



Planning and Constructing an Ethanol Plant in Minnesota: A Guidance Document

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(revised)**



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Minnesota Pollution Control Agency
Minnesota Department of Natural Resources
Minnesota Department of Agriculture
Minnesota Department of Employment and Economic Development
Minnesota Department of Transportation
Minnesota Department of Commerce
Minnesota Department of Health

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This publication can be made available in other formats,
including Braille, large type, computer disk or audiotape, upon request.

Introduction

Background

Ethanol production in recent years has experienced a tremendous boom in the United States (U.S.) due to technology improvements and the increased cost of competing fuels. An effort to reduce dependence on foreign oil will promote ethanol production even further as will recent state and federal legislation that encourages the production of alternative fuels.

Currently, there are 17 ethanol plants in Minnesota with an annual production capacity of approximately 734 million gallons. That is approximately 15 percent of the total U.S. output.

As of January 2008, there are six Minnesota facilities under construction with an operational capacity of 586 million gallons per year. Once construction of these facilities is complete, Minnesota's total ethanol production capacity will be about 1.3 billion gallons of ethanol per year. With at least seven more facilities proposed or in the early planning stages, there could be an additional 484 million gallons of ethanol capacity added within the next few years, bringing Minnesota's total capacity to nearly two billion gallons per year.

The ethanol-blended gasoline that is commonly sold throughout Canada and the United States contains 6 to 10 percent ethanol. For a vehicle to use fuel that has an ethanol content of more than 10 percent (also called E10), it must be a flexible-fuel vehicle (FFV). In Minnesota, many fuel service providers sell an E85 blend (85 percent ethanol and 15 percent gasoline).

The abundance of corn in the Midwest creates an ideal energy source for producing ethanol. For every 100 British thermal units (BTUs) of energy used to plant, harvest and transport corn, 167 BTUs of energy is produced in ethanol.

Different types of biomass (feedstock)

have the potential to produce ethanol including sugar cane, corn stover, wood products, and switchgrass. Ethanol may also be produced from wood waste, waste sucrose, potato waste, brewery waste, food and beverage wastes, and other sources yet to be considered. In Minnesota, ethanol is currently produced almost exclusively from corn. One facility is producing a small amount of ethanol from cheese whey.

Ethanol is produced from starch. All agricultural crops and residues contain starch, which is a polymer of glucose. To produce ethanol from grain, the starch portion of the grain is exposed and mixed with water to form a mash. The mash is heated and enzymes are added to convert the starch into glucose.

The next phase, fermentation, involves the addition of yeast to convert the glucose to ethanol and carbon dioxide. Fermentation produces a mixture called beer, which contains about 10 to 15 percent ethanol and 85 percent water. The beer is boiled in a distillation column to separate the water, resulting in ethanol. Ethanol production from grain utilizes only the starch. A variety of highly valued feed co-products including gluten meal, gluten feed and dried distiller grains, are produced from the remaining protein, minerals, vitamins and fiber and are sold as high-value feed for livestock.



Many ethanol producers also capture carbon dioxide emissions for use in beverage processing.

U.S. Production of Ethanol

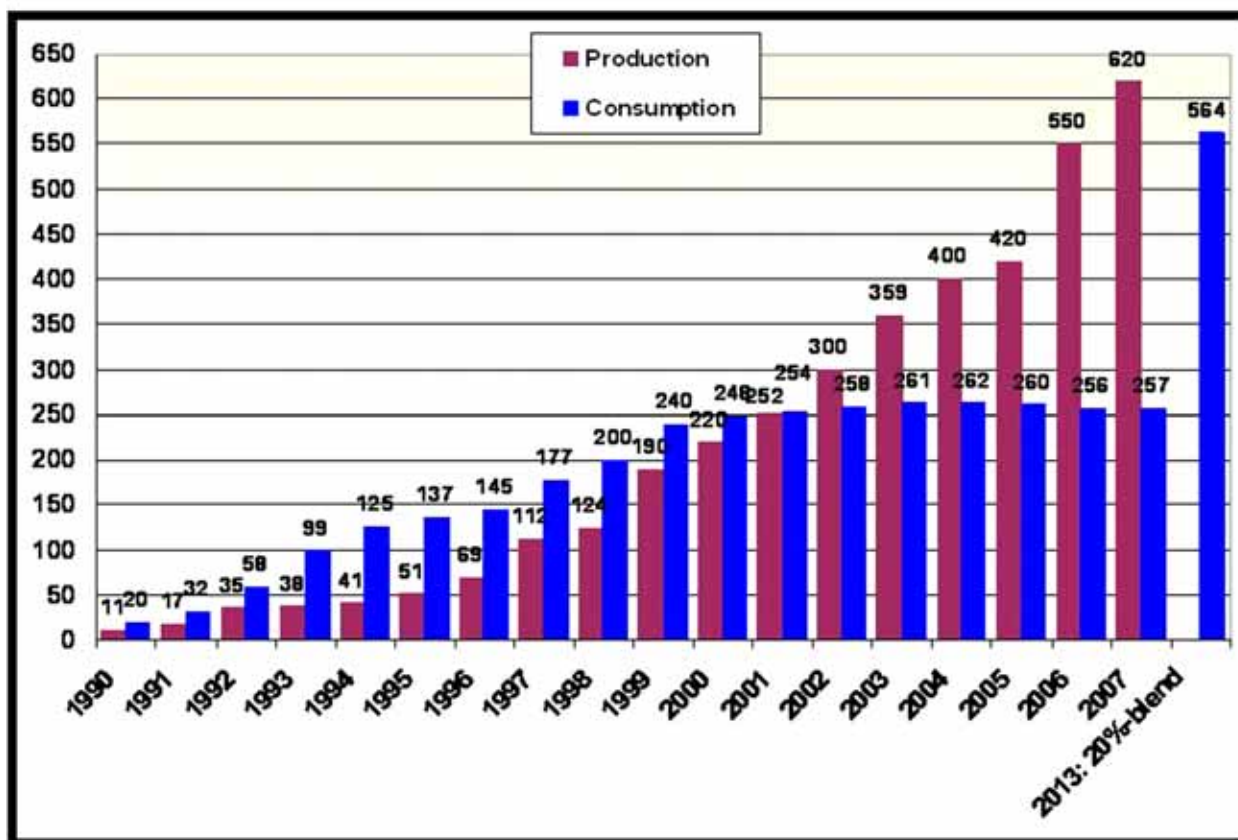
The U.S. consumed an estimated 140 billion gallons of gasoline in 2006. Production of ethanol in 2006 was nearly 5 billion gallons annually from approximately 1.8 billion bushels of grain. Nationally, there are an estimated 139 ethanol refineries in operation, with 61 under construction and seven expanding. With this new construction and expansion at existing facilities, billions of gallons in ethanol production capacity will be added nationwide by the end of 2008.

The Energy Independence and Security Act of 2007 requires that 36 billion gallons of



renewable fuel be used annually by 2022. The Act further requires that 21 billion gallons of that goal must come from advanced biofuels including cellulosic ethanol.

Minnesota Ethanol Production and Consumption (Million Gallons)



This graph is based on Minnesota ethanol production capacity numbers from the Minnesota Department of Agriculture. The 2013-estimated consumption is based on Governor Pawlenty's proposed 20 percent-blend ethanol.

