpoint and also would not contribute to the solution of the pit flooding problems described above.

2.2 Groundwater Wells

Consideration was given to supplying process water by drilling a number of ground water wells and developing those wells. This alternative was rejected because most wells in the area only produce between 200 and 300 gpm. Up to 50 ground water wells, pump stations, force mains, electric services, and support structures would need to be developed, operated and maintained to provide adequate flow for the plant given such flow rates. Excelsior deemed this alternative to be impractical based on the geographical spread of the well field required, its potential effect on ground water levels in the area, and the overall number of wells required.

3.0 Description of Resources and Water Supply

As noted, Excelsior evaluated a number of potential water sources in order to determine the most appropriate water supplies for Mesaba One and Mesaba Two. The Applicant and its consultants have conducted site visits, meetings with state and local officials, literature research (both current and forensic) and engineering analyses in order to determine water supply capability, process water pipeline routes, pump station locations, water intake locations, discharge points, and utility maintenance and access corridors between the water sources and the plant site.

The CMP, HAMP Complex, LMP, and Prairie River have been identified as the best potential water sources for the Phase I and II IGCC Power Station. These water sources are described below in further detail.

3.1 Canisteo Mine Pit (CMP)

3.1.1 Historical Perspective

The Canisteo Mine was one of 18 different properties, operated by six different companies that made up a 4.5 mile long natural ore mining complex. In 1907 the Holman-Cliffs, Diamond, and Canisteo properties were the first to begin shipping ore. By September 1985, mining across the entire length of the mining complex had ceased after having shipped more than 194,500,000 long tons of ore (MDNR, 2001).

During active mining, it was necessary to pump water from the individual pits making up the mining complex to permit mining of the iron ore body. Once the pits were abandoned, dewatering operations ceased and they began to fill with water. Waters that had received pumped input, in lieu of natural drainage, were cut off from this water supply as runoff and ground water began to fill the abandoned pits. Water rose dramatically in the first several years following abandonment but was not monitored.

3.1.2 Current Use

The west end of the mining complex, the Buckeye Mine Pit, filled with water and was used for recreational fishing after a boat launch was installed and the MDNR began a fish stocking program. As water continued to rise in each of the pits across the abandoned mining complex, the pits became interconnected. The Buckeye Mine Pit became connected to the other pits in the early 1990's. The connected series of pits is locally referred to as the CMP, and currently the entire length of the Pit receives some occasional and unintended recreational use by virtue of access via the Buckeye Mine Pit boat launch. The Applicant is recommending for safety, security, and operational considerations that this boat launch be removed and recreational use of the CMP be prohibited.

Much of the shoreline of the CMP and the underlying mineral rights are now owned by mining companies or Itasca County. Figure 4 is a picture taken from the east end of the CMP facing west.

Figure 4: East End of Canisteo Mine Pit Facing West

Stocking of lake trout in the west end of the conjoined pits (formerly the Buckeye Mine Pit) has occurred since 1999 and as a result, some lake trout have begun to populate waters in the eastern end of the CMP. Illegal stocking and/or unintended transport of other species may also have occurred in the CMP.

According to the MDNR's sampling of the CMP, rainbow smelt are present in the pit. It is unknown if the effects of rainbow smelt on the fishery in the CMP are negative or positive.

The trophic state of the CMP is considered to be oligotrophic. Water that enters into the mine pit is mostly groundwater. Since there is relatively little surficial inflow to the pit, the quantity of nutrients and biota is also relatively low, thereby resulting in a deficiency in the food chain within the pit and slow fish growth.

Black crappie, bluegill, horneyhead chub, largemouth bass, pumpkinseed sunfish, painted turtle, rainbow trout, rock bass, snapping turtle, walleye, white sucker, and yellow perch have been found in the Canisteo and Buckeye Mine Pits by the MDNR. Bass appear to be relatively abundant in the pit, but they appear to grow slowly. Bluegill was also abundant in the pit. See Appendix C for a more detailed description of the fish sampled in the Canisteo and Buckeye Mine Pits.

3.1.3 Existing Studies and Data

Since 1994, the annual rate of water rise in the CMP has been approximately 2.5 to 5 feet, depending on precipitation input and season. This steady rate of water rise has caused legitimate and growing concerns by local residents and governmental entities about pit overflow and potential adverse impacts (MDNR, 2001).

The CMP does not have a surficial outlet. At the current rate the water levels are rising, it is expected that water will overflow through the City of Bovey within the next ten years, resulting in flood damage within the community and degradation of water quality within Trout Lake.

In response to concerns about rising water levels in the CMP, the MDNR conducted a study of the Pit that was completed in 2001. The study used the WATBUD model to predict when the CMP will overflow, and the range of discharges likely to occur. The WATBUD model for the Canisteo Mine Pit is described in the 2001 MDNR study of the CMP and is available through the MDNR.

WATBUD is a computer model that was developed by the MDNR's Division of Waters to simulate future water level conditions. WATBUD is a physically-based parameter model capable of optimizing and estimating water balance parameters by comparing simulated to known lake level data. Recorded water level and climate data along with estimates of evaporation and seepage are utilized to calibrate the model (MDNR, 2001).

Flood damage potential was considered to be a high enough priority for additional evaluation. In 2004, Barr Engineering Company ("Barr") completed a study of potential outlet concepts that considered impacts on water quality and increased water levels in potential receiving waters (See Barr Engineering Company 2004. Canisteo Mine Pit Outflow: Phase I Comparative Feasibility Analysis Report).

3.1.4 Recharge Rates

Detailed information on the CMP has been obtained from Mr. Bob Leibfried (MDNR), conversations with local officials, the 2001 MDNR study, and the 2004 Barr study.

Bathymetric data have been collected by the MDNR and were used to develop a stage-storage relationship for the Pit. The MDNR has also collected stage (elevation) data since 1989. However, stage data were not collected on a daily basis until 1995.

Since there are less detailed stage data available for the period 1989 to 1995, a long-term average inflow was calculated. Based on the available stage data and the stage-storage relationship for the pit, an average recharge of 3,160 gpm was calculated over this period.

Daily stage data are available from the MDNR starting in 1995, but data gaps exist. The MDNR continues to collect daily stage data, which show that from 1995 to the present day, recharge rates range from 810 gpm to 4,190 gpm, with an average of 2,580 gpm.

The water surface elevation in the mine pit on November 1, 2005 was 1309 feet msl, which corresponds to a surface area of 1,400 acres and a water volume of 147,000 acre-feet.

Groundwater movements are extremely difficult to quantify. It appears that the amount of ground water seepage out of the Canisteo Mine Pit increases significantly when the water surface elevation is above the bedrock elevation (approximately 1,300 feet msl).

When the years in which the stage was above 1,300 feet msl (after 2000) were eliminated from consideration, the recharge rates range from 1,820 gpm to 4,190 gpm, with an average of 2,980 gpm.

Recharge rates were calculated by the MDNR and independently by Applicant's consultant. Appendix E is a summary of the independent verification of recharge rates also prepared by Applicant's consultants.

3.1.5 Hill Annex Mine Pit (HAMP)

3.1.6 Historical Background

The Hill Annex Mine Pit (HAMP) Complex consists of four principal mine pits, including: Arcturus, Gross-Marble, Hill-Trumbull, and Hill Annex. Active mining operations required the pits to be completely

dewatered, which lasted until 1979. Following 1979, some dewatering took place while some of the pits began to fill with water . By 1981, all mining operations had ceased (Barr, 1987). Hill Annex was established as a state park in 1988 by the Minnesota Legislature and is controlled by the MDNR – Division of Parks and Recreation.

The Arcturus, Gross-Marble, and Hill-Trumbull/Hill Annex Mine Pits were separated by large rock masses during mining operations. Following the cessation of mining, water levels in the pits began to rise, and the GMMP became connected to the Hill-Trumbull/Hill Annex when the water surface elevation reached approximately 1,215 feet msl. The water surface in the Arcturus is higher than that of the other pits, and does not share a common water level with those other pits. Water currently flows overland out of the Arcturus into the Gross-Marble. Figure 5 shows a picture of the east end of the HAMP facing northwest.

Figure 5: Hill Annex from the East End of the Mine Facing Northwest

3.1.7 Current Use

Park staff currently manage HAMP Complex water levels by operating a dewatering pump (with a capacity of 6,200 gpm) about 5 to 6 months a year.

The HAMP Complex is not managed as a fishery, and the MDNR has never stocked the pit. Sampling in 1990 failed to identify any game species in the mine pit. Some small species such as brook sticklebacks and common shiner were captured in minnow traps. See Appendix C for a more detailed description of fish sampling conducted in the HAMP.

The MDNR Division of Parks and Recreation currently maintains a part of the former mining site as a State Park. The park offers tours of the mine pit features and facilities on a seasonal basis. Since the state park has limited funding, the existing dewatering pumps only operate about 5 to 6 months a year and, as a result, water levels have risen above some of the mine features and facilities.

3.1.8 Existing Studies and Data

Information on the Hill Annex Mine Pit was obtained through conversations with Bob Leibfried, John Adams, and Steve Railson of the MDNR, a review of the Hill Annex DRAFT Park Management Plan, a review of the Hill Annex Hydrology Report (Barr, 1987), and site reconnaissance.

Pumping records have been kept since 1973, and the MDNR Hill Annex staff continue to report dewatering volumes on a monthly basis.

Bathymetric data were collected by Applicant's consultants in the fall of 2005. A stage-storage relationship was developed for the Arcturus, Gross-Marble, and Hill-Trumbull/Hill Annex Mine Pits from such data.

Stage data were collected by the MDNR from 1993 through 2002 for Hill Annex. As the stage data were not collected on a regular basis, it could not be used for a detailed yearly estimate of pit recharge. The stage in Gross-Marble, Hill-Trumbull/Hill Annex was measured at 1247 and Arcturus was measured at 1269 feet msl on November 1, 2005 by Applicant's consultants, who continue to measure stage at all of the pits within the HAMP Complex.

3.1.9 Recharge Rates

Actual recharge rates when the pits were dewatered from 1973-1979 can be calculated based on pumping records as the volume of water in the pits was not decreasing. Calculated recharge rates during this period range from 3,230 gpm to 4,030 gpm.

Long-term average recharge rates have also been calculated based on the stage-storage relationship, pumping records, and stage measurements, . Assuming that the pits were completely dewatered on January 1, 1979 and the Arcturus was completely full by 1999, an average recharge rate of 2,150 gpm was calculated using the stage-storage relationship, stage measured on December 9, 1999, and historical pumping records.

A second long-term average recharge rate was calculated by adding the difference in volume in the pits between December 9, 1999 and November 1, 2005 and adding the volume of water pumped during this time period. The average recharge rate between the end of 1999 to 2005 was determined to be 1,590 gpm.

Uncertainties in the long-term average recharge rates calculated above arise because of potentially missing data and pumping records, as well as highly variable groundwater head conditions. Recharge rates were calculated by the MDNR and independently by Applicant's consultants. Appendix E contains a summary of an independent verification of recharge rates.

3.2 Lind Mine Pit (LMP)

3.2.1 Existing Studies and Data

Very little historical water surface elevation and outflow data are available for the LMP. The pit has filled with water and has an outlet pipe that discharges to the Prairie River. Figure 6 shows a picture from the Greenway Mine Pit facing east. The most easterly body of water is the West Hill Mine Pit, followed by the LMP, and the Prairie River. Only a small piece of the Greenway Mine Pit is seen in the picture.

Bathymetric mapping of the pit has been developed, based on electronic sampling of the mined surface through the water column. Common shiner and black crappie were sampled by the MDNR in this pit. Black crappie appear to be naturally reproducing, and the black crappie sampled appear to be near average with

respect to growth rate. *See* Appendix C for a more detailed description of fish sampling conducted in the LMP.

The West Hill Mine Pit filled with water following the cessation of mining and currently discharges to the LMP through two 8-inch diameter HDPE pipes.

Figure 6: Greenway Mine Pit Facing East

Applicant's consultants recently (November 2, 2005) measured the pipe size, flow depth, and flow velocity at the pipe outlet and determined that the outflow from the LMP was approximately 4 cfs (1,800 gpm) at that time. A majority of the outflow appears to come from the West Hill Mine Pit. The pipe size, flow depth, and flow velocity at the pipe outlet was also measured and it was determined that the outflow from the West Hill Mine Pit was approximately 3.5 cfs (1570 gpm).

3.3 Prairie River

3.3.1 Existing Data

Excelsior will also appropriate water from the Prairie River. River gauge data was obtained and a statistical analyses was conducted of the appropriate data to assess the potential supply characteristics of the Prairie River. Average monthly flow rates are shown in Figure 7, with more detailed information provided in Appendix D. Figure 8 shows a picture of the Prairie Lake Dam taken August 29, 2005. Minnesota Power reported an average flow for August 29, 2005 of 27 cfs.

Gauge data have been collected off and on at a USGS gauging station for a period of 16 years. The USGS gauge is located near the Scenic Highway 7 crossing of the river, north of Taconite.

Gauge data have also been collected intermittently at the Prairie Lake Hydropower Dam, which is several miles downstream of the USGS gauge station. Flow data were collected from 1925 to 1957 on a monthly average basis while under the control and ownership of Blandin Paper Company. Minnesota Power assumed control and ownership of the facility and has collected flow data from 1997 to 2005 on a daily basis. Since the river flows are buffered by the lake and managed at the dam, the variability in the daily flow rates is not as extreme as the USGS Prairie River gauge site.

Excelsior's proposed appropriation point is located downstream of the Prairie Lake Hydropower Facility and will not impact the hydropower facility's power production.

3.3.2 EPA Clean Water Act Rule 316(b)

The EPA Clean Water Act ("CWA") Rule 316(b) contains criteria regarding Cooling Water Intake Structures ("CWIS"). The rule specific to CWIS on fresh water rivers states that the maximum amount of water that can be taken is "5% of the mean annual flow or 25% of the 7Q10, whichever is the lesser."

7Q10 represents the 7-day low flow average with a 10-year recurrence interval. The Weibull distribution is the preferred statistical method when determining the 7Q10 (see Riggs, H.C., 1972, Techniques of Water-Resources Investigations of the United States Geological Survey, Book 4: Chapter B1, Low-Flow Investigations, 18p), and the top 80% of the flow measurements are dropped with this method as they are not considered to be true "low flows."

3.3.3 Statistical Analysis

Only the data collected by Minnesota Power at the Prairie Lake Dam from 1998 to 2004 were used in determining the mean annual flow and the 7Q10. Since there was not a full year of record for 1997 and 2005, these two years were not utilized in the analysis. As the Blandin data from 1925-1957 were recorded on a monthly average basis, they also could not be used to determine the 7Q10. Finally, data from the USGS gauge were not used because the measurement point is several miles downstream of the USGS gauging station and Prairie Lake.

The mean annual flow in the Prairie River is 319 cfs, and 5% of that flow is 16 cfs. The 7Q10 in the Prairie River was determined to be 22 cfs, and 25% of that flow is 5.5 cfs. Since 25% of the 7Q10 is the smaller amount, Section 316(b) requires that the maximum rate at which water can be appropriated from the Prairie River is 5.5 cfs (2,468 gpm).

Calculations for the Wiebull method were done using an Excel spreadsheet. Flows were then plotted (on a log scale) against reoccurrence interval (on a normal scale) and an exponential regression was used to best fit a regression line to the data points. This line was used to determine the 7Q10. See Appendix F for a technical memorandum describing the statistical analysis.

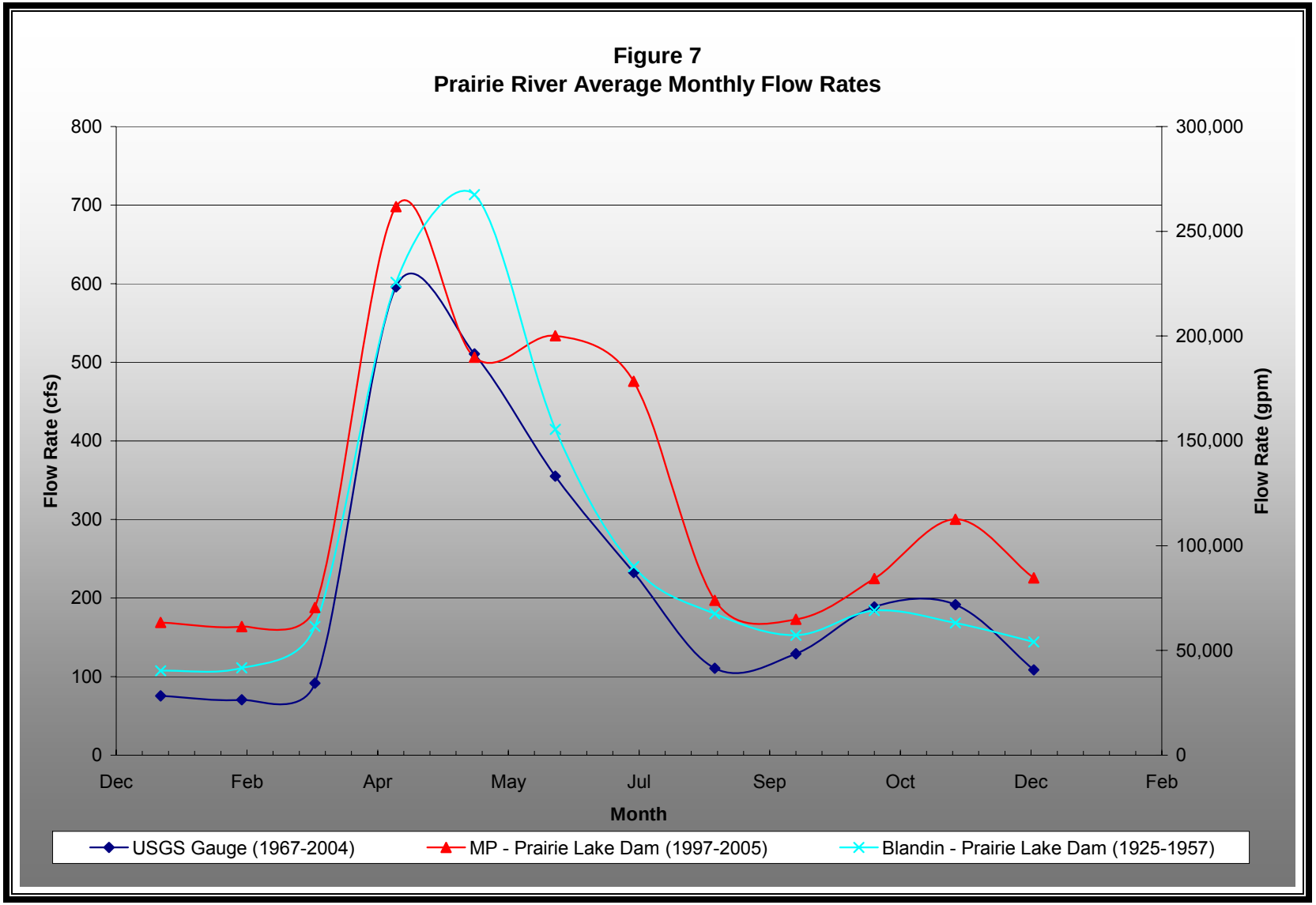


Figure 7: Prairie River Average Monthly Flow Rates

Figure 8: Dam at Prairie Lake

3.4 Blowdown

Water usage at the plant will be a consumptive use. Depending on the number of cycles of concentration, 60-80% of the process water will be evaporated into the atmosphere. The remaining water is referred to as cooling tower blowdown.

