DOE/EIS-0399

Federal Draft Environmental Impact Statement

and

State of Montana Supplemental Draft Environmental Impact Statement

for the

Montana Alberta Tie Ltd. (MATL) 230-kV Transmission Line

VOLUME I

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United States
Department of Energy

State of Montana
Department of Environmental Quality

COVER SHEET

Responsible Agencies: U.S. Department of Energy (DOE) and Montana Department of Environmental Quality (DEQ) are co-lead agencies; the Bureau of Land Management (BLM), U.S. Department of the Interior, is a cooperating agency.

Title: Federal Draft Environmental Impact Statement and State of Montana Supplemental Draft Environmental Impact Statement for the Montana Alberta Tie Ltd. (MATL) 230-kV Transmission Line (DOE/EIS-0399)

Location: Cascade, Teton, Chouteau, Pondera, Toole, and Glacier Counties, Montana.

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Comments: For the convenience of commentors, the Montana DEQ has agreed to receive all comments on this document and to provide them to DOE for consideration. Comments may be submitted to Tom Ring at the above address or via electronic mail at matl@mt.gov.

Abstract: MATL proposes to construct and operate a merchant 230-kV transmission line between Great Falls, Montana, and Lethbridge, Alberta, that would cross the U.S.-Canada border north of Cut Bank, Montana. The transmission line would transmit 300 megawatts (MW) of electric power south and 300 MW north. In order to build and operate the line, MATL must first obtain a Presidential permit from DOE to cross the U.S.-Canada border, a certificate of compliance from the Montana DEQ to construct the line in Montana, and a right-of- way grant from the BLM to cross any BLM-administered lands.

In March 2007, DOE and DEQ prepared a joint document that was a Draft Environmental Assessment for DOE and a Draft EIS for DEQ. Based largely on the public comments received on the March 2007 document, DOE determined that an EIS was the appropriate level of review. For the same reasons, DEQ decided to prepare a supplement to its Draft EIS. The Notice of Intent to prepare this Federal Draft EIS was published on June 7, 2007 (72 FR 31569).

This EIS analyzes the "No Action" alternative, three alternative transmission line alignments, and 11 local routing options. This EIS will be used by DOE, DEQ, and BLM to ensure that they have the environmental information needed to render informed decisions.

Comment Period: The agencies will prepare a Final EIS after considering all comments received or postmarked during the 45-day public comment period that will begin when the U.S. Environmental Protection Agency publishes a Notice of Availability of this Draft EIS in the *Federal Register*. The agencies will consider late comments to the extent practicable. Locations and times for public hearings will be announced in the *Federal Register* as well as in local media. The Draft EIS will be available on DOE's NEPA website at www.eh.doe.gov/nepa/documentspub.html.

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Summary

S.1 Introduction

This document is both a State of Montana Supplemental Draft Environmental Impact Statement (EIS) and a U.S. Department of Energy (DOE) Federal Draft EIS (referred to herein as the Draft EIS for both state and federal purposes) prepared for the United States portion of the proposed Montana Alberta Tie Ltd. (MATL) 230-kilovolt (kV) transmission line.

MATL has proposed to construct an international 230-kV alternating current merchant (private) transmission line that would originate at an existing NorthWestern Energy (NWE) 230-kV switch yard at Great Falls, Montana, and extend north to a new substation to be constructed northeast of Lethbridge, Alberta, crossing the U.S.-Canada international border north of Cut Bank, Montana (proposed Project). Approximately 130 miles of the 203-mile transmission line are proposed to be constructed in the U.S. The line would be constructed and owned by MATL, a private Canadian corporation owned by Tonbridge Power. The proposed line would be part of the Western Interconnection[1] (western grid), and a phase shifting transformer would be installed at the substation near Lethbridge to control the direction of power flows on the line. In order to develop the proposed Project, MATL must obtain Federal and State authorizations.

MATL has submitted an application for a certificate of compliance (certificate) to the Montana Department of Environmental Quality (DEQ) under the Montana Major Facility Siting Act (MFSA), (75-20-101, et seq., Montana Code Annotated [MCA]). MATL has also applied to DOE for a Presidential permit (permit) to construct, operate, maintain, and connect facilities for the transmission of electric energy at the U.S.-Canada international border and to the U.S. Bureau of Land Management (BLM) for a right-of-way (ROW) grant for Transportation and Utility Systems and Facilities on Federal Land. MATL must receive all three authorizations before it can implement the proposed Project. In response to the application for a certificate, DEQ must prepare a report, conduct an environmental review, and issue an approval before construction may begin. These are required by the Montana Environmental Policy Act (MEPA) and MFSA. The DOE and BLM actions also require an environmental review conducted in accordance with the National Environmental Policy Act (NEPA).

1 While the power system in North America is commonly referred to as "the grid," there are actually three distinct power grids or "interconnections." The Eastern Interconnection includes the eastern two-thirds of the continental United States and Canada from Saskatchewan east to the Maritime Provinces. The Western Interconnection includes the western third of the continental United States (excluding Alaska), the Canadian provinces of Alberta and British Columbia, and a portion of Baja California Norte, Mexico. The third interconnection comprises most of the State of Texas. The three interconnections are electrically independent from each other except for a few small direct current transmission lines that link them.

S.2 Purpose and Benefit to the State of Montana

The proposed MATL transmission line would connect the Montana electric system with the Alberta electric system, provide access to potential markets for new and existing power generation facilities in the vicinity of the proposed transmission line, and improve transmission access to markets seeking new energy resources. Expected benefits of the proposed Project are summarized below.

S.2.1 Benefits to Electricity Generators and Consumers in Montana

The proposed transmission line would have the capacity to carry up to 300 megawatt (MW) of electric power north and 300 MW south for a total capacity of up to 600 MW. However, due to constraints on the current system where the MATL line would tie in at Great Falls, the full capacity of 300 MW to the south may not be realized unless additional upgrades are made to the transmission system south of Great Falls. The added transmission capacity from the proposed MATL transmission line could support a modest increase in new power generation in Montana. While new generation higher than 600 MW would need more transmission capacity than MATL's proposed Project could provide the construction and operation of the proposed Project would provide opportunities for development of smaller energy generation projects of up to 600 MW, such as wind energy, in Montana. Currently, MATL has sold all the "capacity" of the line to potential wind farms. The development of wind farms along the MATL line is considered to be a reasonably foreseeable future action under federal law and is analyzed under the cumulative impacts.

Additional expected benefits to Montana generators and consumers include: additional connection with markets that demand energy; additional wholesale electricity purchasing options for Montana utilities, which could result in lower electricity rates due to an increase in supplier competition; and increased opportunities for western grid optimization during high Montana export and low Alberta-to-British Columbia export scenarios.

S.2.2 Benefits to Existing Transmission Systems

A modified transmission system, including a tie line between Montana and Alberta, may also result in benefits to transmission system operators whose service areas include Montana and to utilities that provide transmission service within the state. A modified transmission system could provide more options for power routing within Montana, increase energy transactions between Montana and Alberta, and allow for easier balancing of energy surpluses and shortages within and between balancing authority areas. Because tie lines are able to connect with adjacent electric systems, different generation resources can combine to provide a level of reliability that one jurisdiction

could not otherwise afford to provide if that jurisdiction had to cover the same resources independently. The MATL line could also create another opportunity for Montana's largest privately owned transmission and distribution utility, NWE, to obtain regulating reserves for its transmission system control area. Regulating reserves are likely to become increasingly important as more wind energy is built in NWE's jurisdiction.

S.2.3 Benefits as Stated by the Applicant

The MATL transmission line would be a merchant line, the primary purpose of which is to financially benefit the owner/operators. The MATL application for certification described the following benefits to MATL, the U.S., and Canada:

> *The Project would be the United States' first power transmission interconnection with Alberta and is expected to facilitate development of additional sources of generation (e.g., windfarms both in northern Montana, and southern Alberta), and improve transmission system reliability in Montana, Alberta, and on a regional basis in both the U.S. and Canada. In addition, the Project would promote increased trade in electrical energy across the international border, and provide a transmission route to balance energy surplus/shortage situations in an efficient and economic manner.*

In addition, MATL asserts that system stability studies conducted under the direction of the Western Electricity Coordinating Council Peer Review Group indicate that the proposed Project would not adversely affect transmission system stability (Tonbridge Power, Inc. 2007).

The proposed Project is needed to provide transmission capacity between Lethbridge and Great Falls. There is currently no direct high voltage power transmission connection between Alberta and Montana. Although additional capacity is not needed to provide power to Montana customers, additional capacity would allow increased electricity trading between Alberta and Montana and could facilitate development of wind farms or other generation facilities in the vicinity of the northern part of the proposed transmission line.

Because Montana makes more electricity than it consumes, to be economically viable, any new generation resources in Montana must offer competitive pricing and have adequate transmission access to compete in out-of-state markets or replace an existing supplier choosing to take higher profits by selling out of state. Either way, additional transmission capacity is not needed to serve Montana customers, but it is essential for the viability of new generation enterprises (DEQ 2004).

This line could support a modest increase of new electricity generators by connecting them to regional electric systems and thus potentially to electricity markets. The proposed line would be capable of shipping up to 300 MW of power north and 300 MW south at the same time. The amount of new generation that would be able to be shipped south into Montana by MATL is currently unknown due to transmission constraints south of Great Falls, which is the southern terminus of the MATL line. To the extent that southerly electrical flows on the MATL transmission line are constrained, this would reduce MATL's ability to ship power from additional generators. It also may result in more electricity flowing from Montana into Alberta than from Alberta into Montana.

S.3 General DOE, MFSA, NEPA/MEPA, and BLM Requirements

MEPA requires that decision makers consider the effects of their actions on the human environment. MFSA requires that need, environmental effects, costs, electric reliability and other factors are considered before making a decision. State agencies must inform the public of the decision making process and seek participation in the process. Similarly, NEPA requires that Federal decision makers be fully informed of the potential environmental consequences of their agency's proposed actions, provide an opportunity for public participation in the environmental review process, and document the reasons for their decisions. The information contained in this Draft EIS will provide a basis for DEQ to make findings required for certification and for federal agencies to determine whether it is in the public interest to grant a Presidential permit, and BLM to grant a ROW. DEQ, DOE, and the BLM will use this information to decide which alternative(s) could be implemented and which mitigation measures, if any, would be appropriate for inclusion as a condition of the certificate, permit, or ROW grant. DEQ, DOE, and BLM will document their decisions in separate Records of Decision.

S.3.1 Purpose and Need for DOE Action

DOE has the responsibility for implementing Executive Order (E.O.) 10485 (September 9, 1953), as amended by E.O. 12038 (February 7, 1978), which requires the issuance of a Presidential permit for the construction, operation, maintenance, and connection of electric transmission facilities at the United States international border. DOE may issue the permit if it determines the project to be consistent with the public interest and after obtaining favorable recommendations from the U.S. Departments of State and Defense. In determining if a proposed Project is consistent with the public interest, DOE considers:

1. Potential environmental impacts in accordance with NEPA and Council on Environmental Quality (CEQ) and DOE implementing regulations at 40 Code of Federal Regulations (CFR) Parts 1500-1508 and 10 CFR Part 1021, respectively;

2. The proposed project's impact on electric reliability, that is whether the proposed Project would adversely affect the operation of the U.S. electric power supply system under normal and contingency conditions; and

3. Any other factors that DOE may consider relevant to the public interest.

DOE will consider this EIS in determining whether to grant a Presidential permit to MATL. DOE's action responds to MATL's request for a Presidential permit.

S.3.2 DEQ MFSA Requirements

Under MFSA, DEQ requires a certificate of compliance for construction of electric transmission lines defined as facilities. The purposes of MFSA are to: (1) ensure the protection of the state's environmental resources; (2) ensure the consideration of socioeconomic impacts; (3) provide citizens with an opportunity to participate in facility siting decisions; and (4) establish a coordinated and efficient method for the processing of all authorizations required for regulated facilities. DEQ must find that the selected alternative meets the set of criteria listed in 75-20-301, MCA, and applicable administrative rules to be eligible for transmission line certification.

DEQ would approve a transmission line facility as proposed or as modified or an alternative to the proposed facility if it finds and determines:

- the need for the facility;
- the nature of probable environmental impacts;
- that the facility minimizes adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives;
- what part, if any, would be located underground;
- the facility is consistent with regional plans for expansion of the appropriate grid of the utility systems serving the state and interconnected utility systems;
- the facility would serve the interests of utility system economy and reliability;
- that the location of the proposed facility conforms to applicable state and local laws;
- that the facility would serve the public interest, convenience, and necessity;
- that DEQ has issued all necessary decisions, opinions, orders, certifications, and permits; and,

- that the use of public lands for location of the facility was evaluated, and public lands were selected whenever their use is as economically practicable as the use of private lands (75-20-301[1], MCA).

S.3.3 BLM Requirements

BLM has responsibility to issue ROW grants for electric transmission lines on BLM-administered lands in accordance with the Federal Land Policy and Management Act of 1976 and regulations at 43 CFR Part 2800.

A ROW grant provides for the construction, operation, maintenance, and termination of a specific project for a specific period of time. Before issuing a ROW grant, BLM will:

- complete a NEPA analysis or approve a previously completed NEPA analysis;
- determine whether the project complies with Federal and State laws and land use plans;
- consult with other governmental entities;
- hold public meetings if sufficient public interest exists; and
- take any other action necessary to fully evaluate and decide whether to approve or deny the application.

It is BLM's policy to encourage proponents to locate projects within designated or existing ROW corridors to the maximum extent feasible. However, no designated or existing ROW corridor is present on approximately 0.3 mile of BLM land that would be crossed.

S.3.4 NEPA/MEPA Process

Initially, the DOE considered an environmental assessment (EA) to be the appropriate level of review under NEPA for the proposed Project while DEQ considered the appropriate level of review for MEPA to be an EIS analysis. DOE issued a "Notice of Intent to Prepare an Environmental Assessment and to Conduct Public Scoping Meetings and Notice of Floodplain and Wetlands Involvement; Montana Alberta Tie, Ltd." in the *Federal Register* on November 18, 2005 (70 FR 69962). In addition, DOE mailed a copy of the notice to each owner of land within and adjacent to the MATL-proposed corridor. Names were obtained from Montana land ownership records.

DEQ and DOE hosted public meetings in December 2005 and DEQ hosted a public meeting in June 2006. At these meetings the public was asked to identify issues and concerns to be addressed during the review. During each meeting, MATL and DEQ representatives presented briefings. Maps and other information were available for review, and representatives from each agency were available to discuss the project, answer questions, and receive public comments.

Meeting dates and locations were:

- Conrad on December 5, 2005
- Great Falls on December 6, 2005
- Cut Bank on December 7, 2005
- Cut Bank on June 26, 2006

In March 2007, the agencies published a document titled *Draft Environmental Impact Statement for the Montana –Alberta Tie Ltd. (MATL) 230-kV Transmission Line* that served as a Draft EIS for DEQ and an EA for DOE (March 2007 document). In order to receive public comments, DEQ and DOE hosted three public hearings after the March 2007 document was issued:

- Conrad on March 27, 2007
- Cut Bank on March 28, 2007
- Great Falls on March 29, 2007

Based on comments received on the March 2007 document relating to land use and potential effects on farming, DOE determined an EIS to be the appropriate NEPA compliance document. Accordingly, on June 7, 2007, DOE published a Notice of Intent to Prepare an EIS and to Conduct Scoping in the *Federal Register* (72 FR 31569) and invited additional comments for a 30-day period. Throughout the scoping processes, stakeholders submitted comments via letters, phone calls, and emails.

DEQ decided to prepare this Supplemental Draft EIS to address issues raised in comments on the March 2007 document. Comments received on that document indicated additional analysis was needed to describe the costs of farming around the proposed structures and to compare these costs to the additional costs associated with alternative locations for the line. In addition, substantial changes to state tax law were enacted during Montana's May 2007 special legislative session which changed the analysis of socioeconomic impacts.

Under MFSA, the Montana Department of Transportation (MDT); Montana Department of Natural Resources and Conservation (DNRC); Montana Fish, Wildlife and Parks (FWP); Montana Department of Revenue; and the Montana Public Service Commission are required to report to DEQ information related to the impact of the proposed project on each agency's area of expertise. The report may include opinions on the advisability of granting, denying, or modifying the certificate (75-20-216[6], MCA). Other agencies having interest or responsibility in the project approval process include the Montana State Historic Preservation Office (SHPO), U.S. Department of Agriculture Farm Service Agency, and the U.S. Fish and Wildlife Service.

Based on comments received from the participating agencies and the public, the following issues and concerns were identified:

(1) impacts on farming, ranching, and other land uses such as difficulties and hindrances of farming and spraying around the transmission line structures, potential for interference with Differential Global Positioning System (DGPS)-guided farm equipment, potential for noxious weed growth, interference with existing and future pivot or mechanical irrigation systems, and additional fencing needs;

(2) impacts on protected, threatened, endangered, special status, and sensitive animal and plant species and their critical habitats, such as increased perch opportunities for birds of prey that could result in increased predation on species such as the swift fox and sharp-tailed grouse, disturbance of rare plant species, interference with migratory and feeding flight paths of waterfowl, avian mortality from bird strikes, and potential impacts on critical wildlife habitats;

(3) impacts on floodplains and wetlands, such as size and degree of impacts on known and delineated floodplains, wetlands, waters of the U.S., and other special aquatic sites;

(4) impacts on cultural and historic resources including potential disturbance of Native American settlements and religious sites;

(5) impacts on human health and safety related to minimum ground clearance of the line, corona effects (including audible noise and radio and television interference), and other electromagnetic field effects;

(6) impacts on air, soil, and water, such as soil erosion and resultant sedimentation to surface water, mass movement of unstable geologic materials and soils, reclamation constraints, and impacts on existing air quality;

(7) visual impacts to homes, historic homesteads, and tribal landscapes;

(8) socioeconomic impacts to taxes and disturbance of residential property in Cascade, Teton, Chouteau, Pondera, Toole, and Glacier counties from the construction and operation of the line; and

(9) impacts from development of wind or other generation projects that could occur as reasonably foreseeable future actions.

On September 6, 2007, DOE invited the BLM to participate as a cooperating agency in the preparation of the EIS. DOE requested BLM's involvement to address BLM's authority to approve MATL's request for a ROW grant and the proposed Project's relationship to relevant BLM land use plans. The BLM accepted the invitation to be a cooperating agency on October 12, 2007.

Following publication of this Draft EIS, the agencies will hold a 45-day comment period during which the public is invited to submit comments. Also during this time, the agencies will hold additional public hearings.

Following the comment period, the agencies will analyze the comments received and will include their responses in the Final EIS. The agencies will use the Final EIS in their respective decision making processes. Federal agency decisions will be issued subsequent to the Final EIS, in the form of a Record of Decision for each agency or as a letter of concurrence, no sooner than 30 days after the Final EIS is available. In the case of DEQ, a decision on whether to issue a certificate of compliance could be timed to coincide with the decisions of the Federal agencies.

S.4 Alternatives Description

This Draft EIS evaluates the proposed Project, three other alternatives, and several local routing options. The No Action alternative, designated Alternative 1, reflects the status quo and serves as a benchmark against which the proposed Project and other alternative actions can be evaluated. The proposed Project is Alternative 2 (**Figure S-1**).[2] Alternative 3 was developed by MATL in response to a single siting criterion under MFSA that gives consideration to paralleling existing utility corridors. Alternative 4 describes an additional alignment (**Figure S-1**) that was developed based on comments and issues raised during the scoping process. In addition, 11 possible local routing options were developed.

2 *Throughout this EIS, many references are made to the Project study area and analysis area. The Project **study area** is the area that includes the proposed and alternative alignments and areas where roads may be built or improved. The study area was defined by MATL in its MFSA application to DEQ. The **analysis area** is the area evaluated for each resource. Different resources have different analysis areas. For some resources, the analysis area is the entire study area. For other resources, it may be a smaller area defined by the potential extent of impacts or a larger region defined by the units (for example, counties) for which relevant data are available.*

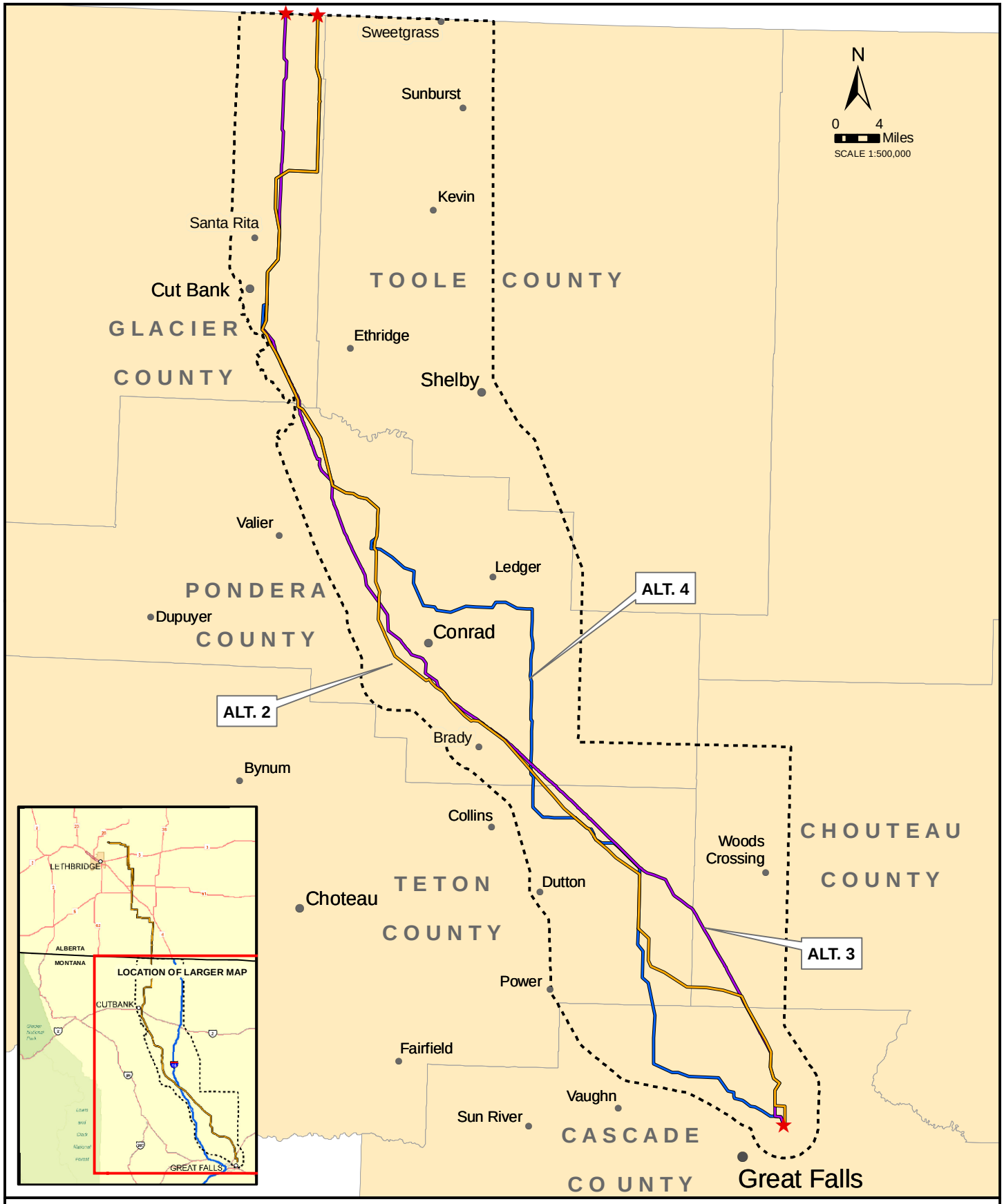


FIGURE S-1
PROJECT STUDY AREA

LEGEND

- ALT2 - ALIGNMENT
- ALT3 - ALIGNMENT
- ALT4 - ALIGNMENT
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE FigS-1_MATL_Project_Study_Area_012408.mxd

These local routing options, which could apply to Alternative 2 and in some instances to Alternative 4, were based on landowner or MATL input and comments on the March 2007 document. The agencies have not identified a preferred alternative.