Site Considerations

Selecting a site

Location

There are many factors that need to be considered when selecting a suitable site for an ethanol project. Within this section, you will find some of the major factors to consider.

There are local conditions that must be considered in planning a project as well. Contact the Minnesota Pollution Control Agency (MPCA) early in the planning process to review critical siting considerations before a specific site preference is determined. Also check with local governing authorities before moving ahead in the siting process. Here is a link to the Association of Minnesota Counties Web page and a link to individual Minnesota county Web pages:

- www.mncounties.org
- www.mncounties.org/About_Counties/county_websites.htm

Preplanning Process. This document is designed to help in the preplanning process and will be updated as needed. We encourage those seriously evaluating the construction and development of a new ethanol facility to do additional research. Research sources include trade organizations, the Internet, and your local library.

Key Site Location Factors

Water Supply and Natural Resource

Features. Under current ethanol plant configurations, water use for ethanol production in Minnesota averages four gallons of water per gallon of ethanol produced. For example, a million-gallon-per-year production facility would require four million gallons of water annually. In some parts of Minnesota, adequate water supply of suitable quality can be limited, and may inhibit or prevent the success of an ethanol project. In most cases, ethanol facilities

pump from underground aquifers. Recently, other water sources have been considered, including treated wastewater. In addition, the presence of natural resource features and their regulation may affect site location. Information on calcareous fens and threatened and endangered species may be found by submitting a Natural Heritage Information Request found at:

- http://files.dnr.state.mn.us/eco/nhnrp/nhis_data_request.pdf

Additional contact information and links related to the Minnesota Department of Natural Resources (DNR) can be found in the “Environmental Factors – Water” section (pages 6-8) of this document and in Appendix H.

Wastewater Disposal. Due to the potential volume of wastewater generated from an ethanol facility, wastewater disposal issues are important. In Minnesota, many surface waters do not meet current water-quality standards. It is critical to become familiar with and proactively address the potential barriers and concerns associated with wastewater disposal. More new or proposed facilities in Minnesota are going to “zero discharge” designs, recycling their wastewater for process use rather than discharging it. Zero discharge may reduce the need for groundwater appropriation and can help where water-quality concerns limit discharge; however it can require additional analysis for pollutant concentrations. For wastewater disposal information, refer to the Minnesota Pollution Control Agency (MPCA) information in the “Environmental Factors – Water” section of this document and Appendix H.

Availability of Feedstock. In Minnesota, corn is the most common feedstock used in ethanol production because of its availability. Other feedstocks, such as corn stover, switch grass,

and wood products should be considered. Additional information from the Minnesota Department of Agriculture, including contacts and Web links, can be found in Appendix H.

Transportation. Transportation of product and raw materials to and from the facility is a key consideration. Minnesota options include truck, rail, and to a lesser extent, river barges. Ethanol facilities substantially increase heavy vehicle traffic on state and local roadways. Rail service options should be strongly considered. Since ethanol facilities have the potential to substantially increase rail traffic, grade crossing safety devices along the rail line may need to be upgraded. The Minnesota Department of Transportation (Mn/DOT) district office should be contacted early to establish appropriate transportation improvements that will be needed to safely accommodate increased traffic. The Mn/DOT district office closest to the proposed facility can provide information related to highway access, traffic impacts and the permitting process (see Appendix H for Mn/DOT contact information). Local governmental units should also be contacted regarding county and municipal roadways used for heavy vehicle traffic. A Mn/DOT utility permit (for a trunk highway right of way) may be required for the construction of structures such as pipelines.

Although Mn/DOT does not participate in costs of roadway improvements, early contact will allow the ethanol plant proposer sufficient time to secure funding from other sources. Funding opportunities may be available for improving rail grade crossings. The Minnesota Rail Service Improvement Program seeks to preserve and enhance rail service in Minnesota. The program provides loans to shippers, railroads, and rail authorities to improve access and rehabilitate rail lines. You can find contacts for

the rail programs in the Department of Transportation section in Appendix H.

Type of Fuel. In Minnesota natural gas is the most common fuel used in ethanol production. Other fuels could also be considered. For additional fuel information refer to the Minnesota Department of Commerce contact information listed in Appendix H.

Funding and Economics. Local and state resources exist to assist in the economic development of businesses in Minnesota. Once a possible location has been selected, local and state economic development agencies should be contacted. For additional funding information refer to the economic development resources information and contacts listed in Appendix G.

Local Site Issues. Most ethanol facilities are located in very rural areas (potentially without other nearby industrial sources). This can significantly impact nearby residents. Local impacts to consider include dust from traffic and facility operations, air emissions, noise, odor, light from nighttime operations, and public drainage ditch authorization.

Community Relations. While ethanol projects often receive local support from investors and communities seeking industrial development, early and effective communication with neighbors in the immediate vicinity of a proposed site will help ensure positive relations, or at least reduce the chance for strong opposition, as the project moves forward. Lack of timely and accurate information among neighbors can fuel misunderstanding and opposition. Personal contact and simply listening to concerns in the early stages can be beneficial in the long run. Other helpful communication tools include periodic mailings with project updates, information meetings, local news media contacts, and providing Web sites with additional information.

Environmental Factors

Environmental Review, Water, and Air

Environmental Review

The potential effects that a project may have on natural resource features are evaluated through the environmental review process.

For ethanol plants, the MPCA is considered the responsible governing unit and the DNR provides the necessary review and oversight for appropriation of surface or ground water. If the proposed project includes ground-water appropriation, an aquifer test should be conducted prior to the preparation of the environmental review documents in order to address natural resource issues. Web information regarding the DNR's environmental review program may be found on the DNR Web site at:

- www.dnr.state.mn.us/eco/ereview/index.html

The threshold that triggers a mandatory environmental review for fuel conversion (including ethanol) facilities is construction or expansion of ethanol production by five million gallons or more per year. A mandatory review is required for new ethanol facilities requiring a new surface- or ground-water appropriation of 30 million gallons or more per month. In addition, environmental review is mandatory for large, new, or expanded discharges of industrial wastewater including those generated by ethanol facilities.

The MPCA provides more detailed information about environmental review on its Web page at:

- www.pca.state.mn.us/programs/envr_p.html

There is also information on the Environmental Quality Board (EQB) Web site regarding environmental review at:

- www.eqb.state.mn.us/program.html?Id=18107

The EQB writes the rules for conducting environmental reviews.

Environmental Assessment Worksheet (EAW)

An EAW must be performed for new ethanol plants producing up to 125 million gallons per year or for production increases of five million gallons per year or more at existing facilities. An EAW is a document designed to gather and disclose information about potential environmental effects

from a proposed project. The EAW also examines ways to avoid or minimize any environmental effects.

An EAW contains a list of standardized questions. These questions cover things such as:

- land use and habitat
- water issues including water consumption, stormwater, and wastewater
- air emissions
- traffic impacts
- historic or archeological resources.

Once the MPCA publishes the EAW, the public can participate during a 30-day public comment period. The MPCA posts the EAW on its Web site, mails copies to a standard mailing list, and sends a press release to media outlets that cover news in the area of the proposed project. After people review the EAW, they may ask questions or identify other significant issues they think may have been overlooked.

