APPLICATION TO

NORTH DAKOTA PUBLIC SERVICE COMMISSION

FOR

ROUTE PERMIT

FOR THE HESS HAWKEYE CRUDE OIL PIPELINE PROJECT

(CASE NUMBER PU-15______)

by

HESS NORTH DAKOTA PIPELINES LLC

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A. Project Description

A.1 Type of Facility

Hess North Dakota Pipelines LLC (Hess) has filed a Right-of-Way (ROW) Grant application with the Bureau of Land Management (BLM) to construct, operate, and maintain the Hawkeye Pipeline Project (includes crude oil, natural gas, and natural gas liquids pipelines) in McKenzie and Williams counties, North Dakota. As part of this Project, Hess proposes to construct and operate a crude oil pipeline (Project) as shown in **Appendix A** (**Figure A-1**). The projected in-service date for the Project is October 2015. The expected life of the Project is 30 years.

Hess is proposing to construct and operate an approximately 25-mile-long pipeline connecting Bakken production fields south of Lake Sakakawea to existing processing and truck facilities north of the lake. The Project would transport subsurface crude oil from the proposed Hawkeye Oil Facility (**Appendix A**, **Figure A-2**) near Keene, North Dakota to the Ramberg Truck Facility near Tioga, North Dakota (**Appendix A**, **Figure A-1**).

Hess proposes to install approximately 10 miles of new 12-inch-diameter crude oil pipeline and two associated 24-strand fiber optic cables in a single trench from the proposed Hawkeye Oil Facility to the existing North Charlson Compressor Station (**Appendix A**, **Figure A-1**). From the existing North Charlson Compressor Station to the existing North of River Valve Station, Hess proposes to convert approximately 2.4 miles of an existing 8-inch-diameter spare pipeline across Lake Sakakawea to crude oil service. An existing gas pipeline across the lake would be taken out of service and used to string two, 24-strand fiber optic cables (associated with the crude oil pipeline). From the existing North of River Valve Station to the existing Ramberg Truck Facility, Hess proposes to install approximately 12.8 miles of new 12-inch diameter crude oil pipeline and two, 24-strand fiber optic cables in a single trench. Proposed aboveground Project components (e.g., pipeline inspection gauge [pig] launcher/receivers, mainline valves [MLVs], emergency shutdown [ESD] valves) (**Appendix A**, **Figures A-3** through **A-6**) associated with the crude oil pipeline include:

Proposed Hawkeye Oil Facility:

- 1, 12-inch-diameter prefabricated pig launcher skid
- 1, 12-inch-diameter ESD valve
- Oil storage and truck off-loading capabilities

Existing North Charlson Compressor Station:

- 1, 12-inch-diameter prefabricated pig receiver skid
- 1, 12-inch-diameter MLV
- 1, 8-inch-diameter prefabricated pig launcher skid
- 1, 8-inch-diameter ESD valve

Existing North of River Valve Station:

- 1, 8-inch-diameter prefabricated pig receiver skid
- 1, 8-inch-diameter ESD valve
- 1, 12-inch-diameter prefabricated pig launcher skid
- 1, 12-inch-diameter MLV

Existing Ramberg Truck Facility:

- 1, 12-inch-diameter prefabricated pig receiver skid
- 1, 12-inch-diameter ESD valve

The Project would cross approximately 2.6 miles of United States (U.S.) Department of Agriculture Forest Service Lands (USFS), 2.9 miles of U.S. Army Corps of Engineers (USACE), 1.2 miles of North Dakota state-owned land, and 18.6 miles of private land.

The Project would be designed, constructed, and operated in accordance with the U.S. Department of Transportation (USDOT) regulations in 49 Code of Federal Regulations (CFR) 195, Transportation of Hazardous Liquids by Pipeline Minimum Federal Safety Standards, and other applicable federal and state regulations. The federal regulations are administered by USDOT's Pipeline and Hazardous Materials Safety Administration (PHMSA).

The sources of the crude oil that would be transported by the Project are the middle Bakken and upper Three Forks formations (Bakken) of the Williston Basin. The base flow rate for the crude oil pipeline is expected to be 60,000 barrels per day (bpd); the pipeline is designed to carry up to 76,000 bpd. The pipeline would be buried with a minimum of 5 feet of cover except for locations/conditions that would warrant deeper burial depths. Other surface facilities would be limited to pipeline markers, pipeline inspection gauge (pig) launchers and receivers, cathodic protection rectifiers and block valves. A pump house associated with the Hawkeye Oil Facility would provide the necessary pumping pressures needed for the Project.

A.2 Product

The Project would transport subsurface crude oil from the proposed Hawkeye Oil Facility near Keene, North Dakota, to the Ramberg Truck Facility near Tioga, North Dakota (**Appendix A**, **Figure A-1**).

A.3 Size and Design

The Project includes approximately 25 miles of pipeline (23 miles of new pipeline and 2 miles of repurposed pipeline) connecting the Bakken production field south of Lake Sakakawea to infrastructure north of the lake. New pipeline construction would tie into the existing pipeline infrastructure to cross Lake Sakakawea. The pipeline would transport crude oil from south of Lake Sakakawea in McKenzie County, North Dakota, to the Ramberg Truck Facility   Section A.1, Type of Facility, provides a general description of the pipeline and proposed and existing aboveground facilities. In addition, **Appendix A** provides engineering and construction-related drawings for the Project. The crude oil pipeline would be designed for an initial flow rate of 60,000 bpd and a maximum design flow rate of the crude oil pipeline is 76,000 bpd. The crude oil pipeline would be buried a minimum of 5 feet underground and is designed for a maximum operating pressure of 1,000 pounds-force per square inch gauge (psig) with a Maximum Operating Temperature of 100 degrees Fahrenheit. The crude oil pipeline would have a 12-inch outside diameter (OD) x 0.375-inch wall thickness (WT), API 5L–X52 for the majority of the Project route except for at boring locations (0.500-inch WT), and at the Lake Sakakawea crossing, which has a 8-inch OD x 0.500-inch wall thickness.

A.3.1 Right-of-Way and Construction Procedures

A.3.1.1 Construction

Hess facilities would be designed, constructed, tested, operated, and maintained in accordance with applicable requirements of the USDOT regulations in 49 CFR 195, Transportation of Hazardous Liquids by Pipeline, Minimum Federal Safety Standards; United States Department of Labor regulations; Occupational Safety and Health Administration (OSHA) requirements; and other applicable federal and state regulations, such as PHMSA regulations. These regulations are intended to ensure adequate protection for the public and to prevent pipeline accidents and failures. Among other design standards, 49 CFR 195 specifies pipeline material selection; minimum design requirements; protection from internal, external, and atmospheric corrosion; and qualification procedures for welding and operations personnel. ROW acquisition is substantially complete and Hess has general acquired a 100-foot-wide construction ROW and a 50-foot-wide permanent ROW. Hess anticipates that the BLM will approve a ROW grant that would allow construction and permanent widths of 50 and 25 feet on USFS-administered land and 50 and 20 feet on USACE-administered land, respectively.

A.3.1.2 Safety Requirements and Environmental Inspection

Hess and its contractors would undergo prevention, response, and safety training. The program would be designed to improve awareness of safety requirements, pollution control laws and procedures, and proper operation and maintenance of equipment.

As part of the construction mobilization activities, Hess would hold a pre-construction safety coordination meeting at each spread or project work location. Designated Hess Project Management personnel would attend these sessions with the contractor superintendent, foremen, and safety representatives. The meeting would address any specific contractor and/or Hess concerns and expectations; safety initiatives; facilitate review of the safety compliance program, incident reporting, and established protocols for determining, correcting, and documenting safety non-compliance incidents.

Following the pre-mobilization safety and environmental orientation, the Contractor would conduct safety and environmental orientation for all personnel and site visitors prior to granting access to any portion of the construction ROW. The Contractor would keep a log of all personnel receiving safety and environmental orientation. All work would be conducted in accordance with the terms and conditions of the approved ROW permit.

The Contractor and subcontractors would ensure that persons engaged in project construction are informed of the construction and environmental requirements and would attend and receive training about the requirements, laws, rules, and regulations applicable to the work. All project personnel would be trained on environmental permit requirements and specifications, fuel handling and storage, cultural resources protection, stream and wetland crossing requirements, and sensitive species protection measures.

The Contractor would provide, at a minimum, one qualified and experienced safety representative and three personnel trained in emergency management for each construction spread. Hess would provide at least one environmental inspector per spread to ensure construction activities are compliant with the permit-approved environmental mitigation and reclamation requirements.

Construction activities would be carried out during daylight hours unless otherwise approved by Hess. Burning along the ROW would be controlled in accordance with local permits and requirements. Spill prevention measures would be taken to maintain the safety of the construction personnel and to protect the environment. Access to the ROW would be controlled to allow only authorized vehicles and to maintain the safety of the public and construction crews.

Multiple spreads may be constructed at the same time. The construction process would be coordinated in such a manner as to minimize the total time an individual tract of land is disturbed, exposed to erosion, or temporarily precluded from its normal use. A typical pipeline construction sequence is shown in **Appendix A**, **Figure A-7.**

A.3.1.3 Survey and Staking

The first step of construction would involve marking the limits of the approved work area (the construction ROW and additional temporary workspaces [ATWSs]), the pipeline centerline, access roads, existing utility lines, and other special areas. Sensitive areas such as wetland boundaries and cultural resources sites would be marked and flagged. Hess would notify landowners in advance of construction activities that could affect their property, business, or operations.

A.3.1.4 Clearing and Grading

The construction ROW would be cleared and graded (where necessary) to provide a relatively level surface for construction equipment, a sufficiently wide workspace for the passage of heavy construction equipment, and safety for the pipeline workers.

To avoid soil mixing, topsoil would be salvaged for future reclamation efforts by removal and segregation from the underlying subsoil for the entire width of the Project ROW for the length of the pipeline. Typically, stripped topsoil would be stored within the temporary construction ROW on the spoil side of the trench. After pipeline installation is complete, the subsoil would then be replaced in the pipeline trench and adjacent areas to restore the land's natural contours. Only then would the topsoil be replaced in the locations from where it was initially removed. However, special, site-warranted cases (e.g., rugged terrain) may require the storage of topsoil on the working side of the trench (e.g., construction on an upward facing side slope). Typical construction ROW cross-sections depicting topsoil and subsoil storage locations are provided in **Appendix A**, **Figures A-7** through **A-14**.

The depth of topsoil stripping would vary according to the ROW landscape position. Construction activities would be suspended during abnormally wet conditions to prevent excessive rutting or mixing of topsoil and subsurface soils. The suspension of construction activities would depend on the depth of topsoil rutting with work halting when ruts reach an average depth of 3 to 4 inches.

Fences and gates would be constructed during the clearing and grading operations to allow continuous use of pastures and livestock facilities. Silt fence would be installed along the ROW adjacent to wetlands and streams. When crossing small water features, such as small ponds, streams, and creeks, approved temporary flumed structures would be constructed to minimize impacts to the water feature. Temporary erosion controls would be installed after initial disturbance of soils, where necessary, to minimize erosion. Erosion controls would be maintained throughout construction.

A.3.1.5 Trenching

Trenches would be excavated using a backhoe and/or excavator. Special excavation equipment or techniques may be used if large quantities of solid rock are encountered. Trenches would be excavated to a minimum depth of 6 feet, which would ensure a 5-foot depth of cover from the top of the pipe. USDOT specifies a minimum cover of 3 feet from natural ground to the top of the pipe, except in rock, where a minimum depth of cover of 30 inches is required. By exceeding federal pipeline standards, the additional depth allows for various farm activities without impacting the installed pipelines.

The amount of open trench permitted at any time during the project would be governed by the stability of the trench and the prevailing weather conditions. The open trench would be restricted so as not to extend more than 3 miles ahead of the welding and x-ray crew unless approved by Hess. When the trench is excavated through lands where livestock is confined or through cultivated fields where it is desirable for the landowner to have a passageway across the trench, temporary fences, gates, and/or bridges would be installed to provide appropriate restriction or safe access across the open trench. It is envisioned that the trenching activities would be carried out after completion of welding and follow up scope to minimize any impact on landowners.

A.3.1.7 Pipe Stringing, Bending, and Welding

The Contractor would string along the ROW, side by side. Hess plans to use typical pipe lengths of 40 feet. A stringing crew using special trailers would move the pipe along the ROW.

A pipe-bending machine would be used to make necessary side bends and over bends in the pipe to account for changes in the pipeline route and to conform to the topography. The bending machine uses a series of clamps and hydraulic pressure to make a smooth, controlled bend in the pipe. All bending is performed in strict accordance with federally prescribed standards to ensure integrity of the bend. The pipe would be bent at the mill using high-frequency technique when necessary to achieve 5-times-diameter radius for bends. The pipe would be pre-coated at the mill with a fusion-bonded epoxy external coating (or other coating technique) to provide corrosion protection.

A welding process would be used to join the sections of both sets of pipe into two continuous lengths, simultaneously, side by side. Each welder would be required to pass an approved qualification test to work on particular aspects of the pipelines. The qualification tests would be conducted using project-specific weld procedures that would be developed in accordance with federally adopted welding standards.

Welds would be nondestructively tested to ensure structural integrity and compliance with the applicable USDOT regulations. Those welds not meeting established specifications would be repaired or removed. Once the welds are approved, the welded joints would be externally coated and both entire pipelines would be visually and electronically inspected for coating defects, scratches, or other damage. Any damage or defects would be repaired before lowering the pipe into the trench. Both pipes would be lowered into the trench, sequentially, side by side, while maintaining the required 12-inch minimum spacing between pipes.

A.3.1.7 Lowering-in, Padding, and Backfilling

A series of side-boom tractors would simultaneously lift welded sections of the pipe and carefully lower the sections into the trench. The fiber optic armored cables would be continuously unrolled alongside the pipes after completion of lowering and stringing the pipe. Non-metallic slings protect the pipe and coating as it is raised and moved into position. In rocky areas, the Contractor may place sandbags at the bottom of the trench prior to lowering-in to protect the pipe and coating and fiber optic cables from damage. Trench breakers or water stops would be installed, as necessary, adjacent to wetlands and stream crossings to preclude groundwater migration along the trench.

The trench would be dewatered, as necessary, prior to lowering in. Dewatering effluent would pass through sediment filters (hay bale structures and/or filter bags) to ensure compliance with applicable water quality standards.

The trench would be backfilled after the pipes and fiber optic cables have been installed. Soil would be returned to the trench in the reverse order of excavation. Subsoil would be backfilled first, followed by topsoil. The trench line (subsoil) would be compacted with a wheeled-roller or other suitable construction equipment. A crown would be left over the trench line to allow for natural subsidence in locations that are not cultivated. If the excavated material (rock) can damage the pipe and/or coating and/or the fiber optic cables, they would be protected with a rock shield and/or covered with select padding fill obtained from commercial borrow areas, or by separating suitable material from nearby trench spoil. Topsoil would not be used for padding.

A.3.1.8 Hydrostatic Testing

The entire length of the crude oil pipeline would be hydrostatically tested per USDOT regulations at 49 CFR 195 before being placed into service. The existing pipe to be used to convey crude oil across Lake Sakakawea was hydrostatically tested in June 2013. The pipeline section under Lake Sakakawea passed the requisite tests required by federal pipeline regulations. For new build sections, Hess plans for the construction contractors to obtain hydrostatic test water and/or alternatively antifreeze might be added to the water during winter testing from an approved location or municipality to hydrostatically test the pipeline. No surface water sources would be utilized for hydrostatic testing of the pipeline. Each pipeline section would be filled with water and pressurized to a level higher than the operating pressure. Hess would require a minimum hydrostatic test pressure of 125 percent of design pressure for a minimum of four hours to confirm that it meets the design strength requirements and whether any leaks are present. The pipeline test section breakdowns and approximate mileposts (MPs) are provided in **Table A-1**.

Hess plans to dispose of all hydrostatic test water via a contracted trucking company, which would haul the water to a wastewater treatment facility for treatment prior to being discharged.

Table A-1 Hydrostatic Test Segments and Estimated Water Volumes

Pipeline Segment	Product	Approximate MPs		Length (miles)	Water Volume (gal)	Source	Proposed Discharge Locations (Approx. MP)
Proposed Hawkeye Oil Facility to North Charlson Compressor Station	Oil	0	10.0	10.0	311,902	TBD	3. 5
Lake Crossing	Oil	10.0	12.5	2.5	33,363	TBD	12.5
North of River Valve Station to Ramberg Truck Facility	Oil	12.5	25.3	12.8	397,497	TBD	23.4
Total					**742,762**		

A.3.1.9 Cleanup

The final step in the construction process is restoring the ROW as closely as possible to its original condition. Depending on the project requirements, this typically involves decompacting construction work areas, replacing topsoil, and seeding non-cultivated land. Final grading is anticipated to occur within 20 days of backfilling the trench. Measures to protect the pipeline and mitigate against the loss of cover include, but are not limited to, trench plugs, permanent slop breakers, erosion control, matting, and rip rap.

Pipeline markers and/or warning signs would be placed along the pipeline centerlines at line-of-sight intervals and at crossings of roads, railroads, and other key points as required by 49 CFR 195 to show the location of the pipelines. Access roads would be restored to pre-construction conditions, unless otherwise specified by the landowner. Public and private property (fences, gates, driveways, roads, etc.) that were disturbed by construction would be restored to their original or better condition, consistent with agreements with landowners, federal agencies, counties, and/or townships. Rocks greater than 6 inches across would not be placed within 1 foot of the surface on tilled land. Rocks would be collected and disposed of off the ROW or at a location designated by the landowner.

A.3.1.10 Restoration

The construction Contractor would limit ground disturbance wherever practical and use appropriate erosion and sediment control measures. Prior to the completion of construction activities, Hess would ensure that the BLM authorized officer has access to review and inspect vegetation and restoration activities along the ROW on federal lands. Hess and its contractors would be responsible for the removal of temporary construction facilities, structures or surface materials, reclamation of the original grade contours, and restoration of disturbed areas to a state similar to pre-construction conditions, to the extent practicable. Post-construction reclamation activities include removing and disposing of debris, dismantling temporary facilities, leveling or filling tire ruts, soil decompaction, and reseeding non-cultivated areas.

A.3.2 Special Construction Techniques

A.3.2.1 Highway, Road, and Railroad Line Crossings

Highway and road crossings would be constructed according to applicable crossing permits. Hess proposes to bore all road crossings (primary and unimproved) with possible exception of service roads within Hess-owned facilities. Pipeline crossings of primary roads would be constructed using the conventional bore method to ensure little or no traffic disruption during construction.

A.3.2.2 Waterbody Crossings

Hess proposes to use the horizontal directional drilling (HDD) method for 13 waterbodies and two combined road/waterbodies crossed by the Project. The open cut method would be used while crossing dry swales and minor drainages that do not have water flow. The channel would not be blocked so that water flow would be possible in the event of a storm. Spoils from the trench would be placed in an upland area with requisite sediment and erosion control ditching. No foreign material would be added to the channel during backfilling the trench and the channel would be recontoured as close as possible to original condition.

An Environmental Inspector would be present prior to and during water crossing construction to ensure Best Management Practices (BMPs) are implemented and functioning as intended.

A.3.2.3 Wetland Crossings

All wetlands that cannot be avoided would be crossed using boring techniques and standard wetland construction mitigation. Boundaries of all wetlands within the construction ROW would be marked with tape or pin flags no more than 5 days prior to construction. An Environmental Inspector would be present prior to and during construction in wetland areas to ensure BMPs are implemented and functioning as intended. Unless required by permit, wetlands would not be reseeded.

A.3.2.4 Horizontal Directional Drilling

HDD is a construction technique for installing pipelines beneath ground surface to avoid impacting sensitive areas (e.g., wetlands, steep topography, cultural resources, and roads) (**Appendix A**, **Figures A-15** and **A-16**). Entry and exit holes are constructed at either end of the predetermined HDD pipeline segment to control and guide the pipe installation and set back a sufficient distance from the avoidance area. The pilot hole generally is 1.5 to 2 times the size of the pipe diameter to ensure enough space to pull the pipe through. Circulating drilling fluid, primarily consisting of bentonite, is released from equipment on ground level through the drill pipe to a downhole bit and then back to the surface between the pipe and the wall of the hole. Bentonite keeps the equipment lubricated and serves to remove large cuttings: Wyoming Bentonite is an inert clay also used in the food industry. The drilling fluid would be under a great amount of pressure and follows the path of least resistance. With that said, there could be pockets of substrate material encountered that can't be penetrated or contains fissures, thus causing fluids to rise to the surface. Hess will prepare a contingency plan prior to HDD construction to manage unintended returns of drilling fluids.

While the hole is being drilled, the pipe is being welded and hydraulically tested along the construction ROW. Once the hole is prepared and stable, the welded pipe, or drill string, is strung through the hole. Welded pipe typically is laid out on the exit side of the drill. Additional workspace will be required at both the entry and exit holes as well as an area to string, weld, and test the pipe.

Upon completion of the directionally drilled crossing and installation of the carrier pipe, the drilled cuttings and residual drilling fluid are removed from site to an approved dump site.

A.3.3 Operation and Maintenance

The Fiber Optic Control System would provide continuous operating data. Pressure, temperature, flow rate, pressure alarms, and status alarms would be transmitted to a central location and monitored 24 hours per day, 7 days per week. Hess would develop a Pipeline Integrity Management Plan, which, together with the Emergency Response Plan (ERP), outlines preventive maintenance, inspection, line patrol, leak detection systems, Supervisory Control and Data Acquisition (SCADA), and other pipeline integrity management procedures to be implemented during operation.

Hess periodically would use the permanent ROW to perform inspections, maintain equipment, and make repairs during the life of the pipeline. Undesired vegetation that may interfere with the safe and reliable operations of the pipeline would be removed. Per federal regulations, the pipeline surveillance would occur at least 26 times per year, not to exceed a 3-week interval. This helps identify unauthorized activities along the ROW and facilitates leak detection.

A.3.4 Restoration Procedures

The construction Contractor would limit ground disturbance wherever practical and use appropriate erosion and sediment control measures. Prior to the completion of construction activities, Hess would ensure that the BLM authorized officer has access to review and inspect vegetation and restoration activities along the ROW on federal lands. Hess and its contractors would be responsible for the removal of temporary construction facilities, structures or surface materials, reclamation of the original grade contours, and restoration of disturbed areas to a state similar to pre-construction conditions, to the extent practicable.

Post-construction reclamation activities include removing and disposing of debris, dismantling temporary facilities, leveling or filling tire ruts, soil decompaction, and reseeding non-cultivated areas.

A.3.5 Aboveground Facilities

Section A.1, Type of Facility, provides descriptions of aboveground facilities associated with the Project.

A.4 Time Schedule

Table A-2 provides the time schedule for important permitting and construction phases of the Project. Construction of the pipeline and aboveground facilities would likely begin in May 2015 and be completed in October 2015 (approximately 6 months). Private contractors would likely construct the pipeline and also would haul away construction wastes associated with the Project.

Pipeline construction would generally follow a sequential set of activities performed by crews proceeding along the length of the pipeline. **Table A-2** lists construction activities.

Table A-2 Conventional Personnel, Equipment, and Time Requirements for Construction

Task	Number of Personnel	Equipment	Length of Time
Pipeline Construction			
Site Preparation	32	Excavators , dozers, graders and trucks	20 Days
Survey and Staking	8	Trucks and survey equipment	14 Days
Clearing and Grading	27	Excavators , dozers, graders and trucks	30 Days
Trenching	21	Excavators and trucks	30 Days
Pipe Stringing, Bending, and Welding	90	Dozers, bending machine, welding units and trucks	50 Days
Lowering-in, Padding and Backfilling	50	Dozers, excavators and trucks	40 Days
Hydrostatic Testing	22	Fracturing tanks, test header and compressor	20 Days
Cleanup	18	Dozers, farm tractors and trucks	20 Days
Aboveground Facilities Construction			
Proposed Hawkeye Oil Facility	90	Crane, excavators, welding units and trucks	667 Days
Existing North Charlson Compressor Station			
1,12-inch-diameter prefabricated pig receiver skid	44	Crane, excavators, welding units and trucks	5 Days
1, 12-inch-diameter MLV	44	Crane, excavators, welding units and trucks	2 Days
1, 8-inch-diameter prefabricated pig launcher skid	44	Crane, excavators, welding units and trucks	5 Days
1, 8-inch-diameter ESD valve	44	Crane, excavators, welding units and trucks	2 Days
Existing North of River Valve Station			
1, 8-inch-diameter prefabricated pig receiver skid	44	Crane, excavators, welding units and trucks	5 Days
1, 8-inch-diameter ESD valve	44	Crane, excavators, welding units and trucks	2 Days
1,12-inch-diameter prefabricated pig launcher skid	44	Crane, excavators, welding units and trucks	5 Days
1, 12-inch-diameter MLV	44	Crane, excavators, welding units and trucks	2 Days
Existing Ramberg Truck Facility			
1,12-inch-diameter prefabricated pig receiver skid	44	Crane, excavators, welding units and trucks	5 Days
1,12-inch-diameter ESD valve	44	Crane, excavators, welding units and trucks	2 Days

B. Studies

B.1 Environmental Reports/Application

An Environmental Assessment (EA) for the Project is being prepared under the direction of the BLM, serving as the lead federal agency in compliance with the National Environmental Policy Act of 1970 (NEPA) per the Mineral Leasing Act (MLA) of 1920, as amended. The USFS, USACE, U.S. Fish and Wildlife Service (USFWS), and State of North Dakota are serving as cooperating agencies on the Project. This document follows the guidelines promulgated by the Council of Environmental Quality (CEQ) for implementing the procedural provisions of NEPA (40 CFR 1500-1508), BLM's NEPA Handbook (H-1790-1), and the USACE regulation ER 200-2-2 (33 CFR 230). Additionally, 40 CFR 1506.3(a) allows the cooperating agencies (USFS, USACE, USFWS, and State of North Dakota) to adopt a NEPA document prepared by the lead federal agency (BLM). In order to issue an easement for a proposed activity, the cooperating agencies would independently evaluate and verify the information and analysis undertaken in the EA and would take full responsibility for the scope and content contained herein, even though, per the MLA, the BLM would issue the ROW Grant for all federal lands crossed. NEPA requires federal agencies to make a series of evaluations and decisions that anticipate adverse effects on environmental resources and that a reasonable range of project alternatives identify potential direct, indirect, and cumulative environmental impacts. If impacts cannot be fully avoided, mitigation measures are to be recommended to reduce the severity of impacts. Information regarding potential impacts to natural and human resources from Project construction and operation as described in the EA has been provided in Section B.2, Potential Impacts. Hess is the Project applicant (also referred to as Project sponsor or Project proponent) and would be responsible for construction, operation, maintenance, and decommissioning of the Project.

Specific regulations require BLM to coordinate and consult with federal, state, and local agencies, and Native American tribes about the potential of the Project and alternatives to affect sensitive resources. The coordination and consultation must occur in a timely manner and these activities are required before any final decisions are made. Issues related to agency and tribal consultation may include biological resources, cultural resources, properties of traditional religious and cultural importance to Native American tribes, socioeconomics, land use, and water management. Biological resource consultations are completed to address potential impacts to sensitive species or habitats, as required by Section 7 of the Endangered Species Act (ESA). Cultural resource and tribal consultations are completed to address potential impacts to important archaeological sites and sites of tribal concern, as required under Section 106 of the National Historic Preservation Act (NHPA).

A Natural Resources Report (**Appendix B**) includes information regarding wetlands and waterbodies, federal listed species, USFS-sensitive species, noxious weeds, wooded areas, and raptor nests based on field surveys conducted within the 200-foot-wide corridor.

A Cultural Resources Class III Inventory Report was developed that summarizes the results of the pedestrian surveys conducted within a 200-foot-wide survey corridor. Based on direction provided by the North Dakota State Historical Society this report has not been included in this application due to the sensitive nature of this information.

A Paleontological Resources field survey and report, and subsequent report addendum, were completed for the Project within the 200-foot-wide survey corridor (**Appendix C1 and C2**).

A Spill Risk Assessment that addresses the potential impacts to soils, wetlands, vegetation, special status species, and wildlife and fisheries that may occur as a result of a potential crude oil release during operation (**Appendix D**).

B.2 Potential Impacts

B.2.1 Air Quality

B.2.1.1 Construction

Construction equipment would emit gaseous criteria pollutants and particulates as a result of tailpipe emissions. Construction equipment also would cause fugitive dust emissions from disturbed areas and along paved and unpaved roads. However, construction would progress continuously through a given area, leading to negligible temporary and localized air quality impacts.

CO_2 emissions result from the combustion of diesel fuel in engines powering trucks, tractors, and other mobile equipment such as dozers, backhoes, and trenchers. CO_2 emissions are expected to be far below USEPA's 25,000 tons per year (tpy) threshold, which would be seen as a significant level of emissions. To reach this level of concern, the fuel usage would have to be on the order of 2,200,000 gallons of diesel fuel. The CO_2 emitted from construction equipment is expected to be only a small fraction of this amount and a minor contribution to national and statewide CO_2 emissions. Emissions from construction equipment combustion and temporary fuel transfer systems and associated tanks will be controlled to the extent required by state and local agencies through the permit process. Therefore, negligible impacts to air quality resulting from the operation of heavy construction equipment are expected.

An increase in traffic during construction in the Project area from oil and gas development may lead to a higher exposure potential to the general public from ambient dust particles. As a result, additional mitigation (e.g., dust suppressants) may be needed in order to reduce possible health and safety hazards related to dust inhalation.

B.2.1.2 Operation

The Project would include three 50,000 barrels (bbl) crude oil tanks at the proposed Hawkeye Oil Facility. Daily throughput for each of the storage tanks is assumed to be approximately 23,000 bpd. Volatile organic compounds (VOC) emissions due to standing, working and breathing losses were estimated using the USEPA TANKS 4.09D software and estimated tank characteristics. The tanks are assumed to be vertical fixed roof tanks with an internal floating roof. Results from TANKS 4.09D (USEPA 2005) are provided in **Table B-1**.

Table B-1 Estimated VOC Emissions from 50,000 bbl Storage Tanks

Losses per Tank (lbs/year)				
Rim Seal Losses	**Withdrawal Losses**	**Deck Fitting Losses**	**Deck Seam Losses**	**Total VOC Emissions**
1,390	1,026,390	769	0	1,028,549

Source: USEPA 2005.

As shown in **Table B-1**, total VOC emissions would be 1,028549 lbs/year or 514 tpy of VOC emissions from onsite storage tanks at the proposed facilities. VOC emissions also include emissions of HAPs, such as benzene, toluene, and formaldehyde, which are known to cause health-related issues and can be fatal at higher concentrations. The major source limit for any individual HAP is 10 tpy and 25 tpy for all HAPs combined. Even though HAPs would be only a small fraction of VOC emissions, based on the estimated VOC emissions, HAPs emissions may approach major source limits. Hess maintains that the Project would help to address anticipated regional pipeline and outlet constraints north of Lake Sakakawea as development of the Bakken Formation increases and that the pipeline is needed to relieve the large truck traffic congestion on the western North Dakota road system. Using the conservative assumptions that each truck hauls 200 barrels, a pipeline capacity of 76,000 bpd, and an average roundtrip of 150 miles, approximately 57,000 truck miles per day would be eliminated from western North Dakota roads. **Table B-2** provides the estimated pollutant reductions expected on a per truck basis, daily basis, and annual basis.

Table B-2 Total Combustion Emissions Reductions Expected from Diesel-fired Heavy Duty Haul Trucks Being Taken Off the Road

Pollutants	Emissions Reductions		
	(tons/truck-day)	**(tons/day)**	**(tons/year)**
NO_X	1.36E-03	4.09E-01	149.06
CO	4.13E-03	1.24E+00	451.77
SO_2	2.75E-06	8.29E-04	0.31
VOC	9.83E-04	2.95E-01	107.77
Benzene	2.01E-05	6.01E-03	2.18
Toluene	1.47E-05	4.42E-03	1.61
Ethylbenzene	3.04E-06	9.15E-04	0.33
Xylene	1.04E-05	3.14E-03	1.14
Formaldehyde	1.16E-04	3.49E-02	12.73
n-Hexane	1.57E-06	4.70E-04	0.17
CO_2	3.16E-01	9.48E+01	34,560
CH_4	1.30E-05	3.89E-03	1.43
N_2O	2.59E-06	7.79E-04	0.29
CO_2e	3.16E-01	9.50E+01	34,678

B.2.1.3 Climate Change

Existing climate change models can predict climate change impacts with a high degree of certainty over global or continental scales. However, these same models find it difficult to simulate climate change on a smaller scale. In the small scale environment, climate variations occur frequently, which make it difficult to distinguish if temperature changes are due to external forces (i.e., local construction, drilling, or production activities) or naturally occurring events.

While the effects of greenhouse gas (GHG) emissions are well-documented on the global level, science does not have the ability to determine what effect GHG emissions from particular activities and projects might have on the environment. Although it is not possible to predict the effects on climate change due to the Project, **Table B-2** demonstrates that upon Project completion, yearly GHG emissions would be greatly reduced as a result of decreased truck traffic on the North Dakota arterial highway system.

B.2.2 Geology and Minerals

B.2.2.1 Geology

<u>Construction</u>

Construction activities would include disturbances to the topography along the Project route and at associated aboveground facilities due to grading and trenching that may result in slope instability. Since the Project route crosses landslide prone areas on either side of Lake Sakakawea, construction activities could result in instability through undercutting of slopes or changes in drainage and surface flow.

Blasting is not anticipated for the Project. If hard bedrock is encountered it can be disaggregated by using rippers, trenchers, or other equipment.

Operation

As previously identified, landslide areas would be crossed by the Project route. Pre-construction geotechnical investigations would help to identify site-specific engineering design and monitoring that would lessen the risk and potential impact of landslide and ground instability concerns. Operation of the Project would not alter the geological and physiographic conditions.

Mine subsidence has the potential to create ground instability with a risk of damaging the pipelines, disruption of service, and possible contamination from leaks. As with landslides, pre-construction investigations in areas of known or suspected historic mining, and avoidance of those identified, would lessen the risks associated with ground subsidence.

Because there are no identified active faults along the Project route, no impacts due to ground deformation due to fault movement are expected. The Project is in an area not likely to experience strong ground motion during a maximum credible earthquake, therefore impacts due to ground motion are not anticipated.

B.2.2.2 Minerals

Construction

As described in **Table B-3**, the Project route crosses multiple oil and gas fields. In addition, the Project route may cross aggregate resources (e.g., gravel, sand) in alluvial valleys and river terraces. Aggregate production is from localized deposits in floodplains or glacial deposits (Carlson 1985, 1983; Freers 1970). Some areas in McKenzie County also have scoria deposits that are used for road topping. Scoria is formed from the in-situ burning of coal seams that result in baked rock. No gravel or scoria pits are located within the Project vicinity. Nevertheless, construction would have very minor and short-term impacts on current mineral extraction activities due to the temporary and localized nature of pipeline construction activities. Construction of the Project is not expected to impact gravel mining operations.

Construction activities potentially could damage wells, associated underground fluid lines and pipelines, and disrupt normal operations and routine maintenance. Also, damage to oil and gas facilities, should it occur, could present severe health and safety and contamination hazards. Abandoned wells also could be impacted because construction potentially could remove existing abandoned well markers and damage near surface cement plugs. Because oil and gas are produced at depths considerably deeper than the excavation depth, construction of the Project would not be expected to affect the oil and natural gas producing formations. Rather, any construction-related impacts would be limited to surface or near-surface components of the wells and gathering systems, which would temporarily disrupt production until repairs are made.

Operation

The primary issues of concern regarding mineral resources and operation of the proposed pipeline are the potential for reduced access to underlying minerals and interference with future mineral extraction operations.

Long-term operation of a pipeline has the potential to preclude access to mineral resources. Overall, the Project does not pose a hindrance for accessing oil and gas resources. With the current propensity to drill horizontal laterals or directionally drill wells to access oil and gas resources, the proposed pipeline would not restrict access to those resources. Although the Project is within an area of coal and uranium resources, no current plans to mine such resources along the Project route were identified.

Additionally, impacts on future mineral development would not constitute a substantial loss of mineral resource or mineral availability because of the narrow, linear nature of the pipeline ROW relative to the expanse of areas with mineral resource potential. The pipeline trench would be backfilled with materials derived from the trench excavation, and it might be necessary to obtain some construction sand and gravel from local, existing commercial sources for use as pipe padding, road base, or surface facility pads. These demands for sand and gravel would not affect the long-term availability of construction materials in the area.

Table B-3 Oil and Gas Wells Within 200 Feet of Project Route

Pipeline[1]	MP	Direction and Distance from Centerline (feet)	API Number	Operator	Well Name	Well Type[2]	Status[3]
Oil CL	3.8	West, 142	33-053-02099-00-00	Thomas A. Haugen Operating Co.	Vern Sherven 27-1	OG	PNC
Oil CL	7.6	East, 31	33-053-00259-00-00	The Texas Co.	S. Holman 1	OG	DRY
Oil CL	8.4	East, 36	33-053-00165-00-00	Texaco Exploration & Production Inc.	Charlson-Madison North Unit D-404	OG	PA
Oil CL	9.1	East, 134	33-053-00590-00-00	Texaco Exploration & Production Inc.	Charlson-Madison North Unit B-203	OG	PA
Oil CL	9.7	West, 44	33-053-03279-00-00	Denbury Onshore, LLC	Charlson 24-34h	OG	PNC
Oil CL	10.2	East, 180	33-053-00099-00-00	William Herbert Hunt Trust Estate	CMNU B-234	OG	PA
Oil CL	13.3	West, 36	33-105-00417-00-00	Sm Energy Company	Hofflund 16	OG	PA
Oil CL	13.7	West, 16	33-105-00499-00-00	Sm Energy Company	Hofflund 15	OG	PA
Oil CL	16.5	West, 93	33-105-00480-00-00	Koch Industries, Inc.	Capa-Madison Unit N-203	OG	PA
Oil CL	17.3	West, 126	33-105-00473-00-00	Hess Bakken Investments II, LLC	Capa-Madison Unit M-206	OG	PA
Oil CL	19.8	East, 170	33-105-00765-00-00	Hess Bakken Investments II, LLC	Bldu G-303	OG	A
Oil CL	20.5	East, 174	33-105-00118-00-00	New Concord Development Co.	Math Iverson 2	OG	DRY
Oil CL	20.8	East, 164	33-105-00142-00-00	Hess Bakken Investments II, LLC	Beaver Lodge-Devonian Unit G-305i	WI	PA
Oil CL	23.0	East, 2	33-105-00559-00-00	Hess Bakken Investments II, LLC	Beaver Lodge-Devonian Unit G-309	OG	A
Gas CL	0.9	West, 142	33-053-02099-00-00	Thomas A. Haugen Operating Co.	Vern Sherven 27-1	OG	PNC
Gas CL	4.7	East, 31	33-053-00259-00-00	The Texas Co.	S. Holman 1	OG	DRY
Gas CL	5.6	East, 36	33-053-00165-00-00	Texaco Exploration & Production Inc.	Charlson-Madison North Unit D-404	OG	PA
Gas CL	6.3	East, 134	33-053-00590-00-00	Texaco Exploration & Production Inc.	Charlson-Madison North Unit B-203	OG	PA
Gas CL	6.9	West, 44	33-053-03279-00-00	Denbury Onshore, LLC	Charlson 24-34h	OG	PNC
Gas CL	7.4	East, 180	33-053-00099-00-00	William Herbert Hunt Trust Estate	CMNU B-234	OG	PA
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Gas CL	10.9	West, 16	33-105-00499-00-00	Sm Energy Company	Hofflund 15	OG	PA
Gas CL	13.7	West, 93	33-105-00480-00-00	Koch Industries, Inc.	Capa-Madison Unit N-203	OG	PA
Gas CL	14.5	West, 126	33-105-00473-00-00	Hess Bakken Investments II, LLC	Capa-Madison Unit M-206	OG	PA
Gas CL	17.0	East, 170	33-105-00765-00-00	Hess Bakken Investments II, LLC	BLDU G-303	OG	A
Gas CL	17.7	East, 174	33-105-00118-00-00	New Concord Development Co.	Math Iverson 2	OG	DRY
Gas CL	17.9	East, 164	33-105-00142-00-00	Hess Bakken Investments II, LLC	Beaver Lodge-Devonian Unit G-305i	WI	PA

Table B-3 Oil and Gas Wells Within 200 Feet of Project Route

Pipeline[1]	MP	Direction and Distance from Centerline (feet)	API Number	Operator	Well Name	Well Type[2]	Status[3]
Gas CL	20.2	East, 2	33-105-00559-00-00	Hess Bakken Investments II, LLC	Beaver Lodge-Devonian Unit G-309	OG	A
Gas CL	20.2	East, 199	33-105-01513-00-00	Hess Bakken Investments II, LLC	BLMU L-014 Ah	OG	PA

[1] CL – Centerline.
[2] SWD – Salt Water Disposal Well; C – Confidential; OG – Oil or Gas Well.
[3] IA – Inactive; C – Confidential, PA – Plugged and Abandoned; TA – Temporarily Abandoned; PNC – Permit Now Cancelled; AB – Abandoned; DH – Dry Hole.

Source: North Dakota Oil and Gas 2014.

B.2.3 Paleontological Resources

B.2.3.1 Construction

The issue of concern with regard to paleontological resources is the potential damage to and loss of scientifically important fossils from ROW clearing, grading, trench excavation, and construction of other pipeline facilities. Potential impacts to fossil localities during construction would be both direct and indirect. Direct impacts to or destruction of fossils would occur from trenching or facility construction activities conducted through significant fossil beds. Indirect impacts would include erosion of fossil beds due to slope re-grading and vegetation clearing or the unauthorized collection of scientifically important fossils by construction workers or the public due to increased access to fossils along the Project route.

The Project route is within areas where the Tongue River/Bullion Creek and Sentinel Butte formations are the primary bedrock strata. BLM has ranked these Paleocene formations as Class 4 (PFYC) formations due to the high potential of these formations to consistently and predictably produce paleontologically significant vertebrate fossils or scientifically significant invertebrate and plant fossils.

Paleontological field surveys of the Project route were conducted on August 21 and 22, 2012, and October 19, 2012. A total of four non-significant fossil occurrences were documented during the field surveys. A desktop review of variations to the Project route that occurred subsequent to the 2012 field surveys was conducted in September 2014. The desktop review indicated that the route variations fall in flat and primarily vegetated areas with no exposure of sensitive paleontological bedrock due to the vegetation and surficial glacial deposits; therefore, no field surveys were recommended. In October 2014, the BLM agreed with the findings and recommendation that no field surveys of the variations were necessary.

Although only four non-significant fossil occurrences were documented during the field surveys of the Project route, and no exposure of sensitive paleontological bedrock were identified during the desktop review of the route variations, data provided by the North Dakota Geologic Survey and University of North Dakota show numerous paleontological resource localities within proximity of the Project route, which suggest that ground-disturbing Project activities through areas underlain by these bedrock units could uncover paleontological resources. Therefore, monitoring for paleontological resources during ground-disturbing activities in areas identified with PFYC Class 4 bedrock may be warranted. If paleontological resources are discovered during Project-related construction activities, all construction activity would cease within 100 feet of the discovery and would be reported to the construction supervisor and a qualified BLM-permitted paleontologist for assessment and recommended actions. The discovery would be handled as stipulated in the *Unanticipated Discoveries Plan for Paleontological Resources*. Construction activities would not resume until the BLM Project Manager has issued a Notice to Proceed.

B.2.3.2 Operation

The primary impact for paleontological resources during pipeline operation is potential damage to and loss of scientifically important fossils from maintenance activities. Any potential effects to fossils from maintenance activities would be isolated due to the probable dispersed nature of those activities.

Normal operation of the Project is not expected to disturb important paleontological resources. If there are maintenance activities that would result in surface disturbance, it would occur within previously disturbed ROW and would not be likely to affect paleontological resources. Therefore, there would be no impacts to paleontological resources during operation of the Project.

B.2.4 Soils

B.2.4.1 Construction

The Project construction would create surface disturbance to soils associated with:

- ROW clearing and grading;
- Topsoil stripping;
- Trench excavation; and
- Expansion of existing facilities.

Land disturbance would include:

- Vegetation removal by mechanical methods (mowing, brushing, tree and stump removal);
- Stripping topsoil by use of bull-dozer (topsoil to be temporarily stockpiled);
- Excavation of trench with wheel trencher or backhoe (subsoil to be temporarily stockpiled [on area stripped of topsoil]);
- Equipment traffic within the ROW;
- Trench backfilling and trench compaction with backhoe and bulldozer;
- Subsoil de-compaction with a chisel plow or deep ripper, as needed;
- Spreading topsoil with a bulldozer;
- Disking (to prepare a seed bed); and
- Planting specified seed mix.

Potential impacts include:

- Compaction of soil by construction equipment;
- Accelerated erosion due to a lack of vegetative cover;
- Temporary surface grade changes affecting stormwater runoff patterns;
- Alteration of the soil profile within the excavated trench; and
- A reduction in soil productivity.

The Project would have surface disturbing activities that would result in short-term and long-term impacts. Short-term impacts are those impacts to soil resources that are related to initial construction and installation of the pipeline. Surface disturbance areas would be reclaimed and soils would be returned to a condition that currently exists. Long-term impacts are those impacts associated with features used for operations and maintenance of the proposed project that would not be reclaimed until after the Project is decommissioned at the end of the Project's life. The acreage of sensitive soils impacted by the Project has been estimated to assess the overall impacts to soil resources. The acreage of sensitive soils within temporary and permanent disturbance areas is listed in **Table B-4**.

Table B-4 Soils Impacted by the Project (Acres)

Disturbance Type	Wind Erodible	Water Erodible	Compaction Prone	Hydric	Droughty	Shallow Depth to Bedrock	Prime Farmland	Farmland of Statewide Importance
New Pipelines (Temporary)	11.7	16.3	127.2	85.2	0	0	1.6	49.7

Table B-4 Soils Impacted by the Project (Acres)

Disturbance Type	Wind Erodible	Water Erodible	Compaction Prone	Hydric	Droughty	Shallow Depth to Bedrock	Prime Farmland	Farmland of Statewide Importance
Proposed Hawkeye Oil Facility (Permanent)	0	0	78.9	74.9	0	0	0	59.9

Source: Natural Resources Conservation Society (NRCS) 2013.

Accelerated wind and water erosion would occur where land has been disturbed. Soils with unfavorable properties, including thin topsoil layers, moderate to strong salinity and alkalinity, clayey or sandy topsoil and areas that have steep and/or long continuous slopes would present challenges for erosion control and revegetation.

Soil compaction and rutting would likely result from the movement of heavy construction vehicles along the construction ROW and facilities. The degree of compaction would depend on the moisture content and texture of the soil at the time of construction. Compaction would be most severe where heavy equipment operates on moist to wet soils with high clay contents. Detrimental compaction also can occur on soils of various textures and moisture contents if multiple passes are made by equipment.

Typically soils that are compaction prone also are prone to rutting or displacement when saturated. Rutting occurs when the soil strength is not sufficient to support the applied load from vehicle traffic. Rutting affects the surface hydrology of a site as well as the rooting environment. The process of rutting physically severs roots and reduces the aeration and infiltration of the soil, thereby degrading the rooting environment. Rutting also disrupts natural surface water hydrology by damming surface water flows, creating increased soil saturation upgradient from ruts, or by diverting and concentrating water flows thereby causing accelerated erosion and gullying. Rutting is most likely to occur on moist or wet fine-textured soils, but also may occur on dry sandy soils due to low soil strength.

Prime Farmland and Farmland of Statewide Importance would be temporarily impacted during construction of the pipeline. With proper topsoil segregation and de-compaction techniques, impacts to farmland are expected to be short term. No permanent facilities would be constructed on Prime Farmland. One facility expansions would impact farmland of statewide importance. Agricultural use would be suspended permanently at this location.

Hess plans to minimize or mitigate potential impacts to soils by implementing environmental protection measures (**Appendix E**); the Stormwater Pollution Prevention Plan (SWPPP); and the Construction, Mitigation, and Reclamation Plan (CMRP). The CMRP, SWPPP, and Environmental Protection Measures, would provide an effective program that would ensure successful erosion control and reclamation of all land disturbance. Hess would follow the CMRP when operating on USFS and state lands, and would comply with soil protection and land use goals identified by the landowners on private lands.

Impacts to soil resources would be short term, since all disturbed areas (except the facility expansion area) would be reclaimed immediately following construction. Additional soil impacts may occur post construction if re-vegetation is not successful or adverse weather conditions (mainly heavy rainstorms) occurred before vegetation becomes established. Re-grading, reseeding, and maintenance of erosion controls may be necessary in such cases.

Some unquantifiable soil loss resulting from accelerated wind and water erosion would occur until erosion measures were implemented (generally measures would be implemented within 20 days of backfilling the trench). In addition to the sensitive soils, a few small unquantifiable areas (mainly abrupt steep slopes and localized areas with soil containing unfavorable physical and chemical properties) would be subject to accelerated erosion and require intensive and continuing maintenance of erosion control measures.