S.4.1 Details Common to All Action Alternatives

Two types of transmission line support structures would be used: H-frame structures made of laminated or round wood poles and metal monopoles (**Figure S-2**). The typical span between structures of either type (ruling span) would be about 800 feet, but could range from 500 feet to 1,600 feet. Approximately six to seven (average of 6.6) structures per mile would be required for an 800-foot ruling span.

Either type of support structure would incorporate 230-kV design standard synthetic insulators, hardware, and ground wires to provide nearly corona-free operation, as well as reduce audible noise and radio and television interference. Ground clearance under the conductors for either type of support structure would be a minimum of 21.2 feet. MATL would be required to comply with requirements of the National Electric Safety Code. Spacing between the two poles of a typical 65-foot high H-frame structure would be about 23 feet. A typical monopole would be about 90 feet high.

MATL would install bird strike diverters or similar warning devices in high risk areas such as lakes, river crossings, wildlife refuge areas, and high ridge crossings. MATL would comply with appropriate regulations of the Federal Aviation Administration (FAA) and install FAA-recommended colored aerial markers for aviation safety at river crossings. In addition aerial markers would be installed at major pipeline crossings as determined by consultation with pipeline companies.

MATL proposes to construct a new substation on farmland or range/pasture land approximately 10 miles south of Cut Bank at a location next to the site where Naturener USA has proposed to build the McCormick Ranch wind park. The approximate location of the substation would be in the southeast quarter of Sec. 27 T32N R5W. The interconnection at the Great Falls switch yard would require NWE to enlarge the switch yard to accommodate the MATL tie line and other proposed lines. The expanded Great Falls switch yard would be located on farmland or range/pasture land. MATL would submit a copy of an executed interconnection agreement with NWE to the agencies as an addendum to the MFSA application, if such an agreement becomes valid. It is unlikely the line would be built unless a valid interconnection agreement is obtained.

MATL anticipates only minimum development of access roads to construct, operate, and maintain the line because most of the Project ROW would be accessed from public roads, existing two-track roads (unmaintained trails), and farm fields. MATL does not anticipate maintenance of these access points with the exception of certain gate installations.

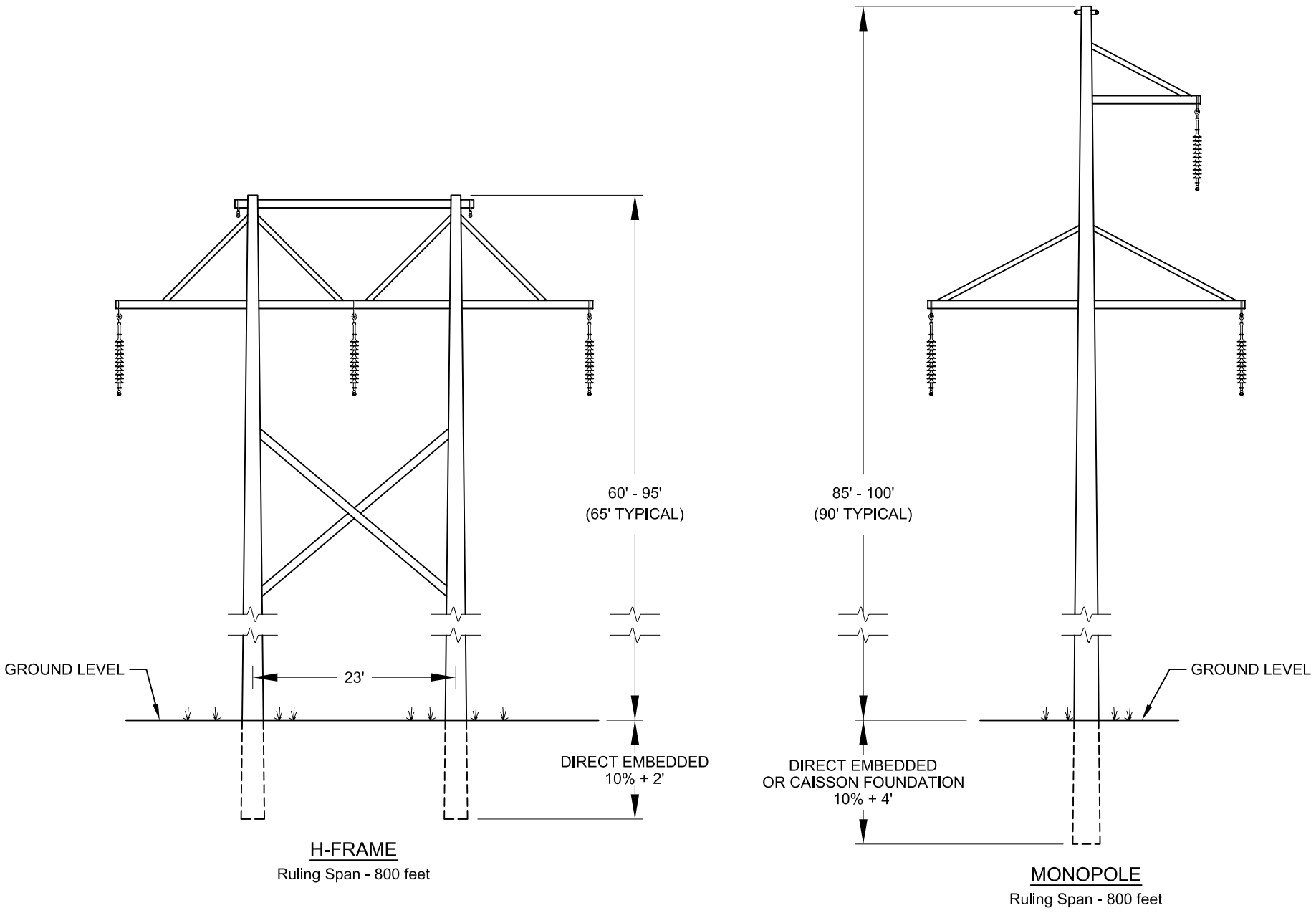


FIGURE S-2
PROPOSED MATL POWERLINE
TYPICAL SUPPORT STRUCTURES

Right-Of-Way Width - 45 ft
Safety Zone Width - 30 ft on each side of ROW

Figure S-2_Typical Support Structures.dwg - DWH - 01/22/2008

Construction is anticipated to take 4 to 6 months to complete. A summary of construction tasks is included in **Table S-1**. Additional tasks would include the following:

- Pre-Construction: Environmental permitting, cultural resource clearance, final transmission structure siting, engineering design, land procurement, various utility studies, and major procurement.
- Surveying: survey control, alignment centerline location, and profile surveys. Light Detection and Ranging (LIDAR) would be used to provide much of this information. LIDAR is an airborne laser mapping technology that directly measures the shape of the earth's surface under the aircraft. LIDAR generates wide-area elevation information that can be used to make models showing details such as buildings, trees, and power lines.
- Geotechnical Survey: Investigations would be completed at selected key locations to establish foundation requirements. The geotechnical information is used to reduce problems during erection of the structures and assist with the cost estimate and bidding process for the project.
- Access Planning and Preparation: Crews would gain access primarily from existing public roads and trails as well as within the transmission line ROW. Graded surface access roads are planned for a few steep hillsides. Existing roads and trails would be left in comparable or better condition than before construction or to those conditions specified by landowners during easement lease negotiations.

  Gates would be installed where fences cross the ROW. Locks would be installed at landowner's request. Gates not in use would be closed but not locked unless requested by the landowner.

- Delivery and Assembly: Structure components, including poles, X-braces, cross-arms, insulators, and hardware for structures would be delivered and assembled.

  For H-frame structures poles would be set directly in holes and backfilled with compacted native soil or gravel. Any excess soil would be evenly regraded around the structure or hauled off site, depending on the landowner's preference. At heavy angled and dead-end structures, cast-in-place concrete footings would be installed.

  For monopoles after the pole is set in the hole, cement would be used, instead of soil, to backfill within approximately 1 foot of the soil surface. The salvaged topsoil material would be replaced on top of the cement. Any excess soil would be evenly regraded around the structure or hauled off site, depending on the landowner's preference.

TABLE S-1
SUMMARY OF CONSTRUCTION TASKS AND REQUIRED RESOURCES AND EQUIPMENT

Task	Crew Size	Typical Wage Level ($/hour)[a]	Equipment
Access Fencing/Reclamation	2	$15 to $18	¾ –ton post pounder
Framing	6	$17 to $20	Teleking 5-ton crane, Bobcat, 1-ton crewcab pickup
Setting	8	$17 to $20	330 Texoma digger, 35-ton setting crane, gravel truck, concrete truck, air compressor w/ tamper, Bobcat, (2) 1-ton crewcab pickups
Anchoring	3	$20 to $22	radial arm digger or retrofitted trench hoe
Material Handling	2	$17 to $20	(2) trucks
Pole Hauling	3	$20 to $22	pole truck, pickup
Stringing	31	$20 to $26	Tensioner, puller, 30-ton crane and pickup, soft line winder and pickup, cat pulling sock line and pickup, crane and pickup, flat deck and small crane, rider pole crew digger, pole truck

Notes:
[a]Wage levels extrapolated from "Montana Prevailing Wage Rates – Heavy Construction" Rates Effective March 10, 2006

- Conductor Installation: After erecting structures, conductor and ground wires would be installed. Large reels of conductor and overhead ground wire would be delivered to pre-selected pulling and tensioning sites (about every 2 miles) along the transmission line alignment. Adjustments made during tensioning would prevent the cable from sagging too much to comply with the applicable regulations.
- Reclamation: All disturbed areas would be reclaimed. These efforts typically include gate repair as necessary, regrading and revegetation, and waste material removal.

MATL proposes to commence construction as soon as all property rights are obtained, the interconnection agreement has been finalized, and all necessary state and federal authorizations are issued. MATL may not begin any construction activities unless and until it obtains all required permits.

MATL would design, construct, operate, and maintain the proposed transmission system in accordance with the National Electrical Safety Code (NESC), U.S. Department of Labor Occupational Safety and Health Act (OSHA) Standards, and other requirements and guidance as appropriate.

Construction staging areas would be located in previously disturbed areas whenever possible. In general, construction staging areas would either be located in communities near the ROW where rail and truck service are available or in rural areas where equipment could be unloaded from tractor-trailers. Construction staging areas would be on private land and would be subject to landowner negotiations and agreements. Construction staging areas would likely be located near Cut Bank, Valier, Conrad, Brady, Dutton, or Great Falls. MATL expects that staging areas would be established in three locations, with each staging area occupying about 5 acres. However, a few smaller areas (about 2.5 acres) might be used.

NWE and Alberta Electric System Operator system dispatchers would direct normal line operations, using MATL's facilities to operate circuit breakers, determine the amount of power required to serve the loads and configure the power system accordingly, schedule the proper generation amount, and monitor the power system to ensure reliable service. Circuit breakers would operate automatically to ensure safe transmission line operation. Normal farming and other activities would be permitted on transmission line ROWs if these activities do not interfere with line operation and maintenance or create safety problems.

Maintenance programs would include routine aerial and ground patrols. Aerial patrols would be conducted annually and as needed to check for damage to conductors, insulators, or structures after severe wind, ice, wild fires, or lightning storms. Ground patrols generally would occur every 5 years to detect equipment in need of repair or replacement. Ground patrols and subsequent repair activities would be scheduled to minimize crop and property damage. Noxious weed control plans would help guide herbicide treatments. Vegetation clearing may also be required in certain areas to minimize fire hazards.

For emergencies, crews would respond promptly to repair or replace damaged equipment. MATL would meet with respective landowners to arrange compensation for any damages incurred during emergency repair operations.

In its applications to DEQ and DOE, MATL has committed to project-specific environmental protection measures that may be used to avoid or reduce the intensity and/or duration of the impacts to resources. MATL proposes to implement a worker education program and on-site monitors to ensure that the site-specific environmental protection measures are strictly followed. Other guidance MATL proposes to use includes Western Area Power Administration's (WAPA) Construction Standard 13

(WAPA 2001), and Raptor-Safe Power Line Construction Practices (Edison Electric Institute [EEI] and Avian Power Line Interaction Committee [APLIC] 1996).

S.4.2 Alternative 1 — No Action

Under Alternative 1 the proposed Project would not be approved or constructed. Existing electrical transmission service in north-central Montana would be maintained and operated at its current level. In addition, plans to construct new generation facilities in the analysis area would need to consider other transmission alternatives or not be built. Selection of Alternative 1 would likely preclude the construction of the proposed facility in Canada as well.

S.4.3 Alternative 2 — MATL's Proposed Project

Alternative 2 is to construct and operate a 129.9 mile long, 230-kV merchant transmission line between Great Falls, Montana, and Lethbridge, Alberta, as described in MATL's application to DEQ, its application to DOE for a Presidential permit and its application to the BLM for a ROW grant. The proposed alignment would have an operational ROW width of 45 feet with an additional 30 feet on either side to create a 105-foot safety zone. The line would extend from the expanded 230-kV Great Falls switch yard north of Great Falls to a proposed new substation south of Cut Bank, and then north to the Montana-Canada border at the western edge of the Red Creek Oil Field. Monopole structures would be used on 53 miles of the line where it would cross cropland and Conservation Reserve Program (CRP) land diagonally. H-frame structures would be used for the remainder of this alternative.

S.4.4 Alternative 3 – MATL B

Alternative 3 would be 121.6 miles long and would be similar to Alternative 2 in that the width of the ROW, types of access roads, implementation, conductors, markers, substations, construction, operations, maintenance, and MATL's proposed environmental protection measures would be the same as those described for Alternative 2 and in details common to all alternatives. The Alternative 3 alignment would be different from Alternative 2 in that it would generally parallel an existing 115-kV transmission line along the entire route from the Great Falls switch yard to a substation near Cut Bank and use only H-frame structures. Alternative 3 was developed by MATL in response to a single siting criterion under MFSA that gives consideration to paralleling existing utility corridors (Circular MFSA-2). This alternative alignment was not intended to address potential land use issues or maintenance issues but is the shortest and potentially the least costly alternative under consideration.

S.4.5 Alternative 4 – DEQ-Developed

Alternative 4 was developed by the DEQ to address public concerns regarding line interference with farming activities and close proximity to residences. This alternative would be 139.6 miles long and would be similar to Alternative 2 in that width of the ROW, types of access roads, implementation, conductors, markers, substations, construction, operations, maintenance, and MATL's proposed environmental protection measures would be the same as those described for Alternative 2 and in details common to all alternatives. The differences in environmental impacts between Alternatives 2 and 4 are discussed in Section S.6. Alternative 4 would incorporate a higher degree of environmental protection than either Alternative 2 or 3 since it would employ DEQ's draft Environmental Specifications contained in Appendix F.

The Alternative 4 alignment would use portions of the Alternative 2 alignment from north of Conrad to the Montana-Alberta border. In other areas it would maximize the use of range and pasture land, where available. Where cultivated land would be crossed, it would generally be located along field or strip boundaries. Alternative 4 would require the use of monopole structures on all 88.9 miles of cropland and CRP land, not just where cropland and CRP land are crossed on the diagonal as in Alternative 2.

Although Alternative 4 is analyzed as a whole, the agencies could select some or all parts of this alternative or other realignments (i.e., the local routing options described in the following section) whose environmental impacts have been considered in this EIS.

MATL has indicated that because Alternative 4 is longer than the other alternatives this alternative would be more expensive than Alternatives 2 and 3. MATL estimates that Alternative 4 would result in a 12-month delay and a $7 million increase in direct costs. MATL has stated that if Alternative 4 is selected, the project would be unlikely to be built since it would have difficulties obtaining adequate financing for the project due to additional costs and delays.

Comments received from landowners indicate that Alternative 4 would minimize impacts to farmland. Although MATL has indicated a reluctance to implement this alternative, it is possible that MATL could reconsider this position if this alternative were selected by the agencies.

S.4.6 Local Routing Options

Based on public comments received on the March 2007 document, the agencies worked with landowners to refine Alternatives 2 and 4 to address landowner concerns related to costs, impacts to farming, impacts to other land uses, and proximity to residences.

They developed eleven local routing options for Alternative 2 (**Figure S-3**), a subset of which could also be included in Alternative 4.

The local routing options would not change environmental impacts for most resource areas. Several of the local routing options would result in fewer impacts on crop production, including lower costs for farming around transmission line structures.

Diamond Valley local routing options. Three local routing options (Diamond Valley South, Diamond Valley Middle, and Diamond Valley North) were identified for the Diamond Valley area. These are alternative alignments for one segment of the line, applicable to both Alternatives 2 and 4. All three options would result in less diagonal crossing of farm fields, but two options (Diamond Valley Middle and Diamond Valley North) could interfere with aerial spraying because they would create acute angles with the existing NWE 115-kV transmission line. Also, the Diamond Valley North option could require relocation of a grain bin to avoid safety problems. Compared with Alternative 2, the Diamond Valley North option would reduce by one the number of residences within 1/2 mile of the alignment; the Diamond Valley Middle option would increase by one the number of residences within this distance; and the Diamond Valley South option would decrease the proximity of the line to one residence.

Teton River Crossing local routing option. The local routing option for the Teton River Crossing Area could apply to Alternatives 2 and 4. It would allow one transmission line structure to be on a slightly more elevated terrace that would avoid an area that is reported to have flooded in 1964. It would also locate structures at the edge of fields to reduce interference with farming. It could, however, result in some clearing of tall growing riparian vegetation.

Southeast of Conrad local routing option. The Southeast of Conrad local routing option for Alternative 2 would reduce the crossing of cropland, but would increase by one the number of residences within 1/2 mile of the alignment and would increase the chance of encountering cultural resource sites.

West of Conrad local routing option. The West of Conrad local routing option for Alternative 2 would decrease the diagonal crossing of cropland and reduce potential interference with aerial crop dusting.

Northwest of Conrad local routing option. The Northwest of Conrad local routing option for Alternative 2 would decrease the diagonal crossing of cropland, but increase the chance of encountering cultural resource sites.

FIGURE S-3
LOCAL ROUTING OPTIONS

N

0 10 Miles

LEGEND

- ALT 2 - PROPOSED ALIGNMENT
- MILE MARKERS
- LOCAL ROUTING OPTIONS
- NAME OF LOCAL ROUTING OPTION
- MAJOR HIGHWAYS
- SECONDARY ROADS
- STUDY AREA BOUNDARY
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- PROPOSED MARIAS SUBSTATION

GIS map by Ed Madej -TTEMI-HE FigS-3_MATL_Local_Routing_Options_All_010908.mxd

Belgian Hill Road area local routing option. The Belgian Hill Road area local routing option for Alternative 2 would increase the distance between the transmission line and nearby residences, slightly reduce the diagonal crossing of cropland, and reduce but not fully avoid the crossing of irrigated fields. Portions of this option also could be used for Alternative 4. Like the local routing option for Alternative 2, the option for Alternative 4 would increase the distance between the transmission line and nearby residences and reduce but not fully avoid the crossing of irrigated fields. The option for Alternative 4 would also decrease by one the number of residences within ½ mile of the alignment and avoid diagonal crossing of farmland.

Bullhead Coulee South local routing option. The Bullhead Coulee South local routing option for Alternatives 2 and 4 would avoid interference with the planned location of a wind turbine unrelated to the proposed MATL transmission line, but would increase the potential for soil erosion.

Bullhead Coulee North local routing option. The Bullhead Coulee North local routing option for Alternatives 2 and 4 would reduce interference with farming.

South of Cut Bank local routing option. The South of Cut Bank local routing option for Alternatives 2 and 4 would move the alignment to follow property boundaries better, is located farther away from one residence, and would result in greater potential for general local acceptance. This routing option would generally parallel Alternative 2.

S.4.7 Alternatives Considered But Dismissed

Several alignment and construction-detail alternatives were considered but eliminated from detailed study.

- Many local realignment options
- MATL C alignment
- Building the line underground
- Unguyed, self-supporting angle and dead-end structures
- Requiring the use of helicopters to string the line
- Requiring monopole structures in all areas
- Cut Bank to Shelby alternatives
- NWE 115-kV transmission line rebuild alternative

Numerous local realignment options were considered but eliminated from detailed analysis for one or more of the following reasons: did not address local land use concerns; did not reduce impact to farming; encountered greater geologic and topographic constraints compared to other alternatives being carried forward, would be

more costly than the estimated cost savings to farmers, or would not reduce farming and land use impacts as well as other alternatives being carried forward.

The MATL C Alignment is in the MFSA application. It was dismissed from detailed study because it did not fully address issues raised during scoping. Specifically, although it would cross less cropland diagonally than Alternative 2, it would have crossed more farm land diagonally in the segment beginning south of Brady and continuing to approximately 10 miles north of Conrad. This alternative also would be located very close to several residences, and would not use as much range and pasture land, or parallel existing transmission lines as much as other alignments.

Building the line underground was dismissed because it would cost between two and 15 times more than overhead construction and because digging the trenches required to bury the line would result in greater construction disturbance to the land and require more time to install. The use of unguyed, self supporting angle and dead-end structures would reduce some of the impacts on land uses but this alternative was dismissed because of the substantially higher costs for these structures. Similarly, the use of helicopters to string the line would avoid the construction of some access roads but would increase the cost of construction. Also, helicopters are most commonly used in extremely hilly terrain or in large marshy areas where ground access would be difficult. This alternative was dismissed because most of the study area is accessible from the ground.

The use of monopole support structures instead of H-frame structures for the entire length of the line was dismissed because of added costs with little additional land use benefits on rangeland. However, the use of monopoles is now proposed for 53 miles of cropland and CRP (89 miles) crossed diagonally under Alternative 2 and is also analyzed for all cropland and CRP crossings under Alternative 4.

Two alternatives between Cut Bank and Shelby were identified but dismissed. In one alternative, MATL would build the proposed line from the border to Shelby where it would tie into WAPA's transmission system. Energy producers or other subscribers would then have to pay MATL for the use of its project between the border and Shelby and then pay WAPA for the use of its transmission system from Shelby to Great Falls. This alternative was dismissed because it would result in a substantial increase in transmission costs for those proposing to ship energy into the Great Falls area. In the second alternative, MATL and WAPA would jointly rebuild portions of WAPA's existing Shelby-Great Falls 230-kV line to a double circuit configuration. However, WAPA declined to pursue this alternative because it would reduce the reliability of its system.

MATL also considered an alternative that would combine its proposed transmission line with a rebuilt and updated version of NWE's existing 115-kV line between Cut Bank and Great Falls. This alternative was dismissed because it would create unacceptable operating logistics to maintain electric service while the line was being rebuilt and upgraded and because of the economics associated with the partnership.

S.5 Affected Environment

The 1,444,790-acre Project study area contains sparsely populated semi-arid rolling hills, gentle ridges, and plateaus bisected by alluvial corridors of the Marias and Teton rivers and their tributaries. The area has low topographic relief with elevations ranging from 4,372 feet above sea level in the northwest corner of the study area to about 3,016 feet above sea level on the Missouri River in the southeast corner of the area. Winters are extremely cold with desiccating winds and snow. May and June are the wettest months; however, perennial streams and rivers are sustained primarily from moisture derived from mountain snowpack.

The bedrock geologic units are primarily glaciated Cretaceous shales and sandstones. This region includes portions of eight hydrologic subbasins in Montana, all of which contribute to the lower Missouri River Basin. The primary surface water features in the analysis area are Cut Bank Creek, the Marias River and the Dry Fork Marias River, Pondera Coulee, the Teton River, Benton Lake, Hay Lake, and the Missouri River. Isolated prairie potholes, lakes, and stock reservoirs are scattered throughout the analysis area.