After the EAW comment period ends, the MPCA responds to comments and prepares a document called the Findings of Fact. The MPCA must decide whether the project has the potential for significant environmental impacts. If it is determined there would be no significant environmental effects from the proposed project, the EAW process is concluded. The time it takes to complete the EAW process varies from project to project.

If it is determined during the review process that there is the potential for significant environmental effects, the proposed project progresses to a more in-depth document called an Environmental Impact Statement. An EIS is also required for new facilities or expansions of 125 million gallons or more per year. An EIS may take a year more to complete.

Whenever environmental review is required during the permitting of new or expanding ethanol facilities, it must be completed before permits or final approvals are issued. Facilities with current operations should strive to be in compliance with their existing requirements as they plan a new or expanded project.

Water Supply and Natural Resource Features

Before site selection and commitment to a proposed site, water supply and natural resource features must be carefully considered. The DNR has responsibility for water appropriation permitting and natural resource protection during the permit process for an ethanol facility.

Two key issues that need to be considered:

- Is there sufficient water supply?
- Will natural resource features be adversely affected by the project?

Addressing these issues is vital to successful completion of the project.

It is important to think creatively about the re-use and recycling of water. Some parts of Minnesota may not have adequate water supplies of sufficient quality to meet the needs of proposed projects or expansions. Water needs and availability should be determined early in project development. Appendix C includes a map of relative water availability in Minnesota. Contact information for regional and area hydrologists familiar with local water resources and availability is available from the DNR Waters Division at:

- http://files.dnr.state.mn.us/waters/area_hydro.pdf

Water supplies with significant amounts of dissolved materials (including hardness, chloride, sulfur, and iron) can substantially increase the costs of water treatment and environmental management for an ethanol facility. It is essential, early in the site evaluation process, to obtain detailed information about the volume and quality of potential alternative water supplies. Contact the MPCA for information about water-supply considerations related to quality and a list of constituents to test for when considering a facility. These water-quality test results are

essential for the project proposer and the MPCA to determine the appropriate waste treatment and permit requirements for the proposed facility.

Site viability can also be affected by unique and significant natural resources features that include state and federal endangered species, calcareous fens, and protected trout streams, all of which are protected by law. Trout stream information may be found at:

- www.dnr.state.mn.us/fishing/trout_streams/index.html

Designated trout stream information is found at:

- www.revisor.leg.state.mn.us/arule/6264/0050.html

If any part of a proposed project is located near waters that have been identified as public waters, a wetland, or navigable waters, additional state, federal and local restrictions and requirements may apply.

Public Water Supply Wells

If a water supply well for an ethanol plant is intended to provide drinking water for other businesses, residences, municipalities, or rural water systems, contact the Minnesota Department of Health early in the well planning process. This should be done before beginning well construction to ensure that the necessary MDH regulations are followed.

- www.health.state.mn.us/divs/eh/wells

Water Appropriation Permits

DNR regulates the use of water from surface and ground water to ensure a consistent water supply. One tool used for water supply management includes a permit system to allocate waters of the state.

The presence of an adequate and sustainable water supply needs to be demonstrated for the issuance of an appropriation permit. Water

appropriation permits are required for use of surface or ground water that exceeds 10,000 gallons per day or one million gallons per year. Aquifer (pump) testing is necessary for an appropriation permit if the water source is ground water. The purpose of the aquifer test is to determine the adequacy of the water supply and potential impacts to other users and natural resources. Conduct the aquifer test before environmental review documents are prepared so that the EAW can describe the ground-water appropriation as completely as possible. The aquifer test must be a minimum of seven days in duration and performed at the rate at which the facility will operate. This process will require monitoring of nearby private wells. Before conducting the aquifer test, it is important that the DNR area hydrologist be consulted.

The DNR requires a complete application. Final permit actions cannot be taken until the all necessary data have been received. The application and instructions can be found at:

- www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html

An applicant must control (own or rent) land adjacent to surface-water sources or land that is above ground-water sources. Environmental considerations used to evaluate a permit application include:

- protection of aquifers from excessive withdrawals
- maintenance of protected stream flows for habitat (fish, wildlife, and native plants) to accommodate water quality, navigation, recreation, and higher-priority downstream users
- maintenance of protected levels in basins for habitat and protection of existing uses of the basin surface.

Water-use priorities have been established by the Minnesota Legislature. These priorities are used for permit decisions and conflict resolution. The priorities in descending order are:

1. domestic water use
2. consumptive use of less than 10,000 gallons per day
3. agricultural irrigation and processing
4. power production
5. commercial and industrial uses
6. non-essential uses.

Monitoring of long-term ground-water levels utilizing monitoring wells may also be required. If the proposed water use may affect surface water or other natural resource features, additional monitoring will be needed.

Water use for ethanol production must consider all practical and feasible water-conservation methods and practices, including recycling and re-use. The use of water for once-through cooling and to meet water-quality discharge standards is not allowed.

Public Water Permits

Proposed facilities located near waters designated by state law as public waters may be subject to additional requirements. An example of an activity that may require a public water permit includes construction of an outfall structure to a river or a pipeline crossing a stream. Those proposing an ethanol facility should contact the DNR Waters office for more information about public water permits. You can also get information about these restrictions on the DNR Web site at:

- www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/index.html

Other helpful Web links on water regulations include the U.S. Army Corps of Engineers at

- www.mvp.usace.army.mil/regulatory

Local units of government that administer the Wetland Conservation Act can be found on the Board of Water and Soil Resources Web page at:

- www.bwsr.state.mn.us/directories/index.html

Wastewater Disposal Permits

Ethanol plants have a variety of regulated wastewater flows. An ethanol plant needs to apply for and obtain a National Pollutant Discharge Elimination System (NPDES) and/or a State Disposal System (SDS) permit for:

- disposal of cooling water, reject water, filter backwash, cleaning and wash water, and other non-process wastewater
- stormwater runoff during facility construction
- stormwater runoff from ongoing operations.

Permit application and issuance are required before facility construction can begin. Complete applications for wastewater disposal permits should be submitted at least 180 days prior to the planned construction start date. Permit applications must be accurate. They must include engineering plans that ensure the facility is properly designed to manage wastewater. The 180-day period does not begin until the MPCA determines the application is complete. Facility design changes or additional information needs can restart the 180-day period. Permit applications for ethanol facilities can be found on the MPCA Web site at:

- www.pca.state.mn.us/water/permits/index.html

One of the most important components of a complete NPDES/SDS permit application is a dependable water balance (water management design) for the proposed project. The project proposer should provide a clearly defined and accurate water balance to the MPCA staff well before the other NPDES/SDS permit application materials are submitted. The project's initial water balance should be designed and reviewed with the MPCA at the same time that a preferred project location is being determined, and before proceeding with aquifer testing. A clear and accurate water balance enables the MPCA to develop preliminary discharge limits, which are critical to understand early on as the project water management system is designed.

The NPDES/SDS permit issuance process includes a public notice and comment period of at least 30 days. The MPCA must review and

consider public comments before permits can be issued. The MPCA requires a review period prior to public notice. Proposed disposal alternatives require site-specific review to determine monitoring and limit requirements as well as other permit conditions.

In Minnesota, application fees and annual fees for NPDES/SDS permits are based on facility type, size of proposed discharge(s), and whether the required permits are individual or general.