With effective use of erosion control/revegetation procedures, understory vegetation on sites without soil limitations is expected to return to near pre-construction conditions within 5 years after construction. Problem areas may require replanting and/or use of special revegetation techniques if revegetation does not respond in one to two growing seasons. In areas of limited precipitation or drought (less than 9 inches), and where there are shallow soils and/or low permeability soils, reclamation techniques that enhance permeability and conserve moisture would increase the potential for successful revegetation. Impacts to overstory vegetation would be long term with shrubs and trees taking several years to become re-established (e.g., 10 to 20 years for shrubs and 50 to 75 years for tree species).

Potential effects of fuel spills on soils would include contamination at the spill site and possible removal of contaminated soils. Contaminants BMPs incorporated into the Spill Prevention, Control, and Countermeasure (SPCC) Plan would be implemented to minimize fuel spills and their potential effects.

B.2.4.2 Operation

As previously described, some accelerated soil loss would result from wind and water erosion until vegetation becomes established.

Very small scale, isolated surface disturbance impacts, from accelerated erosion, soil compaction, potential spills, and related reductions in the productivity of desirable vegetation could result from pipeline maintenance traffic and incidental repairs. During operation, these types of impacts would be addressed with the affected landowner or land management agency and a mutually agreeable resolution reached. Similar Environmental Protection Measures as those used during the Project construction would be used to avoid and minimize potential impacts resulting from operational maintenance.

B.2.5 Water Resources

B.2.5.1 Surface Water

The surface water resources in the Project area would be managed and protected according to existing federal laws and policies regarding the use, storage, and disposal of the resource during the construction and operation of the Project. Surface water resource use and protection is administered under the following federal laws:

- Clean Water Act of 1972 (CWA), as amended (33 United States Code [U.S.C.] 1251 et seq.)
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1711–1712)
- NEPA (42 U.S.C. 4321)
- Safe Drinking Water Act of 1974, as amended (42 U.S.C. 300 et seq.)

Water quality is protected under the Federal Water Pollution Control Act (as amended), otherwise known as the CWA. The CWA has developed rules for regulating discharges of pollutants into waters of the U.S. and also regulates water quality standards for surface waters. The CWA also has made it unlawful to discharge any pollutant from a point source into any navigable waters of the U.S., unless a permit has been obtained from the National Pollution Discharge Elimination System (NPDES) program.

<u>Construction</u>

Potential construction impacts to surface water would depend on the construction techniques employed and the physical characteristics of the streams and watersheds crossed by the Project route. Construction of the Project could affect surface water in several ways. Clearing, grading, trenching, and soil stockpiling activities could temporarily alter overland flow. Surface soil compaction caused by the operation of heavy equipment could reduce the soil's ability to absorb water, which could increase surface runoff and the potential for ponding. These impacts would be localized and temporary. Other temporary impacts, mainly in the form of erosion and sedimentation effects on surface water quality, generally would be expected from land disturbance during construction.

The potential for these impacts would be minimized with the implementation of the environmental protection measures discussed in **Appendix E**. In addition, the SPCC Plan would address preventive and mitigation measures that would be used to avoid or minimize the potential impact of hazardous material spills during construction. Areas of disturbance adjacent to and directly upslope of intermittent streams might contribute to temporary impacts of surface water through increased rates of erosion that contribute sediment to the intermittent streams during storm runoff events. Measures contained in the SWPPP, typical construction practices, and committed measures set forth in **Appendix E** would be utilized during construction and reclamation to minimize impacts. The Project would be designed and constructed so it would not impede the flow of any waterway. Pipeline crossings would be scheduled at times when there is as little rainfall as possible to minimize the risks of debris, stockpiled soil, and other sources of sediment from being washed into water bodies or wetlands. This would minimize the risks of debris, stockpiled soil, and other sources of sediment from being washed into waterbodies or wetlands. Temporary erosion and sediment control measures would be installed across the entire width of the construction ROW after clearing and before ground surface disturbance. No silty/turbid discharge water from the trench dewatering operations would be allowed to enter any waterbody or wetland. The pipeline would be installed below the bed of the waterway, at a level so the channel bed gradient does not change.

If temporary dewatering of groundwater is required during construction activities, water would be discharged in compliance with a NPDES permit and the SWPPP. The SWPPP would provide guidance on the location of dewatering structures, resulting in no deposition of sediments into wetlands and water bodies, and no impacts on cultural resources or habitat for sensitive species. The discharge of water from dewatering and hydrostatic testing operations would comply with relevant state discharge guidelines, and would follow the Hydrostatic Test Plan. Effects from dewatering would be localized, temporary, and generally insignificant.

Operation

During operation, impacts to surface water resources would occur if a pipeline leak or rupture released crude oil. The severity and duration of such an impact would depend on its location, the volume of oil released, and the spill response and countermeasures implemented. Hess would install remotely controlled MLVs are proposed and existing Hess facilities. MLVs would be installed in accordance with federal regulations and as reviewed by PHMSA.

The pipeline would be monitored 24 hours a day, 365 days a year from an OCC using a sophisticated SCADA system. The SCADA system would allow abnormal operating conditions to be discussed immediately and addressed promptly, including shutdown of the system in the event of a leak or other appropriate circumstance. Hess would implement additional and multiple leak detection methods and systems that are overlapping in nature and progress through a series of leak detection thresholds. The leak detection system would be configured in a manner capable of alarming the OCC operators through the SCADA system and also would provide the OCC operators with a comprehensive assortment of display screens for incident analysis and investigation. The pipeline operator also would develop a Pipeline Integrity Management Plan, which together with the ERP, outlines the preventative maintenance, inspection, line patrol, leak detection systems, SCADA, and other pipeline integrity management procedures to be implemented during the operation of the Project.

B.2.5.2 Groundwater

Bedrock aquifers in the Project area include, from deepest to shallowest, the Cretaceous Fox Hills/Hell Creek aquifers, the Tertiary Ludlow aquifer, and the Tongue River and Sentinel Butte aquifers of the Fort Union Group. Shallow glacial and alluvial aquifers crossed by the Project route include the Dry Fork Creek aquifer in glacial till and the alluvial Missouri River/Lake Sakakawea aquifer where the Project ROW crosses Lake Sakakawea (**Appendix F**, **Figure F-5**). The water levels in the bedrock aquifers are generally too deep to be impacted by Project construction activities. The shallow water levels in the Dry Fork Creek and Missouri River/Lake Sakakawea aquifers are expected to be below the planned construction depth of the Project pipeline during the time of construction. If dewatering is required during construction, groundwater removed would be disposed of in accordance with an NPDES permit and the SWPP, and mitigation measures would be implemented as needed to prevent impacts to groundwater resources. Additionally, well completion methods would prevent cross contamination between aquifers or the introduction of hazardous materials into aquifers.

The shallow Sentinel Butte Formation aquifer, commonly used for domestic supply in the area, outcrops in Dunn and McKenzie counties. This aquifer meets the water quality standards of the NDDH (Croft 1985). The Dry Fork Creek aquifer and the alluvial aquifer along the Missouri River (Lake Sakakawea/Missouri River aquifer) are locally used for domestic supply and irrigation. Water quality analyses can be found in Armstrong (1969), Carlson (1985; pts II and III), Klausing (1979). Review of electronic records of the North Dakota State Water Commission revealed 81 existing water wells within an approximate 5-mile boundary of the Project area. The existing water wells include 7 domestic wells, 7 industrial wells, 1 industrial well-plugged, 1 irrigation well, 18 observation wells, 3 observation wells-plugged, 6 stock wells, 1 surface water monitoring site, 22 test holes, and 15 wells of an unknown type. Eleven of the existing wells are within 1 mile of the Project.

<u>Construction</u>

Construction and operation of the Project is not expected to adversely affect groundwater resources in the Project area or vicinity. Blasting is not anticipated as a means for trench excavation. No measurable alteration of aquifer recharge should occur. The trench excavated for pipe placement would be above the water table along the proposed route in most locations, with the exceptions of surficial alluvial aquifers along streams and shallow glacio-fluvial aquifer zones. Portions of the Project route in the immediate vicinity of these features may encounter shallow groundwater during excavation. Following backfilling of the trench, these areas would be returned to their original condition, and groundwater impacts would not be expected. No unpermitted withdrawals of groundwater would occur. Therefore, impacts to groundwater resources due to construction of the Project are not anticipated.

Some dewatering of construction areas and the pipeline trench may occur; however, relatively small volumes are expected and effects on the overall groundwater system would be small and temporary. Potential impacts on the groundwater would include minor fluctuations in groundwater levels and/or increased turbidity within the aquifer adjacent to the activity. Because of the relatively small amount of water removed, the short duration of the activity, and the local discharge of the water, groundwater levels would quickly recover after pumping stops. If temporary dewatering of groundwater is required during construction, dewatering would be discharged in compliance with a NPDES permit.

There is a risk for small spills of liquids during construction, but these would be contained to small, isolated areas centered along the construction ROW. Potential leaks or spills of petroleum products or other hazardous materials from construction equipment and vehicles have the potential to adversely affect near-surface groundwater. In such an event, actions and reporting conducted according to an approved SPCC Plan would reduce the extent and severity of groundwater impacts.

<u>Operation</u>

The greatest risk for impacts to groundwater would result from the accidental release of a hazardous substance during construction or from a release during operations of the pipeline. Hess has developed a SPCC Plan and a SWPPP to address preventive and mitigation measures that would be used to avoid or minimize the potential impact of hazardous material spills during construction. The Project would be monitored through a fiber optic cable control system, which would alert operations personnel to any potential leaks. Additionally, communications equipment would be installed allowing valves to be operated remotely to minimize any potential impacts of a spill. Expected actuator locations include both sides of the Lake Sakakawea crossing; however, additional locations are pending consultation with the PHMSA.

Water for hydrostatic testing, dust abatement, and other construction uses may temporarily impact groundwater resources, either through withdrawals from municipal or private wells. Water would be obtained through Temporary Use Agreements with current water users, as applied for and pending approval by the State of North Dakota. Hydrostatic testing would occur in three pipeline segments and three HDD sections as they are completed during the construction period. Water for hydrostatic testing would be disposed of according to applicable federal, state, and local regulations. Test water would be discharged into a selected dispersion device as described in the Hydrostatic Testing Plan, so as to avoid erosion and sedimentation in upland settings. The Hydrostatic Test Plan provides guidance on the location of dewatering structures, which would be located and constructed to avoid deposition of sediments into waterbodies or shallow aquifers. The discharge of water from dewatering and hydrostatic testing operations would comply with relevant state discharge guidelines.

No perennial streams would be crossed utilizing the HDD construction method. Therefore, inadvertent releases of drilling fluids and lubricants through seepage, which sometimes can reach surface water or shallow groundwater, would not occur.

B.2.6 Wetlands and Floodplains

The impact analysis area for wetland and floodplain resources encompasses the Project area which includes the construction ROWs associated with the new pipeline facilities, additional temporary workspaces, and permanent aboveground facilities (i.e., proposed Hawkeye Oil Facility). A 100-foot-wide temporary construction ROW would be allowed in most areas except USFS-administered lands, wooded areas, and wetland crossings, which typically would be limited to a nominal 50-foot-wide construction ROW. With the exception of the proposed Hawkeye Oil Facility, aboveground facilities to be installed as part of the Project would be located within existing fenced Hess facilities. Hess would construct a total of 3 new access roads. Pipe storage yards would be located within existing Hess facilities.

The primary issues associated with wetland resources could include direct and/or indirect impacts to wetlands and floodplains including impacts associated with the potential introduction and/or spread of noxious weed species and potential for accidental oil spills.

B.2.6.1 Construction

Hess has committed to using HDD to avoid disturbance of all wetlands. For this reason, there would be no direct impact of the proposed project on wetlands. Impacts to surface waters are discussed in detail in Section B.2.5, Water Resources.

Hess would implement the environmental protection measures and design features detailed (**Appendix E**). Avoidance and minimization measures include a using HDD to avoid direct impacts in all wetlands, the exclusion of permanent facilities within wetlands, installment of signs denoting wetland areas so that specific BMPs and work practices are adhered to, and the implementation of BMPs (e.g., installation of erosion control devices to reduce sediment transport into wetlands). No refueling or lubricating would occur within 100 feet of wetlands and hazardous materials, chemicals, and fuels would not be stored within 100 feet of wetlands.

To minimize fugitive dust emissions, Hess would follow the measures detailed within the CMRP. The primary protection measure focuses on the use of water or chemical soil binders and BMPs to control dust along the ROW and access roads during construction in accordance with federal, state, and local requirements.

B.2.6.2 Operation

No permanent aboveground facilities would be located within wetlands; therefore, no impacts are anticipated as a result of Project operation.

If an accidental spill were to occur within a wetland during construction or operation, Hess would employ the spill prevention, contingency plans, and spill containment and countermeasures outlined within the CMRP.

B.2.7 Vegetation Resources

The impact analysis area for vegetation resources encompasses the Project area, which includes the construction ROWs associated with the new pipeline facilities, additional temporary workspaces, and permanent aboveground facilities (i.e., proposed Hawkeye Oil Facility). A 100-foot-wide temporary construction ROW would be allowed in most areas except USFS-administered lands, wooded areas, and wetland crossings, which typically would be limited to a nominal 50-foot-wide construction ROW. With the exception of the proposed Hawkeye Oil Facility, aboveground facilities to be installed as part of the Project would be located within existing fenced Hess facilities. Hess would construct a total of 3 new access roads. Pipe storage yards would be located within existing Hess facilities. **Table B-5** summarizes temporary and permanent acreage disturbances to each vegetation community type within the proposed project area.

The primary issues associated with vegetation resources include direct and/or indirect impacts to native vegetation communities, riparian/wetland habitats, and impacts associated with the potential introduction and/or spread of noxious weed species.

B.2.7.1 Electrical Transmission Lines

No new power lines would be constructed as part of the proposed project, therefore impacts to vegetation communities would not occur.

B.2.7.2 Hydrostatic Testing

Hydrostatic testing would be accomplished using municipal water sources. No surface water sources would be used as hydrostatic test water sources. Therefore, impacts to vegetation communities would not occur.

B.2.7.3 Construction

Direct impacts from Project-related activities would include the temporary loss of vegetation as a result of trampling/compaction, clearing/trenching/blading of surface cover, and direct removal of aboveground and belowground vegetation as a result of construction. Temporary disturbances predominately would affect agriculture, developed, and grassland vegetation communities in the construction ROW. All wetland and riparian areas would be horizontally directionally drilled resulting in no disturbance to wetland and riparian areas. Long-term impacts (greater than 30 years) would be limited to the loss of woodland and shrublands until successful reclamation of these communities is achieved. Increased fugitive dust emissions associated with vehicle and equipment travel along access roads during construction may result in a potential decrease in species and habitat productivity in the short term.

B.2.7.4 Operation

Permanent disturbances resulting from pipeline operation and maintenance activities would be limited to the agriculture vegetation communities located within the footprint of the permanent Hawkeye Oil Facility. Woody species present within the woodland and shrubland vegetation communities would be replaced pursuant to the Tree and Shrub Mitigation Specifications. Tree and shrub replacement would be completed on 2:1 basis within the disturbed ROW; however, tree and shrub replacement would not be permitted within a 20- to 30-foot-wide path over the pipeline centerline to facilitate periodic visual inspections of the ROW. Mitigation for these species would be determined in consultation with the Public Service Commission (PSC)

Table B-5 Temporary and Permanent Vegetation Disturbances

Vegetation Type	Temporary Disturbance (Acres)[1]		Permanent Disturbance (Acres)[1]
	Construction ROW	Additional Temporary Workspaces	Hawkeye Oil Facility
Agricultural	132	4	77
Barren	--	--	--
Wetland and Riparian Areas	--	--	--
Developed	6	<1	2
Grasslands	89	10	--
Woodland and Shrubland	4	<2	--
Total	**230**	**14**	**80**

[1] Total discrepancy due to rounding.

Source: Stantec 2014.

and could include off-site mitigation options. Although there would be a loss of woody-dominated vegetative cover from Project construction, an increase of woody species individuals and herbaceous-dominated vegetative cover acreage would result from tree and shrub replacement plantings.

Indirect impacts resulting from Project development may include the potential for introduction of noxious weed species in areas of vegetation removal or soil disturbance, in areas of prolonged, unsuccessful reclamation, or in areas of high soil erosion or low vegetation cover. Noxious weed species can be introduced to the proposed project area through weed-contaminated vehicles, equipment, and erosion control devices (e.g., straw bales) and, if not controlled, can displace native plant species, rendering infested areas unproductive.

To minimize environmental impacts and ensure site stabilization and revegetation, Hess would implement the environmental protection measures and design features (**Appendix E**). The Construction Mitigation Reclamation Plan (CMRP) outlines the procedures Hess would follow during construction and reclamation, and the subsequent mitigation necessary to return all vegetation cover types to pre-disturbance conditions. Timely stabilization of areas disturbed by construction and seeding with an appropriate species composition would minimize the magnitude and duration of vegetation disturbance. Trees and shrubs would be replaced in accordance with the PSC Tree and Shrub Mitigation Specifications. Hess would coordinate with the appropriate agencies to identify efficient restoration and mitigation measures and would develop appropriate revegetation seed mixtures. In addition, ROW monitoring would be conducted to determine reclamation success. The Noxious Weed and Invasive Weeds and Aquatic Nuisance Species Control Plan outlines BMPs to use prior to construction, and during construction, reclamation, and monitoring timeframes.

To minimize fugitive dust emissions, Hess would follow the measures detailed within the CMRP. Direct spills of fuels, drilling fluids, or other hazardous materials would saturate soils and adversely affect vegetation resources. To minimize the potential for spills, Hess would employ the spill prevention, contingency plans, and spill containment and countermeasures outlined within the CMRP.

B.2.8 Noxious Weeds and Invasive Species

The impact analysis area for noxious weeds and invasive species encompasses the Project area which includes the construction ROWs associated with the new pipeline facilities, additional temporary workspaces, and permanent aboveground facilities (i.e., proposed Hawkeye Oil Facility). A 100-foot-wide temporary construction ROW would be allowed in most areas except USFS-administered lands, wooded areas, and wetland crossings, which typically would be limited to a nominal 50-foot-wide construction ROW. With the exception of the proposed Hawkeye Oil Facility, aboveground facilities to be installed as part of the Project would be located within existing fenced Hess facilities. Hess would construct a total of 3 new access roads. Pipe storage yards would be located within existing Hess facilities. **Table B-5** summarizes temporary and permanent acreage disturbances to each vegetation community type within the Project area.

The primary issues associated with noxious weeds and invasive species include their potential introduction and/or spread into native vegetation communities and riparian/wetland habitats, and subsequent reduction of suitable vegetation species, overall habitats, or decreased land values.

B.2.8.1 Electrical Transmission Lines

No new power lines would be constructed as part of the proposed project, therefore impacts from noxious weeds would not occur.

B.2.8.2 Hydrostatic Testing

Hydrostatic testing would be accomplished using municipal water sources. No surface water sources would be used as hydrostatic test water sources. Therefore, impacts from noxious weeds would not occur.

B.2.8.3 Construction

Substantial increases in weed prevalence within the Project area are not anticipated. However, despite efforts to prevent the proliferation of noxious weed species, it is possible that construction activities could spread or introduce noxious weed species along the ROW, or that weed species could be transported into areas that were relatively weed-free. Implementation of the Project's Noxious Weed Control Plan would minimize the introduction and spread of noxious weed species within the Project area. The Noxious Weed Control Plan identifies pre-construction, construction, and post-construction measures including, but not limited to, the following: pre-construction biological monitors and weed control, use of weed-free erosion control devices, pressure washing all construction equipment, and post-reclamation monitoring and control.

B.2.8.4 Operation

Noxious weed species can be introduced to the Project area via weed-contaminated vehicles, equipment, and erosion control devices (e.g., straw bales) and, if not controlled, can displace native plant species, rendering infested areas unproductive. Impacts to vegetation as a result of noxious weed invasions are not anticipated during project operation. Hess will implement the Noxious Weed Control Plan, which includes post-reclamation monitoring and noxious weed control measures.

B.2.9 Wildlife and Fisheries

B.2.9.1 Wildlife

Wildlife species and related issues for this analysis were determined through consultation with the North Dakota Game and Fish Department (NDGFD), USFS, and USFWS. Construction impacts were calculated based on the inclusion of construction ROWs associated with the new pipeline facilities and additional temporary workspace. A 100-foot-wide temporary construction ROW would be allowed in most areas except USFS-administered lands, wooded areas, and wetland crossings, which typically would be limited to a nominal 50-foot-wide construction ROW. Operation impacts were calculated based primarily on the acreage that would be occupied by the permanent aboveground facilities (i.e., proposed Hawkeye Oil Facility).

The primary issues related to wildlife species include the loss or alteration of native habitats, increased habitat fragmentation, animal displacement, and direct mortalities. Direct impacts to wildlife species include mortality and displacement related to pipeline construction and operation. Habitat loss, alteration, and fragmentation also would occur. Indirect impacts include disturbance from increased levels of noise and human activity.

Potential impacts to wildlife species can be further classified as temporary and permanent. Temporary impacts consist of habitat removal, activities associated with Project construction, and changes in wildlife habitats until reclamation activities have been completed and vegetation is re-established. Permanent impacts consist of permanent changes to habitats and the wildlife populations that depend on these habitats, regardless of reclamation success. The extent of both temporary and permanent impacts depends on factors such as species sensitivity to human activity, seasonal use patterns, type and timing of construction activities, and physical parameters (e.g., topography, cover, forage, precipitation).

Impacts to game and nongame wildlife species, which occur in the Project area, are anticipated to be minimal because: 1) only a small portion of the potentially suitable, available habitat would be impacted by Project construction activities; 2) established topsoil handling techniques and subsequent reseeding of disturbed areas would aid in the re-establishment of habitats; 3) the temporary nature of Project construction would minimize the length of time that wildlife would potentially avoid habitats along the Project ROW; and 4) measures to avoid impacts to wetland and riparian areas would be implemented.

<u>Electrical Transmission Lines</u>

No new power lines would be constructed as part of the proposed project, therefore impacts to wildlife species would not occur.

Hydrostatic Testing

Hydrostatic testing would be accomplished using municipal water sources. No surface water sources would be used as hydrostatic test water sources. Therefore, impacts to wetland and riparian areas and associated species would not occur.

Management Indicator Species

Construction

Three MIS have been identified for the Project: sharp-tailed grouse, greater sage-grouse, and black-tailed prairie dog. Impacts to sharp-tailed grouse are discussed under Small Game Species. No greater sage-grouse leks occur within the Project area; therefore, impacts to the species are not anticipated. No black-tailed prairie dog colonies occur within the Project area; therefore, impacts to the species are not anticipated.

Big Game Species

Construction

Impacts to big game habitat (e.g., mule deer, white-tailed deer, elk, pronghorn, and mountain lion) include the temporary loss of potential forage and vegetation cover (native and reclaimed vegetation) and increased habitat fragmentation within the Project area. No big game critical ranges are identified within the Project area. A total of 129 acres of potential big game habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat.

Operation

Project operation may result in direct and indirect impacts to big game species. Direct mortality to individuals may result from collisions with maintenance vehicles. Potential indirect impacts would include displacement of individuals and decreased breeding success due to increased levels of noise and human activity.

Displacement of big game as a result of direct habitat loss and indirect reduction in habitat quality has been widely documented (Irwin and Peek 1983; Lyon 1983, 1979; Rost and Bailey 1979; Ward 1976). Big game species tend to move away from areas of human activity and roads, which reduces habitat utilization near disturbance areas (Cole et al. 1997; Sawyer et al. 2006; Ward 1976). Displacement distances are strongly influenced by the level and timing of human activity, topography, and vegetation cover (Cole et al. 1997; Lyon 1979), which affects noise attenuation and visual barriers. Mule deer and pronghorn appear to be more tolerant of human activity than elk. For mule deer, displacement distances ranged from 330 feet to 0.6 mile, depending on the presence of vegetation cover (Ward 1976). For evaluation purposes, 660 feet was the most common displacement distance used for mule deer, especially in areas with minimal vegetation cover. Mule deer and pronghorn have been observed to habituate to vehicles. Displacement distances decreased when traffic was predictable; moved at a constant speed; and was not associated with out-of vehicle activities (Ward 1976).

Disturbances associated with construction activities would be temporary, and it is assumed that animals would return to the area following construction. Based on the amount of available habitat within the Project area, impacts to big game species are anticipated to be minimal and primarily limited to displacement from areas of human activity and habitat alteration. In most instances, suitable habitat adjacent to disturbed areas would be available for big game species until herbaceous and woody vegetation are re-established within the disturbance areas.

Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. The loss of available woody/shrubby vegetation would require more than 20 years to become re-established. Herbaceous species may become established within 3 to 5 years, depending on reclamation success, weather conditions, and grazing management practices in the Project area. Permanent impacts would occur to 77 acres of wildlife habitat (agricultural land), as a result of the construction and operation of aboveground facilities.

Small Game Species

Construction

Direct impacts to small game would include mortality or displacement as a result of construction activities. Indirect impacts include habitat loss, alteration, and fragmentation. Disturbance from increased levels of noise and human activity also would indirectly impact small game species. A total of 129 acres of potential small game habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat, until reclamation has been completed and vegetation is re-established within the disturbance areas.

Habitat fragmentation impacts to some small game species have been demonstrated to negatively impact populations. In most instances, suitable habitat adjacent to disturbed areas would be available for small game species until herbaceous and woody vegetation become re-established. Temporary loss of habitat would reduce productivity for the current breeding season. However, due to the large amount of suitable habitat in the Project area, impacts to small game species are anticipated to be low.

Operation

Project operation may result in direct and indirect impacts to small game species. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals may result from collisions with maintenance vehicles. Other potential indirect impacts would include displacement of individuals, and decreased breeding success from increased noise levels and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. Permanent impacts would occur to 77 acres of wildlife habitat (agricultural land), resulting from construction and operation of aboveground facilities.

Sharp-tailed Grouse

Construction

Project construction would result in the temporary loss of 129 acres of potential brooding and winter habitat, including 57 acres of grassland, 70 acres of agricultural land, and 2 acres of woodland and shrubland until reclamation has been completed and vegetation is re-established within the disturbance areas.

One active sharp-tailed grouse lek occurs along the Project route. Project construction during the breeding season may impact the sharp-tailed grouse by destroying nests, causing nest abandonment, or causing injury or direct mortality to the young. The species is particularly sensitive to disturbance while the birds gather on lekking grounds each morning and evening from March to June. Construction activities and associated noise, which may occur in the early morning or late evening near lekking grounds, may disrupt and displace individuals that have gathered for breeding activities. Once breeding activities have concluded, hens build their nests on the ground beneath vegetation near the lekking grounds. As presented in **Appendix E**, no construction activities would be allowed within 1 mile (line of sight) of identified sharp-tailed grouse leks on USFS-administered land during the breeding season (March 1 through June 15). Therefore, impacts to breeding sharp-tailed grouse are anticipated to be low.

Operation

Project operation may result in direct and indirect impacts to sharp-tailed grouse. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals may result from collisions with maintenance vehicles. Potential indirect impacts would include displacement of individuals and decreased breeding success from increased noise levels and human activity.

However, as presented in **Appendix E**, no operation or maintenance activities would be allowed within 1 mile (line of sight) of identified sharp-tailed grouse leks on USFS-administered land during the breeding season (March 1 through June 15). Therefore, impacts to breeding sharp-tailed grouse are anticipated to be low. Regarding sharp-tailed grouse habitat along the Project route, Project operation would allow vegetation to become re-established. However, trees and shrubs over 15 feet in height within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. Permanent impacts would occur to 77 acres of agricultural land as a result of the construction of aboveground facilities.

Nongame Species

Construction

Construction activities may result in mortalities of less mobile or burrowing nongame species (e.g., small mammals, and reptiles) within the ROW, from crushing by construction vehicles and equipment. Indirect impacts include habitat loss, alteration, and fragmentation. Increased noise levels and human activity also would indirectly impact nongame species. A total of 129 acres of potential nongame habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat. Impacts would occur until herbaceous vegetation returns to pre-construction conditions (approximately 3 to 5 years). For species dependent on shrubland habitat, displacement would occur until shrubs become re-established, which would require over 20 years. However, due to the large amount of suitable habitat in the Project area impacts to nongame species are anticipated to be low.

Operation

Project operation may result in direct and indirect impacts to nongame species. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals may result from collisions with maintenance vehicles. Other potential indirect impacts would include displacement of individuals, and decreased breeding success from increased noise levels and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. Herbaceous species may become established within 3 to 5 years, depending on reclamation success, weather conditions, and grazing management practices in the Project area. Permanent impacts would occur to 77 acres of wildlife habitat (agricultural land) resulting from construction and operation of aboveground facilities.

Migratory Birds

Construction

Migratory birds that use various habitats in the Project area may be impacted by construction activities. Direct impacts to avian species include mortality, nest destruction, displacement, and disturbance from increased noise levels and human activity. Indirect impacts to migratory birds include habitat loss, alteration, and fragmentation. A total of 129 acres of potential big game habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat, until reclamation has been completed and vegetation is re-established within the disturbance areas.

In addition to habitat loss, reductions in bird population densities in both open grasslands and woodlands may be attributed to a reduction in habitat quality caused by elevated noise levels (Reijnen et al. 1997, 1995). Although visual stimuli in open landscapes may add to density reduction at relatively short distances, the effect of noise appears to be the most critical factor. Breeding birds of open grasslands (threshold noise range of 43 to 60 dBA) and woodlands (threshold noise range of 36 to 58 dBA) respond very similarly to disturbance by traffic volume (Reijnen et al. 1997). Reijnen et al. (1996) determined a threshold level for effects to bird species as 47 dBA.

As discussed in **Appendix E**, Hess has committed to conducting construction activities outside of the migratory bird breeding season (February 1 to July 15), or conducting pre-construction surveys for active migratory bird nests within 5 days of construction during the breeding season. If nests are identified, Hess will coordinate with the BLM and USFWS to avoid impacts to migratory birds and their nests during construction of the pipeline. Therefore, impacts to migratory birds are anticipated to be low.

Operation

Project operation may result in direct and indirect impacts to migratory birds. Direct impacts may result if maintenance activities are conducted during the breeding season. Mortality to individuals or destruction of nests may result from being crushed by, or colliding with maintenance vehicles. Potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased noise levels and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. Herbaceous species may become established within 3 to 5 years, depending on reclamation success, weather conditions, and grazing management practices in the Project area. Permanent impacts would occur to 77 acres of wildlife habitat (agricultural land)as a result of the construction and operation of aboveground facilities.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to migratory birds due to oiling of plumage, ingestion of crude oil from contaminated plumage and prey, and transfer of crude oil to eggs and young. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to migratory birds are unlikely because: 1) the low probability of a spill and 2) the low probability of the spill coinciding with the presence of most migratory birds (five months per year).

<u>Raptors</u>

Construction

A number of raptor species (e.g., bald eagle, golden eagle, red-tailed hawk, ferruginous hawk, Swainson's hawk, prairie falcon, American kestrel, Cooper's hawk, sharp-shinned hawk, great-horned owl, long-eared owl, short-eared owl, and northern harrier) use various habitats in the Project area. Direct impacts to raptor species may include mortality and displacement. Indirect impacts include the loss or alteration of habitat, reduction in prey base, and disturbance from increased noise levels and human activity. A total of 129 acres of potential big game habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat, until reclamation has been completed and vegetation is re-established within the disturbance areas.

The loss of native habitat to human development has resulted in declines of hawks and eagles throughout the West (Boeker and Ray 1971; Schmutz 1984). In some cases, habitat changes have not reduced numbers of raptors, but have caused shifts in species composition (Harlow and Bloom 1987). Impacts to small mammal populations from habitat loss and fragmentation can cause a reduced prey base for raptors, resulting in lower raptor densities. Thompson et al. (1982) and Woffinden and Murphy (1989) found that golden eagles and ferruginous hawks had reduced nesting success where native vegetation had been lost because the habitat was no longer able to support jackrabbit (prey) populations. Raptors have low tolerance of disturbance while nesting or roosting, which results in displacement and reduced nesting success (Holmes et al. 1993; Postovit and Postovit 1987; Stalmaster and Newman 1978). Thompson et al. (1982) and Woffinden and Murphy (1989) found that increased levels of noise and human activity also can preclude otherwise acceptable raptor habitat from use (USFWS 2002a). Vehicles that stop and go cause greater levels of disturbance to raptors than continuously moving vehicles (Holmes et al. 1993; White and Thurow 1985).

As described in **Appendix E**, a preconstruction survey would be conducted to identify migratory bird nests (including raptor nests) in, and adjacent to, surface disturbance areas. The typical raptor nesting season in North Dakota is February 1 through July 15 (USFWS 2013). To minimize impacts, Hess will coordinate with the BLM and applicable federal agencies to make sure raptors and their nests would be avoided during construction of the pipeline. Distance buffers for active raptor nests vary by species, ranging from 0.25 mile to

0.5 mile. Consultation with the USFWS regarding migratory birds, including raptors, would be ongoing during construction activities. Therefore, impacts to raptor species are anticipated to be low.

Operation

Project operation may result in direct and indirect impacts to raptors. Direct impacts may result from collision with maintenance vehicles. Indirect impacts would include displacement of individuals, and decreased breeding success due to increased levels of noise and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. Herbaceous species may become established within 3 to 5 years, depending on reclamation success, weather conditions, and grazing management practices in the Project area. Permanent impacts would occur to 77 acres of wildlife habitat (agricultural land), as a result of the construction and operation of aboveground facilities.

<u>Reptiles</u>

Construction

Construction activities may result in direct and indirect impacts to less mobile species, such as reptiles. Direct mortality to individuals may result from crushing of individuals or burrows by vehicles and equipment. Indirect impacts may include habitat loss, alteration, and fragmentation; and disturbance from increased levels of noise and human activity. A total of 129 acres of potential big game habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat, until reclamation has been completed and vegetation is re-established. However, due to the presence of suitable habitat adjacent to the disturbed areas and the temporary nature of Project construction, impacts to reptiles are anticipated to be low.

Operation

Project operation may result in direct and indirect impacts to reptiles. Direct mortality to individuals may result from crushing of individuals or burrows by maintenance vehicles. Potential indirect impacts would include displacement of individuals, and decreased breeding success due to increased levels of noise and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. Herbaceous species may become established within 3 to 5 years, depending on reclamation success, weather conditions, and grazing management practices in the Project area. Permanent impacts would occur to 77 acres of wildlife habitat (agricultural land), as a result of the construction and operation of aboveground facilities.

B.2.9.2 Fisheries

<u>Construction</u>

The primary issues related to fisheries resources include increased sedimentation and potential toxicity related to fuel or other hazardous material spills. Intermittent streams and wetland crossings would be bored and therefore no impacts to fisheries habitat would occur . The Lake Sakakawea crossing would be constructed by tying-in to existing pipelines under the lake. Direct impacts to fish and other aquatic communities and habitat from potential increased sedimentation would be minimized by implementing environmental protection measures as described in **Appendix E**.

Surface water quality may be impacted if construction equipment and vehicles leaked or spilled petroleum products or other hazardous materials into or near any streams or waterbodies. Direct spills of fuels or other hazardous materials would saturate soils and adversely affect fisheries habitat, less mobile species, and young, which are still dependent on the nest or burrow site. Environmental protection measures are presented in **Appendix E** and the SWPPP. Hazardous materials, chemicals, fuels, etc., would not be stored within 100 feet of wetlands or perennial/intermittent waterbodies (**Appendix E**). Other setbacks would include at least

50 feet for additional temporary workspace and equipment staging areas. Therefore, impacts to fisheries resources from potential fuel or other petroleum product spills are not anticipated.

Hydrostatic test water would be brought in from a certified outside source and following testing, the water would be trucked offsite for disposal. Since there is no test water discharge, hydrostatic testing would not affect fisheries resources.

<u>Operation</u>

Project operation may result in direct and indirect impacts to fisheries resources. Direct mortality to individuals could occur from maintenance activities conducted near waterbodies. Indirect impacts would include displacement of individuals, increased sedimentation, and degradation of habitat. Maintenance activities near waterbodies would remove a small amount of riparian and wetland vegetation. The removal of grasses and small shrubs near stream crossings would represent a relatively small portion of streamside cover for aquatic species. Repairs in areas near waterbodies may result in temporarily increased erosion. Erosion control procedures, as part of the Project SWPPP and CMRP would be implemented as part of the Project to minimize any erosion in disturbed areas. Project operation would allow vegetation to become re-established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW.

In the unlikely event of a spill that would enter Lake Sakakawea, exposure to crude oil may result in adverse toxicological effects to fisheries resources. Despite this designation, it is unlikely that an oil spill into Lake Sakakawea would result in acute benzene toxicity to fisheries resources. Benzene was chosen as the primary contaminant of concern due to its relatively high toxicity and solubility, which results in the highest relative toxicity of crude oil hydrocarbons. Even following a worst-case scenario spill volume, benzene levels in affected areas are not expected to raise benzene concentrations to a level sufficient to cause acute toxicity in the most sensitive fish species, such as rainbow trout. While this species is not found within Lake Sakakawea, rainbow trout are much more sensitive than most other fish species, and therefore are often used as a baseline species when determining toxicity levels from a spill. Additionally, the Missouri River also is subject to an intensive integrity management program stipulated by the USDOT (Integrity Management Rule, 49 CFR 195).

Also, it is unlikely that the Bakken crude oil would sink to the bottom sediments where it could potentially come in contact with benthic fisheries resources. The composition of Bakken crude oil contains minor amounts of heavy molecular weight hydrocarbons; therefore, Bakken crude oil would float on the water's surface facilitating containment and cleanup, even as the crude oil weathers. Further, if a spill event were to occur, federal and state laws would require containment and cleanup of spills, so that the potential impacts to fisheries resources are further reduced in magnitude. The low probability of a release that would need to coincide with the presence of fisheries resources in the same area as the spill, coupled with the mandated cleanup of spills, impacts to fisheries resources are considered unlikely.

Winter Spill Scenario

During the winter, Lake Sakakawea freezes over with a layer of ice that, in very cold years, can be as thick as 36 to 48 inches. This layer of ice would trap oil released below the lake's surface and prevent benzene evaporation from occurring. Therefore, during the winter, evaporative loss would be negligible and would allow a longer contact between the crude oil and the water column. However, natural undulations in the bottom of the ice would trap the material and prevent it from spreading horizontally, potentially causing very localized impacts to aquatic organisms in prolonged contact with the near-surface water (e.g., phytoplankton). Exposure to fish deeper in the water column likely would not experience adverse impacts.

The natural containment of winter releases facilitates cleanup efforts as the pockets of oil can be drilled to and removed using vacuum trucks. Thus, winter releases are predicted to have lower impacts to fisheries, particularly with respect to area of extent, as compared to releases occurring during the warmer seasons.

B.2.10 Special Status Species

The impact analysis area for special status species is defined by the Project area and relevant buffers for sensitive, mobile wildlife species. Construction impacts were calculated based on the inclusion of construction ROWs associated with the new pipeline facilities and additional temporary workspace. A 100-foot-wide temporary construction ROW would be allowed in all areas except USFS-administered lands, wooded areas, and wetland crossings, which typically would be limited to a nominal 50-foot-wide construction ROW. Operation impacts were calculated based primarily on the acreage that would be occupied by the permanent aboveground facilities (i.e., Hawkeye Oil Facility). The primary issues associated with special status species include loss of individuals and/or populations, and/or loss of suitable habitats.

The Project may result in both direct and indirect impacts to special status species identified in (**Appendix G**). Direct impacts to special status plants could include the temporary loss of individual plants or local plant populations as a result of partial removal of vegetation from trampling or crushing by construction vehicles and equipment, or permanent loss of individuals from ROW clearing. Direct impacts to special status wildlife could include mortalities or displacement related to pipeline construction and operation, as well as habitat loss, alteration, and fragmentation.

Indirect impacts to special status plants could include temporary and long-term establishment of noxious weeds and invasive species, temporary and long-term accumulation of fugitive dust on plant species within suitable habitat resulting from construction and operation vehicle and equipment use, and potential loss of species from adjacent noxious weed-related herbicide application. Indirect impacts to special status wildlife could include short-term displacement of mobile species (e.g., mammals, adult birds) caused by increased noise levels and human activity. Impact levels would depend on timing and type of construction, sensitivity of the impacted species, and seasonal use patterns.

Potential impacts to special status plant and wildlife species can be further classified as temporary and permanent. Temporary impacts consist of habitat and vegetation removal, disturbance from Project construction, and changes in wildlife habitats and plant assemblages until reclamation activities have been completed and/or native vegetation populations are re-established. Permanent impacts consist of permanent changes to habitats and the plant and wildlife populations that depend on these habitats, regardless of reclamation success. The extent of both temporary and permanent impacts depends upon the sensitivity of the species, seasonal use patterns, type and timing of construction activities, and physical parameters (e.g., topography, cover, forage, precipitation).

B.2.10.1 Electrical Transmission Lines

No new power lines would be constructed as part of the Project, therefore impacts to special status species would not occur.

B.2.10.2 Hydrostatic Testing

Hydrostatic testing would be accomplished using municipal water sources. No surface water sources would be used for hydrostatic test water. Therefore, impacts to aquatic habitats and associated plant and animal species would not occur.

B.2.10.3 Plant Species

Species-specific impact summaries and applicant-committed environmental protection measures for the 8 USFS sensitive plant species carried forward in detailed analysis are presented below. As summarized in Section 3.10.1, species-specific surveys were conducted to determine the presence of special status species individuals and populations within and adjacent to the Project area on USFS-administered lands.

As presented in Section 4.6, Vegetation Resources, a total of four vegetation and two land use (barren and developed) cover types occur in the Project area. A total of 129 acres of vegetation would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat. Permanent impacts would occur to 77 acres of vegetation (agricultural land), as a result of the construction and operation of aboveground facilities.

Blue Lips (*Collinsia parviflora*)

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

To minimize environmental impacts to suitable habitat and ensure site stabilization and revegetation, Hess would implement the environmental protection measures and design features detailed in **Appendix E,** as well as the following mitigation measures:

- The revegetation plan would include a commitment to reseed disturbed native prairie with a comparable native grass/forb seed mixture and planting a diverse mixture of native cool- and warm-season grasses and forbs; and
- Obtaining a seed source that is as local as possible to insure the particular cultivars are well adapted to the local climate.

Implementation of the CMRP and Noxious Weed and Invasive Species and Aquatic Nuisance Species Control Plan would minimize the magnitude and duration of suitable habitat disturbance. Hess would coordinate with the appropriate agencies to identify effective restoration and mitigation measures following construction; and to develop the appropriate revegetation seed mixtures. In addition, ROW monitoring would be conducted to determine reclamation success and identify post-reclamation noxious weed populations. To minimize fugitive dust emissions, Hess would follow the environmental protection measures. The primary protection measure focuses on the use of water or chemical soil binders and BMPs to control dust along the ROW and access roads during construction in accordance with federal, state, and local requirements. Environmental protection measures would be implemented to minimize impacts to suitable habitat.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

Torrey's Cryptantha (*Cryptantha torreyana*)

Construction

Although suitable habitat was present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie) on USFS lands, would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

Dakota Buckwheat (*Eriogonum visheri*)

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie) on USFS lands, would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

Missouri Pincushion Cactus (*Escobaria missouriensis*)

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

Sand Lily (*Leucocrinum montanum*)

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 8.9 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

<u>Golden Stickleaf (*Mentzelia pumila*)</u>

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

<u>Alyssum-leaved Phlox (*Phlox alyssifolia*)</u>

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

<u>Alkali Sacaton (*Sporobolus airoides*)</u>

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for the species and its habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

<u>Stemless Townsend Daisy (*Townsendia exscapa*) and Hooker's Townsendia (*Townsendia hookeri*)</u>

Construction

Although suitable habitat is present, no individuals or populations were identified within the Project area; therefore, no direct impacts to this species are anticipated. However, pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the Project ROW encourages the establishment of weeds and other invasive species. Construction-related disturbances, occupying approximately 57 acres of suitable habitat (mixed-grass prairie and sand prairie), would be considered temporary in nature, pending successful reclamation.

Impact minimization measures for this species' suitable habitat would be the same as presented for the blue lips.

Operation

It is unlikely that permanent facilities would be sited within suitable habitat for this species; therefore, no permanent loss of habitat is anticipated.

B.2.10.4 Wildlife Species

As presented in Section 4.6, Vegetation Resources, a total of four vegetation cover types occur in the Project area. A total of 129 acres of wildlife habitat would be temporarily impacted by Project construction. This includes 70 acres of agricultural land, 57 acres of grassland, and 2 acres of woodland and shrubland habitat. Permanent impacts would occur to 77 acres of vegetation (agricultural land), as a result of the construction and operation of aboveground facilities.

Species-specific impact summaries and applicant-committed environmental protection measures for the 16 special status wildlife species carried forward in detailed analysis are presented below.

<u>Mammals</u>

Northern Long-eared Bat

<u>Construction</u>

Pending regulatory approvals, construction activities are planned for May 2015 to October 2015; therefore, Project construction would overlap with the northern long-eared bat's maternity season (May through August). Direct and indirect impacts to the northern long-eared bat include mortalities or displacement related to pipeline construction; habitat loss, alteration, and fragmentation; and increased levels of noise, activity, and human presence. To reduce impacts to wooded areas, the construction ROWs would be reduced to a maximum width of 50 feet in areas where the Project crosses windbreaks, shelterbelts, and native woodlands and shrublands. Project construction would result in the temporary loss or alteration of approximately 2 acres of potential roosting habitat and foraging habitat, consisting of both native woodlands and shrublands and planted tree rows/shelterbelts.

<u>Operation</u>

No direct impacts to the northern long-eared bat are anticipated during operations. Indirect impacts would include habitat reduction and fragmentation as a result of ROW maintenance activities. No permanent impacts to suitable roosting and foraging habitat would occur as a result of the construction and operation of aboveground facilities. Other potential indirect impacts would include displacement of individuals due to increased noise levels at facilities and human activity. During operation, vegetation would be re-established. Operations maintenance would remove trees and shrubs within 15 feet either side of the centerline to allow for aerial inspections of the ROW.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to the northern long-ear bat due to oiling of the body and ingestion of crude oil from contaminated prey. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to northern long-ear bats are unlikely due to: 1) the low probability of a spill of any size, 2) the low probability of a spill coinciding with the presence of northern long-ear bat individuals, and 3) the unlikely exposure of bats through direct contact or from a reduction in its food base or drinking water, and 4) the requirement for containment and cleanup of a release in coordination with federal and state authorities. It is estimated that a spill would occur while northern long-eared bats are in the area approximately once every 677 years. This estimate is based on the estimated spill frequency of 0.0015 incidents per mile per year, the maximum anticipated species presence in the Project area (i.e., 12 months out of the year), and a total of 0.7 mile of suitable habitat crossed. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

If a spill event were to occur, federal and state laws would require containment and cleanup of spills, so that the potential impacts the northern long-eared bat would be temporary with reduced magnitude. Due to the low probability of a release coupled with the low probability of concurrent species presence in the same area as the spill, exposure pathways for becoming exposed to crude oil, and the mandated immediate cleanup of spills, adverse impacts to this species are considered unlikely.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. Specifically, trees and shrubs (i.e., potential roosting habitat), would be replaced in accordance with the PSC’s tree and shrub mitigation specifications. As a result, it is anticipated that implementation of the Project would have minimal impacts on northern long-eared bats.

Black-tailed Prairie Dog

<u>Construction</u>

No black-tailed prairie dog colonies have been identified within the Project area (Stantec 2014). However, suitable habitat exists within the Project area and the species is known to occur near the Project area in the Little Missouri National Grassland (LMNG) complex. Impacts to this species, if present, would include direct mortalities of individuals if burrows are crushed by construction vehicles or equipment. Indirect impacts would result from increased noise levels and human activity. There would be no impacts to individual black-tailed prairie dogs as a result of the Project. However, the Project may impact suitable black-tailed prairie dog habitat. Therefore, direct impacts to this species would be limited to the incremental temporary loss of 57 acres of potentially suitable grassland habitat.

<u>Operation</u>

If black-tailed prairie dog colonies become established along the construction ROW in the future, direct and indirect impacts during Project operations may occur. No permanent impacts would occur to potential habitat as a result of the construction and operation of aboveground facilities. Direct mortality to individuals may result from collisions with maintenance vehicles. Indirect impacts may include habitat fragmentation as a result of ROW maintenance activities. Project operation would allow vegetation to become re-established. However, trees and shrubs over 15 feet in height within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW. This may in fact benefit black-tailed prairie dogs, which prefer grassland habitat as opposed to shrubland habitat.

Information regarding the presence, size, density, and activity status (active or inactive) or any newly established prairie dog colonies potentially impacted by the Project would be determined prior to construction. Based on the implementation of the aforementioned environmental protection measures and design features, impacts to suitable habitat would be considered temporary in nature pending successful reclamation.

