January 18, 2002

TO: INTERESTED PARTIES

RE: Chippewa Valley Ethanol Company Plant Expansion

Enclosed is the Environmental Assessment Worksheet (EAW) for the proposed Chippewa Valley Ethanol Company Plant Expansion, Swift County. The EAW was prepared by the Minnesota Pollution Control Agency (MPCA) and is being distributed for a 30-day review and comment period pursuant to the Environmental Quality Board (EQB) rules. The comment period will begin the day the EAW availability notice is published in the EQB Monitor, which will likely occur in the January 21, 2002, issue.

Comments received on the EAW will be used by the MPCA in evaluating the potential for significant environmental effects from this project and deciding on the need for an Environmental Impact Statement (EIS).

A final decision on the need for an EIS will be made by the MPCA Commissioner after the end of the comment period. If a request for an EIS is received during the comment period, or if the Commissioner recommends the preparation of an EIS, the nine-member MPCA Citizens' Board (Board) will make the final decision. The final EIS need decision will also be made by the Board if so requested by the project proposer, other interested parties or MPCA staff and if this request is agreed to by one or more members of the Board or the MPCA Commissioner. The Board meets once a month, usually the fourth Tuesday of each month, at the MPCA office in St. Paul. Meetings are open to the public and interested persons may offer testimony on Board agenda items. A listing of Board members is available on request by calling (651) 296-7306.

Please note that comment letters submitted to the MPCA do become public documents and will be part of the official public record for this project.

If you have any questions on the EAW, please contact Barbara Conti of my staff at (651) 296-6703.

Sincerely,

Beth G. Lockwood
Supervisor
Operations and Environmental Review Section
Regional Environmental Management Division

BGL:gs

Enclosure

ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to reviewers: The Environmental Assessment Worksheet (EAW) provides information about a project that may have the potential for significant environmental effects. This EAW was prepared by the Minnesota Pollution Control Agency (MPCA), acting as the Responsible Governmental Unit (RGU), to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer supplied reasonably accessible data for, but did not complete the final worksheet. Comments on the EAW must be submitted to the MPCA during the 30-day comment period which begins with notice of the availability of the EAW in the *Minnesota Environmental Quality Board (EQB) Monitor*. Comments on the EAW should address the accuracy and completeness of information, potential impacts that are reasonably expected to occur that warrant further investigation, and the need for an EIS. A copy of the EAW may be obtained from the MPCA by calling (651) 296-7398. An electronic version of the completed EAW is available at the MPCA Web site http://www.pca.state.mn.us/news/eaw/index.html#open-eaw.

1. Project Title: Chippewa Valley Ethanol Company Plant Expansion

2. Proposer: Chippewa Valley Ethanol Company

Contact Person Bill Lee

and Title General Manager

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3. RGU: Minnesota Pollution Control Agency

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4. Reason for EAW Preparation:

EIS Scoping		Mandatory EAW	X	Citizen Petition		RGU Discretion		Proposer Volunteered	

If EAW or EIS is mandatory give EQB rule category subpart number and name: Minn. R. 4410-4300, subp. 5.B. Fuel Conversion Facilities

5. Project Location: County Swift City/Twp Benson

SE 1/4 SW 1/4 Section 36 Township 122N Range 40W

Tables, Figures, and Appendices attached to the EAW:

- Figure 1. United States Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries;
- Figure 1. County map showing the general location of the project;
- Figure 3. Site plan showing all significant project and natural features;
- Figure 4. Minnesota Department of Natural Resources (DNR) Natural Heritage Database Review; and
- Figure 5. Minnesota Historical Society letter.

6. Description:

a. Provide a project summary of 50 words or less to be published in the *EQB Monitor*.

Chippewa Valley Ethanol Company proposes to expand its existing ethanol production facility and add a thermal oxidizer to control emissions. The proposed project would increase undenatured ethanol production from a 22.4 million gallons per year (MMGY) to 49.5 MMGY. Production of distillers dried grain with solubles (DDGS), which is used as animal feed, would increase from 67,615 tons per year (TPY) to 149,417 TPY.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

Overview

Chippewa Valley Ethanol Company proposes to expand its existing ethanol production facility. The facility is approximately one mile west of the city of Benson. The site is adjacent to the Benson airport, off County Road 20 (see Figures 1-3). Currently, the plant processes approximately 8.3 million bushels of corn per year. This produces 22.4 MMGY of undenatured ethanol. Production of DDGS, used as an animal feed, is 67,615 TPY.

