

## **5.0 CONCLUSIONS AND MITIGATION**

The analysis presented in this EIS is based on information provided in filings by Enbridge and was further developed through data requests, literature searches, public and agency scoping; an analysis of alternatives; and contacts with federal, state, and local agencies and Indian tribes. As described in Section 4.0 of this EIS, Enbridge has coordinated with federal, state, and tribal agencies; landowners; and other stakeholders to develop design modifications, construction methods, post-construction restoration, and compensatory mitigation to limit potential impacts. Additional impact avoidance and minimization for some resources would be accomplished through implementation of mitigation measures and/or permit requirements by federal and state regulatory agencies.

### **5.1 ALTERNATIVES AND CONNECTED ACTIONS**

Several types of alternatives were analyzed in this EIS to determine whether they would be reasonable and environmentally preferable to the proposed action. A No Action Alternative, system alternatives, major route alternatives, route variations, and aboveground facility alternatives were considered. In addition, siting alternatives are described for the Superior Terminal Expansion Project.

While the No Action Alternative would eliminate the environmental impacts directly associated with the proposed Alberta Clipper Project, it would not meet the proposed action's purpose and need or provide the United States with its energy needs and security. Therefore, we concluded that the No Action Alternative is not a reasonable alternative.

System alternatives assessed in this EIS include existing and proposed oil pipelines, such as TransCanada's Keystone and TransCanada's proposed Keystone XL projects, Enbridge's existing pipeline system, and hauling alternatives (by trucks, rail, or barge). Based on our analysis, none of the alternatives would provide sufficient capacity to meet the proposed Project's needs, nor were they environmentally preferable.

Three major route alternatives were considered in this EIS, including a Straight Line Alternative, an alternative across the CNF and LLR (the GLG Alternative), and an alternative route around the FDL Reservation. None of these alternatives was considered environmentally preferable to the currently proposed Project route.

The WDNR requested that Enbridge evaluate major corridor alternatives in Wisconsin as part of the permitting process for the State of Wisconsin. Enbridge evaluated eight corridor alternatives as part of its analysis in support of its permit application to WDNR. None of the alternative corridors within the State of Wisconsin reduced impacts overall when compared to the proposed Project route.

Minor route variations from the existing Enbridge corridor were assessed in a total of 25 areas to address landowner and federal and state agency concerns. All but two of these minor route variations (the Wilton variation and the Upper Sucker Lake variation) have been incorporated into the proposed Project route. In our evaluation of potential alternatives for aboveground facilities (i.e., pump station locations), we found no alternative sites that would result in fewer environmental impacts than use of the existing pump stations, as proposed.

The EIS also presents alternatives to the siting of the Superior Terminal Expansion Project, a separate but connected action to the proposed Project. The Superior Terminal Expansion Project is being environmentally reviewed and permitted, if appropriate, by federal and state agencies including COE and WDNR (DOS has no permitting or regulatory authority for this project). The alternatives analysis considered a number of siting alternatives for the Superior Terminal Expansion Project, including on-site

and off-site locations. Because the proposed location of the Superior Terminal Expansion Project has the necessary infrastructure, would preserve pipeline efficiency, and would provide the necessary storage capacity to accommodate the proposed Alberta Clipper Project, Enbridge concluded that it is considered the most preferable alternative. The appropriate federal and state permitting agencies are currently assessing the Superior Terminal alternatives analysis.

## **5.2 GEOLOGY**

The proposed Alberta Clipper Project would not involve substantial topographical alteration and would not disturb any geological features protected by federal or state laws. In general, the bedrock along the proposed Alberta Clipper Project route is buried so deeply by glacial deposits or soils that it would not be encountered during construction. Less than 1 percent of the proposed pipeline route may require blasting. The Enbridge Blasting Plan (Appendix L) identifies requirements for developing a site-specific blasting plan for any area where blasting is deemed necessary. These site-specific plans would account for protection of aboveground and below ground structures (such as water mains), resources (such as threatened and endangered species), and water resources (surface water and groundwater). Pleistocene-age mammal fossils may be unearthed during excavation activities in the area of the proposed Project; however, it is unlikely that any scientifically significant fossils are present in the area of the proposed Project.