B.2.10.5 Bird Species Associated with Open Water/Wetland Habitat

Whooping Crane

Construction

No direct impacts to the whooping crane are anticipated from the construction of the Project. Although potentially suitable roosting and foraging habitat occurs along the Project route, historic records for this species in the Project area do not exist, and established communal roost sites have not been documented within or adjacent to the Project area. Based on the current migration pathway of this species through the Project area and the presence of suitable roosting and foraging habitat, potential occurrence within or near the Project would be limited to migrants.

Indirect impacts could result from migrating individuals being flushed from the Project during construction-related activities. Since whooping cranes are highly mobile, it is anticipated that individuals would move to other suitable resting and foraging habitats within the Project region. Based on the rarity of the species and the lack of occurrence data for the Project area, potential impacts from encountering and flushing a migrating whooping crane from the Project would be negligible.

Habitat loss from Project construction would include the temporary disturbance of 70 acres of agricultural land within the Project disturbance areas. Crops and rangeland would return to their original state during the following growing season. In most instances, suitable foraging habitat adjacent to disturbed areas would be available to whooping cranes.

Hydrostatic testing would be accomplished using private and/or municipal water sources. No surface water sources would be used for hydrostatic test water. As a result, impacts from hydrostatic testing on the whooping crane would be negligible.

Operation

Project operation may result in indirect impacts to the whooping crane, including habitat reduction and fragmentation as a result of ROW maintenance activities. Permanent impacts would occur to 77 acres of agricultural land as a result of the construction and operation of aboveground facilities. Other potential indirect impacts would include displacement and increased stress to individuals during migration by increased noise levels and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs over 15 feet in height within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to whooping crane due to oiling of plumage and ingestion of crude oil from contaminated plumage. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to whooping cranes are unlikely due to: 1) the low probability of a spill, and 2) the extremely low probability of the spill coinciding with the presence of whooping crane individuals. Based on the species presence in the Project area a possible 4 months out of the year (i.e., spring and fall migration) and 13.9 miles of suitable habitat crossed, a spill frequency of 0.0098 incidents per mile per year was derived, which estimates that a spill could occur while whooping cranes are in the area approximately once every 102.3 years. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements or best management practices. Further, these historical data do not account for supplemental protective measures that Hess would implement.

If a spill event were to occur, federal and state laws would require containment and cleanup of spills so that the potential impacts to the whooping crane are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species, and mandated cleanup of potential spills, impacts to this species are considered unlikely.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. If construction occurs during migration, appropriate avoidance measures would be implemented if birds are seen. As a result, it is anticipated that implementation of the Project would have minimal impacts on whooping cranes.

<u>Interior Least Tern</u>

Construction

Due to the location of the existing tie-in locations for the pipelines at the Lake Sakakawea crossing, no direct impacts to suitable interior least tern habitat are anticipated. However, suitable breeding habitat for the interior least tern may be located within 0.5 mile of the Project area at the Lake Sakakawea crossing. According to construction schedule, construction activities are planned for May 2015 to October 2015, therefore overlapping with the interior least tern breeding season (April 1 to August 31). Therefore, indirect impacts could result from increased noise and human presence at work site locations if breeding terns are located within or adjacent to the Project area.

Additionally, Lake Sakakawea and its tributaries are not a source of water for hydrostatic testing. No surface water sources would be used for hydrostatic test water. Therefore, there would be no water depletion impacts on the interior least tern or its habitat from hydrostatic testing.

Operation

Indirect impacts could result from increased noise and human presence during any pipeline maintenance activities if breeding interior least terns are located within or adjacent to the Project. Prior to any Project activities that would occur within or adjacent to potential breeding habitat, Hess operations personnel would coordinate with the USFWS to establish authorized mitigation if maintenance activities are required during the breeding season within or adjacent to suitable breeding habitat.

No new overhead transmission lines would be constructed as part of the proposed Project; therefore, no impacts to interior least terns from overhead transmission lines would occur.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to interior least terns due to oiling of plumage, ingestion of crude oil from contaminated plumage and prey, and transfer of crude oil to eggs and young. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to interior least terns is very low due to: 1) the low probability of a spill, and 2) the low probability of the spill coinciding with the presence of interior least tern individuals (5 months per year). It is estimated that a spill would occur while interior least terns are in the area approximately once every 495 years. This estimate is based on the estimated spill frequency of 0.0020 incidents per mile per year, the maximum anticipated species presence in the Project area (i.e., 5 months out of the year), and a total of 2.3 miles of suitable habitat crossed. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

The Missouri River also is subject to an intensive integrity management program stipulated by the USDOT (Integrity Management Rule, 49 CFR 195), which specifies how pipeline operators must identify, prioritize, assess, evaluate, repair, and validate the integrity of hazardous liquid pipelines that could, in the event of a leak or failure, affect HCAs within the U.S. Further, if a spill event were to occur, federal and state laws would require containment and cleanup of spills, so that the potential impacts to the interior least tern are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species in the same area as the spill, and mandated cleanup of potential spills, impacts to this species are considered unlikely.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. If construction occurs during the breeding season, pre-construction surveys would be conducted in suitable breeding habitat. Appropriate avoidance measures would be implemented, if nests are identified. As a result, it is anticipated that implementation of the Project would have minimal impacts on interior least terns.

<u>Piping Plover</u>

Construction

Threats to piping plover nesting habitat include reservoirs, channelization of rivers, and modifications of river flows that have eliminated hundreds of miles of nesting habitat along Northern Great Plains’ rivers (USFWS 1994). Eggs and young are vulnerable to predation and human disturbance, including recreational activities and off-road vehicle use.

Due to the location of the existing tie-in locations for the pipelines at the Lake Sakakawea crossing, no direct impacts to suitable piping plover critical habitat are anticipated. However, suitable breeding habitat for the piping plover may be located within 0.5 mile of the Project area at the Lake Sakakawea crossing. According to the proposed construction schedule, construction activities are planned for May 2015 to October 2015; therefore overlapping with the piping plover breeding season (April 1 to August 31). Indirect impacts could result from increased noise and human presence at work site locations if breeding piping plovers are located within or adjacent to the Project area.

Additionally, Lake Sakakawea and its tributaries are not a source of water for hydrostatic testing. No surface water sources would be used for hydrostatic test water. Therefore, there would be no water depletion impacts on the piping plover or its habitat from hydrostatic testing.

Operation

Indirect impacts could result from increased noise and human presence during pipeline maintenance activities if breeding piping plovers are located within or adjacent to the Project. Prior to Project activities that would occur within or adjacent to potential breeding habitat, Hess operations personnel would coordinate with the USFWS to establish authorized mitigation measures if maintenance activities are required during the breeding season within or adjacent to suitable breeding habitat.

No new overhead transmission lines would be constructed as part of the proposed Project; therefore, no impacts to piping plovers from overhead transmission lines would occur.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to piping plover due to oiling of plumage, ingestion of crude oil from contaminated plumage and prey, and transfer of crude oil to eggs and young. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to piping plover is very low due to: 1) the low probability of a spill, and 2) the low probability of the spill coinciding with the presence of piping plover (5 months per year). It is estimated that a spill would occur while piping plovers are in the area approximately once every 495 years. This estimate is based on the estimated spill frequency of 0.0020 incidents per mile per year, the maximum anticipated species presence in the Project area (i.e., 5 months out of the year), and a total of 2.3 miles of suitable habitat crossed. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

The Missouri River also is subject to an intensive integrity management program stipulated by the USDOT (Integrity Management Rule, 49 CFR 195), which specifies how pipeline operators must identify, prioritize, assess, evaluate, repair, and validate the integrity of hazardous liquid pipelines that could, in the event of a leak or failure, affect HCAs within the U.S. Further, if a spill event were to occur, federal and state laws would require containment and cleanup of spills, so that the potential impacts to the interior least tern are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species in the same area as the spill, and mandated cleanup of potential spills, impacts to this species are considered unlikely.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. If construction occurs during the breeding season, pre-construction surveys would be conducted in suitable breeding habitat. Appropriate avoidance measures would be implemented if nests are identified. As a result, it is anticipated that implementation of the Project would have minimal impacts on piping plovers.

<u>Rufa Red Knot</u>

Construction

Due to the location of the existing tie-in locations for the pipelines at the Lake Sakakawea crossing, no direct impacts to suitable rufa red knot habitat are anticipated. Indirect impacts could result from increased noise and human presence at work site locations if migrating rufa red knots are located within or adjacent to the Project area.

Additionally, Lake Sakakawea and its tributaries are not a source of water for hydrostatic testing. No surface water sources would be used for hydrostatic test water. Therefore, there would be no water depletion impacts on the rufa red knot from hydrostatic testing.

Operation

Project operation may result in indirect impacts to the rufa red knot. Indirect impacts would include displacement and increased stress to individuals during migration by increased noise levels and human activity at operations and maintenance locations if migrating rufa red knots are located within or adjacent to the Project area.

No new overhead transmission lines would be constructed as part of the proposed Project; therefore, no impacts to the rufa red knot from overhead transmission lines would occur.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to rufa red knots due to oiling of plumage and ingestion of crude oil from contaminated plumage and prey. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to rufa red knot is very low due to: 1) the low probability of a spill, and 2) the low probability of the spill coinciding with the presence of individual rufa red knots (9 months per year). It is estimated that a spill would occur while rufa red knots are in the area approximately once every 275 years. This estimate is based on the estimated spill frequency of 0.0036 incidents per mile per year, the maximum anticipated duration of species presence in the Project area (i.e., 9 months out of the year), and a total of 2.3 miles of suitable habitat crossed. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

The Missouri River also is subject to an intensive integrity management program stipulated by the USDOT (Integrity Management Rule, 49 CFR 195), which specifies how pipeline operators must identify, prioritize, assess, evaluate, repair, and validate the integrity of hazardous liquid pipelines that could, in the event of a leak or failure, affect HCAs within the U.S. Further, if a spill event were to occur, federal and state laws would require containment and cleanup of spills, so that the potential impacts to the interior least tern are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species in the same area as the spill, and mandated cleanup of potential spills, impacts to this species are considered unlikely.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. If construction occurs during migration, appropriate avoidance measures would be implemented if birds are seen. As a result, it is anticipated that implementation of the Project would have minimal impacts on rufa red knots.

B.2.10.6 Bird Species Associated with Grassland Habitat

<u>Sprague’s Pipit, Baird’s Sparrow, and Long-billed Curlew</u>

Construction

Direct and indirect impacts to the Sprague’s pipit, Baird’s sparrow, and long-billed curlew would include mortalities or displacement related to pipeline construction if construction occurs during the breeding season (February 1 through July 15); habitat loss, alteration, and fragmentation; and disturbance from increased noise levels and human activity. In addition to habitat loss, reductions in bird population densities also may be attributed to a reduction in habitat quality produced by elevated noise levels (Reijnen et al. 1997, 1995). Although visual stimuli in open landscapes may negatively affect densities at relatively short distances, the effects of noise appear to be the most critical factor, since breeding birds of open grasslands (threshold noise range of 43 to 60 dBA) and woodlands (threshold noise range of 36 to 58 dBA) respond similarly to disturbance by traffic volume. Reijnen et al. 1996 determined a threshold effect for bird species to be 47 dBA. Project construction would result in temporary impacts to 127 acres of potential breeding and foraging habitat, including 57 acres of grassland and 70 acres of agricultural land.

Operation

Project operation may result in direct and indirect impacts to the Sprague’s pipit, Baird’s sparrow, and long-billed curlew. Direct impacts may result if maintenance activities are conducted in suitable habitat during the breeding season. Direct mortality to individuals or nests may result from being crushed by or colliding with maintenance vehicles. Indirect impacts may include habitat reduction and fragmentation as a result of ROW maintenance activities. Permanent impacts would occur to 77 acres of potential breeding and foraging habitat (agricultural land), as a result of the construction of aboveground facilities. Other potential indirect impacts include displacement of individuals and decreased breeding success due to increased noise levels and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs over

15 feet in height within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to the Sprague's pipit, Baird's sparrow, and long-billed curlew due to oiling of plumage, ingestion of crude oil from contaminated plumage and prey, and transfer of crude oil to eggs and young. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to these species are unlikely due to: 1) the low probability of a spill, and 2) the low probability of the spill coinciding with the presence of Sprague's pipits, Baird's sparrows, and long-billed curlews (5 months per year). Based on the estimated species presence in the Project area of 5 months and 9.8 miles of suitable habitat crossed, a spill frequency of 0.0086 incidents per mile per year was derived, which is used to estimate that a spill could occur while these species are in the Project area approximately once every 116.1 years. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the "pre-modern" era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

If a spill event were to occur, federal and state laws would require containment and cleanup of spills so that the potential impacts to the Sprague's pipit, Baird's sparrow, and long-billed curlew are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species in the same area as the spill, and mandated cleanup of potential spills, impacts to these species are considered unlikely.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. If construction occurs during the breeding season, pre-construction surveys would be conducted in suitable habitat for nests of these species. Appropriate avoidance measures would be implemented if nests are identified. As a result, it is not anticipated that implementation of the Project would contribute to a trend toward federal listing or cause a loss of viability to the population or species.

Burrowing Owl

Construction

No black-tailed prairie dog colonies occur within the Project area; therefore, the potential for nesting burrowing owls to be present is minimal. However, burrowing owls are known to nest in other types of mammalian burrows that may be present in the Project area. Therefore, according to the Land and Resource Management Plan for the Dakota Prairie Grasslands, if an active nest is identified within 0.25 mile of construction activities, no surface occupancy or use is allowed within 0.25 mile (line of sight) of burrowing owl nests (USFS 2001).

Potential impacts to the burrowing owl, if present, would result from the incremental reduction of suitable habitat within the Project area during construction activities. Temporary impacts to 127 acres of potential burrowing owl habitat would occur, including 57 acres of grassland, 70 acres of agricultural land. However, due to the lack of primary nesting habitat (i.e., prairie dog colonies), potential for construction-related impacts to the species are low.

Operation

Project operation may result in direct and indirect impacts to the burrowing owl, if present. Direct impacts may result if maintenance activities are conducted during the breeding season (May 1 to September 15 [Grondahl and Schumacher 1997]). Direct mortality to individuals or nests may result from being crushed by or colliding with maintenance vehicles. Indirect impacts would include habitat reduction and fragmentation as a result of ROW maintenance activities. Permanent impacts would occur to 77 acres of potential burrowing owl habitat (agricultural land), as a result of the construction and operation of aboveground facilities. Other potential indirect impacts would include displacement of individuals and decreased breeding success due to increased noise levels and human activity. Project operation would allow vegetation to become re-established. However, trees and shrubs over 15 feet in height within 15 feet either side of the centerline would be removed as necessary to allow for aerial inspections of the ROW.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to the burrowing owl due to oiling of plumage, ingestion of crude oil from contaminated plumage and prey, and transfer of crude oil to eggs and young. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to burrowing owls are unlikely due to: 1) the low probability of a spill, 2) the low probability of the spill coinciding with the presence of burrowing owls, and 3) the requirement for containment and cleanup of a release in coordination with federal and state authorities.

Based on the low potential for occurrence of nesting burrowing owls within the Project area and implementation of Hess's environmental protection measures (**Appendix E**), it is not anticipated that implementation of the Project would contribute to a trend toward federal listing or cause a loss of viability to the population or species.

B.2.10.7 Bird Species Associated with Shrubland Habitat

<u>Loggerhead Shrike</u>

Construction

Potential indirect impacts to the loggerhead shrike, if present, include displacement related to pipeline construction; and habitat avoidance and disturbance from increased noise, activity, and human presence. Project construction would result in the temporary loss or alteration of 2 acres of woodland and shrubland habitat. However, reductions in bird population densities in both open grasslands and woodlands also may be attributed to a reduction in adjacent habitat quality produced by elevated noise levels (Reijnen et al. 1997, 1995). Although visual stimuli in open landscapes may add to density effects at relatively short distances, the effects of noise appear to be the most critical factor since breeding birds of open grasslands (threshold noise range of 43 to 60 dBA) and woodlands (threshold noise range of 36 to 58 dBA) respond very similarly to disturbance by traffic volume (Reijnen et al. 1997). Reijnen et al. (1996) determined a threshold effect for bird species to be 47 dBA, while a New Mexico study in a pinyon-juniper community found that impacts of gas well compressor noise on bird populations were strongest in areas where noise levels were greater than 50 dBA. However, moderate noise levels (40 to 50 dBA) also showed some effect on bird densities in this study (LaGory et al. 2001).

Operation

Project operation may result in indirect impacts to the loggerhead shrike. Indirect impacts would include displacement of individuals and decreased breeding success due to increased noise levels and human activity. No permanent impacts would occur to woodland and shrubland habitat as a result of the construction and operation of aboveground facilities.

In the event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to the loggerhead shrike due to oiling of plumage, ingestion of crude oil from contaminated plumage and prey, and transfer of crude oil to eggs and young. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to loggerhead shrikes are unlikely due to: 1) the low probability of a spill, 2) the low probability of the spill coinciding with the presence of loggerhead shrikes, and 3) the requirement for containment and cleanup of a release in coordination with federal and state authorities.

As described in **Appendix E**, appropriate agency consultation and implementation of environmental protection measures would occur. If construction occurs during the breeding season, pre-construction surveys would be conducted in suitable habitat for loggerhead shrike nests. Appropriate avoidance measures would be implemented if nests are identified. As a result, it is not anticipated that implementation of the Project would contribute to a trend toward federal listing or cause a loss of viability to the population or species.

B.2.10.8 Butterfly Species

Dakota Skipper, Ottoe Skipper, Regal Fritillary Butterfly, Tawny Crescent

Construction

The USFS has documented one historic occurrence of the tawny crescent near the Project route near MP 7.3 (USFS 2013). Historic occurrences for the other butterfly species do not occur near the Project area. However, proposed critical habitat for the federally threatened Dakota skipper occurs approximately 3.1 miles west and approximately 1.9 miles east of the Project area on USFS-administered lands south of Lake Sakakawea.

The main reasons for the decline of Dakota skippers, ottoe skippers, regal fritillary butterflies, and tawny crescents include the loss and fragmentation of native habitat through grazing, fire, weed control, pesticide use, and other ground disturbances (Opler et al. 2012). Pipeline construction reduces native grassland areas by removing vegetation and disturbing the prairie sod. Once disturbed, this sod is extremely slow to redevelop. Disturbing soil along the construction ROW encourages the establishment of weeds and other invasive species. Project construction would result in the temporary disturbance to 57 acres of grassland habitat, including mixed-grass prairie and sand prairie.

Operation

Project operation may result in direct and indirect impacts to the Dakota skipper, ottoe skipper, regal fritillary butterfly, and tawny crescent. Direct impacts may result if maintenance activities are conducted when these species are present. Direct mortality to individuals may result from being crushed by or colliding with maintenance vehicles. Indirect impacts would include habitat reduction and fragmentation as a result of ROW maintenance activities. No permanent impacts would occur to suitable native prairie habitat as a result of the construction and operation of aboveground facilities. Other potential indirect impacts would include displacement of individuals due to increased noise levels and human activity. Project operation would allow vegetation to become established. However, trees and shrubs within 15 feet either side of the centerline would be removed as necessary maintenance during operations to allow for aerial inspections of the ROW.

In the unlikely event of a spill or leak, direct contact with a crude oil spill could result in adverse effects to the Dakota skipper, ottoe skipper, regal fritillary butterfly, and tawny crescent due to oiling of exoskeleton/wings and ingestion of crude oil from contaminated vegetation. While these exposure routes have the potential to cause adverse effects to individuals, the probability of adverse effects to these species are unlikely due to: 1) the low probability of a spill, 2) the low probability of the spill coinciding with the presence of Dakota skippers, ottoe skippers, and tawny crescents, and 3) the requirement for containment and cleanup of a release in coordination with federal and state authorities. Based on the maximum duration of species presence in the Project area of 12 months out of the year and 9.8 miles of suitable habitat crossed, a spill frequency of 0.0207 incidents per mile per year was derived, which is used to estimate that a spill may occur while these species are in the area once every 48.4 years. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

If a spill event were to occur, federal and state laws would require containment and cleanup of spills so that the potential impacts to the Dakota skipper, ottoe skipper, regal fritillary butterfly, and tawny crescent are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species in the same area as the spill, and mandated cleanup of potential spills, impacts to this species are considered unlikely.

Based on implementation of Hess's environmental protection measures (**Appendix E**), it is not anticipated that implementation of the Project would contribute to a trend toward federal listing or cause a loss of viability to the populations or species. Additionally, impacts to suitable habitat would be considered temporary in nature pending successful reclamation.

B.2.10.9 Fish Species

Pallid Sturgeon

Construction

Hess proposes to tie-in to existing pipelines under Lake Sakakawea and therefore would not be disturbing lake shoreline or lake bottom. The tie-in locations are within existing Hess facilities on both the north and south banks of Lake Sakakawea and not within the Missouri River floodplain.

Potential hazardous materials, fuel or other petroleum product spills will not affect pallid sturgeon or their habitat, since these activities will be restricted to within a minimum of 100 feet of Lake Sakakawea and its tributaries. Other setbacks would include at least 50 feet for additional temporary workspace and equipment staging areas. Environmental monitors will inspect the construction areas to ensure that leaks or spills have not occurred at the lake crossing.

Hydrostatic testing would not affect this species, since Lake Sakakawea or its tributaries would not be used as test water. In addition, hydrostatic test water would not be discharged into the Missouri River or Lake Sakakawea.

Operation

Routine pipeline operation would not affect the pallid sturgeon.

In the unlikely event of a spill that would enter Lake Sakakawea, exposure to crude oil would not be anticipated to cause adverse toxicological effects to pallid sturgeon. Benzene, which is present in Bakken crude oil, was chosen as the primary contaminant of concern due to its relatively high toxicity and solubility. This results in the highest relative toxicity of petroleum hydrocarbons to aquatic species. Assuming a worst-case scenario spill volume, benzene levels in affected areas are not expected to raise benzene concentrations to a level sufficient to cause acute toxicity in the most sensitive fish species, such as rainbow trout (LC_{50} of 7.4 ppm). While this species is not found within Lake Sakakawea, rainbow trout are much more sensitive than most other fish species (including pallid sturgeon), and therefore are often used as a baseline species when determining toxicity levels from a spill.

If released into the aquatic environment, Bakken crude oil would float on the water's surface facilitating evaporation, containment, and cleanup. The composition of Bakken crude oil is largely composed of volatile compounds with crude oil containing only minor amounts of heavy molecular weight hydrocarbons. The majority of benzene in BakkenLink crude oil would evaporate within the first 12 to 18 hours following a spill. Therefore, it is unlikely that the products would sink to the bottom sediments where they potentially could come in contact with pallid sturgeon.

Because crude oil sinking and incorporation into sediments is not anticipated, ingestion contaminated prey is not anticipated for pallid sturgeon. Chronic toxicity is not anticipated since Bakken crude has relatively low persistence and polycyclic aromatic hydrocarbons (PAHs) within crude oil are readily metabolized and do not biomagnify within food chains. Cleanup activities would be conducted until crude oil concentrations in the environment pose negligible threats to the environment, including aquatic species.

Based on the maximum duration of species presence in the Project area of 12 months out of the year and 2.3 miles of suitable habitat crossed by the Project, a spill frequency of 0.0049 incidents per mile per year was derived, which is used to estimate that a spill could occur while pallid sturgeon are in the area once every 206 years. Because the Project has not yet been constructed, it does not have an operational history from which to derive incident frequency rates. Consequently, a conservative approach was taken by first determining the baseline incident frequencies from industry data (i.e., PHMSA data). Baseline incident frequencies are derived from historical national pipeline incident data for both hazardous liquid and natural gas transmission. Because the majority of pipelines in the U.S. were constructed in the “pre-modern” era (i.e., the 1970s or earlier), these baseline frequencies reflect incident rates associated with earlier pipeline design and construction methods that often do not meet the current regulatory requirements. Further, these historical data do not account for supplemental protective measures that Hess would implement.

The Missouri River also is subject to an intensive integrity management program stipulated by the USDOT (Integrity Management Rule, 49 CFR 195), which specifies how pipeline operators must identify, prioritize, assess, evaluate, repair, and validate the integrity of hazardous liquid pipelines that could, in the event of a leak or failure, affect HCAs within the U.S. Further, if a spill event were to occur, federal and state laws would require containment and cleanup of spills so that the potential impacts to the pallid sturgeon are further reduced in magnitude. Due to the low probability of a release that would need to coincide with the presence of the species in the same area as the spill, and mandated cleanup of potential spills, impacts to this species are considered unlikely.

B.2.11 Land Use

B.2.11.1 Construction

The Project would require land for the construction and operation of the pipeline and ancillary facilities. For most of its length, the construction ROW would be 100 feet wide and the permanent easement would be 50 feet wide. Where the pipeline would cross the LMNG on land administered by the USFS, the construction easement would be 50 feet wide and the permanent easement would be 20 feet wide. The easements would also be narrowed through wetlands and certain woodlands. Additional temporary workspace easements would be needed in some places, particularly where additional space would be required for boring under roads and water courses, and for staging areas and access roads. Permanent easements would be needed for new aboveground facilities at the Hawkeye Oil Facility.

The Project would require approximately 254 acres of temporary easements for construction plus approximately 79.7 acres during its operating life for the Hawkeye Oil Facility (**Table A-2**). The construction acreage accounts for the pipeline as well as aboveground facilities, temporary work spaces and staging areas. The permanent easement acreage includes the pipeline ROW, which would revert to existing surface uses after completion of construction, and the new facilities area.

The Project would be consistent with McKenzie County’s agricultural zone standards, which identify pipelines as an allowed use in the agricultural zone district. The Project may need to obtain a conditional use permit from Williams County, or demonstrate to the county that requirements of the county’s agricultural zoning district have been satisfied (Corbett 2014).

The Project would be compliant with relevant provisions of the LMNG Land and Resource Management Plan (LRMP) in that the proposed pipeline would be underground and would parallel an existing pipeline for most of its route on the LMNG, except where the USFS has recommended deviation. The visual effects would be minimal upon successful completion of reclamation as demonstrated by the degree to which existing pipelines in the area have been visually blended with the natural landscape.

No residential lands would be crossed by the Project ROW. There is one farm residence approximately 332 feet west of the existing Hawkeye Compressor Station and approximately 574 feet from the Project route. Because the closest residence is so near the existing compressor station, it is assumed that effects from construction of the proposed pipeline would be minor in comparison. The other residences in the vicinity are far enough from the Project ROW that effects on the use and enjoyment of the properties would be minor and short-term. The proposed pipeline would be approximately 365 feet from the Trinity Lutheran Church on 61st Street NW (Section 31 in Pleasant Valley Township). The precise construction schedule is not known, but it is assumed that it would be coordinated with the church's activities schedule if necessary to prevent conflicts so the effects would be minor and short-term. There are no schools, parks, or other sensitive land use areas within more than one mile of the Project ROW.

The most common land cover types that would be crossed by the Project route include grassland (9.8 miles) and agricultural cropland (11.4 miles). Approximately 0.8 mile are considered "developed". Potential effects on these lands would include temporary reductions in use of small percentages of the total rangeland and pasture in the Project area. Potential effects on cultivated cropland would occur only if construction were to occur on those lands during the relevant growing season. Construction would impact a maximum of one growing season.

Agricultural lands would be restored to their former use after reclamation of construction disturbance. Landowners would be compensated for crop loss during construction. Topsoil preservation practices and planned alleviation of any substantive compaction that construction would cause would effectively minimize adverse effects to agricultural lands and restrict such effects to the short term during and immediately after construction. Reclamation plans include measures to ensure that soil productivity is not diminished in agricultural lands. Revegetation would comply with landowner preferences, including on rangelands where the ROW would be seeded using mixes selected in consultation with the NRCS and the landowner.

Areas disturbed by pipeline construction on the LMNG would be reclaimed and restored to the standards and reclamation requirements of the USFS. Topsoil preservation and alleviating compaction would be similar on LMNG lands to the approaches planned for private lands as noted above. Adverse effects to use of LMNG lands would be minor and short term, limited to the period of construction period and the time needed for successful reclamation of ROW disturbance.

Based on the Project plans and proposed management practices, it is anticipated that impacts to land use from the Project would be minor.

B.2.11.2 Operation

The easement required for the operation of the Project would be approximately 153 acres. The pipeline would be underground with minimal aboveground ancillary facilities. The largest aboveground facility would be the new 79-acre Hawkeye Oil Facility. Other new pipeline facilities would occur within currently developed properties where the land uses are already established. No substantive conflicts have been identified between the proposed project facilities and existing land uses or county land use plans and ordinances. Land use effects from operation of the Project would be minimal.

B.2.12 Recreation

B.2.12.1 Construction

Concerns regarding the potential effects of pipeline construction on recreational activities include possible degradation of recreational experiences from noise, dust and intrusion of heavy equipment. There also is the potential that this activity could displace recreation activity, prevent access to recreation areas, or disturb wildlife in an area where hunting is an especially popular recreational activity. Countering these concerns, the nature of pipeline construction is that it tends to be quite localized and relatively fast moving, affecting a particular area for only a few weeks, at most, from clearing and grading through reclamation.

The Project would not cross any Wildlife Management Areas; national, state or municipal parks; or developed recreational facilities. One Private Land Open to Sportsmen (PLOTS) site out of approximately two dozen in deer hunt unit 3B1 would be crossed by the Project. Construction during the fall could affect hunting activities. Heavy construction equipment use and noise may displace game during construction and hunting access may be temporarily affected by construction activities, depending on season and location. To the extent that these effects occur, they would be short term in nature.

Scenic views, particularly on the bluffs above Lake Sakakawea, would be temporarily affected during construction until reclamation and revegetation return the vegetation colors and textures of the ROW to their pre-disturbance visual character. Additional information on visual effects of the Project is presented in Section B.2.13, Visual Resources.

Construction during the summer months could affect camping, hiking, fishing, and other summer activities when they are at their peak, particularly on public lands of the LMNG and on the shores of Lake Sakakawea. There are no formal recreation facilities or opportunities identified in these areas, however, and any such effects would be short-term in nature, affecting parts of one summer season at most.

Impacts to urban and dispersed recreation resources from the influx of the construction workforce are expected to be minimal due to the modest size and short-term nature of the population increase (Section B.2.15, Socioeconomics). Further, the intensive nature of the construction schedule suggests most non-local construction workers would have little time to engage in recreation pursuits during their time in the Project area.

B.2.12.2 Operation

Recreation effects of operation of the Project would be minimal. Following construction, the construction disturbance would be restored to near pre-construction conditions, and long-term effects to recreational opportunities in the area would be limited to those effects associated with aboveground facilities (Section B.2.13, Visual Resources). After disturbed areas are reclaimed to pre-construction conditions, the Project would be largely invisible to casual observers. The pipeline would be buried with only small route markers along the ROW. At Project termination, all surface facilities would be removed, and the disturbed areas would be reclaimed.

B.2.13 Visual Resources

B.2.13.1 Construction

There are foreground views of short segments of the Project route from Lake Sakakawea and from SH 1804. Lake Sakakawea is the most sensitive viewing perspective because of its recreational usage and lake access from a boat ramp and campground (Little Beaver Bay) approximately 1.5 miles east of the Project route on the north shore of the lake. Construction disturbance would be visible from the lake up to a distance of approximately 4,300 feet inland from the shore on the north lake shore and approximately 3,400 feet inland from the shore on the south lake shore before it would be hidden by terrain. Views from SH 1804 would be seen by approximately 1,700 motorists per day (2013 traffic count), which is likely the most viewers from any point on the Project ROW. The sensitivity of the average viewer on the highway is relatively low, however, because nearly 70 percent of the traffic on the road is commercial trucks. The Project also would be visible from a network of very low volume rural roads and from a small number of rural farm residences.

The LMNG border lies approximately 1,000 feet inland from the south shoreline of the lake. From that point on for approximately 3.1 miles, the USFS Visual Management System applies to visual effects of the Project. The LMNG in this area has a “low” SIO, which accommodates modification to a “moderately altered” visual character. There are currently approximately one dozen drill pads and other oil and gas facilities in the foreground viewshed where the Project is proposed to enter the LMNG.

Construction activities, including vegetation clearing, trenching, pipeline material stringing, heavy construction equipment, and support vehicles would be visible from these public viewing locations. Construction activities would affect views from dust raised by the movement of vehicles, excavation work, and by wind blowing across exposed soil. Construction activities may use lights for safety and illumination of work areas if night construction is required, which would introduce strong visual contrast with existing dark night skies in the Project area. During construction there would be periods of high activity in an area that currently has little most of the year. While construction activity would resemble modern agricultural activity in some respects, the level of intensity would be higher for the short duration of construction. From immediate foreground viewing perspectives, the degree of visual impact would be temporarily moderate to strong.

Construction would temporarily modify the topography with parallel linear mounds of topsoil and subsoil removed to the edge of the construction ROW. This topographic alteration would last for a very short time at any particular location during stringing and burying of the pipelines and fiber optic cables. Surface disturbance would change the color and texture of the landscape along the length of the ROW, creating a visually moderate linear contrast with the existing landscape that would continue after construction ends, lasting until restoration of vegetation is successfully complete. On lands of the LMNG, and other lands where the existing landscape is mostly mixed prairie and shrubland of various types, this visual contrast would last for from three to five years, depending largely on the amount of precipitation received in the growing seasons following construction. On cultivated agricultural lands, the visual effects of the pipeline would effectively disappear during the first growing season after construction is completed.

Construction of new aboveground facilities at the Hawkeye Oil Facility would increase the visual effects of the Project at that location. The effects would be minor, however, because viewing locations near the new facility include SH 1806, a relatively low volume highway, and one farm residence, which benefits from substantial visual screening provided by a mature wind break planting. Expansions to other major above ground facilities would be incremental increases to sizable existing industrial facilities that would take place within existing Hess fenced areas. All other new aboveground facilities (e.g., pig launchers and receivers) would be located on existing disturbed sites and would not be prominently noticeable to casual observers.

B.2.13.2 Operation

The Project would temporarily disturb 16 acres of land on the LMNG, all of which is rated “low” for its scenic integrity objective (SIO). Visual impacts would be weak to moderate for changes in the color, texture and for the linear character of the ROW until reclamation and revegetation are successfully completed. As reclamation progresses, moderate impacts for changes in vegetation colors would gradually become weak to imperceptible. Both the initial moderate and the eventual weak to imperceptible impacts would readily meet the objectives for SIO low landscapes.

The Project’s overall effects on visual conditions both in the daytime and at night would be low. Night lighting would be required for operational safety and security at expanded above ground facilities, but existing facilities at those locations are already lighted at night so the incremental increase in lighting would have minor to moderate effects. All of these facilities are on private lands, not on the LMNG.

With application of reclamation measures designed for the soils and climate of the Project area, croplands likely would achieve visual compatibility in the first growing season after construction, while prairie and shrubland landscapes likely would reach the same level in 3 to 5 years during the operations phase of the Project.

Decommissioning of the Project at the end of its productive life would have temporary effects on the visual environment similar to construction phase impacts.

B.2.14 Noise

B.2.14.1 Construction

The significance of noise impacts is a function of several factors, including existing ambient noise levels at noise sensitive areas (NSAs), noise emissions from construction and operation of the Project, and the timing and duration of project-related noise emissions.

Construction of the Project would generate noise primarily from heavy equipment used to prepare the corridor, assemble and bury the pipe, and reclaim the ROW. The equipment roster would include bulldozers, backhoes, excavators, HDD boring machines, sidebooms, and a variety of trucks, generators, welders and air compressors. Noise emissions from these types of equipment typically range from 70 dBA to 85 dBA at 50 feet from the source (USEPA 1971b). Construction noise for this type of project is not steady-state through the course of a work day; varying substantially as different pieces of equipment would be used at different times and at differing levels of intensity. Most of the equipment is also mobile, which moves the noise sources nearer and farther from a NSA in the course of a day, and modern pipeline construction progresses rapidly so that noise effects at any given NSA would be short-term and temporary.

Based on this scenario, it is assumed noise levels from a typical assemblage of pipeline construction equipment would average 80 dBA at a distance of 50 feet from the pipeline during the course of a work day. This approach yielded results indicating construction would generate noise levels of approximately 60.0 dBA at a distance of 574 feet from the center of the trench, the distance to the nearest residence. These are average daily levels; there would likely be episodes of higher levels for brief periods of time and periods of lower levels. The calculations represent a conservative approach to the impact analysis, however, utilizing only the effects of noise dispersion to calculate levels at NSAs. Consequently, actual average noise levels might be further reduced in certain cases by intervening terrain barriers, ground absorption, atmospheric conditions or other factors.

It is assumed that construction activities would be limited to the hours between 7:00 a.m. and 7:00 p.m. within 1,000 feet of any residence. Consequently, construction would not substantially affect noise levels during the more sensitive nighttime hours. It is further assumed that construction would not occur within 1,000 feet of the Trinity Lutheran Church on Sundays. Based on the preceding evaluation and these assumptions, construction of the Project would comply with the 65 dBA Housing and Urban Development (HUD) standard for day-night average outdoor noise levels near NSAs.

B.2.14.2 Operation

Operation of the Project would generate modest levels of additional noise. The proposed truck off-loading facility at the Hawkeye Oil Facility expansion would generate an unknown amount of additional truck traffic, but it would be more than 2,000 feet from the nearest residence and on the opposite side of the Hawkeye Oil Facility from the residence. Construction within the existing Hawkeye Compressor Station would add an increment of additional noise on the expanded site across the road to the south of the existing facility. At its nearest point, the expansion site would be approximately 574 feet from the farm residence, which is approximately 332 feet from the existing compressor station site. Neither existing noise levels nor expected noise emissions from the expansion facility at this NSA are known. It is important to note, however, that noise levels are not simply additive, so the expansion facility would increase the total noise level incrementally, but would not be expected to raise it by a major amount over ambient noise levels at the residence from the existing compressor station. Noise from these sources is of somewhat greater concern than construction noise because they would operate around the clock for the life of the project. Consequently, they would increase both day and night noise levels, adversely impacting day-night average levels for the long term.

Proposed pig launchers and receivers would be located within existing facility perimeters. They would be used only sporadically and would be expected to minimally influence project related noise levels. There would be some monitoring, maintenance and repair activities over the life of the Project, but they would occur only occasionally. Most such activities would generate little noise, although there may be occasions when they would mimic construction activities in limited areas.

B.2.15 Socioeconomics

B.2.15.1 Employment

Construction

The Project would take approximately six to seven months to construct from start to finish. Construction of the Project would require an estimated total of 400 workers divided among four spreads. The total workforce would include foremen, inspectors, equipment operators, welders, laborers and other skilled workers. The number of project construction workers in the area at any particular time would vary somewhat depending on the stage of construction. Although Hess has indicated it would hire as many local workers as possible, the extremely tight labor market in northwestern North Dakota, where unemployment rates are estimated at less than 1.0 percent, suggests most of the required personnel would come from outside the local study area. Local employment opportunities initiated by Project construction would be considered beneficial to the local area economies.

Operation

It is assumed that the Project would be operated and maintained by existing Hess staff. Consequently, there would be no measurable effect on employment from operations.

B.2.15.2 Population

Construction

As a result of the short duration of construction, it is assumed that very few, if any, of the non-local construction workforce would bring their families with them to the Project area. If the estimates from the 1979 Pipeline Construction Workers and Community Impact Surveys Report are still valid, there would be 0.3 dependents per worker in addition to the workers themselves (Mountain West Research, Inc. 1979). Assuming 90 percent of project construction workers would be non-local (360 persons at peak), with 0.3 dependents each (108 persons), the maximum Project related increase in Project area population would be 468 people, or 1.3 percent of the estimated 2012 population of the two-county study area. This very small percentage, maximum case increase in the study area population, combined with the short duration of construction and some variation in the particular workers needed during changing stages of construction, would at worst produce minimal adverse social, economic, and community infrastructure impacts during construction. No measurable effect on demography of the Project area would be expected.

Operation

Assuming operations and maintenance of the Project would be conducted by existing Hess employees, there would be no effect from the Project on the population or demography of the Project area during its operating life.

B.2.15.3 Economic Conditions, Income and Poverty

Construction

Construction and oil and gas development workers are among the higher paid professions in the study area. As such, construction of the Project is expected to have a beneficial effect on the local economy. The magnitude of the benefit would be tempered by the fact that construction would be short term and most construction workers would only live in the area temporarily, taking a substantial portion of their earnings with them to their permanent places of residence. Nevertheless, for the time they are in the area, they would spend some portion of their wages on housing, food, transportation and other everyday expenses, which would contribute to the local economy and would support secondary employment to a small degree. Also, because they would be taking notable portions of their earnings to their permanent residence locations, the economic benefits would extend beyond the local study area.

Effects on poverty levels in the study area would be minimal as most of the jobs would be skilled positions and most of the workers would be brought in from outside the Project area.

Operation

The Project's operations workforce would be made up of existing residents of the study area. As such, they would contribute to the local economy over the long term through spending for goods and services. The overall economic effect of the operations and maintenance workforce would be small because the number of workers would constitute a very small percentage of the local labor force.

In addition to the wages and salaries, operation of the Project would also benefit the study area economy through purchases of materials, services, motor fuels, etc. in support of the ongoing operation.

B.2.15.4 Housing

Construction

Hess plans to house non-local workers in man camps near Tioga or Watford City. There are over 10,000 beds in man camps in the two-county study area, although it is not known how many are now or will be available at the time of construction. There are also numerous RV park type facilities in the study area where some construction workers may prefer to locate, and there are numerous hotel and motel facilities in the area as well. Because of the short duration of construction, housing demand would be temporary and it is likely that few, if any, of the non-local construction workers would pursue housing in more permanent accommodations. Although actual vacancy rates for any of the temporary/transient housing resources are not known, housing continues to be at a premium in the area. Construction of new residential housing has greatly accelerated in recent years, which may be reducing pressure on temporary housing to some degree by providing alternative opportunities for new workers who are in more permanent work, but who have been using temporary housing resources in the short term. If local housing is not available for construction workers, some may commute long distances and some may locate RVs in ad hoc locations.

A potential effect of the construction work force on housing would be competition with travelers, recreationists, and more notably, other industry workers for temporary accommodations. Peak construction would occur during the summer tourist and fall hunting seasons; however, accommodations in the Project area are quite limited such that the construction work force would at worst have an incremental impact on an already strained housing environment.

Operation

Because operation of the Project is expected to be handled by existing Hess workers, no additional housing would be required after completion of construction.

B.2.15.5 Public Facilities & Services

Construction

Project area government services have been stressed by the rapid expansion of oil and gas development in the region. The Project would increase the demands on facilities and services, but the effects would be temporary, lasting only for approximately six months during the scheduled construction period. Effects to government services also would be a relatively minor incremental increase over existing demands because the estimated Project-related population increase, which would be the primary driving factor in service demand, is projected to be at most approximately 1.3 percent of the estimated current study area population. Effects on schools, in particular, would be minimal because most workers on such a short-term construction project would not be expected to bring school aged children with them to the Project area.

Operation

No substantive, incremental effects on public facilities and services would be anticipated from operation of the Project because operational activities are proposed to be conducted by existing employees currently living in the area and using public resources.

B.2.15.6 Public Finance

Construction

The estimated cost of constructing the pipeline would be $59 million, of which labor cost would be approximately $26.5 million, and capital approximately $32.5 million. Although most of the construction workforce would likely be non-local, some portion of the construction wages would be spent locally, which would generate local economic activity and state sales taxes; it is likely that some local sales taxes and possibly lodging taxes would also accrue to Williston, Watford City, Tioga and Ray. Since the two counties in the Project area do not levy sales taxes, the counties would not benefit from that potential revenue source.

The sales tax receipts from construction worker spending would be a short-term beneficial effect ending at completion of construction.

In addition to construction worker local expenditures, other income generated by construction would include local material purchases by contractors and other support personnel. It is assumed that the contractor would purchase as many materials as possible from local sources. These expenditures would include tools, fuel, oil, parts, and repairs. Local communities would benefit from fuel sales and repair expenditures.

Operation

The estimated total Project-related ad valorem tax receipts for the first year of operations are presented in **Table B-6.** The estimates are based on the 2012 county-wide average mill levy, although the actual mill levy may vary somewhat from the average. The estimates also are based on an assumption that the actual value of the Project would approximately equal the capital cost noted above. Each county and school district would benefit from the project-related tax base increase. The total amount of property tax generated each year would vary, depending on the yearly mill levy and the assessed valuation, which would decline over the life of the Project due to depreciation.

At the end of the Project's useful life, abandonment of Project facilities would decrease the tax bases of the affected counties and districts.

Table B-6 Estimated Ad Valorem Tax Receipts from the Project

County	Miles of Pipeline	2012 Average Tax Rate[1] (mills)	Estimated Taxable Value of Pipeline and Facilities[2] ($)	Estimated Property Tax Receipts From Pipeline and Facilities[3] ($)
McKenzie	11.8	122.09	$740,347	$90,389
Williams	14.1	219.75	$884,653	$194,402
Total	**25.9**	**NA**	**$1,625,000**	**$284,791**

[1] Estimated average county-wide tax rates may not reflect actual tax rate applied to pipeline.

[2] Estimated values of pipe and facilities were multiplied by 0.50 to determine the assessed value and 0.10 to determine the estimated taxable value. Typically this value is calculated by the North Dakota Office of State Tax Commissioner.

[3] Estimated annual taxes based on first year valuation and 2012 average mill rates.

NA – Not Applicable.

B.2.16 Environmental Justice

B.2.16.1 Construction

Estimated percentages of minority and low-income populations in McKenzie and Williams Counties are either lower than statewide percentages, or slightly higher than statewide percentages, but not high enough to be considered "meaningfully greater" for purposes of the environmental justice analysis.

The Fort Berthold Indian Reservation, a portion of which lies in McKenzie County, does have substantially higher percentages of American Indians and persons below the poverty level. The reservation is approximately four miles from the Project, however, and there is no indication that residents of the reservation would be affected by construction or operation of the project differently than the rest of the population in the two-county area. Consequently, it is anticipated that there would not be any disproportionately high adverse effect on the health or environment of minority and low-income populations resident on the reservation.

B.2.16.2 Operation

No disproportionate adverse effects on minority or low-income populations would occur as a result of operation of the Project.

B.2.17 Transportation

B.2.17.1 Construction

Construction of the Project would generate an increase in traffic on local roads from trucks hauling pipe and other construction materials and from construction workers accessing the ROW. Pipe and construction materials would either arrive by rail or be trucked in via state and U.S. highways to staging areas in preparation for distribution to the ROW as needed.

Truck traffic would arrive in the area via U.S. Highway 2 in Williams County or U.S. Highway 85 in McKenzie County. Major access routes within the study area would be State Highway (SH) 1804 and County Road (CR) 21 and 23 in Williams County and SH 1806 and SH 23 in McKenzie County. All of these highways have sufficient capacity to accommodate the Project-related traffic without creating major delays. Effects on traffic flows would be minor and short term, although the increase in heavy trucks could create some queuing delays on road segments where passing is restricted.

In addition to the paved highways, there is a grid of gravel surface, rural roads that would provide direct access to the ROW. Traffic on these roads is generally very light. Specific local roads used would vary as construction progressed along the Project ROW. Local motorists may experience minor delays caused by heavy trucks traveling under restrictions for weight and speed, but the rapid progression of the construction process and the relatively short total duration of construction would minimize the adverse effects.

There are load limit restrictions on county and township roads and bridges that must be observed at all times to prevent surface and structural damage. If construction occurs during the spring freeze-thaw cycle, additional restrictions may apply. Oversized loads would comply with special permit requirements of the North Dakota Department of Transportation and county highway departments.

Effects of the Project on traffic safety would be expected to be minor. The number of total accidents could be expected to increase approximately in proportion to the Project-related increase in total traffic. The incremental increase in traffic would be relatively small; however, and the accident rate per mile would not be expected to increase.

Increased heavy truck traffic would tend to accelerate deterioration of road surfaces. This effect would be minimal on state and U.S. highways built to accommodate such traffic. Road maintenance requirements on unpaved county roads may increase somewhat during the construction period, but county restrictions on weight and speed of heavy vehicles, especially during freeze-thaw cycles, should minimize the damage.

Hess plans to bore all road crossings. Consequently, project related traffic interruptions would be minor, limited to equipment and personnel accessing the ROW and periodically crossing roads.

B.2.17.2 Operation

Operation of the Project would reduce the current level of truck traffic in the vicinity by replacing approximately 270 to 400 daily truck trips transporting oil and NGL with pipeline transport. This would be a positive effect on local traffic. The new truck off-loading facility within the Hawkeye Oil Facility would increase truck traffic near that location by an estimated 100 trips per day. This increase would be offset to some degree by the 320 current trips that would be removed from local roads throughout the Project area.

Occasional pipeline maintenance or repair requirements would cause activity similar to construction but only for very brief periods and on a much smaller scale. Maintenance activities would be more localized than would be experienced during the initial construction of the Project.