The proposed expansion would increase corn usage to approximately 18.3 million bushels. Ethanol production would increase to 49.5 MMGY. DDGS production would increase to 149,417 TPY. In addition to process modifications, a thermal oxidizer would be added to the dryer stack. The thermal oxidizer would control emissions of volatile organic compounds, which is expected to also reduce odors.

The ethanol production process is described below, followed by a description of the proposed changes.

Dry Mill Ethanol Production Process

Starch Conversion. The starch conversion process breaks down the starch in the corn, converting it into sugar. Corn is received via an enclosed conveyor from Glacial Plains Cooperative. The corn is conveyed to a surge bin from which metered amounts of corn are discharged into the mill. A conveyor moves the milled corn from the hammermill into the mix tank. The mix tank mixes the milled corn with water to start the ethanol production process. The water is superheated processed condensate (reused process water from the distillation) plus fresh make-up water. This mixing produces a slurry. Sodium hydroxide and alpha-amylase enzyme is added to the slurry to adjust the pH and break the starch down to a low viscosity dextrin. After approximately 15 minutes holding time in the mix tank, the slurry is pumped through heat recovery exchangers to a temperature of 140 degrees Fahrenheit (F). The mash is sent to a saccharification tank where it is mixed with gluco-amylase enzyme to begin breaking down the dextrin into simple sugars that can be fermented by yeast. After holding for four to six hours in the saccharification tank, the mash is cooled to 90 degrees F and pumped to the fermentation section.

Batch Fermentation. Fermentation involves the conversion of sugars (dextrins) in the mash to ethanol. The process begins by adding yeast and gluco-amylase enzyme to the mash and transferring it to a fermentation tank. The enzyme breaks the dextrins down into glucose, a simple sugar, which is converted by the yeast to ethanol and carbon dioxide (CO_2). The CO_2 flows to a scrubber which captures entrained ethanol. The exhaust stream, including the CO_2, is then vented to the atmosphere.

After approximately 48 hours, all sugars are consumed and the entire contents of the fermenter are pumped to the beerwell. The ethanol concentration at this stage is about 12 to 16 percent by volume. The empty fermentation tank is then rinsed and cleaned for the next batch.

Distillation/Dehydration. The beer resulting from the fermentation runs through a continuous distillation system with integrated molecular sieves to remove and dehydrate the ethanol. Beer is pumped continuously from the beerwell to the top of the stripper column. Heat is provided at the bottom of the stripper and ethanol travels up the column as a vapor. Water and remaining corn solids travel down and out of the stripper. The ethanol vaporizes and reaches 186 proof at the top of the stripper. The 186 proof ethanol is pumped through a vaporizer/superheater and the resulting vapor flows through the molecular sieve bed. The sieve material in the bed absorbs the remainder of the water and 200 proof ethanol vapor flows out of the bottom. The 200 proof ethanol is condensed and pumped through a cooler to a storage tank. The flow of 186 proof alternates between beds. The bed not in use is regenerated by vacuum. The product from regeneration is 130 proof ethanol which is condensed and pumped back to the rectifying section of the stripper column.

Each time ethanol is transferred from storage to a loadout conveyance (i.e. truck and/or rail car), a smaller amount of unleaded or natural gasoline is pumped from a 20,000-gallon denaturant tank to the rail car or tank truck involved. This amount is equal to five percent of the amount of ethanol transferred.

By-product Processing: Stillage, a by-product of distillation, consists of the remaining solids and water coming off the bottom of the stripper column. The stillage is dried for storage and shipping. The stillage is centrifuged to yield thin stillage and solids fractions. The thin stillage becomes backset (recycled) water for the cook (starch conversion) system and feed to the evaporator. The evaporator removes water from the thin stillage to create a 32 percent dry matter syrup. Syrup is pumped to the mixing auger to be combined with the wet distillers grains (solids coming off the centrifuge). The mixture is conveyed into drum dryers. Cyclone separators control the particle emissions. Fifty percent of the exhaust is recycled to the dryer inlet and the balance is vented to the atmosphere. The resulting DDGS exits the cyclone via an air lock divided by two screw conveyors. The first recycles two-thirds to three-fourths of the product back to the mixing auger and the second conveys the remainder to storage.

