



**NORTH DAKOTA PUBLIC SERVICE COMMISSION
DOCKET NO. PU-11-605**

**APPLICATION OF
ENBRIDGE PIPELINES (NORTH DAKOTA) LLC
for
CERTIFICATE OF CORRIDOR COMPATIBILITY**

**GRENORA STATION UPGRADE PROJECT
OCTOBER 2011**



GRENORA STATION UPGRADE PROJECT
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APPLICATION FOR CORRIDOR CERTIFICATE

SECTION A

DESCRIPTION OF PROPOSED FACILITY

A.1 DESCRIBE THE TYPE OF FACILITY ADDRESSED IN THIS APPLICATION. THE DESCRIPTION SHALL INCLUDE THE PURPOSE OF THE FACILITY AND THE TECHNOLOGY TO BE EMPLOYED

A.1.a Type of Facility

Enbridge Pipelines (North Dakota) LLC (“EPND”) owns and operates a 968-mile existing underground petroleum gathering and mainline pipeline system that extends from eastern Montana through North Dakota to Clearbrook, Minnesota and also extends northward to the US-Canadian International Border where EPND’s transmission line (Line 26) ties into its Canadian counterpart’s pipeline system near the town of Lignite in Burke County, North Dakota. (See Exhibit A, EPND System Overview Map).

In this application, EPND is proposing to upgrade its Grenora Pump Station, which is located south of Grenora in Williams County, North Dakota. The upgrade, referred to as the Grenora Station Upgrade Project (“Project”), includes the redesign and reconfiguration of the existing Grenora Station, as more fully described in Section A.3 of this Application. The Project will also enable EPND to increase the injection capacity of its Grenora Station into Line 83 in order to transport additional Bakken production from EPND’s Grenora Pump Station to its Beaver Lodge Station and Terminal Facility in Williams County, North Dakota. All construction and work activities will be performed within the existing property boundaries of EPND’s Grenora Station, which EPND owns in fee.



A.1.b Purpose of Proposed Facilities

The purpose of this Project is to accommodate the receipt of new crude oil volumes from a new shipper-owned and operated truck-offloading facility, which will be located on property leased from EPND at its existing Grenora Pump Station site in Williams County. This Project also enables EPND to increase the injection capacity of its Grenora Pump Station from 16,800 barrels per day (“bpd”) to an annual rate of 59,670 bpd, allowing EPND to transport an incremental 42,870 bpd of Bakken Production from its Grenora Pump Station to its Beaver Lodge Station and Terminal Facility via Line 83. From Beaver Lodge, such crude oil volumes will have access to EPND’s Mainline System for further transportation to refinery and marketing centers throughout the Upper Midwest and the Midcontinent, including those connected to the Cushing, Oklahoma hub.

The Project is the most reliable, efficient, and cost effective alternative in order to meet forecasted nominations on the EPND system, as described in more detail in Section C.1.

A.2 DESCRIBE THE TYPE, SOURCE AND FINAL DESTINATION OF THE PRODUCT TO BE TRANSMITTED BY THE PROPOSED FACILITY

Type

As defined in its FERC Tariff on Rules and Regulations, EPND currently transports the following commodities within its multi-pipeline system:

US High Sweet Crude (UHC)

Source

The primary source of supply for the EPND System is production from the Williston Basin spanning Montana, North Dakota, South Dakota and Wyoming. The primary geographical sources for UHC production are those regions of Montana and North Dakota that comprise the western and central portions of the Williston Basin.



Final Destination

Today, shippers will have the ability to transport supply volumes to Clearbrook, MN, where they have access to Enbridge's Mainline System and other third-party pipelines for further transportation to a number of refineries and market hubs as described below.

Also, upon completion of EPND's Bakken Expansion Program, shippers will have access to additional export capacity to transport supply volumes north via Line 26 to the US-Canadian International Border. From that point, shippers will have access to Enbridge pipelines in Canada for further transportation to the Enbridge Mainline System at Cromer, Manitoba, which is capable of transporting 2 million barrels per day. From Enbridge's Mainline System, shippers will have access to the numerous refinery markets throughout the Upper Midwest and the Midcontinent, including those connected to the Cushing, Oklahoma hub.

A.3 SIZE AND DESIGN

A.3.a Electric Facility

Not Applicable.

A.3.b Provide a description of the size and design of the PIPELINE facility including, but not limited to, the following:

A.3.b.(1) Width of the Right of Way

Not Applicable.

A.3.b.(2) Estimated Distances Between Surface Structures

The distance between the Grenora Pump Station and the next above-ground facilities, which is the Beaver Lodge Pump Station and Terminal Facility in Williams County, is approximately 52 miles.



A.3.b.(3) Pipe Size

The station piping will have the following characteristics:

Nominal Size	Outside Diameter	Wall Thickness	API Standards	Type
4-inch	4.5 inch	0.337	API 5L Grade B	Steel
6-inch	6.625 inch	0.280	API 5L Grade B	Steel
8-inch	8.625 inch	0.322	API 5L Grade B	Steel
10-inch	10.75 inch	0.365	API 5L Grade B and X-42	Steel
12-inch	12.75 inch	0.375	API 5L Grade B	Steel
14-inch	14.00 inch	0.375	API 5L Grade B	Steel

A.3.b.(4) Approximate Length of Facility

EPND proposes to install station piping as outlined below:

Nominal Size of Pipeline	Approximate Length
4-inch	1,500
6-inch	2,400
8-inch	20
10-inch	3,300
12-inch	1,100
14-inch	10

A.3.b.(5) Maximum Design Operating Pressure and Temperature

The design pressure for the station piping is 285 psig on the suction side of the pumps, while the design pressure for the station piping is 1480 psig on the discharge side. Normal operating pressures are anticipated to be less than 150 psig on the suction side, and 1310 psi or less on the mainline pump discharge side. The operating temperature of crude oil at Grenora Station will typically range from 40° F to 65° F.



A.3.b.(6) Maximum Design Flow Rate at Grenora Station

Station Piping from new shipper Truck Off-Loading Facility to Tankage

The maximum design flow rate for each truck unloading lot is 900 barrels per hour (“bph”). With eight truck unloading lots planned, the maximum design flow rate from the truck unloading lots into the Grenora Station is 7200 bph. (Calculation: 8 shipper-owned pumping units x a maximum flow rate of 900 bph = maximum design flow rate of 7200 bph).