The majority of the land (90 percent) is privately owned, with the remainder being owned or managed by state, Federal, and local government agencies. Over 88 percent of the Project study area is considered agricultural lands, including irrigated and non-irrigated cropland and rangeland. Some dry land crops and grazing occur on state and federal lands. Management of agricultural lands can involve the use of Differential Global Positioning System (DGPS)-guided farming equipment and vehicles (e.g., tractors, sprayers, combines) and other equipment used for irrigation, aerial and ground based spraying, plowing, seeding, fertilizing, and harvesting. These activities occur on 73 percent of the Project study area. This agricultural land base gives the landscape its characteristic and dominant patterns of linear strips of dryland cultivation and circular and rectangular shapes associated with irrigated fields. Views are typically expansive throughout the entire Project area, extending across rolling uplands and plains to the Rocky Mountain Front and island ranges such as the Sweet Grass Hills and Highwood Mountains. Portions of Cascade, Chouteau, Glacier, Pondera, Teton, and Toole counties are in the Project study area.

Numerous oil and gas fields are located within the northern portion of the study area. Gathering lines and pipelines between 8 and 20 inches in diameter occur within or traverse the Project study area, including main lines, and transmission/trunk lines. Existing electric and magnetic fields (EMF) levels in the project vicinity are primarily dominated by EMF from common household appliances. Existing transmission and distribution lines also contribute to EMF levels.

S.6 Comparison of Alternatives and Impacts

No natural resources would experience a substantial impact from implementation of any action alternative. Potential impacts and cumulative impacts are similar for all three action alternatives.

The no action alternative would forgo the socioeconomic benefits of the proposed Project. Under this alternative there would be no additional employment from construction or operation of the transmission line, no increase in county or state tax revenue, and no additional impacts or compensation to farmers for use of their land. There would be no increased transmission capacity for new or existing power generators.

All of the action alternatives would result in some loss of and interference with crop production. Alternative 3 would have the most impacts to crop production because it would include the most diagonal crossing of crop lands and because H-frame structures would be used on all cropland crossings. Alternative 3 would add to impacts associated with farming around structures because this alternative would closely parallel an existing 115-kV transmission line between Great Falls and Cut Bank. Alternative 4 would have less impact to crop production than the other action alternatives because it would include the least diagonal crossing of cropland and would use monopoles on all cropland crossings.

Construction activities under all of the action alternatives could result in increased soil erosion and release of sediment to streams, lakes, and wetlands, although best management practices would reduce or avoid potential impacts. The 500-foot wide analysis area associated with Alternative 4 would have the highest potential for soil erosion and sediment discharge to surface waters because it would cross the largest area of potentially unstable soils, the most streams, and the largest area of identified wetlands. The analysis area would, however, avoid crossing the edge of Black Horse Lake and its associated wetlands. The analysis area associated with Alternative 2 would cross the smallest area of unstable soils, while the analysis area associated with Alternative 3 would cross the least number of streams and the smallest area of identified wetlands, but the largest number of lakes.

All action alternatives would produce some localized short-term emissions of particulate matter during construction. In addition, all action alternatives would emit very small amounts of greenhouse gasses, principally from vehicle and equipment operations during construction.

Under all action alternatives some bird mortality could result from collisions with transmission lines even after mitigating measures are applied; potential impacts would be somewhat less under Alternative 4 than the other alternatives because Alternative 4 would not be located as close to the Benton Lake National Wildlife Refuge. Under all action alternatives, portions of the transmission line would cross some potential habitat for special status species. Although no adverse effects to special status species are expected from any of the action alternatives, Alternative 2 would cross more potential habitat for special status species than Alternatives 3 and 4.

Under all action alternatives, nearby residents and motorists using travel corridors would be exposed to views of a transmission line; Alternative 3 would expose the largest number of nearby residences and the longest length of travel corridors to near-field views within ½ mile of the proposed line. Alternative 4 would have the lowest overall visibility to nearby residences and travel corridors, but Alternatives 2 and 4 would have the smallest number of residences within 1/4 mile.

Under any of the alternatives, no disproportionately high and adverse impacts would be expected to minority or low-income populations.

S.6.1 Cumulative Impacts

CEQ regulations implementing the procedural provisions of NEPA define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR § 1508.7). The regulations further explain that "cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

MEPA defines cumulative impacts as "the collective impacts on the human environment of the proposed action when considered in conjunction with other past, present, and future actions related to the proposed action by location or generic type" (75-1-220(3), MCA). Related future actions may only be considered when these actions are under concurrent consideration by any agency through pre-impact statement studies, separate impact statement evaluations, or permit processing procedures (75-1-208(11), MCA). DEQ considers cumulative impacts when making the findings under MFSA (Administration Rules of Montana (ARM) 17.20.1604 (1)(b) and 1607(1)(a)(vii)).

Pursuant to ARM 17.4.627, whenever a state agency prepares a joint environmental impact statement that must comply with NEPA and MEPA, the joint document must be prepared in compliance with both statutes. The State agency may accede to and follow more stringent federal requirements, such as additional content. NEPA requires reasonably foreseeable future actions to be included in the cumulative impacts analysis, not just those undergoing concurrent review.

Analysis of cumulative environmental impacts of a proposed Project and other actions helps to ensure that agency decisions consider the full range of consequences of the agencies' actions to the extent information is available.

At least 17 pipelines and 8 transmission lines transect the Project study area and vicinity. Other present and past activities in the vicinity of the proposed Project include farming (irrigated and non-irrigated), grazing, weed management, hunting and general recreation; growth of cities and towns, residential areas, and industrial and commercial areas; and development of Federal and state highways and county roads, railroads and railroad rights–of-way, communication facilities, military installations, conservation easements, airports, and national trails. Reasonably foreseeable future actions that could occur in the Project study area include the development of wind farms, rebuilding and relocating a WAPA transmission line, the Southern Montana Electric Highwood Generating Station 250 MW coal-fired power plant proposed to be built outside Great Falls and the transmission line that would connect it to the local electric system, the proposed gas-fired Great Falls Energy Center 275 MW power plant, development of irrigation systems, and the potential for MATL to upgrade the capacity of the line from 300 MW to 400 MW in each direction.

DOE views wind development as a reasonably foreseeable future action. Various developers of wind farms that would be located near the MATL transmission line have purchased all the line capacity. However, wind farm developers that have purchased the capacity on the MATL line might not be the same power suppliers that use the line in the future. MATL has indicated that its transmission service rights contracts do not require the holder to supply any particular form of power generation. In light of the foregoing, DOE believes that MATL's proposed Project is separate from and has an existence and utility independent from the wind farms. While the wind farms would be the first users, it is reasonably foreseeable that other shippers can own the right to ship electricity over the proposed line. As a result, DOE does not view the currently subscribed wind farms as "connected actions" as defined in 40 C.F.R. § 1508.25(a) (1). Therefore, the impacts from potential wind farms are evaluated as cumulative impacts of the proposed Project, consistent with 40 C.F.R. § 1508.7.

Table S-2 summarizes impacts to natural resources, including cumulative impacts, considerations of environmental justice, and impacts to the existing transmission system (engineering and electric system reliability) among the alternatives analyzed.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Land Use – General Impacts Comparative impacts of action alternatives depend on overall length of alignment, length on cropland, extent of diagonal crossing of cropland (diagonal crossings of cropland result in more interference with farming), and use of H frames vs. monopoles (use of monopoles reduces interference with farming)		Facility construction traffic may conflict with movement of farm equipment on roads. Loss of and interference with crop production due to structures and roads, increased potential for weed introduction and spread, potential for equipment damage from hitting a structure, increased time to farm around poles, and some DGPS-guided equipment may be affected. Cropland crossings also increase the potential for crop duster accidents.	Same as Alt 2	Same as Alt 2	New projects would generally have short-term construction impacts and longer term changes to land use depending on the project. Wind development is generally compatible with a wide variety of land uses and generally would not preclude recreational, wildlife habitat conservation, military, livestock grazing, oil and gas leasing, dry land farming, or other activities that currently occur.
Land Use – Total Amount of Land Crossed	There would be no additional impacts.	129.9 miles.	121.6 miles. Alt 3 disturbs the least.	139.6 miles. Alt 4 disturbs the most.	Impacts would depend on the type, location and design of development.
Land Use – Total Cropland Crossed		93.3 miles	95.3 miles. Alt 3 crosses the most.	88.9 miles. Alt 4 crosses the least.	
Land Use – Total Cropland Crossed Diagonally		54.9 miles	68.4 miles. Alt 3 crosses the most cropland diagonally.	28 miles. Alt 4 crosses the least cropland diagonally.	

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Land Use – Type of structure used on cropland		Monopoles used on 53 miles of diagonal crossings of cropland; H-frames used on cropland not crossed diagonally	H-frames on the entire line, including cropland	Monopoles used for all cropland crossing	
Land Use –Total distance crossing Public Land, Special Management Areas and conservation easements		35.3 miles	24.7 miles. Alt. 3 would cross the least	43.9 miles. Alt 4 would cross the most	
State Land (FWP owned) crossed, Great Falls Shooting Sports Complex		0.7 miles crossed	0.5 miles crossed	Alt 4 would avoid the Great Falls Shooting Sports Complex.	
State Land – Lewis and Clark Heritage Greenway Conservation Easement.		0.1 miles at the edge of the Lewis and Clark Heritage Greenway Conservation Easement.	0.1 miles at the edge of the Lewis and Clark Heritage Greenway Conservation Easement.	0.1 miles at the edge of the Lewis and Clark Heritage Greenway Conservation Easement	
Montana State Trust Lands crossed		10.6 miles crossed	5.9 miles. Alt 3 would cross the least.	11.0 miles. Alt 4 would cross the most.	
Conservation easements crossed		USFWS – 0.0 miles CRP - 23.6 miles	USFWS - 3.8 miles CRP - 14.3 miles	USFWS - 1.7 miles. CRP – 30.8 miles	
BLM Land crossed		0.3 miles	0.1 miles	0.3 miles	

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Geology – Miles on Soil and Geologic Resources Prone to Mass Movement	There would be no additional impacts.	5 miles. Potential impacts would largely be mitigated by pole placement designed to span sensitive slopes and engineering design.	3 miles. Alt 3 has the least potential for mass movement that could result in pole instability. Potential impacts would largely be mitigated by pole placement designed to span sensitive slopes and engineering design.	20 miles. Alt 4 has the most potential for mass movement that could result in pole instability. Potential impacts would largely be mitigated by pole placement designed to span sensitive slopes and engineering design.	Impacts would depend on the type, location and design of development.
Soils – Miles on Unstable Soils (greater than 20 percent slope)	There would be no additional impacts.	16 miles. Soil erosion impacts would be mitigated by erosion control measures.	12 miles. Alt 3 has the least potential for soil erosion. Soil erosion impacts would be mitigated by erosion control measures.	24 miles. Alt 4 has the most potential for soil erosion. Soil erosion impacts would be mitigated by erosion control measures.	Additional development could cause increased soil erosion. Erosion control and storm water control would mitigate impacts.
Engineering- The structural reliability of electric transmission facilities in the area.	There would be no additional impacts.	No adverse impact to structural reliability is anticipated. All facilities are proposed to be constructed in compliance with accepted engineering standards.	Same as Alt 2	Same as Alt 2	None expected.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Hazardous Materials	There would be no additional impacts.	Wood structures would be treated with pentachlorophenol. Hazardous materials and wastes would be managed in accordance with State and federal requirements	Same as Alt 2.	Same as Alt 2.	Construction, operation, and decommissioning future activities could require the use of some hazardous materials. Wastes would have to be managed as required by state and federal law.
Electric and Magnetic Fields– Exposure Levels	There would be no additional impacts. Exposure levels in the project vicinity are primarily dominated by EMF from common household appliances.	Exposure levels outside the ROW would be less than 3.8 mG	Same as Alt 2.	Same as Alt 2.	If the line capacity increased to 400 MW in each direction, the electric field and the mean magnetic field would be higher, but electric field strength would remain below the state standard of 1 kV/m at the edge of the ROW in subdivision and residential areas, and the increase in the mean magnetic field would be slight

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Electric and Magnetic Fields– Length of 500-foot-wide Alignment Buffer Zone Within 100 feet of a Pipeline	There would be no additional impacts.	To ensure safety, pipelines near a transmission line would need to be grounded. 7.0 miles of the alignment would be within 100 ft of a pipeline 8″ or larger.	9.8 miles of the alignment would be within 100 ft of a pipeline 8″ or larger. Alt 3 has the longest distance where pipelines may need to be grounded.	5.7 miles of the alignment would be within 100 ft of a pipeline 8″ or larger. Alt 4 has the shortest distance where pipelines may need to be grounded.	Impacts would depend on the type and location of development
Electric and Magnetic Fields– Radio or TV Interference	There would be no additional impacts.	None anticipated for nearby residents. May be some potential for interference with DGPS guidance systems. MATL would correct DGPS interference.	Same as Alt 2. MATL would correct DGPS interference.	Same as Alt 2. MATL would correct DGPS interference.	There is a potential for wind farm power lines to cause interference, but this impact would depend on the type, location and design of development and might be avoided by proper siting and design.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Water – General Impacts	There would be no additional impacts.	Minor short-term adverse impacts to surface water quality could occur by temporarily increasing sources of sediment from the time of construction to reclamation completion. This impact would be mitigated by avoiding disturbance of water and riparian areas or by implementing measures to reduce sediment transport. The potential for impact is related to the number of stream and lake crossings.	Same as Alt 2.	Same as Alt 2.	Future development activities combined with the proposal could increase sediment and other pollutants to water resources in the analysis area and potentially affect water quantity and quality. Construction would likely cause increased stormwater runoff and soil erosion. Because projects would be required to reduce the potential for sedimentation, require proper pesticide application, and comply with waste water discharge requirements, and to employ mitigation measures, these impacts are likely to be minor and short term.
Water – Potential Number of Perennial Stream or River Crossings	There would be no additional impacts.	10 crossings within the 500-foot wide alignment	6 crossings. Alt 3 poses the lowest potential for impact within the 500-foot wide alignment.	17 crossings. Alt 4 poses the greatest potential for impact within the 500-foot wide alignment.	Impacts would depend on the type and location of development.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Water – Potential Number of Lake Crossings	There would be no additional impacts.	4 crossings within the alignment.	6 crossings. Alt 3 poses the greatest potential for impact within the alignment.	2 crossings. Alt 4 poses the least potential for impact within the alignment.	Impacts would depend on the type and location of development.
Wetlands - General	There would be no additional impacts.	Structures would not be placed in wetlands. Construction disturbance could result in a change in wetland plant community if wetland hydrology is altered. This impact would be mitigated if wetlands were undisturbed during construction and maintenance. Potential impact is related to the area of wetlands crossed.	Same as Alt 2.	Same as Alt 2.	Impacts would depend on the type, location and design of development.
Wetlands – Total Wetlands and Potential Wetlands Crossed	There would be no additional impacts.	67.6 acres crossed within the 500-foot wide alignment, including 64.4 acres of marshland, 0.8 acre lake wetlands, and 2.4 acres of river wetlands.	62.3 acres crossed within the 500-foot wide alignment, including 58 acres of marshland, 0.8 acre lake wetlands, and 3.5 acres of river wetlands. Alt 3 would cross the least total area of wetlands.	76.4 acres crossed within the 500-foot wide alignment, including 74 acres of marshland and 2.4 acres of river wetlands. Alt 4 would cross the largest total area of wetlands, but would avoid crossing wetlands associated with lakes.	Impacts would depend on the type and location of development.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Floodplains	There would be no additional impacts.	Line would cross floodplains at the Teton, Dry Fork Marias, and Marias river crossings, but no transmission line structures would be placed in 100-year floodplains. A local routing option for the Teton River crossing would place a structure in a slightly higher location that was not inundated in the 1964 flood.	Same as Alt. 2, except that the local routing option is not applicable.	Same as Alt 2.	There are no reasonably foreseeable future actions that would impact floodplains
Vegetation – General	There would be no additional impacts.	Temporary loss of vegetation and increased potential for weed emergence and dispersion in disturbed areas until reclaimed. Potential impact is dependent on the number of acres disturbed.	Same as Alt 2.	Same as Alt 2.	Future activities would likely disrupt vegetation in a similar manner. Revegetation would likely make impacts minor and short term.
Vegetation – Number of non-cropland acres to be disturbed for construction	There would be no additional impacts.	214 acres.	206 acres. Alt 3 would disturb the fewest acres.	240 acres. Alt 4 would disturb the most acres.	Impacts would depend on the type, location and design of development.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Vegetation – Native range, forest and riparian vegetation cover crossed	There would be no additional impacts.	32.7 miles of grassland/shrubland and riparian vegetation would be crossed	22.5 miles of grassland/shrubland, riparian vegetation, and forest would be crossed	47.8 miles of grassland/shrubland, riparian vegetation, and forest would be crossed	Impacts would depend on the type, location and design of development.
Wildlife - General	There would be no additional impacts.	Short-term impacts include loss of individuals during construction or direct disturbance of species during critical periods in their life-cycles. Long-term impacts include habitat alterations, electrocutions, and collisions. Collisions would be reduced by line marking.	Same as Alt 2.	Same as Alt.2.	Activities would result in disturbance and displacement of wildlife during the construction, followed by some permanent loss of habitat. Bird and bat mortalities are expected due to collisions with wind turbines.
Wildlife – Mule Deer Winter Range	There would be no additional impacts.	19.4 miles of habitat would be crossed. Minor to no impact to mule deer population relative to the size of the existing habitat and individual mobility.	20.5 miles of habitat would be crossed. Minor to no impact to mule deer population relative to the size of the existing habitat and individual mobility.	27.7 miles of habitat would be crossed. Minor to no impact to mule deer population relative to the size of the existing habitat and individual mobility.	Impacts would depend on the type, location and design of development. Herd animals could be affected if developments are placed along migration paths or in fawning areas.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Wildlife – Birds	There would be no additional impacts.	Collisions with transmission line could result in bird loss. The potential for bird collisions would be greatest in those portions of the line located near wetlands and the Benton Lake National Wildlife Refuge.	Similar to Alt 2.	Similar to Alt. 2, but line would be farther from the Benton Lake National Wildlife Refuge	Additional development could reduce habitat. Wind farms potentially associated with the proposed line could cause estimated 2 to 3 mortalities per year of raptors (such as eagles and hawks) and 480 to 960 mortalities per year of passerine birds (such as sparrows, larks, warblers, and crows) from collisions with turbines.
Wildlife – Bats	There would be no additional impacts.	There would be no additional impacts.	There would be no additional impacts.	There would be no additional impacts.	Wind farms associated with the MATL project could cause an estimated 28 to 1,711 bat mortalities per year from collisions with turbines.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Fish – Expected impacts to habitat due to changes in water quality	There would be no additional impacts.	Fish habitat may be slightly affected by construction activity that contributes sediment to streams. Potential for impact is related to potential for impact to rivers and streams – 10 perennial river or stream crossings in the 500-foot wide alignment but no in-stream activities anticipated.	Similar to Alt. 2, – 6 perennial river or stream crossings in the 500-foot wide alignment, but no in-stream activities anticipated. Alt 3 has the least potential to slightly affect fish habitat.	Similar to Alt. 2, – 17 perennial river or stream crossings in the 500-foot wide alignment, but no in-stream activities anticipated. Alt 4 has the highest potential to slightly affect fish habitat.	Cumulative impacts that adversely affect water resources could adversely affect fish and fish habitats.
Special Status Species - Vegetation	There would be no additional impacts.	All known occurrences of special status plant species are located outside the study area. Potential for impact is based on potential impact to their habitat (wetlands).	Alt 3 has the least likelihood of these species because the alignment crosses less wetland habitat than Alts 2 and 4.	See Alt 2 and 3.	Construction activities could affect threatened, endangered, and sensitive species in the same manner that vegetation could be affected.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Special Status Species – Wildlife Habitat crossed. Although no black-footed ferrets are found in the area, prairie dog towns if crossed by the proposed alignments may be habitat for this federally listed endangered species. Alternatives also would cross actual or potential habitat for 5 bird species listed as sensitive species by Montana and/or BLM and 3 fish species listed as sensitive by Montana.	There would be no additional impacts.	19.9 miles. Alt 2 crosses the most habitats for one or more special status species. The biological assessment concluded that there would be no effect on black-footed ferrets or their critical habitat.	11.3 miles. Alt 3 crosses the least habitat for special status species.	11.7 miles.	Construction activities could affect threatened, endangered, and sensitive species in the same manner that wildlife and aquatic resources could be affected in general.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Air Quality – General Air quality in the analysis area is designated as attainment for all criteria pollutants.	There would be no additional impacts.	Some localized short-term emissions of particulate matter would occur during construction.	Same as Alt. 2.	Same as Alt 2.	Construction of new facilities such as wind farms and other electrical generating facilities would generally have short-term impacts similar to construction impacts of the transmission line, but because of differences in timing, few impacts would likely be cumulative with air quality impacts of the proposed action. Operation of future facilities could increase other emissions, but few impacts would be cumulative with air quality impacts of the proposed action. Furthermore, construction of new facilities could either help reduce or contribute to emissions of greenhouse gasses; this depends on the type, size, and quantity of any generation built.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Noise – General	There would be no additional impacts.	Short-term, localized construction noise. Operation of the transmission line would not add substantially to existing background noise levels.	Same as Alt 2.	Same as Alt 2.	Construction of new facilities such as wind farms and other electrical generating facilities would generally have short-term impacts would vary in magnitude and duration based on the size and complexity of the project. Operation of wind turbines would result in noise; noise levels would depend on the observer's location.
Social Resources	No change to existing conditions and trends.	Increased short-term construction and long-term maintenance employment opportunities. Potential for impact to local schools, community structure and social services from influx of workers is small.	Same as Alt 2.	Same as Alt 2.	Any large development or numerous simultaneous small developments could strain local services. Smaller projects would have impacts similar to Alt 2. There could be a perception that wind turbines change the local character of a given area. There could be disagreement over wind turbine location.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Economics – Short term	There would be no change in employment opportunities.	There would be short-term construction-related employment opportunities.	Same as Alt 2.	Same as Alt 2.	Depending on the size and number of activities and location, impacts could vary from very minor to large.
Economics – Counties	There would be no opportunities for long-term operation and maintenance employment and no increased county tax revenues.	There would be opportunities for long-term operation and maintenance employment. County tax revenues would increase.	Same as Alt 2.	Same as Alt 2.	Depending on the size and number of activities and location, impacts could vary from very minor to large. Such impacts would include jobs, income, taxes and effects on social services.
Economics – State	There would be no increased opportunity for power import or export, no increased competition that could reduce costs to ratepayers, less opportunity for wind or other power generation facility start up and no increased state tax revenues.	Opportunities to import or export electric power would increase. Increased competition may reduce cost to ratepayers. Creation of opportunities to start up wind generation facilities. State tax revenue would increase.	Same as Alt. 2	Same as Alt 2.	Depending on the size and number of activities, impacts could vary from very minor to large. Such impacts would include jobs, income, and taxes, as well as changes in the local electric system.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Economics – Landowners and Farmers	No change in existing conditions and trends.	Farmers would incur additional costs estimated at $82,000 to $86,000 per year. MATL would compensate landowners with one time easement payments, annual per-pole payments, and annual flat fees for the additional costs of farming caused by the transmission line. Some agricultural landowners would also receive a state property tax exemption for property within 660 feet of the centerline. Long-term impacts on land values are likely to be small.	Additional cost to farmers is estimated to be $108,000 to $109,000 per year. Compensation would be provided as described for Alt 2. Alt. 3 would have the highest cost to farmers before compensation. Some agricultural landowners would also receive a state property tax exemption for property within 660 feet of the centerline. Long-term impacts on land values are likely to be small.	Additional cost to farmers is estimated to be $57,000 to $59,000 per year. Compensation would be provided as described for Alt 2. Alt. 4 would have the lowest cost to farmers before compensation. Some agricultural landowners would also receive a state property tax exemption for property within 660 feet of the centerline. Long-term impacts on land values are likely to be small.	Depending on the size and number of activities and location, impacts could vary from very minor to large.
Paleontological Resources – The Two Medicine Formation is the geologic unit with a high probability of containing fossils.	There would be no additional impacts.	Construction activity could disturb fossil sites. Since most of the Two Medicine Formation is covered by 1 to 15 feet of material, little or no impact is anticipated.	Similar to Alt 2.	Similar to Alt 2.	Future activities could uncover or destroy currently unknown paleontological resources.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Cultural Resources	There would be no new impacts to cultural resources or Traditional Cultural Properties.	Construction could disturb archaeological or historical resources. The 500-foot wide analysis area would encompass 8 known sites eligible for the NRHP and 33 sites of undetermined eligibility. Traditional Cultural Properties or potential locations identified by knowledgeable Tribal members would be avoided.	Similar to Alt. 2. Alt 3 would encompass 7 sites eligible for the NRHP and 9 sites of undetermined eligibility.	Similar to Alt 2. Alt 4 would encompass 4 sites eligible for the NRHP and 19 sites of undetermined eligibility.	Future activities could uncover or destroy currently unknown cultural resources.
Visuals – General	There would be no additional impacts.	Decline in aesthetic quality of view sheds, increase in visual contrast or landscape change due to contrast with natural landscape. Potential impact is primarily dependent on proximity of viewers and residences to the transmission line.	Same as Alt 2.	Same as Alt 2.	Impacts would depend on the type and location of development. Future activities would increase the developed character of the landscape for the long term. In particular, wind farms would be highly visible because of the introduction of turbines into rural landscapes with few other comparable structures.
Visuals – Residences within ¼ mile	No residences would be exposed to the view of a new transmission line.	20 residences.	25 residences. Alt 3 would be visible from the highest number of residences within this distance.	20 residences.	