Other Processes and Equipment: The facility currently has two 60-million British Thermal Unit (BTU) per hour gas-fired boilers to provide steam for cooking, distilling, evaporating, and other plant uses. The facility has two emergency electrical generators (2,220 brake horsepower (BHP) each).

Proposed Project and Changes

The facility proposes to increase its capacity to 49.5 MMGY of ethanol, including the plant modifications listed in Table 1. In addition, the facility proposes to add air pollution control equipment to the DDGS dryers. The proposed control equipment is a thermal oxidizer/heat recovery boiler, which would control emissions of particulate matter and volatile organic compounds from the dryer. The use of the thermal oxidizer is also expected to help reduce odorous compounds from the dryer.

Table 1. Proposed Equipment Modifications

Equipment Change	Location
Add three new fermenters at 325,000 gallons, each	Outside
Add one new beerwell at 425,000 gallons	Outside
Convert existing beerwell to a fermenter	Outside
Add a new fermentation scrubber	Inside
Convert existing fermentation scrubber to a process scrubber that would be used to control emissions from the distillation system	Inside
Add two new hammermills	Outside
Replace the existing hammermill baghouse with a new baghouse	Outside
Add a new DDGS dryer	Inside
Add a new thermal oxidizer/heat recovery boiler that would control both dryers and would exhaust into a new common stack. The heat recovery boiler for the thermal oxidizer would also provide additional process steam to the facility.	Inside
Add a new conveyor to replace the existing grain conveyor	Outside
Add a new DDGS loadout to replace the existing DDGS loadout	Outside
Add a new fermentation building	Outside
Add a new dryer building	Outside
Add three new emergency electrical generators at 2,200 BHP, each	Outside
Add a new distillation system, including two molecular sieves, a rectifier, a beer stripper and a side stripper	Inside
Add a new cooling tower	Outside
Add a new 600,000-gallon denatured ethanol storage tank with floating covers to control emissions.	Outside
Add a new CO_2 scrubber which would operate at twice the water flow rate and twice the gas flow rate of the existing unit.	Inside
Expand the existing ammonia tank	Outside

Construction duration is estimated at six months or less and is likely to begin in spring or summer 2002.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The purpose of the project is to increase ethanol production at the Chippewa Valley Ethanol Company facility.

d. Are future stages of this development including development on any outlots planned or likely to happen? ☐Yes ☒No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

e. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No
If yes, briefly describe the past development, timeline and any past environmental review.

7. Project Magnitude Data

Total Project Area (acres) 14 or Length (miles) _____
Number of Residential Units: Unattached _____ Attached _____ maximum units per building _____
Commercial/Industrial/Institutional Building Area (gross floor space): total square feet 55,386
Indicate area of specific uses (in square feet):

Office	8,700	Manufacturing	71,859
Retail		Other Industrial	3,658
Warehouse	9,600 (DDGS storage)	Institutional	
Light Industrial	4,680 (boilers)	Agricultural	
Other Commercial (specify)	55,386	Storage tanks and cooling tower	
Building height		If over 2 stories, compare to heights of nearby buildings	See below

Note: Totals listed above are for the facility after the proposed changes.

Existing building heights range from 24 to 45-feet above grade. The existing dryer stack is 70 feet. The proposed fermentation building height is 45 feet. The proposed new cooling tower height is also 45 feet. The new dryer stack is proposed to be 75-feet above grade.

8. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

Unit of Government	Type of Application	Status
MPCA	Air Emissions Permit	To be modified; application submitted
	National Pollutant Discharge Elimination System (NPDES) Industrial Storm Water General Permit	To be modified; application to be submitted
	NPDES/State Disposal System Discharge Permit (for Non-contact Cooling Water)	To be updated/reissued; application to be submitted
	Above-ground Liquid Storage Tank Permit	To be modified; application to be submitted
DNR	Water Appropriation Permit	To be modified; application submitted
Swift County	Conditional Use Permit	Application to be submitted
	Building Permit	Application to be submitted

9. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

Chippewa Valley Ethanol Company is located approximately one mile west of the city of Benson on a 190-acre site. The site is adjacent to the Benson airport and the former Agralite Cooperative generating plant. The plant and associated facilities occupy 14 acres of the site. The 190-acre site also has 153 acres of cropland set aside in the Conservation Reserve Program (CRP) because it is a large, open expanse with the potential for wind erosion. The property also has 23 acres of wetlands. The plant area and the area of the proposed plant expansion has been zoned as an urban development area by Swift County. In the past, farming has been the only land use present on the project site. There are no known instances of past environmental contamination at the site.

10. Cover Types. Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Types 1-8 wetlands	23	23	Lawn/landscaping	10	8
Wooded/forest	0	0	Impervious Surfaces	4	6
Brush/grassland	0	0	Other (describe)	0	0
Cropland	153	153			
			TOTAL	190	190

11. Fish, Wildlife, and Ecologically Sensitive Resources.

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

Twenty-three acres of wetlands (types 2-8) are present on the site; however, no field delineation of wetlands has been conducted. Construction areas for the proposed project are not in wetland areas.

Two waterfowl areas and the Chippewa River are within approximately one mile of the site. The proposed modifications are not expected to result in significant impacts to these resources.

b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? ☒ Yes ☐ No
If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number. ERDB 20020134
Describe measures to minimize or avoid adverse impacts.

A review of the Minnesota Natural Heritage Database did not identify any rare resources on the site. One rare feature, a wet prairie area, was identified within approximately one mile of the site. The DNR indicated that, due to the nature and location of the project, it would not affect this rare feature (see Figure 4).

12. Physical Impacts on Water Resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No
If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

13. Water Use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☒ Yes ☐ No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

Chippewa Valley Ethanol Company currently has two industrial wells in operation, each having a pumping capacity of 200 gallons per minute. The unique well numbers are 563341 and 5633452. Currently, Chippewa Valley Ethanol Company uses 75 MMGY.

While all process water is recycled and reused, some water is lost at the dryer. Additional water is therefore needed for the ethanol process, boilers, and the cooling tower. Water consumption for the facility is expected to therefore increase to 165 MMGY after the proposed expansion. Two additional wells, with 150 gallons per minute (gpm) pumping rates, would need to be added to meet the water supply demands for the proposed expansion.

Ground-water supplies in the area are believed to be adequate to supply the proposed project. A pump test would be required as part of the permit application process to determine the adequacy of the resource. Any well interferences or water use conflicts would need to be addressed before the water appropriation permit could be issued. Final review by the DNR is pending for the water appropriation permit. The DNR permit includes required annual reporting of the monthly water usage.

Although no water usage conflicts are expected, per Minn. Stat. § 103G.261., domestic water use takes priority over other uses. The DNR has a well interference resolution process available to address usage conflicts, which includes a questionnaire and an evaluation by the DNR Area Hydrologist.

14. Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☐ Yes ☒ No
If yes, identify the district and discuss project compatibility with district land use restrictions.

15. Water Surface Use. Will the project change the number or type of watercraft on any water body? ☐ Yes ☒ No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. Erosion and Sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: 2 acres; _____ cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

The site is fairly flat. On the parts of the site that are not designated as CRP or occupied by buildings, erosion control would be maintained by seeding and mulching of the land in and around the plant

complex. A storm water general permit for construction activities is not required for projects that disturb less than five acres. Chippewa Valley Ethanol Company's Storm Water Pollution Prevention Plan (SW3P) specifies the use of Best Management Practices (BMPs), such as silt fences and covering soil piles, to be used in construction areas to prevent erosion or sedimentation.

17. Water Quality – Surface Water Runoff.

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.

Surface water drainage from the plant site is currently directed to a detention pond. Changes in the quantity and quality of the runoff after the project are not expected to be significant.