Injection Capacity into Line 83

As previously stated, this Project will enable EPND to increase the injection capacity of its Grenora Station into Line 83 as shown on Table 1 below.

Table 1 Grenora Station Upgrade Project Injection Capacity		
	<u>Current Capacity (bpd)</u>	<u>New Capacity (bpd)</u>
Ultimate Design Capacity¹	28,800	66,300
Ultimate Annual Capacity²	26,000	59,670
Initial Design Capacity³	18,667	66,300
Initial Annual Capacity⁴ (90%)	16,800	59,670

¹ Maximum economic expansion capacity of individual pipeline. Requires additional pumping horsepower over current design to meet this capacity

² Maximum economic expansion capacity of individual pipeline that is sustainable average daily rate per day over a year

³ Theoretical capacity

⁴ Average sustainable rate average barrels per day over a year (90% of Design Capacity)



EPND also plans to hydrotest its Line 83 in accordance with the rules and regulations of the U.S. Department of Transportation, Pipeline Hazardous Materials Safety Administration, Office of Pipeline Safety, Part 195 of Title 49 of the Code of Federal Regulations. Upon successfully completing the hydrotest, Line 83's maximum operating pressure will be increased to accommodate the increased annual injection capacity of the Grenora Pump Station. (See Table 1 for the current and new injection capacity of the Grenora Station.)

A.3.b.(7) The General Location of the Grenora Station Upgrade Project

The Project will consist of the following: (See Exhibits B.1 – B.3 for detailed mapping).

Location, Size and Design of Proposed Station Upgrade Project

Location

150th Drive, NW
Grenora, North Dakota

Legal Description

NE ¼ Section 14, Township 159 North, Range 103 West, 5th
Principal Meridian, Williams County, ND

Station Upgrades

- Two (2) New receivers (Flat Lake and Reserve incoming lines)
- New Electrical Shelter Building (ESB) to house new Variable Frequency Drives for mainline pumps
- New 10 – inch tank fill manifold
- New 12 – inch tank suction header
- Two (2) New approximate 125 HP booster pumps
- Two (2) New Coriolis mass meter assemblies
- Two (2) New approximate 1500 HP mainline pumps
- New Drag Reducing Agent (DRA) skid
- New pig launcher at station discharge
- New Sump Tank with sump pump

Tankage

- Install one (1) 40,000 barrel tank



Land Requirements

All upgrades will take place on land owned by EPND in fee.

Aerial, Topo and Plot Plan Maps of Proposed Grenora Station Upgrade

Maps are enclosed herewith as:

- Exhibit B.1 (Overall Plot Plan Map)
 - Exhibit B.1.1 (Station Plot Plan Map)
 - Exhibit B.1.2 (Facilities Plot Plan Map)
- Exhibit B.2 (Topographic Map)
- Exhibit B.3 (Aerial Map)

Construction at Site by Others

EPND will lease property to third-party shippers, who plan to construct, own and operate eight (8) truck-unloading facilities, which will include a Leased Automatic Custody Transfer (LACT) unit and an associated storage tank.

The utility company will install a new electric transformer, anticipated as 12470/4160 VAC.

A.4 TIME SCHEDULE

A.4.a Certificate of Corridor Compatibility

Expected on or before April 18, 2012.

A.4.b Route Application

Route Application was submitted in October 2011 as part of this Consolidated Application for a Certificate of Corridor Compatibility and Route Permit.

A.4.c Route Permit

Expected on or before April 18, 2012.

A.4.d Construction Start Date

EPND proposes to commence construction in April, 2012, subject to receipt of all appropriate approvals.

A.4.e Construction Complete

Estimated construction completion date is December, 2012.

A.4.f In-Service Date

Estimated in-service date is December, 2012.

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SECTION B

STUDIES

EPND defined its survey area as a 152-acre parcel in the NE $\frac{1}{4}$ of Section 14, Williams County, North Dakota. Field surveys were conducted in the Fall of 2011. Although the Project area only occupies a small section of the survey area owned by EPND (see Exhibit B.1), the entire property has been surveyed for the purposes of this corridor certificate application. EPND has also assessed a roughly one-half mile-wide “study area” associated with this parcel (measured from the perimeter of the survey area boundary) in this application.

B.1 CULTURAL RESOURCE INVESTIGATIONS

On behalf of EPND, Metcalf Archaeological Consultants (Metcalf) of Bismarck, ND conducted a Class III Cultural Resource Inventory in August 2011 on the survey area. No cultural resources were identified during the survey. Metcalf recommended a finding of “No Historic Properties Affected” as a result of the Project. A report of the survey’s methods, findings, and recommendations is included as Exhibit C.1.

In September 2011, EPND requested North Dakota State Historic Preservation Office (ND-SHPO) concurrence with the findings of the archaeological survey and Project clearance for the 152-acre parcel. The ND-SHPO responded with Project concurrence on September 14, 2011, stating that they concurred with the “No Historic Properties Affected” and “No Significant Sites Affected” determinations, provided the Project is of the nature stated, and it takes place in the plotted locations. (See Exhibit C.2 for a copy of this correspondence).

B.2 WETLAND ASSESSMENT

On behalf of EPND, in August 2011, Carlson McCain, Inc. (Carlson McCain) of Bismarck, ND, completed a wetland delineation of the survey area and identified eight wetlands within the survey boundary (see Exhibit D.1), which are summarized in Table 2, below.



Table 2

WETLAND ID.	ACREAGE	NATIONAL WETLAND INVENTORY TYPE ¹	WETLAND TYPE
1	0.39	PEMA	Depression (isolated)
2	9.58	PEMC	Intermittent Stream (connected)
3	0.86	PEMC	Depression (connected)
4	0.74	PEMC	Depression (connected)
5	0.34	PEMC	Depression (Isolated)
6	0.15	PEMA	Depression (isolated)
7	0.05	PEMA	Depression (isolated)
8	0.27	PEMA	Depression (isolated)

¹ PEMA = Palustrine, Emergent, Temporarily Flooded
 PEMC = Palustrine, Emergent, Seasonally Flooded

On behalf of EPND, in September 2011, Merjent, Inc. (Merjent) of Minneapolis, MN, submitted a request for Jurisdictional Determination to the U.S. Army Corps of Engineers (COE) - Omaha District (North Dakota Regulatory Office) for the eight delineated features listed in Table 2, above. At the time of this filing, no response has been received.