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Visuals – Number of Residences ¼ - ½ mile	No residences would be exposed to the view of a new transmission line.	51 residences.	65 residences. Alt 3 would be visible from the highest number of residences within this distance.	45 residences. Alt 4 would be visible from the lowest number of residences within this distance.	
Visuals – Residences within ½ to 1 mile	No residences would be exposed to the view of a new transmission line.	111 residences.	139 residences. Alt 3 would be visible from the highest number of residences within this distance.	111 residences.	
Visuals – Within ½ mile of a travel corridor (I-15 and US Highways 2 and 87)	No travel corridors would be exposed to the view of a new transmission line.	6.1 miles.	7.6 miles. Alt 3 would have the longest near-field visibility from travel corridors.	5.0 miles. Alt 4 would have the shortest near-field visibility from travel corridors.	
Environmental Justice	No change in existing conditions.	No disproportionately high and adverse impacts to minority or low-income populations were identified.	Same as Alt. 2	Same as Alt. 2	Future activities could have an impact on environmental justice depending on location and size of the project, but the proposed project would not contribute to cumulative adverse effects.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Electric System Reliability – The ability of the electric system to operate within established criteria under normal and emergency conditions.	No change.	No adverse effect on electric system reliability.	Same as Alt. 2	Same as Alt. 2	Depending on the project, there might be changes in the local electric system.

Notes:

Alt	Alternative
BLM	Bureau of Land Management
CRP	Conservation Reserve Program
DGPS	Differential Global Positioning System
EMF	Electric and Magnetic Field
FWP	Montana Dept. of Fish, Wildlife and Parks
kV/m	Kilovolt per meter
mG	Milligauss
MW	Megawatt
NA	Not applicable
NRHP	National Register of Historic Places
ROW	Right of Way
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service

S.6.2 Unavoidable Adverse Impacts

Unavoidable short-term adverse impacts from the proposed Project would be expected to occur to wetlands, land use (including transportation), noise, visuals, and native vegetation. Unavoidable long-term adverse impacts would occur to land use, birds, and visuals.

Construction activities could have short-term adverse impacts on land use, transportation, noise, and visuals, due to construction traffic and the establishment of staging areas, tensioning sites, access, and structure assembly areas. Construction activities could also have short-term adverse impacts on wetland resources from the alteration of surface water drainage patterns, disturbances and trampling of vegetation during construction, and from an increase in sedimentation to localized wetland areas from disturbances on adjacent properties. MATL's transmission line structures would not be placed in wetland areas, so no long-term impacts are expected for wetland resources. Native vegetation would be unavoidably disturbed, and weed infestations may occur for the short term during construction and before reclamation.

Long-term impacts to land use include loss of production of farmland, increased risk to aircraft, and interference with farming activities. An increase in avian mortality would be unavoidable and long term. Visual resources would experience unavoidable adverse impacts to the aesthetic quality of the landscape by transmission lines.

S.6.3 Irreversible or Irretrievable Commitments of Resources

If concrete footings are used, the concrete would be left in place and irreversibly committed. Fuel used during construction and decommissioning would be irreversibly committed. If wood structures are used, it is probable that these poles would not be available for future transmission projects and would be irreversibly committed. Energy lost during transmission line operation (line losses) would be irretrievably committed.

Paleontological and cultural resources, including traditional cultural properties, are nonrenewable resources. The MATL project would increase access to the areas where these resources may be located. This increased access could lead to intentional damage from looting and vandalism, including unauthorized relic collecting, theft, and defacement, and result in the loss of information and destruction of the resource. Any impacts to these resources would constitute an irreversible commitment of resources.

S.6.4 Short-Term Use and Long-Term Productivity

Short-term uses are characterized by existing land use as affected by the proposed Project and all activities that such land use facilitates. Long-term productivity involves sustaining the interrelationships of each resource in a condition sufficient to support ecological, social, and economic health.

All action alternatives would manage resources within requisite regulatory standards for air quality, water quality, cultural resource preservation, and wildlife management. Impacts from any of the action alternatives to visual resources and farming activities would not adversely affect long-term productivity of the resource. Beneficial impacts to socioeconomic resources would be realized from all action alternatives. Because Alternative 4 contains additional environmental mitigation measures for avoiding adverse impacts to farming, riparian areas, visual resources, and surface water, this alternative presents the most protective alternative for the maintenance and enhancement of long-term productivity of the environment while benefiting socioeconomic resources.

S.7 Regulatory Restrictions Analysis

MEPA requires the disclosure of any regulatory impacts on the private property rights of an applicant. These impacts are usually estimated in terms of economic cost. Alternatives and mitigation measures are designed to further protect environmental, cultural, visual, and social resources, although they add to the cost of the Project. Alternatives and mitigation measures that are required by federal or state laws and regulations to meet minimum environmental standards do not need to be evaluated for extra costs to the project proponent. If approved, DEQ would require that the project meet standards for noise and electric field strength in residential and subdivided areas, unless affected landowners waive these requirements. The project would be required to meet minimum standards set forth in the National Electrical Safety Code and Federal Aviation Administration requirements for marking the line.

Project costs and costs of mitigation are presented in **Table S-3**. Monetary values of impacts, except for estimated costs to farmers, cannot reasonably be quantified. Many potential adverse environmental impacts are minimized through measures proposed by the applicant and the application of environmental specifications. A plan for monitoring the facility is described in environmental specifications for the project, as required by administrative rules implementing MFSA and further detailed in ARM 17.20.1901.

TABLE S-3 PROJECT COSTS			
	Alternative 2	**Alternative 3**	**Alternative 4**
Length (miles)	129.9 (53 miles monopoles, 76.9 miles H-frames)	121.6 (all H-frames)	139.9 (88.9 miles monopoles, 51 miles H-frames)
Construction cost [a]	$39,874,650	$35,689,600	$43,994,350
Total cost with mitigating measures	$40,619,150	$36,346,600	$44,873,350

[a] H-frame structures $293,500 per mile; monopole structures $326,500 per mile (MATL 1/26/07).

Bond requirements and other mitigation measures that might be imposed by DEQ would add from 1.3 to 1.9 percent to the basic construction cost of Alternative 2. Alternative 3 would be less expensive to build than Alternative 2. Alternative 4, including bond, would cost 12.5 percent more than the basic construction cost of Alternative 2 or 11.1 percent more than the cost of Alternative 2 including bond.

Mitigation measures whose costs can be estimated are precision mapping of unstable soils, archaeologist observation of construction, wetlands delineation, bonding for reclamation and revegetation, and the use of conductors with dulled, non-reflective surfaces. Monopole structures in addition to the 53 miles that MATL has committed to use for diagonal crossings of cultivated cropland might also be required in some areas.

The costs of other measures, such as damage payments are not readily quantifiable but would add to the total cost of the Project.

MATL has already negotiated easements across portions of the proposed Project alignment. The cost to MATL of acquiring these easements is unknown. If MATL has already paid for ROW access to lands that may be crossed by the Alternative 2 alignment, and that alignment is not permitted, MATL may lose the money already spent. Alternative 2 with additional mitigation measures and the use of monopoles on selected portions of the transmission line would impose the least regulation on MATL's private property rights while reducing environmental impacts.

S.8 Intentional Destructive Acts

Intentional destructive acts, such as sabotage, terrorism, vandalism, and theft, sometimes occur at electric utility facilities. These acts include shooting at insulators, power lines, transmission towers, or substation equipment; vandalism; and theft of equipment, supplies, tools, or materials. Vandalism and thefts are most common. However, these acts do not generally cause a disruption of electric service to the area.

In general, it is possible that destroying support towers or other equipment may result in disruption of electrical service depending on the size (voltage and capacity) of the transmission line, the particular act, and the configuration of the local transmission system. However, given the characteristics of the proposed MATL transmission line project and its rural location, it is unlikely that intentional destructive acts would occur. Furthermore, even if such an act did occur, it is not likely to have a major impact on the regional transmission system or local electrical service because the electric system is designed to withstand the instantaneous loss (regardless of the cause) of key elements and still provide uninterrupted service to customers.

1.0 Purpose, Benefits and Need for the Proposed Actions

Background

Montana-Alberta Tie Ltd. (MATL) is proposing to construct and operate an international 230-kilovolt (kV) alternating current, merchant (private) transmission line that would originate at an existing NorthWestern Energy (NWE) Great Falls 230-kV switch yard near Great Falls, Montana, and extend north to a new substation to be constructed northeast of Lethbridge, Alberta, crossing the U.S.-Canada international border north of Cut Bank, Montana. Approximately 130 miles of the 203-mile transmission line is proposed to be constructed in Montana. The line would be owned by MATL, a private Canadian corporation owned by Tonbridge Power. The proposed line would be part of the Western Interconnection (western grid), and a phase shifting transformer would be installed at the substation near Lethbridge to control the direction of power flows on the line.

Before constructing and operating the proposed transmission line, MATL must obtain a Presidential permit from the U.S. Department of Energy (DOE) (10 CFR Part 205 320 et seq) and a Certificate of Compliance (certificate) from the State of Montana Department of Environmental Quality (DEQ) under the Montana Major Facility Siting Act (MFSA)(75-20-101, et seq., Montana Code Annotated [MCA]). MATL has submitted an application for a certificate to the DEQ and an application to DOE for a Presidential permit. These applications address the portion of the transmission line between Great Falls and the border between the United States and Canada. **Figure 1.1-1** shows the location of the proposed facility and alternatives.

Environmental Review

DEQ approval of the proposed Project must be obtained before construction may begin. In response to the application for a certificate, DEQ must conduct an environmental review. This review is required by the Montana Environmental Policy Act (MEPA)(75-1-101 *et seq.*, MCA) and MFSA. Granting a Presidential permit also requires an environmental review conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 USC §§ 4321-4347). Because of the similarities in the two environmental review processes and the requirements of the regulations implementing NEPA and MEPA, and to reduce the burden and expense of preparing separate documents, DOE and DEQ decided to cooperate as joint lead agencies in the preparation of a single environmental review document that would address both purposes. Initially, DOE considered an environmental assessment (EA) to be the appropriate level of review under NEPA while the DEQ considered the appropriate level of review for MEPA to be an environmental impact statement (EIS) analysis.

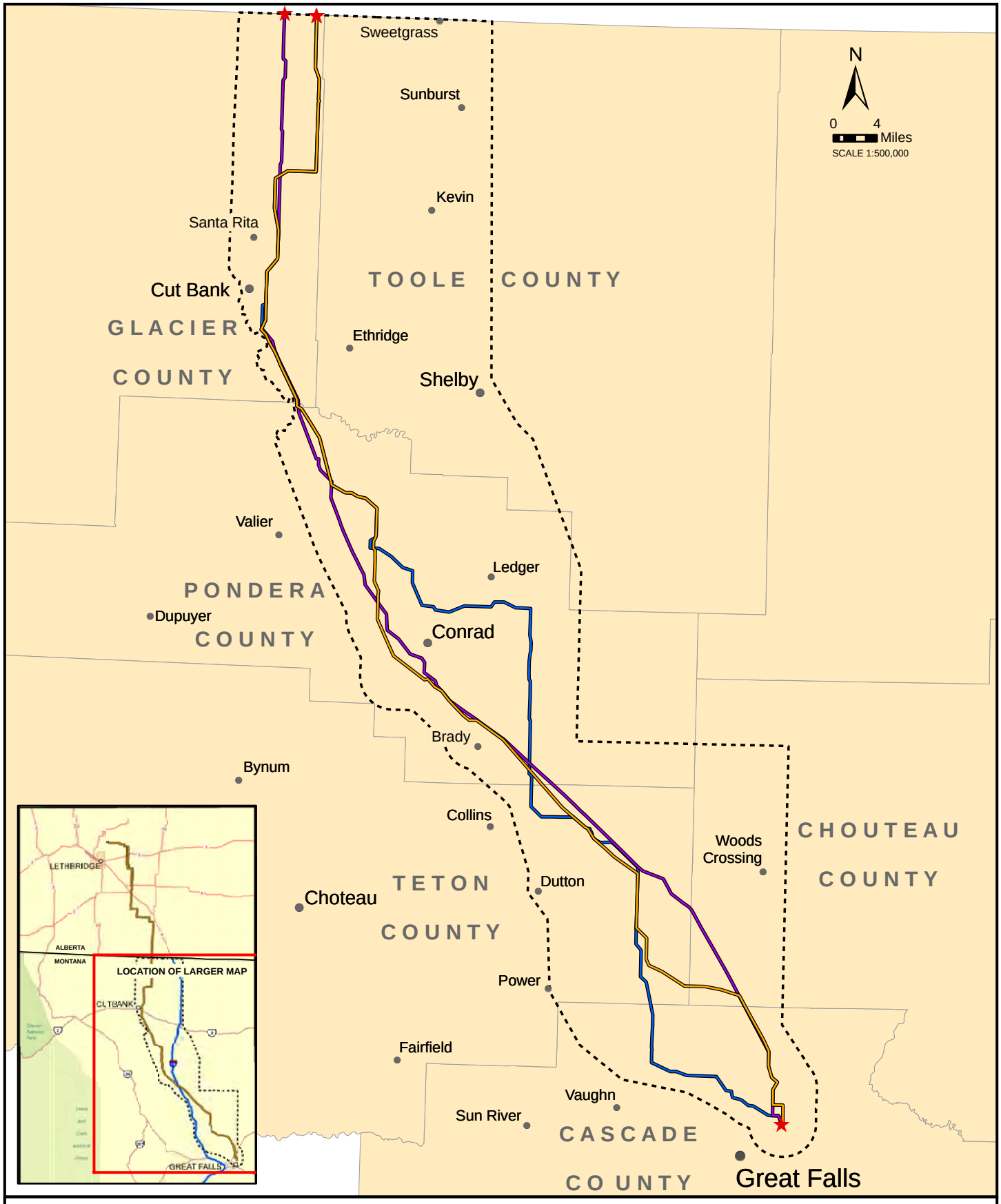


FIGURE 1.1-1
PROJECT STUDY AREA

LEGEND

- ALT2 - ALIGNMENT
- ALT3 - ALIGNMENT
- ALT4 - ALIGNMENT
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE Fig1_1-1_MATL_Project_Study_Area_020107_JA.mxd

DEQ initiated its process by publishing notice in Montana newspapers that an application for the MATL project had been received and started the public scoping process. The notice ran in five newspapers for two weeks. In addition a press release alerted other media of the proposal and meetings. In June 2006 another notice of a scoping meeting ran in four area newspapers after MATL revised its proposed alignment north of Cut Bank.

On November 18, 2005, DOE published in the *Federal Register* (70 FR 69962) a Notice of Intent to Prepare an EA and to Conduct Public Scoping Meetings and Notice of Floodplain and Wetlands Involvement. That notice opened a 45-day scoping period during which the public was invited to participate in the identification of potential environmental impacts that may result from construction of the MATL transmission line project and reasonable alternatives. Scoping meetings were held in the project area as described in Section 1.5.1.

In March 2007, the DEQ and DOE published a draft document that was both the DEQ Draft EIS and the DOE EA (March 2007 document). The document was distributed for public comment and three public hearings were conducted to receive comments on the document during a 55-day public comment period. Based on comments received on the March 2007 document relating to land use and potential effects on farming, DOE determined an EIS to be the appropriate NEPA compliance document. Accordingly, on June 7, 2007, DOE published in the *Federal Register* (72 FR 31569) a Notice of Intent to Prepare an EIS and to Conduct Scoping. On July 27, 2007, MATL submitted to the U.S. Bureau of Land Management (BLM) an Application for Transportation and Utility Systems and Facilities on Federal Land. On September 6, 2007, DOE invited BLM to participate as a cooperating agency in the preparation of the EIS. DOES requested BLM's involvement to address BLM's authority to approve MATL's request for a special use permit and the proposal's relationship to relevant BLM land use plans. On October 12, 2007, BLM informed DOE of its intent to be a cooperating agency in the preparation of this EIS.

Comments received on the March 2007 document indicated additional analysis was needed to describe the costs of farming around the proposed structures and to compare these costs to the additional costs associated with alternative locations for the line. In addition substantial changes to state tax law took place in Montana's April 2007 special legislative session which changed the analysis of socioeconomic impacts. These issues are addressed further in this document, which is both a Federal Draft EIS and a State of Montana Supplemental Draft EIS (November 2007 document).

General DOE Requirements

The Department of Energy has the responsibility for implementing Executive Order (E.O.) 10485 (September 9, 1953), as amended by E.O. 12038 (February 7, 1978), which requires the issuance of a Presidential permit for the construction, operation, maintenance, and connection of electric transmission facilities at the United States international border. DOE may issue the permit if it determines that the project is in the public interest, and after obtaining favorable recommendations from the U.S. Departments of State and Defense. In determining if a proposed Project is consistent with the public interest, DOE considers:

1. Potential environmental impacts in accordance with the National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality and DOE implementing regulations at 40 CFR 1500-1508 and 10 CFR 1021, respectively;
2. The proposed Project's impact on electric reliability, that is whether the proposed Project would adversely affect the operation of the U.S. electric power supply system under normal and contingency conditions; and
3. Any other factors that DOE may consider relevant to the public interest.

General NEPA/MEPA and MFSA Requirements

MEPA requires that decision makers consider the effects of their actions on the environment, and that state agencies inform the public of the decision making process and allow participation in the process. Similarly, NEPA requires that Federal decisionmakers be fully informed of the potential environmental consequences of their actions and document the reasons for their decisions. If DEQ and DOE determine that issuing a certificate or granting a Presidential permit would be in the public interest, the information contained in this document would provide a basis upon which those decisions are made. DEQ and DOE would consider this information in deciding which alternative(s) could be implemented and which mitigation measures, if any, would be appropriate for inclusion as a condition of the certificate or permit. DEQ and DOE will document its decisions in separate Records of Decision. The BLM would also document its decision with an issuance of a Decision Record and Findings of No Significant Impacts.

MFSA requires a certificate of compliance for development of this electric transmission line. The purposes are to: (1) ensure the protection of the state's environmental resources; (2) ensure the consideration of socioeconomic impacts; (3) provide citizens with an opportunity to participate in facility siting decisions; and (4) establish a coordinated and efficient method for the processing of all authorizations required for regulated facilities (DEQ 2006). A summary of how the Project and alternatives would

address each MFSA-required finding, including probable impacts, is provided in Section 3.18.

Under MFSA, the Montana Departments of Transportation (MDT), Natural Resources and Conservation (DNRC), Fish, Wildlife and Parks (FWP), and Revenue, and the Public Service Commission are required to report to DEQ information related to the impact of the proposed site on each agency's area of expertise. The report may include opinions on the advisability of granting, denying, or modifying the certificate (75-20-216[6], MCA).

Organization of the November 2007 document

This February 2008 document is presented in 2 volumes; Volume 1 is the Environmental Impact Statement and Volume 2 contains the responses to public comments on the March 2007 document.

Volume I, Chapter 1 includes a description of the project, purpose, benefit, and need for the project, relevant agency permitting actions, public participation, issues of concern, and other background information. Chapter 2 of this February 2008 document contains the descriptions of MATL's proposed Project and the alternatives to the Project, along with alternatives considered but dismissed. Chapter 3 presents the affected environment and impacts analysis. Cumulative impacts, unavoidable adverse impacts, and irreversible and irretrievable impacts are in Chapter 4. Consultation and coordination with other agencies and interested groups is in Chapter 5. The list of people who prepared this document is in Chapter 6. Chapter 7 presents a glossary and acronym list. References are in Chapter 8.

Volume II contains comments on the March 2007 document and agency responses to those comments.

Twelve appendices (Appendix A through L) were included in the March 2007 document EA and are not included in this November 2007 document unless changed or updated. Three additional and three revised appendices are included in this February 2008 document. These appendices follow the references and include:

Appendix F — Revised Draft DEQ Environmental Specifications
Appendix H— Land Use Types By Milepost
Appendix L— Photographic Simulations
Appendix M—MATL System Impact Study and WECC Letter
Appendix N – Farm Cost Review for MATL Project
Appendix O – Potential Wind Farm Mitigation Measures BLM Programmatic EIS for Wind Energy Development on BLM Lands in the Western U.S.

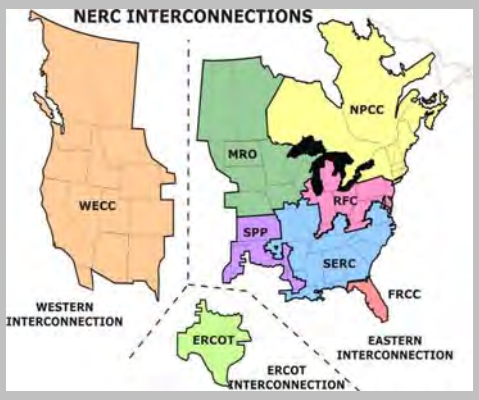
1.1 Project Background

In North America, electricity moves from power generating facilities to customers using a transmission system. The North American Electric Reliability Corporation (NERC) is responsible for improving the reliability and security of the electric power system in North America. NERC works with eight Regional Reliability Councils to improve the reliability of the bulk power system. The members of the regional councils come from all segments of the electric industry: investor-owned utilities, Federal power agencies, rural electric cooperatives, state, municipal and provincial utilities, independent power producers, power marketers, and end-use customers (NERC 2006). These entities account for virtually all the electricity supplied and used in the U.S., Canada, and a portion of Baja California, Mexico (**Figure 1.1-2**). Montana is located primarily within the Western Grid (see text box) under the direction of the Western Electricity Coordinating Council (WECC), one of the eight regional councils.

By design, the Western Grid system is weakly tied to the eastern portion of the North American Grid. There is currently no direct high voltage power transmission connection between Alberta and Montana (**Figure 1.1-2**).

To ensure reliable electrical transmission service, NERC authorizes "balancing authorities" in critical areas throughout the system that are responsible for maintaining load-interchange-generation balance within a balancing authority area. The WECC region contains 44 transmission operators and 35 balancing authorities (**Figure 1.1-2**). NWE and DOE's Western Area Power Administration (WAPA) are the two balancing authorities in Montana (NERC 2007). A description of the existing transmission system in Montana and Alberta, and how reliability could be affected by the Project is provided in Section 3.17.