The Chippewa Valley Ethanol Company SW3P requires the facility to identify sources of wastewater discharge that can cause possible storm-water contamination. After sources are identified, the facility must implement and maintain BMPs to minimize the potential for contamination. The SW3P also establishes schedules and criteria for routine inspections as defined in the plan. Recordkeeping, reporting and other activities necessary for compliance with the permit are also in the plan to minimize the potential for contamination. Because material handling and manufacturing process equipment are enclosed, the potential for storm-water contamination by contact with significant materials is limited. In most cases, contact would only be possible in the event of a spill, leak or equipment failure. Any spill or leak of fuel or finished material in the tank farm area would be captured within the containment dikes. Finished material spills at the loadout area or from liquid transfer will be minimized by the facility spill prevention procedures and bulk transfer policy.

Grain fines or dust materials accumulated near loading areas or near the cyclone used for airborne particulate removal can contaminate storm-water runoff. In the event of an equipment or material handling failure, and if product was spilled or released, any resulting waste residues could contaminate runoff. Lubricating oils or hydraulic fluids leaking from outdoor motors, gearboxes, bearings, or other mechanical equipment can also contaminate storm-water runoff. As long as the process and equipment are properly operated and maintained, the likelihood of contamination from these sources is remote.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

Runoff from the plant area drains to the pond located northeast of the building area. The runoff from the remainder of the site enters ditches along the southern and eastern boundaries of the site. Runoff will be carried through this ditch system for a distance of roughly one mile prior to discharging into the Chippewa River at a point southeast of the facility. All open areas adjacent to the facility buildings are seeded with suitable grasses and all runoff from the graveled area will pass through a buffer area prior to leaving the site.

No significant changes are expected in the quantity or quality of runoff from the proposed project.

18. Water Quality – Wastewater.

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

Approximately 43,000 gallons per day of combined cooling tower blowdown and boiler blowdown will be directly discharged into a holding pond under a NPDES outfall permit.

All process related wastewater is treated on site and recycled for use in the plant. The treatment system includes two 40,000-gallon tanks equipped with aeration spargers and compressors.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

The proposed expansion will not affect the existing septic system.

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

Chippewa Valley Ethanol Company will not discharge wastewater to publicly owned treatment works.

d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

Not applicable.

19. Geologic hazards and soil conditions.

a. Approximate depth (in feet) to Ground water: _____ minimum; 8 average.
Bedrock: _____ minimum; 150 average.
Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

No on-site hazards to ground water are known to exist.

b. Describe the soils on the site, giving SCS classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

The site has sandy loam or loamy sand soils including Fossum sandy loam, Hecla loamy sand, and Hamar loamy sand. These soils have high water tables and are subject to wind erosion if unprotected.

A test well on the site encountered two feet of topsoil followed by alternating layers of clay and sand to a depth of 152 feet.

20. Solid Wastes, Hazardous Wastes, Storage Tanks.

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

Construction and demolition debris generation, as a result of the facility expansion, is expected to be minor in quantity and all such wastes will be properly disposed of by the construction contractor(s).

Hazardous wastes generated by Chippewa Valley Ethanol Company include solvents used for parts washing. The wastes are stored in steel barrels for transport to a commercial recycler. Waste lubricating oils from the plant are recycled. No changes to waste generation rates are anticipated as a result of the proposed facility expansion.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

Ethanol and regular unleaded or natural gasoline are stored on site. Storage tanks for these materials are located above ground within containment areas.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

All storage tanks are located above ground in a lined, diked area. Each tank has a fire valve, a level gauge, overfill protection, an emergency vent, and a pressure vacuum vent. Product is bottom loaded into tanker trucks and rail cars. With the plant expansion, the facility will add a new 600,000-gallon ethanol storage tank that will have its own lined, diked area. The ammonia tank will be expanded as part of the expansion from 8,800 gallons to 20,000 gallons. The concentration of ammonia in the ammonia tank is 28 percent and the remaining 72 percent is water.

The new ethanol storage tank would be designed with secondary containment designed to contain the contents of the largest above-ground storage tank as well as runoff from a significant (25-year storm) rainfall event. Underground lines will be designed to prevent leaks and will include a suitable leak detection system. Product transfer areas are located on impervious material and are bermed to contain potential releases at the tank connection and at the transfer vehicle.

Current production/process tanks located indoors include three 258,000-gallon fermenters and one 258,000-gallon beerwell. As part of the expansion project, three new 325,000-gallon fermenters and one new 425,000-gallon beerwell will be added. The existing 325,000-gallon beerwell will be converted to a fermenter as part of the expansion project.