EPND has designed the Project to minimize impacts to wetlands and other drainage features. An access road off of County Highway 5 will cross one of the delineated wetland features (wetland/intermittent stream 2 in Table 2 above), resulting in minor temporary and permanent impacts (see Exhibit B.1). EPND plans to install an appropriately-sized culvert under the access road to maintain stream flow under the access road. It is estimated that less than 0.1 acre of permanent impacts and 0.5 acre of temporary impacts to this wetland/stream will occur.

As described above, EPND has initiated consultation with the COE - Omaha District to determine if the delineated wetland features described above fall within their jurisdiction. The COE has broad regulatory jurisdiction over construction activities affecting waters of the United States, such as wetlands and waterbodies, and authorizes several classes of construction projects through a Nationwide Permit (NWP) program, if a project has minimal environmental impact, and if a project can meet certain environmental compliance objectives. Should the wetland crossed by the access road fall under the jurisdiction of the COE, EPND will coordinate with the

COE to determine the appropriate permitting process. It is anticipated that the Project will be eligible for coverage under COE NWP 14 (Linear Transportation Projects), which is specifically geared towards the construction of roads, driveways, and other transportation related features, or NWP 12 (Utility Line Projects), which is geared towards construction, maintenance, and repair of utility lines, which do not result in the permanent loss of greater than 0.5 acre of waters (wetlands and waterbodies) of the United States. The issuance of NWPs is typically granted 1-3 months after submittal of an acceptable application.

As an additional measure to protect wetlands and waterbodies, EPND will implement mitigation measures as described in the Project's Environmental Mitigation Plan (EMP) attached as Exhibit E.

B.3 BIOLOGICAL RESOURCES

As part of the wetland delineations referenced in Section B.2 above, Carlson McCain also conducted a habitat assessment and raptor nest survey of the survey area. The assessments did not reveal threatened and endangered species or critical habitat areas of concern. A ground survey for tree and ground raptor nests was also conducted during the on-site evaluations, and no raptor nests were observed (see Exhibit D.1).

B.3.1 AGENCY CONSULTATIONS

In September 2011, letters were submitted to the U.S. Fish and Wildlife Service (FWS), North Dakota Game and Fish Department (ND-GFD) and North Dakota Parks and Recreation Department (ND-PRD) requesting review of the surveyed area and a one-half mile study area associated with the Project for concerns related to unique or rare wildlife species and their habitats. A summary of these consultations is provided below.

B.3.1.(a) U.S. Fish and Wildlife Service (FWS): Federally Listed Threatened and Endangered Species:

As described above in Section B.3, Carlson McCain conducted a habitat assessment and raptor nest survey of the surveyed area in August 2011. Assessments for federally listed threatened, endangered and candidate species were conducted by evaluating historic and present occurrences, and by determining if potential habitats exist within the survey area. Determinations were made

concerning direct and cumulative effects of the proposed activity on each species and their habitat.

Currently, five federally listed species have been documented in Williams County, including:

1. Gray Wolf (*Canis lupus*) - federally endangered;
2. Interior Least Tern (*Sterna antillarum*) - federally endangered;
3. Pallid Sturgeon (*Scaphirhynchus albus*) - federally endangered;
4. Piping Plover (*Charadrius melodus*) - federally threatened with designated critical habitat; and
5. Whooping Crane (*Grus americana*) - federally endangered.

A synopsis of the determinations for each of these species is included below. Suitable habitat for the interior least tern and pallid sturgeon is generally limited to the Missouri River system, which is over 40 miles from the study area. As such, there will be no effect on these species. Please refer to Exhibit D.1 for further information.

Gray Wolf (*Canis lupus*)

Gray wolves were not observed during the habitat assessment and there is no potential habitat located in the survey area. The proposed Project will have *no effect* on this species at this time.

Piping Plover (*Charadrius melodus*)

No individuals were sighted during the field habitat assessment, and there was no suitable habitat identified within the survey area. The nearest piping plover designated Critical Habitat is Twin Lakes, located approximately two miles west of the survey area in Section 16, Township 159 North, Range 103 West.

In its consultation letter to FWS, EPND outlined general mitigative measures related to piping plover. As part of pre-construction activities, EPND will conduct environmental training with the contractor and construction crews, and provide details on this species. If a piping plover is sighted within one-mile of construction activities, EPND will suspend construction at that location and contact the FWS immediately. For these reasons, the Project is *not likely to adversely affect* this species and will have *no effect* on its designated critical habitat.

Whooping Crane (*Grus americana*)

Whooping cranes may fly over, temporarily feed, or loaf in the area during spring and fall migration. Whooping cranes were not observed during the field survey; however, there is suitable habitat located within the survey area. The whooping cranes preferred habitat includes large marshy wetlands where whooping cranes are likely to roost, and croplands where cranes may feed. The survey area does include areas of isolated wetlands and some cropland areas. If individuals migrate through the Project area during construction, they will likely avoid the Project area and utilize adjacent croplands or wetland complexes.

In its consultation letter to FWS, EPND outlined general mitigative measures related to whooping crane. As part of pre-construction activities, EPND will conduct environmental training with the contractor and construction crews, and provide details on this species. If a whooping crane is sighted within one-mile of construction activities, EPND will suspend construction at that location and contact the FWS immediately. For these reasons, the proposed Project is *not likely to adversely affect* this species.

Raptors and Migratory Birds

The Project may affect raptor and migratory bird species through direct mortality, habitat degradation, and/or displacement of individual birds. These impacts are regulated in part through the Migratory Bird Treaty Act (916 USC 703-711) and the Bald and Golden Eagle Protection Act (BGEPA).

A ground survey for tree and ground raptor nests was conducted within the survey area during the on-site evaluation. No raptors or raptor nests were observed during the survey. Nesting habitat is limited to a shelterbelt associated with an active farmstead approximately 0.45 mile from the existing Grenora Station.

A copy of the above-referenced Carlson McCain report and determinations (see Exhibit D.1) and a consultation request letter requesting review of the study area were submitted to the FWS in September 2011. At the time of this filing, no response has been received.