While the power system in North America is commonly referred to as "the grid," there are actually three distinct power grids or "interconnections." The Eastern Interconnection includes the eastern two-thirds of the continental United States and Canada from Saskatchewan east to the Maritime Provinces. The Western Interconnection includes the western third of the continental U.S. (excluding Alaska), the Canadian provinces of Alberta and British Columbia, and a portion of Baja California Norte, Mexico. The third interconnection comprises most of the state of Texas. The three interconnections are electrically independent from each other except for a few small direct current ties that link them. Within each interconnection, electricity is produced the instant it is used, and flows over virtually all transmission lines from generators to loads.



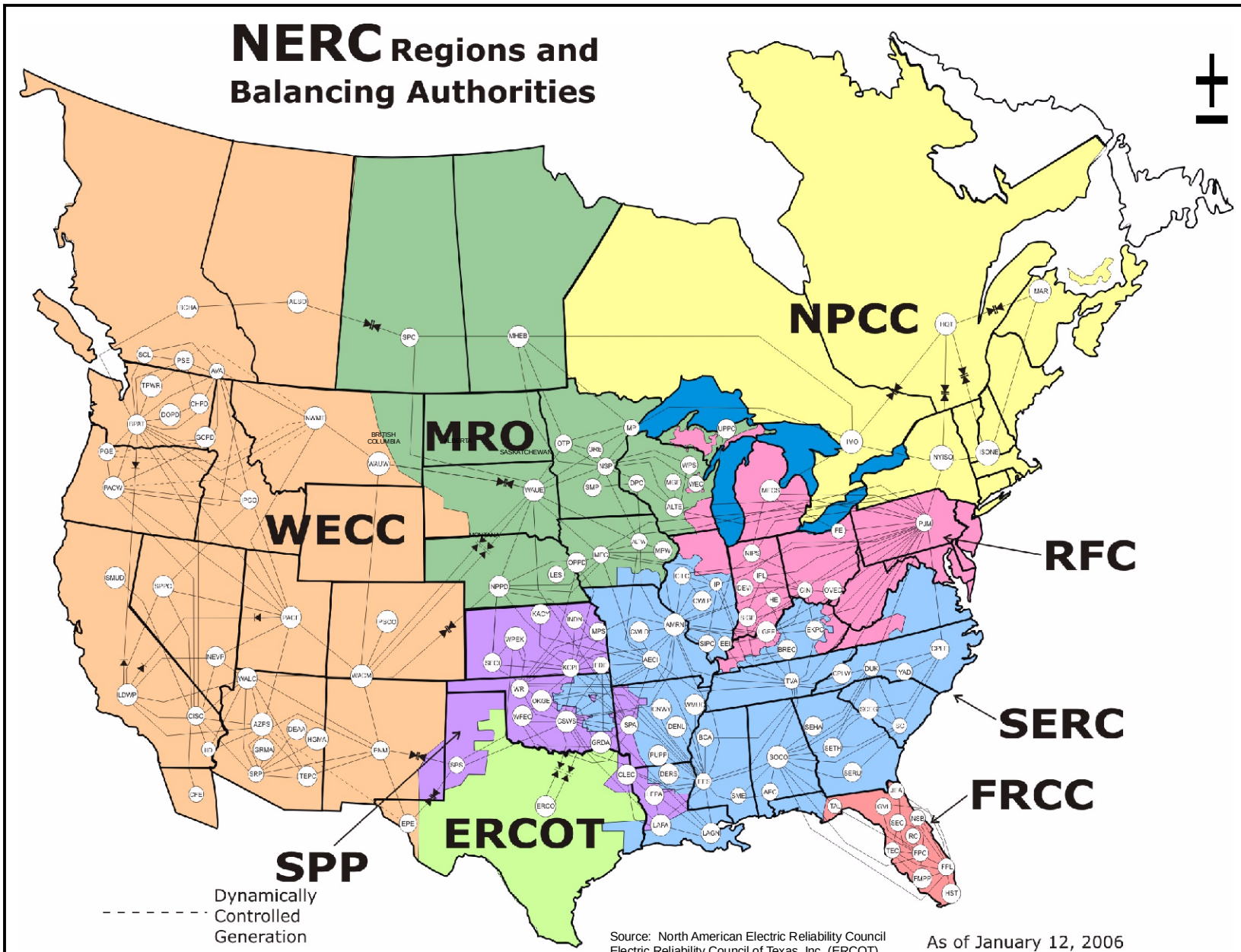


FIGURE 1.1-2
NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL REGIONS AND BALANCING AUTHORITIES

GIS map by Ed Madej - TTEMI-HE
Fig1_1-2_MATL_NERC_Regions_020107_JA.mxd

1.2 Purpose, Benefit, and Need

This section describes the purpose and benefit of the proposed action to the State of Montana as required under MEPA and MFSA (Section 1.2.1). This section also addresses purpose and need for the Federal action as required under NEPA (Section 1.2.4) and purpose and benefit to the applicant (Section 1.2.2) and the need for the facility under MEPA (Section 1.2.3). DEQ will make several findings, including a finding of need, before a certificate can be issued under MFSA. Under MFSA, consideration will be given to the benefits of the project to the applicant and to the state.

1.2.1 Purpose and Benefit to the State of Montana

The purpose for the proposed MATL transmission line is to connect the Montana electrical transmission grid with the Alberta electrical transmission grid (no direct connection currently exists), provide access to potential markets for new and existing power generation facilities in the vicinity of the proposed transmission line, and improve transmission access to markets seeking new energy resources. Expected benefits of the proposed Project are summarized below and examined in detail in Section 3.13.

Benefits to Electricity Generators and Consumers in Montana

The proposed transmission line could transport 300 MW of power north and 300 MW south on a firm basis (guaranteed). Customers who have signed agreements with MATL to ship power on a firm basis are currently wind farm developers in Montana and are listed in **Table 4.1-2**. Although the electricity generated by these wind farms may be shipped over the MATL transmission line and the majority of the revenue earned by MATL may be from wind farm operators, the MATL transmission line and the potential wind farms are not connected actions. Potential wind farms along the MATL line are considered to be reasonably foreseeable future actions and are discussed as cumulative impacts in Chapter 4.

Due to constraints on the current electrical grid system where MATL would tie in at Great Falls, the full capacity of 300 MW to the south may not be realized at all times. The added electrical transmission capacity from the MATL line could support a modest increase in new power generation in Montana. When the firm capacity is not being fully used by the contracted firm power generators, the line would be available for short-term, non-firm transfers of power from other generation sources. If the proposed transmission line is approved, MATL will have already sold the firm capacity of the line to four potential wind farms before construction begins. The known information regarding the four wind energy generation companies that have contracted with MATL is provided in Chapter 4.

Additional expected benefits to Montana generators and consumers include: additional connection with markets that demand energy from sustainable sources, such as electricity generated from wind power; additional wholesale electricity purchasing options for Montana utilities, which could result in lower rates due to an increase in supplier competition; and increased opportunities for western grid system optimization during high Montana export and low Alberta-BC export scenarios.

Benefits to Existing Transmission Systems

A modified transmission system, including a tie line between Montana and Alberta, may also result in benefits to transmission system operators whose service areas include Montana and to utilities that provide transmission service within the state. A modified transmission system could provide more options for power routing within Montana, increase energy transactions between Montana and Alberta, and allow for easier balancing of energy surpluses and shortages within and between balancing authority areas. Because tie lines are able to connect with adjacent electric systems, different generation resources can combine to provide a level of reliability that one jurisdiction could not otherwise afford if that jurisdiction had to cover the same resources independently. The MATL line could also create another opportunity for Montana's largest privately owned transmission and distribution utility, NWE, to obtain regulating reserves for its transmission system control area.

1.2.2 Benefits as Stated by the Applicant

The MATL transmission line is a merchant line the primary purpose of which is to financially benefit the owner/operators. The MATL application for certification described the following benefits to MATL, the U.S., and Canada (MATL 2006b):

> *The Project would be the United States' first power transmission interconnection with Alberta and is expected to facilitate development of additional sources of generation (e.g., wind farms both in northern Montana, and southern Alberta), and improve transmission system reliability in Montana, Alberta, and on a regional basis in both the U.S. and Canada. In addition, the Project would promote increased trade in electrical energy across the international border, and provide a transmission route to balance energy surplus/shortage situations in an efficient and economic manner.*

In addition, MATL asserts that system stability studies conducted under the direction of the WECC Peer Review Group indicate that the proposed Project would not adversely affect transmission system stability (Tonbridge Power, Inc. 2007).

1.2.3 Need for the Facility

The need for this line is the additional transfer capacity it would provide, if built. This line would directly connect Montana's and Alberta's regional operating transmission systems, and would allow power to flow directly between these two systems where there is no current connection.

Because Montana makes more electricity than it consumes, to be economically viable, any new generation resources in Montana will offer competitive pricing and have adequate transmission access to compete in out-of-state markets or replace an existing supplier choosing to take higher profits by selling out of state (DEQ 2004). Either way, additional transmission capacity is not needed to serve Montana customers, but it is essential for the viability of new generation enterprises (DEQ 2004).

The MATL transmission line could support a modest increase of new electricity generators, such as wind, in the study area by connecting them to regional grids and thus potentially to electricity markets. The MATL transmission line is proposed to be capable of shipping up to 300 MW north and 300 MW south. The amount of new generation that would be able to be shipped south into Montana by MATL is currently unknown due to potential transmission constraints south of Great Falls, which would be the southern terminus of the MATL transmission line. To the extent that southerly electrical flows on the MATL transmission line are constrained, this would reduce MATL's ability to meet the need for increased capacity. It also might result in more electricity flowing north from Montana into Alberta than from Alberta to Montana.

1.2.4 Purpose and Need for DOE Action

DOE will consider this EIS to determine whether to grant a Presidential permit to MATL for the construction, operation, maintenance, and connection of the proposed 230-kV transmission line that would cross the U.S.-Canada border. The purpose of DOE's action is to respond to MATL's request for a Presidential permit. BLM will use this EIS to determine whether granting an easement to MATL for the proposed transmission line would be compatible with its West HiLine Resource Management Plan.

1.3 Scope of this Document

The objective of this February 2008 document is to evaluate the potential environmental impacts associated with the proposed actions of issuing a MFSA certificate of compliance, a DOE Presidential permit, and a BLM easement that would result in the construction and operation of the proposed MATL 230-kV transmission line (the Project) or two action alternatives. This document also provides information pertaining

to findings necessary for transmission line certification in accordance with MFSA (Section 3.18). The document also considers a "No Action" alternative, the impacts of not certificating or permitting the proposed facility, or amending the land use management plan. The alternatives are described in Chapter 2 along with several local routing options. The description of the environment that would be affected by the proposed Project and alternatives and an analysis of impacts to human health and the environment are provided in Chapter 3. Resource areas that are discussed in detail in this document are: land use, geology and soils, engineering, hazardous materials, water, wetlands, vegetation, wildlife, fish, special status species, air quality, noise, transportation, human health and electromagnetic fields, socioeconomics, visuals, cultural resources, and the transmission grid.

This February 2008 document analyzes only those project-related facilities constructed inside the U.S. Neither the U.S. nor agencies of the State of Montana have jurisdiction over the regulation or permitting of facilities in Canada.

1.3.1 Alternatives Considered For Detailed Analysis

A discussion of how alternatives were developed, alternatives considered but dismissed from detailed analysis, and complete descriptions of the four alternatives considered for detailed analysis is provided in Chapter 2. A summary of the four alternatives is presented below.

Alternative 1 — No Action

Under Alternative 1, the proposed Project would not be approved by DEQ, DOE, or BLM and, consequently, would not be constructed. Existing electrical transmission service in north-central Montana would be maintained and operated at its current level. In addition, plans to construct new generation facilities in the analysis area would need to consider other transmission alternatives or not be built.

Alternative 2 — Proposed Action

Alternative 2 is to construct and operate a merchant transmission line between Great Falls, Montana and Lethbridge, Alberta, as described in MATL's application to DEQ (MATL 2006b), application to DOE for a Presidential permit, and application to the BLM for an easement. The Alternative 2 proposed alignment is 129.9 miles long (within Montana) and extends from the 230-kV Great Falls switch yard north of Great Falls to a proposed new substation near Cut Bank, and extends north to the Montana-Canada border at the western edge of the Red Creek Oil Field. Monopole structures would be used on 53 miles of the line where it would cross cropland and Conservation Reserve Program (CRP) land diagonally. H-frame structures would be used for the remainder of this alternative.

Alternative 3 – MATL B

Alternative 3 would be 121.6 miles long and would be similar to Alternative 2 in that the width of the right-of-way, types of access roads, implementation, conductors, markers, substations, construction, operations, maintenance, and potential environmental protection measures would be the same as those described for Alternative 2. The Alternative 3 alignment would be different from Alternative 2 in that it would generally parallel an existing 115-kV transmission line along the entire route from the Great Falls switch yard to a substation near Cut Bank and use only H-frame structures. Alternative 3 was developed by MATL in response to a single preferred location MFSA siting criterion that recommends paralleling existing utility corridors (Circular MFSA-2, section 3.1). This alternative alignment was not intended to address potential land use issues or maintenance issues.

Alternative 4 – Agency-Developed

Alternative 4 was developed by DEQ within MATL's study area to address concerns raised by the public and interested agencies during the scoping period. Issues of concern that helped shape Alternative 4 are: potential adverse impacts to farmers from diagonal crossings of farm fields using H-frame structures, limitations on private property use due to crossings on private land, and disturbance of visual resources. The alignment under Alternative 4 would be 139.6 miles long and would be generally constructed along field boundaries and where diagonal crossings would not impact farming practices or other private land use. Public land (both Federal- and state-owned) would be used when its use would be as economically practicable as the use of nearby private land. Alternative 4 would also include additional environmental protection measures recommended by DEQ and DOE, but not required under Alternatives 2 and 3. The use of monopoles would be required where the line would cross cropland and CRP land. The width of the right-of-way, project implementation, conductors, markers, substations, types of access roads, construction, operations, and maintenance would be the same as Alternatives 2 and 3.

1.3.2 Other Analyses Used In This Document

Portions of the EIS describing some of the potential impacts resulting from potential development of wind generation projects were summarized and updated from the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (BLM 2005). This document assessed the environmental, social, and economic impacts associated with wind energy development on BLM-administered land. This analysis was used to evaluate cumulative impacts on the environment that would result from the incremental impact of an action alternative when added to other reasonably foreseeable future actions such as increased wind energy development projects.

1.4 Agency Permitting Actions and Authorities

Together, DEQ, DOE, and BLM are responsible for the preparation of this November 2007 document. DEQ administers MFSA, MEPA, the Montana Hazardous Waste Act, the Montana Water Quality Act, and the Clean Air Act of Montana. After a certificate is issued, MFSA (75-20-401[1], MCA) would preempt all other state and local laws except those pertaining to air quality, water quality, worker health and safety, noxious weed control, and instances where the state has a property right such as on state-owned land.

The location of the proposed MATL transmission line will conform to applicable state and local laws and regulations, except where the DEQ may refuse to apply any local law or regulation if it finds that the law or regulation is unreasonably restrictive in view of existing technology, of factors of cost or economics, or of the needs of consumers, whether located inside or outside the directly affected government subdivisions.

In addition to DEQ, DOE, and BLM, other local, state, and Federal agencies have jurisdiction over certain aspects of MATL's proposed Project. **Table 1.4-1** provides a comprehensive listing of agencies and their respective permit/authorizing responsibilities with respect to the proposed Project.

The initial step in the Montana regulatory process is filing of the MFSA application, which is required by DEQ, under Title 75, Chapter 20, MCA. MATL submitted its MFSA application in December 2005. For DOE, the initial step was MATL's submission of its application for a Presidential permit on October 7, 2005 (70 FR 65891, November 1, 2005). For BLM, MATL must submit an application for Transportation and Utility Systems and Facilities on Federal Land prior to beginning construction of the transmission line.

Electricity Export Authorization

Exports of electricity from the United States to a foreign country are regulated by DOE pursuant to sections 301(b) and 402(f) of the Department of Energy Organization Act (42 U.S.C. 7151(b), 7172(f)) and require authorization under section 202(e) of the Federal Power Act (FPA) (16 U.S.C.824a(e)). However, in its application to DOE for a Presidential permit, MATL indicated that it intends to operate the proposed merchant transmission line as an "open access" transmission facility, as that term is defined by the U.S. Federal Energy Regulatory Commission, and that MATL would not export electric energy to Canada on its own account. Therefore, MATL does not intend to seek, nor does it require an electricity export authorization. However, any other entity exporting electricity to Canada using the MATL facilities, if authorized, would require an electricity export authorization issued by DOE.

TABLE 1.4-1
PERMITS AND OTHER REQUIREMENTS FOR THE PROJECT

Permit[a]	Agency	Description	Authority
STATE			
Certificate of Compliance	**Montana Department of Environmental Quality**	Reviews project application, conducts reviews of project impacts, approves and coordinates other permit activities, and monitors project to determine compliance with terms of certificate.	Montana Major Facility Siting Act
Section 401 Certification	**Montana Department of Environmental Quality**	Provides review of potential adverse water quality impacts from discharges associated with dredged or fill materials in wetlands and other Waters of the U.S.	Montana Water Quality Act
318 Authorization	**Montana Department of Environmental Quality**	Provides for a temporary narrative water quality standard for turbidity due to construction.	Montana Water Quality Act
Land Use License (DS-432)	**Montana Department of Natural Resources and Conservation**	Licensing structures and improvements on state lands and across navigable water bodies.	Title 77, MCA
Pre-construction Authorization	**Montana Department of Natural Resources and Conservation**	Authorizes construction prior to easement grant by the Board of Land Commissioners	85-2-402 and 85-2-407, MCA
Utility Crossing Consultation and Occupancy Permit	**Montana Department of Transportation**	Jurisdictional authority for issuing encroachment and occupancy permits; issuing approach permits; and review and approval of modification to Federal-aid eligible highways.	60-6-111, MCA; Title 75, Chap. 20, Sec. 103 and 401
FEDERAL			
Presidential Permit	**U.S. Department of Energy**	Issuance of a permit must be found to be consistent with the public interest and DOE must obtain concurrence of the Secretary of State and Secretary of Defense before permit can be issued.	Executive Orders 10485 and 12038
Section 404	**U.S. Army Corps of Engineers**	Controls discharge of dredged or fill materials in wetlands and other Waters of the U.S.	Section 404 of the Clean Water Act (33 CFR 323.1, 330)
Notice of Proposed Construction/ Alteration	**Federal Aviation Administration**	Structure location, height, lighting, and documentation relative to air traffic corridors.	14 CFR Part 77, Objects Affecting Navigable Airspace

TABLE 1.4-1
PERMITS AND OTHER REQUIREMENTS FOR THE PROJECT

Permit[a]	Agency	Description	Authority
FEDERAL (Continued)			
Safety Plan	**Occupational Safety & Health Administration**	Provides guidance to on-site construction worker safety along with emergency contacts, hospital routes, etc.	29 CFR 1910
Tariff Review and Approval	**Federal Energy Regulatory Commission**	Approval of rates for transmission in interstate commerce for jurisdictional utilities, power marketers, power pools, power exchanges and independent system operators.	Title 18 CFR
Review Authority	**U.S. Department of Defense/U.S. Air Force**	Review of construction plans for power pole placement for potential disturbance of buried cables for Minuteman missile silos.	Consultation and concurrence
Consultation	**U.S. Department of Defense Homeland Security**	Presently required by U.S. security policy.	Consultation and concurrence
Utility Permit for Interstate Crossing	**U.S. Federal Highways Administration**	Review and approval of Montana Department of Transportation permit for transmission lines in the Interstate Highway System right-of-way.	23 CFR Part 645
Section 7 Consultation	**U.S. Fish and Wildlife Service**	Identifies any species and its habitat listed as endangered or threatened that may be impacted by the project.	Federal Endangered Species Act of 1973
A Biological Opinion or Concurrence with the Biological Assessment	**U.S. Fish and Wildlife Service**	USFWS must concur with the Biological Assessment or prepare a Biological Opinion.	Federal Endangered Species Act of 1973
Section 106 Consultation	**Advisory Council on Historic Preservation and Montana State Historic Preservation Office**	Consultation between project applicants and Federal agencies regarding impacts on cultural resources that are either listed or eligible for listing on the NRHP.	Section 110 and 106 of the National Historic Preservation Act
Rights of Way on Federal Land	**U.S. Bureau of Land Management**	Easement on Federal land crossed by the project.	Federal Land Policy Management Act Subchapter V
Compatibility Review	**U.S. Department of Agriculture, Farm Service Agency**	Facility siting on CRP contracted land requires a compatibility review to determine a facility's potential impact to the CRP status of the affected property.	Food Security Act of 1985

TABLE 1.4-1 PERMITS AND OTHER REQUIREMENTS FOR THE PROJECT			
Permit[a]	**Agency**	**Description**	**Authority**
LOCAL/COUNTY/OTHER			
Noxious Weed Management Plan	**County Weed Control Districts**	Provides containment, suppression, and eradication of noxious weeds.	Title 7, MCA
Easement Grants and Road Crossing Permits	**Boards of County Commissioners**	Consider issuance of right-of-way easement grants and road-crossing permits for county property and roadways.	County Commissioners
Line Rating	**Western Electricity Coordinating Council**	Three phases of line rating approval.	National Electricity Coordinating Council Energy Policy Act of 2005

Notes:

[a] Refers to permit, notice, review authority, certificate, license, consultation or law.
CFR Code of Federal Regulations
MCA Montana Code Annotated
USC United States Code

Eminent Domain

Eminent domain is the process by which the state can acquire private property for public use. The state is limited in that "just compensation to the full extent of the loss" will be paid to the property owner when exercising eminent domain (Montana Legislative Services 2005). Different property types and land uses have been identified by the legislature as appropriate public uses of eminent domain. Among these uses, power lines and their associated rights of way are included with the stipulation that rights of way are designed to be most compatible with the greatest public benefit and the least private harm (Evans 2001). Before acquiring property through the use of eminent domain, the state will prove that public interest requires taking the property based on several criteria and then proceed through the legal process (Evans 2001). It is through eminent domain that states have the power to provide transportation corridors and other infrastructure needs for their citizens.

Any Presidential permit that DOE may issue does not convey any rights of eminent domain.

1.5 Public Participation and Issues of Concern

The scoping process is used to identify all issues relevant to the Project as proposed by the applicant and to develop alternatives to the proposed Project. Members of the public, the agencies, and the interdisciplinary EIS team all helped to define the issues for the scope of analysis. Information related to consultation and coordination among public and government entities can be found in Chapter 5.

1.5.1 Opportunities for Public and Agency Input

DOE issued a "Notice of Intent to Prepare an Environmental Assessment and to Conduct Public Scoping Meetings and Notice of Floodplain and Wetlands Involvement; Montana Alberta Tie, Ltd." in the *Federal Register* on November 18, 2005 (70 FR 69962). In addition, DOE mailed a copy of the notice, using Montana land ownership records, to each owner of land on the MATL-proposed corridor.

DEQ and DOE hosted public meetings in December 2005. In addition, DEQ hosted a public meeting in June 2006 because MATL changed its proposed alignment north of Cut Bank. During the meetings, the public was asked to identify issues and concerns to be addressed during the review. During each meeting, MATL and DEQ representatives presented briefings. Maps and other information were available for review, and representatives from each agency were available to discuss the project, answer questions, and receive public comments.

Meeting dates and locations are listed below:

- Conrad on Monday, December 5, 2005, at Norley Hall,
- Great Falls on Tuesday, December 6, 2005, at the Great Falls Civic Center,
- Cut Bank on Wednesday, December 7, 2005, at the Glacier County Voting Center, and
- Cut Bank on Monday, June 26, 2006, at the Cut Bank Civic Center.

Additionally, throughout the scoping process, stakeholders expressed their concerns via letters, phone calls, and emails.