Water Quality Standards

There are many areas in Minnesota where the availability of suitable receiving waters is limited. For example, streams may be dry during parts of the year, or receiving waters may be limited due to use impairments. When considering construction of an ethanol plant, think about alternative water supplies, treatment, discharge points, and disposal methods. Wastewater must meet water-quality standards without dilution. Contact the MPCA for information about the standards that apply to potential receiving waters for proposed discharges.

To reduce risk that a proposed plant could violate water-quality standards, ethanol plants may:

- find supplies of makeup water (water brought into the facility to replace the water that is lost and removed from the facility) with low pollutant concentrations – for example, total dissolved solids
- design the facility with fewer cooling-water cycles to reduce the concentration of problematic substances that might occur
- avoid sites upstream of waters more susceptible to pollution, such as lakes, wetlands, trout streams, and karst (cave and sinkhole) areas
- seek discharge alternatives that include larger rivers rather than smaller streams
- implement alternative treatment options for problematic substances in the wastewater
- apply for a variance to the standard.

***Note:** Applying for a variance can be difficult and time intensive. Also, sometimes it is not possible to get a variance. Please contact the MPCA to find out more about the variance process.*

Since the 1990s, all facilities producing ethanol have required an air emission permit. The air permit is based on Minnesota rules and federal regulations, which set emission limits for grain receiving and handling, fermentation, drying distillers grain, load-out to trucks or railcars, storage tanks, operation of air pollution control equipment, and fuel combustion. Emission limits are determined on a case-by-case basis through the permit process. Permits are required prior to the start of construction. Minnesota issues one permit for construction and operation.

The quantity of emissions that will be potentially emitted can effect the classification of the facility as a major or minor source. Currently, the emission of more than 250 tons¹ of certain pollutants per year will require a federal permit called a Prevention of Significant Deterioration (PSD) permit. Facilities may also be subject to limits for Hazardous Air Pollutants (HAPs).

Application forms for air emission permits are available at:

■ www.pca.state.mn.us/air/permits/forms.html

These forms include instructions to guide the applicant in determining what type of air-quality permit to apply for and how to complete the forms. The MPCA Air Quality Permit Guide is available at:

■ www.pca.state.mn.us/air/pubs/index.html#permit%20guide

The guide explains state and federal air-quality rules and permits in detail.

The MPCA uses a process called Air Emissions Risk Analysis (AERA) to identify and understand potential human-health impacts from

chemical emissions to the air. The analysis summarizes general characteristics of a facility and its surroundings, such as information about the land that surrounds the facility, whether there are schools or hospitals nearby, and results from air monitoring stations, etc. Results of the AERA process help inform MPCA staff in making recommendations for permitting and environmental review. The AERA also generates a risk estimate or number based on emission rates and stack parameters compared with toxicity characteristics of each chemical. This number is then compared with a threshold value designed to characterize the potential amount of excess risk.

However, not all ethanol facilities may need an AERA. Factors that may determine if an AERA is necessary include air pollution controls and facility location (siting). The MPCA has developed a checklist to help ethanol facility proposers determine if an AERA will be needed. Those planning an ethanol facility should refer to the AERA Web site for more specifics and guidance about how to complete an AERA.

■ www.pca.state.mn.us/air/aera.html

¹ The U.S. EPA changed the threshold for ethanol facilities from 100 tons to 250 in May, 2007.

Other Environmental Factors

Tanks

Facilities with cumulative aboveground storage tank (AST) capacity of one million gallons or more at a site need a permit. This size includes most fuel ethanol facilities. AST permits address the outdoor storage of petroleum products, liquid hazardous materials, and other regulated substances. The purpose of the permit is to prevent contamination of ground water and surface water. The permit is intended to prevent, detect, and contain spills and leaks from tanks and associated piping. More information about AST permits can be found at:

- www.pca.state.mn.us/cleanup/ast-more.html

The permit requires field-erected tanks to be designed and inspected according to standards of the American Petroleum Institute. Permits give incentives to facilities that invest in well-designed tanks and safeguards because they require less-frequent inspections. The MPCA considers tanks with well-maintained concrete secondary containment, double-bottom tanks, or tanks underlain with an impervious synthetic liner to be credible designs. Facilities need to submit plans and specifications to the MPCA for review and approval for the tanks and their foundations, secondary containment, vehicle transfer areas, and piping schematics prior to construction.

Spill Prevention, Reporting, and Cleanup

In Minnesota, handlers of oil and hazardous substances are required to be prepared for and prevent spills from occurring to protect the public's health and safety. In addition to adequate control designs and secondary containment for critical areas, knowing your facility and training company personnel are basic planning strategies to prepare a company

for a response. This includes partnering with affiliated truck and rail operators.

Minnesota Statutes Ch. 115E contains specific requirements for preparedness for spills including ethanol spills. A written plan, employee training, arrangement with spill cleanup contractors, and pre-coordination with local responders are required of ethanol facilities. Ch. 115.061 requires immediate reporting of spills including ethanol, denaturants, and organic intermediates and wastes. With the exception of five gallons or less of petroleum products, all spilled material should be called in to the Minnesota Duty Officer immediately at 800-422-0798. This includes spills of pure ethanol, denatured ethanol, gasoline or diesel, fermented corn mash, sodium hydroxide, sulfuric acid, ammonia, and other materials of concern that are commonly found at an ethanol facility. More information is available on the MPCA Web site at:

- www.pca.state.mn.us/cleanup/ert.html

Endangered Species Permits

Minnesota's endangered species law and associated rules regulate taking (e.g. killing) of endangered or threatened species. The law and rules specify conditions under which the DNR commissioner may issue permits to allow taking of endangered or threatened species. Information about Minnesota endangered species permits can be found at

- www.dnr.state.mn.us/eco/nhnrp/endangered_permits.html

The federal Endangered Species Act imposes a separate set of restrictions and permitting requirements related to federally listed species. For additional information, see