**B.3.1.(b) North Dakota Game and Fish Department (ND-GFD):
Conservation Priority Species:**

EPND initiated consultation with the ND-GFD, requesting review of the study area for concerns related to conservation priority species and other ND-GFD interests on September 20, 2011. In an October 14, 2011 response, ND-PRD concluded that the Project will not have any significant adverse effects on wildlife or wildlife habitat, including conservation species, and also confirmed that the Project will not impact ND-GFD-administered PLOTS (Private Land Open to Sportsmen) land. ND-GFD recommended that wetlands be avoided where possible; however, if impacts cannot be avoided, suggested contacting the COE or NRCS to discuss permitting implications.

As discussed in Section B.2 above, the Project will result in less than 0.1 acre of permanent wetland impacts due to construction of an access road leading to the facility. This represents less than 1 percent of all the delineated wetlands within the survey area. EPND will install an appropriately sized culvert under the access road to maintain the natural drainage characteristics. If the delineated wetland is deemed to be within the jurisdiction of the COE, EPND will discuss with the COE whether mitigation is required. It is EPND's understanding that mitigation for permanent impacts is typically not required for projects with less than 0.1 acre of permanent impacts.

A copy of the correspondence with the ND-PRD is included herein as Exhibit F.2.

B.3.1.(c) North Dakota Parks and Recreation (ND-PRD):

EPND initiated consultation with the ND-PRD, requesting review of the study area for concerns related to species listed in the agency's Natural Heritage Inventory (NHI) database and other ND-PRD interests. In an October 7, 2011 response, ND-PRD confirmed that the study area does not affect ND-PRD managed state parks or Land and Water Conservation Fund projects. ND-PRD also reviewed their NHI biological conservation database, and determined there are no documented occurrences of any plant or animal species of concern or other significant ecological communities within an approximate one-mile radius of the Project area.

A copy of the correspondence with the ND-PRD is included herein as Exhibit F.3.

B.4 OTHER AGENCY CONSULTATIONS

In September 2011, EPND also consulted with the North Dakota Department of Health (NDDH) regarding a municipal water supply associated with the city of Grenora. A summary of this consultation is provided below.

B.4.1. North Dakota Department of Health (NDDH):

Based on a desktop review, EPND identified a municipal water supply associated with the city of Grenora. On behalf of EPND, Merjent consulted with the NDDH to determine if the city of Grenora has a defined Well Head Protection Area (WHPA) associated with its water supply. A WHPA is a protected surface and subsurface zone surrounding a well or a well field supplying a public water system. In a September 20, 2011 response, NDDH confirmed the city of Grenora has a WHPA and provided a map and shape file displaying the location. The WHPA intersects a portion of the study area; however, the WHPA is not within the survey area.

A copy of the correspondence with the NDDH is included herein as Exhibit F.4, and further discussion is provided below in Section D.2.b.



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SECTION C

NEED FOR FACILITY

C.1 AN ANALYSIS OF THE NEED FOR THE PROPOSED FACILITY BASED ON PRESENT AND PROJECTED DEMAND FOR THE PRODUCT TRANSMITTED BY THE FACILITY, INCLUDING THE MOST RECENT SYSTEM STUDIES SUPPORTING THE ANALYSIS OF THE NEED

C.1.a Planned Use and Purpose

As demand for the crude oil production from the Williston Basin of North Dakota continues to increase, so does the demand for additional pipeline capacity for crude oil transportation on the EPND System. The basis for the Grenora Station Upgrade Project is the continued and forecasted increase in drilling activities and produced crude volumes, coupled with the opportunity to provide an outlet to refineries and marketing hubs for this production. The Project continues to build upon the numerous EPND expansion projects⁵ this Commission has approved in various docketed proceedings since 2005. EPND is not proposing to increase the pipeline capacity of its mainline system in this Project, only its ability to receive and inject additional crude oil volumes through the proposed upgrades at the Grenora Pump Station.

The primary producing areas that will support the Project are Burke and Divide counties in northwestern North Dakota. Using the Enbridge Conservative Base Case, for the forecast horizon 2012 through 2025, the average production from this area is estimated to be at least 85,396 bpd with significant upside potential, and is considered more than sufficient to supply the 59,670 bpd design capacity of this Project.

⁵ In Docket No. PU-05-274, EPND's Phase 1 and 2 Expansion Projects were approved by the North Dakota Public Service Commission (ND-PSC) and placed in-service in 2005 and April 2007 respectively.
In Docket Nos. PU-06-317; PU-06-330; and PU-06-349, EPND's Phase 3, 4 and 5 Expansion Projects were approved by the ND-PSC and was fully placed in-service on January 2008.
In Docket No. PU-07-791, EPND's Phase 6 approved by the ND-PSC in July, 2008 and was fully placed in-service in January 2010.
In Docket No PU-10-612, EPND's Bakken Pipeline Project US approved by the ND-PSC in May, 2011.
In Docket No PU-10-613, EPND's Beaver Lodge Loop Project approved by the ND-PSC in May, 2011.



C.1.b Future North Dakota System Expansion(s)

EPND continually works closely with its shippers to develop a long term plan that best serves the shippers' increasing pipeline capacity requirements.

With the increasing drilling activity in the Williston Basin production area, EPND continues to receive requests for additional pipeline capacity on the western segment of its North Dakota pipeline system. EPND is responding to those requests with a number of potential future projects that are (subject to approvals) designed to meet the shippers' needs and provide access to the Enbridge mainline system at Clearbrook, MN or Line 26 north to Cromer and back to the U.S, where shippers will have numerous refinery and marketing options via Enbridge's mainline system or through other third-party pipelines.

C.2 ALTERNATIVES TO THE PROPOSED FACILITY

EPND has performed a reasonable and defensible alternative analysis that involves consideration of environmental, engineering and economic factors in a multi-disciplinary and iterative fashion. This analysis resulted in the following alternatives to the Project.

C.2.a No Action Alternative

In light of the overall increase in Williston Basin production, the shippers' requirements for increased pipeline capacity and the current apportionment that is being experienced on the EPND System, a "no action" alternative is unacceptable to EPND and its shippers.

C.2.b Trucking Alternative

Trucking is a vital part of the crude oil gathering and distribution network. However, this alternative may significantly overburden current public road capacity, especially considering that trucks will require round-trip routing. Additionally, EPND or its shippers will need to expand truck loading/unloading facilities at suitable locations to allow receipt into the EPND Beaver Lodge Station and Terminal. Pipelines have proven to be a safer and more economical alternative for transporting this volume of crude oil for these distances. The potential in-service date of additional trucking, road and off-loading capacity is not known. The reliability of this alternative in northern climates is compromised by periodic restrictions in truck traffic due to winter storms and spring road restrictions or other weather related or capacity availability restrictions.