In a cooling tower, warmed cooling water from the Power Station's condenser is cooled by the evaporation of a portion of the water as it passes through the cooling tower. In addition to evaporation, a very small amount of entrained water, called drift (water droplets that are entrained in the exhaust air stream carrying heat away from the towers), would also be lost. As evaporation continues, salts dissolved in the remaining cooling liquid become more concentrated. When the concentrations of dissolved salts near their solubility limit, scale formation may occur on the condenser tubes and hinder heat transfer. Although the addition of certain chemicals can inhibit scale formation, a portion of the cooling water, called cooling tower blowdown, must be discharged. The concentration of dissolved solids in the cooling tower blowdown divided by the concentration of dissolved solids in the incoming water supply determines the number of cycles of concentration.

Cooling tower blowdown will be permitted under an NPDES discharge permit for discharge to Holman Lake and the CMP. Average annual blowdown from Mesaba One is estimated to be about 900 gpm and 3,500 gpm for Mesaba One and full operation of Mesaba One and Two, respectively. The blowdown pipelines to the CMP and Holman Lake are shown in Figure 3 and Figure 9. Attachment B contains a series of maps showing a plan view of the required infrastructure, land parcels across which such infrastructure would traverse, and the legal descriptions of the parcels affected.

The number of cycles of concentration under which the cooling tower operates will be reduced or increased to maintain compliance with water quality criteria standards for the receiving water to which cooling tower blowdown is directed. Recycling water back to the CMP will reduce the net amount of water needed from the water sources. However, reducing the cycles of concentration ("COC") to three (3) COC in the cooling towers will increase the total appropriation of water from the CMP to 10,300 gpm (on an annual average). This scenario represents the likely maximum appropriation rate and is reflected in the permit application in Appendix A. Discharge of blowdown to the CMP is not Applicant's preferred long-term location.

The preferred location for blowdown discharge is Holman Lake. However, the amount of water discharged to Holman Lake will be limited in accordance with the NPDES permit issued to Excelsior for the IGCC Power Station. The amount of water discharged to the CMP versus Holman Lake is subject to the mass balance analysis discussed in the NPDES permit application in Section 5.

Maximum consumption of water from the CMP will occur under circumstances when all water discharged from the IGCC Power Station is directed to Holman Lake, and this was the scenario evaluated in the modeling of the CMP water level fluctuations.

4.0 Water Management

The Applicant plans to appropriate water from the CMP, HAMP Complex, LMP, and the Prairie River in order to supply Mesaba One and Mesaba Two with process water. Each water source will be managed by Excelsior to minimize both auxiliary power consumption and environmental impacts.

4.1 Supply Availability

Table 1 provides estimates of the water supply capability for each of the preferred water resources. These estimates were developed utilizing information supplied by the MDNR, engineering studies, field studies, and discussions with local government units.

Table 1
Supply Availability

Water Source	Est. Range of Flow (gpm)	Sustainable Flow for Water Appropriation Modeling(gpm)
Canisteo Mine Pit	810-4,190	2,800
Hill-Annex Mine Pit Complex	1,600-4,030[a]	2,000[b]
Lind Mine Pit	One Datum Point Available	1,800[c]
Prairie River	0-2,470[d]	2,470[d]
Discharge from IGCC Power Station	0-3,500	Varies

Notes:
[a]Maximum flow occurs at minimum operating elevation
[b]At an operating elevation of 1,230 feet msl
[c]Based on a single observation and flow estimate
[d]Based on 25% of 7Q10

4.2 Supply Capability and Facility Needs

A series of pumps will provide a pumping capacity between 3,500 gpm and 6,500 gpm for Phase I and between 8,800 gpm and 15,200 gpm for Phase II. This capacity will be provided in a permanent pumping station located at the southeast corner of the CMP. A standby pump will be incorporated for use during failure in one of the pumps or during maintenance of the primary pumps. The pump station intake will meet the 316(b) requirements for cooling water intake structures (addressed in the NPDES permit). The pipeline that extends from the CMP to the Station Footprint will be approximately 36 inches in diameter. The length of the pipeline that extends from the CMP to the West Range site is estimated at 11,100 feet.

A pump station will be installed at the Gross-Marble end of the HAMP. The pump station will have a capacity of 7,000 gpm and be installed in the GMMP. Water will be directed into the CMP. The pipeline that extends from the GMMP to the CMP will be approximately 24 inches in diameter and 25,400 feet in length.

A pump station with a capacity of 7,000 gpm will be installed in the northeast corner of the LMP, and water will be directed to the CMP. The pipeline that extends from the LMP to the CMP will be approximately 24 inches in diameter with a pipeline length of 11,300 feet.

An engineered intake structure capable of accepting a maximum rate of 2,470 gpm from the Prairie River will be installed in the river and directed into the LMP for storage. The engineered intake structure will be approximately 18 inches in diameter and approximately 200 feet in length.

Pumping capacity at the HAMP Complex and the LMP must allow for the capture of the 12-month average annual water supply on a seasonal basis. Due to extreme weather conditions, pumping becomes more difficult and costly during the winter months (primarily December through March).

Routing for the pipelines will be primarily on public property adjacent to existing transportation corridors. Figure 3 shows an overview of the water supply plan. Figure 9 through Figure 12 show more detailed intake and discharge locations. Table 2 and Table 3 summarize the pumping station capabilities and water needs of the IGCC Power Station.

Table 2
Supply Capability – Pumping Stations

	Peak Flow (gpm)
Canisteo Mine Pit	15,200
Hill-Annex Mine Pit – Gross Marble End of Mine Pit	7,000
Lind Mine Pit / Prairie River	7,000

Table 3
IGCC Power Station Water Need

	Ave Annual Need (gpm)	**Peak Need (gpm)**
Phase I	4,000-4,400	6,500
Phase II	8,800-10,300	15,200