Proposed construction techniques, along with erosion control and slope stabilization, and measures identified in the Enbridge state-specific EMPs (Appendix C) would reduce potential impacts related to geologic hazards.

Overall, geologic impacts associated with routine operations and maintenance of the proposed pipeline would be minimal. Routine pipeline operation and maintenance are not expected to affect physiography or bedrock geology, paleontological resources, mineral resources, or flooding.

## **5.3 SOILS**

Construction of the proposed Alberta Clipper Project would disturb soils, resulting in increased potential for erosion, compaction, and mixing of topsoil; damage to agricultural drainage tiles; and introduction of rock to the surface soil. Agricultural production on approximately 2,528.8 acres would be temporarily lost from production for the construction season. Enbridge has proposed construction procedures, including state-specific EMPs (Appendix C) and an AMP (Appendix F), designed to minimize the likelihood and severity of these impacts, and to mitigate where impacts are unavoidable. Designated Environmental Inspectors would ensure implementation of measures in Enbridge's Construction Environmental Control Plan (Appendix M) and compliance with applicable regulations and permits.

In the event that previously contaminated soils were discovered during construction, Enbridge would stop work immediately, contact the appropriate state or tribal agency, and consult with the agency with respect to an acceptable plan of action in accordance with Enbridge's Petroleum-Contaminated Soil Management Plan (Appendix J).

Procedures for proper storage and disposal of all hazardous and non-hazardous wastes generated during the construction process, use of controlled staging areas for refueling and hazardous material loading/unloading operations, provision of adequate spill cleanup materials and equipment, and contingency plans for spills that may pose a danger to human health or the environment are described in Enbridge's SPCC Plan (Appendix E). In the event that a spill does occur and causes damage to soil productivity, Enbridge's easement agreements with landowners would require Enbridge to restore the productivity of the right-of-way and compensate landowners or tenants for demonstrated losses associated

with decreased productivity resulting from pipeline construction and operation. Impacts would be mitigated in compliance with applicable federal, state, tribal, and local cleanup standards.

Enbridge has developed an Anthrax Mitigation Plan (Appendix I) to address the potential exposure of animals to anthrax spores resulting from construction activities.

Overall, construction and operation of the proposed Project are expected to cause minor impacts to soil resources with implementation of the existing Enbridge plans and compliance with applicable regulations and permits.

## **5.4 WATER RESOURCES**

Many of the aquifers present in the subsurface beneath the proposed route are isolated by the presence of glacial till, which characteristically inhibits downward migration of water (or contaminants) into these aquifers. Implementation of Enbridge's procedures for minimizing the likelihood of a spill and controlling the impacts if a spill were to occur would reduce potential impacts during construction or operation, as described in the SPCC Plan (Appendix E) and ERP (Appendix Q). Only short-term fluctuations of groundwater levels are expected during construction, and recharge is expected to occur in a short period after construction.

The proposed Alberta Clipper Project route would involve a total of three perennial and 24 intermittent waterbody crossings in North Dakota; 76 perennial and 86 intermittent crossings in Minnesota (15 additional crossings have not yet been surveyed), and one perennial and 13 intermittent waterbody crossings in Wisconsin. The waterbody crossing methods indicated in Appendix P were proposed by Enbridge based on agency consultation, regulatory protection, biological communities present in each waterbody, and engineering issues. Waterbody crossing methods have been proposed in consultation with the COE but will be finalized as part of the COE permit and/or state certification and licensing process.

Construction of the pipeline could result in temporary or short-term impacts due to increased sedimentation, degradation of aquatic habitat from instream construction activities, increased runoff and erosion, changes in channel morphology and stability, temporary reductions in flow during hydrostatic testing activities, alteration of aquatic habitat, and temporary to short-term surface water quality degradation during or after construction from disposal of materials and equipment or from vehicle spills and leaks. Various mitigation measures are proposed to avoid and minimize these potential impacts, including locating extra workspace areas at least 50 feet from the edge of a waterbody, providing temporary erosion control for certain waterbody crossing methods, and restoring waterbodies as soon as practical after construction. Implementation of measures described in the state-specific EMPs (Appendix C) would reduce erosion of soil or sediment and control surface water runoff during construction activities near waterbodies.