- **a discussion of the design and the geographical area affected**

In order to transport the incremental 42,870 bpd of crude oil proposed by the Project, a fleet of trucks would be required as detailed below:

Computation of Trucking Requirements

Crude oil volumes = 42,870 bpd
Per truck capacity = 200 barrels per truck
Number of trucks required = $42,870 / 200 = 214$ trucks per day
Assume each truck requires loading, in-transit full (1/2 day), in-transit empty (1/2 day) and unloading time
Number of trucks in transit = $214 \times 1/2 \text{ day} = 107$ trucks
Number of trucks returning empty = $214 \times 1/2 \text{ day} = 107$ trucks
20% of the in-transit trucks loading and unloading = 43 trucks
Total truck requirements = $107+107+43 = 257$ trucks
(ignoring scheduled/unscheduled down time)
Number of drivers required for 1/2-day round-trip including loading/unloading = $257 \times 1 \text{ driver/truck} = 257$ drivers

In order to facilitate this operation, significant truck loading and offloading terminal facilities will have to be constructed at the Grenora and Beaver Lodge Stations. In addition, it is likely that substantial upgrades and on-going maintenance will be required (at public expense) to the connecting roadways along the entire route.

- **an estimate of the in-service date**

EPND believes that it is impossible for the required terminal facilities at both the Grenora and Beaver Lodge Stations to be constructed on the same timeline as the Grenora Station Upgrade Project, or the timeline required, to meet the production increases. Additionally, EPND does not have an estimate of the time required to acquire the trucking fleet described above, how long it would take to attract and train the associated drivers, or how extensive the roadway upgrade program will be.

- **a discussion of the method of operation**

This operation will be highly labor intensive, with a significant workforce required at both terminal locations, to allow for the



constant loading and offloading requirements. This option would require a significant driver pool to maintain the constant movement of the entire truck fleet.

- **its costs**

Based on the North Dakota Petroleum Council's "Williston Basin Crude Oil Transportation Bottleneck White Paper" dated March, 2006, the approximate transportation costs to move 42,870 bpd by truck would range from \$6.00 to \$10.00 per barrel. Using the United States Department of Labor's Consumer Products Index Inflation Calculator (<http://www.bls.gov/data/inflationcalculator.htm>), the 2011 rates to move those same barrels would range from \$6.72 to \$11.21 per barrel. Therefore, the estimated transportation costs to truck 42,870 bpd would range between approximately \$105.1 and \$175.4 million dollars per year (ignoring the cost of new vehicles and infrastructure facilities necessary).

- **its economic life**

The economic life of the trucks and loading/unloading facilities was not determined since the upgrading of the Grenora Station is a less burdensome and safer alternative.

- **its reliability**

This operation is inherently much less reliable than the Grenora Station Upgrade Project, as truck traffic is affected by weather conditions, mechanical failure, manpower (driver shortages), road maintenance or closures. Furthermore, according to the National Transportation Safety Board trucks have a significantly higher rate of accidents affecting driver and public safety than compared to pipelines.

Trucking cannot compete with pipelines in the transportation of volumes over long distances given the physical limitations of trucks and unloading facilities required to sustain operations of this nature. Therefore, this alternative was not considered further.

C.2.c Rail Alternative

Currently, there is insufficient rail tanker car capacity to transport the incremental 42,870 bpd to Beaver Lodge. The rail tanker car alternative would require the construction (by EPND or its shippers) of rail car loading and off-loading facilities. While rail tanker cars are a vital part of the short-haul distribution network for crude oil, pipelines are a safer and more economic transportation alternative. The potential in-service date of additional truck-to-rail, rail tanker car, rail line, and off-loading capacity is not known. The reliability of this alternative in northern climates is compromised by periodic restriction in truck traffic to deliver to rail due to winter storms and spring road restrictions or other weather-related or capacity availability restrictions.

- **a discussion of the design and the geographical area affected**

In order to transport 42,870 bpd of heavy oil, a fleet of rail cars would be required as detailed below:

Computation of Rail Car Requirements

Crude oil volumes = 42,870 bpd
Rail car capacity = 600 barrels per rail car
Tank cars required = $42,870/600 = 72$ rail cars per day
Estimated time to move each rail car from Grenora Station to Beaver Lodge (various carriers and through various rail assembly yards) = 1 day
Number of cars in transit = 72×1 days = 72 cars
Number of cars returning empty = 72×1 days = 72 cars
20% of the in-transit cars loading and unloading = 15 cars
Total tank car requirements = $72+72+15 = 159$ cars
(ignoring scheduled/unscheduled down time)

Approximately 159 rail cars will have to be in route each day, making the round trip between those two locations in approximately 2 days. In order to facilitate this operation, significant spur lines, rail sidings, and terminal facilities will have to be constructed at Grenora and Beaver Lodge Stations. In addition, substantial upgrades and on-going maintenance will be required to the connecting railways.



- **an estimate of the in-service date**

EPND believes that it is impossible for terminal facilities at both Grenora and Beaver Lodge Stations to be constructed on the same timeline as the Grenora Station Upgrade Project or the timeline required to meet the production increases. Additionally, EPND does not know if the number of rail cars required is available or the time that would be required to manufacture them. Moreover, EPND does not have an estimate of the time required to construct the necessary upgrades associated with the railway infrastructure.

- **a discussion of the method of operation**

This operation will be highly labor intensive, with a significant workforce required at both terminal locations to allow for the constant loading and offloading requirements and rail car operation.

- **its costs**

Based on the North Dakota Petroleum Council's "Williston Basin Crude Oil Transportation Bottleneck White Paper" dated March, 2006, the approximate transportation costs to move 42,870 bpd by rail will range from \$6.00 to \$10.00 per barrel. Using the United States Department of Labor's Consumer Products Index Inflation Calculator, (<http://www.bls.gov/data/inflationcalculator.htm>), the 2011 rates to move those same barrels would range from \$6.72 to \$11.21 per barrel. Therefore, the estimated transportation costs will range between approximately \$105.5 and \$175.4 million dollars per year (ignoring the cost of new rail cars and infrastructure facilities necessary).