B.2.18 Public Safety

B.2.18.1 Construction

Construction of the Project would elevate the potential risk to public safety from increased traffic resulting from local population growth and hazardous chemical and fire-related incidents from pipeline construction activities. To reduce traffic during construction, workers would be housed in temporary accommodations and would utilize temporary transportation measures to minimize the public safety impacts to local citizens. Additionally, emergency response procedures for all incidents would be developed involving hazardous materials and possible fire emergencies. Hess and its contractors would undergo prevention, response, and safety training. The program would be designed to improve awareness of safety requirements, pollution control laws and procedures, and proper operation and maintenance of equipment.

Road construction has begun on several North Dakota highways within the Project area (Williston District) to accommodate the increase in oil and gas development traffic. Construction in this area was initiated in 2013 and would continue through 2017. Although the Project route would only directly cross SH 1804 and SH 1806, U.S. Highways 83, 2, and 85 have begun work on lane expansions and other roadwork in order to accommodate increased traffic within the Project area. Major rehab work such as lane widening, aggregate base laying, structural replacement and grading is currently being done on SH 23 (2014), U.S. Highway 85 (2014-2017) and SH 40 (2014) (NDDOT 2013). These highways will experience significant traffic increases during construction transporting Hess construction personnel from Watford City and Tioga back and forth from the Project site. Both cities use SH 23 and SH 40 as direct routes to the Project area and it is unlikely that alternate routes will be used. Other minor rehab work, such as thin overlaying, is being done on U.S. Highway 52 (2015-2017) and preventative maintenance construction on U.S. Highway 2 (2014-2017), SH 50 (2015-2017) and U.S. Highway 52 (2015-2017) (NDDOT 2013). However construction on these specific highways is less likely to have a significant traffic impact as they are further away from the Project area, and would not be used as daily direct routes by Hess personnel. All of the aforementioned highways would be used, to a degree, to transport these workers and other Hess construction personnel (approximately 400), along with various necessary transport of construction materials.

As part of the construction mobilization activities, Hess would hold a pre-construction safety coordination meeting at each spread or Project work location. Designated Hess Project Management personnel would attend these sessions with the contractor superintendent, foremen, and safety representatives. The meeting would address any specific contractor and/or Hess concerns and expectations; safety initiatives; facilitate review of the safety compliance program, incident reporting, and established protocols for determining, correcting, and documenting safety non-compliance incidents.

All work would be conducted in compliance with the Hess Safety Plan and Procedures. A copy of the Safety Plan would be maintained on site at all times during work. During construction planning, emergency egress and nearest urgent care facilities would be identified and used in the Safety Plan. The Contractor would provide an emergency conveyance vehicle (a Suburban equivalent) for transportation of an injured worker. At a minimum, this vehicle would be equipped with stretcher/cot and basic first aid supplies. Hess would require the construction crew involved in a serious or critical incident injury to worker(s) and crews with similar work operations to stand down from work until an investigation is completed and mitigations put in place to minimize the risk of the incident occurring again.

B.2.18.2 Operation

The transportation of crude oil by pipeline involves some risk to the public in the event of an accident and subsequent release of oil. PHMSA is the primary federal regulatory agency responsible for ensuring that pipelines are safe and reliable. PHMSA works cooperatively with other agencies that regulate pipelines. The safety regulations implement the laws found in 49 CFR 195.

To address potential impacts during operation, an ERP would be developed as required by PHMSA, in conjunction with local authorities and first responders, to build site-specific response plans, detail emergency equipment availability and location, and emergency contacts. Additionally, water trucks, portable water pumps, chemical fire extinguishers, hand tools, and heavy equipment would be available to address effects from fire during operation.

A spill of crude oil during Project operation as a result of a pipeline leak could contaminate soil and groundwater if the leak is not properly contained and remediated. The pipeline would be monitored by an electronic system that would sense pressure and flow rates 24 hours a day, as well as by aerial patrols. Consistent monitoring would allow concerns to be immediately identified and addressed. A Pipeline Integrity Management Plan would be developed, which, in conjunction with the ERP, would outline pipeline integrity management procedures to be implemented during operation.

Hess would use a number of leak detection systems and, in the unlikely event of a pipeline release, would implement a system shutdown to isolate the affected pipeline segment. Specific details of these systems would be determined based on system hydraulics as the Project develops. The pipeline would be continuously monitored at a remote location. If abnormal operating conditions are detected, the system would generate an alarm. The system operator would have a prescribed time (minutes) to evaluate the alert. If the operator fails to respond to the alarm or the alarm is caused by a release, shutdown procedures would commence. The shutdown procedure occurs systematically to avoid pressure hammers that could cause damage to the pipeline. Pump stations would be shutdown first, followed by valve closure. Once the valves are closed, the system is in a “shut-in” condition, isolating the affected segment.

Concurrent with an emergency shutdown, the operator would begin emergency response procedures, including emergency notifications and the mobilization of emergency response staff and equipment. Hess is required by federal regulation to have a Project-specific ERP that is reviewed and approved by PHMSA prior to initiating pipeline operations. The ERP would be prepared to address any number of potential public safety hazards including drinking water contamination, fire/explosions, as well as air pollution hazards, etc.

B.2.18.3 Dust Control

During construction, particularly during high winds and/or low precipitation, there could be an increase in particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) levels in the Project area and along access roads. The Contractor shall at all times control airborne dust levels during construction activities. To reduce the wind-driven construction dust, Hess would have water trucks available and water would be applied to the construction area and access roads, as necessary. Re-vegetating disturbed areas upon completion of construction also would reduce increased levels of wind-blown dust during operation.

Dust shall be strictly controlled where the construction work approaches dwellings, farm buildings, and other areas occupied by people and when the pipeline parallels an existing road or highway. This shall also apply to access roads where dust raised by construction vehicles may irritate or inconvenience local residents. The speed of all Contractor vehicles shall be controlled in these areas. Emissions from construction equipment combustion and temporary fuel transfer systems and associated tanks will be controlled to the extent required by state and local agencies through the permit process.

The Contractor would take appropriate precautions to prevent fugitive emissions caused by sand blasting from reaching any residence or public building. The Contractor would place curtains of suitable material, as necessary, to prevent wind-blown particles from sand blasting operations from reaching any residence or public building. Additional measures may be required by state regulations or local ordinances. The Contractor would comply with all applicable state regulations and local ordinances with respect to truck transportation and fugitive dust emissions.

B.2.18.4 Waste Management

Construction sites along the ROW, access roads, and storage yards would be kept in an orderly condition throughout the construction phase. Refuse and trash would be removed from the site on a daily basis and disposed of in an approved manner at an approved site. No open burning of construction debris or trash would occur. No liquids or solid waste would be disposed of without a valid permit. Accidental spills of fuels or lubricants would be remediated immediately in accordance with Hess' SPCC Plan.

Hazardous materials would be carefully controlled, labeled, and used only by authorized personnel. Storage sites for hazardous materials and fuels would be located at a minimum distance of 100 feet from any waterbody or sensitive environmental area to ensure no risk of contamination. Storage sites holding in excess of 300 barrels of lubricants, oils, and fuels would be surrounded with an impermeable berm. Should an accidental spill occur, the Contractor would contact Hess and the appropriate authorities immediately, and would clean up and dispose of the material. All fuel and service vehicles would be equipped with commercial absorbent material for cleaning up hazardous materials.

B.2.19 Hazardous Materials and Solid Waste

Potential impacts to the environment from the presence of hazardous materials can occur from an accidental release during transportation, and materials used during construction and operation of the Project. Also, crude oil that would be transported in the pipeline is considered a hazardous material that, if leaked or spilled, has the potential to contaminate soil and water resources and pose a threat to public health and safety.

B.2.19.1 Construction

Soil and water contamination may occur from spills during transportation, storage, and handling of hazardous materials and solid waste. Additionally, unknown subsurface contaminants could be encountered during excavation.

Hazardous Materials

Hazardous materials would be carefully controlled, labeled, and used only by authorized personnel. Storage sites for hazardous materials and fuels would be located at a minimum distance of 100 feet from any waterbody or sensitive environmental area to ensure no risk of contamination. Storage sites holding in excess of 300 barrels of lubricants, oils, and fuels would be surrounded with an impermeable berm. Should an accidental spill occur, the Contractor would contact Hess and the appropriate authorities immediately, and would clean up and dispose contaminated materials. All fuel and service vehicles would be equipped with commercial absorbent material for cleaning up hazardous materials. Improper handling or storage of hazardous materials or pipeline leaks can result in contamination of soil and water resources as well as pose a threat to worker and public health and safety. The environmental effects of a release would depend on the material released, the quantity released, and the location of the release. Potential releases could include a small amount of fuel spilled during transfer operations in the Project route to the loss of several thousand gallons of fuel into a riparian drainage.

Soil and water contamination along the Project route may result from spills during construction and trench excavation. Impacts from spills typically would be minor because of the low frequency of spill occurrence and relatively low volume of materials being handled and potentially spilled. Hess' SPCC Plan would address procedures to ensure the proper handling and storage of these materials and procedures for the containment and cleanup of spills at aboveground facilities. In addition, the SPCC Plan provides protection measures for the handling of hazardous materials with respect to sensitive receptors such as a stream, wetland/riparian area, or populated area.

Solid Waste

Hess would dispose of construction waste in accordance with applicable rules. Construction debris would not be placed in or adjacent to waterways and construction trash would be removed from the ROW. Hess would comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations.

Contaminated Sites

It is possible that contaminated soil and groundwater (e.g., hydrocarbon contamination) could be encountered during trench excavation operations. If contaminated soils are encountered, Hess would suspend work in the area of the suspected contamination until the type and extent of the contamination was determined. The specific procedures for handling the discovery of potentially contaminated soils are described in the SPCC Plan. The type and extent of contamination, the responsible party, and local, state, and federal regulations would determine the appropriate cleanup method for contaminated soil and groundwater.

B.2.19.2 Operation

Hazardous Materials

Table B-7 lists various hazardous materials that would be used in the operation of the pipeline. Hess would provide, maintain, and make available the appropriate Material Safety Data Sheets (MSDS) for each of these materials and those for any other hazardous or controlled materials utilized on the Project, at a location accessible to all contractor and Hess employees.

Table B-7 Typical Fuel, Lubricants, and Hazardous Materials

Fluid Uses	Fluids	Typical Quantity Per Location (gallons)	Method of Storage	Storage Location
Fuels	Diesel	5,000 – 10,000	Tanks or Tankers	Contractor Yard Warehouse/ Fuel Vehicle Parking Areas
	Gasoline	5,000 – 10,000	Tanks or Tankers, 10-Gallon Containers, Pick-up Tanks	Contractor Yard Warehouse/ Fuel Vehicle Parking Areas
Lubricants	Engine Oil	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse
	Transmission/ Drive Train Oil	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse/ Service Trucks
	Hydraulic Oil	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse/ Service Trucks
	Gear Oil	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse/ Service Trucks
	Lubricating Grease	<25	Tubes Stored in Paper Cases	Contractor Yard Warehouse/ Service Trucks
Miscellaneous/ Coolants, Hydraulic fluids	Ethylene Glycol	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse/ Service Trucks
	Propylene Glycol	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse/ Service Trucks
	Power Steering Fluid	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse/ Service Trucks
	Brake Fluid	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse/ Service Trucks
	Propane	25 – 100	Pressurized Tanks	Contractor Yard Warehouse/ Welding Trucks

The USDOT classifies crude oil as a hazardous liquid. Accordingly, the pipeline and aboveground facilities associated with the Project must be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR 195. The regulations are intended to ensure adequate protection for the public and to prevent pipeline and facility accidents and failures. 49 CFR 195 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Hess would design, construct, and operate the pipeline in accordance with federal regulations. Important features to ensure the safe operation of the pipeline include:

- Hydrostatic testing to verify the pipeline’s integrity prior to operations;
- Corrosion protection by using high integrity fusion bonded epoxy coating and cathodic protection;
- Internal inspection of the pipe using “smart pigs” designed to detect irregularities on the internal and external surfaces of the pipe;

- SCADA system to continuously monitor the pipeline and the pressure of its contents;
- Participation in state "one call" programs; and
- Use of remotely activated valves at key locations.

Solid Waste

The waste generated during operations would be similar to waste generated during construction, except for certain waste that may be generated from pipeline maintenance operations. Such waste materials may be considered hazardous and would have to be accumulated, stored, and disposed in accordance with applicable rules and regulations.

B.2.20 Cultural Resources

B.2.20.1 Construction

The BLM 8100 Manual states that cultural resources need not be determined eligible for the National Register of Historic Places (NRHP) to receive consideration under NEPA (BLM 2004). Under the NHPA, potential impacts to historic properties are assessed by applying the "criteria of adverse effect" (36 CFR 800.5[a][1]). "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." The analysis of impacts using the criteria is limited to those resources that are either listed in the NRHP or have been recommended as eligible for inclusion in the NRHP.

Potential direct impacts to known and unknown cultural resources include physical disturbance associated with Project-related construction activities. Indirect impacts could include soil erosion and the potential for illegal artifact collecting and vandalism due to the presence of increased numbers of people during construction and increased public access. Visual impacts could result from the introduction of visual intrusions (e.g., aboveground ancillary facilities) resulting in changes in the setting surrounding such resources.

Cultural resources inventories conducted for the Project identified a total of 23 prehistoric sites in the APE. The prehistoric sites contain stone features, cairns, or alignments, and/or cultural material scatter (CMS). Of the prehistoric sites, 1 is on USACE land and is considered not eligible for listing on the NRHP, 1 is on USFS land and is recommended as eligible for the NRHP, and the eligibility of the remaining sites is undetermined. Final determination of eligibility is pending North Dakota SHPO review and concurrence.

Minor variations to the pipeline ROW have resulted in avoidance of all sites by at least 50 feet, thereby avoiding direct impacts to these resources. Although all sites would be avoided by a 50-foot buffer, monitoring during Project-related construction activities is recommended for sites 32MZ0773, 32MZ0796, 32MZ2168, 32MZ2599, 32MZ2766, 32MZ2767, 32MZ2769, 32MZ2770, 32WI1575, 32WI1577, 32WI1579, 32WI1580, 3WI1581, 32WI1632, 32WI1633, 32WI1634, and 32WI1635 because of the possibility for buried deposits associated with the sites and for sites where the 50 feet avoidance buffer is on the edge of the construction corridor (**Table B-8**).

Table B-8 Cultural Resources Requiring Avoidance Measures

Site Number	Site Type	Site Description	Land Status	NRHP-eligibility	Protection Measure
32MZ0773	Prehistoric	CMS	Private	Undetermined	Monitoring; protective fencing
32MZ0796	Prehistoric	CMS	Private	Undetermined	Monitoring; protective fencing
32MZ2168	Prehistoric	Cairn	USFS	Undetermined	Monitoring; protective fencing
32MZ2599	Prehistoric	Stone Features	USFS	Undetermined	Monitoring; protective fencing
32MZ2766	Prehistoric	CMS/Cairn	Private	Undetermined	Monitoring; protective fencing
32MZ2767	Prehistoric	Possible stone effigy	Private	Undetermined	Monitoring; protective fencing

Table B-8 Cultural Resources Requiring Avoidance Measures

Site Number	Site Type	Site Description	Land Status	NRHP-eligibility	Protection Measure
32MZ2769	Prehistoric	Stone alignment	USFS	Undetermined	Monitoring; protective fencing
32MZ2770	Prehistoric	Cairn	USFS	Undetermined	Monitoring; protective fencing
32WI1575	Prehistoric	Stone features	Private	Undetermined	Monitoring; protective fencing
32WI1577	Prehistoric	Stone Features	Private	Undetermined	Monitoring; protective fencing
32WI1579	Prehistoric	Stone circle	Private	Undetermined	Monitoring; protective fencing
32WI1580	Prehistoric	Stone Features	Private	Undetermined	Monitoring; protective fencing
32WI1581	Prehistoric	Stone effigy	Private	Undetermined	Monitoring; protective fencing
32WI1632	Prehistoric	Stone circle/effigy	Private	Undetermined	Monitoring; protective fencing
32WI1633	Prehistoric	Stone alignment	Private	Undetermined	Monitoring; protective fencing
32WI1634	Prehistoric	Stone circle and alignment	Private	Undetermined	Monitoring; protective fencing
32WI1635	Prehistoric	Stone circle	Private	Undetermined	Monitoring; protective fencing

Source: Cardno-ENTRIX 2014.

Resolution of Effects

All of the sites identified during the Class III inventory have been avoided by minor variations to the Project route; therefore, no direct impacts to the sites are anticipated. Potential indirect effects to historic properties located adjacent to the APE as a result of drainage or soil erosion would be minimized through implementation of procedures described in the BMPs, SWPPP, and Reclamation Plan. Other indirect effects, such as illegal collecting of artifacts and inadvertent damage to archaeological sites, could occur in the area of the Project due to an increase in the number of workers during construction and increased public access. In accordance with the environmental protection measures (**Appendix E**, **Table E-1**), Project-related personnel would be educated as to the sensitive nature of the resources; a strict policy of prohibiting collecting of these resources would be implemented. To prevent unauthorized use of the ROW, access would be blocked at locations specified by agencies and/or private landowners (**Appendix E**, **Table E-1**).

To reduce potential visual effects to a historic property in which site setting contributes to its NRHP eligibility, aboveground structures would be painted with BLM-approved environmental colors to minimize contrasts with surrounding landscapes (**Appendix E**, **Table E-1**).

Per the environmental protection measures and as described in the *Unanticipated Discoveries Plan*, if any previously unknown archaeological sites are discovered on private, state, or federal land during Project construction, all construction activities would cease in the area of the discovery and the consulting archaeologist, BLM, and North Dakota SHPO would be notified of the find. Steps would be taken to protect the site from vandalism or further damage until the appropriate federal agency and North Dakota SHPO could evaluate the nature of the discovery. If the site qualifies as a historic property, a mitigation plan would be developed and executed before construction can resume in the vicinity of the discovery. If the site does not qualify as a historic property, construction can resume in the vicinity of the discovery. The BLM Project Manager would provide written notice for when construction can resume at the discovery location for both scenarios (i.e., historic property and discovery that does not qualify as a historic property).

If construction or other Project personnel discover what may be human remains, funerary objects, or items of cultural patrimony, construction would cease within a 100-foot radius from the point of discovery, and the local law enforcement agency, North Dakota SHPO, BLM, and/or applicable land-managing agency would be notified of the find. Any discovered Native American human remains, funerary objects, or items of cultural patrimony found on federal land would be handled in accordance with the NAGPRA. Non-Native American human remains found on federal, state, or private lands would be handled in accordance with the NDCC §23-06-27 and the administrative rules in the North Dakota Administrative Code Chapter 40-02-03. Construction activities would not resume until the BLM Project Manager has issued a Notice to Proceed.

B.2.20.2 Operation

No impacts to cultural resources associated with operation of the Project are anticipated.

B.2.21 Tribal Treaty Rights and Interests

B.2.21.1 Construction

In accordance with all applicable mandates, including, but not limited to Section 101[d][6] of the NHPA, the American Indian Religious Freedom Act, Executive Order (EO) 13007 (Indian Sacred Sites), EO 13175 (Consultation and Coordination with Indian Tribal Governments), Presidential Memorandum on Government to Government Consultation with Native American Tribal Governments (April 29, 1994), Presidential Memorandum on Tribal Consultation issued on November 5, 2009, and the USACE Upper Missouri River Programmatic Agreement (2004), the BLM has consulted with federally recognized Native American tribes regarding potential impacts to properties of traditional, religious, and cultural importance to the tribes.

Tribal members from the Turtle Mountain Band of Chippewa and Three Affiliated Tribes: Mandan, Hidatsa, and Arikara conducted field surveys on various dates in August, September, and October 2013. On September 23, 2013, the Sisseton-Wahpeton Oyate Tribes, Crow Creek Sioux Tribe, Rosebud Sioux Tribe, Spirit Lake Tribe, Yankton Sioux Tribe, Fort Peck Assiniboine and Sioux Tribes, Cheyenne River Sioux Tribe, Oglala Sioux Tribe, and Northern Cheyenne Tribe initiated their 10-day survey with two representatives from each tribe. As a result of the surveys, multiple sites/features consisting mostly of stone cairns, stone alignments, and/or stone circles were identified by the tribal members. On September 16 and 17, 2014, tribal representatives from the Rosebud Sioux Tribe, MHAN, Turtle Mountain Band of Chippewa, Spirit Lake Tribe, Sisseton-Wahpeton Oyate Tribes, Yankton Sioux Tribe, Crow Creek Sioux Tribe, and Northern Cheyenne Tribe participated in field surveys of reroutes to the Project ROW. Numerous areas of resource concern consisting mostly of stone circles, stone cairns, or stone piles were identified during the surveys. Based on the results of the 2013 and 2014 surveys, Hess adjusted the Project ROW to avoid all of the areas of resource concern. No adverse effects to these features/sites are anticipated as a result of Project construction.

Unanticipated discoveries of properties of traditional religious and cultural importance, including human remains, on federal, state, or private land during Project construction would be handled in accordance with the *Unanticipated Discoveries Plan* and as described in Section B.2.20, Cultural Resources.

Public lands retain social, economic, and both traditional and contemporary cultural value for tribal people, as well as contemporary and ongoing spiritual and cultural uses (United Nations Declaration on the Rights of Indigenous Peoples 2008). Some of the tribes with traditional or cultural affiliation with the Project area may have treaty rights that give them the right to hunt, fish, gather, and conduct traditional cultural activities on federal lands crossed by the Project. Construction activities associated with the Project may temporarily reduce the amount of federal lands outside of the reservation where tribal members could exercise their hunting, fishing, and gathering rights; change the way a tribal member accesses resources for tribal use; and, restrict certain activities (e.g., hunting or gathering). However, there would be no restrictions on access to resources and/or areas for religious purposes after construction has been completed. The BLM would continue to consult with federally recognized tribes that have treaty rights pertinent to the Project area, have aboriginal territories encompassing the Project area, or have expressed an interest in the Project area. Tribal consultation currently is ongoing and would continue up to and including Project construction.

B.2.21.2 Operation

No impacts to treaty rights or properties of traditional religious and cultural importance associated with operation of the Project are anticipated.

C. Need for Facility

C.1 Analysis of Need

C.1.1 Hess' Interests and Objectives

Hess submitted a Standard Form (SF) 299 application to the BLM North Dakota Field Office on May 25, 2012, requesting a new ROW Grant to cross USACE and USFS lands in North Dakota. Hess proposes to construct, operate, and maintain the Project that would transport crude oil from the middle Bakken and upper Three Forks formations (Bakken) of the Williston Basin, to existing export infrastructure north of Lake Sakakawea. Hess maintains the Project would help to address anticipated regional pipeline and outlet constraints north of Lake Sakakawea as development of the Bakken Formation increases and the pipeline is needed to relieve the large truck traffic congestion on the western North Dakota road system.

C.1.2 Purpose and Need for the Proposed Action

The purpose of the Project is to consider providing Hess with a ROW across federal lands to meet their interests and objectives for the project. The need for the Project is the requirement to consider granting approval for the construction, operation, maintenance, and termination of a pipeline for the purpose of transporting crude oil on public lands administered by the USFS, McKenzie Ranger District, and the USACE, Omaha District, under the authority of the MLA, as amended and supplemented, (30 United States Code [USC] 181 et seq.), and prescribed in 43 CFR 2880 and 3160. The Department of Interior's Energy Policy Act of 2005 encourages the development of energy related facilities upon review and analysis.

C.2 Alternatives

C.2.1. New Pipeline Construction Crossing Lake Sakakawea

HDD was evaluated for new pipeline installation across Lake Sakakawea as an alternative to re-purposing the existing pipelines at the lake crossing. This alternative was not further developed because there was greater potential for land disturbance and effects on sensitive wildlife species in and adjacent to the lake. Additionally, the existing pipeline across Lake Sakakawea proposed for product use for the current project has been hydrostatically tested, and the pressure tests have proven its integrity, in accordance with USDOT requirements and standards.

C.2.2 Trucking Alternative

An alternative to transporting crude oil via pipeline included the continued trucking of crude oil, which is environmentally undesirable. This alternative would include approximately 270 to 400 daily truck trips for the transportation of crude oil. The proposed crude oil pipeline would allow Hess to capture current and future production in the Buffalo Wallow, Hawkeye, Antelope, and Blue Buttes areas. Without the Project, the level of crude oil trucking would continue to increase from 2015 and into the future. Therefore, the alternative to continue trucking an increased volume of crude oil was eliminated from further analyses.

C.2.3 Route Alternatives

Due to the relatively short length of the pipeline and the proposal to tie into the existing pipeline at the Lake Sakakawea crossing, major pipeline route alternatives that would connect the Hawkeye Oil Facility to the Ramberg Truck Facility were not identified. With the exception of slight modifications based on landowner requests and/or federal agency guidance, the proposed pipeline route mostly follows existing pipeline and utility easements. Many of the aboveground facilities associated with the Project are to be located within existing Hess facilities to reduce additional disturbance and potential environmental effects. Additionally, at the request of the USFS, Hess modified their originally proposed route across the LMNG on the south side of Lake Sakakawea to avoid a proposed USFS Historic Archaeological District. Hess has incorporated the proposed modification into the Project.

C.3 Deviation from Ten-Year Plan

The description of the Project corresponds with information provided in the most recent Ten-Year Plan, which was submitted to the PSC by Hess June 24, 2014 (**Appendix H**). There were no deviations between the planned project described in the Ten-Year Plan and the Project described in this application.

D. Location

D.1 Study Area

Factors provided in Section NDCC 49-22-09 that are to be considered in evaluating application and designation of sites, corridors, and routes are listed below. The PSC shall be guided by, but is not limited to, the following considerations, where applicable, to aid in the evaluation and designation of sites, corridors, and routes:

1. *Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment*.

   A Class I file search of recorded cultural resource sites within the Project corridor was completed using data from the Division of Archaeology and Historic Preservation, State Historical Society of North Dakota. The North Dakota Natural Heritage Inventory and USFWS also provided database information regarding threatened, endangered, and state sensitive plant species. Section B.2, Potential Impacts, provides a summary of potential impacts to natural and human resources as a result of Project construction and operation as described in the EA.

2. *The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.*

   Not applicable.

3. *The potential for beneficial uses of waste energy from a proposed energy conversion facility.*

   Not applicable.

4. *Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.*

   To the extent practicable, all effects from the construction and operation of the pipeline within the proposed corridor would be mitigated. With the exception of the Hawkeye Oil Facility, all other lands that would be disturbed during construction would be returned to the current land use. No other permanent direct or indirect adverse effects are anticipated.

5. *Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.*

   No alternatives to the Project route have been identified at this time. Alternative routes may be identified during the public hearing process.

6. *Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.*

   Irreversible and irretrievable commitments of natural resources would include the permanent loss of vegetation and soil productivity from 79.7 acres of land associated with the Hawkeye Oil Facility. No other irreversible or irretrievable commitments of natural resources would occur from Project construction and operation. All areas of natural vegetation within the ROW would be reclaimed with agency-recommended or landowner seed mixtures.

7. *The direct or indirect economic impacts of the proposed facility*.

   Economic impacts would be positive. Ad valorem taxes would be paid annually, which help the economy. North Dakota sales or use tax would be paid on all materials purchased. During construction, workers would increase the level of business activity in the area.

8. *Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.*

   Portions of the proposed BakkenLink Dry Creek to Beaver Lodge Pipeline Project (crude oil pipeline project) would be constructed within the 200-foot-wide route corridor and would parallel some portions of the Project ROW. Construction of this Project would likely start in May 2015 and be completed in the October 2015. Oil and gas wellfield development or construction of pipeline gathering systems may occur within the 200-foot-wide route corridor. However, no formal development plans have been identified at this time.

9. *The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.*

   The Project corridor includes several cultural resource sites (see Section B.2.20, Cultural Resources). The Project route would avoid all of these sites. In addition, the Project corridor includes several potential paleontological resource areas (see Section B.2.3, Paleontological Resources). Paleontological resources monitoring would be completed within potential fossil-bearing areas along the Project route during construction.

10. *The effect of the proposed site or route on areas which are unique because of the biological wealth or because they are habitats for rare and endangered species*.

    Section B.2.10, Special Status Species, provides a summary of potential impacts to special status species that may occur as a result of Project construction and operation. A Biological Assessment and Biological Evaluation has been submitted to the U.S. Fish and Wildlife Service (USFWS) and U.S. Forest Service (USFS) for review and comment, respectively. Hess will comply with any additional mitigation measures identified by the USFWS as stipulated in the Biological Opinion and by the USFS. Sections B.2.6, Wetlands and Floodplains and B.2.7, Vegetation Resources provide summaries of potential impacts to wetlands and floodplains and vegetation resources, respectively, which may occur as a result of Project construction and operation.

11. *Problems raised by federal agencies, other state agencies, and local entities.*

    Federal and state agencies were contacted during the data collection phase of the Project (**Appendix I**). These agencies have provided input and identified concerns that have been addressed in this document.

D.2 Proposed Route Location Criteria

The locations of the Project route, Hawkeye Oil Facility, and existing aboveground facilities are illustrated in **Appendix A**, **Figure A-1**. The criteria used to develop the Project route location within the proposed corridor are illustrated in **Appendix F**, **Figures F-1** through **F-6**.

D.3 Proposed Route Selection Criteria

The pipeline must originate at the Hawkeye Oil Facility and terminate at the Ramberg Truck Facility. The criteria identified in Section D.4, North Dakota Public Service Commission Criteria, and illustrated in **Appendix F**, **Figures F-1** through **F-6** are difficult to list in order of importance in terms of relative value as they are closely interrelated. They were of equal value and importance in the route selection process. The selection criteria are discussed in the following sections.

D.4 North Dakota Public Service Commission Criteria

The PSC requires a two-step process consisting of identifying and selecting corridors, and routes within corridors. PSC routing requirements are applicable to identifying appropriate corridors as well as specific routes. The Project route within the proposed corridor minimizes impacts to exclusion and avoidance areas. The PSC classifies routing constraints as exclusion areas, avoidance areas, selection criteria, and policy criteria. The criteria are summarized in the following sections.

D.4.1 Exclusion Areas

Exclusion areas are defined as geographical areas that are to be completely avoided during pipeline routing. Buffer zones of reasonable distance are to be applied to each exclusion area. **Appendix F**, **Figures F-1** and **F-2** illustrate exclusion areas that occur within and immediately adjacent to the Project route. Exclusion areas include:

1. *Designated or registered national: parks, memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas.*

   None would be crossed by the Project route.

2. *Designated or registered state: parks, historic sites; monuments; historical markers; archaeological sites and nature preserves.*

   Cultural resource sites would not be crossed by the Project route.

3. *County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions.*

   None would be crossed by the Project route.

4. *Areas that are critical to the life stages of threatened or endangered animal or plant species.*

   Section B.2.10, Special Status Species, provides a summary of potential impacts to special status species (identified in **Appendix G, Table G-1**) that may occur as a result of Project construction and operation. Designated critical habitat for the piping plover would be crossed by the Project route. However, direct disturbance to the critical habitat for piping plover would not occur since an existing pipeline would be repurposed for the transportation of crude oil. Potential habitat (i.e., native grasslands) for the Dakota skipper would be disturbed by Project construction. Impacts to native grasslands would be avoided or minimized with the implementation of environmental protection measures (**Appendix E**).

5. *Areas where animal or plant species that are unique or rare to the state would be irreversibly damaged.*

   Although state sensitive wildlife and plant species occur adjacent to the proposed route, none of these species would be directly affected or irreversibly damaged by construction activities. **Appendix F**, **Figures F-1** and **F-2** illustrate general locations of state sensitive wildlife and plant species populations present adjacent to the Project route.

6. *Areas within one thousand two hundred feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.*

   The Project route is not located within 1,200 feet of the geographic center of an ICBM launch or launch control facility.

7. *Areas within thirty feet on either side of a direct line between intercontinental ballistic missile (ICBM) launch or launch control facilities to avoid microwave interference.*

   The Project route is not located within 30 feet of either side of a direct line between ICBM launch or launch control facilities.

D.4.2 Avoidance Areas

Avoidance areas are defined as geographical areas that are to be completely avoided during pipeline routing, unless the applicant shows that under the circumstances, there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the applicant may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative routes. Economic considerations alone shall not justify approval of these areas. **Appendix F**, **Figures F-3** and **F-4** illustrate the avoidance areas that occur along the Project route. Avoidance areas include:

1. *Designated or registered national: historic districts; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.*

   Portions of the Project route cross Lake Sakakawea (i.e., Missouri River), LMNG, and the historic Elm Tree Archaeological District. The Project route intersects the LMNG (managed by the USFS), which is located in the rugged terrain south of Lake Sakakawea. Half of site 32MZ2768 lies within the Elm Tree Archaeological District, which has been nominated for listing on the NRHP. The Elm Tree Archaeological District covers 152 acres and consists of 12 sites, 6 of which have undergone evaluative testing and were found eligible for inclusion on the NRHP. Rock features were found at all 12 sites; activity areas and datable features additionally were found at the 6 tested sites. The area encompassing the Elm Tree Archaeological District functioned as a natural travel corridor and the identified sites reflect short-term camps where stone tool production, stone tool maintenance, and bison processing were performed. A minimum of 50 feet separates the archaeological sites within the Elm Tree Archaeological District and the Project route. The Project route does not include national wildlife areas, wild and scenic rivers, or national wildlife refuges. This area is currently proposed and is not currently listed on the NRHP.

2. *Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands.*

   None are located along the Project route.

3. *Historic resources that are not specifically designated as exclusion or avoidance areas.*

   None are located along the Project route.

4. *Areas that are geologically unstable.*

   Faults are dislocations where blocks of earth material on opposite sides of the faults have moved in relation to one another. Rapid slippage of blocks of earth past each other can cause energy to be released, resulting in an earthquake. There is evidence of fault offset in older strata underlying the surficial cover, but no evidence of movement on the faults in the last 10,000 years. No active faults have been identified along the Project route (Crone and Wheeler 2000). An active fault demonstrates that movement has taken place in the last 10,000 years (USGS 2009).

   There has been no seismic activity recorded in North Dakota from 1990 to 2006 (USGS 2006a). Seismicity is the intensity, frequency, and location of earth quakes in a given area. Ground motion hazards result when energy from an earthquake is propagated through the ground. The USGS ground motion hazard mapping indicates that potential ground motion hazard along the Project route is low.

The Project route crosses landslide prone areas on either side of Lake Sakakawea (Section B.2.2, Geology and Minerals). There is the potential for landslides on the north and south sides of Lake Sakakawea (Murphy 2004a,b; 2003). Deeply incised glacial sediment has created “badland” topography. This, combined with steep slopes, has created unstable conditions near the lake.

5. *Areas within 500 feet of a residence, school, or place of business*

   There are four residences within 1,000 feet of the Project route, the nearest of which is approximately 574 feet from the Project route. The other three range from 700 feet to approximately 989 feet from the Project route. The church (active) is approximately 365 feet from the Project route.

6. *Reservoirs and municipal water supplies.*

   Lake Sakakawea, a reservoir of the Missouri River, occurs along the Project route. An existing pipeline at the Lake Sakakawea crossing (approximately 2.4 miles long) would connect with the northern and southern segments of the Project route. No municipal water source intake locations occur along the Project route.

7. *Water sources for organized rural water districts.*

   Lake Sakakawea, which is crossed by the Project route, is a water source for a rural water association. This water source would not be affected since an existing pipeline would be repurposed and used for crude oil transportation.

8. *Irrigated land.*

   Irrigated land is not present along the Project route.

9. *Areas of recreational significance that are not designated as exclusion areas.*

   None are located along the Project route.

D.4.3 Selection Criteria

In selecting its proposed corridor, a corridor or route shall be designated only when it is demonstrated to the PSC by the applicant that any significant adverse effects that would result from the location, construction, and maintenance of the facility as they relate to the following, would be at an acceptable minimum, or that those effects would be managed and maintained at an acceptable minimum. Selection criteria along the Project route are illustrated in **Appendix F**, **Figures F-5** and **F-6**. Selection criteria include:

1. *Agricultural production.*

   Land along the Project route is predominantly used for agricultural production, which could not be avoided during the corridor identification process.

2. *Family farms and ranches.*

   Family farms and ranches could not be avoided during the route selection process since the Project area is used primarily for agricultural production.

3. *Land which the owner can demonstrate has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation.*

   Irrigated lands do not occur along the Project route. Land suitable for future irrigation along the Project route has not been identified at this time.

4. *Surface drainage patterns and groundwater flow patterns.*

   Section B.2.5, Water Resources, provides a general description of the hydrology and surface drainage along the Project route. Perennial, ephemeral, and intermittent creeks and wetlands occur along the Project route would be avoided to the extent practicable.

5. *Sound-sensitive land uses.*

   Section B.2.14, Noise, provides information regarding noise impacts to potential sensitive receptors along the Project route.

6. *The visual effect on the adjacent area*.

   Section B.2.13, Visual Resources, provides information regarding potential impacts to the visual landscape and potential sensitive receptors along the Project route.

7. *Extractive and storage resources.*

   The Project route in McKenzie and Williams counties generally parallels the Nesson Anticline where numerous oil and gas fields have been developed and is the epicenter of the current Bakken Play in North Dakota. Lignite coal reserves are traversed by the Project route but these areas would not likely be developed in the future (B.2.2, Geology and Minerals).

8. *Wetlands, woodlands, and wooded areas.*

   Wetlands and wooded areas occur in localized areas along the Project route (Section B.2.6, Wetlands and Floodplains and Section B.2.7, Vegetation Resources). Impacts to these areas would be avoided or minimized with implementation of the environmental protection measures (**Appendix E**).

9. *Radio and television reception, and other communication or electronic control facilities.*

   Several radio, television, and other communication facilities occur within the Project vicinity. However, the operation of the Project would not affect either communication transmission or reception.

10. *Human health and safety.*

    Potential impacts to human health and safety are addressed in Sections B.2.18, Public Safety, and B.2.19, Hazardous Materials and Solid Waste.

11. *Animal health and safety.*

    Potential impacts to animal health and safety are addressed in Section B.2.9, Wildlife and Fisheries, and B.2.10, Special Status Species.

12. *Plant life.*

    Potential impacts to plant life are addressed in Sections B.2.7, Vegetation Resources, B.2.8, Noxious and Invasive Species, and B.2.10, Special Status Species.

D.4.4 Policy Criteria

The PSC may give preference to an applicant that would maximize benefits that result from the adoption of the following policies and practices, and in a proper case, may require the adoption of such policies and practices. The PSC also may give preference to an applicant that would maximize interstate benefits. Policy criteria include:

1. *Location and design.*

   The Project route was selected to avoid sensitive resources to the extent possible.

2. *Training and utilization of available labor in North Dakota for the general and specialized skills required.*

   Not applicable.

3. *Economics of construction and operation.*

   Section D.4.5.1, Economic Considerations, provides the estimated construction and operational costs associated with the Project.

4. *Use of citizen coordinating committees.*

   Not applicable.

5. *A commitment of a portion of the transmitted product for use in North Dakota.*

   The crude oil would be transported to other states.

6. *Labor relations.*

   Union and non-union construction contractors would bid on the Project. The construction contract would be awarded to the lowest qualified bidder. Pipeline construction would require special skills and equipment. The construction contractor would be encouraged to use local labor, when possible.

7. *The coordination of facilities.*

   Hess is proposing to construct an approximately 25-mile-long pipeline connecting Bakken production fields south of Lake Sakakawea to existing processing facilities north of the lake. The Project would transport crude oil from the Hawkeye Oil Facility near Keene, North Dakota, to the existing Ramberg Truck Facility near Tioga, North Dakota.

8. *Monitoring of impacts.*

   Monitoring of reclamation lands would be completed for 5 years following construction and reclamation. During construction, monitoring would be completed within fossil-bearing formations along the Project route in the event paleontological resources are observed. Environmental inspection would be completed during all construction phases of the Project.

9. *Utilization of existing and proposed ROWs and corridors.*

   Existing pipeline ROWs at the Lake Sakakawea crossing are part of the Project, and the Project route parallels several existing ROWs.

10. *Other existing or proposed transmission facilities.*

    Not applicable.

D.4.5 Design and Construction Limitations

In order to serve the intended functions of transmitting crude oil from south of Lake Sakakawea to north of Lake Sakakawea, the proposed pipeline must originate at the Hawkeye Oil Facility and terminate at the Ramberg Truck Facility. Areas of construction limitations including exclusion areas, avoidance areas, selection criteria, and policy criteria are described in sections D.4.1 through D.4.4 and illustrated in **Appendix F**, **Figures F-1** through **F-6**.

D.4.5.1 Economic Considerations

Hess is committed to constructing the proposed pipeline and Hawkeye Oil Facility as economically as possible while strictly adhering to the PSC's criteria. The anticipated construction cost for installation of the proposed pipeline and the Hawkeye Oil Facility within the Project corridor is circa $ 164million; annual operation costs are estimated at approximately $2.5 per year for the proposed pipeline and approximately $1.5 per year for the proposed Hawkeye Oil Facility.

D.5 Environmental Protection Measures

Construction specifications would be designed to minimize potential impacts associated with the proposed pipeline and Hawkeye Oil Facility. Certain impacts may not be entirely avoidable, but could be mitigated to reduce the severity and longevity. Specific environmental protection measures for the Project have been provided in **Appendix E**.

D.6 List of Preparers and Qualifications

This application for a Route Permit was prepared by Stantec, Hess, and Metcalf Archaeological Consultants. The qualifications of the individuals who participated in the preparation and review of this application are provided in **Table D-1**.

Table D-1 Qualifications of Application Preparers

Company and Person	Responsibilities	Education and Experience
Stantec Consulting Ltd.		
Jon Alstad	Route Permit Application Manager	M.S. Range Science B.S. Animal Science A.A. Liberal Arts 26 Years Experience
Erin Bergquist	Vegetation, Noxious Weeds, Wetlands and Floodplains, Special Status Species (plants)	M.S. Ecology B.A. Environmental Studies and Economics 12 Years Experience
Matt Brekke	Biological Resources, Wildlife and Fisheries, Special Status Species (wildlife, fish)	B.S. Wildlife Biology 7 Years Experience

Table D-1 Qualifications of Application Preparers

Company and Person	Responsibilities	Education and Experience
Chuck Herrmann	Soils	B.S Soil Science 16 Years Experience
Bernie Strom	Land Use, Recreation, Visual Resources, Noise, Socioeconomics, Environmental Justice, Transportation	MCRP (City and Regional Planning) B.S. Urban Planning 34 Years Experience
Kim Munson	Cultural Resources, Native American Traditional Values	M.A. Anthropology B.A. Anthropology 29 Years Experience
Taylor Robinson	Application Coordinator, Public Safety, Hazardous Materials and Solid Waste	B.S. Ecology and Evolutionary Biology 2 Years Experience
Nicole Lynass	Application Coordinator	B.S. Natural Resources Management Minor, Business Administration 3 Years Experience
Debbie Thompson	Word Processor	A.A.S. Business Secretary, Two Years General Studies 28 Years Experience
Brian Taylor	GIS, Graphics	B.A. Geography, emphasis GIS 7 Years Experience
Hess Corporation – Tioga, North Dakota/Houston, Texas		
Murray Jackson	Project Manager	L.L.B. Law and Economics Pg Cert Oil and Gas Engineering 17 Years Experience
Roy Nelson	Construction Manager	B.S. Mechanical Engineering Marine Engineer Institute 40 years of international construction and engineering experience Onshore and Offshore Pipeline Construction experience including cross-country, facilities and street work

D.7 Maps

Detailed maps (i.e. figures) of the pipeline and facilities have been provided in **Appendix A** and **Appendix F**.

D.8 Permits, Licenses, Approvals, and Consultation Requirements

The Project would require federal, state, and local authorizations for many aspects of construction, operation, maintenance, and abandonment. It is the Applicant's responsibility to fulfill all requirements of any applicable statutes, regulations, and policies. **Table D-2** lists permits, approvals, and reviews necessary for implementation of the project. Correspondence with federal and state agencies regarding the Project is provided in **Appendix I**.

Table D-2 Federal, State, and Local Permits, Approvals, and Reviews Required for Construction and Operation of the Project

Agency	Nature of Action	Authority
Federal Permits, Approvals, and Reviews		
U.S. Department of the Interior, BLM	Grant ROWs and issue temporary use permits for federal lands following NEPA review	Section 28 of the MLA, as amended
	Issue cultural resource permit to excavate or remove cultural resources on federal lands	Archaeological Resources Protection Act of 1979, 16 USC Section 470aa-47011; 43 CFR 3
USFS	Review proposal for consistency with Land and Resource Management Plan. Provide BLM with reasonable and necessary measures to minimize impacts to LMNG resources.	Section 28 of the MLA, as amended
USACE	Review, provide stipulations, approve, and adopt BLM's decision for issuance of a ROW and Special Use Permits across USACE lands	40 CFR 1506.3(a)
	Issue Section 404 permit for placement of dredged or filled material in Waters of the U.S.	Section 404 of the CWA of 1972 (40 CFR 122-123); 33 USC Section 1344; 33 CFR 323, 325
	Issue Section 10 permit for crossing navigable water in the U.S.	Section 10 of the Rivers and Harbors Act of 1899, 33 USC 401-413
	Outgrant Application Permit to Construct	Required for construction on lands managed by the USACE
USFWS	Section 7 Consultation process for endangered or threatened species	Endangered Species Act (ESA) of 1973; 16 USC 1531 et seq.
USDOT – PHMSA	Review and approve Integrity Management Plan for High Consequence Areas	49 CFR 195
	Review and approve Emergency Response Plan	49 CFR 194
Advisory Council on Historic Preservation	Review and compliance activities related to cultural resources	Section 106 NHPA (16 USC 470) (36 CFR 80)
State of North Dakota		
North Dakota State Historical Society	Review and comment on activities potentially affecting cultural resources	Consultation under Section 106, NHPA
Department of Health, Division of Water Quality	Permit for stream and wetland crossings/consultation for USACE Section 404 process	Section 401 CWA, Water Quality Certification
	Permit regulating hydrostatic test water discharge and construction dewatering and storm water to waters of the state	National Pollutant Discharge Elimination System (NPDES) Temporary Dewatering/ Hydrostatic Testing Permit (NDG07000), Storm Water Discharge Permit NDR10- 0000
Department of Health, Division of Air Quality	Permit to construct	Clean Air Act
Public Service Commission	Permit for construction of a pipeline within an approved corridor and along an approved route	Energy Conversion and Transmission Facility Siting Act Corridor Certificate and Route Permit
North Dakota Game and Fish Department	Consultation and review	Assess potential effects to fish and wildlife

Table D-2 Federal, State, and Local Permits, Approvals, and Reviews Required for Construction and Operation of the Project

Agency	Nature of Action	Authority
North Dakota State Water Commission	Section 401 CWA Certification	CWA
	State Sovereign Lands Permit	NDCC 28-32-02, 61-03-13
	Water Use	Temporary Water Use Permit SWC Form 247
Department of Transportation	Utility Occupancy Permit	ROW occupancy permit for state roadway crossings
Counties	Conditional Use/Pipeline Permit/Road Crossing Permits	Required for pipeline construction

D.9 References

Section B.2.1, Air Quality

U.S. Environmental Protection Agency (USEPA). 2005. Storage Tank Emissions Calculation Software Version 4.09D, Emission Factor and Inventory Group, Emissions, Monitoring, and Analysis Division, Office of Air Quality Planning and Standards U.S. TANKS 4.09D - October 3, 2005.

Section. B.2.2, Geology and Minerals

Carlson, C. G. 1985. Geology of McKenzie County, North Dakota. North Dakota Geological Survey Bulletin 80 – Part I, 55 p.

Carlson, C. G. 1983. Geology of Billings, Golden Valley, and Slope Counties, North Dakota. North Dakota Geological Survey Bulletin 76 – Part I, 40 p.

Freers, T. F. 1970. Geology and Ground Water Resources of Williams, County, North Dakota, Part I - Geology. North Dakota Geological Survey Bulletin 48, 55p.

North Dakota Division of Oil and Gas. 2014. North Dakota Cumulative Oil Production By Formation Through December 2010. Internet website: https://www.dmr.nd.gov/oilgas/stats/statisticsvw.asp. Accessed Spring 2013.

Section B.2.3, Paleontological Resources

N/A

Section B.2.4, Soils

Natural Resource Conservation Service (NRCS). 2014. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Internet website: http://websoilsurvey.nrcs.usda.gov/. Accessed November 25, 2014.