Overall, it is not anticipated that groundwater or surface water quality would be significantly affected during pipeline construction or operation.

## **5.5 WETLANDS**

Approximately 1,346.16 acres of wetlands would be impacted during construction and operation of the proposed Project, 820.64 acres of which would be permanently maintained in an herbaceous state during

operations<sup>1</sup>. The proposed Project would cross one known and five potential wetlands listed in the MDNR Protected Waters Inventory as public water wetlands. Two WRP wetlands, the Pokegama Carnegie Wetlands SNA/ASNRI, and the Superior Airport/Hill Avenue Wetlands/South Superior Triangle Wetlands ASNRI wetlands also would be crossed by the proposed Alberta Clipper Project.

To minimize potential construction and operation impacts, Enbridge would implement procedures outlined in the state-specific EMPs (Appendix C) for wetland crossings. Enbridge would minimize impacts and restore wetlands affected by construction activities, to the extent practical. In addition to standard construction efforts, winter construction has been proposed for up to approximately 25 miles of expansive wetlands. Enbridge has prepared a Winter Construction Plan (Appendix O) that identifies several mitigation measures to reduce impacts to wetlands associated with winter construction activities.

The proposed pipeline would cross the Pokegama Carnegie Wetlands SNA/ASNRI in Douglas County, Wisconsin, resulting in temporary and permanent impacts on wetlands. Enbridge is currently consulting with WDNR and the COE to conduct an alternatives analysis in this area and has developed the Pokegama CRM Plan (Appendix T) that would minimize impacts to the resource. Enbridge minimized impacts to the second ASNRI area during initial routing and does not propose additional mitigation.

Enbridge has identified several measures to minimize and mitigate construction and operations impacts (including winter construction) to wetlands as outlined in its state-specific EMPs (Appendix C). Enbridge would minimize impacts and restore wetlands affected by construction activities, to the extent practical.

To further minimize impacts to this habitat, and in accordance with current or expected COE, MDNR, and MPUC permitting requirements, DOS recommends that Enbridge develop a CMP for approval by the COE at least 1 week prior to construction that provides, to include: an endangered resource plan; identification and inventory of existing plant communities; a preliminary wetland restoration plan; a replanting and reseeding plan; and a preliminary 5-year, site-specific post-construction monitoring plan for the wetland complex located between MP 853 and MP 854, or as otherwise directed by the COE for the Alberta Clipper Project; and that Enbridge take all necessary and reasonable measures to protect the wetland complex between MP 853 and MP 854, and submit proposed site plans to MDNR and MPUC 14 days prior to construction through the area, or as otherwise directed by MDNR and MPUC for the Alberta Clipper Project. Impacts to the sensitive vegetation at this location would further be minimized by construction of the pipeline on the north side of the right-of-way where the habitat is less sensitive.

Compensatory wetland mitigation is being developed in consultation with the COE and appropriate state resource agencies to offset unavoidable impacts to wetlands, which would result in no net loss of wetland function due to the proposed Project.

Overall, temporary and permanent impacts to wetlands, mitigated according to Enbridge plans and agency requirements would result in minor impacts to wetland resources.

## **5.6 TERRESTRIAL VEGETATION**

Vegetation classes potentially affected by the proposed Alberta Clipper Project during construction include upland forested lands (1,254.5 acres), agricultural lands (2,528.8 acres), developed lands (617.2 acres), open lands (655.4 acres), and wetlands (1,346.2 acres). The primary impacts to vegetation from construction would be cutting, clearing, or removing the existing vegetation within the construction work area, along with the potential introduction of noxious weeds.

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<sup>1</sup> These acres of impacts account for all impacts to wetlands; use of access roads or pipe/contractor storage yards would not impact wetlands.

The same vegetation communities would be affected by the proposed Project during operations since the permanent right-of-way would be maintained in an herbaceous condition. The permanent right-of-way would consist of previously forested uplands (622.2 acres), agricultural lands (569.4 acres), developed lands (36.7 acres), open lands (195.2 acres), and wetlands (820.7 acres). Permanent impacts would occur within the permanent right-of-way, where trees and shrubland would be removed and prevented from reestablishing through the periodic mowing and brush clearing required for pipeline operation and inspections.