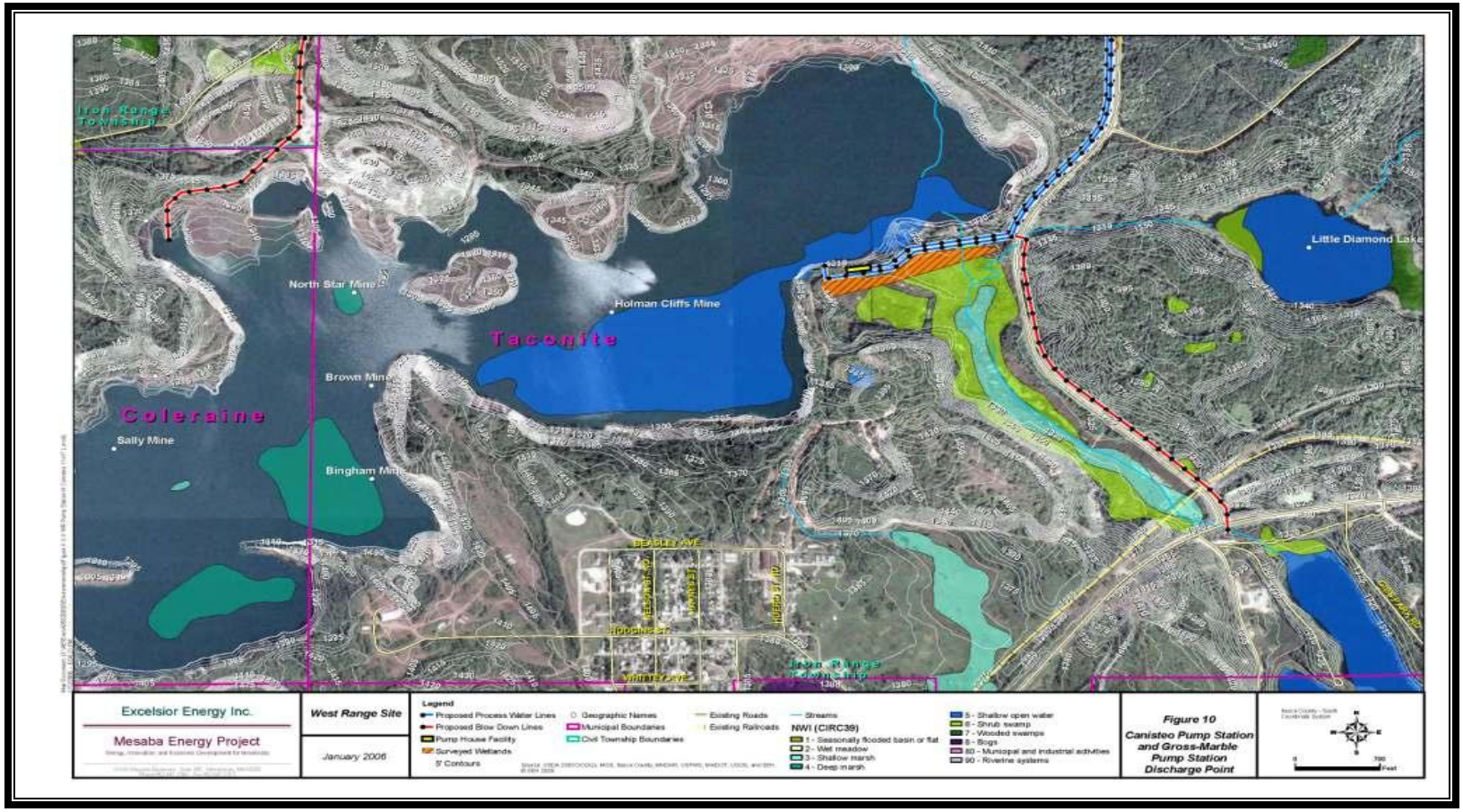


Figure 9: Canisteo Pump Station and Gross-Marble Pump Station Discharge Point

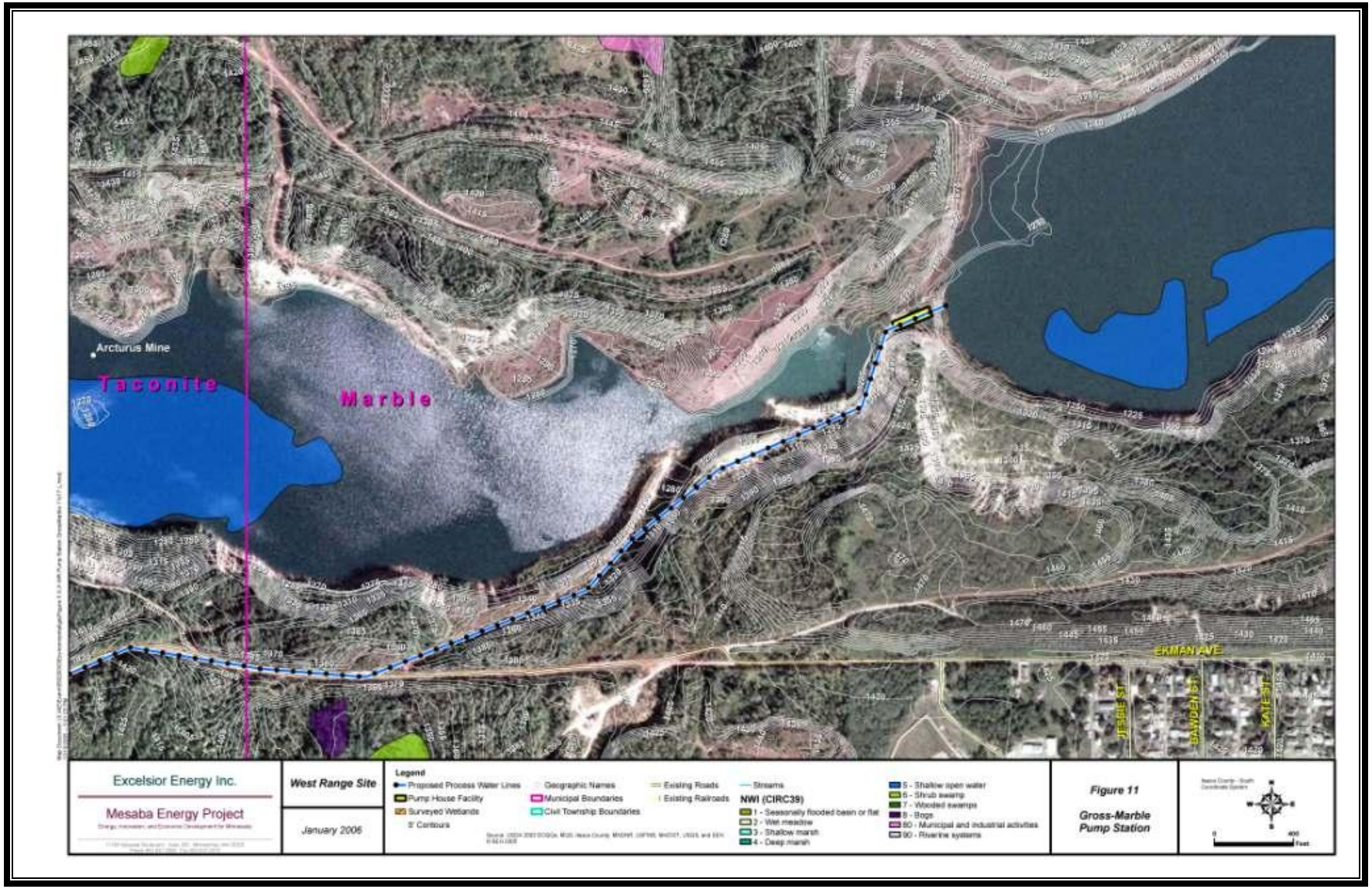


Figure 10: Gross-Marble Pump Station

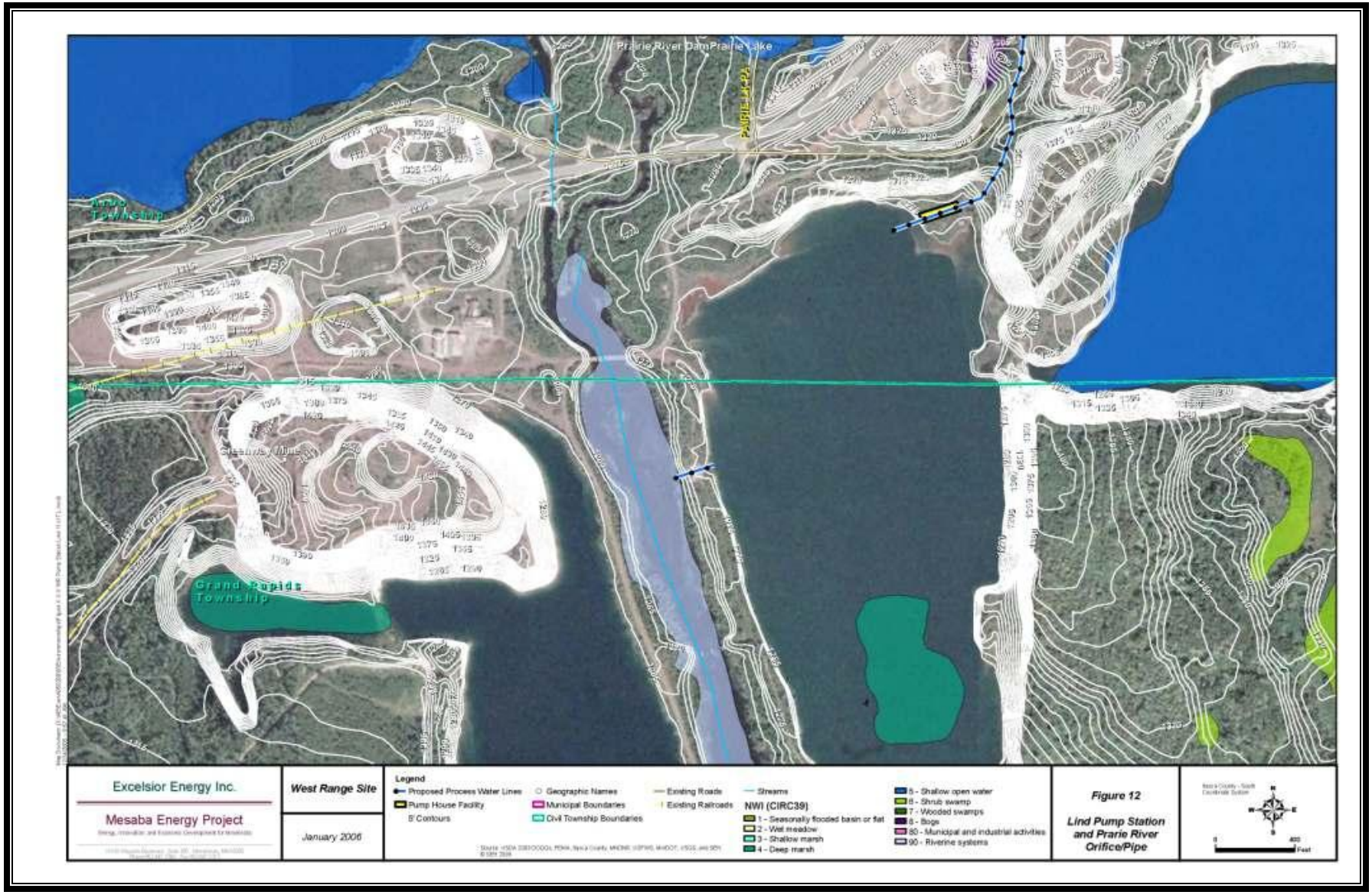


Figure 11: Lind Pump Station and Prairie River Intake structure

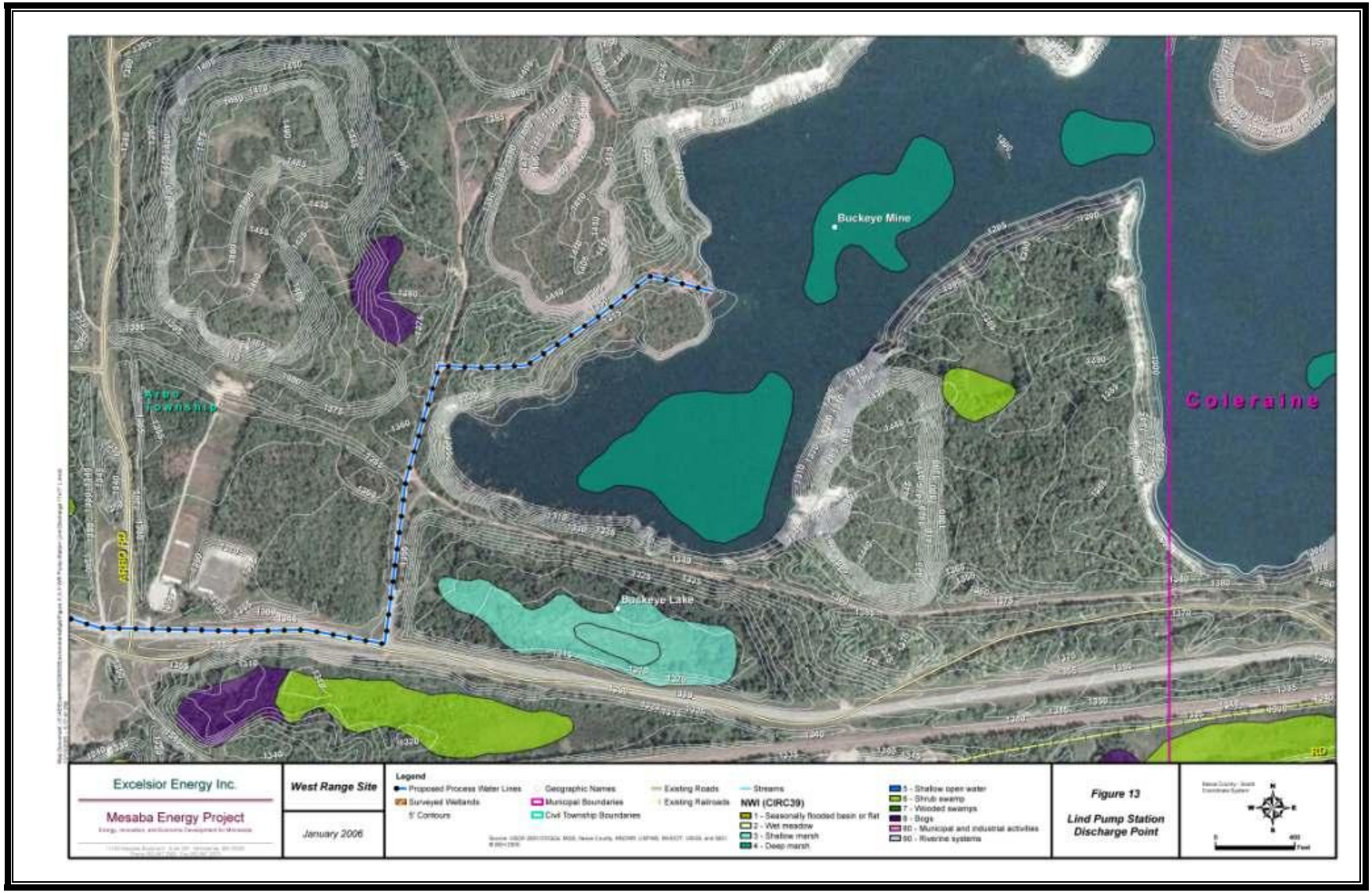


Figure 12: Lind Pump Station Discharge Point

4.3 Canisteo Mine Pit Water Surface Elevation Modeling

A model was developed to predict water surface elevations in the CMP. The model is based on average recharge rates in the CMP, inputs from the GMMP, LMP, and Prairie River, IGCC Power Station use, and the stage-storage curve for the CMP. The equation below provides the water balance used for the model, Q being the net recharge in the Canisteo, inflow from the other water sources, or flow into the other sources:

$$Q_{CMP} + Q_{PR/LMP} + Q_{GMMP} - Q_{IGCC} = \Delta Q$$

Where:

Q_{CMP} = Canisteo Mine Pit Recharge

$Q_{PR/LMP}$ = Input from the Lind Pump Station

Q_{GMMP} = Input from the Gross-Marble Pump Station

Q_{IGCC} = Output to the IGCC Power Station

ΔQ = Net Change in Flow to the CMP

By using the net change in flow to the CMP for a specified time period, a change volume was determined, as shown in the equation below and applied to the stage-storage relationship for the CMP:

$$\Delta V = \Delta Q \times \Delta T$$

Where:

ΔV = Change in Volume

ΔQ = Net Change in Flow to the CMP

ΔT = Change in Time

The change in volume was then used in the stage-storage relationship for the CMP in order to determine fluctuations in the water surface elevation of the CMP. The stage-storage relationship with respect to the water surface elevation is shown below:

$$\Delta WSE = 0.000857 \times \Delta V + 1{,}182 \text{ feet msl}$$

Where:

ΔWSE = Change in Water Surface Elevation in the CMP

ΔV = Change in Volume

The stage-storage relationship was developed utilizing stage-storage data collected by the MDNR. The data was entered into a spreadsheet, graphed, and a line was fit to the data. Elevations below 1,229 feet msl were discarded in order to better fit the line to the data and reduce error in the stage-storage equation (the model is thus not valid for elevations below 1,229 feet msl). The "R" value for the line and associated stage-storage equation is nearly 1, which indicates that there is minimal error in the equation. Figure 13 shows the stage-storage data, best fit line, and associated stage-storage relationship (such relationship being described by the equation of the best fit line provided in Figure 13).

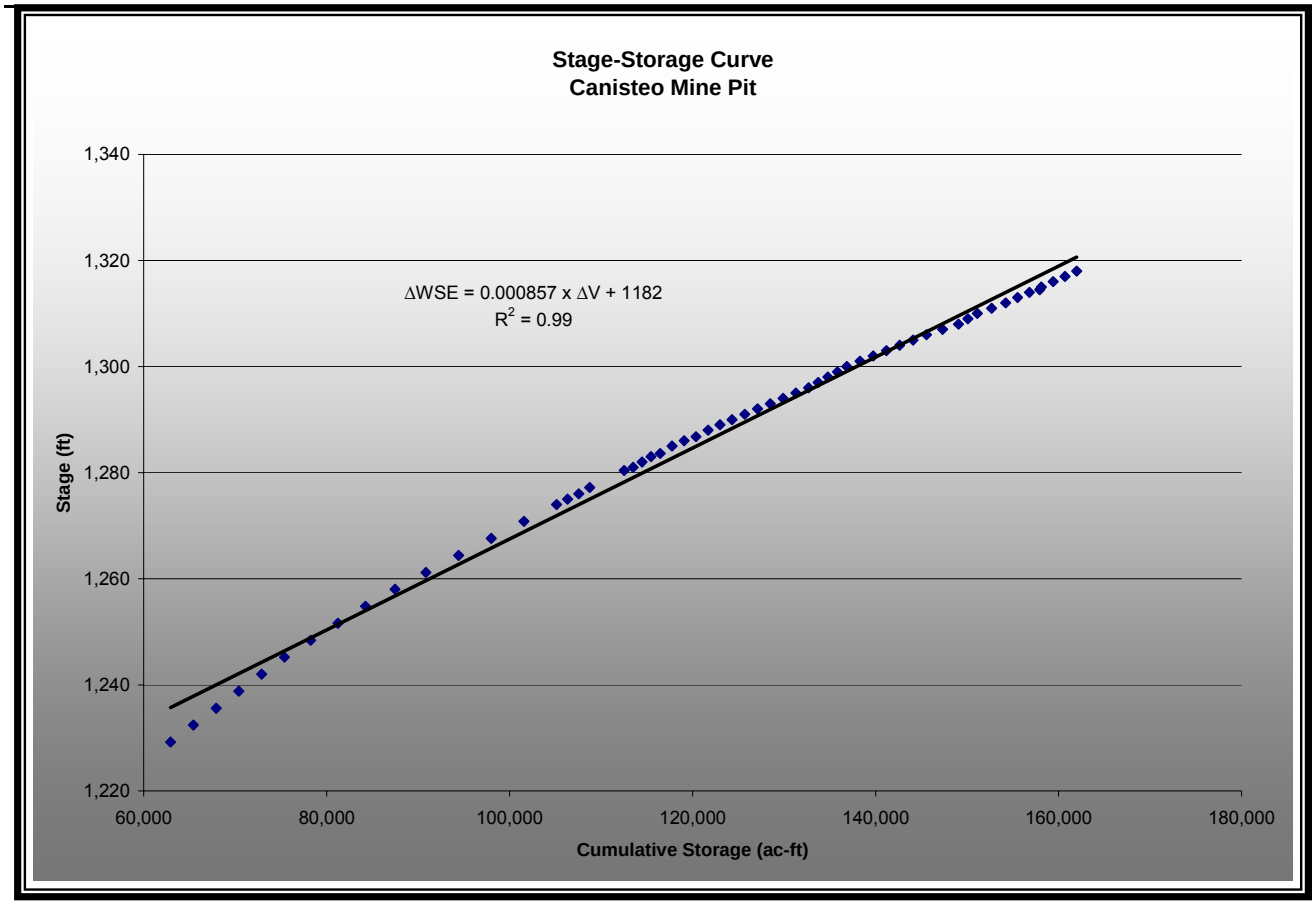


Figure 13: Canisteo Mine Pit Stage-Storage Best Fit Curve

The model can be used to predict monthly water surface elevation changes in the CMP as well as long-term average changes in water surface elevations in the CMP.

Model input and output variables can be adjusted to evaluate water surface elevation changes during dry years, wet years, or other scenarios. See Appendix G for average and worst-case scenario monthly inputs and recharge rates in the CMP. See Appendix H for average monthly water use for Phase I and Phase II.

4.4 Modeling Results

Based on the model developed for the CMP, it is expected that the water surface elevations in the pit will fluctuate approximately two feet during a year with average inflow to the pit and up to six feet during a year under a conservative-case input scenario with operation of both IGCC units. Figure 14 shows the average and conservative-case scenario in the CMP in relation to water levels for operation of both units during a year with typical operations at the site.

The Applicant also evaluated a 5-year conservative scenario with Mesaba One and Mesaba Two in operation. Under this scenario, it would be possible to lower the water surface elevation in the CMP by as much as 30 feet.

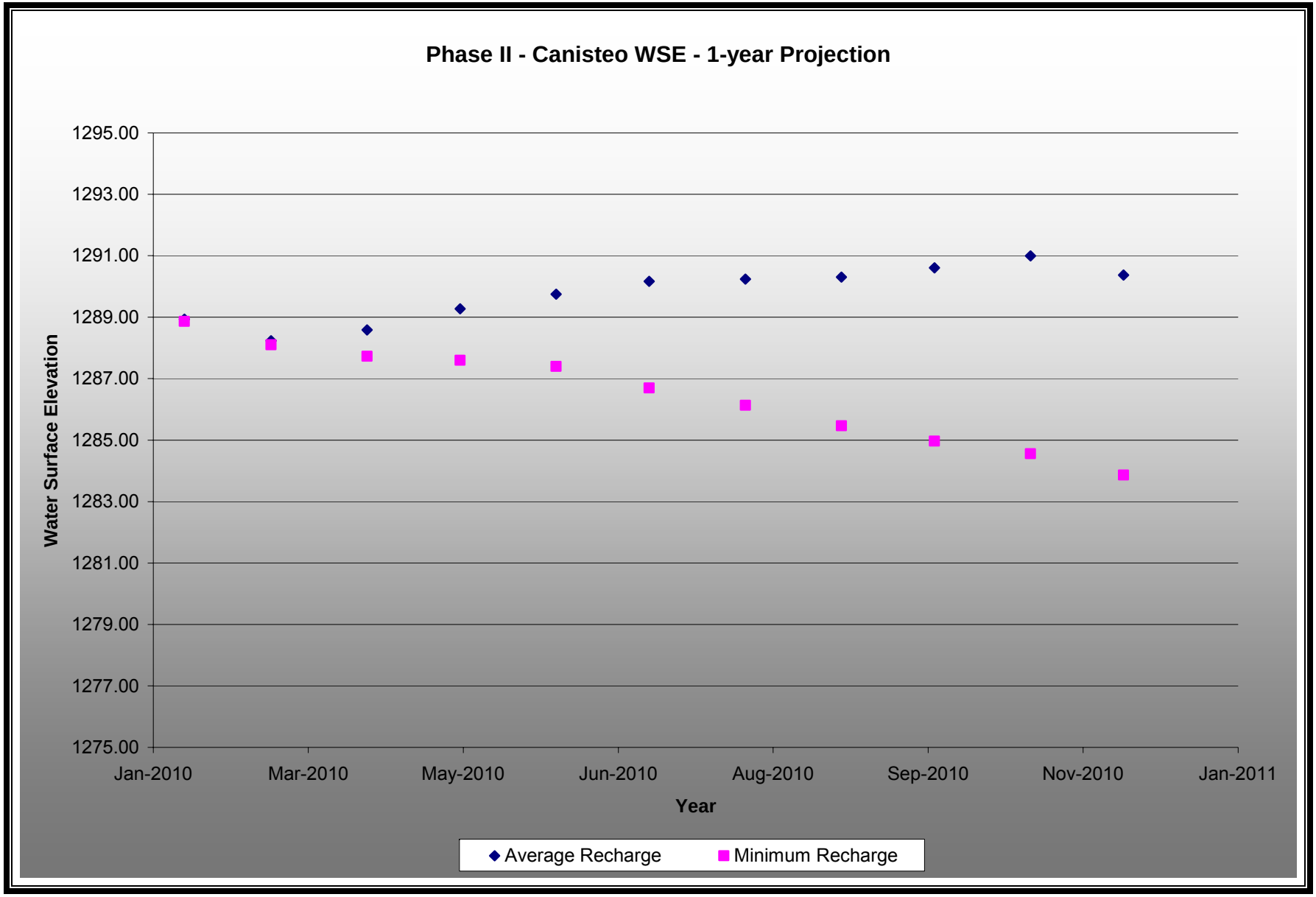


Figure 14: Phase II Canisteo WSE 1-year Projection

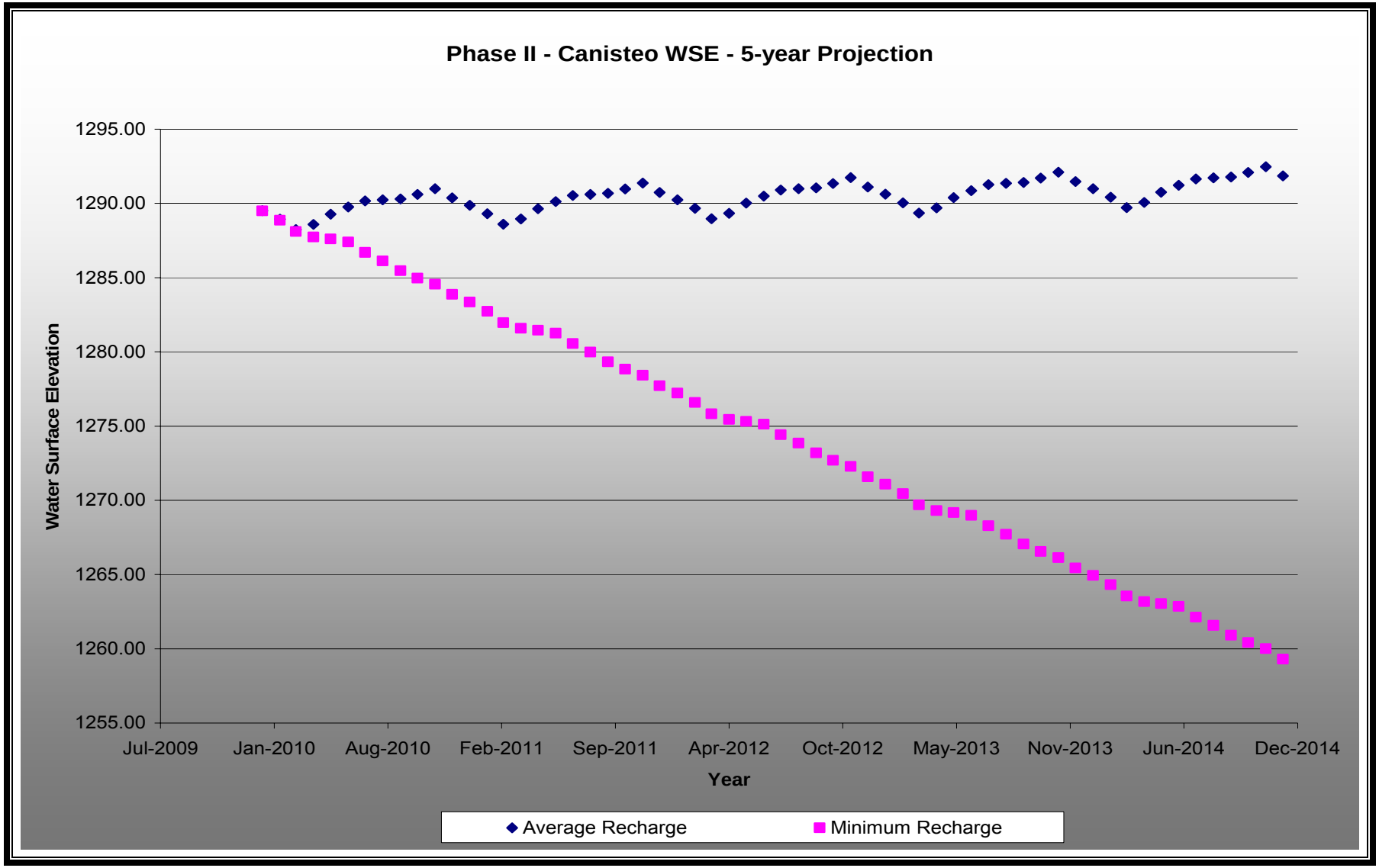


Figure 15: Phase II Canisteo WSE 5-year Projection

A normal operating range of 1260-1290 feet msl with a contingency plan range of 1250-1260 feet msl was selected for use based on the 5-year conservative-case scenario, as shown in Figure 15. An operating range of 1290-1300 feet msl will be used during extremely wet periods. Figure 16 depicts the operating range in the CMP.