A Draft EIS/EA was released for public review in March 2007. Three public hearings were held to receive public comments:

- Conrad on Tuesday, March 27, 2007, at Norley Hall,
- Cut Bank on Wednesday, March 28, 2007, at the Glacier County Voting Center, and
- Great Falls on Thursday, March 29, 2007, at the Great Falls Civic Center.

On June 7, 2007, DOE published in the *Federal Register* (72 FR 31569) a Notice of Intent to Prepare an EIS and to Conduct Scoping and invited additional comments for a 30-day period.

Following publication of this draft EIS, the agencies will hold a 45-day comment period. During that time, the agencies will host additional public hearings allowing the public to submit their comments and will also accept written comments from the public.

Other agencies having interest or responsibility in the project approval process include: FWP, Montana State Historic Preservation Office (SHPO), DNRC, MDT, MDOR, MPSC, U.S. Department of Agriculture (USDA) Farm Service Agency, BLM, and U.S. Fish and Wildlife Service (FWS).

1.5.2 Issues of Concern

Based on comments received from participating agencies and the public before and after the issuance of the March 2007 document, ten issues and concerns were identified and are briefly described below.

(1) Impacts on farming, ranching, and other land uses:

Concerns were expressed regarding potential difficulties and hindrances of farming around the transmission line structures, potential for interference with Differential Global Positioning System (DGPS)-guided farm equipment, potential for noxious weed growth, interference with existing and future pivot or mechanical irrigation systems, and additional fencing needs. One commenter noted that when the original NWE 115-kV Great Falls to Cut Bank line was constructed in the mid-1960s, farmers on the west side of the Golden Triangle expressed concern over the H-frame structures, especially the difficulty of farming around them. With cultivation toolbars and sprayers today ranging up to 120 feet in length, an additional diagonal transmission line presents obstacles to farmers. Requests were made for evaluation of a monopole line that follows (where possible) existing roads, property or section lines, or field boundaries. Realignments of the proposed line could be made at turning points located on land historically used for grazing or placed in CRP. Some stakeholders commented that the proposed line should connect to the WAPA 230-kV line at Shelby, negating the need for a new line that would cross diagonally through cropland all the way to Great Falls.

(2) Impacts on protected, threatened, endangered, and sensitive animal and plant species and their critical habitats:

Concerns were expressed about increased perch opportunities for birds of prey and resulting effects on sharp-tailed grouse populations and special status wildlife. There was concern over disturbance of rare plant species that may occur within the project area. Concerns were also expressed regarding interference with migratory and feeding flight paths of waterfowl, bird strike, and potential impacts on critical wildlife habitats.

(3) Impacts on floodplains and wetlands:

Concerns were expressed about the size and degree of impacts on known and delineated floodplains, wetlands, waters of the U.S., and other special aquatic sites.

(4) Avian mortality:

Concerns were expressed regarding bird mortality and suggestions were made for the use of bird strike mitigation practices currently implemented at the FWS Benton Lake National Wildlife Refuge and other applicable sites in the northern Great Plains.

(5) Impacts on cultural and historic resources:

Concerns were expressed regarding potential disturbance of Native American settlements and religious sites in the alignments.

(6) Impacts on human health and safety:

Concerns were expressed regarding specific voltage and current specifications, minimum ground clearance of the line, corona effects (including audible noise and radio and television interference), and other electromagnetic field effects from the operation of the 230-kV transmission line on human health and safety.

(7) Impacts on air, soil, and water:

Concerns were expressed regarding highly erodible soils, such as soil erosion and resultant sedimentation to surface water; mass movement and unstable geologic materials and soils; reclamation constraints; and potential increased soil erosion and impacts on existing air quality.

(8) Visual impacts:

Concerns were expressed regarding visual impacts to homes, historic homesteads, and tribal landscapes.

(9) Socioeconomic impacts:

Concerns were expressed regarding potential impacts to taxes and disturbance of residential property in Cascade, Teton, Chouteau, Pondera, Toole, and Glacier counties from the construction and operation of the line. Farmers expressed concerns regarding socioeconomic impacts associated with the costs of farming around transmission structures.

(10) Impact from development of wind generation projects:

Concerns were expressed regarding the potential wind energy and other electrical generation development, or limitations of that development that may be associated with the new Montana Alberta Tie 230-kV Transmission Line as "reasonable and foreseeable" development.

1.6 Definition of Terms

All technical terms, regulatory language and acronyms used in this document are defined in Chapter 7. Terms that are used to identify an area of study and common electrical power transmission units are defined as follows:

- The **facility location,** also referred to as the **alignment,** is the 500-foot-wide swath encompassing each alternative. It is defined as 250 feet on either side from a reference centerline; however, unless otherwise stated, a pole may be placed anywhere within the alignment. The alignments for the proposed Project and alternatives are shown in maps.
- The **study area** is a 2,260-square-mile area that includes the proposed and alternative alignments and areas where roads may be built or improved. The study area was defined by MATL in its MFSA application to DEQ.
- The **safety zone** is a term used in discussions of safety, and electric and magnetic fields, and is a 105-foot-wide area centered on the transmission line within the alignment for each alternative. The term is also used in the discussion of payments to landowners.
- The **analysis area** is the area evaluated for each resource. Different resources have different analysis areas. For some resources, the analysis area includes the area directly affected. On the other hand, because impacts to water resources can be realized downstream from ground disturbance, the analysis area for water resources is the entire study area.
- If an alternative is selected and the line permitted, MATL proposes to negotiate a 45-foot-wide **right-of-way** with each landowner. It would fall within one of the alternative alignments evaluated in the environmental analysis.
- **Megawatt** (MW) is a unit used to measure the amount of electrical power transmitted through a transmission line. One megawatt equals 1,000,000 watts.
- **Kilovolt** (kV) is a unit used to measure the voltage at which a transmission line is operated. One kilovolt equals 1,000 volts.

2.0 Description of Alternatives

2.1 Development of Alternatives

This environmental analysis evaluates the proposed MATL 230-kV transmission line (the Project) and three alternatives and several local routing options to the Project. MFSA requires DEQ to find that the facility as proposed, or as modified, minimizes adverse environmental impacts, considering the state of available technology and the nature and economics of the alternatives. NEPA and MEPA require DOE and DEQ to evaluate the proposed Project, reasonable alternatives to the proposed Project that would fulfill its purpose and need, and the No Action alternative.

The No Action alternative reflects the status quo and serves as a benchmark against which the Project and other alternative actions can be evaluated. The No Action alternative is Alternative 1. The proposed Action is Alternative 2. Alternatives 3 and 4 describe two additional alignments that were developed based on comments and issues raised during the scoping process. In addition, ten possible local routing options were developed that could be included in the proposed Project (Alternative 2). These local routing options were based on landowner or MATL input and comments on the March 2007 document and are discussed in Section 2.6. Alternatives that were eliminated from further study are discussed in Section 2.7.

Development of Alternatives

The development of alternatives was based on scoping comments, baseline information in the MATL MFSA application (MATL 2006b), technical analysis of the baseline information and issues, and mandates of the laws, rules, and regulations administered by the agencies. MATL developed three possible transmission line alignments for the MFSA application. This environmental review analyzes two of those MFSA alignments: MATL A - the proposed Project (Alternative 2), and MATL B - an alignment generally following the NWE 115-kV transmission line from Great Falls to Cut Bank (Alternative 3). The third alignment developed by MATL (MATL C) was not analyzed in detail because it did not address scoping comments as well as other alternatives.

Issue-Driven Modifications to the Proposed Project

Issues raised during scoping are summarized in Chapter 1. In response to concerns about diagonal crossings of farmed fields, land use and right-of-way issues, pole construction types and their relationship to land use issues, visual impacts, and wildlife, the agencies began developing Alternative 4 by looking at eight local realignments to the alignment in Alternative 2. Local realignments could resolve site specific issues.

The eight local realignment segments are described in detail in **Appendix A** (March 2007 document). Since some of the local realignment segments overlapped, DEQ and DOE met to compare potential effects and evaluate the tradeoffs among the local realignments. They selected five of the eight segments and combined them with portions of Alternative 2 to make Alternative 4. Alternatives and local realignment segments that were eliminated from further consideration are identified in **Section 2.7** and in **Appendix A** of the March 2007 document. These remaining segments represent a balance among resource impacts, MFSA criteria for approval listed in 75-20-301(1)(c) and (h), MCA, and the following location criteria for electric transmission lines listed in section 3.1.1 of Circular MFSA-2:

- Where there is the greatest potential for general local acceptance,
- Where the alignment uses or parallels existing utility and transportation corridors,
- In nonresidential areas,
- On rangeland rather than cropland,
- On non-irrigated or flood irrigated land rather than mechanically irrigated land,
- In geologically stable areas with non-erodible soils in flat or gently rolling terrain,
- In roaded areas where existing roads can be used for access to the facility during construction and maintenance,
- So that structures need not be located on a floodplain,
- Where the facility would create the least visual impact,
- At a safe distance from residences and other areas of human concentration, and
- In accordance with applicable local, state, or Federal management plans when public lands are crossed.

Several local routing options were developed following comments on the March 2007 document. These local routing options address specific concerns and are discussed in Sections 2.6 and 3.16.

2.2 Alternative 1 — No Action

Under Alternative 1, the proposed Project would not be approved by DEQ, DOE or the BLM and, therefore, could not be built by MATL. Existing electrical transmission service in southern Alberta and north-central Montana would be maintained and operated at its current level. In addition, only limited wind development of wind generation resources along the proposed alignment in the Cut Bank area would occur due to limitations of the current transmission system. Selection of Alternative 1 would likely preclude the construction of the proposed facility in Canada as well.

2.3 Alternative 2 — Proposed Project (MATL A)[3]

Alternative 2 is the proposed Project. Alternative 2 is further defined by the alignment, right-of-way, pole design, access roads, construction and operation stages, and environmental protection measures included in MATL's application to DEQ (MATL 2006b). MATL's commitments stated in its application would become part of DEQ's MFSA certificate of compliance unless otherwise conditioned by DEQ. The following description is based on MATL's application to DEQ. The study area for which MATL provided baseline information is shown on **Figure 1.1-1**.

Description of Alignment

The Alternative 2 alignment is 129.9 miles long and is shown in **Figure 2.3-1**. **Figure 2.3-2** shows the southern portion of the alignment in more detail, **Figure 2.3-3** shows the middle part, and **Figure 2.3-4** shows the northern part. The proposed alignment is dominated by agriculture (90.1 percent) interspersed with patches of non-farmland, mostly grasslands. Except for grazing land near the Marias and Teton rivers, and coulees and drainages, the alignment would cross mostly non-irrigated farmland.

The U.S. portion of the alignment would begin at the 230-kV Great Falls switch yard north of Great Falls. For almost 2 miles the alignment would go directly north following an existing NWE transmission line. The alignment then would turn directly west for 1 mile using FWP land on the south side of the Great Falls Shooting Sports Complex (Complex), then north again, passing along the hills on FWP land on the west side of the Complex. The alignment would parallel the east side of Highway 87, cross the highway at milepost 5[4], and continue northwest along Black Horse Lake Flat (the south side of Black Horse Lake), then go north over dry cropland interspersed with some pasture through a low point in the bluffs above Black Horse Lake Flat. At milepost 8 the alignment would turn slightly to the west, diagonally traversing dry cropland approximately 1 mile east of Benton Lake National Wildlife Refuge. At milepost 14 the alignment would extend west for approximately 9 miles, turn north for about 2 miles, and then northwest for about 3 miles, crossing farmland and the following coulees (from south to north): headwaters of Huntley, unnamed (2), Timber, unnamed, Kinsey, and Hunt Coulee. From the Great Falls switch yard to this point about 4 miles of State of Montana land would be crossed. The alignment would pass over the eastern end of Teton Ridge.

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3 *The proposed Federal action is for DOE to issue a Presidential permit for the proposed transmission line described in MATL's Presidential permit application. In this EIS this action is defined as Alternative 2, the proposed Project. DOE would normally label this as the Proposed Action. However, because this document is both a Federal and State of Montana EIS, DOE will be adopting the nomenclature used by DEQ and refer to the Proposed Action as the "proposed Project."*

4 *All references to mileposts refer to the distance along an alignment from the Great Falls switch yard toward the U.S. Canada border.*

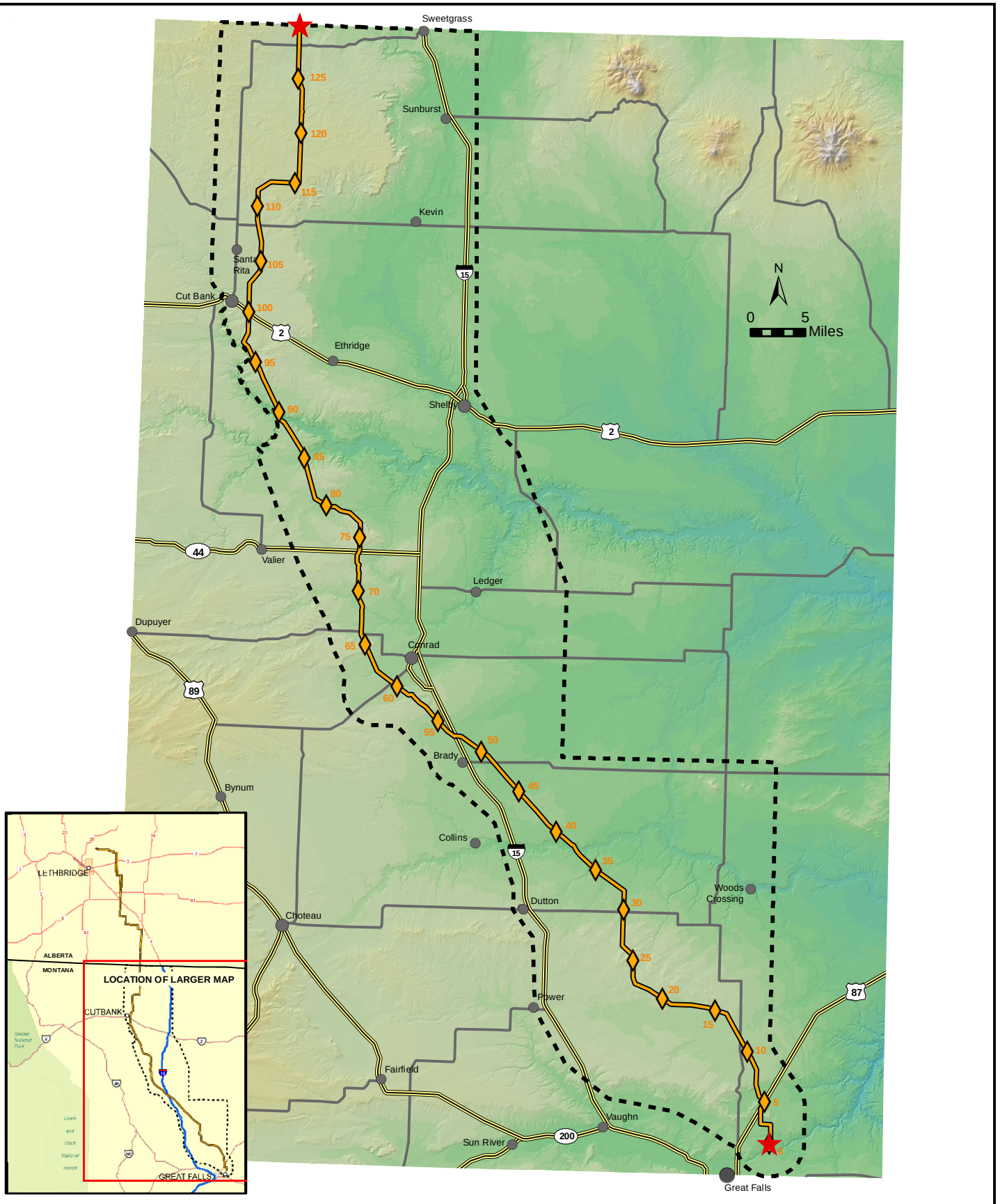

FIGURE 2.3-1
ALTERNATIVE 2 ALIGNMENT

LEGEND

- ALT2 - ALIGNMENT
- MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE Fig2_3-1_MATL_ALT2_Alignment_All_111607.mxd

N

0 4 Miles

50
45
40
35
30
25
20
15
10
5
0

15
87
200

Dutton
Power
Vaughn
Woods Crossing
Great Falls

FIGURE 2.3-2
ALTERNATIVE 2 ALIGNMENT SOUTH

LEGEND

- ALT 2 - ALIGNMENT
- ALT 2 MILE MARKERS
- ALT 3 - ALIGNMENT
- ALT 3 MILE MARKERS
- ALT 4 - ALIGNMENT
- ALT 4 MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE Fig2_3-2_MATL_ALT2_Alignment_South_111907.mxd

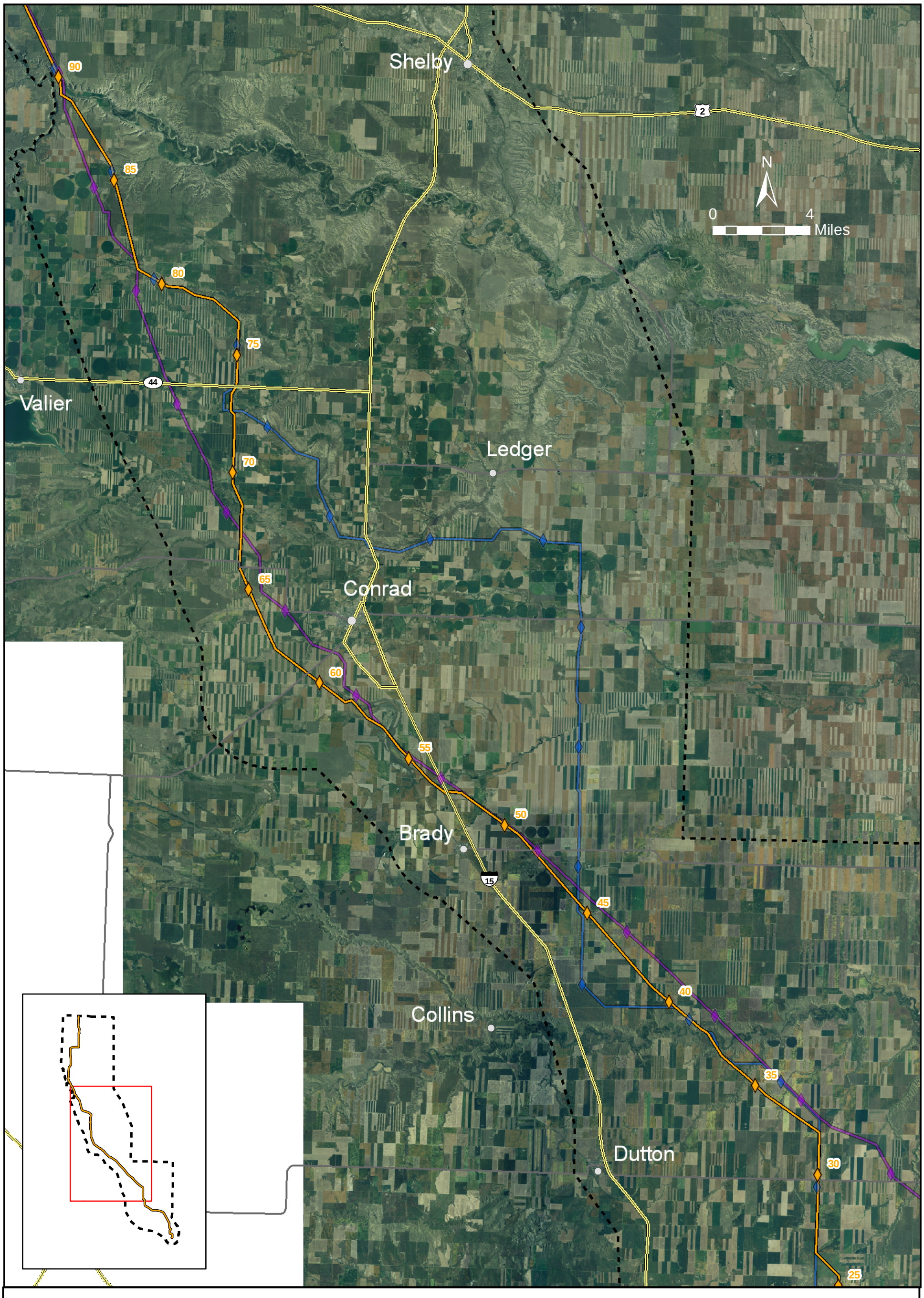

FIGURE 2.3-3
ALTERNATIVE 2 ALIGNMENT
MIDDLE

LEGEND

- ALT 2 - ALIGNMENT
- ALT 2 MILE MARKERS
- ALT 3 - ALIGNMENT
- ALT 3 MILE MARKERS
- ALT 4 - ALIGNMENT
- ALT 4 MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE Fig2_3-3_MATL_ALT2_Alignment_Middle_111907.mxd

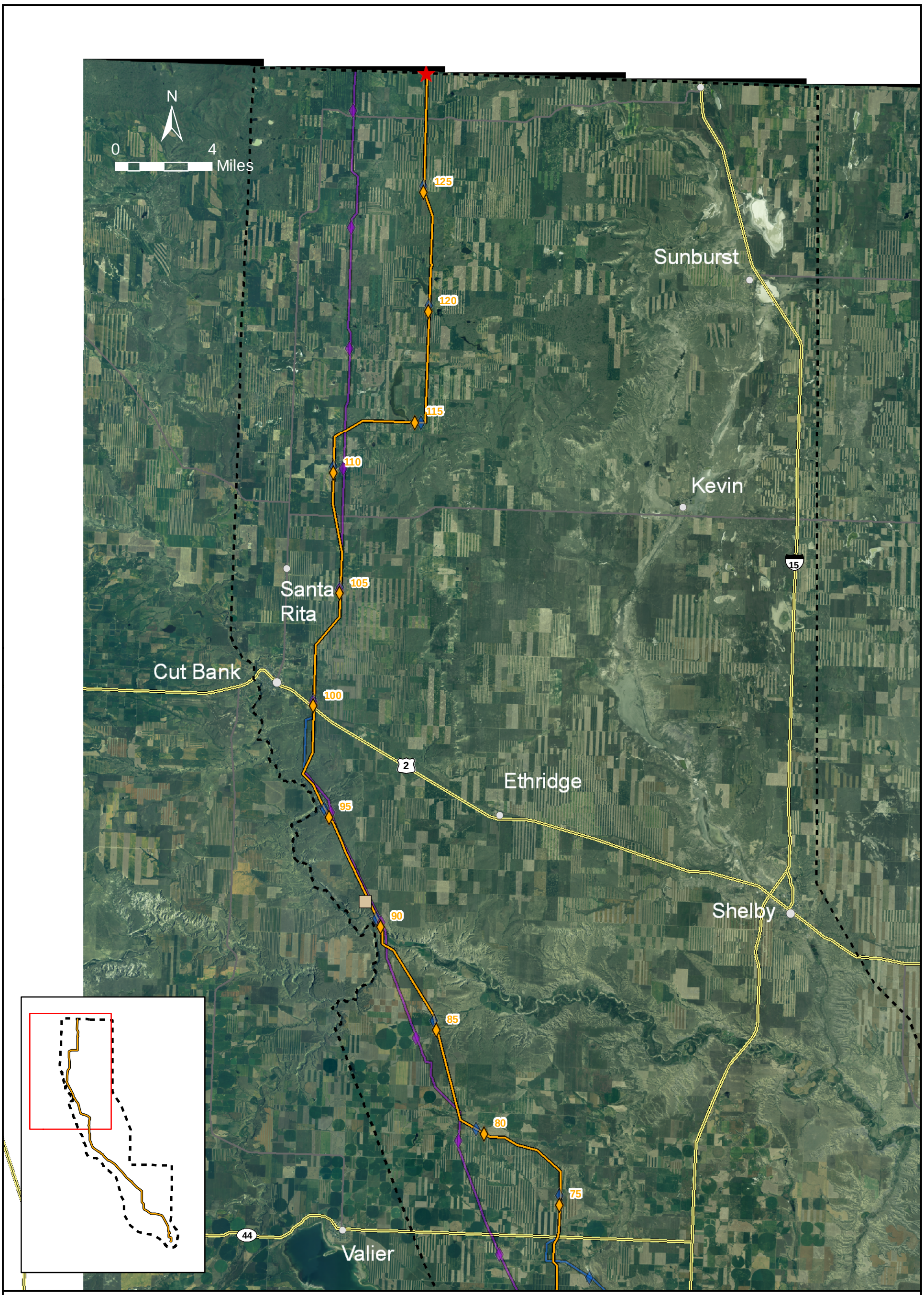

FIGURE 2.3-4
ALTERNATIVE 2 ALIGNMENT
NORTH

LEGEND

- ALT 2 - ALIGNMENT
- ALT 2 MILE MARKERS
- ALT 3 - ALIGNMENT
- ALT 3 MILE MARKERS
- ALT 4 - ALIGNMENT
- ALT 4 MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS
- MARIAS SUBSTATION

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE Fig2_3-4_MATL_ALT2_Alignment_North_111907.mxd

From the crossing of Hunt Coulee at approximately milepost 36, the alignment would traverse approximately 1 mile of cropland and rangeland to the Teton River.