Impacts to forested lands would be incurred in the areas within the permanent right-of-way that would not be allowed to revert to pre-construction cover. Even in construction areas that would be able to revert to forested land, complete recovery of these areas would require decades. Therefore, pipeline construction in forested areas would cause a long-term to permanent, localized impact on forested land.

Enbridge has identified measures to limit impacts to vegetation in its AMP (Appendix F), state-specific EMPs (Appendix C), Noxious Weed Plans (Appendix H), and Revegetation and Restoration Monitoring Plans (Appendix K). To further minimize potential impacts, DOS has identified mitigation measures to address potential impacts to vegetation communities of conservation concern and noxious weeds. In accordance with federal and/or state permitting requirements, DOS has recommended that Enbridge should:

- Take care to avoid damage between April 1 and July 1 to any live, standing residual oak trees adjacent to the right-of-way in counties where oak wilt occurs, and when construction occurs through forested areas containing oak trees. If any such damage does occur, the damaged areas on the trees should be immediately covered with pruning or latex paint.
- Develop a Construction Mitigation Plan (CMP) for the wetland complex located between MP 853 and MP 854, for approval by the COE at least 1 week prior to construction, that provides, among other things, an endangered resource plan; identification and inventory of existing plant communities; a preliminary wetland restoration plan; a replanting and reseeding plan; and a preliminary 5-year, site-specific post-construction monitoring plan—or as otherwise directed by the COE for the Alberta Clipper Project.
- Take all necessary and reasonable measures to protect the wetland complex between MP 853 and MP 854, and submit proposed site plans to MDNR and MPUC 14 days prior to construction through the area, or as otherwise directed by MDNR and MPUC for the Alberta Clipper Project.

In addition, DOS has recommended that revegetation in non-agricultural areas be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density (i.e., greater than 70 percent) and cover to adjacent undisturbed lands. With implementation of Enbridge's proposed mitigation and the additional mitigation measures identified by DOS, impacts to terrestrial vegetation for the proposed Project would be minor.

## **5.7 WILDLIFE**

Construction and operation of the proposed Alberta Clipper Project would result in both short-term disturbance and long-term modification to wildlife habitats, including increased habitat fragmentation and widening of the existing right-of-way. Total habitat loss and alteration due to pipeline construction would be small in the context of available habitat because of the linear nature of the Alberta Clipper Project and the extent of collocation proposed. Operation of the pipeline would be expected to have little, if any, additional effects on wildlife.

To limit potential construction and operation impacts to wildlife, Enbridge has identified mitigation procedures in its state-specific EMPs (Appendix C), Revegetation and Restoration Monitoring Plans (Appendix K), and Noxious Weed Plans (Appendix H), as well as in the AMP (Appendix F) and Migratory Bird Plan (Appendix V). Pipeline construction would also be conducted in accordance with required permits.

In addition, DOS recommends that Enbridge, in accordance with FWS requirements, should finalize plans to survey for migratory bird nests during the nesting season; finalize measures to avoid impacts to migratory bird nests, such as avoidance of land clearing during the primary nesting season (May 1 through July 15 within the Project area); and continue to consult with FWS to develop compensatory mitigation for the loss of quality upland nesting habitats for migratory birds.

Implementation of measures in the Enbridge plans, along with the mitigation measures recommended by the COE, FWS, and DOS, would reduce impacts to wildlife. Consequently, overall impacts to wildlife resulting from the Project are expected to be minor.

## **5.8 FISHERIES**

The proposed Alberta Clipper Project could affect fisheries resources by loss or alteration of habitat; reduced spawning success; direct and indirect mortality; adverse health effects; and loss of individuals and habitats due to hydrostatic testing and exposure to toxic materials. Enbridge would adhere to agency recommendations on timing windows for instream work. All stream crossing methods would require review and approval by the COE and other relevant agencies prior to construction. In addition, Enbridge would need to demonstrate to the COE that each waterbody crossing method is the LEDPA in accordance with EPA's 401(b)(1) Guidelines and COE's regulations.