Section B.2.5, Water Resources

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Appendix A, Project Overview Map and Engineering Drawings

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Appendix A

Project Overview Map and Engineering Drawings

Legend

- Proposed Facility
- Existing Facility
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline (Including 2 Fiber Optic Cables)
- Repurposed Pipeline with 4, 24-strand Fiber Optic Cables
- Project Corridor

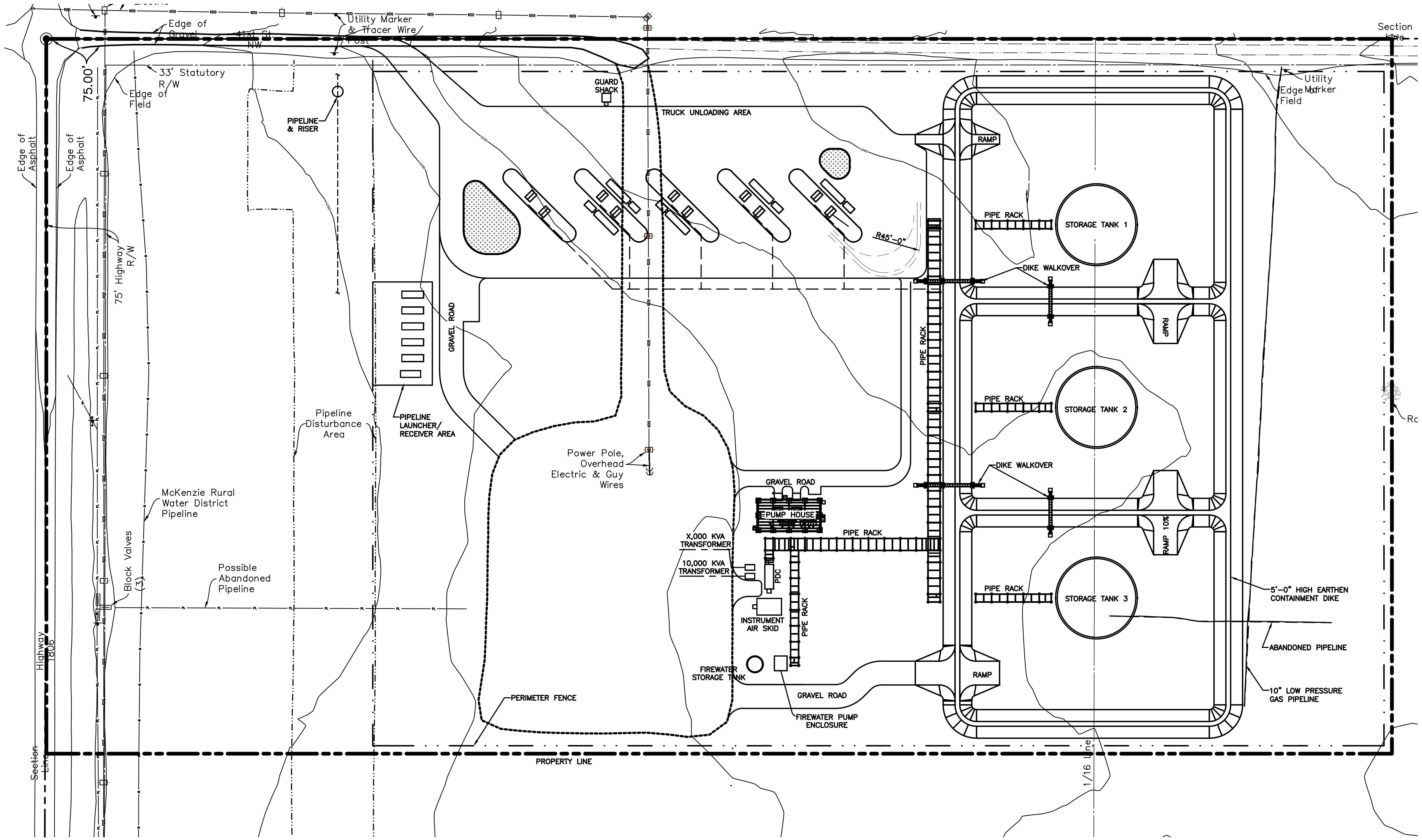
Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-1

Crude Oil Pipeline Project Corridor and Route

0 0.5 1 2
Miles



Location
McKenzie Co., ND

Project Information
Project Number: 212205020
Last Modified: November 18, 2014

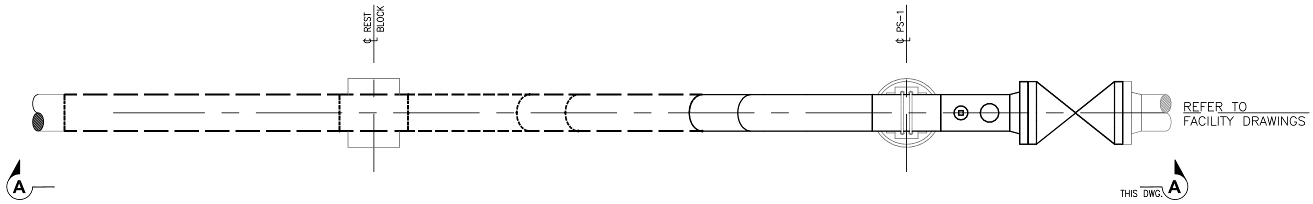
Note: Not to Scale

Data Sources: Hess 2014.

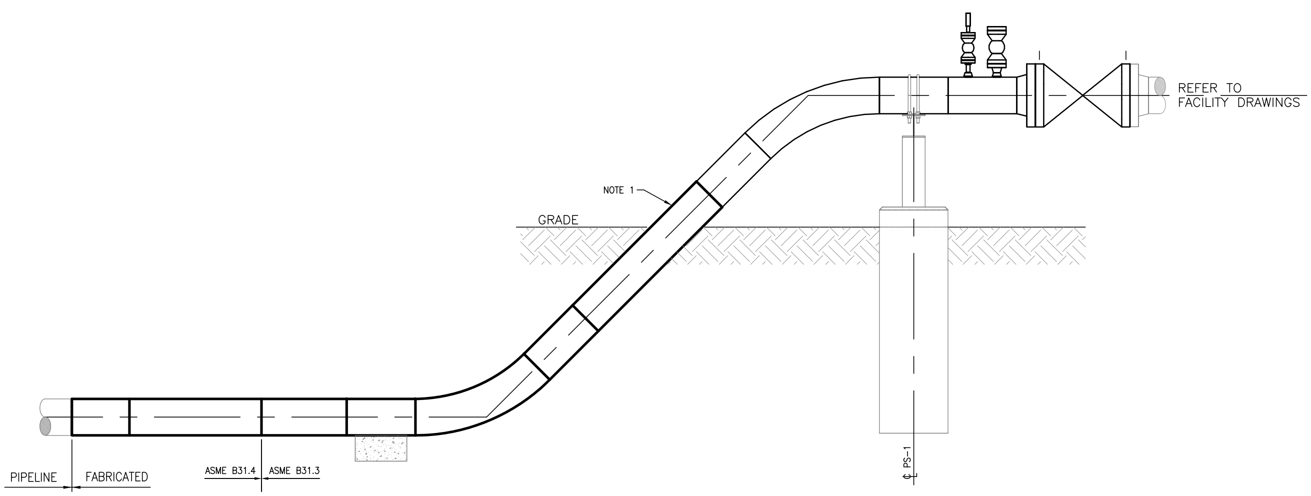
Hawkeye Pipeline System Project

Figure A-2

Hawkeye Oil Facility



PLAN



SECTION A-A THIS DWG.

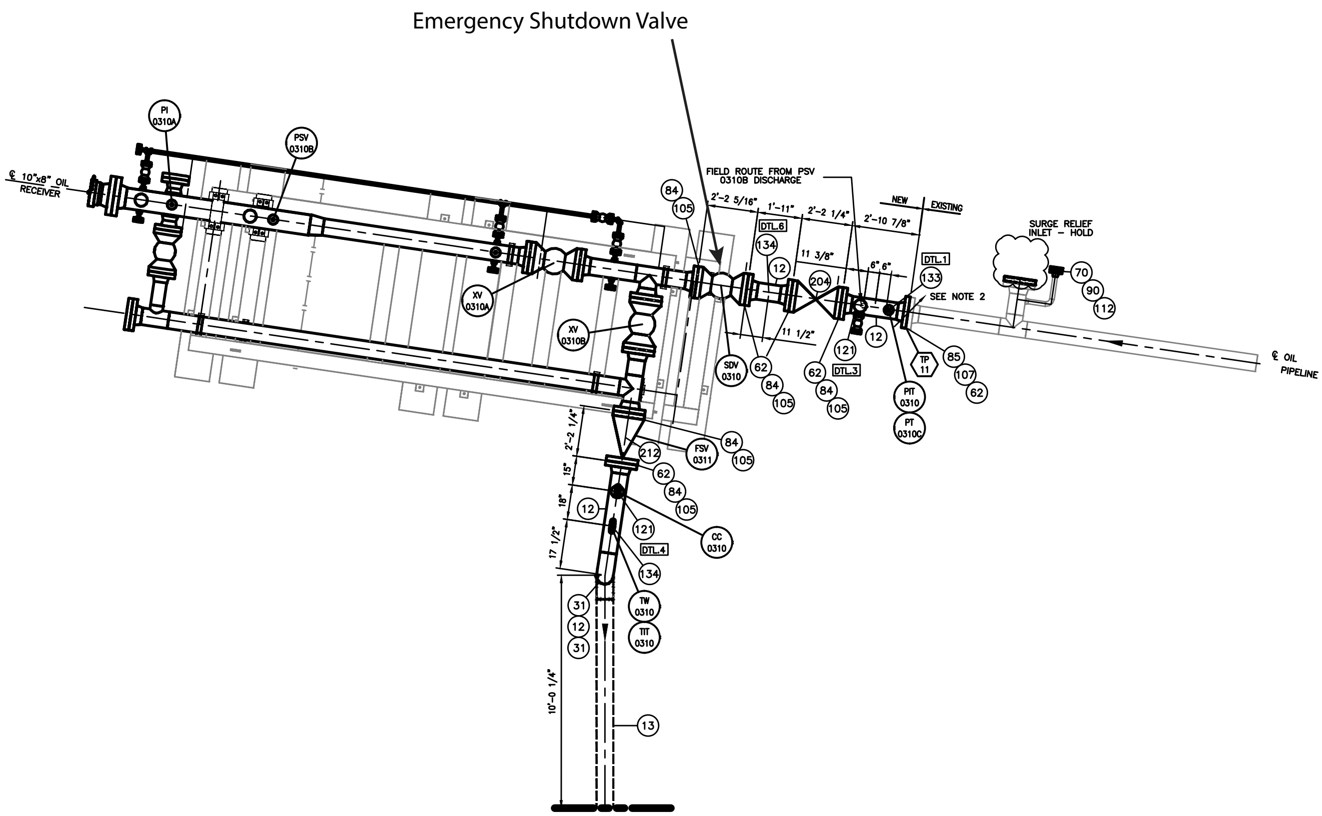
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-3

Crude Oil Pipeline - Mainline Valve Site Plan and Elevation



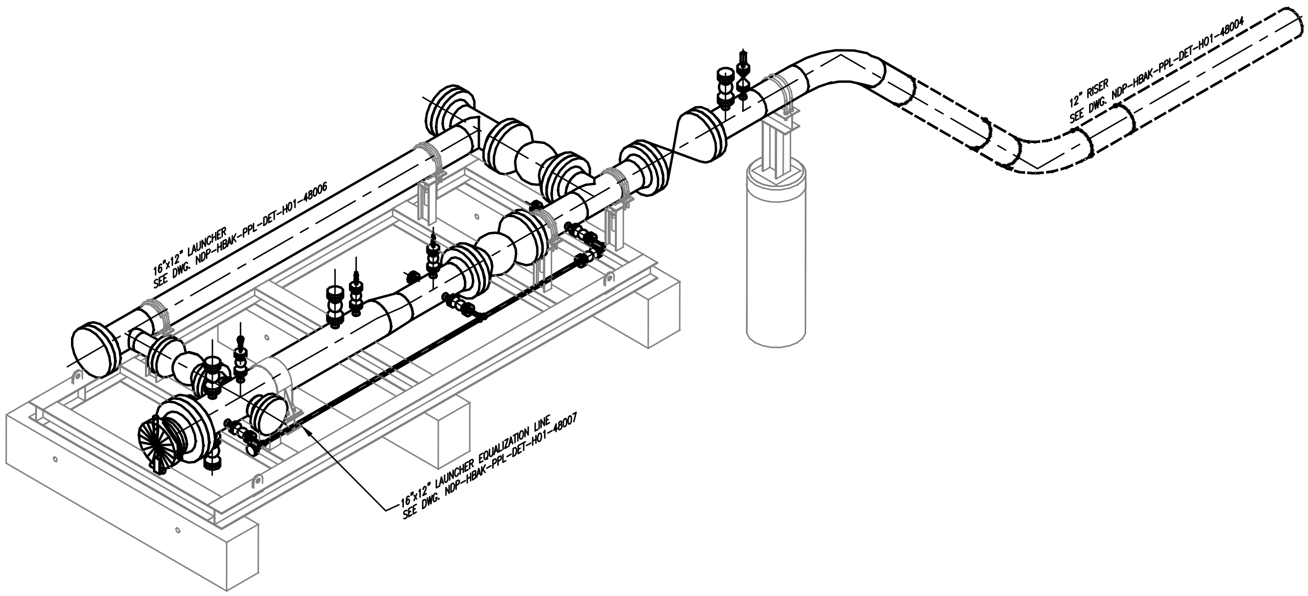
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-4

Crude Oil Pipeline - Emergency Shutdown Valve



ISOMETRIC VIEW

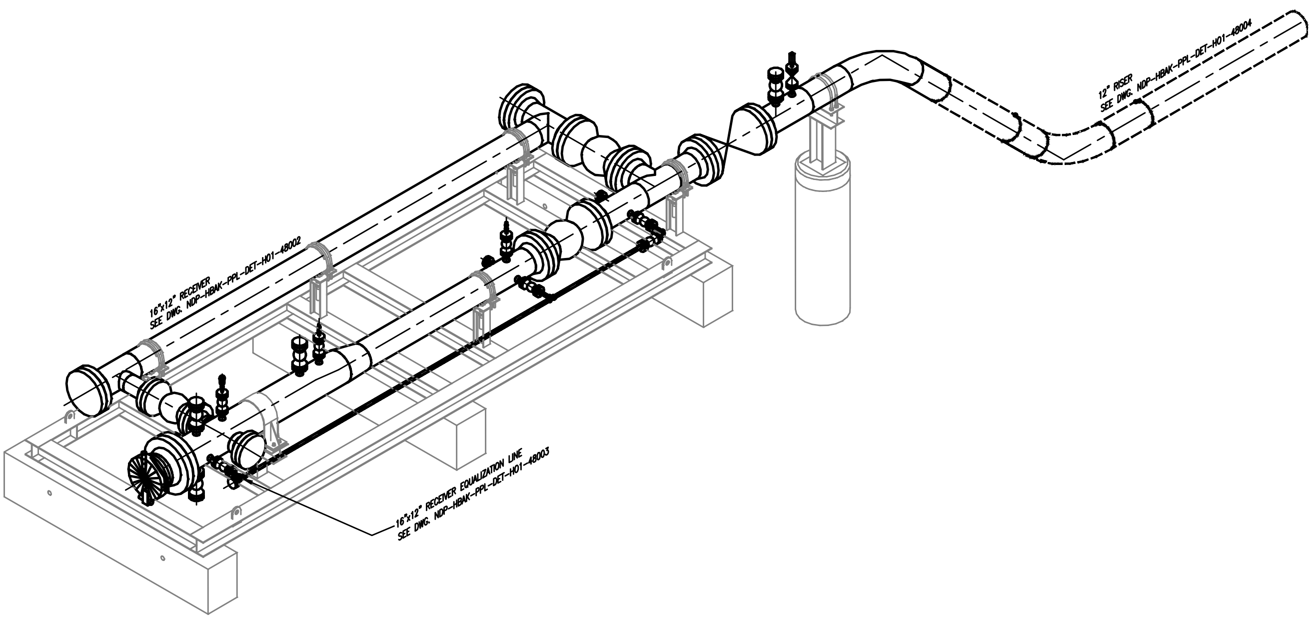
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-5

Crude Oil Pipeline - Pig Launcher Skid



ISOMETRIC VIEW

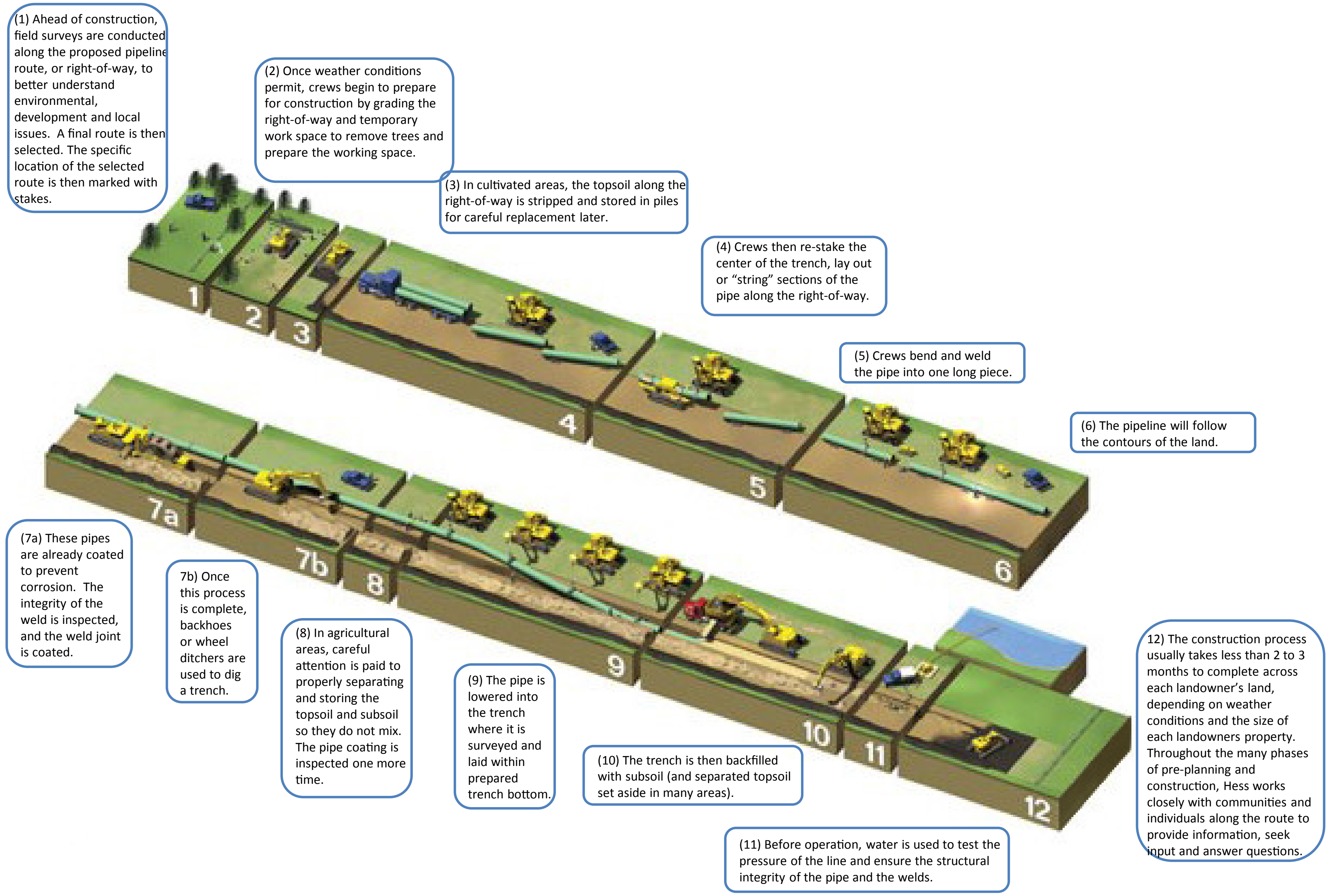
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-6

Crude Oil Pipeline - Pig Reciever Skid



Location
McKenzie Co., ND

Project Information
Project Number: 212205020
Last Modified: November 18, 2014

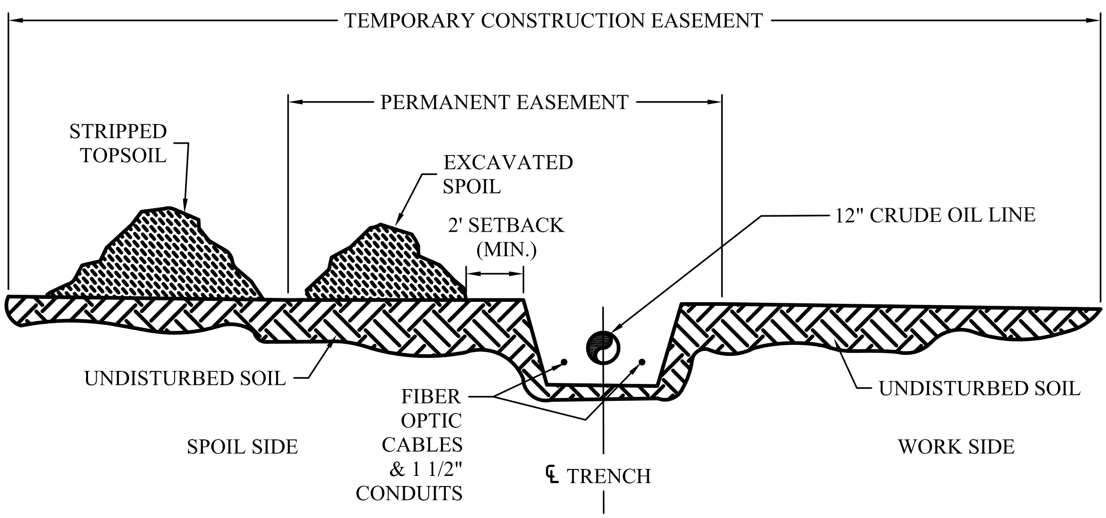
Note: Not to Scale

Data Sources: Hess 2014.

Hawkeye Pipeline System Project

Figure A-7

Typical Construction Sequence



NOTES:

1. EASEMENT WIDTHS ARE:
   PRIVATE PROPERTY:
   100' TEMPORARY,
   50' PERMANENT

2. TOPSOIL MAY BE STORED IN LOCATIONS AS SHOWN ABOVE, OR AT OTHER COMPANY APPROVED LOCATIONS WITHIN THE CONSTRUCTION RIGHT-OF-WAY.

3. LEAVE GAPS IN SPOIL PILES FOR WATER RUN-OFF.

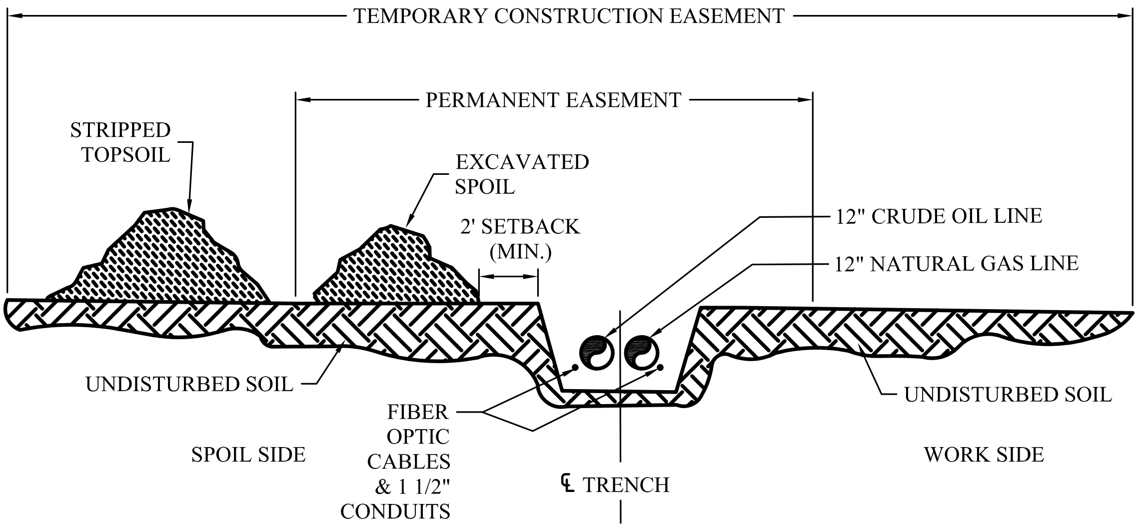
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-8

Construction ROW - Crude Oil



NOTES:

1. EASEMENT WIDTHS ARE:
   PRIVATE PROPERTY:
   100' TEMPORARY,
   50' PERMANENT;

   STATE PROPERTY:
   100' TEMPORARY,
   33' PERMANENT

2. TOPSOIL MAY BE STORED IN LOCATIONS AS SHOWN ABOVE, OR AT OTHER COMPANY APPROVED LOCATIONS WITHIN THE CONSTRUCTION RIGHT-OF-WAY.

3. LEAVE GAPS IN SPOIL PILES FOR WATER RUN-OFF.

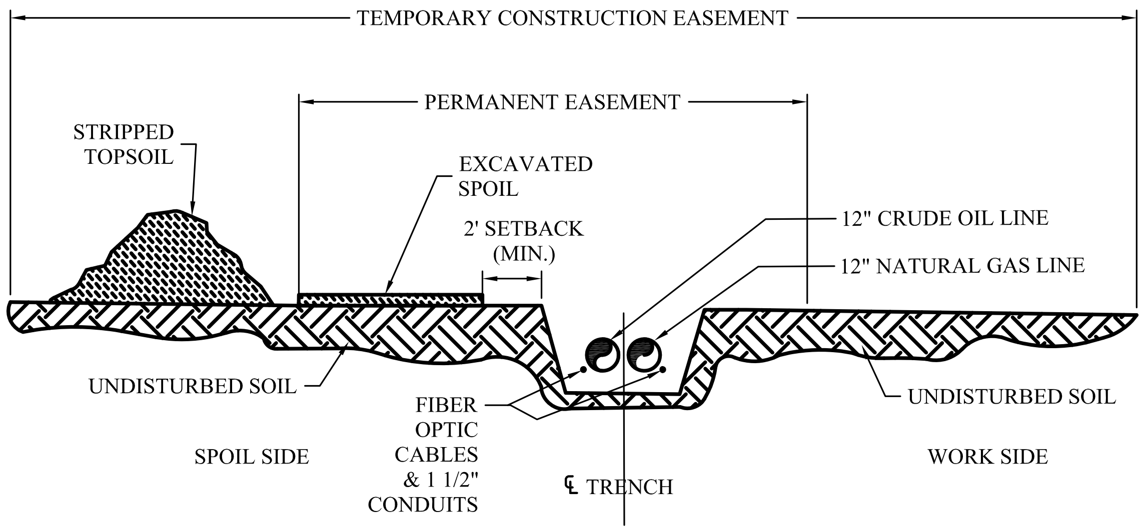
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-9

Construction ROW - Crude Oil and Natural Gas



NOTES:

1. EASEMENT WIDTHS ARE:
   PRIVATE PROPERTY:
   50' TEMPORARY,
   20' PERMANENT

2. TOPSOIL MAY BE STORED IN LOCATIONS AS SHOWN ABOVE, OR AT OTHER COMPANY APPROVED LOCATIONS WITHIN THE CONSTRUCTION RIGHT-OF-WAY.

3. LEAVE GAPS IN SPOIL PILES FOR WATER RUN-OFF.

4. DECOMPACTION WILL BE PROVIDED ON THE WORKING SIDE OF THE TRENCH.

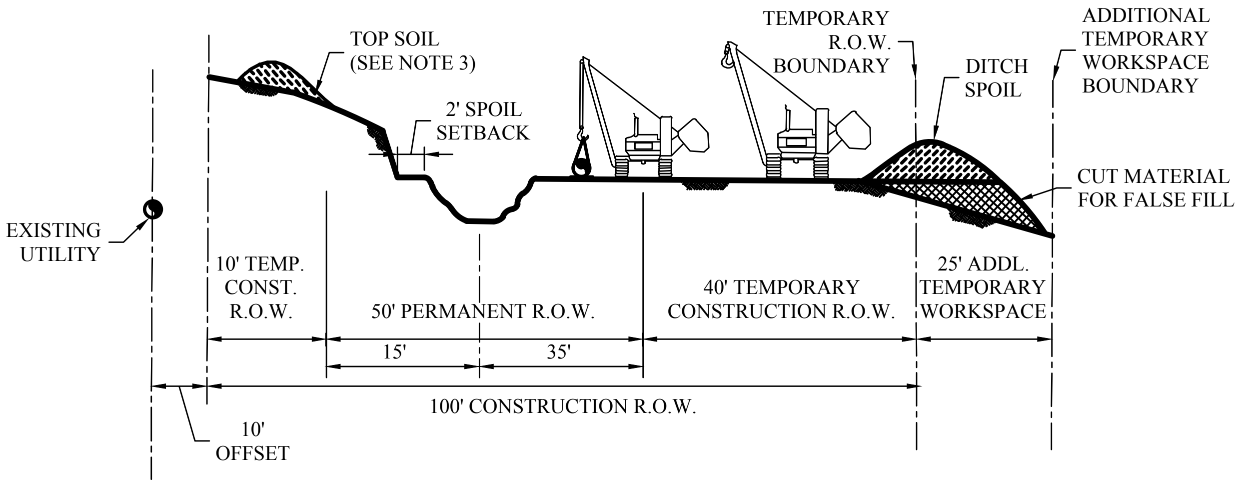
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-10

Construction ROW - Crude Oil and Natural Gas on USFS Land



<u>NOTES</u>:

1. DIMENSIONS ARE TYPICAL, SEE ALIGNMENT SHEETS FOR ACTUAL RIGHT-OF-WAY CONFIGURATIONS AND CLEARING LIMITS.

2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 125 FT WIDE, CONSISTING OF 50 FT OF PERMANENT EASEMENT, 50 FT OF TEMPORARY WORKSPACE AND 25 FT OF ADDITIONAL TEMPORARY WORKSPACE. FURTHER ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.

3. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CANALS OR WETLANDS.

4. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE TRENCH, AND SPOIL SIDES.

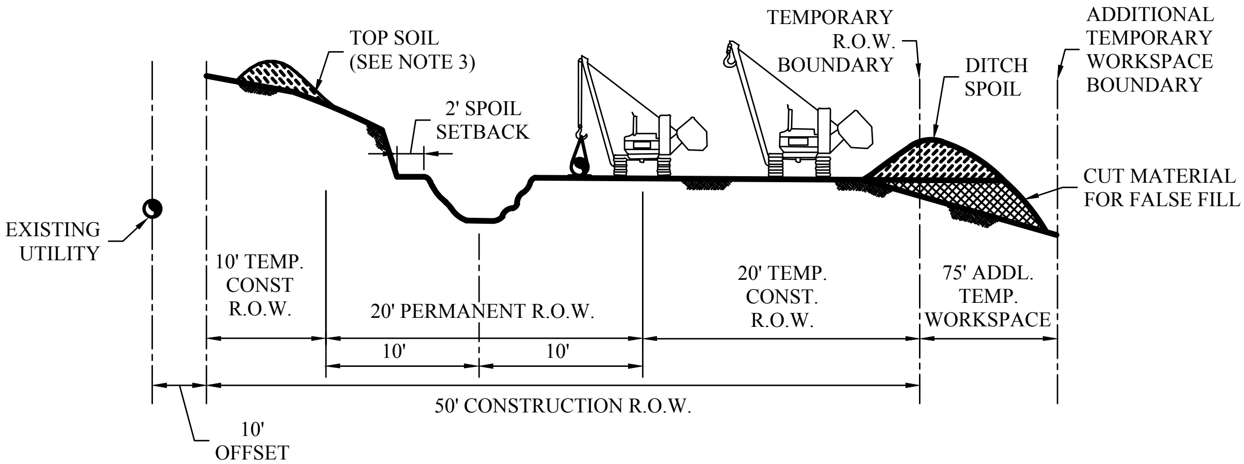
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-11

Construction ROW - Down Side Slope



NOTES:

1. DIMENSIONS ARE DESIRED, SEE ALIGNMENT SHEETS FOR ACTUAL RIGHT-OF-WAY CONFIGURATIONS AND CLEARING LIMITS.
2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 125 FT WIDE, CONSISTING OF 50 FT OF PERMANENT EASEMENT, 50 FT OF TEMPORARY WORKSPACE AND 25 FT OF ADDITIONAL TEMPORARY WORKSPACE. FURTHER ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
3. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CANALS OR WETLANDS.
4. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE TRENCH, AND SPOIL SIDES.

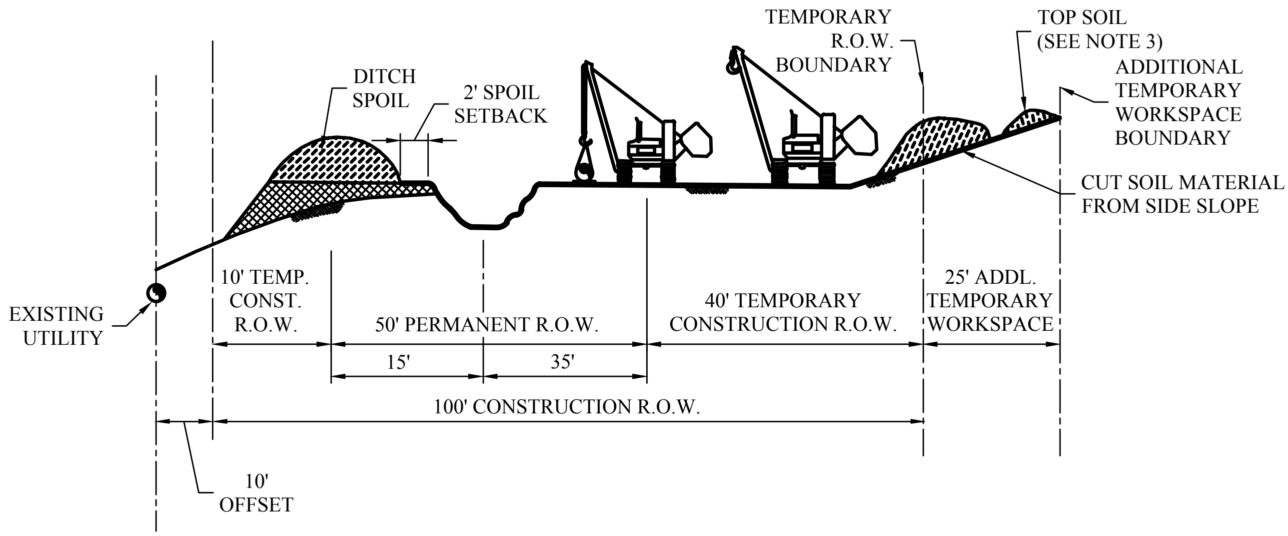
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-12

Construction ROW - Down Side Slope on USFS Land



NOTES:

1. DIMENSIONS ARE TYPICAL, SEE ALIGNMENT SHEETS FOR ACTUAL RIGHT-OF-WAY CONFIGURATIONS AND CLEARING LIMITS.

2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 125 FT WIDE, CONSISTING OF 50 FT OF PERMANENT EASEMENT, 50 FT OF TEMPORARY WORKSPACE AND 25 FT OF ADDITIONAL TEMPORARY WORKSPACE. FURTHER ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.

3. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CANALS OR WETLANDS.

4. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE TRENCH AND SPOIL SIDES.

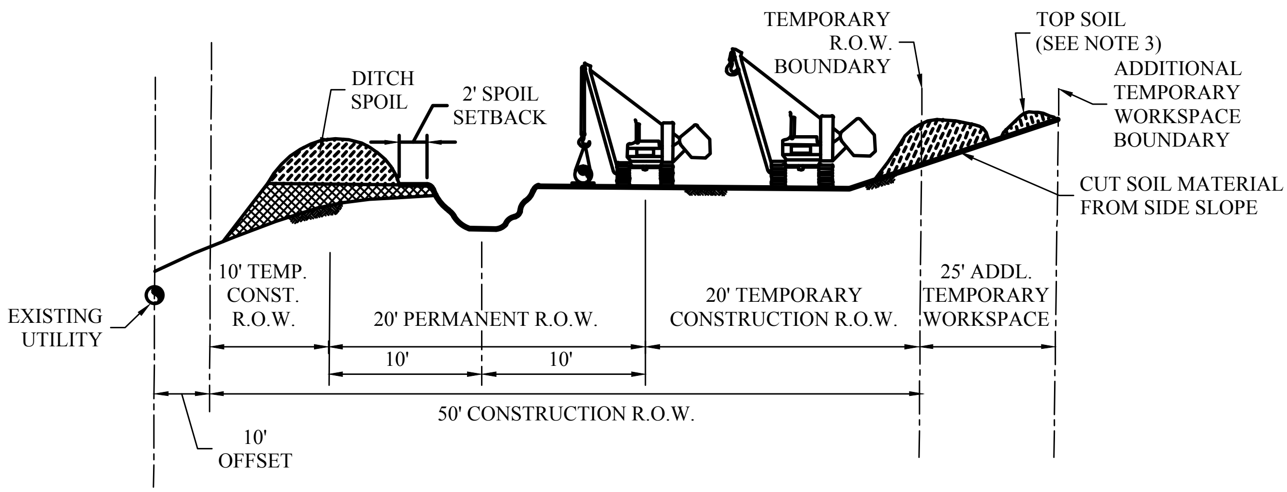
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-13

Construction ROW - Upward Side Slope



NOTES:

1. DIMENSIONS ARE TYPICAL, SEE ALIGNMENT SHEETS FOR ACTUAL RIGHT-OF-WAY CONFIGURATIONS AND CLEARING LIMITS.

2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75 FT WIDE, CONSISTING OF 20 FT OF PERMANENT EASEMENT, 30 FT OF TEMPORARY WORKSPACE AND 25 FT OF ADDITIONAL TEMPORARY WORKSPACE. FURTHER ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.

3. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CANALS OR WETLANDS.

4. TOPSOIL AND SUBSOIL SHALL BE STRIPPED AND SEGREGATED FROM THE ENTIRE 75 FT R.O.W. (TRENCH, SPOIL, AND WORKING SIDES).

Not to Scale

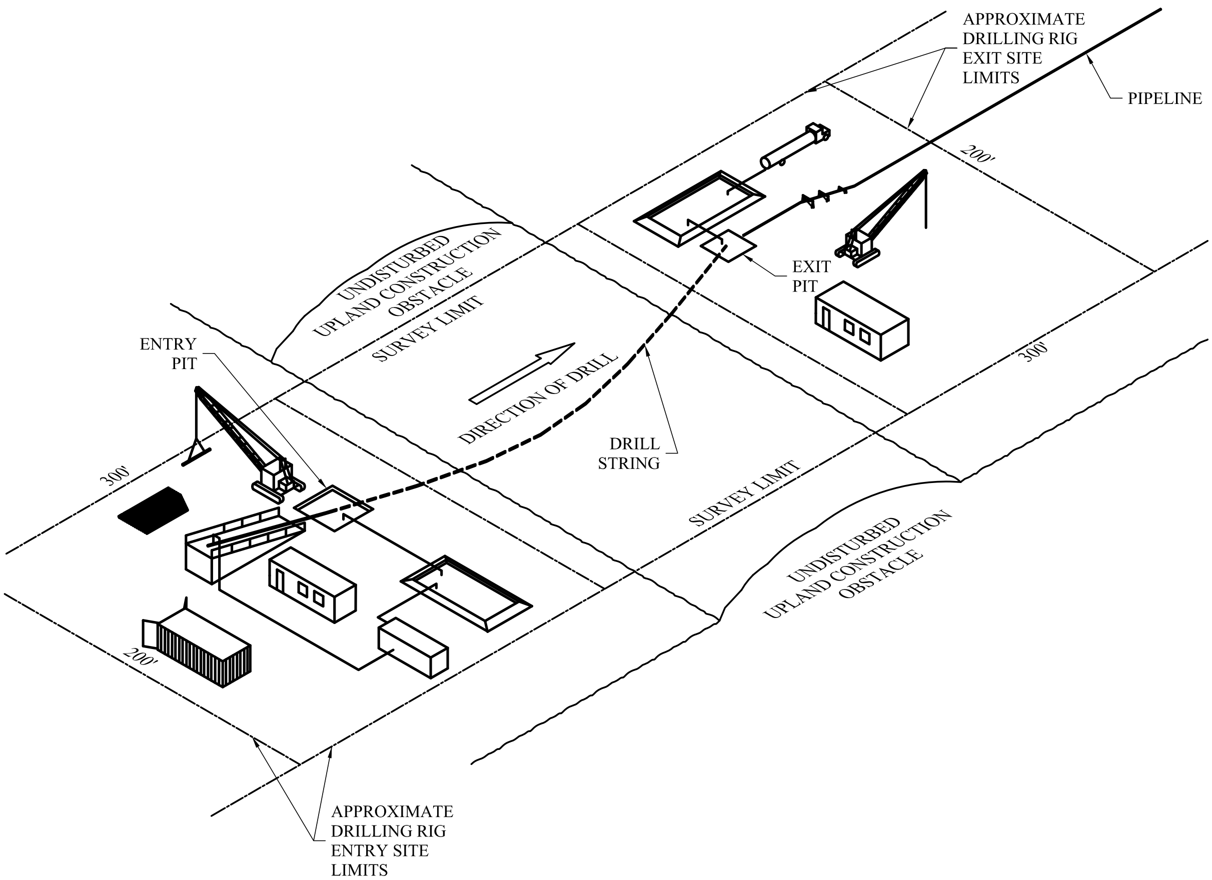
Source: Hess 2014.

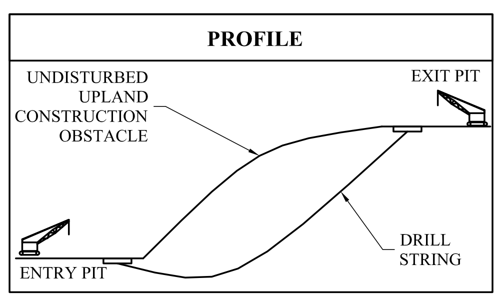
Hawkeye Pipeline System Project

Figure A-14

Construction ROW - Upward Side Slope on USFS Land

DIRECTIONAL DRILLING SITE TO SITE





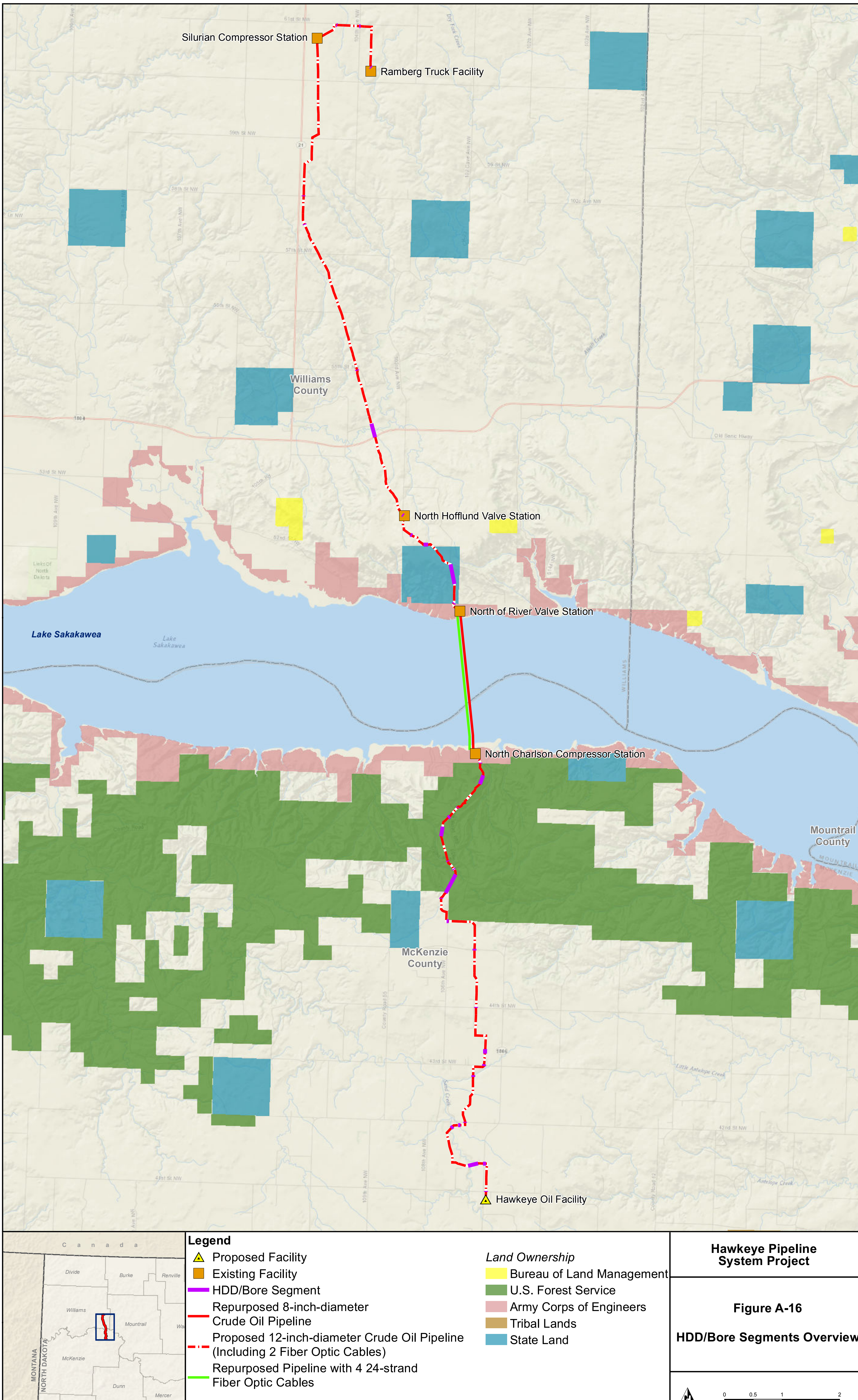
Not to Scale

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure A-15

Typical Construction HDD - Upland Obstacle



Hawkeye Pipeline System Project

Figure A-16

HDD/Bore Segments Overview

Appendix B

Natural Resources Report

Natural Resources Report

Hess Hawkeye Pipeline System Project

Williams and McKenzie Counties, North Dakota

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November 14, 2014

Sign-off Sheet

This document entitled *Natural Resources Report* was prepared by Stantec Consulting Services Inc. for the account of Hess Corporation. The material in it reflects Stantec's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Stantec Consulting Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Prepared by ____

(signature)

Erin Bergquist

Reviewed by ____

(signature)

Kim Munson

Acronyms and Abbreviations

°F	degrees Fahrenheit
CWA	Clean Water Act
ESA	Endangered Species Act
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GPS	global positioning system
NDSCO	North Dakota State Climate Office
NGL	natural gas liquids
NRCS	Natural Resources Conservation Service
OBL	obligate
OHWM	ordinary high water mark
PEM	palustrine emergent
Project	Hawkeye Pipeline System Project
PSC	Public Service Commission
Stantec	Stantec Consulting Services Inc.
SWCA	SWCA Environmental Consultants
UPL	upland
U.S.	United States
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WUS	waters of the U.S.