The alignment would span the Teton River about 2.7 miles west of Kerr Bridge, on State of Montana land in a ¼-mile-wide gap in a riparian cottonwood stand avoiding an area of unstable slopes. From the river the alignment would go northwest and north across cultivated farmland until it intersects and crosses Interstate 15 about 2½ miles north of Brady about milepost 53. The alignment would continue northwest, crossing South Pondera Coulee and the Burlington Northern Santa Fe Railroad and Pondera Coulee, and continue northwest south of Conrad, passing approximately 3 miles west of Conrad.

At milepost 64 the alignment would turn generally north and would cross the eastern end of the Benton Bench. North of the Benton Bench the alignment would cross farmland to the Dry Fork of the Marias River. From milepost 69 north of the river the alignment would continue north about 12 miles over mostly cultivated farmland. From Belgian Hill along Highway 44 the line would go north to about the mid point of Trunk Butte. At milepost 77 the alignment would skirt the edge of farmland and pass through range and pasture land on the north side of Trunk Butte heading west-northwest toward Bullhead Creek. The alignment would follow the south side of Bullhead Creek until crossing the creek approximately 2 ½ miles east of Bullhead Lake. The alignment would traverse farmland and near milepost 81 head northwest. The alignment would cross Abbott Coulee about 2 ½ miles west of Willow Rounds and head northwest to the Marias River.

The alignment would cross the Marias River just west of the existing NWE 115-kV transmission line at milepost 90. The crossing would be approximately ½ mile east of the junction of the Two Medicine River and Cut Bank Creek on State of Montana and BLM land. North of the Marias River the alignment would extend approximately 8 miles northwest, running roughly parallel to Cut Bank Creek to a new Marias Substation south of Cut Bank. The exact location of this substation has not been determined. The alignment would turn north and cross Highway 2 at milepost 100 approximately 1½ miles east of Cut Bank crossing rangeland. From here north the alignment would cross cultivated farmland to cross Old Maids Coulee. North of Cut Bank, about 10½ miles, the alignment would turn east at milepost 112 for approximately 3 miles turning north near Hay Lake and passing the east side of Hay Lake. The alignment would continue north about 14½ miles from Hay Lake over mostly cultivated land to the Montana-Alberta border at a location that coincides with the proposed alignment in Canada. Along this stretch the alignment would pass the eastern edge of Grassy Lake near milepost 121. The border crossing would be at the western edge of the Red Creek Oil Field and would avoid existing oil and gas wells in this area.

Rights-of-Way

MATL proposes an operational right-of-way width of 45 feet plus 30 feet on either side to create a 105-foot safety zone for the proposed Project based on structure type, location, proven construction methods, and safety and operations zones. Transmission line easement requirements would depend on structure widths. The 105-foot-wide zone is to minimize the potential for encroachment and to ensure that if buildings are proposed near the line, the safety zone would be large enough to prevent them from encroaching near the line. The safety zone is based on safety considerations associated with line-to-ground clearances and access needs for line repairs and power line maintenance activities.

As discussed below under Transmission Line Structures, the Project would use a combination of H-frame structures with three-pole structures used at medium and heavy angles (**Appendix B** of the March 2007 document) and dead ends (Glossary) across cultivated ground at right angles as well as on range and pasture lands. Monopoles would be used on nearly all cultivated fields and fields enrolled in the CRP lands that are crossed diagonally (**Figure 2.3-5**). Where the line would turn a corner, angle-bracing guy wires would be used and additional easement space would be required (Appendix B of the March 2007 document).

MATL would coordinate with the Real Estate Management Bureau of DNRC's Trust Land Management Division for rights-of-way and easements across state owned school trust lands and navigable waterways administered by the state. MATL also would coordinate with the BLM Lands and Realty office to seek approval following a compatibility assessment with the BLM's West HiLine Resource Management Plan and completion of the NEPA review process. In addition to fee-owned public lands, areas covered by conservation easements including the FWS wetland easements and the Farm Service Agency's CRP would require that MATL seek compatibility reviews by these agencies on specific parcels to ensure compliance with the terms of the easements.

During the right-of-way acquisition process, MATL has committed to (1) coordinate with each affected landowner in order to develop final alignment and specific tower locations, (2) provide clear information about the right-of-way acquisition process, compensation, construction, and maintenance activities, and (3) understand landowner plans for use of the transmission alignment area in order to address the impact of tower and right-of-way location. The right of eminent domain could be used to obtain easements. The eminent domain process is discussed in Chapter 1.

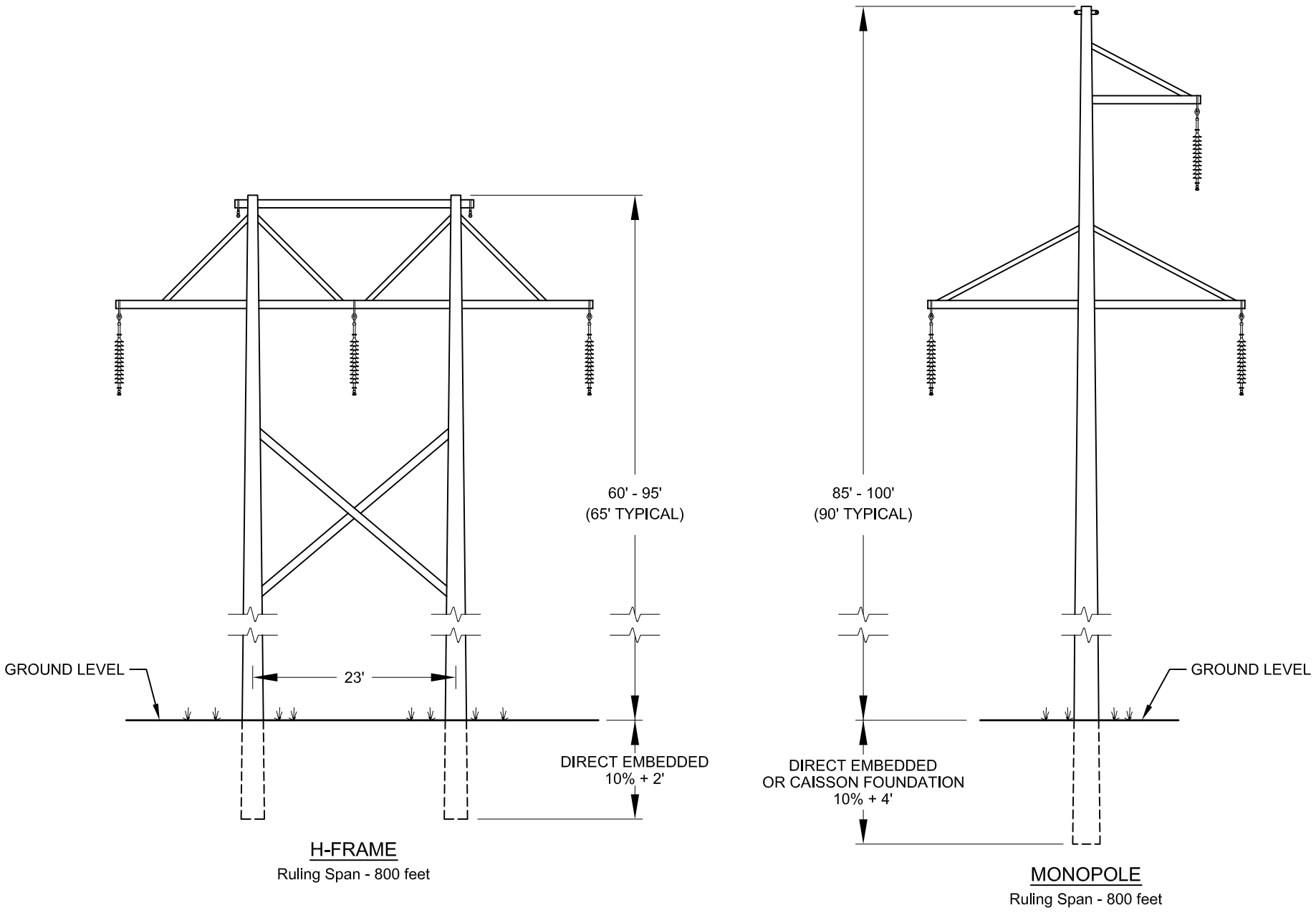

FIGURE 2.3-5
PROPOSED MATL POWERLINE
TYPICAL SUPPORT STRUCTURES

Right-Of-Way Width - 45 ft
Safety Zone Width - 30 ft on each side of ROW

Project Design and Implementation

MATL would design, construct, operate, and maintain the proposed transmission system in accordance with the National Electrical Safety Code (NESC), U.S. Department of Labor Occupational Safety and Health Act (OSHA) Standards, and other guidance as appropriate for safety and protection of property. The following sections describe the system components, general construction methods, and operation of the proposed transmission line.

Transmission Line Structures

Laminated wood or wood pole H-frames would be the primary support structures used to cross range and pasture lands. MATL committed in a letter to DEQ (J.C. van't Hof, MATL President and CEO to Richard Opper, Director Montana DEQ, July 23, 2007) to use monopoles on approximately 53 miles of diagonal alignment that crosses cultivated land using metal monopoles. Additional steel structures may be used for special applications such as monopole dead-end structures. **Figure 2.3-5** illustrates the typical H-frame and monopole structures. Design characteristics of the laminated or round wood-pole H-frame support structures and metal monopole structures are summarized in **Table 2.3-1.** MATL has not specified the exact locations where the monopole structures would be used.

MATL would use different types of H-Frame structures to address the various angles that would be necessary to accommodate changes in terrain and land use. These structures are shown in **Appendix B** of the March 2007 document. The proposed laminated or round wood-pole H-frame structures would incorporate 230-kV design standard synthetic insulators, hardware, and ground wires to provide nearly corona-free operation, as well as reduce audible noise and radio and television interference. On the typical suspension structure, three insulator strings would be hung from each structure. Each string would have 12 individual insulators.

On H-frame structures, one overhead galvanized steel ground wire, about 3/8-inch in diameter, would be installed on one side of the top of the structure for lightning protection. A second ground wire carrying a fiber optic cable for communications would be installed on the other side. On monopoles only the fiber optic ground wire would be used. At this time the fiber optic capacity of the line would only be used for MATL communications and those of MATL customers. MATL would also use the communication capacity to connect MATL facilities and those of NWE and the Alberta Electric System Operator. No plans have been made to use the excess fiber capacity for commercial purposes.

TABLE 2.3-1
TYPICAL DESIGN CHARACTERISTICS [a]

Design Element	H-frame	Monopole
Alternative 2 Length in Montana	129.9 miles	
Length of H-frame or Monopole used in Montana	Approximately 76.9 miles	Approximately 53 miles
Right-of-Way Width	45 feet	Same as H-frame
Safety Zone Width	30 feet on each side of right-of-way	30 feet on each side of right-of-way
Thermal Capacity for 230-kV line	625 MVA @ 212° Fahrenheit	Same as H-frame
Nominal Voltage	230,000 volts (230 kV)	Same as H-frame
Conductor Size	1590 kcmil Falcon	Same as H-frame
Conductor Type	ACSR	Same as H-frame
Overhead Ground Wire	3/8-inch-diameter galvanized	Optical ground wire (diameter of < 0.433 inches)
Electric field at edge of right-of-way	5.39 kV/m	1-conductor side: 4.78 kV/m 2-conductor side: 4.29 kV/m
Electric field at edge of safety zone	1.67 kV/m	1-conductor side: 1.02 kV/m 2-conductor side: 0.98 kV/m
Magnetic field at edge of right-of-way	228.13 mG	1-conductor side: 329.66mG 2-conductor side: 304.63 mG
Magnetic field at edge of safety zone	70.57 mG	1-conductor side: 97.89 mG 2-conductor side: 83.88 mG
Electrostatic short-circuit current limit	5 mA	Same as H-frame
Structure Height Above Ground (approximate)	65 feet average	90 feet average
Length of Span (approximate)	800-foot ruling span	800-foot ruling span
Minimum Ground Clearance of Conductor	21.2 feet at 212°F	Same as H-frame
Typical Structure Base Dimensions	2 poles, 1 foot x 2 foot	1 pole, 30-36 inch radius
Total land temporarily disturbed for conductor reel and pole storage yards	15-20 acres	Same as H-frame
Area required for each structure base during operations[b]	44 square feet	28 square feet
Approximate Cost per mile (U.S. $)	$293,500	$326,500

Notes:

ACSR	aluminum core steel reinforced	Kcmil	1,000 circular mils
kV	kilovolts	kV/m	kilovolts per meter
mA	milliampere	mG	milligauss
MVA	megavolt-amperes		

[a] SNC Lavalin - Revised Design Characteristics, E-mail from B. Williams (MATL) to T. Ring (DEQ), October 18, 2007. Application Revision.

[b] Additional space may be required for angle structures.

For the H-frame structures, holes would be augered into the ground to accommodate the new structures. New poles are typically set in the ground 10 percent of the pole's length plus 2 feet (that is, an 80-foot pole would be buried 10 feet). Spacing between two poles of a proposed 230-kV H-frame structure would be about 23 feet. Typical ruling span length would be about 800 feet, but could range from 500 feet to 1,600 feet. Approximately six to seven (average of 6.6) structures per mile would be required for an 800-foot ruling span. Depending on terrain and type of structure, total disturbance at each structure location during construction would be about 44 square feet for H-frame and 28 square feet for monopole. Pentachlorophenol would be used as a preservative to treat the wood pole structures.

For monopole structure installation, the holes would be 10 percent of the pole length plus 4 feet deep, but have a slightly larger diameter. After the pole is set in the hole, cement would be used, instead of soil, to backfill within approximately 1 foot of the soil surface. The salvaged topsoil material would be replaced on top of the cement and smoothed evenly around the pole. The excess soil from each hole would be evenly regraded around the structure, or hauled off site, depending on the landowner's preference. Additional design characteristics for the project are summarized in **Table 2.3-2**.

TABLE 2.3-2
ADDITIONAL DESIGN CHARACTERISTICS

Component Description	Alternative 2	Alternative 3	Alternative 4
Line Length in Montana (miles)	129.9	121.6	139.9
H-frame	507	803	337
Monopole	350	0	587
Pulling/tensioning sites (10,000 ft^2)	65	61	70
Staging areas (land temporarily disturbed for conductor reel and pole storage yards)	3 to 5 areas	3 to 5 areas	3 to 5 areas
Access road (14 feet wide)	3 miles	5 miles	7 miles
Road disturbance area (16.8 feet wide)[a]	6 acres	10 acres	14 acres

Notes:

NA = Not applicable

ft^2 = square feet

[a] Constructed access road estimates are based on minimal need in areas of steep terrain only. Construction disturbance for a road is assumed to be 20 percent greater than the actual roadbed area.

For construction near water bodies, no pole structures would be installed below the normal high-water mark or within a 100-year floodplain. MATL may use a helicopter for special locations such as major river crossings. If construction occurs during summer or fall months, it may be possible to use a boat to string the line across water bodies. If construction occurs during the winter months, clear-span bridges could be used when a stream is dry or frozen (MATL 2006b). Small watercourses could possibly

be crossed if sufficiently frozen; where crossing isn't possible, other potential options include portable bridge placement or use of existing access roads. Construction across water bodies would be postponed if any excessive flows or flood conditions are present or anticipated. The use of a helicopter or boat would be the construction contractor's choice unless dictated to do otherwise.

Transmission Line Conductors

Electrical conductors provide the medium for flow of electrical energy. The proposed conductor configuration and size for H-frame and monopole support structures are shown in **Table 2.3-1**. The conductor consists of strands of reinforced steel cable encased by aluminum strands. The steel cable provides the tensile strength to support the conductor; the aluminum conducts most of the electrical current.

For both types of support structures (H-frame and monopole), the minimum proposed clearance between the conductor and the ground would be 21.2 feet. The electric and magnetic fields (EMF) are slightly different for H-frame and monopole structures due to the difference in configuration of the conductors (**Table 2.3-1** and **Figures 3.4-2** and **3.4-3**)

Bright Orange Disc Bird Flight Diverter

Markers and Warning Devices

In order to reduce bird collisions with the ground wire, MATL would install bird warning devices in high risk areas such as near Hay Lake, the Marias River, Dry Fork Marias River, and Teton River crossings, east of Benton Lake National Wildlife Refuge (NWR), and high ridge crossings such as the Benton Bench northwest of Conrad. For example, the "firefly" bird flapper/diverter would alert birds to the transmission line through light, motion, and reflectivity (Section 3.8). For daytime deterrence, this diverter uses highly reflective materials and fluorescent colors designed to be seen and avoided by birds. These markers glow in the dark for about 10 hours for night time deterrence. The "firefly" also rotates in 3- to 5-mile-per-hour wind conditions to increase visibility. MATL proposes to explore other technology and deploy it as needed for site-specific application.

Firefly Bird Flight Diverter Daytime

MATL would comply with appropriate regulations of the Federal Aviation Administration (FAA). MATL would install FAA-recommended colored aerial markers for aviation safety and these markers would be installed at major pipeline crossings as determined by consultation with pipeline companies. These ball markers are up to 36 inches in diameter (though 20-inch markers are permitted on approaches to airports where the lines are within 50 feet of the ground) and are available in international orange, white, and yellow (installed with alternating colors). Reflective tape can be installed on the markers to increase their nighttime visibility for aircraft.

New and Upgraded Substations

MATL proposes to construct a new substation, the Marias Substation, next to the proposed Naturener USA McCormick Ranch wind park. This substation would be located approximately 10 miles south of Cut Bank, but the exact location and potential disturbance area has not been determined. The Marias Substation and the expanded 230-kV Great Falls switch yard would be located in farmland or range/pasture land, not in a residential or subdivided area.

North of Great Falls, across the river from Giant Springs State Park, MATL is proposing to interconnect with the NWE 230-kV Great Falls switch yard, requiring NWE to enlarge the switch yard to accommodate the MATL tie line and other proposed lines. MATL would submit a copy of an executed interconnection agreement with NWE to the agencies as an addendum to the application, if the agreement becomes valid. It is unlikely the line would be built unless a valid interconnection agreement is obtained.

Access Roads

As a result of relatively flat topography and associated agricultural land uses that predominate in the Project study area, MATL anticipates only minimum development of access roads to construct, operate, and maintain the proposed Project. The majority of the Project right-of-way would be easily accessed from public roads, existing two-track roads, and farm fields. MATL does not anticipate maintenance of these access points with the exception of gate installations at key locations, if necessary. MATL proposes that disturbances resulting from access requirements would be reclaimed to conditions similar to what existed pre-project or to those conditions specified by landowners during easement-lease negotiations. Obstacles to travel along the right-of-way would potentially include:

- Slopes greater than 5 percent forcing the contractor to construct temporary access roads,
- Coulees or intermittent stream channels,
- Flowing streams and rivers, or wetlands,
- Areas with highly erodible soils,
- Areas providing habitat for sensitive wildlife or plant species,

- Pipelines, railroad tracks, irrigation ditches, or other linear features, and
- Heritage or archaeological sites.

The Marias and Teton River valley crossings might be challenging access because of rugged topography. Grading and recontouring might be required in these potentially difficult construction sites to gain access to reinforced structures that would support conductor spans of these valleys. MATL would reclaim these areas in coordination with landowners and appropriate agencies. MATL expects that other specific sites would be identified and addressed in subsequent reclamation plans as system design and associated access planning proceeds.

Construction

Construction is anticipated to take 4 to 6 months to complete. **Table 2.3-3** provides a summary of construction tasks and required resources and equipment. Transmission line construction tasks would include the following:

- *Pre-Construction*: Environmental permitting, cultural resource clearance, final transmission structure siting, engineering design, land procurement, various utility studies, and major procurement.
- *Surveying:* Initial line survey work would consist of survey control, alignment centerline location, and profile surveys. Access surveys would occur before construction. Light Detection and Ranging (LIDAR) would be used to provide much of this information. LIDAR is an airborne laser mapping technology that directly measures the shape of the earth's surface under the aircraft. LIDAR generates wide-area elevation information that can be used to make models showing details such as buildings, trees, and power lines.
- *Geotechnical Survey:* Investigations would be completed at selected key locations (for example, medium and heavy angle deflection points) to establish foundation requirements. Geotechnical measurements would also be obtained at a frequency of one location for every two miles of line when crossing problem soils. The geotechnical information is used to reduce problems during erection of the structures and assist with the cost estimate and bidding process for the project.
- *Access Planning and Preparation:* Crews would gain access from public roads as well as within the transmission line right-of-way for constructing, operating, and maintaining the line. When possible, access to the right-of-way would be by existing trails and roads. Trails are generally two-track routes and are not maintained. Because access for line construction would be truck travel within the right-of-way, graded surface access roads are not planned except at the Teton River crossing. Trails would be located at right angles to streams and washes. Existing roads and trails would be left in comparable or better condition than before construction. The safety zone is designed to minimize the potential for encroachment and to ensure that if buildings are proposed near the line, the safety zone would be large enough to prevent them from encroaching near the line.

Gates would be installed where fences cross the right-of-way. Locks would be installed at landowner's request. Gates not in use would be closed but not locked unless requested by the landowner.

TABLE 2.3-3
SUMMARY OF CONSTRUCTION TASKS AND REQUIRED RESOURCES AND EQUIPMENT

Task	Crew Size	Typical Wage Level ($/hour)[a]	Equipment
Access Fencing/Reclamation	2	$15 to $18	¾ –ton post pounder
Framing	6	$17 to $20	Teleking 5-ton crane, Bobcat, 1-ton crewcab pickup
Setting	8	$17 to $20	330 Texoma digger, 35-ton setting crane, gravel truck, concrete truck, air compressor w/ tamper, Bobcat, (2) 1-ton crewcab pickups
Anchoring	3	$20 to $22	radial arm digger or retrofitted trench hoe
Material Handling	2	$17 to $20	(2) trucks
Pole Hauling	3	$20 to $22	pole truck, pickup
Stringing	31	$20 to $26	Tensioner, puller, 30-ton crane and pickup, soft line winder and pickup, cat pulling sock line and pickup, crane and pickup, flat deck and small crane, rider pole crew digger, pole truck

Notes:
[a]Wage levels extrapolated from "Montana Prevailing Wage Rates – Heavy Construction" Rates Effective March 10, 2006

- *Delivery and Assembly:* Framing crews would deliver poles, X-braces, cross-arms, insulators, and hardware to structure sites on flatbed trucks, and then assemble individual structures. For H-frame structure installation, poles would be set directly in holes that are 10 percent of the pole length, plus 2 feet deep. Crews would backfill the holes and compact the native soil material to prevent structure movement or settling. Any excess soil from each hole would be evenly regraded around the structure, or hauled off site, depending on the landowner's preference. For H-frame structures located in problem soils that are difficult to compact to the required density, gravel would be used to backfill around the poles. At heavy angled and dead-end structures, cast-in-place concrete footings would be installed. Crews would assemble structures and place hardware using man-lift trucks. Guy wires would be screwed into the ground using standard construction practices.