Enbridge proposes to modify crossing methods based on flow conditions at the time of construction. Consequently, the open-cut method would be used for waterbodies planned as a dry crossing, if the waterbody is dry or has no perceptible flow at the time of construction. Alternatively, a dry crossing method would be used for waterbodies planned as an open cut, but with perceptible flow at the time of construction.

Potential impacts would be avoided and minimized to the degree practical by implementing BMPs. The state-specific EMPs (Appendix C) describe the BMPs that would be used for each type of waterbody crossing to reduce potential effects on fish and aquatic/streambank habitat. To minimize the impacts of construction activities on fish and their habitats, Enbridge generally would complete all open-cut instream activity for minor waterbody crossings (less than 10 feet wide) within 24 hours and all activity for intermediate (10 to 99 feet wide) and major (100 feet wide or greater) waterbodies would be crossed in less than 48 hours, not including those crossed by HDD.

DOS recommends that Enbridge develop a CMP for the Lost River—for approval by the COE at least 1 week prior to construction—that includes confirmation of the crossing method, site-specific mitigation to minimize impacts, a list of all sediment and erosion control equipment that would be on-site, and an endangered resource plan, as directed by the COE.

Implementation of the Enbridge plans and DOS-recommended mitigation would result in overall minor impacts to aquatic habitat and organisms.

## **5.9 THREATENED, ENDANGERED, AND SENSITIVE ANIMALS AND PLANTS**

Federally-listed threatened, endangered, or candidate species identified by FWS as potentially being affected by the proposed Project include Kirtland's warbler, piping plover, Canada lynx, gray wolf (delisted by FWS in a final rule dated April 2, 2009; effective May 4, 2009), Dakota skipper, and western prairie fringed orchid. In addition to the federally-protected species identified, several state- and tribal-designated threatened, endangered, and sensitive species were identified as potentially being affected by the proposed Project.

Construction of the Alberta Clipper Project would result in a small reduction in available habitats for some sensitive bird species, mammals, aquatic animals, and plants. Enbridge has identified mitigation procedures in its state-specific EMPs (Appendix C), Revegetation and Restoration Monitoring Plans (Appendix K), and Noxious Weed Plans (Appendix H), as well as in the AMP (Appendix F) and Migratory Bird Plan (Appendix V) that would reduce impacts on special-status species. Pipeline construction would be conducted in accordance with required permits. Impacts to sensitive mammals, plants, and aquatic animals would be minimized by implementation of measures described in these plans and measures recommended by the COE, FWS, state resource agencies, and tribes.

Further, DOS recommends that Enbridge, in accordance with FWS requirements, finalize plans to survey for migratory bird nests during the nesting season; continue to develop measures to avoid impacts to migratory bird nests, such as avoidance of land clearing during the primary nesting season (May 1 through July 15 within the Project area); and continue to consult with FWS to develop compensatory mitigation for migratory bird nesting habitat loss. Enbridge should relocate the creek heelsplitter mussels encountered in the Swan River (MP 1024.2) prior to instream construction and/or in accordance with COE requirements associated with these waterbody crossings.

With these measures, DOS concludes that the proposed Project either would have no effect or may affect, but would not be likely to adversely affect, federally-listed or candidate species. Section 7 informal consultation with FWS has been completed, and FWS has concurred with the determinations presented in the EIS for federally-listed threatened, endangered and candidate species

## **5.10 LAND USE**

Land uses that would be affected by the proposed Alberta Clipper Project include agriculture, open land, wetlands, waterbodies, residential land, and recreational and other special interest areas. In general, lands required for construction would be temporarily impacted, while lands required for operation of the Project would be permanently impacted. Construction of the proposed Project would affect the following land use categories: forested lands (1,254.5 acres), agricultural lands (2,528.8 acres), developed lands (617.2 acres), open lands (655.4 acres), and wetland/open water (1,346.2 acres). Total land use acres that would be affected by construction of the proposed Project are 6,402.1 acres.