- www.fws.gov/endangered/permits/index.html

Appendix A – Siting Considerations and Permits

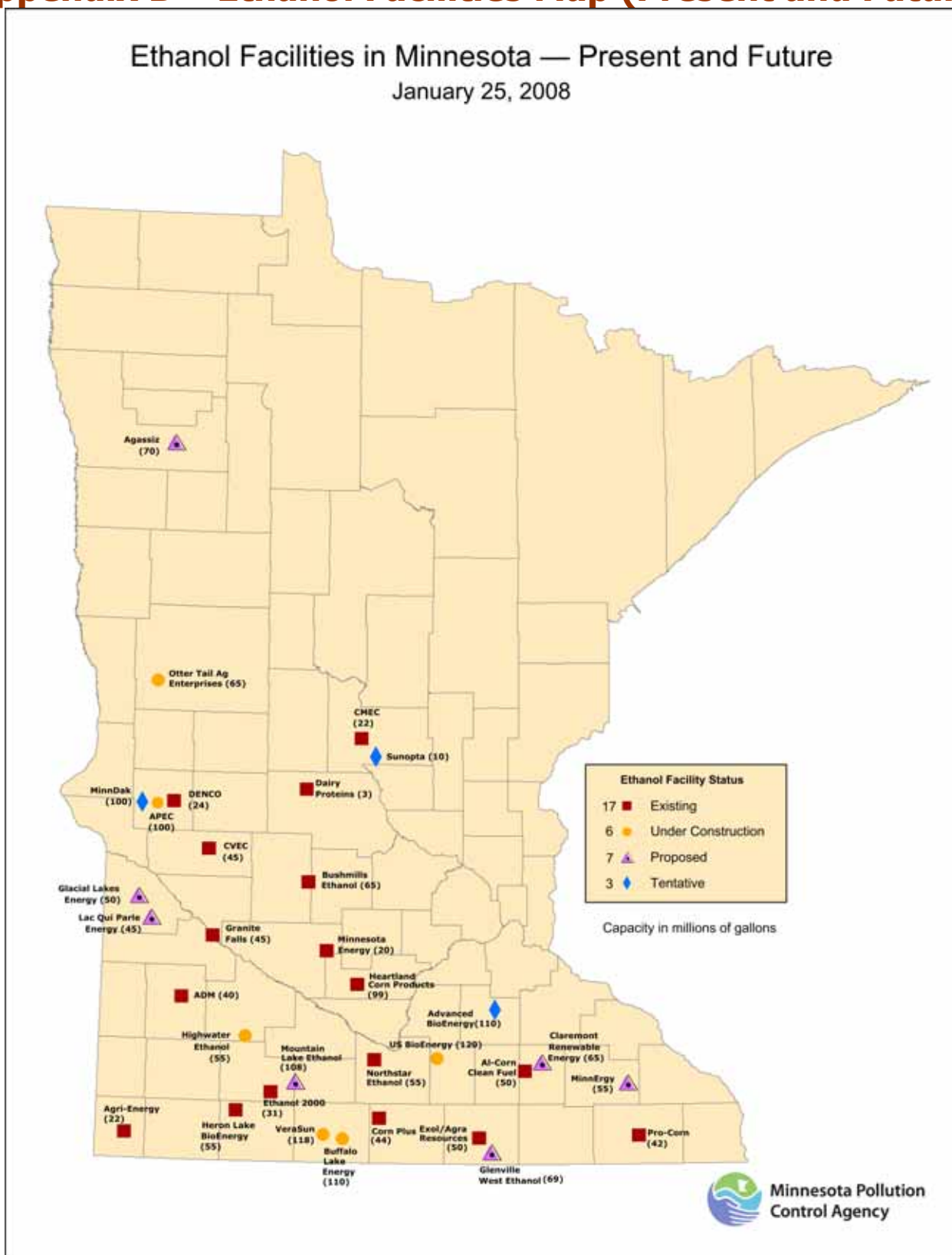
■ Site Selection/Considerations

- ___ Identify high-quality makeup water supply sources
- ___ Identify water availability locations
- ___ Identify feedstock availability (corn, sugar beets, etc.)
- ___ Identify fuel source availability (natural gas, wind power, etc.)
- ___ Identify transportation availability (rail, road etc.)
- ___ Identify economic and business assistance opportunities (grants, etc.)
- ___ Identify local issues such as noise, odor, dust, and traffic
- ___ Consider alternative site locations (previous brownfields, etc.)
- ___ Identify natural resource features
- ___ Identify less-sensitive downstream waters or alternative wastewater treatment discharge/disposal options

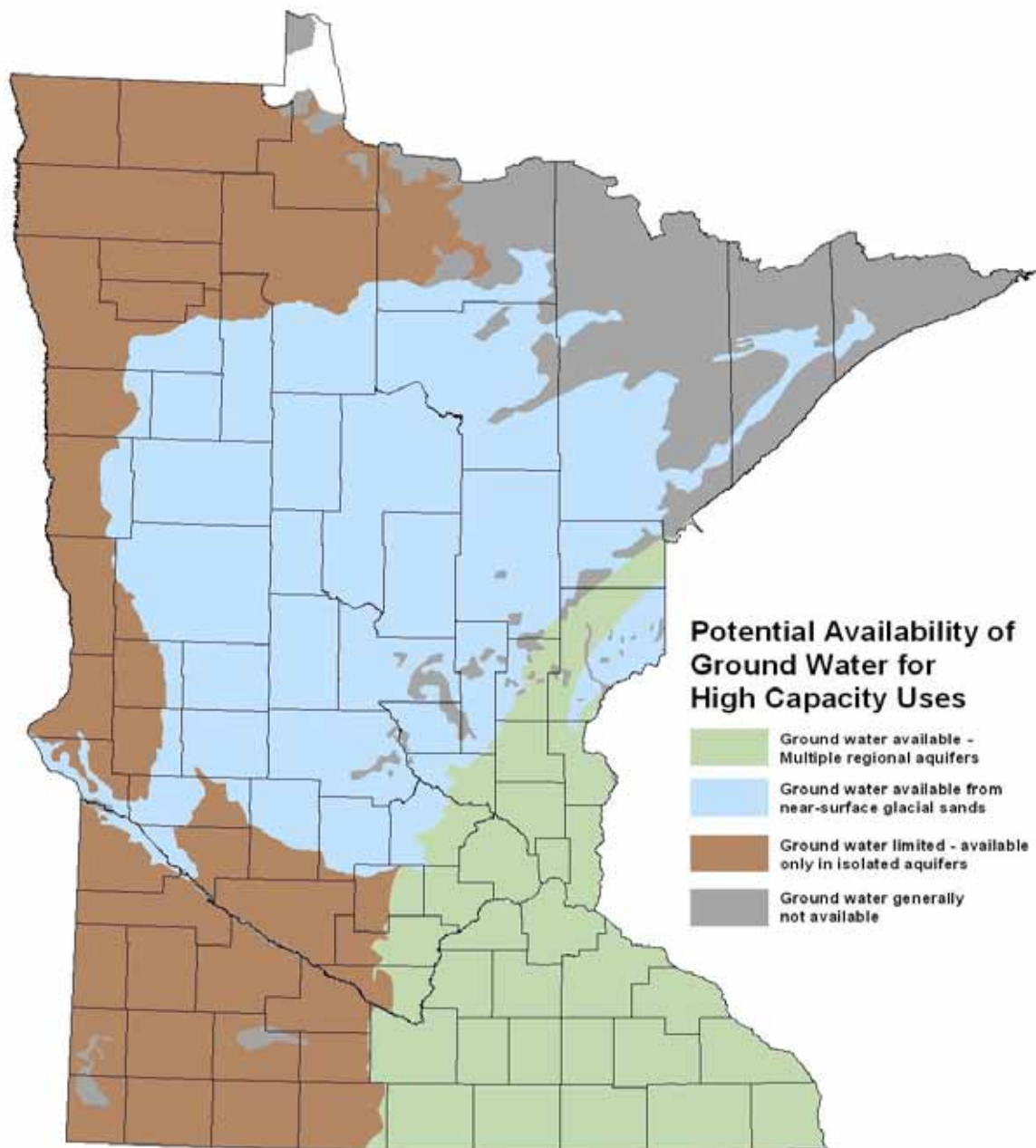
■ Environmental Planning/ Permits

- ___ Environmental Review: EAW or EIS
- ___ Water Appropriations (DNR)
- ___ Public Water Supply Wells (MDH)
- ___ Air Permit
- ___ Air Dispersion Modeling
- ___ Air Emission Risk Assessment (AERA)
- ___ Wastewater Permits (NPDES/SDS): Stormwater (construction and industrial),
Process Wastewater/ Non-Process Water/ Sanitary Sewer Extension
- ___ Storage Tanks: Aboveground or Underground
- ___ Hazardous Waste
- ___ Natural Heritage Information Request
- ___ Wetlands – Combined Joint Notification