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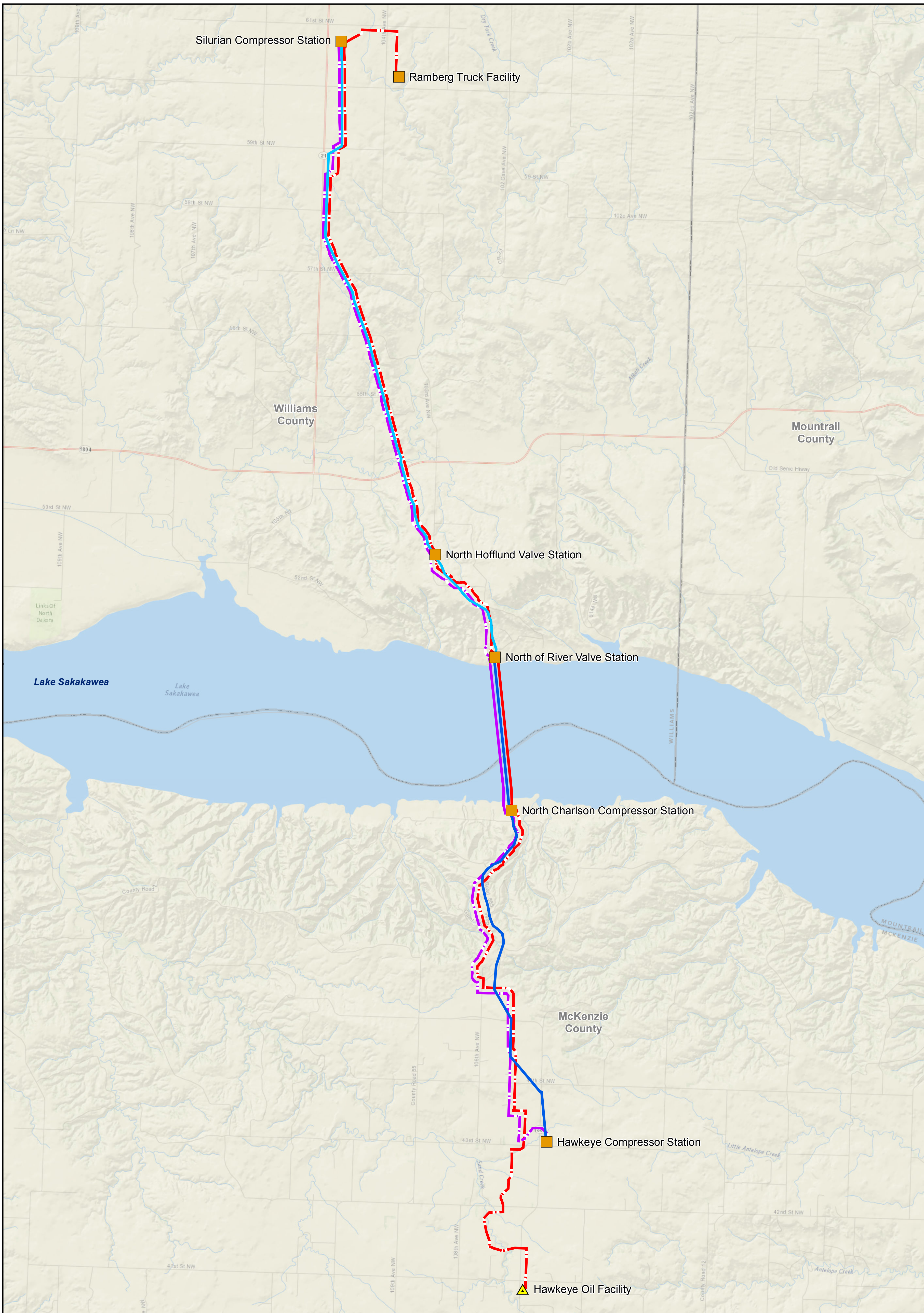
1.0 Introduction

Hess is proposing to construct an approximately 26-mile-long pipeline system connecting Bakken production fields south of Lake Sakakawea to existing processing facilities north of the lake. The Hawkeye Pipeline System Project (Project) would transport crude oil from the proposed Hawkeye Oil Facility near Keene, North Dakota, and natural gas and natural gas liquids (NGL) from the existing Hawkeye Compressor Station near Charlson, North Dakota, to the existing Ramberg Truck Facility (crude oil) and the existing Silurian Compressor Station (natural gas and NGL) near Tioga, North Dakota. A depiction of the proposed Project is provided in **Figure 1-1**. The components of the Project include:

- Construction of 22.9 miles of new 12-inch-diameter crude oil pipeline. The proposed pipeline would tie-in to approximately 2.4 miles of existing 8-inch-diameter pipeline at the Lake Sakakawea crossing.
- Construction of 18.3 miles of new 12-inch-diameter natural gas pipeline. The proposed pipeline would tie-in to approximately 2.4 miles of existing 8-inch-diameter pipeline at the Lake Sakakawea crossing. The proposed natural gas pipeline would be laid in the same trench with the proposed crude oil pipeline.
- Conversion of 16.8 miles of existing 8- and 10-inch-diameter natural gas pipeline to a NGL pipeline. The repurposed pipeline would tie-in to approximately 2.4 miles of existing 8-inch-diameter pipeline at the Lake Sakakawea crossing.
- Construction of 24-strand fiber optic lines. The fiber optic lines would be encased in an existing pipeline across Lake Sakakawea, but laid in the trench alongside the new crude oil and natural gas pipelines everywhere else. From the proposed Hawkeye Oil Facility to the Hawkeye Compressor Station, there would be one 24-strand fiber optic line; two 24-strand fiber optic lines from the Hawkeye Compressor Station to the Ramberg Truck Facility; and from the Ramberg Truck Facility to the Silurian Compressor Station, there would be one 24-strand fiber optic line.
- Construction of eight pig launchers (3 crude oil, 3 natural gas, and 2 NGL). All eight pig launchers would be constructed within existing Hess-owned facilities.
- Construction of eight pig receivers (3 crude oil, 3 natural gas, and 2 NGL). All eight pig receivers would be constructed within existing Hess-owned facilities.
- Construction of the Hawkeye Oil Facility, including permanent surface disturbance of approximately 79.7 acres.

Placement, setting, and any associated construction of mainline valves and emergency shutdown valves would be constructed within existing Hess-owned facilities.

As part of the state and federal permitting process, biological surveys were required for both the existing natural gas pipeline proposed for conversion to NGL, and the proposed crude oil and natural gas pipelines (proposed Project route). Biological surveys consisted of surveying for wetland and waterbodies, noxious weeds, woodlands and shrublands, and special status species and their habitat. Surveys were conducted by Stantec Consulting Services Inc. (Stantec) and SWCA Environmental Consultants (SWCA). Surveys were conducted by SWCA on the 2012 proposed route in October 2012 and May and July 2013. Surveys were conducted by Stantec on variations to the 2012 proposed route in October 2013; and July, August, and October 2014.



Legend

- Proposed Facility
- Existing Facility
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline
- Repurposed 8-inch-diameter Natural Gas Pipeline
- Proposed 12-inch-diameter Natural Gas Pipeline
- Repurposed 8-inch-diameter NGL Pipeline
- Repurposed 10-inch-diameter NGL Pipeline

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure 1-1

Overview Map of Hess Hawkeye Pipeline System Project

0 0.5 1 2
Miles

Surveys specifically for USFS sensitive plant species were conducted in July 2013 by SWCA, and July and August 2014 by Stantec.

1.1 SITE DESCRIPTION

The Project area is located entirely within the Northwestern Great Plains ecoregion, encompassing the Missouri Plateau section of the Great Plains of west-central North Dakota. The northern portion of the proposed route is within the Northwestern Glaciated Plains ecoregion crossing the Missouri Coteau Slope. This area slopes up from the Missouri River with level to gently rolling topography.

The landscape consists of a semi-arid rolling plain of shale, siltstone, and sandstone, punctuated by agriculture and rolling plains topography with isolated sandstone buttes and badland formations. The dominant vegetation community in the area is grasslands, with woody draws located in the rolling topography closer to Lake Sakakawea. Grazing and cropland are the dominant land uses.

The elevation ranges from approximately 1,900 to 2,420 feet above sea level. The elevation ranges get lower in the central portion of the Project area, where the Project moves closer to and crosses Lake Sakakawea. The Project alignment crosses private land, as well as lands administered by the United States (U.S.) Army Corps of Engineers (USACE), U.S. Forest Service (USFS), and State of North Dakota. Average precipitation is about 13 inches a year, with temperatures ranging from an average of 37 degrees F (°F) to 41°F (Northern Prairie Wildlife Research Center 2013a,b).

1.2 REGULATIONS AND DEFINITIONS

1.2.1 Wetlands

The USACE regulates wetlands and special aquatic sites determined to be Waters of the U.S. (WUS) under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. The USACE and the U.S. Environmental Protection Agency define wetlands as "…those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands typically include swamps, marshes, bogs, and other similar areas" (USACE 1987). This definition takes into consideration three distinct environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. The CWA defines the term WUS as:

"a. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

b. All interstate waters including interstate wetlands;

c. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

1. *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
2. *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
3. *Which are used or could be used for industrial purpose by industries in interstate commerce;*

d. *All impoundments of waters otherwise defined as WUS under the definition;*

e. *Tributaries of waters identified in paragraphs (a) through (d) above;*

f. *The territorial seas;*

g. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (g).*

   a. *Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 Code of Federal Regulations 123.11(m), which also meet the criteria of this definition) are not WUS.*

h. *WUS do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA"* (USACE 1977).

1.2.1.1 USACE Nationwide Permit 12

The USACE Nationwide Permit 12 authorizes the construction of utility lines and associated facilities in WUS, provided the activity does not result in the permanent loss of greater than 0.5 acre of WUS, including wetlands. Nationwide Permit 12 also authorizes the construction of access roads for utility lines, provided that the access road:

- Does not result in the permanent loss of greater than 0.5 acre of WUS;
- Is constructed to the minimum width necessary;
- Is constructed so that the length of the road minimizes any adverse effects to WUS; or
- Is as near as possible to pre-construction contours and elevations and is properly bridged or culverted when constructed above pre-construction contours.

If the access roads are used exclusively for construction purposes, they must be temporary and removed upon project completion.

Nationwide Permit 12 requires that the permittee submit a pre-construction notification prior to commencing construction if any of the following criteria are met.

- The activity involves mechanized land clearing in a forested wetland.
- A Section 10 permit is required to cross a navigable waterbody (Rivers and Harbors Act).
- The utility line exceeds 500 feet in length through any single crossing of a WUS.
- The utility line is placed within a jurisdictional area (i.e., WUS) and it runs parallel to a stream bed that is within that jurisdictional area.

- Discharges result in the permanent loss of greater than 0.1 acre of WUS.
- Permanent access roads are constructed abovegrade in WUS for a distance of more than 500 feet.
- Permanent access roads are constructed in WUS with impervious materials.

1.2.1.2 USACE Regional Conditions

The USACE has published several regional conditions for projects operating under nationwide permits in North Dakota. The regional conditions apply to wetlands classified as “fens,” waters adjacent to natural springs, the Missouri River, historic properties, and fish spawning areas.

1.2.2 Noxious Weeds

Pursuant to the North Dakota Century Code § 4.1-47-02, a “noxious weed” is defined as “a plant propagated by either seed or vegetative parts and determined to be injurious to public health, crops, livestock, land, or other property as determined by the commissioner, county, or city weed board.” The North Dakota Department of Agriculture currently lists 11 plant species as state-designated noxious weeds. In addition to the North Dakota state-designated species, management is required for five additional county-specific species for McKenzie, and Stark counties; and 26 USFS designated invasive species.

1.2.3 Woodlands and Shrublands

Woodland and shrubland specifications per the North Dakota Public Service Commission (PSC) are outlined in **Appendix A**.

1.2.4 Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the Endangered Species Act (ESA) and species designated as sensitive by the USFS. In accordance with the ESA, as amended, the lead agency (the Bureau of Land Management), in coordination with the U.S. Fish and Wildlife Service (USFWS) and USFS, must ensure that any action they authorize, fund, or carry out would not adversely affect a federally listed threatened or endangered species.

2.0 Methods

The following sections describe the methods that were implemented by Stantec and SWCA biologists and botanists for the field surveys for wetlands and waterbodies, noxious weeds, tree and shrub counts, and special status species and habitat. For the proposed Project route (crude oil/natural gas pipelines), surveys were conducted within a 200-foot corridor that encompasses the centerline and construction and operation rights-of-way (ROWs). For the NGL (conversion) pipeline, surveys were conducted within a 200-foot corridor centered on the pipeline centerline. For both routes, the 200-foot corridor will be referred to as the survey corridor(s).

2.1 WETLANDS

Field staff conducted wetland determinations within the survey corridors based on the principles and guidelines outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetlands Determination Manual: Great Plains Region Version 2.0 (USACE 2010). According to the 1987 Corps of Engineers Wetland Delineation Manual, an area is a wetland if three mandatory wetland indicators are present in a given area, with special exceptions. These criteria include the presence of hydrophytic vegetation, wetland hydrology, and hydric soils.

2.1.1 Hydrophytic Vegetation

Field staff recorded all plants within the vegetative community based on the respective stratum occupied by each species (tree, sapling/shrub, herbaceous, and woody vine). Vegetation was recorded by scientific name and percent cover for the tree stratum, the sapling/shrub stratum, the herbaceous stratum, and the woody vine stratum. Field staff noted each plant species' respective USFWS indicator status (i.e., upland [UPL], facultative upland [FACU], facultative [FAC], facultative wetland [FACW], and obligate [OBL]).

2.1.2 Hydric Soil

Soil test pits were excavated in both wetland and upland environments to evaluate wetland boundaries and examine for wetland indicators. Soil properties recorded include the hue, value, and chroma (i.e., color) of each soil sample; the depth and extent of that soil color within the entire soil profile; the concentration of any redoximorphic concentrations or depletions; and the texture of the soil at each depth where a color change was observed. Soil pits were excavated to a depth of 12 to 18 inches at each data point.

2.1.3 Hydrology

Wetlands were determined to exhibit wetland hydrology if at least one primary indicator, or at least two secondary indicators, of wetland hydrology were present, as defined by the Corps Manual (1987) and Great Plains Regional Supplement (USACE 2010). Hydrological indicators were determined by field observation as well as examining aerial photographs, and National Wetland Inventory maps (USFWS 2012). Primary indicators for wetland hydrology include inundation, soil saturation within 12 inches of the soil surface, water marks on vegetation, water-borne drift deposits, and oxidized rhizospheres (root channels). Secondary indicators for wetland hydrology include surface soil cracks, sparsely vegetated concave surface, drainage patterns characteristic of a wetland, and a positive FAC Neutral test (comparative dominance of FACW and OBL vegetative species versus FACU and UPL vegetative species).

The boundary of all wetlands was geographically referenced using a Trimble GeoXT series handheld global positioning system (GPS) unit. Representative photos were taken of wetlands within the survey corridors. Information for each surveyed polygon was recorded on standard Great Plains Wetland Delineation forms, and included site id; county; and indicators of hydrophytic vegetation, hydric soil, and hydrology if applicable. Soil properties for the upland soil pits were recorded on a separate form.

2.2 WATERBODIES

Waterbodies (i.e., ponds, creeks, streams, rivers) were identified by the presence of an ordinary high water mark (OHWM). Common identifiable indicators of an OHWM include open water or evidence of a clear, natural line visible on the bank; shelving; changes in soil characteristics; the destruction of terrestrial vegetation; the presence of litter and debris; and watermarks on structures that are inundated during normal high water conditions. The OHWM typically represents the potential limits of the USACE jurisdiction.

The boundary of all waterbodies was geographically referenced using a Trimble GeoXT series handheld GPS unit. Representative photos were taken of waterbodies within the survey corridors. Information for each surveyed polygon was recorded on standard forms, and included site id, county, OHWM width, and periodicity.

2.3 NOXIOUS WEEDS

North Dakota state and county and USFS listed noxious weeds are listed in **Appendix B**. Field staff noted on hard copy maps populations of North Dakota state- or county-listed noxious weeds identified within the survey areas. On USFS managed lands, noxious weeds were delineated using a Trimble GeoXT series handheld GPS unit.

2.4 TREE, SAPLING, AND SHRUB COUNT

The total number of trees, saplings, and shrubs present within the survey corridor were surveyed in planted areas that include windbreaks and shelterbelts, and native growth areas that include woody draws and patches of woody vegetation. Tree and shrub sampling complied with the PSC tree and shrub specifications and followed the protocol outlined in the Tree and Shrub Sampling Plan (**Appendix A**). The boundary of all forested upland, shrubland, and shelterbelt habitat was geographically referenced using a Trimble GeoXT series handheld GPS unit. Representative photos were taken of native growth areas and planted areas. Information for each surveyed polygon was recorded on standard forms, and included site id, county, tree and shrub species present to genus, and the number of each species present in the polygon.

2.5 WILDLIFE

Information regarding the presence of threatened or endangered species, which may occur within the Project area, was obtained from the USFWS list of threatened and endangered species by North Dakota county (USFWS 2014) and the USFS list of sensitive species (USFS 2011). Surveys for raptor nests, habitat for federally listed species, and USFS sensitive plant species were conducted as described below.

2.5.1 Raptor Nests

To identify raptor nests that occur along the Project route, ground surveys were conducted within 0.5 mile of the Project route. Complete visual coverage of each side of the Project route was obtained by surveying all areas of potential raptor nesting habitat (e.g., ridges, bluffs, knolls, trees/shrubs) with binoculars. Raptor nest locations found along Project route and within the 0.5-mile survey buffer were documented by noting the species (if possible), Universal Transverse Mercator coordinates, nest substrate, and nest condition.

A variety of raptor species are known to nest in the region of the Project. These species include eagles, buteos, falcons, owls, harriers, osprey, and other birds of prey. Breeding and nest building/tending activities can begin as early as February for some raptor species (e.g., bald eagle, golden eagle), and the rearing of young and fledgling dependency can last into early August for some of the later nesting species (e.g., Swainson's hawk). However, generally the raptor breeding season in North Dakota is February 1 to July 15.

2.5.2 Threatened and Endangered Habitat

Habitat assessments for the following federally listed species were conducted during the field effort:

- Whooping crane – federally endangered
- Sprague's pipit – federal candidate
- Least tern – federally endangered; and
- Piping plover – federally threatened.

In addition to the federal T&E species listed above, surveys for black-tailed prairie dog (a USFS sensitive species) colonies were conducted within 0.25 mile of the proposed route. Black-tailed prairie dog colonies provide an important food source for the area's raptors and mammals (e.g., coyote, badger, fox) as well as provide nesting habitat for burrowing owls.

2.6 USFS SENSITIVE PLANT SPECIES

Field surveys, which consisted of meandering pedestrian surveys in a zig-zag pattern within the survey corridors, were conducted on USFS managed lands to identify USFS sensitive plant species. Habitat types were recorded on hard copy maps. For any observed sensitive species populations, the boundary of the populations was geographically referenced using a Trimble GeoXT series handheld GPS unit. For any observed populations, representative photos were taken and information for each surveyed polygon was recorded on standard forms, and included site id, county, sensitive species present, and associated dominant species. A list of dominant species observed on USFS lands was developed.

3.0 Results

Results of the field surveys are presented in the following sections by biological resource. Surveys were conducted on several routing options; however, only the results for the proposed Project route and the existing NGL (conversion) pipeline are presented here. For the proposed Project route, survey results are presented for both the survey corridor and the construction ROW. The construction is approximately 100 feet, but does vary over the proposed route (wider in areas with temporary work spaces, and narrower in areas of resource concerns). Due to the different survey teams and timing of surveys, all features have been relabeled with a common nomenclature for consistency. Wetland, waterbodies, woodlands and shrublands, and noxious weeds identified during field surveys are presented in Appendix C (**Figures C.1** through **C14**). Representative photographs are presented in **Appendix D.**

3.1 VEGETATION

Field surveys along the proposed Project route and existing NGL pipeline identified four general types of vegetative communities: grasslands, shrubland and upland woody vegetation, cropland, and wetlands. Wetlands are described in Section 3.2 Wetlands. There also is previous disturbance associated with oil and gas development throughout the two routes.

3.1.1 Grasslands

Grassland communities occurring throughout the survey corridors consisted of untilled areas dominated by herbaceous vegetation. Many of the grassland areas were being grazed by livestock. Areas previously disturbed by constructed oil and gas pipelines were in the process of being reclaimed. Species common to the Northwestern Great Plains Mixedgrass Prairie and confirmed during field surveys included smooth brome (*Bromus inermis*), needle and thread (*Hesperostipa comata*), prairie junegrass (*Koeleria macrantha*), crested wheatgrass (*Agropyron cristatum*), wavyleaf thistle (*Cirsium undulatum*), intermediate wheatgrass (*Elytrigia intermedia*), stiff goldenrod (*Solidago rigida*), big bluestem (*Andropogon gerardii*), threadleaf sedge (*Carex filifolia*), slender wheatgrass (*Elymus trachycaulus*), green sagewort (*Artemisia campestris*), cudweed sagewort (*Artemisia ludoviciana*), Canada goldenrod (*Solidago canadensis*), sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), purple coneflower (*Echinacea angustifolia*), prairie sagewort (*Artemisia frigida*), American licorice (*Glycyrrhiza lepidota*), curlycup gumweed (*Grindelia squarrosa*), sweetclover (*Melilotus* spp.), Kentucky bluegrass (*Poa pratensis*), prairie coneflower (*Ratibida columnifera*), common yarrow (*Achillea millefolium*), and little bluestem (*Schizachyrium scoparium*) (SWCA 2013).

3.1.2 Shrubland and Woody Vegetation

The field surveys observed woodland and shrubland communities occurring throughout the survey corridors, which consisted of woody draws and swales, as well as upland areas dominated by woody-stemmed vegetation. Common shrubs were chokecherry (*Prunus virginiana*), silver buffaloberry (*Shepherdia argentea*), and western snowberry (*Symphoricarpos occidentalis*). Shrub species found in low concentrations include silver sagebrush (*Artemisia cana*), soapweed yucca (*Yucca glauca*), and plains prickly pear cactus (*Opuntia polyacantha*). Common tree species included green ash (*Fraxinus pennsylvanica*), Siberian elm (*Ulmus pumila*), and boxelder (*Acer negundo*) (SWCA 2013).

3.1.3 Cropland

Field surveys indicate several types of tilled fields within the survey corridors. Cropland vegetation included canola (*Brassica napus*) and hard red spring wheat (*Triticum aestivum*).

3.2 WETLANDS

Surveys were conducted in 2012, 2013, and 2014. Precipitation in 2012 and 2013 was below normal, while precipitation in 2014 was above average (North Dakota State Climate Office [NDSCO] 2014, 2013, 2012). Summer 2014 was the ninth wettest summer statewide since 1895 (NDSCO 2014). Compared to average, 2012 and 2013 summers were warmer than average, while the temperature for summer 2014 was colder than average (NDSCO 2014, 2013, 2012).

A total of 33 palustrine emergent (PEM) wetlands were identified and delineated within the survey corridor for both the proposed pipeline route and existing NGL pipeline route (**Appendix E**). Of these, none occur within the proposed pipeline route construction ROW (**Table 3-1**). Dominant vegetation in the surveyed wetlands include prairie cordgrass (*Spartina pectinata)*, foxtail barley (*Hordeum jubatum*), Pennsylvania smartweed (*Polygonum pensylvanicum*), and western dock (*Rumex occidentalis*). Datasheets are included in **Appendix F**. Smooth brome is dominant in the adjacent uplands.

Table 3-1 Total Wetland Acres Along the Proposed Pipeline Route and the Existing NGL Pipeline

Pipeline Route	Wetland Classification	Total Acres	
		Survey Corridor	Temporary Construction ROW
Proposed Route	PEM	6.74	--
Existing NGL Pipeline	PEM	1.90	--

3.3 SOILS

Twenty-nine soil types are present in the proposed pipeline construction ROW based on U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) mapping (NRCS 2013). **Table 3-2** lists all soils units within the construction ROW. The following soil component descriptions represent the most prevalent soil series found within the construction ROW (NRCS 2013).

Table 3-2 Soils Present in the Construction ROW

Soil Type	Slope	Construction ROW (Acres)
Williams-Bowbells loams	3 to 6 percent slopes	52.1
Williams-Zahl-Zahill complex	6 to 9 percent slopes	47.1
Williams-Zahl loams	3 to 6 percent slopes	43.6
Williams-Bowbells loams	0 to 3 percent slopes	19.8
Tansem-Roseglen silt loams	0 to 2 percent slopes	14.2
Tally-Parshall fine sandy loams	2 to 6 percent slopes	14

Table 3-2 Soils Present in the Construction ROW

Soil Type	Slope	Construction ROW (Acres)
Belfield-Grail clay loams	0 to 2 percent slopes	12.2
Zahl-Max loams, dissected	15 to 45 percent slopes	7.9
Cabba-Badland complex	6 to 70 percent slopes	7.2
Tansem-Roseglen silt loams	2 to 6 percent slopes	7
Noonan-Niobell-Williams loams	3 to 6 percent slopes	6.3
Cherry silt loam	0 to 6 percent slopes	4.4
Zahl-Cabba-Arikara complex	9 to 70 percent slopes	4.1
Arnegard loam	0 to 2 percent slopes	4
Livona fine sandy loam	0 to 6 percent slopes	3.5
Korchea loam, occasionally flooded	0 to 2 percent slopes	3.3
Zahl-Max loams	15 to 25 percent slopes	3.2
Amor-Zahl-Werner loams	9 to 25 percent slopes	2.7
Zahl-Max-Arnegard loams	15 to 60 percent slopes	2.1
Farnuf loam	2 to 6 percent slopes	2
Zahl-Cabba-Maschetah complex	6 to 70 percent slopes	2
Tally-Parshall fine sandy loams	0 to 2 percent slopes	1.8
Lehr-Williams loams	0 to 6 percent slopes	0.9
Niobell-Williams loams	0 to 3 percent slopes	0.9
Zahl-Williams-Arikara loams	9 to 45 percent slopes	0.8
Straw-Fluvaquents channeled, complex, frequently flooded	0 to 2 percent slopes	0.8
Brandenburg-Searing-Dogtooth complex	6 to 15 percent slopes	0.7
Daglum-Belfield complex	0 to 6 percent slopes	0.7
Zahl-Beisigl-Tally complex	9 to 15 percent slopes	0.7
Arnegard loam	2 to 6 percent slopes	0.6
Tonka silt loam	0 to 1 percent slopes	0.2
Chama-Cabba-Sen silt loams	6 to 9 percent slopes	<0.1

3.3.1 Williams

The Williams series consists of very deep, slowly permeable, well-drained soils found on glacial till plains and moraines with slopes at approximately 0 to 35 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 42°F. This soil type is largely used for cultivation. Native vegetation species common to this soil type include western wheatgrass (*Pascopyrum smithii*), needle and thread, blue grama, and green needlegrass (*Nasella viridula*) (NRCS 2012).

3.3.2 Bowbells

The Bowbells series consists of very deep, well- and moderately well-drained soils found on glacial till plains and moraines. Permeability is moderate in the upper portions and moderately slow to slow in the substratum. Slopes range from approximately 0 to 9 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 42°F. This soil type is used for cultivation of small grains. Native vegetation species historically common to this soil type include western wheatgrass, green needlegrass, and big bluestem (NRCS 2012).

3.3.3 Zahl

The Zahl series consists of very deep, slowly permeable, well-drained soils found on glacial till plains, moraines, and valley side slopes at approximately 1 to 60 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 40°F. This soil type is largely used for rangeland foraging. Native vegetation species common to this soil type include western wheatgrass, little bluestem, and needle and thread (NRCS 2012).

3.4 WATERBODIES

Three waterbodies are crossed by the proposed pipeline route as identified during the field surveys (**Table 3-3**). For the existing NGL pipeline, the two waterbody crossings are Dry Fork Creek and Lake Sakakawea (**Table 3-4**).

Table 3-3 Waterbodies Crossings Along the Proposed Route

Feature ID	Waterbody Name	Classification	Survey Corridor (Acres)	Temporary Construction ROW (Acres)	Average Width OHWM (feet)
S-1	Dry Fork Creek	Intermittent	0.13	--	7
S-2	Unnamed	Ephermal	0.03	--	6
S-3	Sand Creek	Intermittent	0.18	--	12

Table 3-4 Waterbodies Crossings Along the Existing NGL Pipeline

Feature ID	Waterbody Name	Classification	Survey Corridor (Acres)	Average Width OHWM (feet)
S-1	Dry Fork Creek	Intermittent	0.11	7
S-4	Lake Sakakawea	Perennial	53.71	12,361

3.5 NOXIOUS WEEDS

State and county noxious weeds within the survey corridor for the proposed pipeline route included Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), houndstongue (*Cynoglossum officinale*), halogeton (*Halogeton glomeratus*), and leafy spurge (*Euphorbia esula*). Canada thistle was prevalent throughout the survey corridor on both routes. There were 39 noxious weed populations identified along the proposed route and existing NGL pipeline.

3.6 TREES, SAPLINGS, AND SHRUBS

A total of 71 areas of woody vegetation were identified and delineated within the survey corridor for the proposed pipeline route and existing NGL pipeline route (**Appendix E**). Of these, 26 (4.02 acres) occur within the proposed pipeline route construction ROW, resulting in a total stem count of 5,263 (**Table 3-5**). Based on a 2:1 mitigation ratio, disturbances to the woody vegetation within these areas would thus require the replanting of 10,526 saplings to offset the associated losses. Dominant species observed include green ash, silver buffaloberry, and chokecherry.

Table 3-5 Stem Count of Woodlands and Shrublands along the Proposed Route

Pipeline Route	Survey Corridor		Temporary Construction ROW	
	Total Stem Count	**Acres**	**Total Stem Count**	**Acres**
Proposed Route	43,089	20.35	5,263	4.02
Existing NGL Pipeline	1,337	2.6	--	--

3.7 WILDLIFE

Wildlife surveys were conducted on both the Project route and the existing NGL pipeline. The survey results for wildlife apply to both routes due to their close proximity.

3.7.1 Raptor Nests

For the raptor nest surveys, it is important to note that survey emphasis was placed on locating nests of eagles, buteos, falcons, accipters, and owls that nest in deciduous trees, on cliffs, or on rocky knolls or bluffs. These are the most common species that could be impacted by the Project during construction, particularly if construction were to occur during the breeding season (generally February 1 through July 15), depending on weather and prey conditions. For the field surveys conducted in August and October 2014, the time of year (i.e., outside of the breeding season) was not ideal for locating nesting raptors. However, large stick nests used by golden eagles, hawks, and great horned owls can be effectively located outside of the breeding season. Surveys conducted in May 2013, however, were during the breeding season. One raptor species (red-tailed hawk) was observed during the August 2014 surveys. However, no raptor nests were found within 0.5 mile of the Project route and existing NGL pipeline during any of the survey efforts.

If construction activities were to occur during the raptor breeding season, a follow-up raptor nest survey would need to be conducted no more than 2 weeks prior to construction in order to prevent disturbance to breeding raptor species. This would allow construction to avoid active nest sites and establish appropriate buffers and timing restrictions.

3.7.2 Federally Listed Species

Stantec did not observe any indication of the presence of threatened or endangered species. Suitable whooping crane foraging habitat (i.e., agricultural fields) and roosting habitat (i.e., wetlands) occur in the vicinity of the Project route and existing NGL pipeline. No suitable habitat for the least tern or piping plover was found along the Project route, excluding along the shores of Lake Sakakawa where suitable habitat does occur. Suitable Sprague's pipit habitat (i.e., native grassland) was found within the survey corridor and within the immediate vicinity of the Project route and existing NGL pipeline.

Based on the presence of suitable foraging and roosting habitat (i.e., agricultural fields and wetlands) in the vicinity of the proposed Project route, whooping cranes may be impacted by the Project if present during construction. Due to the lack of surface disturbance associated with the conversion of the existing natural gas pipeline to NGL, no impacts to whooping crane are anticipated. To prevent potential impacts to migrating whooping cranes that may be found near the Project route, Stantec recommends ceasing all work within 1 mile of the Project if a whooping crane is sighted within 1 mile of the pipeline ROW or proposed facilities while under construction and the USFWS be contacted immediately. In coordination with the USFWS, work would resume after the bird(s) leave the area.

For the Sprague's pipit, if Project-related disturbance to grassland habitat were to occur during the migratory bird breeding season in North Dakota (February 1 to July 15), nest surveys would be recommended in order to prevent "take" of migratory birds protected under the Migratory Bird Treaty Act.

Due to the absence of black-tailed prairie dog colonies along the Project reroutes, no impacts to this species or black-tailed prairie dog obligate species (e.g., burrowing owl, swift fox) would occur.

3.8 USFS SENSITIVE PLANT SPECIES

No USFS sensitive plant species were observed along the proposed Project or the existing NGL pipeline. The proposed Project and the existing NGL pipeline cross grasslands and woody draws along the steep and rolling topography southwest of Lake Sakakawea. Dominant species are the same as described above in Section 3.1, Vegetation.

4.0 Conclusions

Field surveys documented 33 wetlands within the survey corridor for the proposed Project and the existing NGL line. Of these, no wetlands occur with the construction ROW for the proposed Project as Hess has committed to boring under all identified wetlands in the construction corridor.

The presence of two intermittent and one ephemeral stream channels also were identified within the construction ROW. The proposed Project connects into existing pipelines at the north and south sides of Lake Sakakawea. One intermittent and one perennial (Lake Sakakawea) were identified as occurring along the existing NGL line. Hess has committed to boring under all identified stream channels in the construction corridor.

Fifty-five areas of woodland vegetation were mapped, which collectively contain approximately 43,089 trees, saplings, and shrubs within the construction ROW. Of these, 5,263 trees, samplings, and shrubs are in areas within the construction ROW that are not being horizontally directionally drilled. Based on a 2:1 mitigation ratio, disturbances to the woody vegetation within these areas would thus require the replanting of 10,526 saplings to offset the associated losses. According to the recommendations of the North Dakota Forest Service, tree species selection for replacement should be accomplished through collaboration with a reputable area nursery. This will allow for species to be selected based on various factors including species hardiness and area soil type (SWCA 2013). According to the recommendations of the USFS North Dakota Office, non-native species are permitted and to an extent recommended for planting as they may be more resistant to known tree pathogens in the area (SWCA 2013).

No threatened or endangered species or USFS sensitive species were observed during field survey of the Project route.

5.0 References

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Appendix A Tree and Shrub Sampling Plan

Tree and Shrub Sampling Plan

Hess Hawkeye Pipeline Project

Williams and McKenzie Counties, North Dakota

Prepared for:
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Houston, TX 77010

Prepared by:
Stantec Consulting Services Inc.
2950 E. Harmony Rd., Suite 290
Fort Collins, CO 80528

October 24, 2014

Tree and Shrub Inventory and Sampling Plan

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Prepared by ______________________________
(signature)

Erin Bergquist

Reviewed by ______________________________
(signature)

Kim Munson

Table of Contents

TREE AND SHRUB SAMPLING PLAN

1.0 Introduction

Hess Corporation (Hess) is proposing to construct an approximately 25-mile-long pipeline system connecting Bakken production fields south of Lake Sakakawea to existing processing facilities north of the lake. The proposed project would transport subsurface crude oil from Hawkeye Central near Keene, North Dakota, and natural gas and natural gas liquids (NGL) from Hawkeye Compressor Station near Charlson, North Dakota to the Ramberg Truck Facility (crude oil) and the Silurian Compressor Station (natural gas and NGL) near Tioga, North Dakota.

Hess will comply with the tree and shrub mitigation specifications outlined in **Appendix XXX**. This sampling plan describes the sampling methods used to inventory the tree and shrubs along the proposed project route.

2.0 Survey Area

The proposed project area is located entirely within the Northwestern Great Plains ecoregion encompassing the Missouri Plateau section of the Great Plains of west-central North Dakota. The landscape consists of a semi-arid rolling plain of shale, siltstone, and sandstone, punctuated by agriculture and rolling plains topography with isolated sandstone buttes and badland formations.

The elevation ranges from approximately 1,900 to 2,420 feet above sea level. The elevation ranges get lower in the central portion of the project areas where the pipeline moves closer to and crosses Lake Sakakawea.

3.0 Sampling Methods

Surveys were conducted within a 200-foot survey corridor that encompasses the centerline and construction and operation footprint of the proposed project. The total number of trees, saplings, and shrubs present within the survey corridor were surveyed in planted areas that include windbreaks and shelterbelts, and native growth areas that include woody draws and patches of woody vegetation.

The boundary of all forested upland, shrubland, and shelterbelt habitat was geographically referenced using a Trimble GeoXT series handheld global positioning system (GPS) unit. Representative photos were taken of native growth areas and planted areas. Information for each surveyed polygon was recorded on standard forms and included site id, county, tree and shrub species present to genus, and the number of each species present in the polygon.

In forested upland and shrubland habitat, the number of all woody stemmed vegetation regardless of diameter at breast height (DBH) was counted or visually estimated. In shelterbelt areas, all woody stemmed vegetation with a DBH of ≥1 inch was inventoried, regardless of height. Ecologists taxonomically identified all recorded individuals to the species level within each habitat type.

In high-density woodland areas, such as shelterbelts that are more than 100 feet wide, the Linear Spacing Estimates could be used in place of individual counting. Linear Spacing Estimates, require that the survey crew ecologist estimate the total number of individual trees or shrubs within each observed shelterbelt by calculating the total number of individuals, regardless of DBH, of each species within a set linear distance. This method assumes that spacing and species pattern between individuals is equal along the entire length of the shelterbelt. When a satisfactory number of replications was averaged (usually up to 50 percent of the total shelterbelt length), ecologists determined the total shelterbelt length and estimated the total number of individuals potentially present based on the average number of individuals per linear foot. Once the number of individuals per foot was estimated for each shelterbelt, ecologists used a shapefile depicting the width of the proposed disturbance area (i.e., 100 feet) to determine the linear length of each shelterbelt segment potentially impacted by construction activities. This linear length was then used to estimate the number of individual trees or shrubs potentially impacted through construction activities.

In native growth areas and planted areas, shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, and sandbar willow) and that are cut flush with the ground surface and not cleared, so as to leave the naturally occurring seed bank and root stock intact are not included in the direct stem counted. Instead, these areas were delineated either from an aerial photo or from field surveys. These areas will be marked on construction drawings to not be cleared or have the ground disturbed. If ground disturbance occurs, Hess will conduct a direct stem count of the disturbance area or estimate the number of stems cleared using a Commission-approved sampling estimate method.

Appendix A – Tree and Shrub Mitigation Specifications

Case No. PU-10-218

Tree and Shrub Mitigation Specifications

Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g.*, *Caragana arborescens*, *Elaeagnus angustifolia*, *Rhamnus cathartica*, *Tamarix chinensis*, *T. parviflora*, *T. ramosissima*, *Ulmus pumila*), shall be inventoried before cutting. The inventory shall record the location, number, and species of trees and shrubs.
2. In windbreaks, shelterbelts, and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, shall be inventoried for replacement.
3. In native growth areas, trees anticipated to be cleared that are 1 inch diameter at breast height ("dbh") or greater shall be inventoried for replacement.
4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way shall be inventoried for replacement.
5. In native growth areas outside the permanent right-of-way, shrubs shall be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil shall be preserved and replaced after construction. Shrubs shall be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared shall be inventoried for replacement.
6. In native growth areas, trees and shrubs may be inventoried by actual count or by sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (NDPSC), and approved prior to the start of construction shall define the sampling method to be used for trees, tall shrubs, and low shrubs. The data from the sample plots shall be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

Clearing for Construction

7. Trees and shrubs shall be selectively cleared, leaving mature trees and shrubs intact where practical.
8. The width of clear cuts through windbreaks, shelterbelts, and all other wooded areas shall be limited to 50 feet or less unless otherwise approved by the NDPSC.
9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced shall be noted on the inventory.

Replacement

10. Prior to tree/shrub replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings shall be filed with the NSPSC for approval.
11. Tree replacement shall be on a 2-to-1 basis with 2-year-old saplings. Shrub replacement shall be on a 2-to-1 basis with stem cuttings.
12. Trees and shrubs shall be replaced by the same species or similar species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.

13. Tree and shrub replacement shall not be conducted within a 20- to 30-foot-wide path over the pipeline to facilitate visual inspections of the right-of-way in accordance with U.S. Department of Transportation safety regulations.
14. Landowners shall be given the option of having replacement trees/shrubs planted off the right-of-way on the landowner's property or waiving that requirement in writing and allowing those replacement trees/shrubs to be planted at alternative locations.
15. At the conclusion of the project, documentation identifying the actual number, variety, type, location and date of the replacement plantings shall be filed with the NDPSC.
16. Tree/shrub replacements shall be inspected once a year for 3 years, on approximately the anniversary of the plantings, and on or shortly before October 1 of each year, a report shall be submitted to the NDPSC documenting the condition of replacement planting and any woodlands work completed. If after 3 years from the anniversary of the plantings, the survival rate is less than 75 percent, the NDPSC may order additional planting(s).

Appendix B North Dakota State and County Listed Noxious Weeds

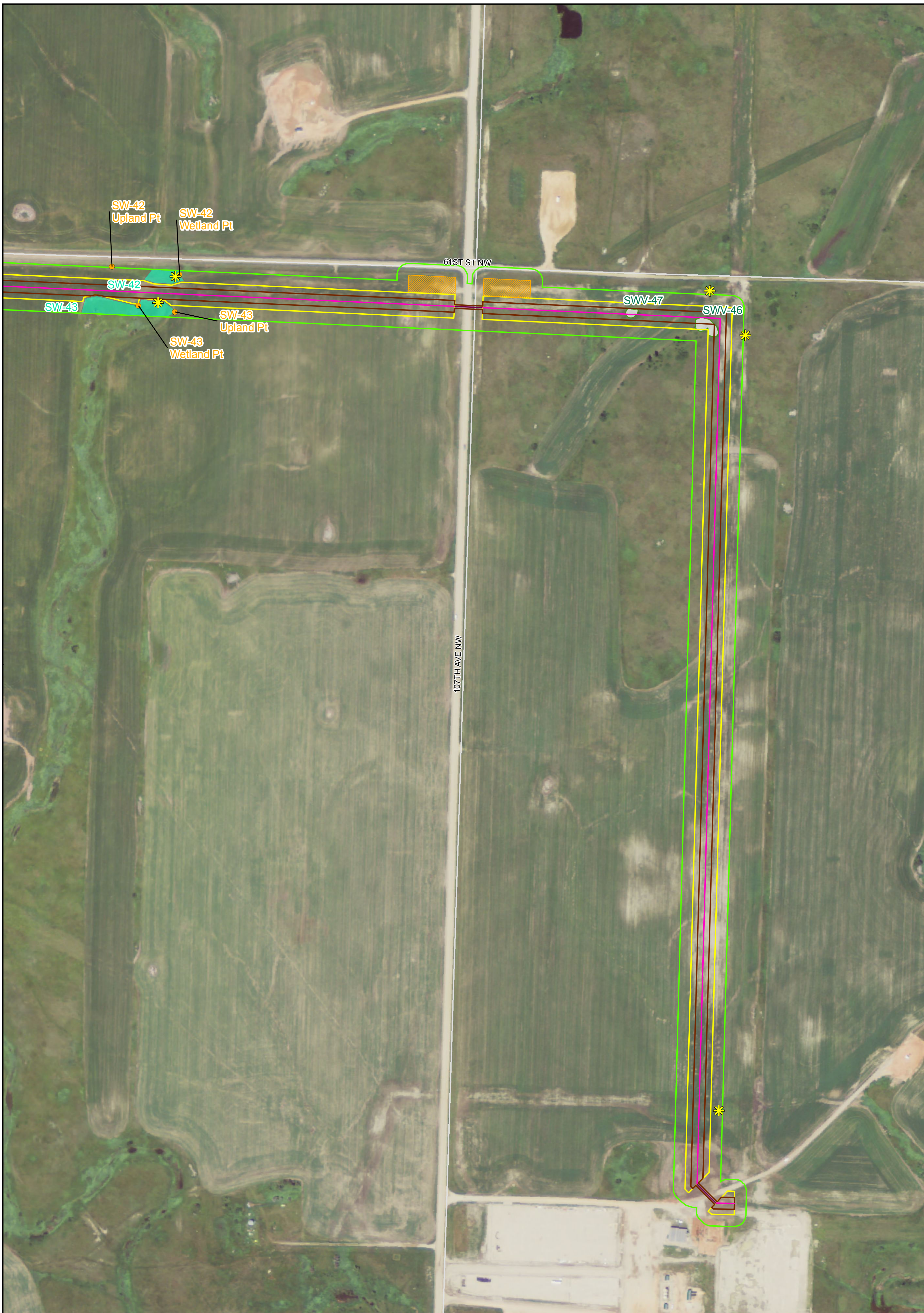
Table B-1 State, County, and USFS Listed Noxious Weeds

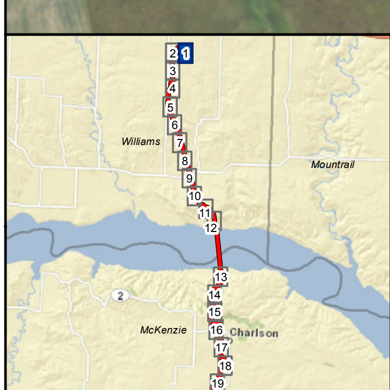
Common Name	Scientific Name	State of North Dakota Designated Species	County Designated Species[1] (MK – McKenzie)	USFS Designated Species
Russian knapweed	*Acroptilon repens*	X	--	X
Crested wheatgrass	*Agropyron cristatum*	--	--	X
Tall wheatgrass	*Thinopyrum ponticum*	--	--	X
Intermediate wheatgrass	*Agropyron intermedium*	--	--	X
Quackgrass	*Elymus repens*	--	--	X
Common burdock	*Arctium minus*	--	MK	X
Absinth wormwood	*Artemisia absinthium*	X	--	X
Smooth brome	*Bromus inermis*	--	--	X
Japanese brome	*Bromus arvensis*	--	--	X
Downy brome	*Bromus tectorum*	--	--	X
Spiny plumeless thistle	*Carduus acanthoides*	--	--	X
Musk thistle	*Carduus nutans*	X	--	X
Diffuse knapweed	*Centaurea diffusa*	X	--	X
Spotted knapweed	*Centaurea stoebe L. ssp. micranthos*	X	--	X
Yellow starthistle	*Centaurea solstitialis*	--	--	X
Canada thistle	*Cirsium arvense*	X	--	X
Field bindweed	*Convolvulus arvensis*	--	--	X
Houndstongue	*Cynoglossum officinale*	--	MK	X
Leafy spurge	*Euphorbia esula*	X	--	X
Baby's breath	*Gypsophila paniculata*	--	MK	X
Halogeton	*Halogeton glomeratus*	--	MK	X
Black henbane	*Hyoscyamus niger*	--	MK	X
Dalmation toadflax	*Linaria dalmatica ssp. dalmatica*	X	--	X
Yellow toadflax	*Linaria vulgaris*	X	--	X
Purple loosestrife	*Lythrum salicaria, L. virgatum*	X	--	X
Sweet clover	*Melilotus* spp.	--	--	X
Kentucky bluegrass	*Poa pratensis*	--	--	X
Canada bluegrass	*Poa compressa*	--	--	X
Sowthistle	*Sonchus* spp.	--	--	X
Saltcedar	*Tamarix spp.*	X	--	--

[1] McKenzie and Williams counties both regulate the 11 state-listed noxious weed species. Each county can require enforcement for additional weed species in their jurisdiction. Williams County has not identified any additional species for enforcement (North Dakota Department of Agriculture 2013).

Sources: North Dakota Department of Agriculture 2014, 2013; USFS 2014.