To address potential impacts to agricultural lands, Enbridge has proposed a number of mitigation measures that are detailed in the AMP (Appendix F). Further, Enbridge would compensate all landowners for lost crops during construction and any documented damage caused by construction activities. After construction, Enbridge would repair or restore drain tiles, fences, and land productivity as these may be damaged during the construction process. After construction, agricultural land could revert to its previous uses, except for land that would be set aside for permanent access roads; Enbridge would directly purchase such land from individual landowners. All negotiations between Enbridge and the affected landowner or tenant would be voluntary and in accordance with the terms of negotiated easements. Construction impacts to general agricultural activities are expected to be minor and temporary; operations impacts would be minor but permanent.

On open lands, construction would require clearing of herbaceous plants and shrubs on the existing right-of-way and in construction work areas. Clearing of these shrubs and plants would result in some minor impacts. Enbridge would reseed and mulch upland open land areas after construction is completed.

Impacts to forested lands would be incurred in the areas within the permanent right-of-way that would not be allowed to revert to pre-construction cover. Even in construction areas that would be able to revert to forested land, complete recovery of these areas would require decades. Therefore, pipeline construction in forested areas would cause a long-term to permanent, localized impact on forested land.

Enbridge has been involved in negotiations with landowners of the 21 residences within 50 feet of the currently proposed construction right-of-way. To reduce construction-related impacts for these properties, Enbridge has developed site-specific construction and mitigation plans for construction activities near residential and commercial structures. Operation of the pipeline has the potential to impact residential properties and landowners. Structures would not be permitted on the permanent right-of-way, and trees would not be allowed to re-grow within the pipeline right-of-way. This permanent easement on residential properties would be considered a permanent impact in that it restricts the use of that portion of the property. This limited use would be accounted for in the easement negotiations between individual landowners and Enbridge.

The proposed Alberta Clipper Project would cross various recreation and special interest areas, resulting in temporary construction impacts and potential permanent impacts. Enbridge has developed mitigation measures for these areas in the state-specific EMPs (Appendix C). The area of the CNF crossed by the proposed pipeline is completely within the LLR. (For a detailed description of impacts and mitigation measures within the LLR and CNF, refer to Appendix U.)

The proposed pipeline would cross approximately 12.9 miles of the FDL Reservation; the entire length of the pipeline through the reservation would be collocated with the existing Enbridge pipeline right-of-way. Enbridge is working closely with FDL to develop site-specific mitigation and minimization measures for reservation lands.

Enbridge has identified an alternative construction configuration through the Pokegama Carnegie Wetland Complex to minimize impacts to the wetlands within the area. Enbridge also has developed a Pokegama CRM Plan for crossing the Pokegama Carnegie Wetland Complex and Douglas County Forest (Appendix T).

Implementation of measures in the Enbridge state-specific EMPs (Appendix C), AMP (Appendix F), Noxious Weed Plans (Appendix H), Revegetation and Restoration Monitoring Plans (Appendix K), and Construction Environmental Control Plan (Appendix M) would reduce potential land use impacts. Enbridge has committed to implementing a comprehensive inspection, monitoring, and compliance control plan to ensure that multiple contractors comply with the conditions of all permits. This includes employing at least three Environmental Inspectors per spread to conduct oversight of pipeline construction as well as funding third-party inspectors, approved by state and or federal agencies, who would be assigned to each construction spread to oversee the contractors and Enbridge Environmental Inspectors. Further, Enbridge has developed a Complaint Handling Procedures Plan (Appendix X) to ensure that all landowner concerns are handled appropriately. This plan was designed to provide landowners with the necessary contact information in the event that the details of the individual easement negotiations or details of the mitigation plans referenced throughout this document are not being upheld. Implementation of the Enbridge proposed plans and mitigation would result in overall minor impacts to land use.

## **5.11 SOCIOECONOMICS**

Construction and operation of the proposed Project could result in several types of socioeconomic impacts. Impacts could be temporary due to construction and more long-term or permanent due to operation of the pipeline. Possible temporary impacts include changes to local population levels and demographics, increased demands for housing and public services, changes in transportation needs, increased traffic, and increased employment opportunities or needs for local goods. Long-term impacts due to operation would include employment, income benefits, and increased tax revenue due to property taxes paid by Enbridge.

Overall, impacts related to socioeconomic resources are expected to be minor but mostly positive for the proposed Project.