Appendix B – Ethanol Facilities Map (Present and Future)

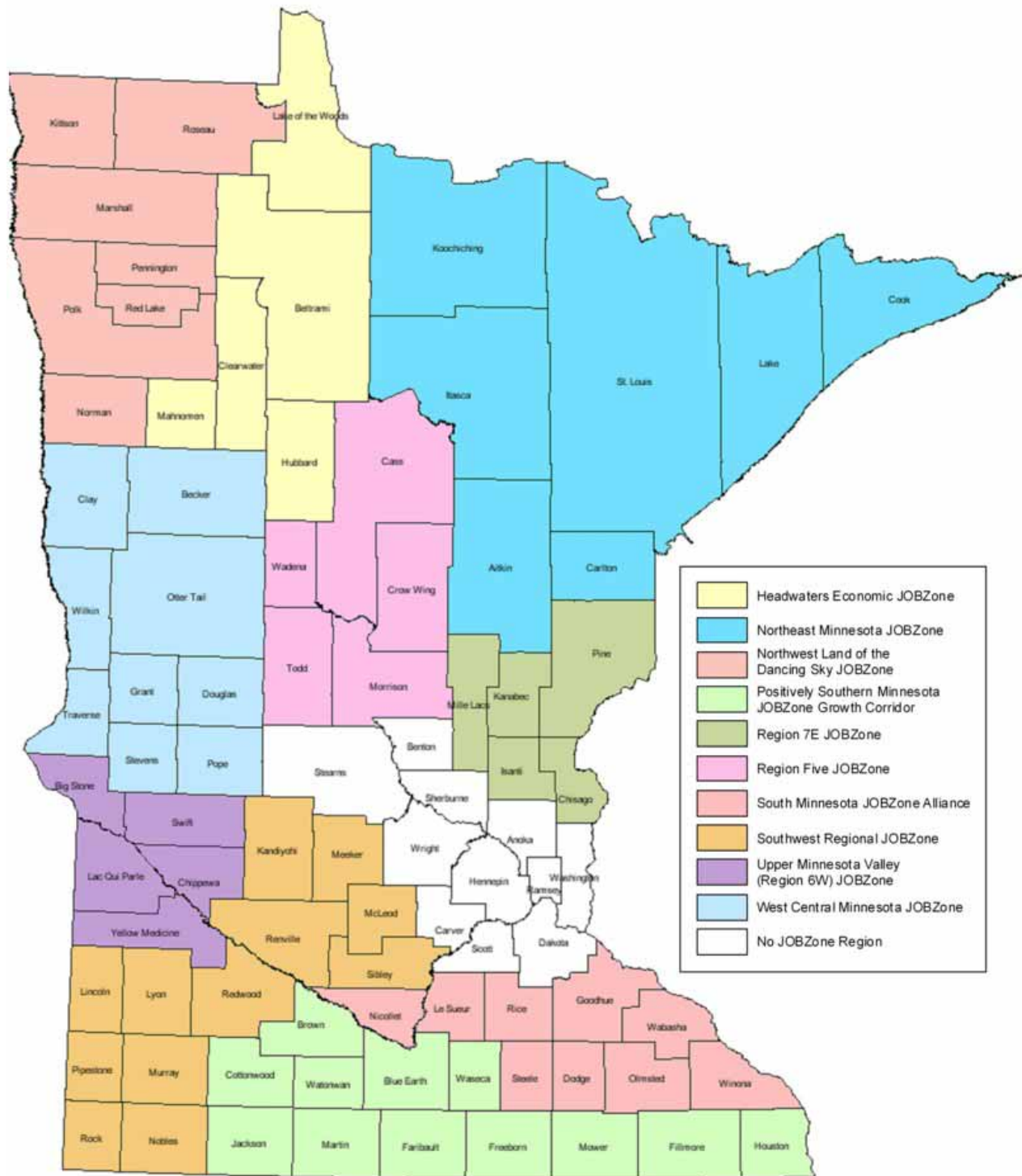


Appendix C – Ground Water Availability Map

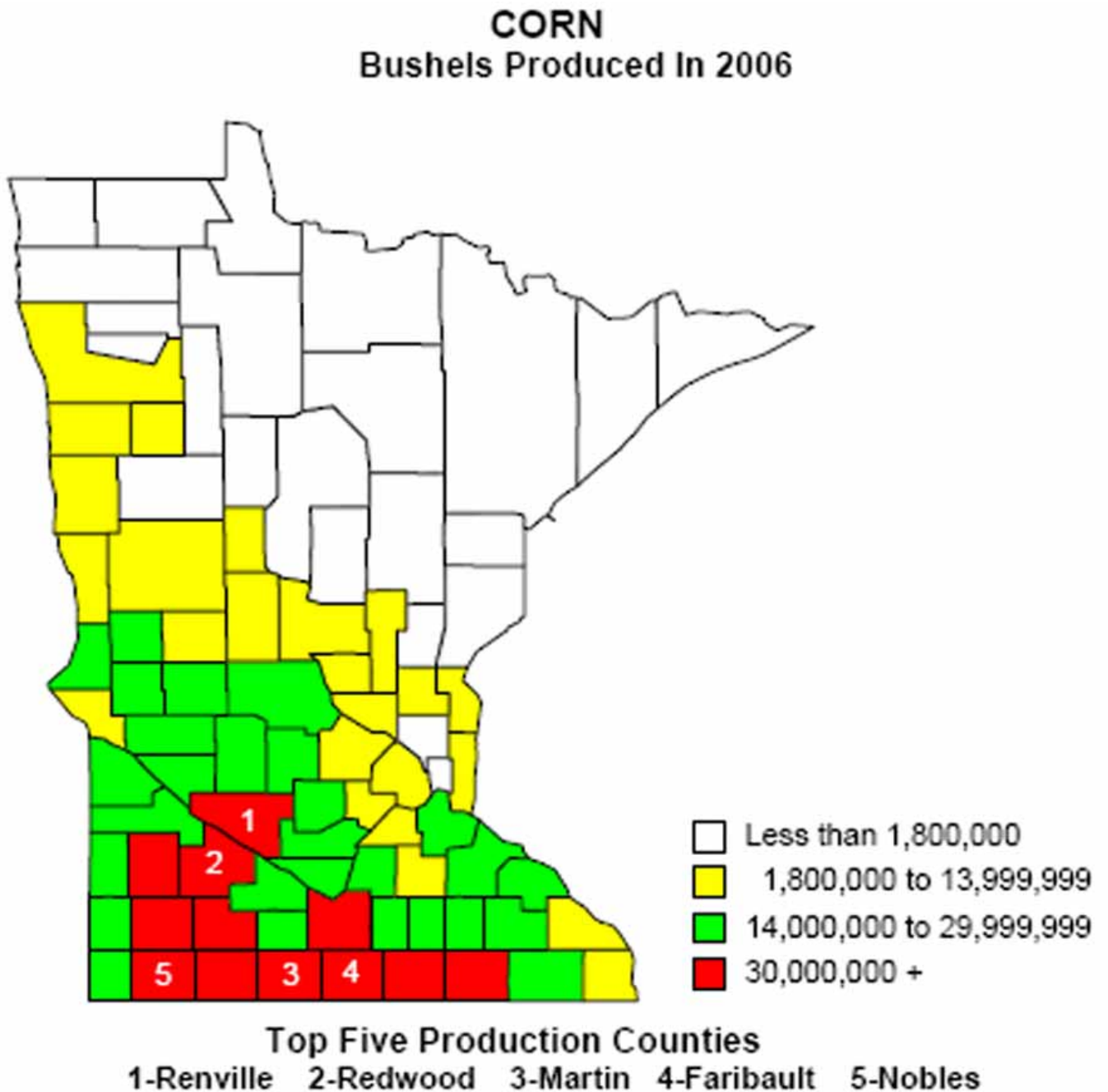


MN DNR Waters - LR - 606

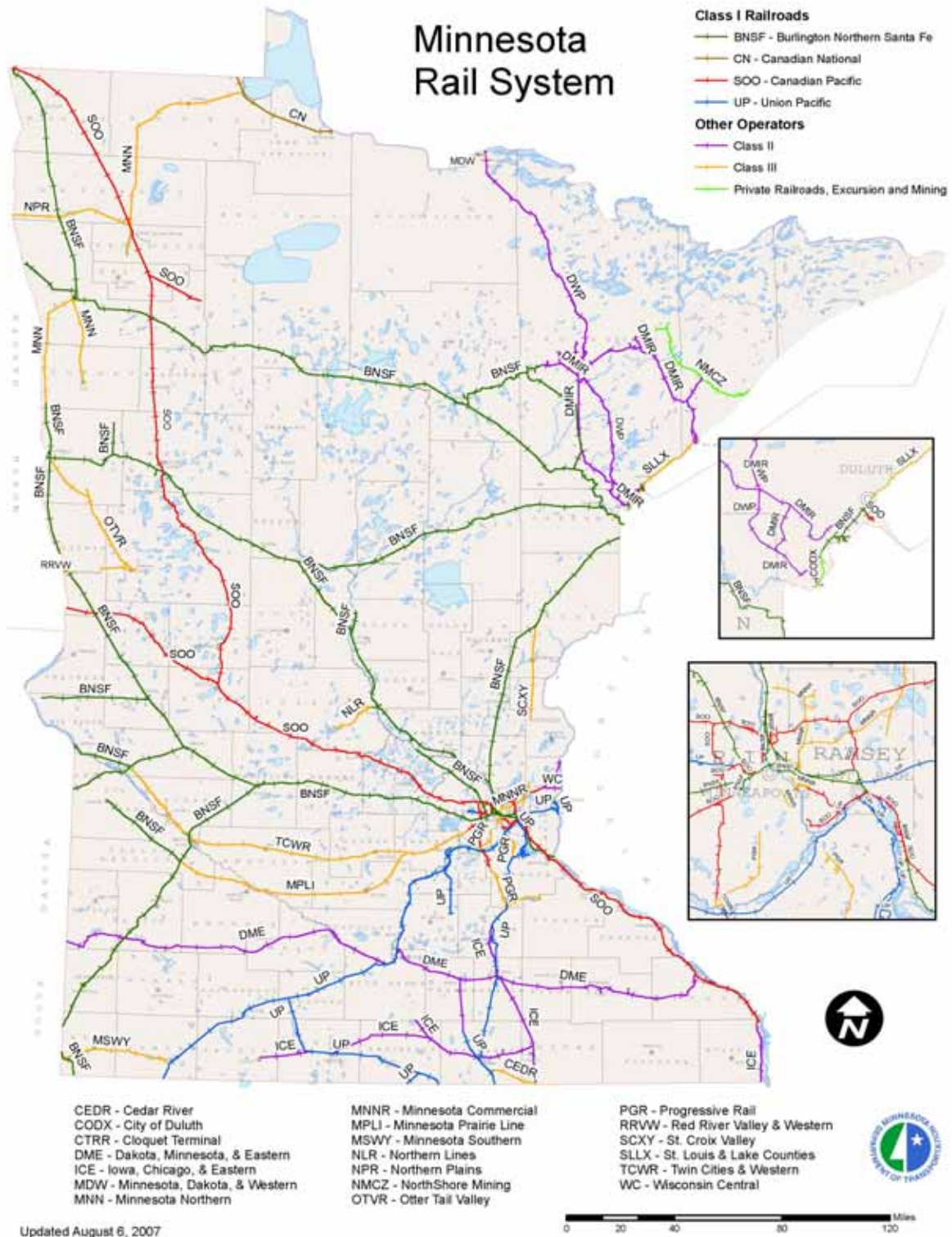
Appendix D – JobZ Map



Appendix E –Corn Production Map



Appendix F – Minnesota Rail Map



Appendix G – Business Development Contacts

Name	Description	Contact Information
Minnesota Investment Fund	This program provides grants that create and retain high-quality jobs on a statewide basis, with a focus on industrial, manufacturing, and technology-related industries, to increase the local and state tax base and improve the economic vitality for all Minnesota citizens.	Paul A. Moe, Director Department of Employment and Economic Development Phone: 651-297-1391 or toll-free: 1-800-657-3858 E-mail: Paul.A.Moe@state.mn.us Web site: www.deed.state.mn.us/bizdev/InvFd/
Small Business Development Loan Program	The purpose of this program is to create jobs and provide loans for business expansions. Small business loans are made by the Minnesota Agricultural and Economic Development Board (MAEDB) through the issuance of industrial development bonds backed by a state-funded reserve of 25 percent.	Paul A. Moe, Director Department of Employment and Economic Development Phone: 651-297-1391 or toll-free: 1-800-657-3858 E-mail: Paul.A.Moe@state.mn.us Web site: www.deed.state.mn.us/bizdev/InvFd/
Minnesota Job Skills Partnership Program	This program acts as a catalyst between business and education in developing cooperative training projects that provide new-job training or retraining for existing employees. Grants are awarded to educational institutions with businesses as partners; all projects must have at least one educational institution and one business working together. The Minnesota Job Skills Partnership Board approves these grants.	Paul D. Moe, Director Department of Employment and Economic Development Phone: 651-282-9814 or toll-free: 1-800-657-3858; TTY: 651-296.3900 E-mail: Paul.Moe@state.mn.us Web site: www.deed.state.mn.us/mjsp/