Emergency discharge from the CMP will be available during extremely wet periods. Water will be pumped to the intersection of the process water line to the plant and the blowdown line to Holman Lake. Water will be discharged to the blowdown line at this location instead of going directly to the plant. The emergency discharge system will be designed to prohibit invasive species from being inadvertently pumped to Holman Lake. The capability to operate the existing pump in the HAMP will be retained in the event it becomes necessary to further manage water levels in the pit complex.

Various land bridges exist in the CMP that could be exposed below water elevations of approximately 1,260 feet msl. The normal case operation of the CMP will be to maintain expected water levels above 1,260 feet msl, unless such other levels are otherwise necessary or required.

The pit water surface elevation will be 1,290 ± 2 feet msl during a typical year. Water from the other pits will help to augment water levels in the CMP, and should help to prevent significant water level changes.

The GMMP will typically be operated in the range of 1,220-1,230 feet msl. Figure 17 depicts the operating range in the GMMP. Higher flows may be available if the water level in the HAMP is reduced below the now-submerged land bridge located between the GMMP and the HAMP. Discussions will be required between the Applicant and the MDNR to determine whether operation at greatly reduced water levels in the HAMP is advisable and, if so, under what conditions such operation would be conducted.

The LMP will be operated in the range of 1,190-1,250 feet msl during a typical year. Figure 18 depicts the operating range in the LMP.

The operating ranges in the GMMP and LMP will allow for storage of water during non-pumping periods. Pumping is unlikely to occur during the winter or if there is equipment failure or system maintenance needs.

Water levels and water usage will be monitored during operation of Phase I and Phase II.

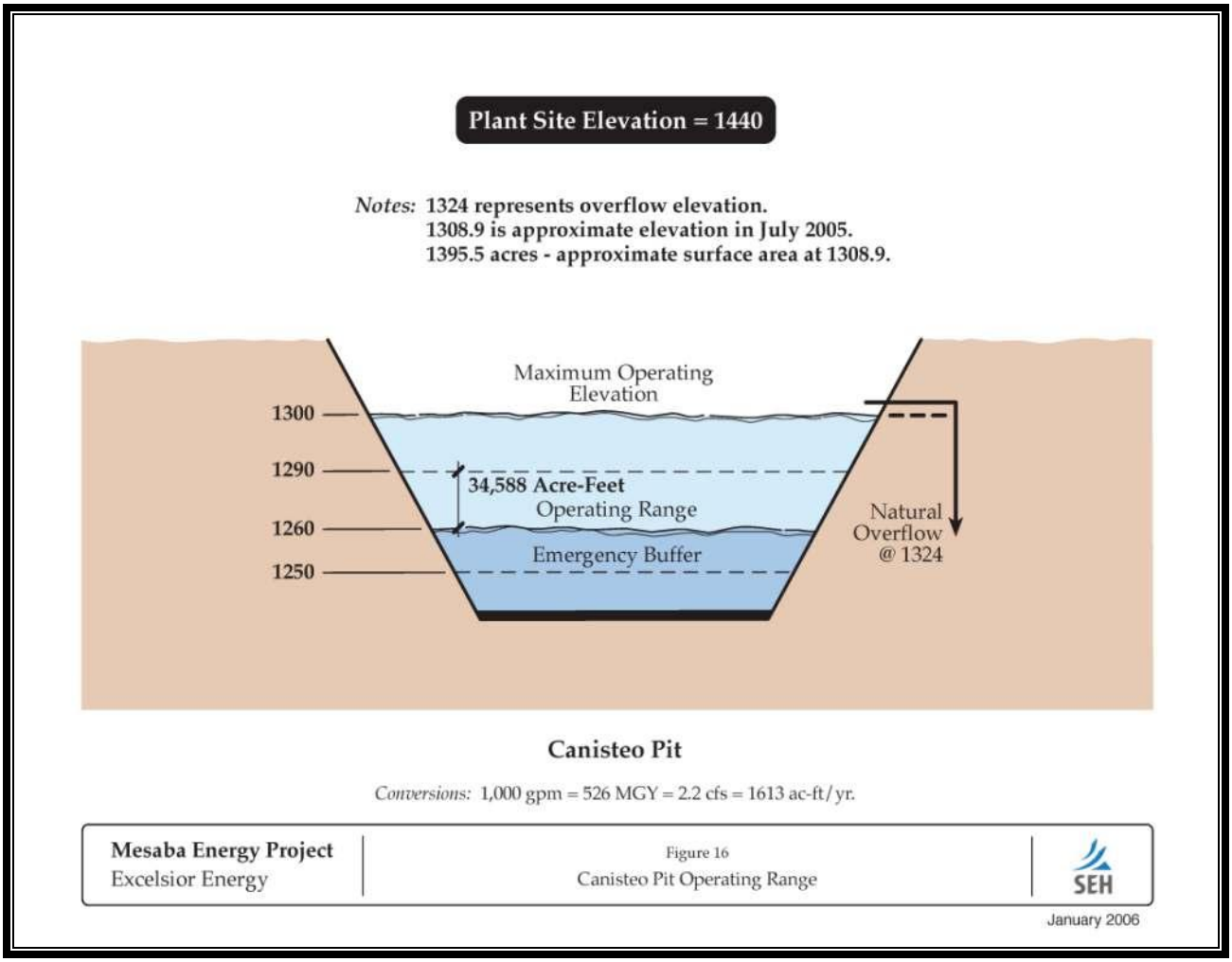


Figure 16: Canisteo Mine Pit Operating Range

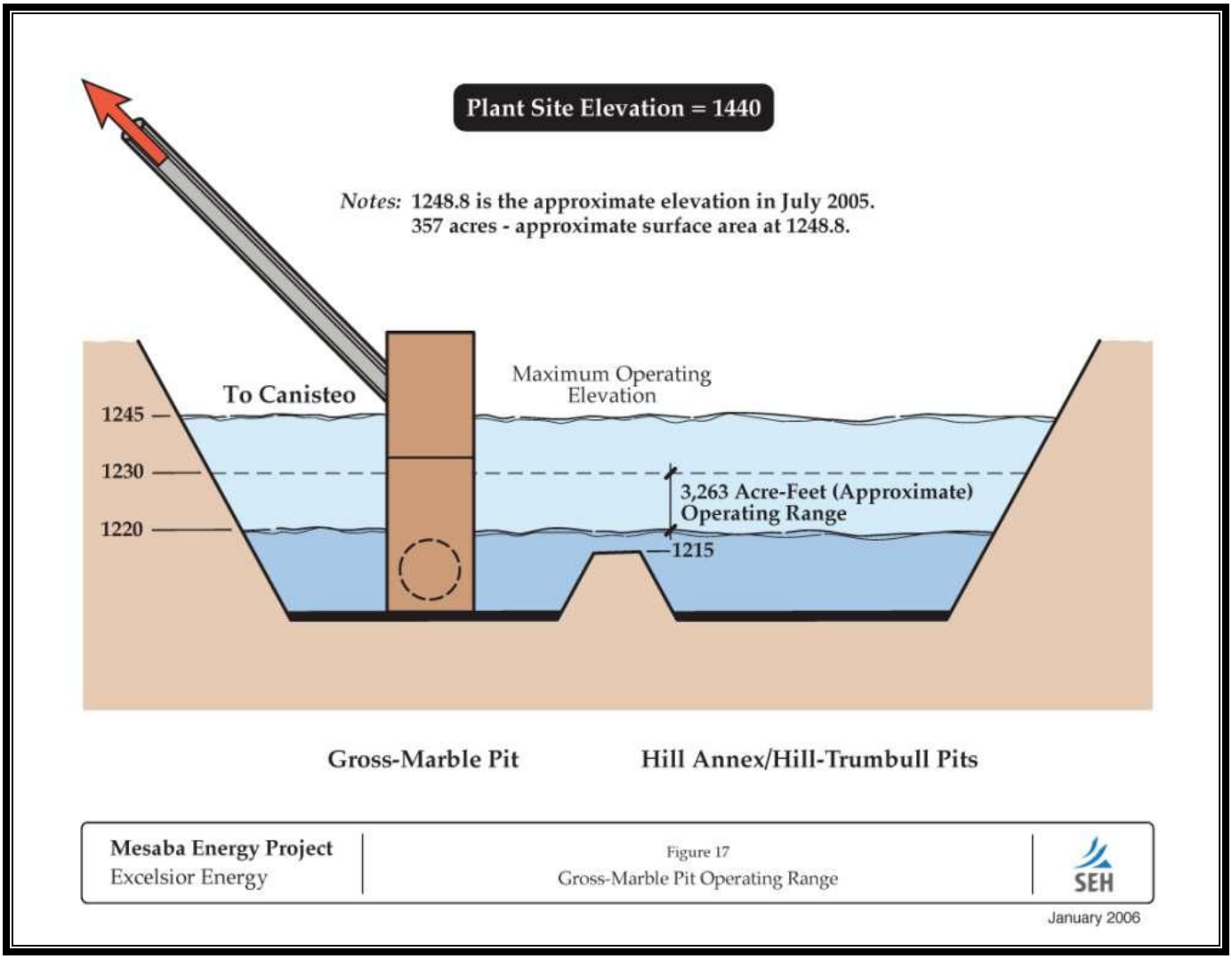


Figure 17: Gross-Marble Mine Pit Operating Range

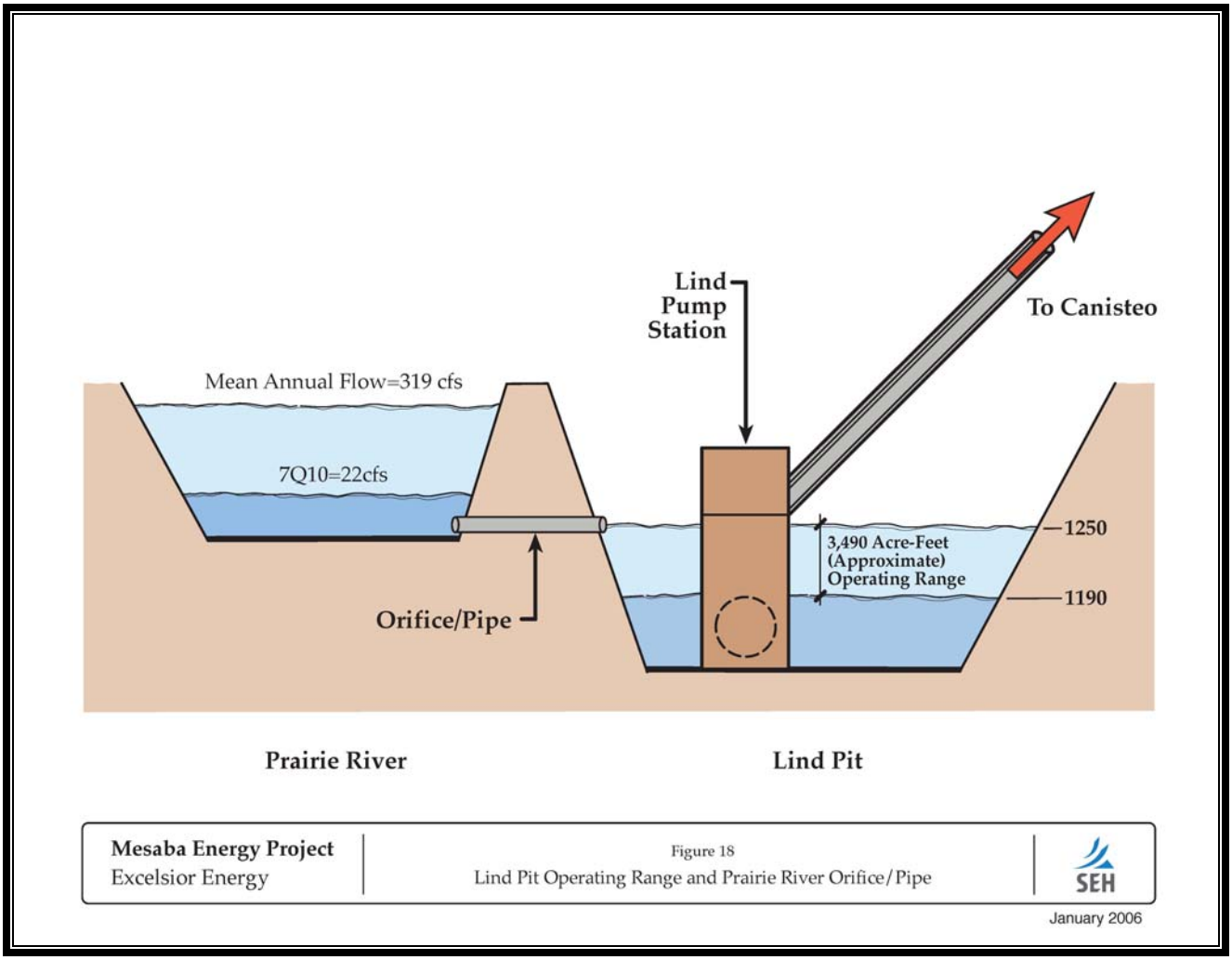


Figure 18: Lind Mine Pit Operating Range and Prairie River Intake structure

5.0 Construction Schedule and Phasing

The IGCC Power Station will require water for commissioning and testing in advance of commercial operation. Mesaba One is expected to be fully operational late 2011. Pump stations at the CMP and HAMP Complex must be operational by early 2010. Initially, water will only be pumped from the CMP until the water level is drawn down to 1,290 feet msl (normal operating level). When the water level in the CMP is at 1,290 feet msl, pumping from the HAMP Complex to the CMP will commence. Figure 19 shows a schematic of water supply for the operation of Mesaba One.

Construction of the Lind Pump Station and the Prairie River engineered intake structure will allow water to be pumped from the LMP to the CMP. Figure 20 shows a schematic of water supply for the operation of Mesaba One and Mesaba Two.

Water levels in the CMP will be monitored in order to evaluate any immediate needs for temporary or emergency pumping from the pit if water levels increase to unacceptable levels prior to completion of Phase I.

A typical cross section of the process water pipelines, conceptual pump station details, and discharge point energy dissipation concepts are provided in Attachment A.