## **5.12 CULTURAL RESOURCES**

For the proposed Project, field studies were conducted to identify archaeological and historic resources. To date, no studies of sites of religious or traditional significance have been completed within the Project corridor, nor have any TCPs been defined within the Alberta Clipper Project APE. DOS has requested in writing and through meetings that consulting parties provide information on properties of religious or cultural significance (including TCPs) so that potential impacts can be avoided or addressed. These studies are ongoing, and consideration of any findings after issuance of the EIS will be conducted through the PA (Appendix R). Section 106 consultation is continuing, and the PA will be used to conclude Section 106 review, to ensure that an appropriate formal process is followed for the outstanding cultural resource surveys that result from Project adjustments or from current denial of survey permissions, and to specify the formal process to be followed in the event that there would be unanticipated discoveries during construction.

Enbridge's main method of mitigation for potential impacts to cultural resources is avoidance. Types of avoidance identified by Enbridge include abandonment (or non-use of the location), narrowing of the construction corridor, limiting impacts (no change to the existing structure), and use of alternative crossing methods (such as HDD). Based on the available information, Enbridge's proposed route, construction methods, and implementation of state-specific Unanticipated Discovery Plans would be expected to result in no impacts to cultural resources.

## **5.13 AIR QUALITY AND NOISE**

Air quality impacts associated with construction of the proposed Project include emissions from fugitive dust, fossil-fueled construction equipment, open burning, and temporary fuel transfer systems and associated storage tanks. Air emissions during construction would be localized, intermittent, and short term. Emissions from construction-related activities would be conducted in compliance with applicable regulations and would not significantly affect local or regional air quality. Project operations would not produce significant air quality impacts, and only minor emissions from fugitive emissions would occur from valves and pumping equipment. Enbridge has proposed measures in the state-specific EMPs (Appendix C) and SPCC Plan (Appendix E) that would reduce impacts related to air quality.

Noise impacts for a pipeline project generally fall into two categories: temporary impacts resulting from construction equipment and long-term or permanent impacts resulting from operation of the facility. Construction of the proposed Project would be similar to other pipeline projects in terms of schedule, equipment used, and types of activities. Construction would increase noise levels in the vicinity of Project activities, and the noise levels would vary during the construction period. In general, residential, agricultural, and commercial areas within 500 feet of the proposed Project right-of-way could experience

short-term inconvenience from construction equipment noise. For HDD crossings, drilling rig, pumps, generators, and mobile equipment produce noise that may impact nearby noise-sensitive areas. If noise from HDD operations cannot be mitigated to the required level, other measures—such as providing temporary lodging at a local motel for affected residents—could be used to avoid exposing residents to objectionable noise. The temporary noise impacts from construction would be minor if appropriate mitigation measures are implemented. Long-term noise impacts from operation of the pipeline would originate from the pump stations. Enbridge has proposed several mitigation measures at pump stations to reduce noise associated with the operation of pump stations for the proposed Project. Material traveling through the buried pipeline would not be expected to emit audible noise above the surface or produce a perceptible level of vibration.

Overall, the impacts to air quality and noise during construction of the proposed Project are expected to be short term and minor. Air and noise impacts during operations would be minor but long term.

#### **5.14 RELIABILITY AND SAFETY**

Crude oil released into the environment (spills) may affect natural resources, human uses and services, and aesthetics to varying degrees, depending on the cause, size, type, volume, rate, temperature of the oil, location, environmental conditions, and associated response actions. To minimize the potential for releases from the proposed pipeline and associated facilities, Enbridge would design and construct the proposed Project in accordance with applicable design, engineering, and safety standards. To ensure the integrity of the pipeline and associated facilities during operation, Enbridge would incorporate the proposed Alberta Clipper Project into its existing programs that (1) ensure that the integrity of its existing pipeline systems is maintained, including inspection of the pipelines and pipeline alignments; and (2) detect and respond to releases of oil that may occur. Enbridge would expand its existing ERP to incorporate the Alberta Clipper Project. The existing plan has been approved by DOT's PHMSA; PHMSA approval of the revised plan would be required for pipeline operation. The ERP identifies specific measures to prevent a release and to implement the appropriate emergency response if a release were to occur. A summary of the procedures included in the ERP is presented in Appendix Q.