Contamination Cleanup and Investigation Grant Program	This program assists development authorities with contamination investigations and development of Response Action Plans (RAPs) or with contamination cleanup prescribed in a Minnesota Pollution Control Agency (MPCA)-approved RAP on a site that will be redeveloped.	Meredith Udoibok, Director Minnesota Department of Employment and Economic Development Phone: 651-296-5005 or toll-free: 1-800-657-3858 Email: Meredith.Udoibok@state.mn.us Web site: www.deed.state.mn.us/Community/contam/index.htm
Job Opportunity Building Zone (JOBZ) Program	The goal of this program is to stimulate economic development activity in rural areas of Minnesota by providing local and state tax exemptions to business expansions, start-ups, or relocations from other states. Ten Job Opportunity Building Zones (JOBZ) have been created throughout Greater Minnesota.	Meredith Udoibok, Director Minnesota Department of Employment and Economic Development Phone: 651-296-5005 or toll-free: 1-800-657-3858 Email: Meredith.Udoibok@state.mn.us Web site: www.deed.state.mn.us/Community/contam/index.htm
Redevelopment Grant Program	This program offers grants to assist development authorities with costs for redeveloping blighted industrial, residential, or commercial sites where a past use and the need to recycle the land for a more-productive use exist.	Meredith Udoibok, Director Minnesota Department of Employment and Economic Development Phone: 651-296-5005 or toll-free: 1-800-657-3858 Email: Meredith.Udoibok@state.mn.us Web site: www.deed.state.mn.us/Community/contam/index.htm
Positively Minnesota BizNice HelpDesk	The goal of this interagency project is to make regulatory compliance a smoother, friendlier, more efficient and hassle-free experience for Minnesota businesses. With knowledgeable staffing from two state agencies, DEED and the MPCA, BizNice offers prompt answers and quick follow-up calls that can help cut through the bureaucratic tangle that businesses too often face when dealing with state agencies.	Steve Sussman, Co-Manager Minnesota Department of Employment and Economic Development Phone: 651-297-1164 or toll-free: 1-888-234-5520 E-mail: Steve.Sussman@state.mn.us Web site: www.PositivelyMinnesota.com Rocky Sisk Minnesota Pollution Control Agency Phone: 651-296-9439 or toll-free: 1-888-234-5520 E-mail: Rocky.Sisk@pca.state.mn.us Web site: www.pca.state.mn.us