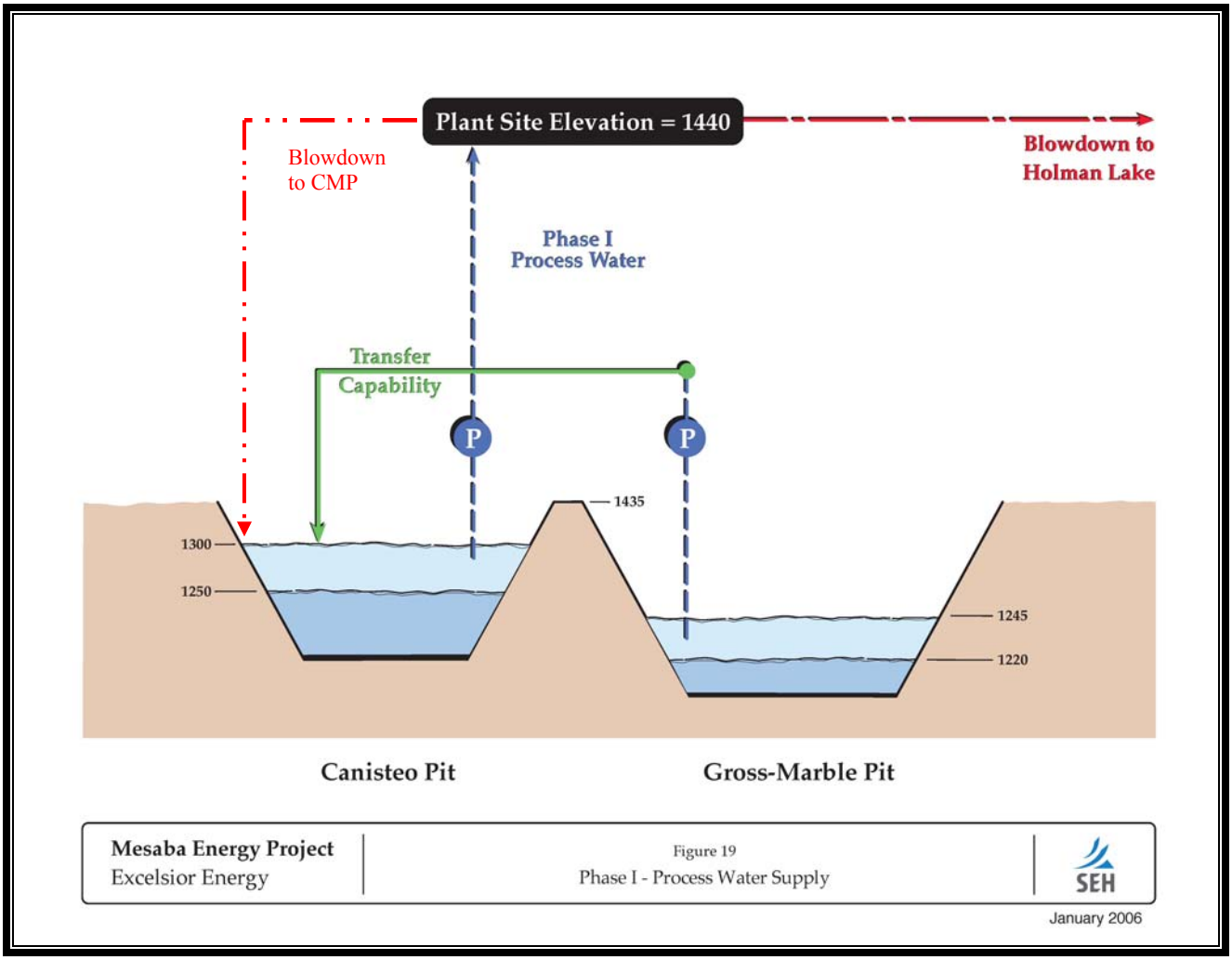


Figure 19: Mesaba One Process Water Supply

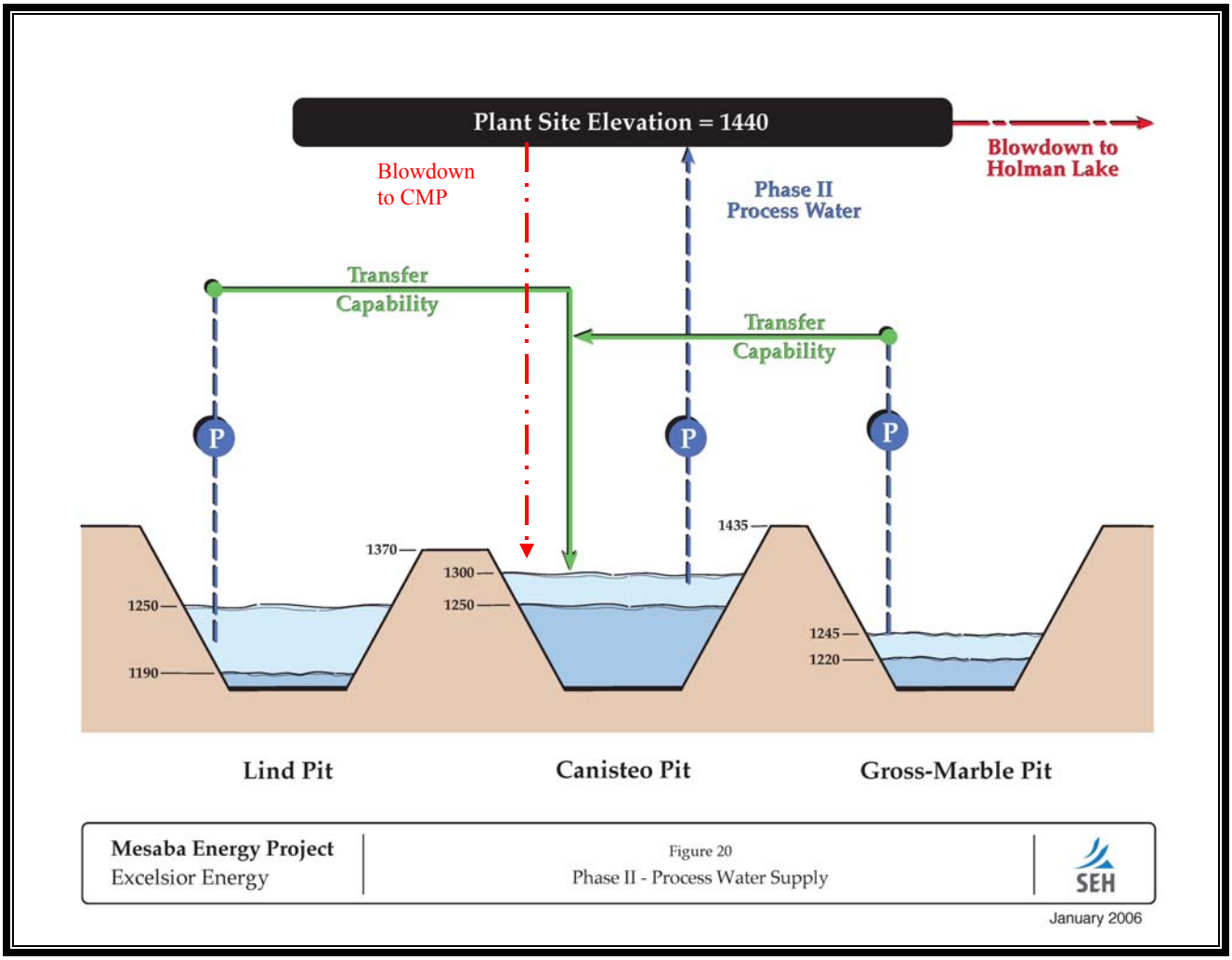


Figure 20: Mesaba One and Mesaba Two Process Water Supply

6.0 Concurrent Permitting and Approvals

6.1 Minnesota Site and Route Permits Joint Application

The Applicant has applied to the Minnesota Public Utilities Commission ("MPUC") for a Large Electric Power Generating Plant ("LEPGP") Site Permit and for a High Voltage Transmission Line ("HVTL") Route Permit pursuant to the Minnesota Power Plant Siting Act (Minnesota Statutes 116C.51 through 116C.69) and Minnesota Rules Chapter 4400. The Joint Application also requests the MPUC to issue a Pipeline Routing Permit pursuant to Minnesota Statutes chapter 116I and Minnesota Rules chapter 4415.

6.2 State and Federal EIS

The U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) is required by the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.), the Council on Environmental Quality NEPA regulations (40 C.F.R. Parts 1500-1508), and the DOE NEPA regulations (10 C.F.R. Part 1021) to prepare an environmental impact statement (EIS) as part of its participation in the Mesaba Energy Project through funding provided from the Clean Coal Power Initiative program and due to the provision of a federal loan guarantee for the Project in the recently enacted Energy Policy Act of 2005 under Title XVII. Because the proposed facility is considered a Large Electric Power Generating Plant (LEPGP), the IGCC Power Station is subject to the Minnesota Power Plant Siting Act (Minn. Stat. §§116C.51-.697), which requires the preparation of a state-equivalent EIS.

The EIS requirements under NEPA and the Minnesota Power Plant Siting Act are substantially similar, and it is DOE's intent to prepare, in cooperation with the Minnesota Department of Commerce and the Minnesota Public Utilities Commission, a joint EIS that will fulfill the requirements of both state and federal law. Excelsior has prepared an Environmental Supplement (ES) to support preparation of the joint EIS which is incorporated herein by reference.

6.3 MPCA – NPDES

The Applicant has also filed a request with the MPCA seeking approval for a National Pollutant Discharge Elimination System (NPDES) Discharge Permit in accordance with Minnesota Rules chapters 7001 and 7050 to meet the water discharge needs of the IGCC Power Station. The Applicant's proposed discharges will be restricted to non-contact cooling water and other minor process water streams similar in quality to cooling tower blowdown.

6.4 Wetlands

Permit applications are being prepared to address compliance with Section 404 of the Clean Water Act and the Minnesota Wetland Conservation Act of 1991.

7.0 References

Barr Engineering Company. 2004. Canisteo Mine Pit Outflow: Phase I Comparative Feasibility Analysis Report.

Barr Engineering Company. 1987. Hydrology Study: Hill-Annex Mine

Huff, F.A., and J.R. Angel. 1992. Rainfall Frequency Atlas of the Midwest. The Midwestern Climate Center. Bulletin 71. MCC Research Report 92-03.

Leibfried, R.T., J.L. Adams, C.F. Rundberg, J.R. Maki, and J.Z. Mackiewicz. 2001. The Canisteo Mine Pit Water Balance Study. Minnesota Department of Natural Resources. Waters Division.

Minnesota Department of Natural Resources, Division of Parks and Recreation. 2004. DRAFT Hill Annex Mine State Park Management Plan.

Minnesota Department of Transportation, Office of Bridges and Structures. 2000. Drainage Manual.

Minnesota Pollution Control Agency. 2000. Protecting Water Quality in *Urban Areas, Best Management* Practices for Dealing with Storm Water Runoff from Urban, Suburban, and Developing Areas of Minnesota.

U.S. Department of Agriculture, Soil Conservation Service, 1992. Minnesota Hydrology Guide.

Appendix A: Water Appropriation Permit Applications

A-02623-04
(Rev.8/04)
Minnesota
DNR Waters

Permit Application for Appropriation of Waters of the State
NON-IRRIGATION

OFFICE USE ONLY
P.A. No.
Date(s) Served
☐ SWCD
☐ WSD
☐ CITY

NOTICE OF WARNING: All information provided on this form is considered to be public information in accordance with the Minnesota Data Privacies Act (M.S. 15.1611 to 15.1698).

▷ SEE INSTRUCTIONS...TYPE OR PRINT CLEARLY

1. Applicant Name (landowner or renter): MEP I LLC and MEP II LLC

2. Business Name: MEP I LLC and MEP II LLC

3. Authorized Agent (if applicable): Robert Evans

4. Phone Numbers (with area codes): (952) 847-2360

5. Mailing Address: 11100 Wayzata Boulevard, Suite 305

6. City, State, Zip Code: Minnetonka, MN 55305

7. Purpose (Explain what the water will be used for) ☐ Public Water Supply ☒ Commercial/Industrial ☐ Water Level Maintenance ☐ Pollution Containment ☐ Temporary (1 year or less) ☐ Other See Attached Report

8. Source of Water ("X" one and complete)
> Additional information MUST be supplied for each source. Refer to instructions (8 & 9) for requirements.

a. ☐ One well
b. ☐ ____ manifolded wells
c. ☐ Stream, ditch, or river (name) ____
d. ☐ Wetland, lake, or impoundment (name) ____
e. ☒ Other Canisteo Mine Pit

9. Point of Taking/Pumping Site
a. SW 1/4 of NE 1/4 of NW 1/4
b. Section No. 22
c. Township No. 56 N
d. Range No. 24 W
e. County Itasca

10. Means of Taking and Rate
a. ☒ Stationary Pump(s) at 15,200 gpm
b. ☐ Portable Pump at ____ gpm
c. ☐ Gravity Flow at ____ gpm/cfs
d. ☐ Other ____ gpm/cfs (circle one)

11. Method of Measurement
a. ☒ Flow Meter
b. ☐ Timing Device
c. ☐ Electric Power Consumption
d. ☐ Other ____

12. Means of Distribution
a. ☒ pipe 36" diam. 11,100' length
b. ☐ tank ____ gal. capacity
c. ☐ channel ____ length
d. ☐ other ____

13. Legal Description-Land Owned/Rented *

Township No.	Range No.	Section	Fractional Sect. Gov't. Lots
SEE ATTACHED MAP BOOK			

* Rental Agreement MUST Be Submitted

14. Months of Appropriation
☒ JAN ☒ JUL
☒ FEB ☒ AUG
☒ MAR ☒ SEP
☒ APR ☒ OCT
☒ MAY ☒ NOV
☒ JUN ☒ DEC

15. Schedule of Appropriation ("X" one and complete)
a. ☒ Continuous — 24 hrs./day 31 days/mo. 12 mo./yr.
b. ☐ Seasonal — Beginning date 1/1/2009
c. ☐ Temporary — End date ____

16. Total Annual Use (Gallons per Year)
5,414 MGY
(10,300 gpm annual average)

17. Discharge To and Quantity
a. ☐ Stream, Ditch or River ____ (name) ( ) MGY
b. ☒ Wetland, Lake or Impoundment Holman Lake (name) (1,840) MGY
c. ☐ Sewer System ( ) MGY
d. ☒ Other Canisteo (1,840) MGY

18. Discharge Point
a. ____ 1/4 of ____ 1/4 of ____ 1/4
b. Section No. SEE ATTACHED
c. Township No. MAP BOOK
d. Range No. ____
e. County Itasca

19. Means of Discharge and Rate
a. ☐ ____ (no.) stationary pump(s) at ____ gpm ea.
b. ☐ ____ (no.) portable pump(s) at ____ gpm ea.
c. ☒ Gravity Flow at 3,500 gpm ____ gpm/cfs
d. ☐ Other ____ gpm/cfs (circle one)

20. Additional Requirements:
a. ☒ Map or Air Photo which shows:
1) Point of Taking or Pumping Site
2) Test Hole Location 3) Boundaries of Property Controlled and Area of Use 4) Discharge Point
b. ☒ $150 Minimum Application Fee will be billed after receipt of application.
c. ☒ Statement of Justification/Alternative Sources
d. ☒ Additional Documents Required

▷ I hereby make application pursuant to Minnesota Statutes Chapter 103G.261 and all supporting rules for a permit to appropriate water in accordance with all supporting maps, plans, and other information submitted with this application. The information submitted and statements made concerning this application are true and correct to the best of my knowledge.

21. Signature of Landowner or Authorized Agent

22. Date

▷ IMPORTANT: Submit this application and all supporting data to the DNR Office serving you (see back for addresses).
APPLICANT: KEEP A COPY FOR YOUR RECORDS.

This information is available in an alternative format upon request.

A-02623-04
(Rev.8/04)
Minnesota
DNR Waters

Permit Application for Appropriation of Waters of the State
NON-IRRIGATION

OFFICE USE ONLY
P.A. No.
Date(s) Served
☐ SWCD
☐ WSD
☐ CITY

NOTICE OF WARNING: All information provided on this form is considered to be public information in accordance with the Minnesota Data Privacies Act (M.S. 15.1611 to 15.1698).

▷ SEE INSTRUCTIONS...TYPE OR PRINT CLEARLY

1. Applicant Name (landowner or renter) MEP I LLC and MEP II LLC	**2.** Business Name MEP I LLC and MEP II LLC
3. Authorized Agent (if applicable) Robert Evans	**4.** Phone Numbers (with area codes) (952) 847-2360
5. Mailing Address 11100 Wayzata Boulevard, Suite 305	**6.** City, State, Zip Code Minnetonka, MN 55305

7. Purpose (Explain what the water will be used for) ☐ Public Water Supply ☒ Commercial/Industrial ☐ Water Level Maintenance ☐ Pollution Containment ☐ Temporary (1 year or less) ☐ Other See Attached Report

8. Source of Water ("X" one and complete)
▷ Additional information MUST be supplied for each source. Refer to instructions (8 & 9) for requirements.
- a. ☐ One well
- b. ☐ ____ manifolded wells
- c. ☐ Stream, ditch, or river (name) ____
- d. ☐ Wetland, lake, or impoundment (name) ____
- e. ☒ Other Gross - Marble Mine Pit

9. Point of Taking/Pumping Site
- a. NW 1/4 of SE 1/4 of SE 1/4
- b. Section No. 18
- c. Township No. 56 N
- d. Range No. 23 W
- e. County Itasca

10. Means of Taking and Rate
- a. ☒ Stationary Pump(s) at 7,000 gpm
- b. ☐ Portable Pump at ____ gpm
- c. ☐ Gravity Flow at ____ gpm/cfs
- d. ☐ Other ____ gpm/cfs (circle one)

11. Method of Measurement
- a. ☒ Flow Meter
- b. ☐ Timing Device
- c. ☐ Electric Power Consumption
- d. ☐ Other

12. Means of Distribution
- a. ☒ pipe 24" diam. 25,400' length
- b. ☐ tank ____ gal. capacity
- c. ☐ channel ____ length
- d. ☐ other ____

13. Legal Description-Land Owned/Rented *

Township No.	Range No.	Section	Fractional Sect. Gov't. Lots
SEE ATTACHED MAP BOOK			

* Rental Agreement MUST Be Submitted

14. Months of Appropriation
☒ JAN ☒ JUL
☒ FEB ☒ AUG
☒ MAR ☒ SEP
☒ APR ☒ OCT
☒ MAY ☒ NOV
☒ JUN ☒ DEC

15. Schedule of Appropriation ("X" one and complete)
- a. ☐ Continuous
- b. ☒ Seasonal
- c. ☐ Temporary

24 hrs./day 31 days/mo. 12 mo./yr.
Beginning date 10/1/2009
End date ____

16. Total Annual Use (Gallons per Year)
2,103 MGY
(4,000 gpm annual average)

17. Discharge To and Quantity
- a. ☐ Stream, Ditch or River ____ (name) ( ) MGY
- b. ☐ Wetland, Lake or Impoundment ____ (name) ( ) MGY
- c. ☐ Sewer System ( ) MGY
- d. ☒ Other Canisteo Mine Pit (2,103) MGY

18. Discharge Point
- a. SW 1/4 of NE 1/4 of NW 1/4
- b. Section No. 22
- c. Township No. 56 N
- d. Range No. 24 W
- e. County Itasca

19. Means of Discharge and Rate
- a. ☒ 1 (no.) stationary pump(s) at 7,000 gpm ea.
- b. ☐ ____ (no.) portable pump(s) at ____ gpm ea.
- c. ☐ Gravity Flow at ____ gpm/cfs
- d. ☐ Other ____ gpm/cfs (circle one)

20. Additional Requirements:
- a. ☒ Map or Air Photo which shows:
  1) Point of Taking or Pumping Site
  2) Test Hole Location 3) Boundaries of Property Controlled and Area of Use 4) Discharge Point
- b. ☒ $150 Minimum Application Fee will be billed after receipt of application.
- c. ☒ Statement of Justification/Alternative Sources
- d. ☒ Additional Documents Required

▷ I hereby make application pursuant to Minnesota Statutes Chapter 103G.261 and all supporting rules for a permit to appropriate water in accordance with all supporting maps, plans, and other information submitted with this application. The information submitted and statements made concerning this application are true and correct to the best of my knowledge.