With implementation of the Enbridge plans and procedures, the reliability and safety of the proposed Alberta Clipper Project is expected to meet or exceed industry standards.

#### **5.15 CUMULATIVE IMPACTS**

The cumulative impacts analysis was conducted on both a Project-wide and watershed-specific level. In general, the primary impacts of concern for the Alberta Clipper Project and other pipelines in the region of influence include short-term construction impacts and long-term land conversion and air emissions. Therefore, the cumulative impacts analysis focused on projects that would result in the same types of impacts. The Project-wide assessment concluded that the Alberta Clipper Project would not result in significant cumulative construction or operation impacts when considered in conjunction with other large-scale projects in the Alberta Clipper Project area, such as other pipelines.

Due to the localized and temporary nature of pipeline construction, the primary emissions of concern during construction of the Alberta Clipper Project would be GHG emissions, including direct impacts from construction equipment and indirect emissions from land disturbance. While it is not possible to develop accurate estimates of indirect carbon release from land disturbance, direct emissions from construction of the Alberta Clipper Project and the Superior Terminal Expansion Project would total approximately 27,000 metric tons of CO<sub>2</sub>. Emissions during operation of the Alberta Clipper Project would primarily be associated with electrical generation to operate the pump stations (estimated at

0.3 million metric tons of CO<sub>2</sub> annually). For context, the GHG emissions inventory in Minnesota is expected to total 163.8 million metric tons in 2010 (CCS 2008).

The cumulative analysis for refineries focused on air emissions, including GHG emissions, for recently upgraded refineries and potential new refineries. Based on the cumulative emissions from recent refinery upgrades, it is estimated that the emissions associated with the 450,000 bpd transported via the Alberta Clipper Project could increase CO emissions by about 1,000 tons per year (tpy), increase VOC emissions by approximately 400 tpy, and decrease emissions of other pollutants relative to currently permitted refinery emissions. Exact emission rates would vary depending on the ultimate refineries where the heavy crude oil would be processed. While there are no federal thresholds or guidelines for definitively assessing the significance of GHG emissions, direct GHG emissions associated with construction and operation of the Alberta Clipper Project would result in a negligible increase in GHG emissions relative to refinery emissions, total U.S. emissions, or global emissions. Any alterations in the refinery water discharges associated with upgrades would be addressed by EPA and the appropriate state agencies through the NDPEs permit process, including cumulative impacts to water quality. Recent refinery upgrades in the Midwest to increase the capacity to process heavy crude oil have resulted in no increase in pollutants in discharged water.

The watershed-level assessment considered large-scale projects and smaller-scale projects on a watershed-by-watershed basis along the Alberta Clipper Project route. This assessment considered the construction and operation impacts of the Alberta Clipper Project within each of the 11 watersheds that would be crossed by the Alberta Clipper Project between the Pembina River Watershed at the U.S./Canada border in North Dakota and the Beartrap-Nemadji River Watershed in Superior, Wisconsin. Smaller-scale projects included road construction, commercial and residential development, flood control projects, energy projects, timber harvesting, mining, and conservation programs. The watershed-by-watershed assessment concluded that the Alberta Clipper Project would not result in significant construction or operation impacts when considered in conjunction with other large-scale and small-scale projects in individual watersheds along the Alberta Clipper Project route.

## **5.16 SUMMARY OF CONCLUSIONS**

The analysis presented in this EIS is based primarily on information provided in filings by Enbridge. It was further developed through data requests; literature searches; public and agency scoping; an analysis of alternatives; contacts with federal, state, tribal, and local agencies; and public comment on the DEIS. Based on the information provided in Section 4.0 of this EIS for each resource category, DOS concludes that the Alberta Clipper Project, as proposed, is the environmentally preferred alternative as it would result in limited adverse environmental impacts if designed, constructed, and operated in accordance with the Project Description in Section 2.0 of this EIS. This conclusion is predicated on Enbridge adhering to additional mitigation measures identified during this environmental review (as described in Section 4.0) and further amended by DOS recommendations and permit requirements by federal, state, tribal, and local agencies with permit jurisdiction along the pipeline corridor.

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