- **its economic life**

The economic life of the trains and loading/unloading facilities was not determined since the upgrading of the Grenora Station is a less burdensome, more reliable, and safer alternative.

- **its reliability**

This operation is inherently much less reliable than the Grenora Station Upgrade Project. The entire operation will be subject to weather related delays, and delays caused by scheduling conflicting rail traffic.



C.2.d Alternative EPND Pipeline Route

Since EPND does not propose to install a new transportation pipeline as part of the Grenora Station Upgrade Project, no alternative EPND Pipeline route was considered.

- The in-service date for the Grenora Station Upgrade Project is December, 2012.
- The Grenora Station Upgrade Project operations will be operationally integrated with the existing EPND System.
- The cost of the Grenora Station Upgrade Project is approximately \$40 million.
- The economic life of the Grenora Station Upgrade Project for this purpose is based on a 25-year depreciation period; however, the functional life of the proposed facilities is indefinite following normal maintenance and inspection practices of the federal regulated interstate pipeline system.
- The EPND System operates year-round, round-the-clock, with the exception of planned system down-time for inspection, maintenance or repair purposes or unplanned down-time due to interruptions in receipts or refinery outages and/or operational disruptions caused by regional power outages or other reasons.

C.2.e A summary of the conclusions reached with respect to the alternative and the reason for its rejection

The objective of the Project is to provide a cost effective and efficient method to:

- receive incremental supply volumes from a shipper-owned and operated truck unloading facility;
- increase the injection capacity of the Grenora Station to inject the incremental supply volumes into EPND's mainline system;
- help reduce the current reliance on long-haul truck deliveries; and
- reduce the transportation costs borne by Williston Basin producers, allowing their savings to be immediately re-directed toward the development of the oil and gas resources in the State, resulting in additional economic benefits to North Dakota.



As proposed, this Project minimizes environmental and landowner impacts and, when integrated with the existing EPND System, provides the safest, most efficient and cost effective alternative to link the growing demand for crude oil supplies in the Midwest with increased and reliable domestic supplies from North Dakota and Montana. Thus, all other alternatives discussed herein were rejected.

C.3 STATEMENT CONCERNING DEVIATION FROM MOST RECENT 10-YEAR PLAN

EPND's currently filed 10-year plan with the ND-PSC is enclosed herein as Exhibit I. At the time of filing, EPND anticipated the need for the proposed Project as disclosed in Schedule H of this plan.



APPLICATION FOR CORRIDOR CERTIFICATE

SECTION D

LOCATION

D.1 STUDY/SURVEY AREA

As described above in Section B, EPND defined its survey area as a 152-acre parcel in the NE ¼ of Section 14, Williams County, North Dakota. Although the Project occurs only within a small section of the survey area owned by EPND (approximately 18 acres, see Exhibit B.1), the entire property was surveyed for the purposes of this corridor certificate application. EPND has also assessed a roughly one-half mile wide “study area” associated with this parcel (measured from the perimeter of the survey area boundary) in this application.

D.2 EVALUATION CRITERIA LEADING TO SITE SELECTION

Evaluation criteria as described in North Dakota Administrative Code (North Dakota Rules) Chapter 69-06-08-02 guided and governed the siting of the Project. Detailed discussions of these criteria, including descriptions, potential impacts, and mitigation measures where appropriate are provided below.

D.2.a Exclusion Areas

Exclusion Areas are areas that should be excluded in the consideration of a route for a transmission facility, or in the case of this Project, the upgrade of an existing facility. No Exclusion Areas are located within the study or survey areas. Table 3 below identifies exclusion areas that were considered for the Project.

Table 3

EXCLUSION AREA	WITHIN STUDY AREA	WITHIN SURVEY AREA
National Parks	No	No
National Memorial Parks	No	No
National Historic Sites	No	No
National Historic Landmarks	No	No
National Natural Landmarks	No	No



EXCLUSION AREA	WITHIN STUDY AREA	WITHIN SURVEY AREA
National Monuments	No	No
National Wilderness Areas	No	No
State Parks	No	No
State Historic Sites	No	No
State Monuments	No	No
State Historical Markers	No	No
State Archaeological Sites	No	No
State Nature Preserves	No	No
County Parks	No	No
County Recreational Areas	No	No
Municipal Parks	No	No
Parks Owned or Administered by Other Governmental Subdivisions	No	No
Areas Critical to the Life stages of Threatened or Endangered Animal or Plant Species	No	No
Areas Where Animals or Plant Species that Are Unique or Rare to this State Would be Irreversibly Damaged	No	No

D.2.b Avoidance Areas

Avoidance Areas shall not be considered in the routing of a transmission facility, or in the case of the proposed Project, the upgrade of an existing facility, unless there are no reasonable alternatives. No Avoidance Areas are located within the survey area; however, one avoidance area is located within the one-half mile study area. Table 4 below identifies Avoidance Areas that were considered for the Project.

Table 4

AVOIDANCE AREA	WITHIN STUDY AREA	WITHIN SURVEY AREA
National Historic Districts	No	No
National Wildlife Areas	No	No
National Wild, Scenic, or Recreational Rivers	No	No



AVOIDANCE AREA	WITHIN STUDY AREA	WITHIN SURVEY AREA
National Wildlife Refuges	No	No
National Grasslands	No	No
State Wild, Scenic, or Recreational Rivers	No	No
State Game Refuges	No	No
State Game Management Areas	No	No
State Management Areas	No	No
State Forests	No	No
State Forest Management Lands	No	No
State Grasslands	No	No
Historical Resources Which Are Not Specifically Designated as Exclusion or Avoidance Areas	No	No
Areas Which Are Geologically Unstable	No	No
Within Five Hundred Feet [152.4 Meters] of a Residence, School, or Place of Business	No	No
Reservoirs and Municipal Water Supplies	Yes	No
Water Sources for Organized Rural Water Districts	No	No
Irrigated Land	No	No
Areas of Recreational Significance Which Are Not Designated as Exclusion Areas	No	No

D.2.b.(1) Municipal Water Supplies

One municipal water supply associated with the city of Grenora was identified within the one-half-mile study area associated with the Project; however, the municipal water supply is not within the survey area of the project (see Exhibit H.1). The NDDH considers this a “Not Likely Susceptible” aquifer (based on the NDDH DRASTIC scoring model); however, the NDDH has defined a WHPA for the city water supply. As the WHPA is not located with the survey area of the Project, there are no anticipated impacts to this aquifer. Please refer to Section B.4.1 above for further information.