21. Signature of Landowner or Authorized Agent	**22.** Date

▷ IMPORTANT: Submit this application and all supporting data to the DNR Office serving you (see back for addresses).
APPLICANT: KEEP A COPY FOR YOUR RECORDS.

This information is available in an alternative format upon request.

A-02623-04
(Rev.8/04)
Minnesota DNR Waters

Permit Application for Appropriation of Waters of the State
NON-IRRIGATION

OFFICE USE ONLY
P.A. No.
Date(s) Served
☐ SWCD
☐ WSD
☐ CITY

NOTICE OF WARNING: All information provided on this form is considered to be public information in accordance with the Minnesota Data Privacies Act (M.S. 15.1611 to 15.1698).

▷ SEE INSTRUCTIONS...TYPE OR PRINT CLEARLY

1. Applicant Name (landowner or renter) MEP I LLC and MEP II LLC	**2.** Business Name MEP I LLC and MEP II LLC
3. Authorized Agent (if applicable) Robert Evans	**4.** Phone Numbers (with area codes) (952) 847-2360
5. Mailing Address 11100 Wayzata Boulevard, Suite 305	**6.** City, State, Zip Code Minnetonka, MN 55305

7. Purpose (Explain what the water will be used for) ☐ Public Water Supply ☒ Commercial/Industrial ☐ Water Level Maintenance ☐ Pollution Containment ☐ Temporary (1 year or less) ☐ Other See Attached Report

8. Source of Water ("X" one and complete)
▷ Additional information MUST be supplied for each source. Refer to instructions (8 & 9) for requirements.
- a. ☐ One well
- b. ☐ ____ manifolded wells
- c. ☐ Stream, ditch, or river (name) ____
- d. ☐ Wetland, lake, or impoundment (name) ____
- e. ☒ Other Lind Pit

9. Point of Taking/Pumping Site
- a. NE 1/4 of SE 1/4 of SE 1/4
- b. Section No. 34
- c. Township No. 56 N
- d. Range No. 25 W
- e. County Itasca

10. Means of Taking and Rate
- a. ☒ Stationary Pump(s) at 7,000 gpm
- b. ☐ Portable Pump at ____ gpm
- c. ☐ Gravity Flow at ____ gpm/cfs
- d. ☐ Other ____ gpm/cfs (circle one)

11. Method of Measurement
- a. ☒ Flow Meter
- b. ☐ Timing Device
- c. ☐ Electric Power Consumption
- d. ☐ Other

12. Means of Distribution
- a. ☒ pipe 24" diam. 11,300' length
- b. ☐ tank ____ gal. capacity
- c. ☐ channel ____ length
- d. ☐ other ____

13. Legal Description-Land Owned/Rented *

Township No.	Range No.	Section	Fractional Sect. Gov't. Lots
SEE ATTACHED MAP BOOK			

* Rental Agreement MUST Be Submitted

14. Months of Appropriation
☒ JAN ☒ JUL
☒ FEB ☒ AUG
☒ MAR ☒ SEP
☒ APR ☒ OCT
☒ MAY ☒ NOV
☒ JUN ☒ DEC

15. Schedule of Appropriation ("X" one and complete)
- a. ☐ Continuous
- b. ☒ Seasonal
- c. ☐ Temporary

24 hrs./day 31 days/mo. 12 mo./yr.
Beginning date 10/1/2009
End date ____

16. Total Annual Use (Gallons per Year)
2,244 MGY
(4,269 gpm annual average)

17. Discharge To and Quantity
- a. ☐ Stream, Ditch or River ____ (name) ( ) MGY
- b. ☐ Wetland, Lake or Impoundment ____ (name) ( ) MGY
- c. ☐ Sewer System ( ) MGY
- d. ☒ Other Canisteo Mine Pit (2,244) MGY

18. Discharge Point
- a. SW 1/4 of NW 1/4 of NE 1/4
- b. Section No. 36
- c. Township No. 56 N
- d. Range No. 25 W
- e. County Itasca

19. Means of Discharge and Rate
- a. ☒ 1 (no.) stationary pump(s) at 7,000 gpm ea.
- b. ☐ ____ (no.) portable pump(s) at ____ gpm ea.
- c. ☐ Gravity Flow at ____ gpm/cfs
- d. ☐ Other ____ gpm/cfs (circle one)

20. Additional Requirements:
- a. ☒ Map or Air Photo which shows:
  1) Point of Taking or Pumping Site
  2) Test Hole Location 3) Boundaries of Property Controlled and Area of Use 4) Discharge Point
- b. ☒ $150 Minimum Application Fee will be billed after receipt of application.
- c. ☒ Statement of Justification/Alternative Sources
- d. ☒ Additional Documents Required

▷ I hereby make application pursuant to Minnesota Statutes Chapter 103G.261 and all supporting rules for a permit to appropriate water in accordance with all supporting maps, plans, and other information submitted with this application. The information submitted and statements made concerning this application are true and correct to the best of my knowledge.

21. Signature of Landowner or Authorized Agent	**22.** Date

▷ IMPORTANT: Submit this application and all supporting data to the DNR Office serving you (see back for addresses).
APPLICANT: KEEP A COPY FOR YOUR RECORDS.

This information is available in an alternative format upon request.

A-02623-04
(Rev.8/04)
Minnesota
DNR Waters

Permit Application for Appropriation of Waters of the State
NON-IRRIGATION

OFFICE USE ONLY
P.A. No.
Date(s) Served
☐ SWCD
☐ WSD
☐ CITY

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▷ SEE INSTRUCTIONS...TYPE OR PRINT CLEARLY

1. Applicant Name (landowner or renter)
MEP I LLC and MEP II LLC

2. Business Name
MEP I LLC and MEP II LLC

3. Authorized Agent (if applicable)
Robert Evans

4. Phone Numbers (with area codes)
(952) 847-2360

5. Mailing Address
11100 Wayzata Boulevard, Suite 305

6. City, State, Zip Code
Minnetonka, MN 55305

7. Purpose (Explain what the water will be used for) ☐ Public Water Supply ☒ Commercial/Industrial ☐ Water Level Maintenance ☐ Pollution Containment ☐ Temporary (1 year or less) ☐ Other See Attached Report

8. Source of Water ("X" one and complete)
▷ Additional information MUST be supplied for each source. Refer to instructions (8 & 9) for requirements.
a. ☐ One well
b. ☐ _____ manifolded wells
c. ☒ Stream, ditch, or river (name) Prairie River
d. ☐ Wetland, lake, or impoundment (name) _____
e. ☐ Other _____

9. Point of Taking/Pumping Site
a. NE 1/4 of NW 1/4 of NE 1/4
b. Section No. 3
c. Township No. 55 N
d. Range No. 25 W
e. County Itasca

10. Means of Taking and Rate
a. ☐ Stationary Pump(s) at ____ gpm
b. ☐ Portable Pump at ____ gpm
c. ☒ Gravity Flow at 5.5 cfs gpm/cfs
d. ☐ Other ____ gpm/cfs (circle one)

11. Method of Measurement
a. ☐ Flow Meter
b. ☒ Timing Device
c. ☐ Electric Power Consumption
d. ☐ Other

12. Means of Distribution
a. ☒ pipe 18" diam. 200' length
b. ☐ tank ____ gal. capacity
c. ☐ channel ____ length
d. ☐ other ____

13. Legal Description-Land Owned/Rented *

Township No.	Range No.	Section	Fractional Sect. Gov't. Lots
SEE ATTACHED MAP BOOK			

* Rental Agreement MUST Be Submitted

14. Months of Appropriation
☒ JAN ☒ JUL
☒ FEB ☒ AUG
☒ MAR ☒ SEP
☒ APR ☒ OCT
☒ MAY ☒ NOV
☒ JUN ☒ DEC

15. Schedule of Appropriation ("X" one and complete)
a. ☒ Continuous — 24 hrs./day 31 days/mo. 12 mo./yr.
b. ☐ Seasonal — Beginning date 1/1/2010
c. ☐ Temporary — End date ____

16. Total Annual Use (Gallons per Year)
1298 MGY
(5.5 cfs annual maximum)

17. Discharge To and Quantity
a. ☐ Stream, Ditch or River ____ (name) ( ) MGY
b. ☐ Wetland, Lake or Impoundment ____ (name) ( ) MGY
c. ☐ Sewer System ( ) MGY
d. ☒ Other Lind Pit (1,298) MGY

18. Discharge Point
a. NE 1/4 of NW 1/4 of NE 1/4
b. Section No. 3
c. Township No. 55 N
d. Range No. 25 W
e. County Itasca

19. Means of Discharge and Rate
a. ☐ ____ (no.) stationary pump(s) at ____ gpm ea.
b. ☐ ____ (no.) portable pump(s) at ____ gpm ea.
c. ☒ Gravity Flow at 5.5 cfs gpm/cfs
d. ☐ Other ____ gpm/cfs (circle one)

20. Additional Requirements:
a. ☒ Map or Air Photo which shows:
1) Point of Taking or Pumping Site
2) Test Hole Location 3) Boundaries of Property Controlled and Area of Use 4) Discharge Point
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21. Signature of Landowner or Authorized Agent	**22.** Date

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Appendix B: Contacts

Name	Title	Agency	Address 1	Phone	e-mail
Robert Evans	Vice President - Environmental Affairs	Excelsior Energy	Crescent Ridge Corporate Center 11100 Wayzata Boulevard, Suite 305 Minnetonka, MN 55305	952.847.2360	bobevans@excelsiorenergy.com
Mike Wadley	Vice President - Operations and Technology	Excelsior Energy	Crescent Ridge Corporate Center 11100 Wayzata Boulevard, Suite 305 Minnetonka, MN 55305	952.847.2360	mikewadley@excelsiorenergy.com
Bruce Browers	Owner	Browers Consulting	4315 Gladstone Road Duluth, MN 55804	218.525.4165	brucebrowers@charter.net
Chuck Michael	Principal	SEH	3240 East River Road NE, Suite 102 Rochester, MN 55906-3422	507.529.7209	cmichael@sehinc.com
Jeff Davis	Principal	SEH	3535 Vadnais Center Drive St. Paul, MN 55110-5196	651.490.2025	jdavis@sehinc.com
Jeremy Walgrave	Project Engineer	SEH	3535 Vadnais Center Drive St. Paul, MN 55110-5196	651.490.2037	jwalgrave@sehinc.com
Mike Peloquin	Regional Hydrologist Region 2	MDNR	1201 East Highway 2 Grand Rapids, MN 55744	218.327.4417	mike.peloquin@dnr.state.mn.us
Howard Christman	Area Hydrologist Itasca County	MDNR	1201 East Highway 2 Grand Rapids, MN 55744	218.327.4106	howard.christman@dnr.state.mn.us
Bob Leibfried	Mine-pit Lake Hydrologist (Canisteo Pit)	MDNR	1201 East Highway 2 Grand Rapids, MN 55744	218.327.4232	bob.leibfried@dnr.state.mn.us
Jim Japs	Water Mgmt Section Administrator	MDNR	1200 Warner Road St. Paul, MN 55106	651.297.4600	jim.japs@dnr.state.mn.us
John Adams	Mine-pit Lake Hydrologist (Hill Annex Pit)	MDNR	1201 East Highway 2 Grand Rapids, MN 55744	218.327.4110	john.adams@dnr.state.mn.us
Steve Railson	Hill Annex Park Manager	MDNR	Hill Annex Mine State Park P.O. Box 376, Calumet, MN 55716	218.247.7215	Steve.Railson@dnr.state.mn.us
Chris Kavanaugh	Area Fisheries Supervisor	MDNR	1201 East Highway 2 Grand Rapids, MN 55744	218.999.7821	chris.kavanaugh@dnr.state.mn.us
Paul Maurer	DNR Regional Park Operations Supervisc	MDNR	1201 Eeast Highway 2 Grand Rapids, MN 55744	218.327.4388	paul.maurer@dnr.state.mn.us
Tom Balcom	DNR Ecological Services	MDNR	500 Lafayette Rd Box 25 St Paul, MN 55155-4025	651.259.5075	tom.balcom@dnr.state.mn.us
Bill Storm	State Planning Director	PUC/DOC	Routing & Siting Unit 85 7th Place East Suite 500 St. Paul, MN 55101-2198	651.296.9535	bill.storm@state.mn.us
Jim Dexter	Construction Permit Duluth Office	MPCA	525 Lake Avenue South Suite 400 Duluth, MN55802	218.529.6253	james.dexter@pca.state.mn.us
John Thomas	Industrial Stormwater Permit Duluth Office	MPCA	525 Lake Avenue South Suite 400 Duluth, MN55802	218.723.4928	john.thomas@state.mn.us

Appendix C: MDNR Lake Information Reports

> MN DNR Home > Lake Finder >

Lake information report

Name: BUCKEYE PIT

Nearest Town: Coleraine, MN.
Primary County: Itasca

Survey Date: 08/23/1993
Inventory Number: 31-1249-00

Public Access Information

Ownership	Type	Description
Other	Gravel	A MINE ROAD COMES IN FROM THE NORTH SIDE OF THE MINEPIT.

Lake Characteristics

Lake Area (acres): 48.00
Littoral Area (acres): N/A
Maximum Depth (ft): 80.00
Water Clarity (ft): 19.00

Dominant Bottom Substrate: N/A
Abundance of Aquatic Plants: N/A
Maximum Depth of Plant Growth (ft): N/A

Did you know? Each year, the MinnAqua program teaches beginning anglers, primarily inner city youth, about fishing and aquatic biology.

Fish Sampled up to the 1993 Survey Year

Number of fish per net

Species	Gear Used	Caught	Normal Range	Average Fish Weight (lbs)	Normal Range (lbs)
Bluegill	Gill net	2.3	N/A - N/A	0.08	N/A - N/A
	Trap net	22.1	N/A - N/A	ND	N/A - N/A
Largemouth Bass	Trap net	4.3	N/A - N/A	ND	N/A - N/A
Pumpkinseed Sunfish	Gill net	1.3	N/A - N/A	0.16	N/A - N/A
	Trap net	2.8	N/A - N/A	ND	N/A - N/A
Rainbow Trout	Gill net	2.8	N/A - N/A	0.52	N/A - N/A
Rock Bass	Gill net	5.3	N/A - N/A	0.16	N/A - N/A
	Trap net	6.2	N/A - N/A	ND	N/A - N/A
Walleye	Gill net	0.3	N/A - N/A	2.11	N/A - N/A
Yellow Perch	Gill net	0.8	N/A - N/A	0.26	N/A - N/A
	Trap net	0.6	N/A - N/A	0.22	N/A - N/A

Normal Ranges represent typical catches for lakes with similar physical and chemical characteristics.

Length of Selected Species Sampled for All Gear for the 1993 Survey Year

Number of fish caught in each category (inches)

Species	0-5	6-8	9-11	12-14	15-19	20-24	25-29	>29	Total
Bluegill	138	1	0	0	0	0	0	0	139
Largemouth Bass	6	26	6	1	0	0	0	0	39
Pumpkinseed Sunfish	25	4	0	0	0	0	0	0	29
Rainbow Trout	0	0	8	3	0	0	0	0	11
Rock Bass	48	22	0	0	0	0	0	0	70
Walleye	0	0	0	0	1	0	0	0	1
Yellow Perch	0	6	2	0	0	0	0	0	8

*For the record, the largest **Shortnose Gar** taken in Minnesota weighed 4 lbs., 9.6 oz. and was caught by:*

Who: Matthew "Dewy" Ocel, Minneapolis, MN
Where: Mississippi River, Hennepin County
When: 7/22/84.
Statistics: 34.6" length, 10" girth

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

For Additional Information

Area Fisheries Supervisor:

1201 E HIGHWAY 2
GRAND RAPIDS, MN 55744
(218) 327-4430

General DNR Information:

DNR Information Center
500 Lafayette Road
St. Paul, MN 55155-4040
(651) 296-6157 or (888) MINNDNR
TDD: (651) 296-5484 or (800) 657-3929
E-Mail: info@dnr.state.mn.us

Lake maps can be obtained from:
Minnesota Bookstore
660 Olive Street
St. Paul, MN 55155
(651) 297-3000 or (800) 657-3757
To order, use 0000 for the map-id.

Turn in Poachers (TIP):

Toll-free: (800) 652-9093

FIGURE 21

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Lake information report

Name: Canisteo Pit (Pit Lake)

Nearest Town: Coleraine, MN.
Primary County: Itasca

Survey Date: 06/05/1995
Inventory Number: 31-1282-00

Public Access Information

Ownership	Type	Description
Other	Gravel	I.R.R.R.B. access on north side of Buckeye basin. Rising water level is flooding this access.

Lake Characteristics

Lake Area (acres): 1,338.00
Littoral Area (acres): 130.00
Maximum Depth (ft): 311.00
Water Clarity (ft): 10.50

Dominant Bottom Substrate: rubble (3-10"), gravel, ledge rock
Abundance of Aquatic Plants: common
Maximum Depth of Plant Growth (ft): 14.00

Did you know? The annual budget for the Section of Fisheries is approximately $17 million, which is funded primarily by fishing license and stamp fees and by a federal excise tax on fishing and boating equipment.