Regulated tanks located indoors are designed, and will be managed, to minimize the possibility of a release reaching surface or ground water.

21. Traffic. Parking spaces added: 0 Existing spaces (if project involves expansion): 40

Estimated total average daily traffic generated: see below Estimated maximum peak hour traffic generated (if known) and its timing: 90 percent from 8:00 a.m. to 5:00 p.m. with 10 percent between 5:00 p.m. and 8:00 a.m.

Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

Current truck and employee traffic is estimated at 120 vehicles. Increasing plant production from 22.4 MMGY to 49.5 MMGY will generate approximately 10 more trucks per day. Increased traffic congestion or air quality impacts are not anticipated due to the low volume of post-expansion traffic. No traffic improvements are planned or needed for the facility.

22. Vehicle-related Air Emissions. Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult *EAW Guidelines* about whether a detailed air quality analysis is needed.

Air emissions due to vehicles would not be significant due to low additional traffic volume.

23. Stationary Source Air Emissions. Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

Sources of Air Emissions and Pollution Control Equipment: The following is a summary of air emissions sources at the facility and the proposed new emission control equipment. Through the use of air pollution control equipment, emissions from the facility will remain below 100 TPY for all criteria pollutants. The facility is subject to federal New Source Performance Standards, Subpart VV for controlling volatile organic compounds (VOC) equipment leaks from sources such as valves or fittings.

Corn Receiving and Handling. Fugitive particulate emissions from the unloading building, conveyors, elevators, and bins are exhausted through a negative pressure ventilation system, which continuously pulls air from these sources through a baghouse. The baghouse is used to control particulate emissions.

Corn Milling and Handling. Fugitive particulate emissions from the milling system are exhausted through a negative pressure ventilation system, which continuously pulls the air through a baghouse. Two new hammermills, sized the same as the existing hammermills, will be added and will tie into a new baghouse as part of the proposed expansion.

Batch Fermentation. Fermentation of sugar produces ethanol and also CO_2 as a major by-product. The vents of the fermenters, and other atmospheric vessels in the fermentation and mash cooling areas, are all tied into the inlet of one direct contact water scrubber. A continuous blow-down of the scrubber water flows back into the process stream. Most of the entrained ethanol is captured by the scrubber. CO_2, uncaptured ethanol, and other non-condensable gases leaving the scrubber are vented to the atmosphere.

Distillation/Dehydration. Any CO_2 and other non-condensable gases that are contained in the beer are exhausted to the distillation scrubber prior to venting to the atmosphere. As with the fermentation scrubber, not all of the alcohols are captured, and small amounts are emitted to the atmosphere along with the gases.

The expansion project will involve the addition of a new distillation system, which will include two molecular sieves, a beer stripper, a side stripper, and a rectifier. All distillation equipment will be vented to the process scrubber.

Dried Distillers Grain Drying and Handling. Distillers grain is dried in a rotary dryer system in which wet material is moved pneumatically through the dryer. The forced air and solids exiting the dryer are conveyed to cyclones used to separate the dried grain. Exhaust gases not recycled to the dryer inlet are vented. Those exhaust gasses contain particulate matter and volatile organic compounds.

A second dryer system will be installed for the expansion. Both dryers, running in series, would be controlled by a new thermal oxidizer/heat recovery boiler. The thermal oxidizer/heat recovery boiler will burn natural gas and propane. The thermal oxidizer controls emissions of VOC and is expected to also reduce odors from the dryers. The dryers and their control equipment will exhaust to a new common stack.

Ethanol Storage Tanks. Each tank has a fire valve, a level gauge, overfill protection, an emergency vent, and a pressure vacuum vent. Product is bottom loaded into tanker trucks and rail cars. VOC emissions from these tanks are included in the facility emission total.

Steam Boilers. Two natural gas-fired boilers, with a maximum fuel consumption rate of 60 million BTUs/hour each, are located at the facility. Combustion gases are vented to the atmosphere.

The facility will add three more emergency generators (2,220 BHP each) as part of the proposed expansion.