D.2.c Selection Criteria

Selection Criteria are those environmental resources on which the Project must have an acceptable minimum amount of impact, as determined by the ND-PSC. Table 5 below identifies Selection Criteria that were considered for the Project. A discussion of potential impacts and mitigation measures that will be implemented is provided in those instances where impacts to Selection Criteria are possible.

Table 5

SELECTION CRITERIA	POTENTIAL IMPACTS RESULTING FROM PROJECT
Agricultural Production	Minimal
Family Farms and Ranches	No
Land Suitable for Irrigation	No
Surface and Groundwater Flow Patterns	No
Noise Sensitive Areas	No
Visual Effects	Minimal
Extractive and Storage Resources	No
Wetlands	Minimal
Woodlands	No
Communication or Electric Control Facilities	No
Human Health and Safety	Potential
Animal Health and Safety	No
Plant Life	Minimal

D.2.c.(1) Agricultural Production

Based on the U.S. Geological Survey (USGS) National Land Cover Data Set (2001), approximately 93% of the survey area is comprised of an agricultural land use (see Exhibit H.2). Additionally, the wetland delineation performed by Carlson McCain

(see Exhibit D.1) in August, 2011 noted the majority of the study area is comprised of agricultural fields.

Detailed soil characteristics were identified and assessed using the Soil Survey Geographic database (SSURGO; U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), 2008). Less than 1% of the survey area is considered to be prime farmland, with just over 1% considered “prime farmland if drained.” The majority (84%) of the survey area is not considered to be prime farmland, while the remaining 14% having soils considered to be “farmland of state wide importance.” Locations of prime farmland and farmland of state wide importance soils are depicted on Exhibit H.3.

Potential temporary effects on soil resources include the loss of soil productivity due to erosion, soil mixing, or soil compaction. Soil disturbances associated with clearing, grading and excavating will expose soils to water and wind, increasing the potential for short-term erosion. During construction, the effects of erosion will be mitigated by use of silt fence and other erosion control measures as described in EPND’s EMP (see Exhibit E).

It is estimated that approximately 18 acres of farmland will be permanently converted as a result of the Project. While this farmland will be permanently taken out of production, this amount is considered to be negligible compared to the estimated 1.14 million acres of farmed land in Williams County, North Dakota (USDA 2007 Census of Agriculture).

D.2.c.(2) Visual Effects

No designated scenic outlooks or viewing areas were identified within the study area. The study area and general landscape consists primarily of agricultural fields where the line of sight is broken by rolling hills and the occasional wooded draw or shelterbelt. Additionally, the Project is located adjacent to EPND’s existing Grenora Station facilities.

Temporary visual effects will exist during active construction during which time heavy equipment, excavation/grading, and spoil piles will change the colors and textures of the landscape. The duration of visual impacts will be relatively short-term as the re-establishment of vegetation on agricultural land following construction will occur relatively fast. The only permanent impacts on visual resources would

be additional structures built in association with the upgrade of the Grenora Station. This station is already in existence, and located in rural agricultural area where the additional structures will have a negligible visual effect on adjacent areas.

D.2.c.(3) Wetlands

As identified in Section B.2, eight wetlands totaling 12.38 acres were delineated within the survey area. An access road off of County Highway 5 will cross one of the delineated wetland features (wetland/intermittent stream 2 in Table 2, above), resulting in less than 0.1 acre of permanent and 0.5 acre of temporary impacts (see Exhibit B.1). EPND plans to install an appropriately-sized culvert under the access road to maintain stream flow under the access road.

As described above, the COE is currently conducting a Jurisdictional Determination of the eight delineated wetland features identified in the survey area. If the wetland crossed by the access road falls under the jurisdiction of the COE, EPND will coordinate with the COE to determine the appropriate permitting process. It is anticipated that the Project will be eligible for coverage under COE NWP 14 (Linear Transportation Projects), which is specifically geared towards the construction of roads, driveways, and other transportation related features, or NWP 12 (Utility Line Projects), which is geared towards construction, maintenance and repair of utility lines, which do not result in the permanent loss of greater than 0.5 acre of waters (wetlands and waterbodies) of the United States. Issuance of NWPs is typically granted 1-3 months after submittal of an administratively complete application.

As an additional measure to protect wetlands and waterbodies, EPND will implement mitigation measures as described in the Project's EMP attached as Exhibit E.

D.2.c.(4) Human Health and Safety

Despite its excellent safety record, the transportation of crude oil involves some risk to the public. Perhaps the most obvious risk to human health is the potential for fire in the event of an accident and subsequent release. Toxic exposure from crude oil through skin contact, ingestion, or vapor inhalation can also be a risk from exposure to significant quantities or in confined spaces.



EPND will design, construct, test, operate, and maintain the Project in accordance with all applicable laws and standards. The U.S. Department of Transportation's pipeline standards are published in Parts 194 and 195 of Title 49 of the Code of Federal Regulations. The regulations are intended to ensure adequate protection of the public and to prevent accidents and failures. Part 195 specifically addresses petroleum pipeline safety issues. It specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion. Part 194 prescribes emergency planning to prepare for prompt shutdown, containment and cleanup to minimize the effects of a pipeline release, should one occur

D.2.c.(5) Plant Life

According to the Carlson McCain wetland delineation and habitat assessment referenced above (see Exhibit D.1), the majority of the survey area is comprised of agricultural land (planted in wheat at the time of survey), with scattered wetlands on site.

Approximately 18 acres of agricultural land would be permanently converted to industrial use. No species of concern, rare or unique species, or critical habitat were observed during the field assessment, and long-term impacts to plant life are considered negligible.



D.2.d Policy Criteria

Policy criteria are those factors which are positively affected by the Project that may lead the Commission to give preference to an applicant. These factors are discussed below.

D.2.d.(1) Location and Design

EPND has designed the Project to maximize the use of the existing Grenora Station facilities.

D.2.d.(2) Training and Utilization of Available Labor in this State for the General and Specialized Skills Required

The number of construction workers that may be hired locally during construction may vary depending on the qualified contractor selected for the Project. Pipeline and station construction is a specialized market and it is unlikely that there are qualified local pipeline contractors in the immediate vicinity capable of completing the Project. If a non-local contractor is awarded this Project, it is likely that up to 75 percent of the workers may be non-local. The remaining 25 percent may be hired from the local population currently residing in nearby areas of North Dakota.