Fish Sampled up to the 1995 Survey Year

Number of fish per net

Species	Gear Used	Caught	Normal Range	Average Fish Weight (lbs)	Normal Range (lbs)
Black Crappie	Gill net	1.0	N/A - N/A	0.64	N/A - N/A
	Trap net	1.3	N/A - N/A	0.60	N/A - N/A
Bluegill	Gill net	trace	N/A - N/A	0.24	N/A - N/A
	Trap net	17.9	N/A - N/A	0.12	N/A - N/A
Hornyhead Chub	Trap net	trace	N/A - N/A	0.09	N/A - N/A
Largemouth Bass	Gill net	2.4	N/A - N/A	0.61	N/A - N/A
	Trap net	2.8	N/A - N/A	0.20	N/A - N/A
Pumpkinseed Sunfish	Trap net	1.4	N/A - N/A	0.07	N/A - N/A
Painted Turtle	Trap net	1.1	N/A - N/A	ND	N/A - N/A
Rainbow Trout	Gill net	trace	N/A - N/A	1.28	N/A - N/A
Rock Bass	Gill net	0.6	N/A - N/A	0.24	N/A - N/A
	Trap net	2.0	N/A - N/A	0.15	N/A - N/A
Snapping Turtle	Trap net	0.2	N/A - N/A	ND	N/A - N/A

White Sucker	Gill net	0.4	N/A - N/A	2.02	N/A - N/A
	Trap net	0.3	N/A - N/A	1.70	N/A - N/A

Normal Ranges represent typical catches for lakes with similar physical and chemical characteristics.

Length of Selected Species Sampled for All Gear for the 1995 Survey Year

	Number of fish caught in each category (inches)								
Species	***0-5***	***6-8***	***9-11***	***12-14***	***15-19***	***20-24***	***25-29***	***>29***	***Total***
Black Crappie	1	5	6	3	0	0	0	0	15
Bluegill	88	48	0	0	0	0	0	0	136
Largemouth Bass	11	15	8	0	0	0	0	0	34
Pumpkinseed Sunfish	17	0	0	0	0	0	0	0	17
Rock Bass	17	7	0	0	0	0	0	0	24

*For the record, the largest **Sauger** taken in Minnesota weighed 6 lbs., 2.75 oz. and was caught by:*

Who: Don Kizer, Red Wing, MN
Where: Mississippi River near Red Wing (L&D No.3), Goodhue County
When: 5/23/88.
Statistics: 23 7/8" length, 15" girth

Fish Stocked by Species for the Last Five Years

Year	Species	Age	Number
1999	*Lake Trout*	Adult	532
	Lake Trout	Yearling	6,289
2000	*Lake Trout*	Yearling	4,932
2001	*Lake Trout*	Adult	400
	Lake Trout	Yearling	4,891
2002	*Lake Trout*	Adult	256
	Lake Trout	Yearling	4,892
	Lake Trout	Yearling	366
2003	*Lake Trout*	Yearling	4,929
2004	*Lake Trout*	Adult	281

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Status of the Fishery (as of 06/05/1995)

This is the first assessment of the fish population ever conducted on Canisteo Pit. Before it connected to Canisteo, Buckeye Pit had been managed as a stream trout lake and some fall trout assessments had been conducted. The Minnesota DNR has never stocked any fish in Canisteo Pit. Largemouth bass appear to be abundant in the lake as indicated by the high catch rates in the gill and trap nets. Most of the bass sampled were small (mean length = 10.0 inches in the gill nets, 7.2 inches in the trap nets). Bass appear to grow slowly. The most abundant species sampled in the trap nets were bluegill. These bluegill ranged from 3.9 to 7.3 inches in length. The catch rate of black crappie in the gill nets is within the expected range for this type of lake but the trap net catch rate is a little below the expected range. The mean length for crappie sampled in the gill nets was 9.8 inches and for the trap nets it was 9.7 inches. One rainbow trout was sampled. Other species sampled include: pumpkinseed sunfish, rock bass, smallmouth bass, white sucker and hornyhead chub. Although none were sampled in this assessment, smelt have been introduced through illegal stocking and are present. What effects they will have on this developing fishery are unclear at this time.

For Additional Information

Area Fisheries Supervisor:

1201 E HIGHWAY 2
GRAND RAPIDS, MN 55744
(218) 327-4430

Lake maps can be obtained from:

Minnesota Bookstore
660 Olive Street
St. Paul, MN 55155
(651) 297-3000 or (800) 657-3757
To order, use B0129 for the map-id.

General DNR Information:

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500 Lafayette Road
St. Paul, MN 55155-4040
(651) 296-6157 or (888) MINNDNR
TDD: (651) 296-5484 or (800) 657-3929
E-Mail: info@dnr.state.mn.us

Turn in Poachers (TIP):

Toll-free: (800) 652-9093

FIGURE 22

Main Categories: Outdoor Activities | Regulations, Licenses, Permits | Natural Resources | Education & Safety | About the DNR | Maps | Publications | Employment | Volunteering | Technical & Financial Assistance | Public Input

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> MN DNR Home > Lake Finder >

Lake information report

Name: HILL ANNEX PIT

Nearest Town: Calumet, MN.
Primary County: Itasca

Survey Date: 08/27/1990
Inventory Number: 31-1279-00

Public Access Information

Ownership	Type	Description
Unknown	Unknown	ACCESS MAY BE GAINED THROUGH HILL ANNEX MINE STATE PARK.

Lake Characteristics

Lake Area (acres): 775.00
Littoral Area (acres): N/A
Maximum Depth (ft): 300.00
Water Clarity (ft): 19.00

Dominant Bottom Substrate: N/A
Abundance of Aquatic Plants: N/A
Maximum Depth of Plant Growth (ft): N/A

Did you know? Each year, DNR fisheries personnel stock game fish fry and fingerlings in lakes lacking habitat for natural reproduction.

Fish Consumption Advisory

No fish consumption information is available for this lake. For more information, see the "Fish Consumption Advice" pages at the Minnesota Department of Health.

Status of the Fishery (as of 08/27/1990)

NO GAMEFISH WERE CAPTURED IN EITHER GILLNETS OR TRAPNETS DURING THE ASSESSMENT. MINNOW TRAPS WERE USED TO SAMPLE THE SMALL SPECIES AS SHORELINE SEINING WAS IMPRACTICAL. BROOK STICLEBACKS AND CSH WERE THE ONLY SPECIES CAPTURED IN THE MINNOW TRAP SETS. WE FOUND NO FURTHER INFORMATION SUGGESTING OTHER SPECIES MAY BE PRESENT IN THIS MINE PIT.

For Additional Information

Area Fisheries Supervisor:

1201 E HIGHWAY 2
GRAND RAPIDS, MN 55744
(218) 327-4430

Lake maps can be obtained from:

Minnesota Bookstore
660 Olive Street
St. Paul, MN 55155
(651) 297-3000 or (800) 657-3757
To order, use 0000 for the map-id.

General DNR Information:

DNR Information Center
500 Lafayette Road
St. Paul, MN 55155-4040
(651) 296-6157 or (888) MINNDNR
TDD: (651) 296-5484 or (800) 657-3929
E-Mail: info@dnr.state.mn.us

FIGURE 23

Turn in Poachers (TIP):

Toll-free: (800) 652-9093

Main Categories: Outdoor Activities | Regulations, Licenses, Permits | Natural Resources | Education & Safety | About the DNR | Maps | Publications | Employment | Volunteering | Technical & Financial Assistance | Public Input

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Appendix D: Prairie River Data - Average Monthly Flow Rate

USGS Gauging Station North of Taconite on Scenic Highway 7 Period of Record (1967-2004)		
month	**cfs**	**gpm**
January	76	33,909
February	71	31,687
March	92	41,146
April	596	267,465
May	511	229,148
June	355	159,349
July	233	104,384
August	111	49,701
September	129	57,984
October	189	84,750
November	192	85,994
December	109	48,704

MN Power Gauge at Prairie Lake Hydropower Dam Period of Record (1997-2005)		
month	**cfs**	**gpm**
January	169	75,734
February	164	73,507
March	188	84,339
April	698	313,200
May	506	227,307
June	534	239,548
July	476	213,578
August	197	88,466
September	173	77,599
October	225	100,851
November	300	134,798
December	226	101,246

Blandin Gauge at Prairie Lake Hydropower Dam Period of Record (1925-1957)		
month	**cfs**	**gpm**
January	108	48,307
February	111	49,953
March	164	73,644
April	602	270,110
May	713	320,117
June	415	186,056
July	240	107,726
August	180	80,840
September	153	68,596
October	184	82,635
November	168	75,567
December	144	64,655

Appendix E:
Memo - Canisteo Mine Pit and Hill Annex Mine Pit Recharge Rate

SEH MEMORANDUM

TO: Jeremy Walgrave/SEH

FROM: Dan Cazanacli/SEH

DATE: December 7, 2005

RE: Excelsior Energy – Canisteo Mine Pit and Hill Annex Mine Pit Recharge Rates
SEH No. A-EXENR0502.00

After analyzing all of the available data I have reached the following conclusions:

1. The long term average recharge rates in Canisteo Mine pit are approximately 3,300 gpm
2. The long term average recharge rates in Hill Annex Mine pit are approximately 2,300 gpm

Given the lack of data in case of Hill Annex Mine, the average recharge rate of 2,300 gpm should be regarded as a minimum recharge rate to be expected rather than a long term average.

In computing these rates only long term water level fluctuations were considered. Daily or even weekly variations available particularly in case of Canisteo Mine pit, are not a reliable method of computing recharge rates, as extremely small errors in water level measurements could lead to large errors in estimating short term recharge rates.

The first conclusion is based on the following observations:

> Over the past 10 to 11 years the water surface elevation in Canisteo increased from approximately 1275.0 to approximately 1308.7. However, the average rate of water storage increase, which is essentially the recharge rate, has decreased over time and appears to be sensitive to the water level. The recharge rate drops significantly as the level approaches elevation 1300. The average long term recharge rate around elevation 1290 (1290 to 1295 range) is approximately 3,300 gpm.

The second conclusion is based on the following observations:

> From the end of 1999 to the end of 2002 little pumping was performed within Hill Annex mine pit. The water surface elevation increased from 1230.7 to 1257.1. This increase in storage indicates a recharge rate of approximately 2,300 gpm. This number is also close to the minimum recharge rate from 1997 to 1999 computed from pumping records. During this interval the water surface elevation increased from 1216.7 to 1230.7. Pumping records for this period would suggest a long term average rate higher than 2,300 gpm. However, these records are not very reliable.

If the recent climate trends continue, these pumping rates can be relied upon without causing a significant drop in water level. The average surface water elevation for Canisteo is expected to be around 1290. For the

Hill Annex – Gross Marble – Arcturus complex, around 1230. Dryer weather would result in lower levels. However, since lower levels would trigger in turn higher recharge rates, the drop in water levels would be limited. Conversely, wetter weather would result in an increase in water levels which in turn would result in a decrease in the recharge rates.

If you have any questions please call me at 651.490.2112 or email me at dcazanacli@sehinc.com

Appendix F: Memo - Prairie River: Q, 7, 10 Calculation

SEH MEMORANDUM

TO: Jeremy Walgrave, PE

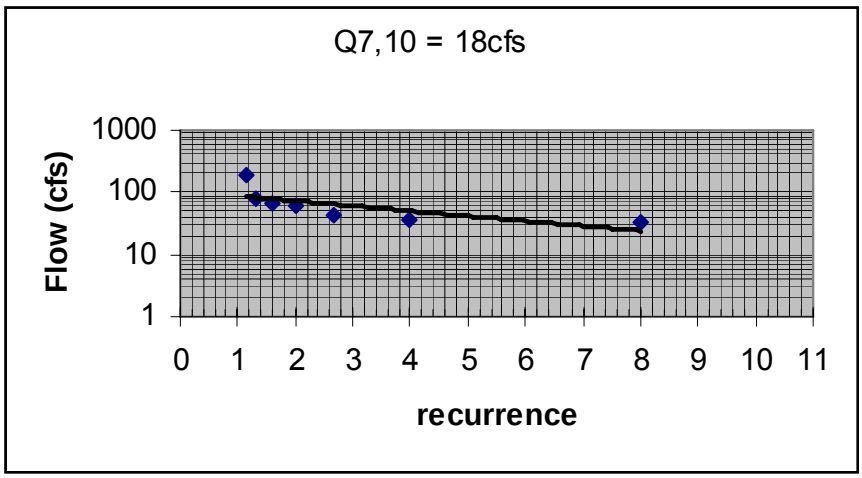
FROM: Bernard N Lenz, PE

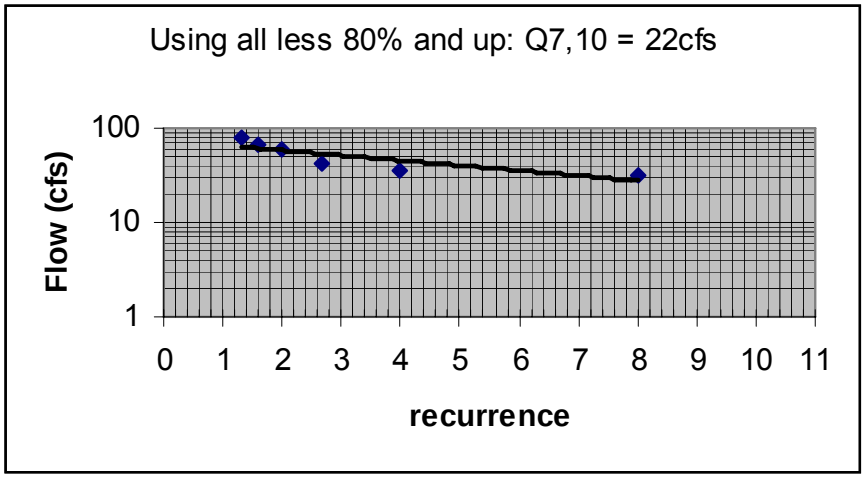
DATE: February 8, 2005

RE: Prairie River: Q,7,10 Calculation
SEH No. AEXENR0502.01

Here is the probability plot for the Prairie River. Using the Weibull Method, the Q 7,10 is 18 cfs uncorrected. The method usually is corrected by dropping the 80% and higher flows, as it can be argued that they are not considered true low flows. (In our case you can see the 1999 data is a good example of why these are dropped.) When I did drop the top 80%, the Q7,10 using the Weibull Method is 22 cfs.

This method is considered good for 2n recurrence, so since you have 7 years of data it should be accurate up to the 14 year recurrence. (Gordon and other, 1992). I didn't have to extrapolate the data that far. Below are the graphs.





I also used the Log Pearson Type III distribution; this takes into account variance, standard deviation, and skew into the prediction. Using this distribution the Q7,10 was calculated to be 33 cfs. Again, if the 1999 high flow year was dropped from the calculation the Q 7,10 would be 30 cfs using the Log-Pearson Type III distribution method.

We talked about boosting our confidence in this 7 years of data by comparing the Q,7,10 recurrence at the nearby USGS gage calculated from a long period of record to the Q,7,10 recurrence at the USGS gage calculated using the same 7 years for which we had data from below the dam. I looked into this and trouble is, the period of available data at the USGS gage is 1967-1982, and 2001-2003 (missing 1983-2000). The flow data available below the dam is 1998-2004. That only gives us three years of overlap, which is not enough to do the analysis.

Regardless, this is the best we can do with the available data and very defendable.

REFERENCES

Gordon, N.D, McMahon, T. A., and Finlayson, B. L., 1992, Stream Hydrology: An introduction for Ecologist, John Wiley & Sons, West Sussex, England

Riggs, H.C., 1972, Techniques of Water-Resources Investigations of the United States Geological Survey, Book 4: Chapter B1, Low-Flow Investigations, 18p.

USDA, 1998, Technical Release 38: Tables of Percentage Points of the Pearson Type III Distribution, US Department of Agriculture, Washington DC, 17p.

bnl
j:\bernie\projects_lakes\praire q,7,10\memorandum.doc

Appendix G: Canisteo Mine Pit Average Monthly Water Input

Starting Elevation 1290	Canisteo Recharge Q-avg (gpm)	*(see below)* Q-min (gpm)	Hill Annex Recharge Q-avg (gpm)	2000 gpm Q-min (gpm)	Lind/West Hill Recharge Q-avg (gpm)	1800 gpm Q-min (gpm)	Prairie River Supply Q-avg (gpm)	5.5 cfs Q-min (gpm)
Jan-2010	2100	2000	0	0	0	0	0	0
Feb-2010	2600	2100	0	0	0	0	0	0
Mar-2010	2350	1800	0	0	0	0	0	0
Apr-2010	3100	1900	3000	1500	2700	900	3703	1851
May-2010	5200	3200	3000	1500	2700	900	3703	1851
Jun-2010	4550	3800	3000	1500	2700	900	3703	1851
Jul-2010	4000	-600	3000	1500	2700	900	3703	1851
Aug-2010	1250	800	3000	1500	2700	900	3703	1851
Sep-2010	1100	-100	3000	1500	2700	900	3703	1851
Oct-2010	2800	1000	3000	1500	2700	900	3703	1851
Nov-2010	2800	1000	3000	1500	2700	900	3703	1851
Dec-2010	1750	1100	0	0	0	0	0	0
Annual Average	2800	1500	2000	1000	1800	600	2470	1234

Appendix H: Average Monthly Water Use – Phase I and Phase II

	Phase I Use Q-avg (gpm)	Phase II Use Q-avg (gpm)
Jan-2010	3200	6400
Feb-2010	3800	7600
Mar-2010	4240	8480
Apr-2010	4700	9400
May-2010	4300	8600
Jun-2010	4900	9800
Jul-2010	4900	9800
Aug-2010	4980	9960
Sep-2010	4980	9960
Oct-2010	4800	9600
Nov-2010	4400	8800
Dec-2010	3600	7200
Annual Average	4400	8800

*Monthly average water consumption rates are rough estimates used for modeling. These numbers are subject to some variability depending on the final design and weather conditions.

APPENDIX I

NA-02659-04
Rev. 10/05

Department of Natural Resources - Water Permit Application Fees

Use this sheet to determine your permit application fee for the following types of projects.