Appendix H – State Agency and Other Contacts

State Agency Contacts

Minnesota Department of Agriculture

The MDA has a long history of involvement with various issues related to the ethanol production industry, fuel performance issues, legislation and policy on a state and national level. The MDA Web site has a variety of information about renewable fuels at www.mda.state.mn.us/renewable/renewablefuels/fuels.htm

For ethanol issues at the MDA, call Ralph Groschen at 651-201-6223 or e-mail him at Ralph.Groschen@state.mn.us

If you are looking for information about buying stock for cooperative ethanol facilities, there is information about the MDA Rural Finance Authority Stock Loan Program at www.mda.state.mn.us/agfinance/stockloan.html, or call Gary Blahosky at 651-201-6666.

Other helpful MDA Web links include:

- www.mda.state.mn.us/renewable/ethanol/default.htm
- www.mda.state.mn.us/renewable/renewablefuels/balance.htm

Information on the federal renewable energy program is available from Robin Holdorf of the U.S. Department of Agriculture office in St. Paul. She can be reached at 651-602-7812.

Corn production statistics can be found on the Minnesota Agricultural Statistical Service Web site at:

- www.nass.usda.gov/Statistics_by_State/Minnesota/index
- or call 1-800-727-9540.

Department of Commerce

For questions regarding ethanol, contact Stacy Miller at stacy.miller@state.mn.us or 651-282-5091.

Department of Employment and Economic Development

For questions regarding employment and economic development issues, contact Steve Sussman at Steve.Sussman@state.mn.us or 651-297-1164.

Department of Health

For questions about well construction, contact Ed Schneider of the MDH Well Management Section at 651-201-4595 or ed.schneider@health.state.mn.us. For plan review and public water-supply system issues, contact Brian Noma of the MDH Drinking Water Protection Section at 651-201-4683 or brian.noma@health.state.mn.us.

Well management information is available on the MDH Web site at: www.health.state.mn.us/divs/eh/wells.

Department of Natural Resources

Contact information for regional and area hydrologists familiar with local water resource and availability can be found on the DNR Waters office locations and contacts Web page at:

- http://files.dnr.state.mn.us/waters/area_hydros.pdf

Minnesota Pollution Control Agency

The MPCA biofuels team coordinates environmental review, air permitting, and water permitting. Contact the following managers and staff with questions.

- Jess Richards (biofuels program manager) at jess.richards@pca.state.mn.us or 651-296-7757
- Chai Insook (biofuels project coordinator) at chai.insook@pca.state.mn.us or 651-296-7718
- Ralph Pribble (communications) at ralph.pribble@pca.state.mn.us or 651-296-7792
- Rocky Sisk (business liaison) at rocky.sisk@state.mn.us or 651-296-9439

You can also get more information about ethanol on the MPCA Web site at:

- www.pca.state.mn.us/programs/ethanol.html

The following link provides MPCA policy related to lab certification. Laboratories submitting data to the MPCA must be located within and be certified by a state that has reciprocity with Minnesota or be certified directly by the state of Minnesota.

- www.pca.state.mn.us/programs/pubs/qa-labcertpolicy.pdf

Department of Transportation

For general transportation questions, contact Brian Kamnikar at Brian.Kamnikar@dot.state.mn.us or 651-284-3768.

You can also contact the following managers for rail service and rail safety programs.

- Janelle Collier (program manager for Mn/DOT Rail Service Program) at janelle.collier@dot.state.mn.us or 651-366-3653
- Julie Carr (program manager for Mn/DOT Grade Crossing Safety Program) at julie.carr@dot.state.mn.us or 651-366-3651

Other contacts

Minnesota Association of Co-ops

- Amy Fredregill at Amy.fredregill@wfcmac.coop or 651-228-0213

Cooperative Development Services

- Kevin Edberg at Kedberg@cdsus.coop or 651-287-0184

Other Links

Electronic transmission map

- www.lmic.state.mn.us/chouse/metadata/elec_trans03.html

Appendix I – Air Emission Risk Analysis Checklist



MINNESOTA POLLUTION CONTROL AGENCY
AIR QUALITY
520 LAFAYETTE ROAD
ST. PAUL, MN 55155-4194

AERA-13 ETHANOL DETERMINATION CHECKLIST

AIR EMISSIONS RISK ANALYSIS
Air Quality #9.13 August 2006

Determination of Need for an Air Emissions Risk Analysis (AERA)

Facilities with **all** of the following characteristics will generally not be asked to complete an AERA. Please indicate whether each of the following applies to your proposed project:

Yes	No	
		Facility will operate less than 120 million gallons per year production capacity
		Entire facility property is either fenced or public access within the facility boundary is restricted and there are no receptors within 200 meters (approximately 600 feet) of that property line
		Facility's buffer distances from the boundary of the supporting community, including residences and any <i>sensitive</i> receptors (as defined in the AERA guidance) are equal to or greater than the following: Stack height less than 50 meters: 1.5 kilometers (approximately one mile) Stack height between 50 and 100 meters: 3 kilometers (approximately two miles) Stack height greater than 100 meters: 10 kilometers (approximately six miles) (please provide a map)
		Zoning or community development plans do not include projects that would place residences or other receptors within the buffer distances listed above (please provide a map or other verification) .
		Facility will be using only natural gas as fuel and no solid fuels (e.g. coal, biomass, etc.) or liquid fuels will be used.
		Facility intends to install BACT-like control equipment proven effective within the ethanol industry – <u>Note</u> : a list of BACT-like controls for each piece of process equipment will be attached with the checklist provided to a proposer.
		Facility will be using only grain corn as a feedstock

The Agency retains its discretion to request that a proposed facility complete an AERA as described in our guidance, even if it exhibits all of the characteristics outlined above, if issues are identified that could be addressed with an AERA.

Facility Name: _____
Address: _____
Date: _____