Appendix C Site and Feature Maps





Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-1

Hess Hawkeye Natural Resource Survey Results

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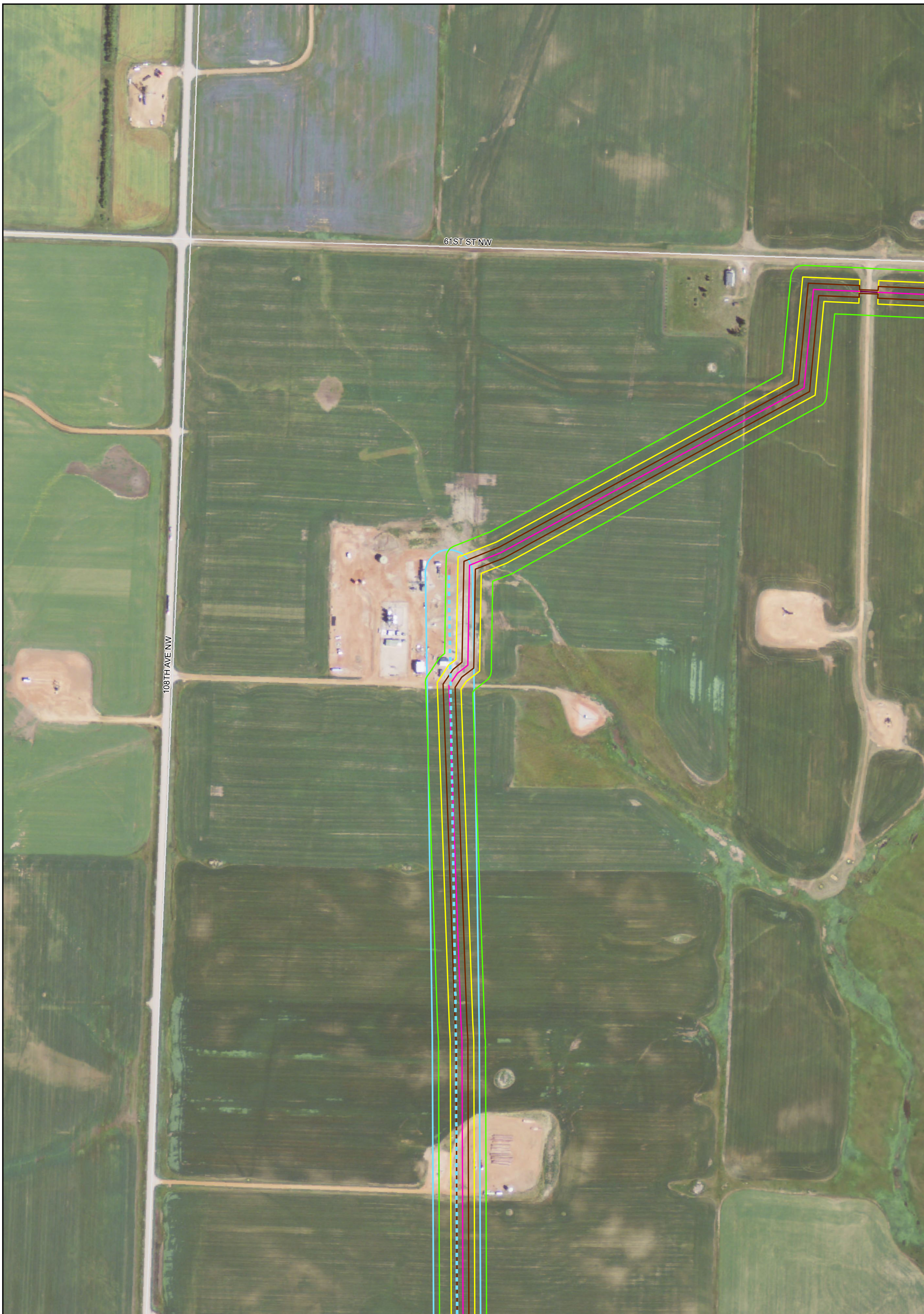
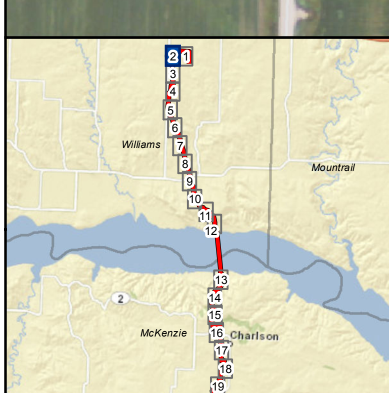
Miles





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Pipe Type
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- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-2

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles

Legend

Pipe Type
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-3

Hess Hawkeye Natural Resource Survey Results

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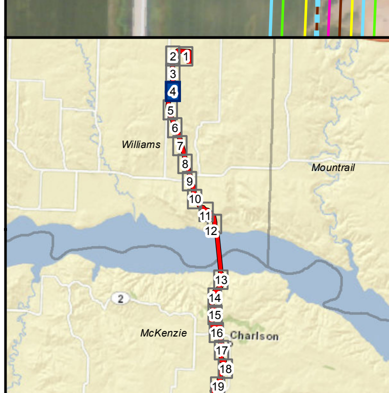
Miles



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PipeType
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- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-4

Hess Hawkeye Natural Resource Survey Results

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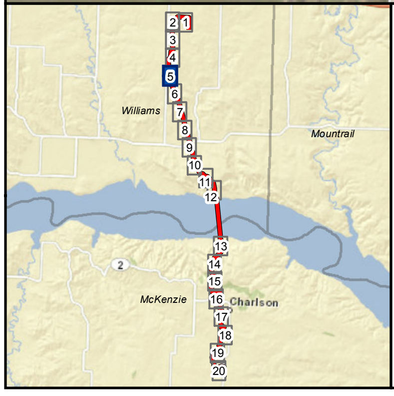
Miles



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PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-5

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles

Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-6

Hess Hawkeye Natural Resource Survey Results

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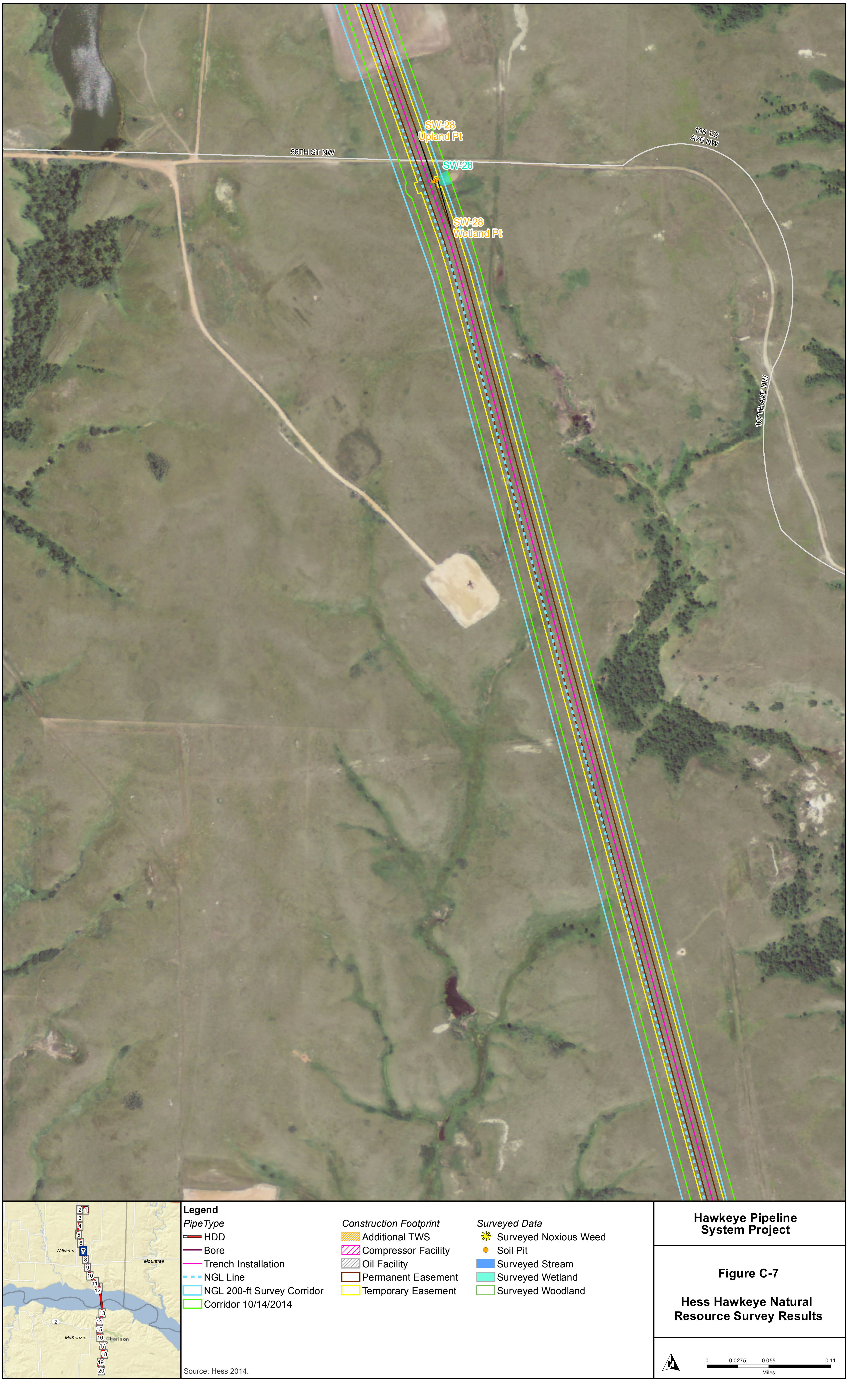
Miles



Legend

PipeType
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- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-7

Hess Hawkeye Natural Resource Survey Results

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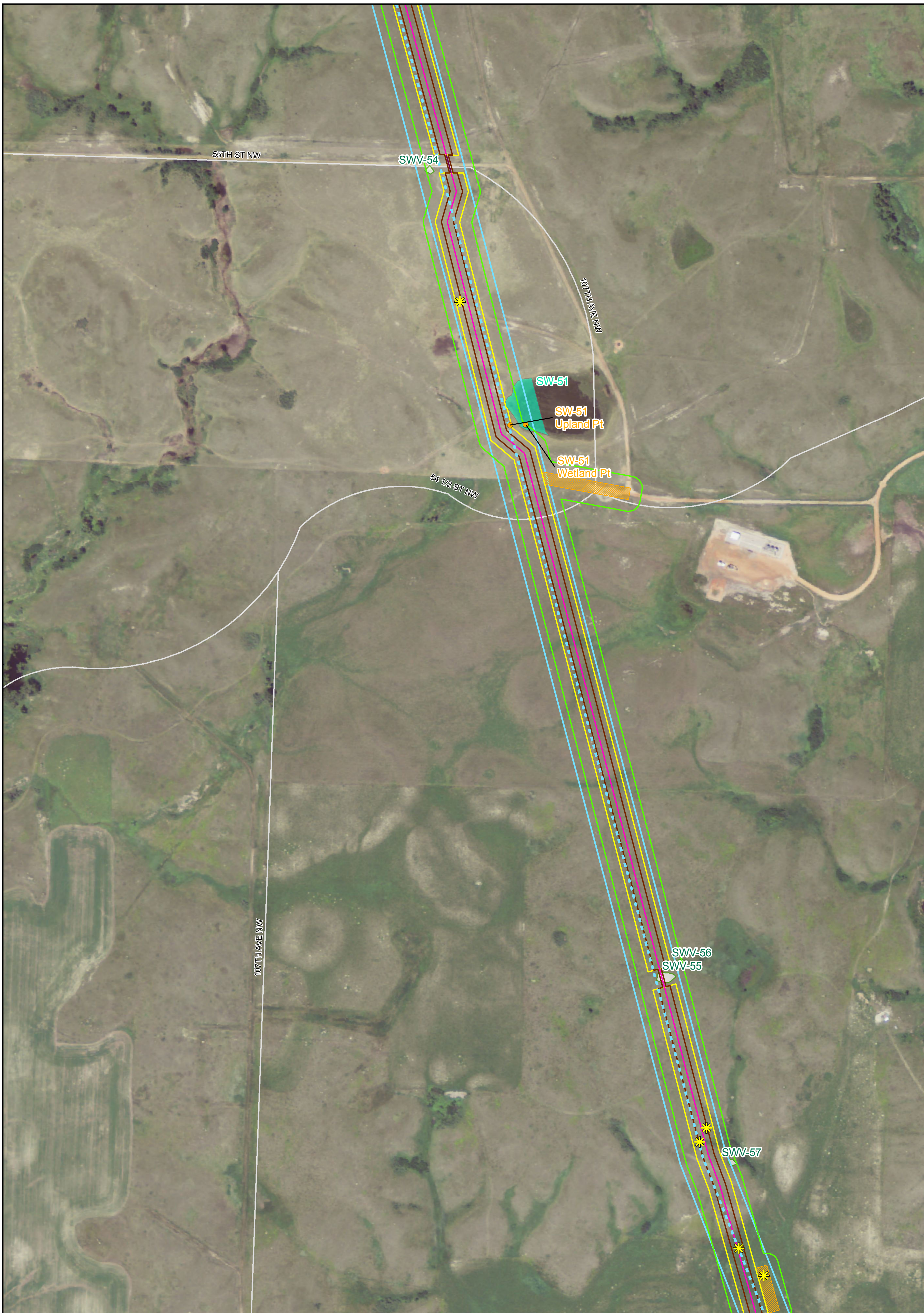

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PipeType
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- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-8

Hess Hawkeye Natural Resource Survey Results

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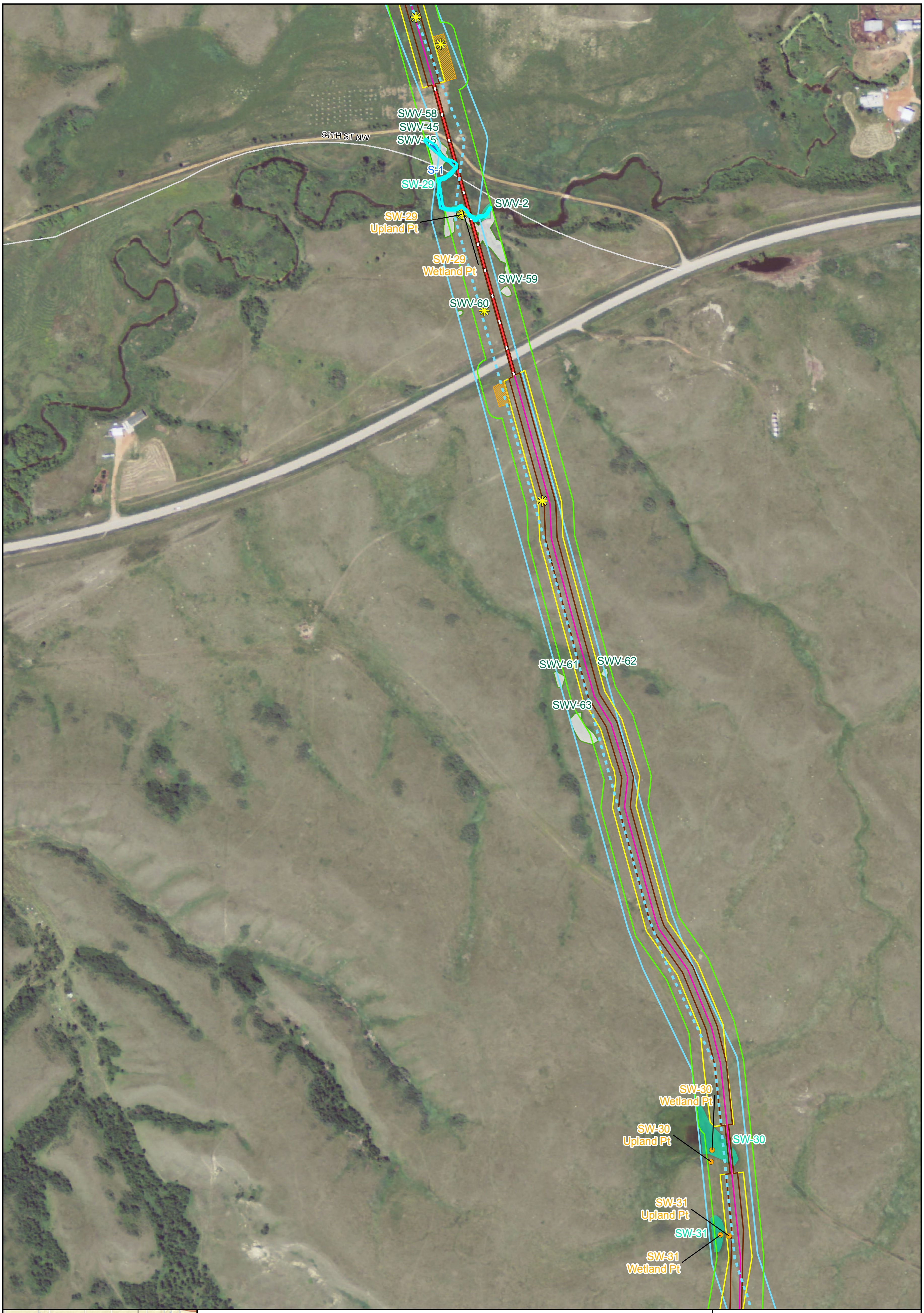

Legend

PipeType
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- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-9

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles

Legend

Pipe Type	*Construction Footprint*	*Surveyed Data*
HDD	Additional TWS	Surveyed Noxious Weed
Bore	Compressor Facility	Soil Pit
Trench Installation	Oil Facility	Surveyed Stream
NGL Line	Permanent Easement	Surveyed Wetland
NGL 200-ft Survey Corridor	Temporary Easement	Surveyed Woodland
Corridor 10/14/2014		

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-10

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles

Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland
- State Land

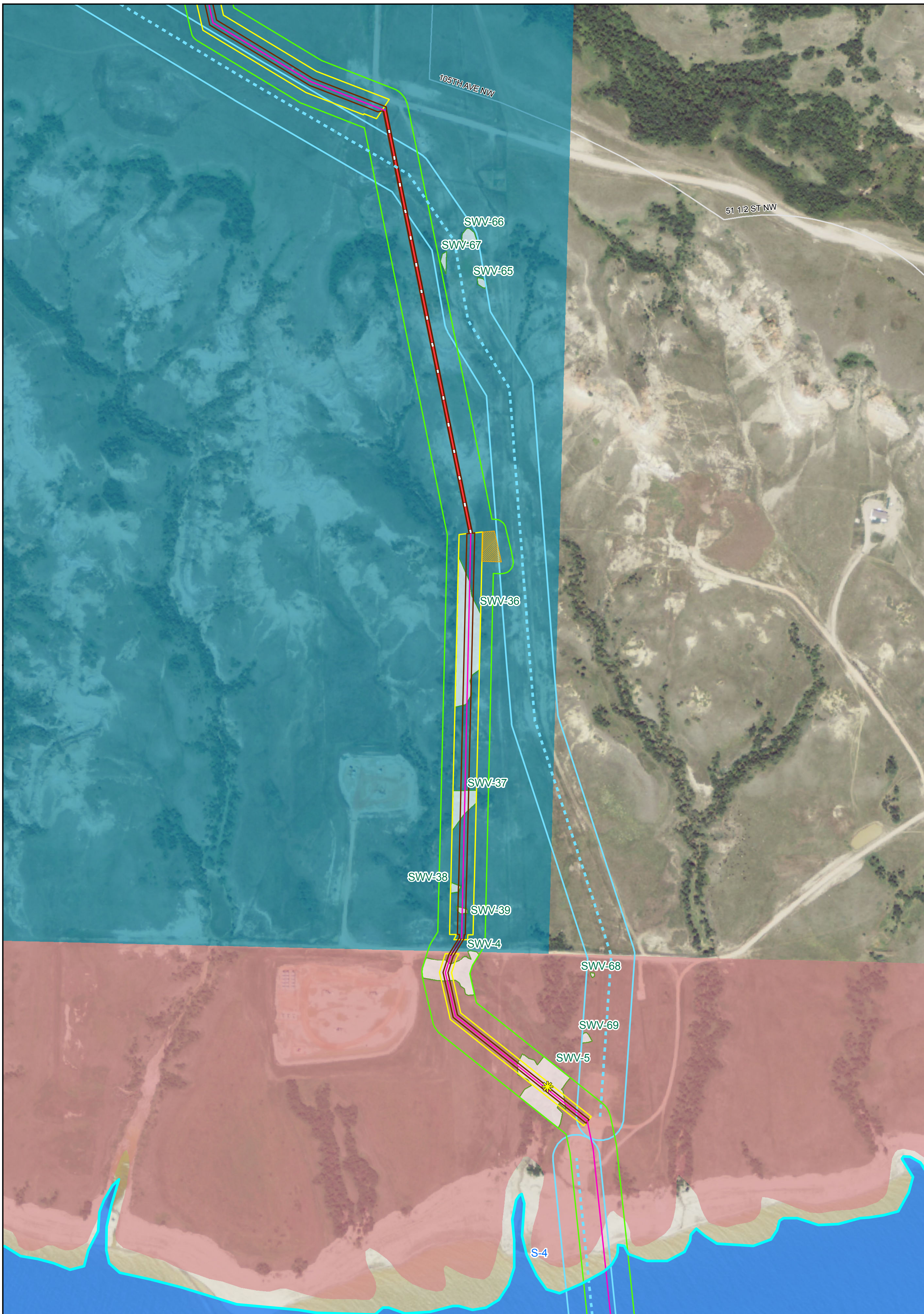
Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-11

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles



Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland
- Army Corps of Engineers
- State Land

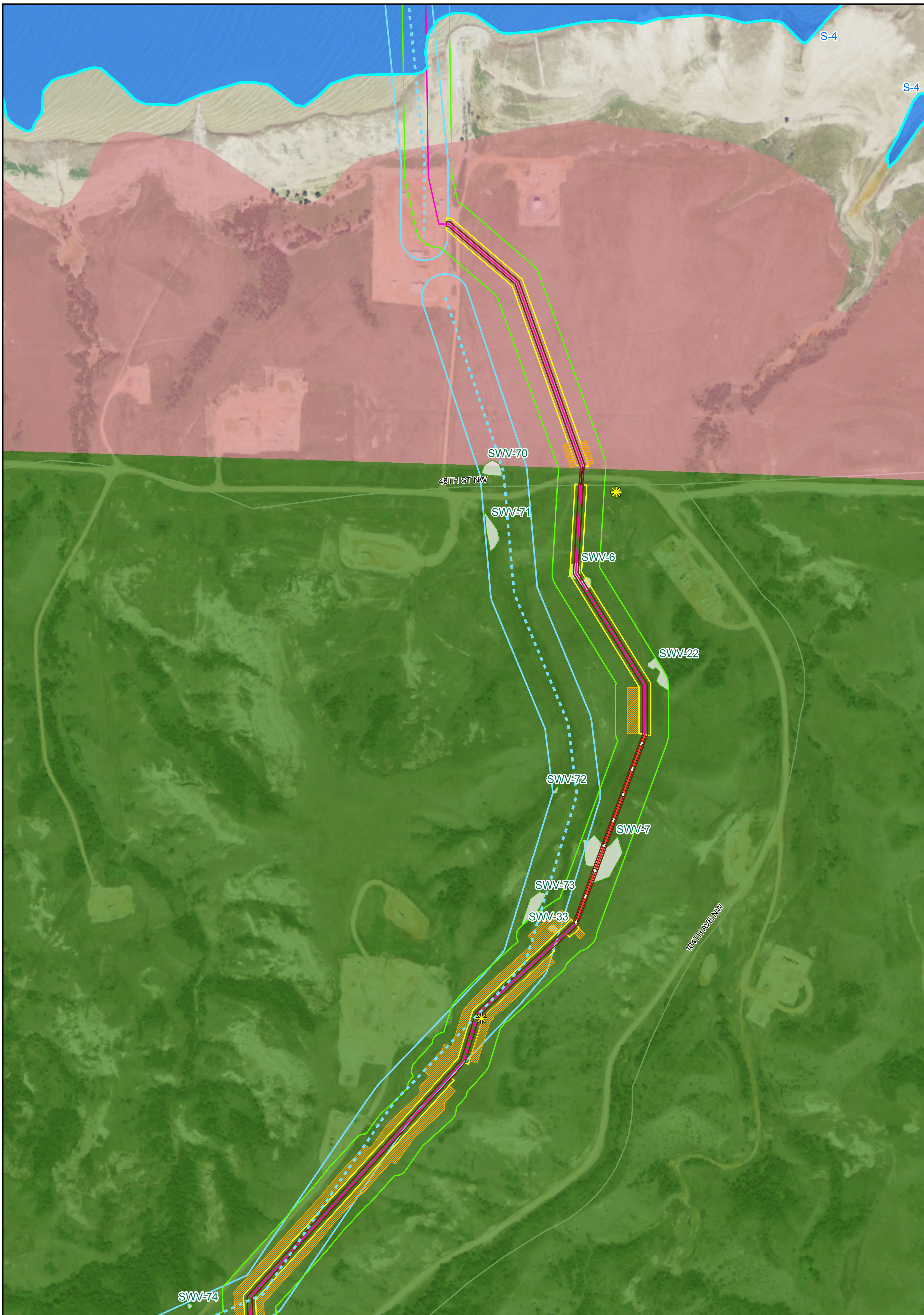
Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-12

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles



Legend

Pipe Type
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland
- U.S. Forest Service
- Army Corps of Engineers

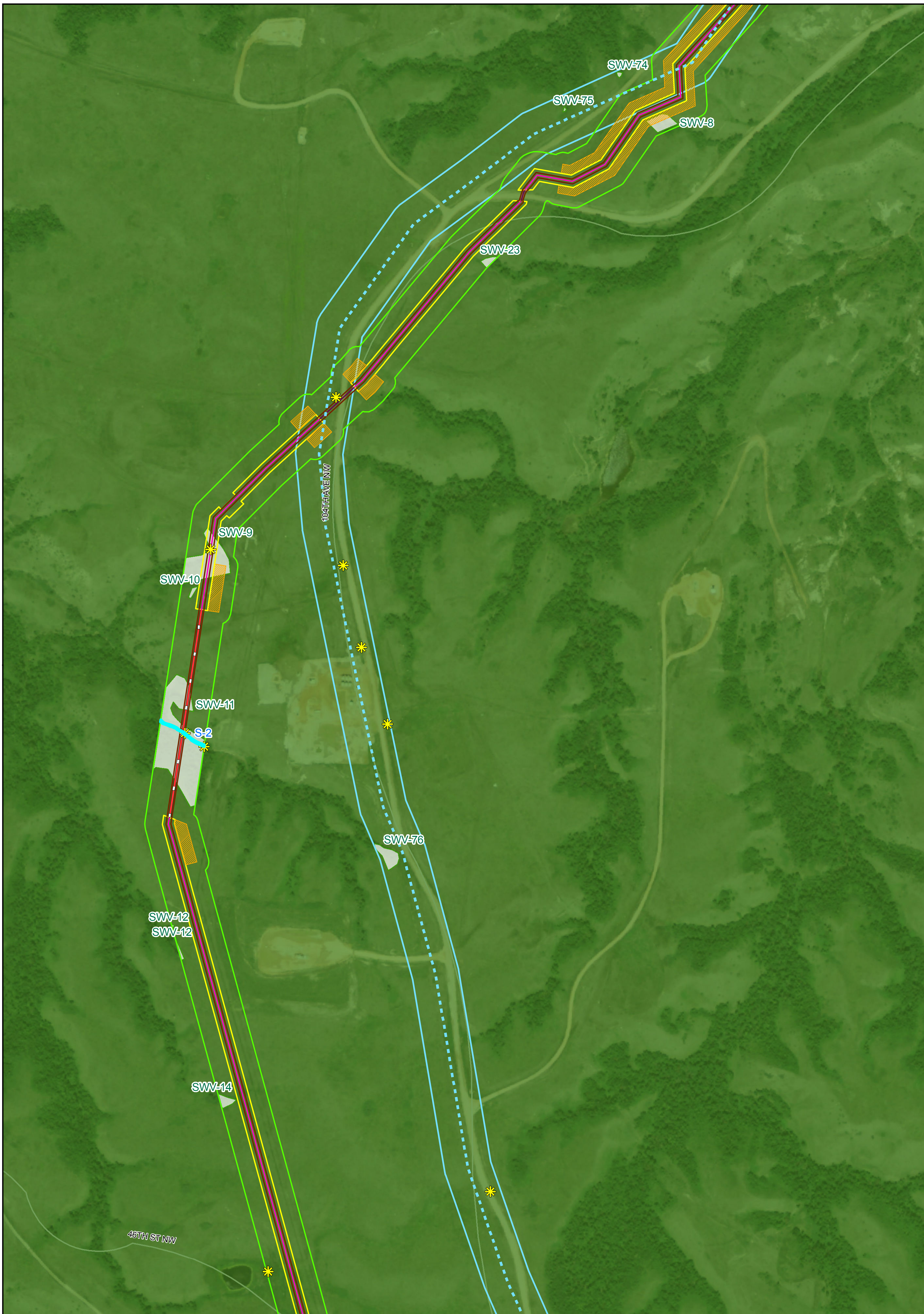
Source: Hess 2014.

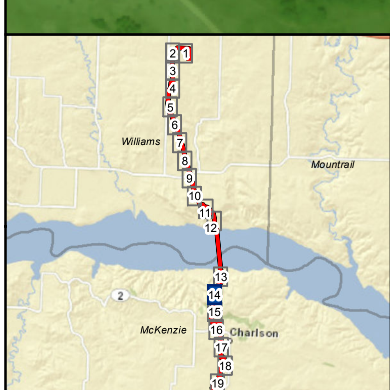
Hawkeye Pipeline System Project

Figure C-13

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles





Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland
- U.S. Forest Service

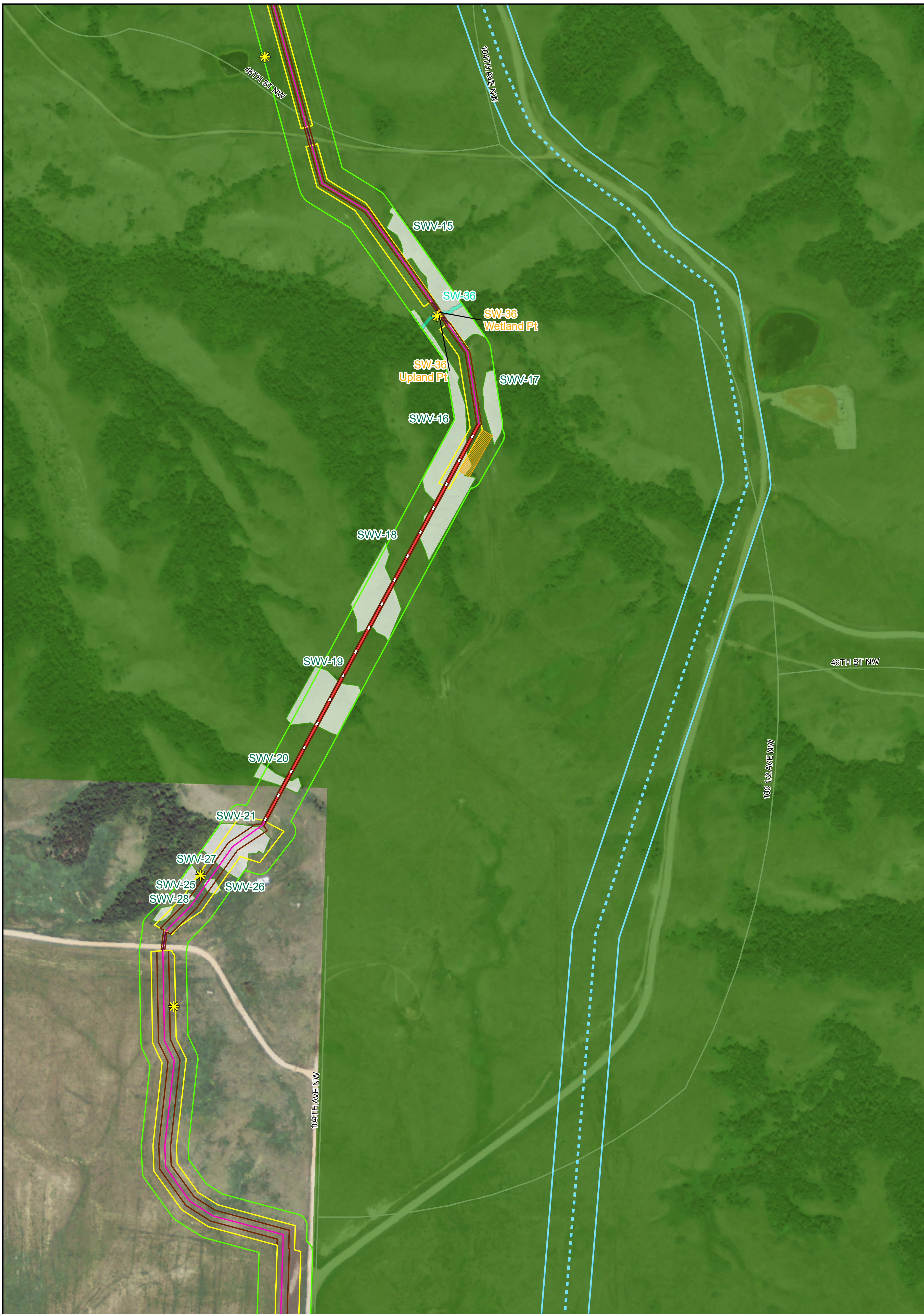
Source: Hess 2014.

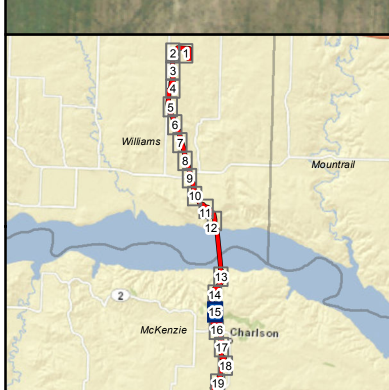
Hawkeye Pipeline System Project

Figure C-14

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles





Legend

Pipe Type
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland
- U.S. Forest Service

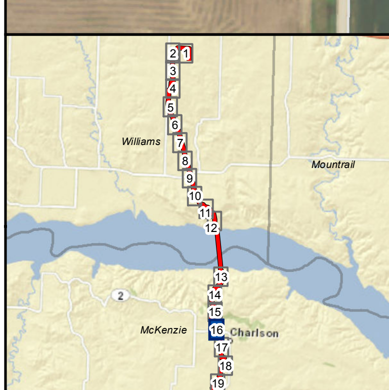
Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-15

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles



Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland
- U.S. Forest Service

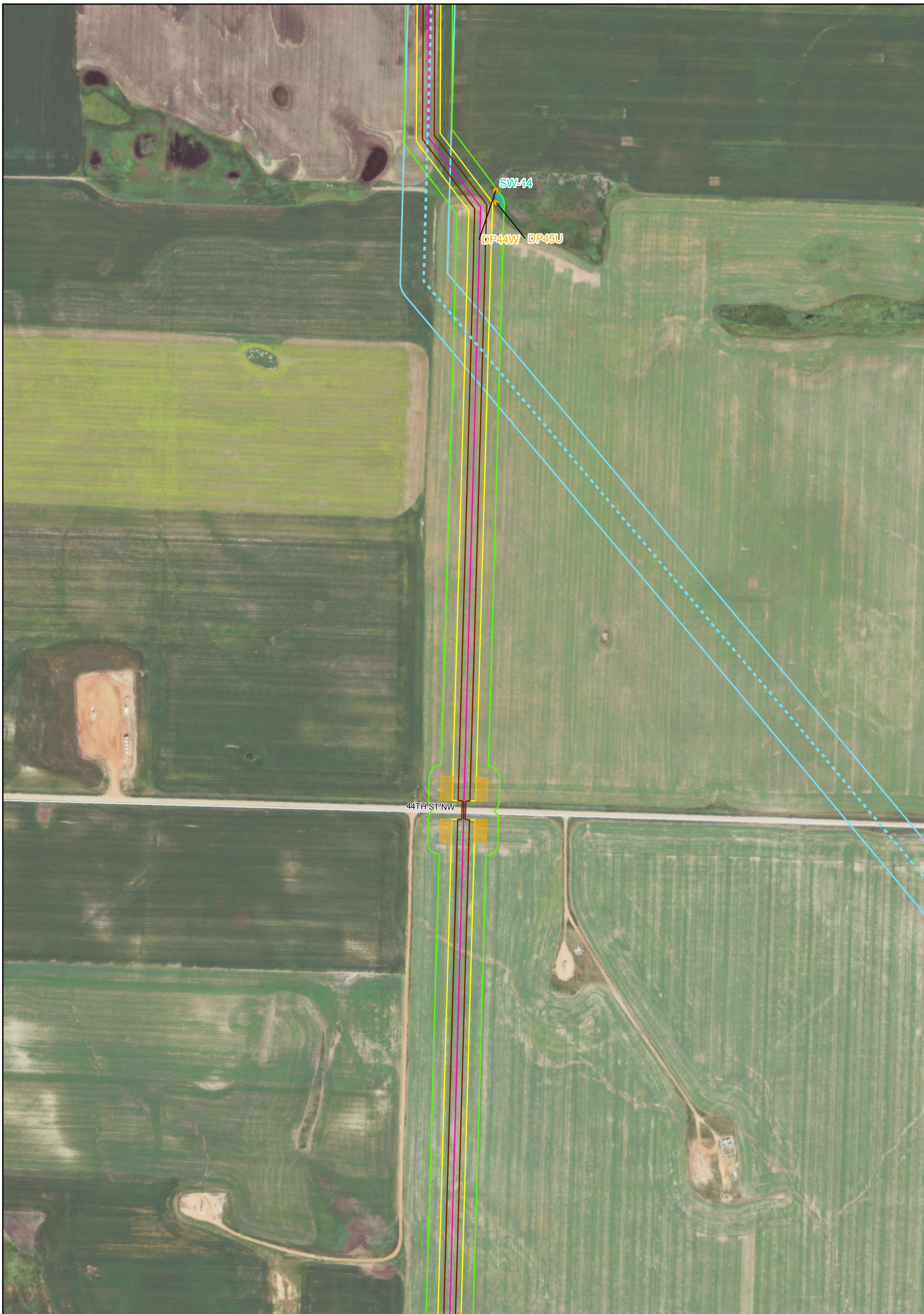
Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-16

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles



Legend

Pipe Type
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

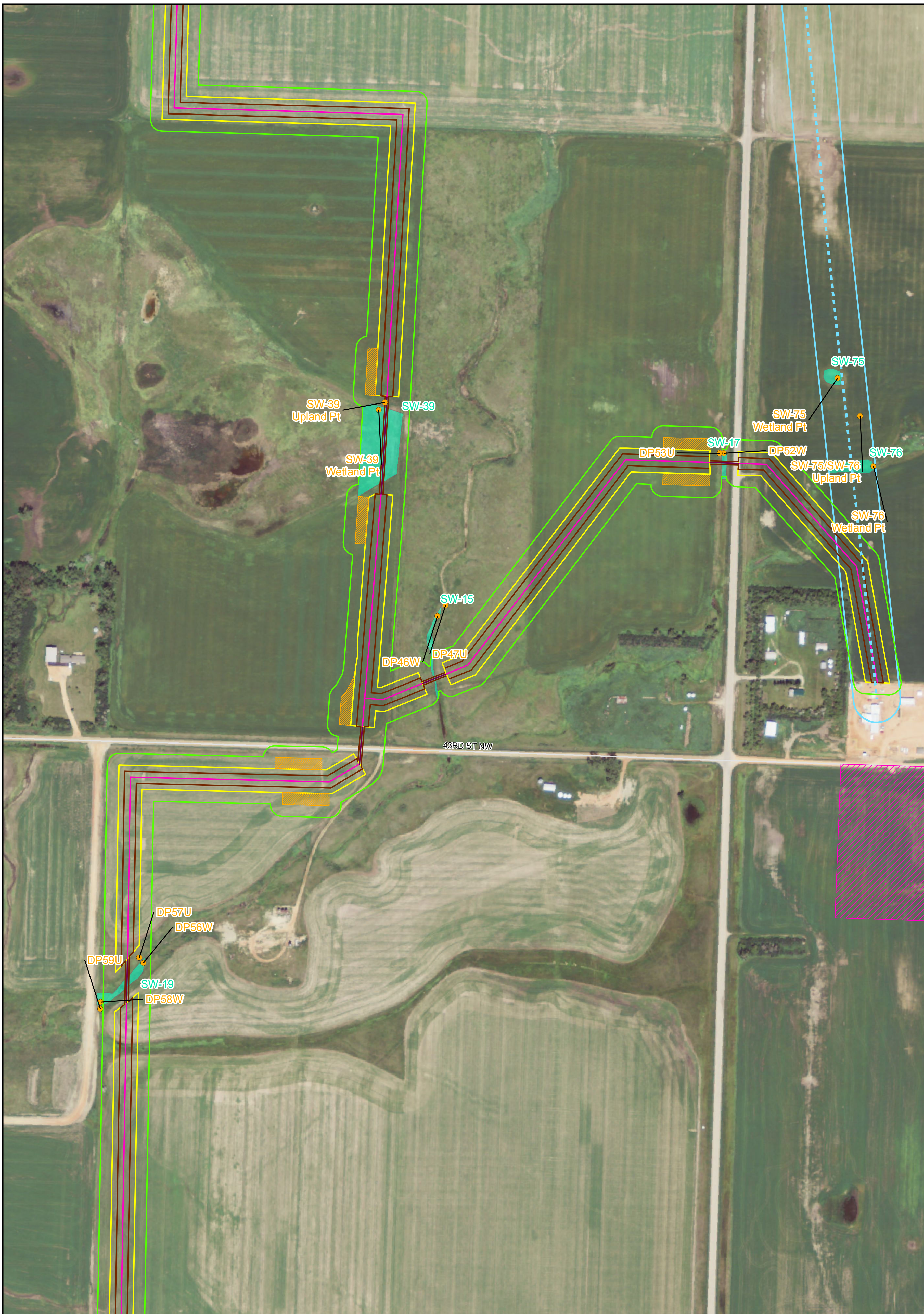
Source: Hess 2014.

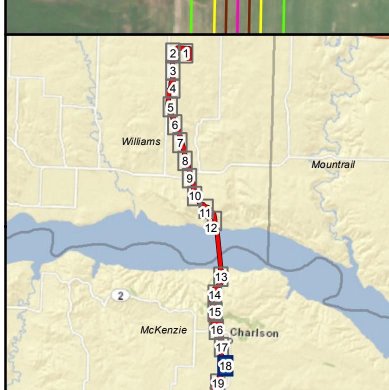
Hawkeye Pipeline System Project

Figure C-17

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles





Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

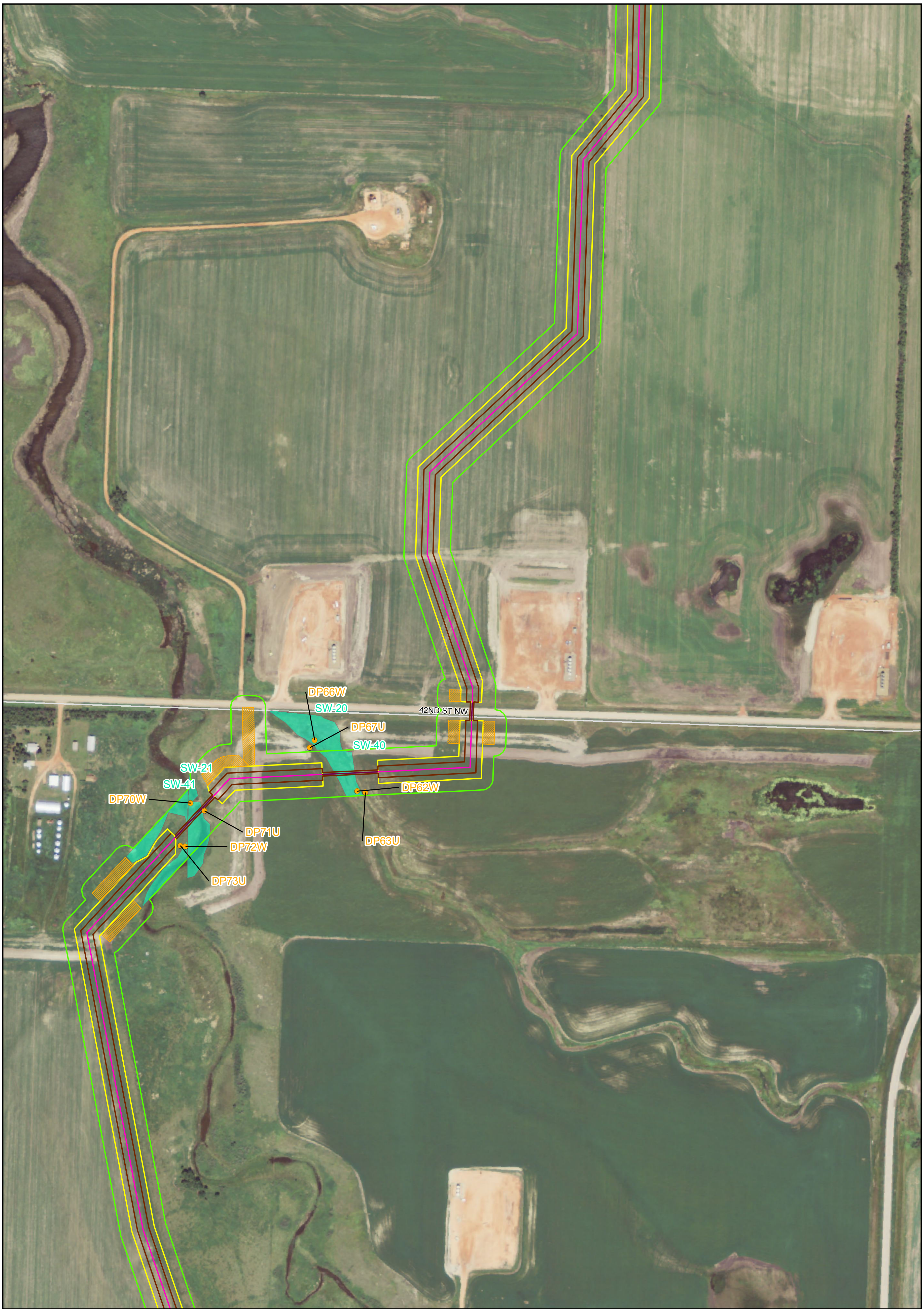
Source: Hess 2014.

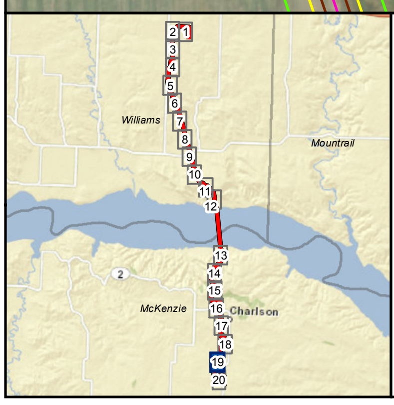
Hawkeye Pipeline System Project

Figure C-18

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles





Legend

PipeType
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

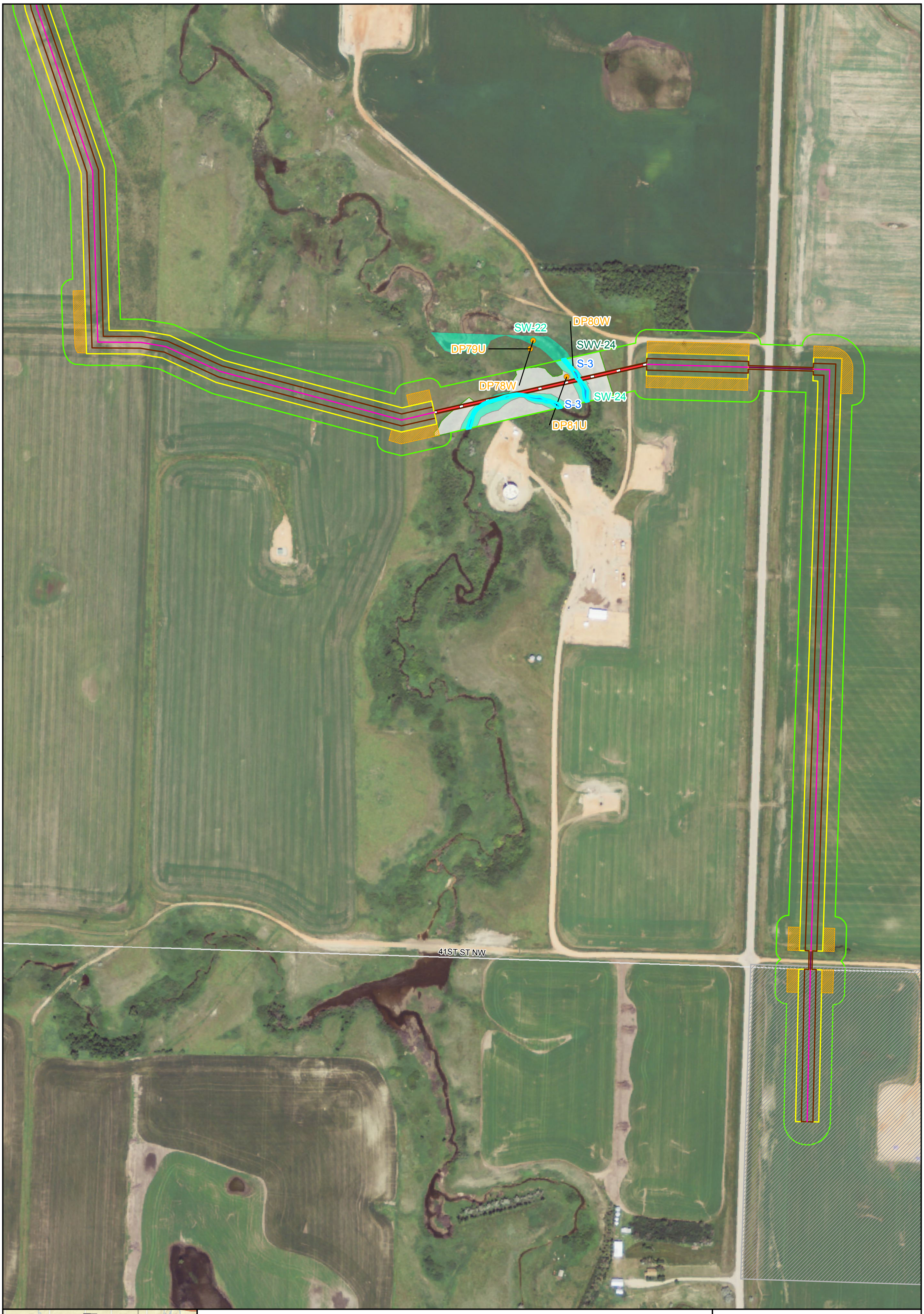
Source: Hess 2014.

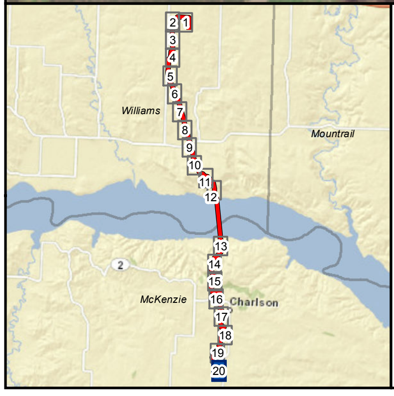
Hawkeye Pipeline System Project

Figure C-19

Hess Hawkeye Natural Resource Survey Results

0 0.0275 0.055 0.11
Miles





Legend

Pipe Type
- HDD
- Bore
- Trench Installation
- NGL Line
- NGL 200-ft Survey Corridor
- Corridor 10/14/2014

Construction Footprint
- Additional TWS
- Compressor Facility
- Oil Facility
- Permanent Easement
- Temporary Easement

Surveyed Data
- Surveyed Noxious Weed
- Soil Pit
- Surveyed Stream
- Surveyed Wetland
- Surveyed Woodland

Source: Hess 2014.