Please Return This Completed Sheet With Your Application.
Do NOT Submit the Fee With Your Application. You Will Be Billed Separately.

Fee for the application for a **water appropriation permit** **$150**

Fee for the construction or repair of a **dam** **$150**
(Under Minnesota's Dam Safety Rules, M.R. 6115.0300-6115.0520)

Fee for the placement of **riprap shore protection** **$150**
(or place fill to recover shoreland lost to erosion)

Fee for the application for a **state general permit** **$150**

Fee for transferring or amending an **existing permit**..... ..... **$150**

Fee for **all other projects** ..... **See Below***

Minimum Fee: ..... **A) $150**

Project Cost (for work in Public Waters): $ _____ x 1% = ... **B) $____**

Length of Shoreline Affected:
_____ feet X 75 cents per foot = ... **C) $____**
(For channel excavation projects, the shoreline affected is the difference in length between the existing channel and the new channel.)

Volume of Material Filled or Excavated:
_____ cubic yards x 75 cents per cubic yard = ... **D) $____**
(For channel excavation projects, the volume is only the material filled or excavated in public waters.)

Maximum Fee: ..... **E) $1000**

***DETERMINE YOUR FEE AS FOLLOWS:**

- If **B**, **C**, and **D** are all less than $150 ..... the fee is $150
- If **B**, **C** or **D** is more than $150 but less than $1000, the fee is the largest amount of B, C or D.
- If **B**, **C**, or **D** is more than $1000 ..... the fee is $1000
- If you represent a **Township applying for a road, bridge, or culvert project** ..... the fee is $100

--- NOTICE ---

If a DNR permit is required for the work proposed, **you will be billed the appropriate fee**. Return this form with your application. Applications will be considered withdrawn if no fee is received after 30 days of billing and no further action will be taken. Permits cannot be issued until all fees have been paid. The permit application fee for work partially or wholly completed prior to the permit application is double the normal fee; if a field inspection is also required, the application fee will be double the normal fee plus the actual cost of the field inspection (not less than $100).

ALL FEES ARE NONREFUNDABLE

Application Fees 2005-10.doc Effective August 1, 2005

Attachment A

Excelsior Water Management Plan with Conceptual Pump Station Drawings

EXCELSIOR ENERGY, INC
MESABA ENERGY PROJECT
WEST RANGE SITE
WATER MANAGEMENT PLAN

Prepared by: Bruce Browers

Bruce Browers MN P.E # 13817
President
Browers Consulting LLC
Date: 3/20/2006

Approved Michael Wadley

Michael Wadley
Vice President – Operations & Technology
Excelsior Energy, Inc.
Date: 3/20/2006

1.0 INTRODUCTION

1.1 Basic Requirements

The Excelsior Energy Mesaba Energy Project (MEP) will be constructed in two phases. Each phase will have a net nominal capacity of 600 MWe. The plant design will be based upon ConocoPhillips E-Gas Technology for the gasification island coupled with a two on one combined cycle power block configuration. Cooling for the air separation unit, gasification island and power block will be supplied by conventional wet cooling towers. Water make up requirements are preliminarily estimated as shown in the following table:

Preliminary estimates for water appropriation requirements are presented in Table 1.0

Table 1.1
Water Requirements

Phase	Average Yearly (gpm)	Peak Appropriation (gpm)
I	4,000[a]-4,400[b]	6,500
I & II	8,800[b]-10,500[c]	15,200

[a]Based on 8 COC in gasification island and the power block cooling towers
[b]Based on 5 COC in gasification island and the power block cooling towers
[c]Based on 3 COC in gasification island and the power block cooling towers

Note: The above information is based upon Fluor memo of September 13th, 2005 from John Ruud. The basis is Rawhide PRB (worst case feedstock), 38 F, and 92% capacity factor. Also used is Table 13-3 from the Fluor Design Basis Document dated September 22nd, 2005.

A water use flow diagram for the IGCC Power Station is presented in Figure 1.1

Figure 1.1

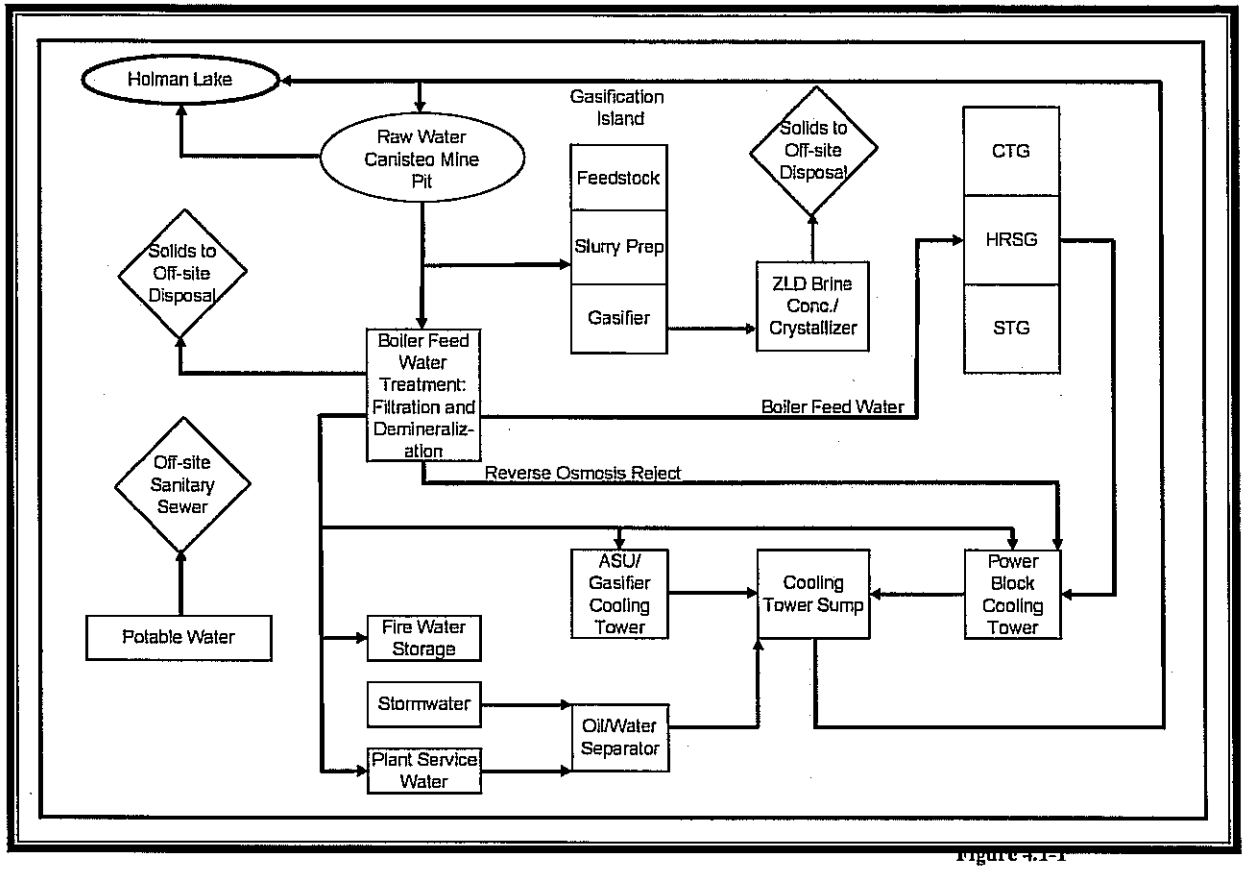


Figure 4.1-1
IGCC Power Station Water Use

*Red lines represent contact process waters; blue lines non-contact water. **Phase I & II**
(Phase I only-reduce rates by 50 percent)

1.2 Overview

The water supply system consists of three pumping stations located on three mine pits, and, if necessary, an engineered intake structure to draw water from the Prairie River. The overall plan is as follows:

1.2.1 Phase I

- Water from the Hill-Annex Mine Pit Complex is pumped via a pump station to the Canisteo Mine Pit.
- A pump station on the Canisteo Mine Pit pumps the water to the IGCC Power Station for makeup water or to Holman Lake for mine pit water level control and mine pit water quality management.
- Excess water in the Hill-Annex Mine Pit Complex is pumped to Lake Panaca to maintain the desired water level as is the current practice.

- Cooling tower blowdown from the IGCC Power Station is discharged to the Canisteo Mine Pit and/or Holman Lake.

1.2.2 Phase I & II

- Water from the Hill-Annex Mine Pit Complex is pumped via a pump station to the Canisteo Mine Pit.
- A pump station on the Canisteo Mine Pit pumps the water to the IGCC Power Station for makeup water or to Holman Lake for mine pit water level control and mine pit water quality management.
- Excess water in the Hill-Annex Mine Pit Complex is pumped to Lake Panaca to maintain the desired water level.
- Water from the Lind Mine Pit is pumped via a pump station to the Canisteo Mine Pit.
- If additional water is needed for operation of the IGCC Power Station, an engineered intake structure will be installed on the Prairie River. Above certain river flows the water will be directed and flow by gravity to the Lind Mine Pit.
- Cooling tower blowdown from the IGCC Power Station is discharged to the Canisteo Mine Pit and/or Holman Lake.

1.3 Mine Pit Water Sources

The current water surface elevation, water surface area and estimated water volume in all proposed mine pit sources is summarized in Table 1.3

Table 1.3

Abandoned Mine Pit Water Sources

Water Source	Water Surface Elevation (feet) (November 2005)	Surface Area (acres) (November 2005)	Estimated Volume (acre-feet) (November 2005)
Canisteo Mine Pit	1,306	1,400	145,000
Hill-Annex Complex			
Hill-Annex Mine Pit	1249	216	20,600
Arcturus Mine Pit	1269	105	4,490
Gross/Marble Mine Pit	1249	141	11,100
Lind Mine Pit	1265	82	8,310

The purpose of this analysis is to present an approach for obtaining the required make up supplies, providing for seasonal fluctuations, and managing water storage inventories.

2.0 System Capabilities

2.1 Water Source Supply Capability

The sustainable supply capability for each water source was estimated using information supplied by the Minnesota Department of Natural Resources, previous engineering studies, and information supplied by local government units. The actual sustainable rates that will be realized are dependent on several factors including: precipitation, evaporation, pit water level and hydrogeological conditions. The estimated water source supply capabilities are presented Table 2.1

Table 2.1
Water Source Supply Capability

Water Source	Est. Range of Flow (gpm)	Assumed Sustainable Flow for Water Balance Modeling (gpm)
Canisteo Mine Pit	950-4,200	2,800
Hill-Annex Mine Pit Complex	1,600-3,500	2,000[a] 3,500[b]
Lind Mine Pit	Not yet quantified	1,800[c]
Prairie River	0-2,470	2470[d]
Discharge from IGCC Power Station	0-3,500	Varies

[a]At an operating Elevation of 1,230 ft.
[b]At minimum operating elevation of approximately 900 ft.
[c]Based on a single observation and flow estimate
[d]Based of 25% of 7Q10

Based on available information, it appears that an aggregate of at least 4,800 gpm (yearly average) is available from the Hill-Annex/Gross Marble/Arcturus Mine Pit Complex and the Canisteo Mine Pit. This leaves a supply margin of 400 to 800 gpm for Phase I.

2.2 Pumping Station Capability

Preliminary estimates of required capability of the pumping stations are presented in Table 2.2. Pump station peak flow capability will provide redundancy to supply daily peak and average needs in the event of a failure of a major pump station.

Table 2.2
Pumping Station Capability (Phases I & II)

Pump Station Location	Ave Yearly Flow (gpm)	Peak Flow (gpm)
Canisteo Mine Pit	Up to 10,500	15,200
Hill-Annex Complex	Up to 3,500	6,000-7,000
Lind Mine Pit	Up to 4,270[1]	6,000-7,000

[1] Includes flow from the Prairie River if required

The actual estimated pumping rates for the Canisteo Mine Pit pump station are summarized in Table 2.3

Table 2.3
Canisteo Mine Pit Pump Station – Expected Operation

	Phase I	Phase I & II
Yearly Average Flow	4,400 gpm	10,500 gpm
Peak Day (80 °F)	6,500 gpm	15,200 gpm

Mine pits will receive excess water in wet years and provide additional supply to cover shortfalls in dry years. The combined Phase I and Phase II Developments will require approximately 16,900 acre-ft (5,520 million gallons per year) of water each year.

A permanent pumping station will be installed on the southeast corner of the Canisteo Pit. A total of 4-6 pumps will be installed. The Pumping Station will meet the 316.B requirements. A cross-tie into Holman Lake will allow excess pit water to be pumped on a temporary basis. The cross-tie will contain sufficient protection to ensure that unwanted species do not end up being inadvertently pumped to Holman Lake.

A floating pump station will be installed at the Gross-Marble end of the Hill-Annex Pit. Pumping will occur on a seasonal basis (no winter pumping). The number of pumps is yet to be determined.

A floating pump station will be installed in the northeast corner of the Lind Pit. Pumping will occur on a seasonal basis (no winter pumping). The number of pumps is yet to be determined.

3.0 Operating Plan

3.1 Operating Criteria

The water supply system will be designed and operated to provide the following:

- Pumping of water from the Canisteo Mine Pit to Holman Lake for mine pit water level control and mine pit water quality management.
- Continued pumping of the Hill-Annex Mine Pit Complex for water level control and water quality management in the Canisteo Mine Pit.
- Adequate redundancy and pit inventory to supply daily peak and average needs despite catastrophic failure of a major pump station.
- Retention of water in years of excess precipitation.
- Withdrawal of water from inventory in years of lower precipitation.
- Emergency discharge of water from mine pits in cases of extreme precipitation.

3.2 Pit Operation Description

3.2.1 Canisteo Mine Pit

The Canisteo Mine Pit will be utilized as part of the water supply system as follows:

- Host the main water pumping station on the southeast corner of the pit.
- Provide the primary supply of cooling and process make up water to the IGCC Power Station for routine operation.
- Receive cooling tower blowdown water from the IGCC Power Station.
- Accept the discharge from the Lind Mine Pit pumping station in the western edge of the pit.
- Accept the discharge from the Hill-Annex Mine Pit Complex pumping station in the eastern edge of the pit.
- Provide for water being pumped from the Canisteo Mine Pit into Holman Lake through a new discharge pipe to Holman Lake.
- Provide an inventory of water within a sufficiently wide operating range of pit elevations to accommodate wet and dry years.

3.2.2 Hill-Annex Mine Pit Complex

The Hill-Annex Mine Pit Complex is comprised of three interconnected mine pits: Arcturus, Gross-Marble, and Hill-Annex. The MDNR is currently pumping seasonally out of the Hill-Annex pit to preserve historically significant mining structures. Use of the Hill-Annex Mine Pit complex water will be somewhat dependent upon the MDNR needs to control Hill-Annex pit levels. Discussions are underway with the MDNR to

understand its current planning and operational priorities. A final plan will be developed once the needs of the MDNR are finalized.
A pumping station will be installed on the Gross Marble Mine Pit and will pump directly to the Canisteo Mine Pit. The existing Hill-Annex pumping system will be maintained to allow pumping to its current discharge point, Lake Panaca, and if necessary, may be modified to pump water into the Gross Marble Mine Pit.

3.2.3 Lind Mine Pit

A pumping station may be required on the Lind Mine Pit for the Phase I and Phase II IGCC Power Station. The pumping station will pump a combination of pit inflows and, if necessary, water obtained from the Prairie River (see below).

3.2.4 Prairie River

If insufficient water is available from the mine pits for the Phase I and Phase II IGCC Power Station, then additional water will be obtained from the Prairie River. Overflow from the Prairie River during high flow periods would be directed to the Lind Mine Pit via an engineered intake structure. The level in the Lind Mine Pit would be maintained low enough to accommodate gravity feed of the flow from the Prairie River.

3.3 Implementation Plan

The Canisteo Mine Pit pumping station will be constructed as part of the Phase I development. If there is enough retained water available in the Canisteo Mine Pit and the Phase II IGCC Power Station is constructed within two to three years of Phase I, it may be possible to defer the construction of the Hill-Annex Mine Pit pumping station until Phase II development. If there is not enough retained water to supply the interim needs until Phase II is constructed, then the Hill-Annex Mine Pit Complex pumping station will be constructed during Phase I development. The Lind Mine Pit pumping station will be part of Phase II development. If additional studies demonstrate the need to appropriate Prairie River water, the Prairie River intake structure would also be constructed as part of Phase II development.

4.0 Pit Inventory

The Canisteo Pit will be used to retain water in wet years and as an additional supply in dry years. When MEP is fully developed it will require approximately 16,900 acre feet of water per year. Assuming zero inflows for the three resources, two years of withdrawl would require approximately 28 feet of water in the Canisteo Pit. As a rough starting point, the operating limits in the Canisteo Pit should be in the 20-30 foot range at a minimum.

Some typical operating scenarios are shown in the following table for illustration.

Table 4.0
Typical Operating Scenarios

	Dry Year Gallons/minute	Normal Year Gallons/minute	Wet Year Gallons/minute
Canisteo	950	2800	4200
Hill-Annex	500 – for illustration needs verification	3500	3500 – for illustration
Lind – Greenway Pit	Unknown	1800	400-900
Prairie River	0	0	0
Storage	7350-8850 withdrawn from storage Canisteo lowered 10-12 feet	0	0

The Canisteo Pit is targeted to have a normal operating level of 1295 ft. with an operating range from 1265-1305 ft. to account for below and above normal years of precipitation.

The Hill-Annex Complex is targeted to have an operating level of 1230 ft for Phase I. The operating level for the fully developed facility (Phases I & II) will be lower to increase the amount of water available to the project. The exact level for Phases I & II will be determined during the Phase II design work.

The Lind Pit is targeted to operate between the elevations of 1190-1250 ft.

Attachment B

Pipeline Route Map Books

Attachment C

Legal Descriptions and Agreements

Attachment D

NPDES Permit Application