A comparison of air emissions from the entire facility before and after the proposed project is shown in Table 2. As noted, the project includes the addition of air pollution control equipment.

Table 2. Summary of Total Controlled Air Pollutant Emissions

Pollutant	Existing facility (total prior to modification) (TPY)	Proposed facility (total after the modification) (TPY)
Carbon Monoxide (CO)	65.95	63.65
Nitrogen Oxides (NO_x)	96.2	91.42
Sulfur Dioxide (SO_2)	1.25	1.82
VOCs	90.6	89.94
Total Particulate Matter (PM)	92.2	99.31
Particulate Matter less than ten microns (PM_{10})	97.1	68.86

The hazardous air pollutant (HAP) emissions associated with the project expansion are shown in Table 3, below. HAP emission sources at the Chippewa Valley Ethanol Company facility include fuel combustion equipment (boilers, generators, thermal oxidizer), dryers, and tanks. Some HAPs are also classified as VOCs. The proposed thermal oxidizer would control VOC emissions from the dryers.

Table 3. Hazardous Air Pollutant Summary

	Potential to Emit Emissions	
Pollutant	**(lb/hr)**	**(TPY)**
Acetaldehyde**	0.19	0.85
Acrolein**	0.02	0.07
Benzene	0.03	0.13
Cyclohexane	0.06	0.27
Ethyl Acetate	0.26	1.12
Formaldehyde**	0.11	0.48
Hexane	0.87	3.82
Methanol**	0.04	0.18
Toluene	0.00	0.01
Total Combined HAPs	**1.58**	**6.94**
Largest Individual HAP	**0.87**	**3.82**
** Includes emissions based on recent stack testing performed at a similar sized ethanol facility in Minnesota; includes 95 percent control efficiency of the thermal oxidizer.		

Carbon dioxide is one of the gases known to contribute to global climate change. There is, however, no evidence to suggest that the proposed project would contribute significantly to this phenomenon.

24. Odors, noise and dust. Will the project generate odors, noise or dust during construction or during operation? ☒ Yes ☐ No
If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Dust. Dust will be generated as part of construction; however, impacts due to dust should be minimal due to the relatively small external areas to be disturbed. Construction related dust will be mitigated as needed by wetting the generation areas to reduce dust released to the air. Dust from additional truck traffic for the proposed expansion will be minimal, since truck traffic haul routes are paved.

Odors. A reduction in odors from the facility is expected as a result of the plant expansion. The addition of the thermal oxidizer/heat recovery boiler is expected to reduce odors from the dryers.

Noise. No significant changes in noise are expected as a result of the proposed expansion.

25. Nearby resources. Are any of the following resources on or in proximity to the site?

a. Archaeological, historical, or architectural resources? ☐ Yes ☒ No
b. Prime or unique farmlands or land within an agricultural preserve? ☐ Yes ☒ No
c. Designated parks, recreation areas, or trails? ☐ Yes ☒ No
d. Scenic views and vistas? ☐ Yes ☒ No
e. Other unique resources? ☐ Yes ☒ No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

26. Visual impacts. Will the project create adverse visual impacts during construction or operation? Such as

glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☒ Yes ☐ No
If yes, explain.

The exhausts from the gas-fired boiler and the distillers grain drying system are currently emitted from 35-foot and 70-foot stacks, respectively. An additional distillers grain dryer will be added for the expansion and both dryers, running in series, will tie into a new thermal oxidizer/heat recovery boiler and will exhaust to a common 75-foot stack.

27. Compatibility with plans and land use regulations. Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☐ Yes ☒ No
If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

28. Impact on infrastructure and public services. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☐ Yes ☒ No
If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

The facility will expand existing gas, propane, and electrical utilities on site; however no additional public services will be required.

29. Cumulative impacts. Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

None identified.

30. Other Potential Environmental Impacts. If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

None identified

31. Summary of issues. List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

RGU CERTIFICATION.

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minn. R. 4410.0200, subps. 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer: **Beth G. Lockwood, Supervisor**
Environmental Review Unit
Operations and Environmental Review Section
Regional Environmental Management Division

Date:

The format of the Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at Minnesota Planning. For additional information, worksheets or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN 55155, 651-296-8253, or at their Web site www.mnplan.state.mn.us.