EPND does not anticipate hiring any permanent employees to operate the Grenora Station. Operation of this facility will be managed by EPND's existing workforce.

D.2.d.(3) Economies of Construction and Operation

Crude oil and natural gas are North Dakota's leading mineral products. North Dakota is the fourth largest producer of crude oil in the country. The Project will boost the State's economy and allow the State to capitalize on tax revenue gathered from increased production and extraction taxes.

The State and local economies will also benefit during construction from the temporary hiring of local construction workers, and from a relatively large-scale, temporary influx of non-local construction workers. Unemployment in the area would see a temporary drop, and payroll taxes would temporarily rise.



Local businesses will benefit from the demand for goods and services generated by the temporary workforce's need for food and lodging. In addition, EPND will purchase some of the materials necessary for construction of the Project locally. EPND estimates that local purchases made for construction of the Project will primarily include consumables, fuel, equipment rental, and miscellaneous construction-related materials (e.g., office supplies).

The current North Dakota State property tax paid by EPND is approximately \$2.1 million. The total assessed value resulting from the Project will increase the estimated state taxes by approximately \$437,800.

D.2.d.(4) A Commitment of a Portion of the Transmitted Product for Use in this State

EPND does not own any of the crude oil in its system, and, as a common carrier pipeline, does not determine the destinations for the products transported by its system. EPND's business is to provide transportation service to its customers as a common carrier, and to receive a fee for that service pursuant to tariffs authorized by the Federal Energy Regulatory Commission (FERC) pursuant to the Interstate Commerce Act.

D.2.d.(5) The Coordination of Facilities

As previously mentioned, EPND has designed the Project to maximize use of the existing Grenora Station facilities and site to minimize environmental impacts to the greatest extent possible.

D.2.d.(6) Monitoring of Impacts

EPND is committed to protecting the environment and complying with all applicable environmental laws, regulations, and standards. EPND is proposing to implement environmental training and will designate an environmental representative to oversee the Project and to ensure and document environmental compliance throughout the course of the Project. Please refer to the Project EMP (see Exhibit E) for further details.



D.2.d.(6)(i) Environmental Training

To communicate the Project's environmental requirements to Project personnel, EPND will require environmental training of all Project personnel prior to construction. EPND will:

- require environmental training of all personnel (both contractor and EPND) visiting or working at the job site;
- require everyone who attends training to sign an acknowledgement form and be issued, as a proof-of-training, a hardhat sticker; and
- require all personnel to display a hardhat sticker when on a job site or dismiss personnel from the job site until it is obtained through completion of training.

D.2.d.(6)(ii) Environmental Monitoring

Environmental monitoring, in the form of ongoing site inspection, will be conducted during and following construction. Contract specifications will incorporate environmental protection and mitigation measures required by regulation, EPND specifications or environmental permits. Contractors will be expected to implement these measures in the field. Contractor training and project orientation will also be provided by EPND.

Environmental data has been assessed, (specifically cultural resources, wetlands, and protected species), as described in Section B of this application. EPND will continue to work with appropriate regulatory agencies and will continue to gather comprehensive information during the permitting process.

D.2.d.(7) Utilization of Existing and Proposed Rights-of-Way and Corridors

As previously mentioned, EPND has designed the Project to maximize use of the existing Grenora Station facilities and property to minimize environmental impacts to the greatest extent possible.

D.3 RELATIVE VALUE OF EVALUATION CRITERION

The Project involves the upgrade of EPND's existing Grenora Station. The criteria evaluated in Section D.4 were considered in the design of the proposed upgrade facilities.

D.4 CRITERIA TO BE EVALUATED

- Exclusion Areas
- Avoidance Areas
- Selection Criteria
- Policy Criteria
- Design and Construction Limitations
- Economic Considerations

Complete descriptions, potential impacts, and mitigation measures relevant to the six criteria cited above are provided in Section D.2.

D.5 GENERAL MITIGATIVE MEASURES TO BE TAKEN

Mitigation measures to minimize adverse impacts of the Project are identified throughout this document. In addition, EPND has developed an EMP for this Project (see Exhibit E). The EMP provides a more detailed discussion of the guidelines and mitigation measures that EPND will implement throughout the duration of this Project. It was developed based on EPND's corporate experience implementing best management practices during construction.

In addition, EPND has developed a Spill Prevention, Containment and Control Plan (SPCCP) that describes planning, prevention and control measures to minimize impacts of Project-related spills. (see Exhibit G). The EMP and SPCCP are comprehensive, controlling documents that will be included in contract specifications.

D.6 QUALIFICATIONS OF PERSONS CONTRIBUTING TO THE STUDY

D.6.a Sara Ploetz

Environmental Analyst II, Enbridge Major Projects (US)

Degree: BA, Environmental Studies, University of Minnesota-Duluth, Duluth, Minnesota

Experience: 5 years of experience in environmental and regulatory permitting and construction oversight compliance

D.6.b Paul Hartzheim

Senior Analyst, Merjent, Inc.

Degree: B.S., Environmental Science (Hydrology emphasis), University of Minnesota, Twin Cities

M.S., Water Resources Science (pending), University of Minnesota, Twin Cities

Experience: 7 years of experience in environmental and regulatory compliance

Other Training and Licenses: Design of Construction Stormwater Pollution Prevention Plans, Construction Installer – University of Minnesota Erosion and Stormwater Management Certification Program

D.6.c Paul Meneghini

Supervisor, Major Projects (US)

Degree: BS, Civil Engineering, Michigan Technological University, Houghton, Michigan. MBA, Environmental Management, University of St. Thomas, St. Paul, Minnesota

Experience: 16 years of experience in environmental and regulatory permitting and construction oversight compliance

Other Training and Licenses: Professional Engineer – Minnesota

D.7 MAPS

D.7.a Map of Evaluation Criteria within Study Area

EPND is enclosing herewith as Exhibits B.1, B.1.1, and B.1.2 certain plot plans showing the location of the proposed station piping and related pumping and metering facilities within the Grenora Station yard as described in Section A. Also, EPND encloses herein as Exhibits B.2 and B.3, a topographic map and aerial map showing the location of the Project.

D.7.b Mylar Maps of Study Area

Mylar maps have not been included with this application because this map producing process is no longer in use.