  For monopole structure installation, the holes would be 10 percent of the pole length plus 4 feet deep, but have a slightly larger diameter. After the pole is set in the hole, cement would be used, instead of soil, to backfill within approximately 1 foot of the soil

surface. The salvaged topsoil material would be replaced on top of the cement. Any excess soil from each hole would be evenly regraded around the structure, or hauled off site, depending on the landowner's preference.

- *Conductor Installation:* After erecting all structures, conductor and ground wires would be installed. Large reels of conductor and overhead ground wire would be delivered to pre-selected pulling and tensioning sites (about every 2 miles) along the transmission line alignment. About 10,000 to 16,000 feet of conductor and overhead ground wire would be installed for each pull. Methods used to install conductor and overhead ground wire would include using a small line (p-line) attached to the conductor or ground wire to pull the cable through pulleys attached to the insulator strings. Once the conductor/ground wire is pulled the necessary length, it would be tightened. Adjustments made during tensioning would prevent the cable from sagging too much (due to ambient temperature and heating caused by flow of electricity) and would comply with the NESC.
- *Reclamation*: All disturbed areas associated with transmission line construction would be reclaimed. These efforts typically include gate repair as necessary, regrading and revegetation, and waste material removal.

MATL proposes to commence construction as soon as all property rights are obtained and all necessary authorizations are issued by DEQ, DOE and the BLM. However, MATL may not commence any construction activities unless and until it obtains all required permits.

Construction Staging Areas

Construction staging areas (sometimes referred to as "lay-down areas") would be located in previously disturbed areas, such as rail yards, siding areas, construction yards, and fallow lots, whenever possible. Some construction staging areas may be on undisturbed land when disturbed sites are not available. In general, construction staging areas would either be located in communities near the right-of-way where rail and truck service are available, or in rural areas where equipment could be unloaded from tractor-trailers. In all cases, construction staging areas would be on private land and would be subject to landowner negotiations and agreements. Construction staging areas would likely be located near Cut Bank, Valier, Conrad, Brady, Dutton, or Great Falls. MATL expects that staging areas would be established in three of these six locations, with each staging area occupying about 5 acres. However, a few smaller areas (about 2.5 acres) might be used.

Operations

NWE and Alberta Electric System Operator system dispatchers located at power control centers would direct normal line operations, using MATL's facilities to operate circuit breakers, determine the amount of power required to serve the loads and configure the power system accordingly. Dispatchers also would schedule the proper generation amount, and monitor the power system to ensure reliable service. Circuit breakers

would operate automatically to ensure safe transmission line operation. Normal farming and other activities would be permitted on transmission line rights-of-way, if these activities do not interfere with line operation and maintenance or create safety problems. Grid reliability is discussed in Section 3.17.

Maintenance

Maintenance programs would include routine aerial and ground patrols. Aerial patrols would be conducted annually and as needed to check for damage to conductors, insulators, or structures after severe wind, ice, wild fires, or lightning storms. Ground patrols generally would occur every 5 years to detect equipment in need of repair or replacement. When possible, ground patrols and subsequent repair activities would be scheduled to minimize crop and property damage. Noxious weed control plans would help guide herbicide treatments (see Appendix C MATL Noxious Weed Control Plan in the March 2007 document). Vegetation clearing may also be required in certain areas to minimize fire hazards.

For emergencies, crews would respond promptly to repair or replace damaged equipment. MATL would meet with respective landowners to arrange compensation for any damages incurred during emergency repair operations.

Environmental Protection Measures

MATL proposes project-specific environmental protection measures, shown in **Table 2.3-4,** that may be used to avoid or reduce the intensity and/or duration of the impacts to resources. MATL proposes to implement a worker education program and on-site monitors to ensure that site-specific environmental protection measures would be strictly followed. Other guidance MATL proposes to use includes WAPA's Construction Standard 13 (WAPA 2001), and Raptor-Safe Power Line Construction Practices (Edison Electric Institute [EEI] and Avian Power Line Interaction Committee [APLIC] 1996). Applicable standards from Standard 13 that MATL would adopt include:

- *Landscape Preservation (Section 13.3):* Includes guidance on preserving landscape features, constructing and restoring construction roads, and constructing and restoring construction facilities, such as offices and storage yards.

- *Preservation of Cultural Resources (Section 13.4):* Provides requirements for treatment and notification of known or discovered cultural sites or artifacts.

- *Noxious Weed Control (Section 13.5):* Requires a "clean vehicle policy" when entering and leaving construction areas to prevent transport of noxious weed plants and/or seed.

- *Disposal of Waste Material (Section 13.8):* Requires removing and disposing of all waste material generated during construction.

- *Pollutant Spill Prevention, Notification, and Cleanup (Section 13.10):* Requires measures to prevent spills of pollutants and appropriate response if a spill occurs. Includes any solvent, fuel, oil, paint, pesticide, engine coolant, or similar substance.

- *Prevention of Air Pollution (Section 13.13):* Ensures that construction activities and equipment operation reduce air pollutant emissions, and that nuisance dust is controlled.

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
General			
Construction personnel would be instructed on the location and identification of sensitive resources within or adjacent to the Project right-of-way, as well as regulations pertaining to the protection of cultural and ecological resources.	Would help prevent damage to sensitive and/or protected resources.	Throughout Project area. Sensitive areas would be identified further during design phase.	Prior to construction
Erosion Control			
Erosion Control Plan identifying locations and specifications of measures to minimize erosion and sedimentation.	Re-establish vegetation and implement physical barriers to minimize soil movement on exposed slopes.	See MATL's draft Reclamation & Revegetation Plan in **Appendix D** of the March 2007 document. As the design phase continues, a SWPPP would be prepared as part of the MPDES permit.	Pre-construction
Construction contractor would implement erosion control measures (for example, water bars, drainage contours, straw bales, filter cloth, or similar). All off-site vegetative materials would be certified "weed free."	Implemented in areas with steep slopes to minimize soil movement.	See **Appendix D** of the March 2007 document. As the design phase continues, a SWPPP would be prepared as part of the MPDES permit.	During construction
Access			
Access would be limited to existing roads or two-track utility corridor, unless not feasible for transport of equipment/material.	Avoidance of new permanent vehicular access and long-term ground disturbance.	Potentially the Marias River and Teton River crossings may require some new access. This would be finalized and identified by milepost during design phase.	During construction

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
General engineering design plans would be developed for unforeseen temporary use areas.	Disturbance minimization and/or protection of natural resources.	Throughout Project area – This would be finalized and identified by milepost during design phase.	Pre- and during construction
All construction vehicle movement or temporary use areas outside the right-of-way would be coordinated with the authorizing agency and restricted to pre-designated access, contractor acquired access, or existing roads.	By limiting access to the Project area, unnecessary impacts to soils and vegetation would be avoided or minimized.	Throughout Project area – This would be finalized and identified by milepost during design phase.	During construction
At sites with soils that are sensitive to compaction, construction would be done with low bearing-pressure vehicles or compacted soil would be rehabilitated after construction by discing, plowing, or other means.	Weight limiting/distributing to reduce soil compaction and ground cover damage.	Croplands throughout Project area	During/post construction
Access road widening would be restricted unless essential for project implementation.	Minimizes damage to soils and vegetation.	Throughout Project area	During construction
Construction would be planned to avoid periods of intense farming (for example, grain harvest), as applicable.	Avoid impacting farming practices and implement crop damage compensation.	Croplands throughout Project area.	During construction
Fences, gates, and cattle guards would be repaired or replaced to their original condition if damaged during construction.	Replacement or repair as an effective resolution to property damage.	Cropland and range land as required throughout Project area.	Post-construction
MATL would work with the MDT in the design and construction of structures along or crossing any highway right-of-way.	Minimizes traffic disruption.	MDT maintained roads	Design and pre-construction
Existing roads would be properly maintained, and grading may be necessary.	Maintenance of proper drainage.	Throughout Project area	During and post construction
Access not required for operation/maintenance would be closed using the most effective method with landowner concurrence.	Prevention of permanent motorized vehicle use and resulting disturbance to soil/vegetation.	Throughout Project area	Post-construction

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
During project final design, structures and associated disturbances would be located to avoid or minimize impacts to known sensitive features such as water courses, residences, or cultural resource sites.	Avoid/minimize impact to sensitive features.	To be identified by milepost during final project design	Pre-construction
All construction vehicles would be restricted to the certificated construction right-of-way, associated facilities, and permitted access roads.	Avoid/minimize environmental impact	Throughout Project area	During construction
Surface Water, Wetlands, and Floodplains			
Locations for new structures would be selected to avoid 100-year floodplains and, where practicable, to avoid the need for construction activity within 100-year floodplains.	Avoidance would prevent potential disturbance within 100-year floodplains.	Marias River, Teton River, and Old Maids Coulee crossings	Pre-/during construction
MATL would prepare an erosion control plan, whereby measures, locations of measures, and specification for measures would be used to minimize erosion and sedimentation. As a part of this a SWPPP would be submitted to DEQ.	Effective erosion control planning to reduce erosion.	See **Appendix D** of the March 2007 document. As the design phase continues, a SWPPP would be prepared as part of the MPDES permit.	Pre-construction
Unavoidable wetland impacts would require permits from U.S. Army Corps of Engineers to comply with Section 404 of the Clean Water Act.	Mitigate unavoidable impacts to wetlands and other waters of the U.S.	See **Appendix E** of the March 2007 document for a description of drainages and wetland areas that would be avoided, if possible. Any unavoidable areas would be identified by milepost during the final design phase.	During design and construction
If work in a 100-year floodplain is unavoidable, DNRC and county floodplain administrators would be consulted during the design phase and, if required, appropriate permit(s) would be obtained and implemented.	Permit stipulations would avoid or mitigate potential disturbance within floodplains.	Marias River, Old Maids Coulee, and Teton River crossings	Pre-/during construction

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
Wherever possible, placement of new structures and associated construction activities would occur out of wetland boundaries.	Avoidance of impacts to wetlands and other waters of the U.S.	See **Appendix E** of the March 2007 document for a description of wetland areas that would be avoided if possible. Any unavoidable areas would be identified by milepost during the final design phase.	Pre-/during construction
Reclamation & Revegetation			
Disturbed areas would be reclaimed by appropriate contouring and replanting with an approved seed mix. All seed mixtures would be certified "weed free."	Re-establishing desirable vegetation cover on disturbed sites to prevent soil loss and weed infestation.	Throughout Project area. Also see MATL's draft Noxious and Invasive Weed Plan and draft Reclamation and Revegetation Plan (**Appendices C** and **D** of the March 2007 document).	Post-construction
If feasible, equipment would go around wooded areas. Tree removal would be kept to a minimum.	Avoiding or selectively cutting trees would protect limited forested habitats. Avoidance is preferred.	No forested areas have specifically been identified to date. Also see MATL's draft Reclamation and Revegetation Plan (**Appendix D** of the March 2007 document)	During construction
Noxious weeds would be controlled through implementation of noxious weed control plans approved by appropriate county agencies.	These efforts would reduce or eliminate introduction and spread of invasive, noxious plants.	Throughout Project area. Also see MATL's draft Noxious and Invasive Weed Plan and draft Reclamation and Revegetation Plan (**Appendices C** and **D** of the March 2007 document).	Pre-/during construction
Disturbed areas would be reclaimed to pre-construction condition or landowner requests as site work is completed.	Reduce or eliminate erosion, and weed invasion.	Throughout Project area. Also see MATL's draft Reclamation and Revegetation Plan (**Appendix D** of the March 2007 document).	During/post construction
Any reseeding would be done with an approved seed mixture.	Reduce or eliminate spread or invasion of noxious weeds.	Throughout project area. Also see MATL's draft Reclamation and Revegetation Plan (**Appendix D** of the March 2007 document).	Post construction

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
If necessary, vehicle wash stations would be located at appropriate locations and would be used to minimize the spread of noxious weeds along the right-of-way. All construction equipment would be thoroughly washed prior to first use on the Project.	Cleaning would remove mud, dirt, and plant parts from undercarriages, tires, grills, radiators etc. This would reduce potential of spreading noxious weeds.	Need and location of vehicle wash stations would be determined during final design stage.	During construction
All fill mixture brought into construction areas would be free of noxious weeds.	Borrow site should be inspected to minimize movement of noxious weeds.	Throughout Project area. Also see MATL's draft Reclamation and Revegetation Plan (**Appendix D** of the March 2007 document).	During construction
Health & Safety			
All on-site servicing or refueling of construction equipment would be performed using protective spill containment or absorption mats.	To prevent spills of pollutants, such as fuels and lubricants.	Throughout Project area	During construction
Storage of oil fluids or petroleum products on site would be prohibited. All petroleum products would be removed to a disposal facility authorized for disposal.	Reduces chances of spills and ensures proper storage and disposal of fuels and lubricants.	Throughout Project area	During construction
All construction debris and trash would be contained and removed on a daily basis.	Daily containment and removal would prevent accumulation and windblown trash.	Throughout Project area	During construction
Traffic management and control of local roadways would be considered during construction.	Avoid unnecessary impacts to local traffic patterns.	State highway crossings and all county highway crossings. County crossings would be identified by milepost during final design and encroachment permits would be obtained, as required, from local county offices.	During construction
Human Health & Environment			
MATL would address individual complaints concerning radio and television interference as needed.	Alleviate individual impacts to radio and television users in vicinity of line.	As required, throughout Project area.	Pre/post-construction
Design would incorporate reduction or elimination of induced current and voltages.	Eliminate impacts associated with proximity and electric shock.	Throughout Project area	Pre-construction

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
Design and construction would be such to reduce electromagnetic field to the extent feasible.	Reduce potential for EMF effects.	Throughout Project area	Pre-construction
Land Use			
Construction would be planned to avoid periods of intense farming (for example, grain harvest) as applicable.	Avoid crop damage or compensate for damage.	Croplands throughout Project area.	Pre-/during construction
Fences, gates, and cattle guards would be repaired or replaced to their original condition if damaged during construction.	Resolution of potential property damage through replacement or repair.	Throughout Project area	Post-construction
MATL would secure encroachment permits from the MDT and counties for the design and construction of structures along or crossing any highway right-of-way.	Minimize impacts and safety concerns in the vicinity of roads and highways.	Final location of crossings would be determined during final design stage.	Pre-construction
Cultural			
A project map would be provided to the contractor identifying all sensitive areas relative to the selected alternative. Prepare unanticipated discoveries plan.	Contractor awareness and mitigation implementation (notification and/or avoidance).	To be identified once cultural resources inventory and study are completed.	Pre-construction
Archeological monitors (including tribal) would be used when working in the vicinity of archeological sites.	Would monitor and work closely with MATL and contractor to ensure application of mitigation/avoidance measures.	The need for this would be assessed once the cultural resources inventory and study are completed.	During construction
Selective pole placement would be used to avoid impacts to cultural resource sites.	Cultural resource site protection.	To be identified once cultural resources inventory and study are completed.	Pre-construction
Access roads through cultural resource sites would be prohibited.	Cultural resource site protection.	To be identified once cultural resources inventory and study are completed.	Pre-construction
If any buried antiquities or remains are discovered, the contractor would notify DEQ and SHPO prior to continuing work.	Would allow for proper treatment of any undiscovered sites.	Unknown	During construction
Visual			
Structures would be placed to avoid or span visually sensitive features whenever possible.	Reduce potential visual quality impacts.	To be identified once visual resources analysis is completed during the EIS.	Pre-/during construction

TABLE 2.3-4
MATL PROPOSED
ENVIRONMENTAL PROTECTION MEASURES

Environmental Protection Measures and Monitoring	Intended Effectiveness	Locations (if known)	Timing
No paint or permanent discoloring agents would be applied to rocks or vegetation. All flagging would be removed upon completion of the project.	Reduce potential visual quality impacts.	Throughout Project area.	Pre-/during construction
Wildlife			
Raptor safe power line construction practices (Edison Electric Institute, Avian Power Line Interaction Committee) would be employed during transmission line construction.	To reduce risk of electrocution to perching raptors.	Throughout Project area, as needed (Benton Lake NWR, and others).	Pre-/during construction
Approved line marking devices would be installed at appropriate intervals and appropriately staggered on each overhead ground wire across stream crossing and migratory bird flyways (for example, wetland crossings) within the right-of-way.	Minimization of potential bird strikes at stream crossings and other high use areas.	Installed at water body and drainage crossings and at wetland areas identified in **Appendix E** of the March 2007 document. This would be finalized during final design.	Pre-/during construction
MATL would consult with FWP concerning construction activities (for example, timing) near sharp-tailed grouse leks.	Timing restrictions on construction near sharp-tailed grouse leks would reduce potential disturbance to grouse.	Leks were identified within 1 mile of the Marias River crossing and would be addressed.	Pre-/during construction
Air Quality			
Water would be sprayed on areas that are producing excessive airborne dust in proximity of residences and communities and as needed to ensure safety during construction.	Dust suppression during dry periods or near populated areas.	Throughout Project area, as required to address dry conditions during construction.	During construction

Notes:

DNRC	Department of Natural Resources and Conservation
EMF	Electric and magnetic field
EIS	Environmental Impact Statement
FWP	Montana Fish, Wildlife, and Parks
MATL	Montana Alberta Tie Line
MDT	Montana Department of Transportation
MPDES	Montana Pollutant Discharge Elimination System
NWR	National Wildlife Refuge
SHPO	State Historic Preservation Office
SWPPP	Storm Water Pollution Prevention Plan

Source: This table is from the MATL MFSA application, Revised submittal, August 2006.

Site-specific locations where these measures would be used would be finalized during the final design phase and would be identified by project milepost location when that information becomes available. Final mitigation measures required to address those site-specific measures (and all other finalized plans) would be submitted to the agencies before construction begins. In addition, MATL would work with the agencies to identify the extent of environmental monitoring that would be needed during and after construction.

The agencies would apply environmental specifications to the proposed Project. DEQ's draft Environmental Specifications (**Appendix F**) identify general environmental protection measures and sensitive areas for site-specific specifications; DOE and BLM might also provide some additional measures.

2.4 Alternative 3 — MATL B

Alternative 3 generally parallels the NWE 115-kV line along its entire distance from the line's tie-in to NWE's 230-kV switch yard north of Great Falls to a substation near Cut Bank.

This alternative is described in the MATL MFSA application as Alternative MATL B (MATL 2006b). Alternative 3 was designed based on a single application criterion listed in Circular MFSA-2, with specific intent to utilize or parallel the existing NWE 115-kV transmission line corridor. This alternative alignment was initially considered by MATL as its preferred option, but MATL has since changed its preference. This alternative is not intended to address potential land use issues or maintenance issues but is the shortest and potentially the least costly alternative under consideration.

Description of Alignment

The alignment for Alternative 3 would be 121.6 miles long (**Figure 2.4-1**) and would use H-frame design structures for its entire length. The south part of the alignment is shown in detail on **Figure 2.4-2**. The middle part is shown on **Figure 2.4-3**, and the north part is shown on **Figure 2.4-4**. The alignment would leave the Great Falls switch yard in a northwesterly path then turning west for about ½ mile on private property north of existing lines. The alignment would turn north along a field boundary and travel on the west side of the Great Falls Shooting Sports Complex (Complex). The Alternative 3 alignment would rejoin and closely parallel the Alternative 2 alignment north of the Complex at approximately milepost 2.3, generally following the NWE 115-kV power line. Alternative 3 would diverge from Alternative 2 again around milepost 13. Alternative 3 would continue in a northwesterly direction, following the 115-kV power line, on the east end of Teton Ridge, while Alternative 2 would turn west then north.

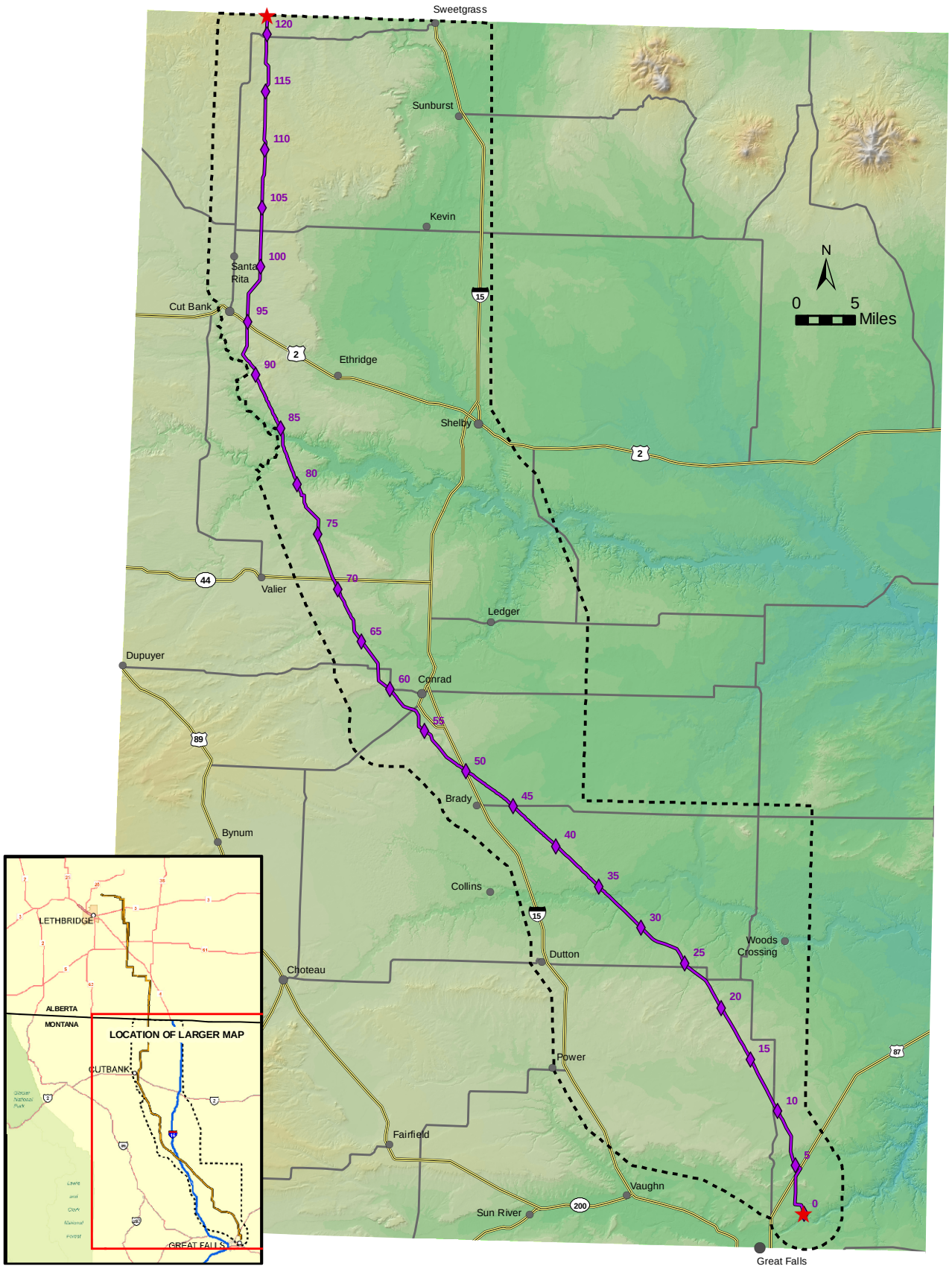

FIGURE 2.4-1
ALTERNATIVE 3 ALIGNMENT
(MATL B)

LEGEND

- ALT3 - ALIGNMENT
- MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE Fig2_4-1_MATL_ALT3_Alignment All_111607.mxd