Hawkeye Pipeline System Project

Figure C-20

Hess Hawkeye Natural Resource Survey Results

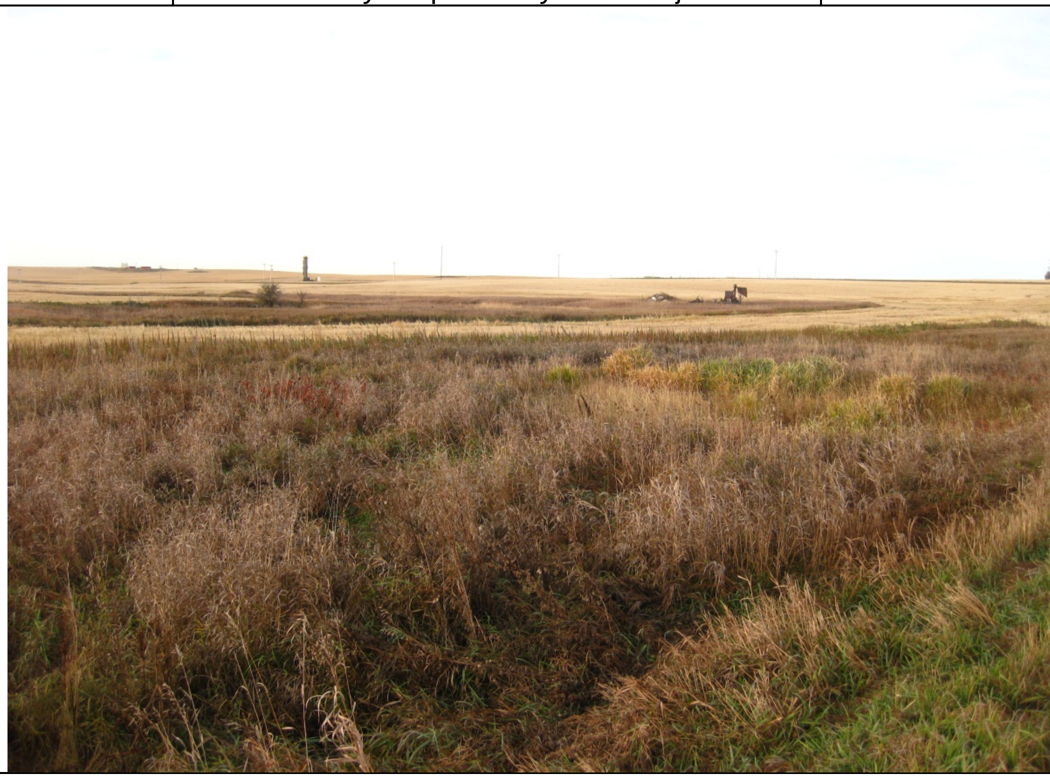
0 0.0275 0.055 0.11
Miles

Appendix D Site Photographs

PHOTOGRAPHIC LOG

Client:	Project:	Project No.
Hess Corporation	Hawkeye Pipeline System Project	212205020

Photo No. 1	**Date:** 10/15/14
Direction Photo Taken: Southwest	
Description: Disturbed wetland in swale in agricultural field	



Client:	Project:	Project No.
Hess Corporation	Hawkeye Pipeline System Project	212205020

Photo No. 10	**Date:** 08/05/14
Direction Photo Taken: South	
Description: Wetland along roadside	

Client: Hess Corporation	**Project:** Hawkeye Pipeline System Project	**Project No.** 212205020
Photo No. 2	**Date:** 08/5/14	
Direction Photo Taken: Southeast		
Description: Isolated wetland/pond		

Client: Hess Corporation	**Project:** Hawkeye Pipeline System Project	**Project No.** 212205020
Photo No. 3	**Date:** 10/15/14	
Direction Photo Taken: Northeast		
Description: Isolated wetland		

Client: Hess Corporation	Project: Hawkeye Pipeline System Project	Project No. 212205020

Photo No. 4	Date: 10/15/14
Direction Photo Taken: Southeast	
Description: Dry Fork Creek and fringing wetland	

Client: Hess Corporation	Project: Hawkeye Pipeline System Project	Project No. 212205020

Photo No. 5	Date: 10/11/12
Direction Photo Taken: South	
Description: Herbaceous wetland in swale	

Client: Hess Corporation	**Project:** Hawkeye Pipeline System Project	**Project No.** 212205020

Photo No. 6	**Date:** 10/14/13
Direction Photo Taken: West	
Description: Windrow	

Client: Hess Corporation	**Project:** Hawkeye Pipeline System Project	**Project No.** 212205020

Photo No. 7	**Date:** 10/16/13
Direction Photo Taken: West	
Description: Isolated wetland in agricultural field	

Client: Hess Corporation		Project: Hawkeye Pipeline System Project	Project No. 212205020
Photo No. 8	**Date:** 10/15/13		
Direction Photo Taken: Northeast			
Description: Windrow			

Client: Hess Corporation		Project: Hawkeye Pipeline System Project	Project No. 212205020
Photo No. 9	**Date:** 10/11/12		
Direction Photo Taken: North			
Description: Noxious weeds within survey area (Field bindweed (*Convovulus arvense*))			

Client: Hess Corporation	**Project:** Hawkeye Pipeline System Project	**Project No.** 212205020

Photo No. 10	**Date:** 10/16/14	
Direction Photo Taken: South		
Description: Native wooded draw		

Appendix E Survey Results Tables

Table E-1 Field Delineated Wetlands Identified within the Survey Corridor for the Proposed Project

Feature ID	NWI Classification	Survey Corridor (Acres)	Temporary Construction Footprint (acres)	Crossing Length[1] (mi)
SW-11	PEM	0.09	--	0.01
SW-12	PEM	0.03	--	--
SW-14	PEM	0.05	--	--
SW-15	PEM	0.05	--	<0.01
SW-17	PEM	0.06	--	<0.01
SW-19	PEM	0.18	--	0.01
SW-20	PEM	0.00	--	--
SW-21	PEM	0.42	--	0.02
SW-22	PEM	0.15	--	0.01
SW-24	PEM	0.81	--	0.05
SW-25	PEM	0.04	--	--
SW-27	PEM	0.19	--	--
SW-28	PEM	0.08	--	--
SW-29	PEM	0.17	--	0.01
SW-30	PEM	0.36	--	0.02
SW-31	PEM	0.12	--	--
SW-32	PEM	0.15	--	0.01
SW-33	PEM	0.09	--	0.01
SW-34	PEM	0.02	--	<0.01
SW-35	PEM	0.14	--	0.01
SW-36	PEM	0.07	--	<0.01
SW-37	PEM	0.14	--	<0.01
SW-38	PEM	0.07	--	<0.01
SW-39	PEM	1.26	--	0.06
SW-40	PEM	0.42	--	0.02
SW-41	PEM	0.64	--	<0.01
SW-42	PEM	0.18	--	--
SW-43	PEM	0.55	--	--
SW-51	PEM	0.15	--	--
SW-65	PEM	0.06	--	--

[1] Crossing lengths were measured along the centerline of the current route.

Table E-2 Field Delineated Wetlands Identified within the Survey Corridor for the Existing NGL Pipeline

Feature ID	NWI Classification	Survey Corridor (Acres)	Crossing Length[1] (mi)
SW-11	PEM	0.01	--
SW-25	PEM	0.07	--
SW-26	PEM	0.03	--
SW-27	PEM	0.09	--
SW-28	PEM	0.03	--
SW-29	PEM	0.12	<0.01
SW-30	PEM	0.46	0.02
SW-31	PEM	0.17	--
SW-32	PEM	0.15	0.01
SW-51	PEM	0.32	--
SW-65	PEM	0.13	--
SW-75	PEM	0.11	<0.01
SW-76	PEM	0.21	0.01

[1] Crossing lengths were measured along the centerline of the existing NGL pipeline.

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals: Survey Corridor (200 feet)	Number of Individuals: Construction ROW	Estimated Mitigation (2:1 Ratio)
SWV-1	Planted shelterbelt	Siberian elm	*Ulmus pulmila*	--	100	--	--
SWV-2	Native woodland	Silver buffaloberry	*Shepherdia argentea*	--	80	--	--
		Green Ash	*Fraxinus pennsylvanica*		11	--	--
		Chokecherry	*Prunus virginiana*		108	--	--
		Boxelder	*Acer negundo*		1	--	--
SWV-3	Native woodland	Fireberry hawthorn	*Crataegus chrysocarpa*	0.05	48	14	28
		Silver buffaloberry	*Shepherdia argentea*		27	8	16
		Green Ash	*Fraxinus pennslyvanica*		2	--	--
		Common juniper	*Juniperus communis*		16	4	8
SWV-4	Native woodland	American elm	*Ulmus americana*	0.09	200	101	202
		Green Ash	*Fraxinus pennslyvanica*		80	44	88
SWV-5	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.28	80	40	80
		Chokecherry	*Prunus virginiana*		300	160	320
		Green Ash	*Fraxinus pennslyvanica*		300	150	300
		Rocky Mountain juniper	*Juniperus scopulorum*		4	1	2
		Skunkbush sumac	*Rhus trilobata*		29	19	38
SWV-6	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	0.1	32	22	44
		Skunkbush sumac	*Rhus trilobata*		13	25	50
		Chokecherry	*Prunus virginiana*		28	12	24
		Common juniper	*Juniperus communis*		--	5	10
		Silver buffaloberry	*Shepherdia argentea*		38	7	14
SWV-7	Native woodland	Chokecherry	*Prunus virginiana*	--	66	--	--
		American elm	*Ulmus americana*		1	--	--
		Green Ash	*Fraxinus pennslyvanica*		11	--	--
		Rocky Mountain juniper	*Juniperus scopulorum*		3	--	--
		Common juniper	*Juniperus communis*		20	--	--
		Creeping juniper	*Juniperus horizontalis*		17	--	--

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals: Survey Corridor (200 feet)	Number of Individuals: Construction ROW	Estimated Mitigation (2:1 Ratio)
SWV-7 (Continued)	Native woodland (Continued)	Skunkbush sumac	*Rhus trilobata*		58	--	--
		Silver buffaloberry	*Shepherdia argentea*		70	--	--
SWV-8	Native woodland	Chokecherry	*Prunus virginiana*	0.06	30	30	60
		Green Ash	*Fraxinus pennslyvanica*		7	6	12
		Silver buffaloberry	*Shepherdia argentea*		10	65	130
SWV-9	Native woodland	Chokecherry	*Prunus virginiana*	0.25	200	27	54
		American elm	*Ulmus americana*		5	3	6
		Green Ash	*Fraxinus pennslyvanica*		70	31	62
		Common juniper	*Juniperus communis*		0	5	10
		Skunkbush sumac	*Rhus trilobata*		20	--	--
		Silver buffaloberry	*Shepherdia argentea*		30	--	--
SWV-10	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	52	--	--
SWV-11	Native woodland	Chokecherry	*Prunus virginiana*	--	3,170	--	--
		Green Ash	*Fraxinus pennslyvanica*		3,047	--	--
		Common juniper	*Juniperus communis*		40	--	--
		Quaking aspen	*Populus tremuloides*		3,045	--	--
		Red osier dogwood	*Cornus stolonifera*		27	--	--
		Silver buffaloberry	*Shepherdia argentea*		24	--	--
SWV-12	Native woodland	Chokecherry	*Prunus virginiana*	--	200	--	--
		Green Ash	*Fraxinus pennslyvanica*		25	--	--
		Silver buffaloberry	*Shepherdia argentea*		37	--	--
SWV-14	Native woodland	Chokecherry	*Prunus virginiana*	--	40	--	--
		Green Ash	*Fraxinus pennslyvanica*		8	--	--
		Fireberry hawthorn	*Crataegus chrysocarpa*		36	--	--
		Silver buffaloberry	*Shepherdia argentea*		70	--	--

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals: Survey Corridor (200 feet)	Number of Individuals: Construction ROW	Estimated Mitigation (2:1 Ratio)
SWV-15	Native woodland	Chokecherry	*Prunus virginiana*	0.03	3,000	0	--
		American elm	*Ulmus americana*		400	200	400
		Green Ash	*Fraxinus pennslyvanica*		500	0	--
		Common juniper	*Juniperus communis*		5	0	--
		Skunkbush sumac	*Rhus trilobata*		36	0	--
		Red osier dogwood	*Cornus stolonifera*		50	0	--
		Saskatoon serviceberry	*Amelanchier alnifolia*		100	0	--
		Nannyberry	*Viburnum lentago*		100	0	--
		Silver buffaloberry	*Shepherdia argentea*		57	113	226
SWV-16	Native woodland	Boxelder	*Acer Negundo*	0.27	35	15	30
		Chokecherry	*Prunus virginiana*		3,000	300	600
		American elm	*Ulmus americana*		300	12	24
		Green Ash	*Fraxinus pennslyvanica*		3,000	129	258
		Saskatoon serviceberry	*Amelanchier alnifolia*		0	150	300
		Silver buffaloberry	*Shepherdia argentea*		3,000	0	--
SWV-17	Native woodland	Boxelder	*Acer Negundo*	<0.01	10	0	--
		Chokecherry	*Prunus virginiana*		3,000	0	--
		American elm	*Ulmus americana*		300	0	--
		Green Ash	*Fraxinus pennslyvanica*		3,000	0	--
		Silver buffaloberry	*Shepherdia argentea*		47	65	130
SWV-18	Native woodland	Boxelder	*Acer Negundo*	--	4	--	--
		Chokecherry	*Prunus virginiana*		3,080	--	--
		Green Ash	*Fraxinus pennslyvanica*		230	--	--
		Silver buffaloberry	*Shepherdia argentea*		300	--	--

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals		Estimated Mitigation (2:1 Ratio)
					Survey Corridor (200 feet)	Construction ROW	
SWV-19	Native woodland	Chokecherry	*Prunus virginiana*	--	3,300	--	--
		Green Ash	*Fraxinus pennslyvanica*		385	--	--
		Common juniper	*Juniperus communis*		30	--	--
		Creeping juniper	*Juniperus horizontalis*		30	--	--
		Chokecherry	*Prunus virginiana*		135	--	--
SWV-20	Native woodland	American elm	*Ulmus americana*	--	1	--	--
		Green Ash	*Fraxinus pennslyvanica*		45	--	--
		Rocky Mountain juniper	*Juniperus scopulorum*		3	--	--
		Common juniper	*Juniperus communis*		51	--	--
		Saskatoon serviceberry	*Amelanchier alnifolia*		10	--	--
		Silver buffaloberry	*Shepherdia argentea*		205	--	--
SWV-21	Native woodland	Chokecherry	*Prunus virginiana*	0.65	300	3000	6000
		Green Ash	*Fraxinus pennslyvanica*		85	28	56
		Common juniper	*Juniperus communis*		15	--	--
		Saskatoon serviceberry	*Amelanchier alnifolia*		10	10	20
		Silver buffaloberry	*Shepherdia argentea*		85	120	240
SWV-22	Native woodland	Chokecherry	*Prunus virginiana*	--	17		--
		Green Ash	*Fraxinus pennslyvanica*		8		--
		Chokecherry	*Prunus virginiana*		11		--
SWV-23	Native woodland	Green Ash	*Fraxinus pennslyvanica*	--	7		--
		Silver buffaloberry	*Shepherdia argentea*		60		--
SWV-24	Native shrubland	Chokecherry	*Prunus virginiana*	0.01	500	25	50
		Fireberry hawthorn	*Crataegus chrysocarpa*		500	--	--
		Common buckthorn	*Rhamnus cathartica*		15	--	--
		Currant	*Ribes spp.*		200	--	--
		Silver buffaloberry	*Shepherdia argentea*		--	10	20

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals: Survey Corridor (200 feet)	Number of Individuals: Construction ROW	Estimated Mitigation (2:1 Ratio)
SWV-25	Native woodland	Chokecherry	*Prunus virginiana*	0.03	0	10	20
		Green Ash	*Fraxinus pennslyvanica*		0	10	20
		Rocky Mountain juniper	*Juniperus scopulorum*		0	1	2
		Silver buffaloberry	*Shepherdia argentea*		20	--	--
SWV-26	Native woodland	Chokecherry	*Prunus virginiana*	0.07	0	10	20
		Green Ash	*Fraxinus pennslyvanica*		10	8	16
		Silver buffaloberry	*Shepherdia argentea*		120	27	54
SWV-27	Native woodland	Chokecherry	*Prunus virginiana*	<0.01	300	3	6
		Green Ash	*Fraxinus pennslyvanica*		85	17	34
		Silver buffaloberry	*Shepherdia argentea*		16	--	--
SWV-28	Native woodland	Chokecherry	*Prunus virginiana*	0.02	1	--	--
		Green Ash	*Fraxinus pennslyvanica*		10	--	--
		Green Ash	*Fraxinus pennslyvanica*		94	9	18
SWV-29	Planted shelterbelt	Russian olive	*Elaegnus angustifolia*	0.24	132	--	--
		Siberian elm	*Ulmus pulmila*		51	--	--
		Siberian elm	*Ulmus pulmila*		25	25	50
SWV-30	Planted shelterbelt	Siberian elm	*Ulmus pulmila*	0.14	20	25	50
SWV-31	Planted shelterbelt	Siberian elm	*Ulmus pulmila*	0.11	3	1	2
SWV-32	Planted shelterbelt	Chokecherry	*Prunus virginiana*	0.10	20	20	40
SWV-33	Native woodland	American elm	*Ulmus americana*	0.03	0	2	4
		Green Ash	*Fraxinus pennslyvanica*		0	15	30
		Rocky Mountain juniper	*Juniperus scopulorum*		0	1	2
		Rocky Mountain juniper	*Juniperus scopulorum*		63	27	54
SWV-36	Native woodland	Green Ash	*Fraxinus pennslyvanica*	1.05	40	18	36
		American elm	*Ulmus americana*		5	1	2
		Silver buffaloberry	*Shepherdia argentea*		22	16	32
		Rocky Mountain juniper	*Juniperus scopulorum*		8	5	10

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals		Estimated Mitigation (2:1 Ratio)
					Survey Corridor (200 feet)	Construction ROW	
SWV-37	Native woodland	Green Ash	*Fraxinus pennslyvanica*	0.24	5	3	6
		Silver buffaloberry	*Shepherdia argentea*		17	11	22
		Rocky Mountain juniper	*Juniperus scopulorum*		8	1	2
SWV-38	Native woodland	Rocky Mountain juniper	*Juniperus scopulorum*	0.03	6	4	8
SWV-39	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.02	5	2	4
		Boxelder	*Acer negundo*		5	--	--
SWV-45	Native woodland	Boxelder	*Acer negundo*	--	5	--	--
		Chokecherry	*Prunus virginiana*		5	--	--
SWV-46	Native shrubland	Chokecherry	*Prunus virginiana*	0.11	0	25	50
SWV-47	Native shrubland	Chokecherry	*Prunus virginiana*	0.04	50	10	20
SWV-48	Native shrubland	Chokecherry	*Prunus virginiana*	--	60	--	--
SWV-49	Native shrubland	Common juniper	*Juniperus communis*	--	1	--	--
		Chokecherry	*Prunus virginiana*		19	--	--
SWV-50	Native shrubland	Chokecherry	*Prunus virginiana*	--	65	--	--
SWV-51	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	100	--	--
		Chokecherry	*Prunus virginiana*		30	--	--
SWV-53	Native woodland	Chokecherry	*Prunus virginiana*	--	10	--	--
		Green Ash	*Fraxinus pennslyvanica*		2	--	--
		Silver buffaloberry	*Shepherdia argentea*		5	--	--
SWV-54	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	6	--	--
SWV-55	Native shrubland	Chokecherry	*Prunus virginiana*	--	10	--	--
SWV-56	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	5	--	--
SWV-57	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	5	--	--
SWV-58	Native woodland	Boxelder	*Acer negundo*	--	5	--	--
SWV-59	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	15	--	--
SWV-61	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	22	--	--
SWV-62	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	20	--	--

Table E-3 Woodlands and Shrublands Identified Along the Proposed Project

Feature ID	Type	Species Name	Scientific Name	Construction ROW (acres)	Number of Individuals: Survey Corridor (200 feet)	Number of Individuals: Construction ROW	Estimated Mitigation (2:1 Ratio)
SWV-63	Native shrubland	Chokecherry	*Prunus virginiana*	--	20	--	--
SWV-77	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	--	20	--	--
		Chokecherry	*Prunus virginiana*		20	--	--
TOTAL				4.02	43,089	5,263	10,526

Table E-4 Woodlands and Shrublands Identified within the Survey Corridor for the Existing NGL Pipeline

Feature ID	Type	Species Name	Scientific Name	Survey Corridor (acres)	Number of Individuals Survey Corridor (200 feet)
SWV-1	Planted shelterbelt	Siberian elm	*Ulmus pulmila*	0.1	41
SWV-2	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.2	80
		Green Ash	*Fraxinus pennsylvanica*		11
		Chokecherry	*Prunus virginiana*		108
		Boxelder	*Acer negundo*		1
SWV-3	Native woodland	Fireberry hawthorn	*Crataegus chrysocarpa*	0.2	62
		Silver buffaloberry	*Shepherdia argentea*		35
		Green Ash	*Fraxinus pennslyvanica*		2
		Common juniper	*Juniperus communis*		20
SWV-7	Native woodland	Chokecherry	*Prunus virginiana*	<0.01	2
		Common juniper	*Juniperus communis*		1
		Skunkbush sumac	*Skunkbush sumac*		1
		Silver buffaloberry	*Shepherdia argentea*		2
SWV-29	Planted shelterbelt	Russian olive	*Elaegnus angustifolia*	0.3	10
SWV-33	Native woodland	American elm	*Ulmus americana*	<0.01	2
		Green Ash	*Fraxinus pennslyvanica*		15
		Rocky Mountain juniper	*Juniperus scopulorum*		1
		Rocky Mountain juniper	*Juniperus scopulorum*		90
SWV-43	Planted shelterbelt	Siberian elm	*Ulmus pulmila*	0.2	19
SWV-44	Planted shelterbelt	Siberian elm	*Ulmus pulmila*	0.1	9
SWV-45	Native woodland	Boxelder	*Acer negundo*	0.1	5
		Chokecherry	*Prunus virginiana*		5
SWV-48	Native shrubland	Chokecherry	*Prunus virginiana*	<0.1	60
SWV-50	Native shrubland	Chokecherry	*Prunus virginiana*	0.1	65
SWV-51	Native shrubland	Chokecherry	*Prunus virginiana*	0.1	30
		Silver buffaloberry	*Shepherdia argentea*		100

Table E-4 Woodlands and Shrublands Identified within the Survey Corridor for the Existing NGL Pipeline

Feature ID	Type	Species Name	Scientific Name	Survey Corridor (acres)	Number of Individuals Survey Corridor (200 feet)
SWV-52	Native shrubland	Chokecherry	*Prunus virginiana*	0.1	10
		Fireberry hawthorn	*Crataegus chrysocarpa*		25
SWV-53	Native woodland	Chokecherry	*Prunus virginiana*	<0.1	8
		Silver buffaloberry	*Shepherdia argentea*		10
		Green Ash	*Fraxinus pennslyvanica*		2
SWV-54	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	<0.1	5
SWV-55	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	0.1	6
SWV-57	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	<0.1	5
SWV-58	Native woodland	Boxelder	*Acer negundo*	<0.1	5
SWV-59	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	<0.1	15
SWV-60	Native shrubland	Common juniper	*Juniperus communis*	<0.1	4
SWV-61	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	<0.1	5
SWV-62	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	<0.1	22
SWV-63	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	0.2	20
SWV-64	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	<0.1	20
		Chokecherry	*Prunus virginiana*		20
SWV-65	Native woodland	Chokecherry	*Prunus virginiana*	<0.1	6
		Rocky Mountain juniper	*Juniperus scopulorum*		5
		Siberian elm	*Ulmus pulmila*		2
SWV-66	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.1	5
		Green Ash	*Fraxinus pennslyvanica*		1
		Rocky Mountain juniper	*Juniperus scopulorum*		1
		Siberian elm	*Ulmus pulmila*		9
SWV-67	Native woodland	Silver buffaloberry	*Shepherdia argentea*	<0.1	4
		Chokecherry	*Prunus virginiana*		18
		Siberian elm	*Ulmus pulmila*		25
SWV-68	Native woodland	Green Ash	*Fraxinus pennslyvanica*	<0.1	3

Table E-4 Woodlands and Shrublands Identified within the Survey Corridor for the Existing NGL Pipeline

Feature ID	Type	Species Name	Scientific Name	Survey Corridor (acres)	Number of Individuals Survey Corridor (200 feet)
SWV-69	Native woodland	Silver buffaloberry	*Shepherdia argentea*	<0.1	5
		Green Ash	*Fraxinus pennslyvanica*		5
		Rocky Mountain juniper	*Juniperus scopulorum*		1
SWV-70	Native shrubland	Silver buffaloberry	*Shepherdia argentea*	0.1	27
		Chokecherry	*Prunus virginiana*		16
SWV-71	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.1	38
		Green Ash	*Fraxinus pennslyvanica*		10
SWV-72	Native woodland	Silver buffaloberry	*Shepherdia argentea*	<0.1	1
		Green Ash	*Fraxinus pennslyvanica*		6
SWV-73	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.1	5
		Boxelder	*Acer negundo*		5
		Chokecherry	*Prunus virginiana*		25
		Green Ash	*Fraxinus pennslyvanica*		18
SWV-74	Native woodland	Silver buffaloberry	*Shepherdia argentea*	<0.1	5
SWV-75	Native woodland	Green Ash	*Fraxinus pennslyvanica*	<0.1	7
		Common juniper	*Juniperus communis*		2
SWV-76	Native woodland	Silver buffaloberry	*Shepherdia argentea*	0.1	34
		Green Ash	*Fraxinus pennslyvanica*		49
SWV-77	Native shrubland	Chokecherry	*Prunus virginiana*	0.1	20
		Silver buffaloberry	*Shepherdia argentea*		20
		TOTAL		**2.6**	**1,337**

Appendix F Data Sheets

Report ID: SW-11

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: Williams Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP34W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S9 T154N R95W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
Subregion (LRR): LRR-F Lat: 48.16864 Long: -102.90548 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes X** **No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Scirpus validus*	45	yes	OBL
2. *Hordeum jubatum*	25	yes	FACW
3. *Juncus balticus*	15	no	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	60	x 1 = 60
FACW species	25	x 2 = 50
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	85 (A)	110 (B)

Prevalence Index = B/A = **1.29**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-11

Sampling Point: **NR_DP34W**

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 4/2	85	7.5YR 5/8	15	C	M	Clay	
6-10	2.5Y 4/3	90	7.5YR 5/8	10	C	M	Clay Loam	
10-20	10YR 2.5/2	95	7.5YR 4/6	5	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No **X**	Depth (inches): **NA**
Water Table Present?	Yes ___	No **X**	Depth (inches): **NA**
Saturation Present? (includes capillary fringe)	Yes ___	No **X**	Depth (inches): **NA**

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-11
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: Williams Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP35U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S9 T154N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-8%
Subregion (LRR): LRR-F Lat: 48.16867 Long: -102.90550 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**	
Wetland Hydrology Present?	Yes ____ No **X**	

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	40	yes	UPL
2. *Agropyron cristatum*	35	yes	UPL
3. *Grindelia squarrosa*	10	no	UPL
4. *Artemisia campestris*	10	no	UPL
5. *Poa pratensis*	5	no	FACU
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**5**	x 4 = **20**
UPL species	**95**	x 5 = **475**
Column Totals:	**100** (A)	**495** (B)

Prevalence Index = B/A = **4.95**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes ____ No **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-11 Upland Pit

Sampling Point: NR_DP35U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
3-7	10YR 2/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
7-20	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes ___ No X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): NA
Water Table Present? Yes ___ No X Depth (inches): NA
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): NA

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-12

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: Williams Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP36W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S9 T154N R95W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0-8%
Subregion (LRR): LRR-F Lat: 48.16867 Long: -102.90509 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X** No ____	**Is the Sampled Area within a Wetland?** **Yes X No ____**
Hydric Soil Present?	Yes **X** No ____	
Wetland Hydrology Present?	Yes **X** No ____	

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	95	yes	FACW
2. *Elymus repens*	15	no	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**95**	x 2 = **190**
FAC species	**15**	x 3 = **45**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**110** (A)	**235** (B)

Prevalence Index = B/A = **2.14**

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- **X** 2 - Dominance Test is >50%
- **X** 3 - Prevalence Index is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Explain)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-12

Sampling Point: **NR_DP36W**

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 4/2	95	7.5YR 5/8	5	C	PL	Silty Clay Loam	
6-20	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
X Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes X No ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): **NA**
Water Table Present? Yes ___ No X Depth (inches): **NA**
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): **NA**

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-12
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: Williams | Sampling Date: October 11, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP37U
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S9 T154N R95W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 0-8%
Subregion (LRR): LRR-F | Lat: 48.16869 | Long: -102.90501 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Poa pratensis*	70	yes	FACU
2. *Symphoricarpos occidentalis*	15	no	UPL
3. *Agropyron cristatum*	10	no	UPL
4. *Melilotus officinalis*	10	no	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**80**	x 4 = **320**
UPL species	**25**	x 5 = **125**
Column Totals:	**105** (A)	**445** (B)

Prevalence Index = B/A = **4.24**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Explain)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-12 Upland Pit

Sampling Point: NR_DP37U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
12-20	10YR 3/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes ____ No X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): NA
Water Table Present? Yes ____ No X Depth (inches): NA
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): NA

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-14

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 11, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP44W
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S27 T153N R95W
Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave | Slope (%): 0-2%
Subregion (LRR): LRR-F | Lat: 48.04155 | Long: -102.87598 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes X No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	95	yes	FACW
2. *Sanchos arvensis*	5	no	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	100	x 2 = 200
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A = **2.00**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- **X** 2 - Dominance Test is >50%
- **X** 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-14

Sampling Point: NR_DP44W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	95	7.5YR 5/4	5	C	M	Silt Loam	
6-20	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
X Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes X No ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0-2"
Water Table Present? Yes X No ___ Depth (inches): 6-20"
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-20"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-14
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP45U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S27 T153N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-20%
Subregion (LRR): LRR-F Lat: 48.04159 Long: -102.87604 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No **X**
Hydric Soil Present? Yes ____ No **X**
Wetland Hydrology Present? Yes ____ No **X**

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	100	yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**100**	x 5 = **500**
Column Totals:	**100** (A)	**500** (B)

Prevalence Index = B/A = **5.00**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-14 Upland Pit

Sampling Point: NR_DP45U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No **X**	Depth (inches): **NA**
Water Table Present?	Yes ___	No **X**	Depth (inches): **NA**
Saturation Present? (includes capillary fringe)	Yes ___	No **X**	Depth (inches): **NA**

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-15

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP46W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S27 T153N R95W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0-2%
Subregion (LRR): LRR-F Lat: 48.04196 Long: -102.87533 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes X** **No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	100	yes	FACW
2. *Rumex occidentalis*	10	no	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	100	x 2 = 200
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	110 (A)	210 (B)

Prevalence Index = B/A = **1.91**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-15

Sampling Point: NR_DP46W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	90	7.5YR 5/8	10	C	M	Silty Clay Loam	
6-20	10YR 2/1	95	7.5YR 4/6	5	C	PL	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): **0-4"**
Water Table Present?	Yes X	No ___	Depth (inches): **4-20"**
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): **0-20"**

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-15
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 11, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP47U
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S27 T153N R95W
Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): None | Slope (%): 0%
Subregion (LRR): LRR-F | Lat: 48.04196 | Long: -102.87529 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**
Hydric Soil Present?	Yes ____	No **X**
Wetland Hydrology Present?	Yes ____	No **X**

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	80	yes	UPL
2. *Elymus repens*	15	no	FAC
3. *Symphoricarpos occidentalis*	15	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**15**	x 3 = **45**
FACU species	**0**	x 4 = **0**
UPL species	**95**	x 5 = **475**
Column Totals:	**110** (A)	**520** (B)

Prevalence Index = B/A = **4.73**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-15 Upland Pit

Sampling Point: NR_DP47U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
4-20	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes ___ No X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	NA
Water Table Present?		X	NA
Saturation Present? (includes capillary fringe)		X	NA

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-15

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP48W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S27 T153N R95W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
Subregion (LRR): LRR-F Lat: 48.04170 Long: -102.87164 Datum: NAD83
Soil Map Unit Name: Williams-Bowbells loams NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Typha latifolia*	50	yes	OBL
2. *Hordeum jubatum*	40	yes	FACW
3. *Rumex occidentalis*	10	no	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**60**	x 1 =	**60**
FACW species	**40**	x 2 =	**80**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**100** (A)		**140** (B)

Prevalence Index = B/A = **1.40**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-15

Sampling Point: **NR_DP48W**

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 4/2	95	5YR 3/4	5	C	M	Clay Loam	
3-12	2.5Y 3/2	95	7.5YR 4/6	5	C	M	Silty Clay Loam	
12-20	2.5Y 3/2	95	5YR 4/6	5	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
_X_ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes _X_ No ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
_X_ Geomorphic Position (D2)
_X_ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No _X_	Depth (inches):	NA
Water Table Present?	Yes ___	No _X_	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ___	No _X_	Depth (inches):	NA

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

Report ID: SW-15
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 11, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP49U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S27 T153N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-8%
Subregion (LRR): LRR-F Lat: 48.04170 Long: -102.87171 Datum: NAD83
Soil Map Unit Name: Williams-Bowbells loams NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?	X	
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

This point was determined not to be within a wetland due to the lack of hydrophytic vegetation and wetland hydrology.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	85	yes	UPL
2. *Poa pratensis*	15	no	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	100	x 5 = 500
Column Totals:	100 (A)	500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Explain)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-15
Upland Pit

Sampling Point: NR_DP49U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	95	7.5YR 4/6	5	C	M	Silt Loam	
4-20	10YR 2/2	95	5YR 4/6	5	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
_X_ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes _X_ No ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	NA
Water Table Present?		X	NA
Saturation Present? (includes capillary fringe)		X	NA

Wetland Hydrology Present? Yes ___ No _X_

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-15
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP51U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S34 T153N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-25%
Subregion (LRR): LRR-F Lat: 48.03784 Long: -102.87672 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected, NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	95	yes	UPL
2. *Spartina pectinata*	10	no	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	10	x 2 = 20
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	95	x 5 = 475
Column Totals:	105 (A)	495 (B)

Prevalence Index = B/A = 4.71

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-15 Upland Pit

Sampling Point: NR_DP51U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
6-20	10YR 3/2	90	7.5YR 3/8	10	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes ____ No X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	NA
Water Table Present?	Yes ____	No X	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	NA

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-17

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye   County: McKenzie   Sampling Date: October 12, 2012
Applicant/Owner: Hess   State: ND   Sampling Point: NR_DP52W
Investigator(s): M. Fettes and G. Schonert   Section, Township, Range: S34 T153N R95W
Landform (hillslope, terrace, etc.): Drainage   Local relief (concave, convex, none): Concave   Slope (%): 0-2%
Subregion (LRR): LRR-F   Lat: 48.03552   Long: -102.88158   Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected   NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed?   Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Elymus repens*	70	yes	FAC
2. *Spartina pectinata*	25	yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**25**	x 2 = **50**
FAC species	**70**	x 3 = **210**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**95** (A)	**260** (B)

Prevalence Index = B/A = **2.74**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-17

Sampling Point: **NR_DP52W**

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	75	7.5YR 3/4	25	C	PL	Silty Clay Loam	
3-7	10YR 3/2	95	7.5YR 5/8	5	C	M	Silty Clay Loam	
7-20	10YR 2/1	90	7.5YR 5/8	10	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	NA
Water Table Present?	X		10+"
Saturation Present? (includes capillary fringe)	X		0-20"

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-17
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye   County: McKenzie   Sampling Date: October 12, 2012
Applicant/Owner: Hess   State: ND   Sampling Point: NR_DP53U
Investigator(s): M. Fettes and G. Schonert   Section, Township, Range: S34 T153N R95W
Landform (hillslope, terrace, etc.): Hillslope   Local relief (concave, convex, none): Concave   Slope (%): 0-20%
Subregion (LRR): LRR-F   Lat: 48.03555   Long: -102.88162   Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected   NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed?   Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**
Hydric Soil Present?	Yes ____	No **X**
Wetland Hydrology Present?	Yes ____	No **X**

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	80	yes	UPL
2. *Andropogon gerardii*	20	no	UPL
3. *Spartina pectinata*	5	no	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**5**	x 2 = **10**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**100**	x 5 = **500**
Column Totals:	**105** (A)	**510** (B)

Prevalence Index = B/A = **4.86**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-17 Upland Pit

Sampling Point: NR_DP53U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
14-20	10YR 4/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes	No	**X**	Depth (inches):	**NA**
Water Table Present?	Yes	No	**X**	Depth (inches):	**NA**
Saturation Present? (includes capillary fringe)	Yes	No	**X**	Depth (inches):	**NA**

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-19

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP56W
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S34 T153N R95W
Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): None | Slope (%): 0%
Subregion (LRR): LRR-F | Lat: 48.02450 | Long: -102.88192 | Datum: NAD83
Soil Map Unit Name: Williams-Bowbells loams | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Polygonum amphibium*	60	yes	OBL
2. *Beckmannia syzigachne*	30	yes	FACW
3. *Rumex occidentalis*	5	no	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	65	x 1 = 65
FACW species	30	x 2 = 60
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	95 (A)	125 (B)

Prevalence Index = B/A = 1.32

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-19

Sampling Point: NR_DP56W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR 3/1	3	7.5YR 4/6	3	C	PL	Silty Clay Loam	
10-20	10YR 3/1	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
X Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): NA
Water Table Present?	Yes ___	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): NA

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-19
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP57U
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S34 T153N R95W
Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): None | Slope (%): 0%
Subregion (LRR): LRR-F | Lat: 48.02454 | Long: -102.88185 | Datum: NAD83
Soil Map Unit Name: Williams-Bowbells loams | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Triticum aestivum*	100	yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**100**	x 5 = **500**
Column Totals:	**100** (A)	**500** (B)

Prevalence Index = B/A = **5.00**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-19 Upland Pit

Sampling Point: NR_DP57U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
10-20	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	NA
Water Table Present?		X	NA
Saturation Present? (includes capillary fringe)		X	NA

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-19

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP58W
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave | Slope (%): 0-2%
Subregion (LRR): LRR-F | Lat: 48.02331 | Long: -102.88690 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 5 ft.)			
1. *Elymus repens*	95	yes	FAC
2. *Hordeum jubatum*	10	no	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	105		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**10**	x 2 = **20**
FAC species	**95**	x 3 = **285**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**105** (A)	**305** (B)

Prevalence Index = B/A = **2.90**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-19

Sampling Point: NR_DP58W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	90	5YR 4/6	10	C	PL	Clay Loam	
6-10	10YR 2/2	98	5YR 4/6	2	C	M	Silty Clay Loam	
10-20	10YR 3/1	95	5YR 4/6	5	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	NA
Water Table Present?		X	NA
Saturation Present? (includes capillary fringe)		X	NA

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-19
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP59U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-10%
Subregion (LRR): LRR-F Lat: 48.02326 Long: -102.88700 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**
Hydric Soil Present?	Yes ____	No **X**
Wetland Hydrology Present?	Yes ____	No **X**

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **0** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**0** (A)	**0** (B)

Prevalence Index = B/A = **N/A**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-19 Upland Pit

Sampling Point: NR_DP59U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
4-20	10YR 4/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches):	**NA**
Water Table Present?	Yes ____	No **X**	Depth (inches):	**NA**
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches):	**NA**

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-20/SW-40 WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP62W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0-2%
Subregion (LRR): LRR-F Lat: 48.02249 Long: -102.88911 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	65	yes	FACW
2. *Hordeum jubatum*	10	no	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		
% Bare Ground in Herb Stratum 25			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**75**	x 2 = **150**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**75** (A)	**150** (B)

Prevalence Index = B/A = **2.00**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Explain)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-20/SW-40

Sampling Point: NR_DP62W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	50	7.5YR 5/8	5	C	M	Silty Clay Loam	
0-10	NONE 4/1	45	NONE NONE	N/A	N/A	N/A	Clay Loam	
10-20	10YR 4/1	90	7.5YR 3/8	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16)
  (MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16)
  (LRR H outside of MLRA 72 & 73)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes X No ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3)
  (where not tilled)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3)
  (where tilled)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 0-5"
Water Table Present?	Yes X	No ___	Depth (inches): 0-20"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0-20"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-20/ SW-40 Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye	County: McKenzie	Sampling Date: October 12, 2012
Applicant/Owner: Hess	State: ND	Sampling Point: NR_DP63U
Investigator(s): M. Fettes and G. Schonert	Section, Township, Range: S6 T152N R95W	
Landform (hillslope, terrace, etc.): Terrace	Local relief (concave, convex, none): None	Slope (%): 0-5%
Subregion (LRR): LRR-F	Lat: 48.02245 Long: -102.88887	Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected	NWI Classification: N/A	

Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)

Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?	X	
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:

This point was determined not to be within a wetland due to the lack of hydrophytic vegetation and wetland hydrology.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Agropyron cristatum*	70	yes	UPL
2. *Symphoricarpos occidentalis*	25	yes	UPL
3. *Bromus inermis*	20	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	115	x 5 = 575
Column Totals:	115 (A)	575 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Explain)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-20/SW-40 Upland Pit

Sampling Point: **NR_DP63U**

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 2.5/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
3-20	10YR 5/2	95	7.5YR 4/6	5	C	M	Sandy Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
X Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	NA
Water Table Present?		X	NA
Saturation Present? (includes capillary fringe)		X	NA

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-20/SW-40 **WETLAND DETERMINATION DATA FORM - Great Plains Region**

Project/Site: Hess Hawkeye — County: McKenzie — Sampling Date: October 12, 2012
Applicant/Owner: Hess — State: ND — Sampling Point: NR_DP64W
Investigator(s): M. Fettes and G. Schonert — Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Drainage — Local relief (concave, convex, none): Concave — Slope (%): 0-2%
Subregion (LRR): LRR-F — Lat: 48.02101 — Long: -102.88893 — Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected — NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? — Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? — (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	90	yes	FACW
2. *Elymus repens*	5	no	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**90**	x 2 = **180**
FAC species	**5**	x 3 = **15**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**95** (A)	**195** (B)

Prevalence Index = B/A = **2.05**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- **X** 2 - Dominance Test is >50%
- **X** 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-20/SW-40

Sampling Point: NR_DP64W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	95	7.5YR 4/6	5	C	M	Silty Clay Loam	
6-12	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
12-20	2.5Y 2.5/1	95	7.5YR 4/6	N/A	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
X Redox Depressions (F8)
___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
X Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): NA
Water Table Present? Yes ___ No X Depth (inches): NA
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): NA

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-20/ SW-40 Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP65U
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 0-2%
Subregion (LRR): LRR-F | Lat: 48.02107 | Long: -102.88885 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	65	yes	UPL
2. *Symphoricarpos occidentalis*	30	yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**95**	x 5 = **475**
Column Totals:	**95** (A)	**475** (B)

Prevalence Index = B/A = **5.00**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-20/SW-40 Upland Pit

Sampling Point: NR_DP65U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
8-20	10YR 3/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches):	**NA**
Water Table Present?	Yes ____	No **X**	Depth (inches):	**NA**
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches):	**NA**

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-20/SW-40 WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye   County: McKenzie   Sampling Date: October 12, 2012
Applicant/Owner: Hess   State: ND   Sampling Point: NR_DP66W
Investigator(s): M. Fettes and G. Schonert   Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Drainage   Local relief (concave, convex, none): Concave   Slope (%): 0-2%
Subregion (LRR): LRR-F   Lat: 48.01822   Long: -102.88888   Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected   NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? **Yes X No ____**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	70	yes	FACW
2. *Hordeum jubatum*	20	yes	FACW
3. *Rumex occidentalis*	5	no	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		185 (B)

Prevalence Index = B/A = **1.95**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-20/SW-40

Sampling Point: NR_DP66W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	5Y 4/2	40	10YR 3/4	20	C	M	Clay Loam	
0-6	NONE 2/1	40	NONE NONE	N/A	N/A	N/A	Clay Loam	
6-20	5Y 4/2	75	NONE NONE	N/A	N/A	N/A	Clay Loam	
6-20	NONE 2/1	25	NONE NONE	N/A	N/A	N/A	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**

___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
_X_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

_X_ Surface Water (A1)
_X_ High Water Table (A2)
_X_ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
_X_ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)

___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
___ Crayfish Burrows (C8)
_X_ Saturation Visible on Aerial Imagery (C9)
_X_ Geomorphic Position (D2)
_X_ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _X_ No ___ Depth (inches): **15"**
Water Table Present? Yes _X_ No ___ Depth (inches): **0-20"**
Saturation Present? (includes capillary fringe) Yes _X_ No ___ Depth (inches): **0-20"**

Wetland Hydrology Present? **Yes** _X_ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-20/ SW-40 Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP67U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-3%
Subregion (LRR): LRR-F Lat: 48.01819 Long: -102.88893 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	
Hydric Soil Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** **X**
Wetland Hydrology Present?	Yes ____ No **X**	

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	75	yes	UPL
2. *Symphoricarpos occidentalis*	15	no	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**90**	x 5 = **450**
Column Totals:	**90** (A)	**450** (B)

Prevalence Index = B/A = **5.00**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-20/SW-40 Upland Pit

Sampling Point: NR_DP67U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Redox Type[1]	Redox Loc[2]	Texture	Remarks
0-20	2.5Y 4/3	100	NONE NONE	N/A	N/A	N/A	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes ___ No X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): NA
Water Table Present? Yes ___ No X Depth (inches): NA
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): NA

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-21/SW-41 **WETLAND DETERMINATION DATA FORM - Great Plains Region**

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP70W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S6 T152N R95W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0-5%
Subregion (LRR): LRR-F Lat: 48.01346 Long: -102.88011 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Hydric Soil Present?	Yes X	No		
Wetland Hydrology Present?	Yes X	No		

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Typha latifolia*	95	yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	95	x 1 = 95
FACW species	0	x 2 = 0
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	95 (A)	95 (B)

Prevalence Index = B/A = **1.00**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-21/SW-41

Sampling Point: NR_DP70W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	NONE NONE	100	NONE NONE	N/A	N/A	N/A	Organic Soil Layer	Muck
6-20	2.5Y 2.5/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
X Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
X Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** X **No** ____

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
X Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
X Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
____ Crayfish Burrows (C8)
X Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches):	**0-5"**
Water Table Present?	Yes X	No	Depth (inches):	**0-20"**
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches):	**0-20"**

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-21/ SW-41 Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye — County: McKenzie — Sampling Date: October 12, 2012

Applicant/Owner: Hess — State: ND — Sampling Point: NR_DP73U

Investigator(s): M. Fettes and G. Schonert — Section, Township, Range: S8 T152N R95W

Landform (hillslope, terrace, etc.): Hillslope — Local relief (concave, convex, none): Concave — Slope (%): 0-5%

Subregion (LRR): LRR-F — Lat: 47.99945 — Long: -102.87561 — Datum: NAD83

Soil Map Unit Name: Zahl-Williams loams, dissected — NWI Classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)

Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? — Are "Normal Circumstances" present? Yes X No ____

Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? — (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	80	yes	UPL
2. *Melilotus officinalis*	15	no	FACU
3. *Agropyron cristatum*	10	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**15**	x 4 = **60**
UPL species	**90**	x 5 = **450**
Column Totals:	**105** (A)	**510** (B)

Prevalence Index = B/A = **4.86**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-21/SW-41 Upland Pit

Sampling Point: NR_DP73U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
8-20	10YR 3/2	75	7.5YR 4/6	5	C	PL	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**

____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)

____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes	____	No	X	Depth (inches):	NA
Water Table Present?	Yes	____	No	X	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes	____	No	X	Depth (inches):	NA

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-21/SW-41 WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP72W
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S8 T152N R95W
Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave | Slope (%): 0-3%
Subregion (LRR): LRR-F | Lat: 47.99938 | Long: -102.87554 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes **X** No ____
Hydric Soil Present? Yes **X** No ____
Wetland Hydrology Present? Yes **X** No ____

Is the Sampled Area within a Wetland? **Yes X No ____**

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 5 ft.)			
1. *Typha latifolia*	95	yes	OBL
2. *Elymus repens*	10	no	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	105		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**95**	x 1 = **95**
FACW species	**0**	x 2 = **0**
FAC species	**10**	x 3 = **30**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**105** (A)	**125** (B)

Prevalence Index = B/A = **1.19**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-21/SW-41

Sampling Point: NR_DP72W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	NONE 2/1	100	NONE NONE	N/A	N/A	N/A	Organic Soil Layer	Muck
1-20	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- X 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	NA
Water Table Present?	X		15-20"
Saturation Present? (includes capillary fringe)	X		0-20"

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-21/ SW-41 Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP73U
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S8 T152N R95W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-5%
Subregion (LRR): LRR-F Lat: 47.99945 Long: -102.87561 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
= Total Cover	0		

Sapling/Shrub Stratum (Plot size: 15 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
= Total Cover	0		

Herb Stratum (Plot size: 5 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *Bromus inermis*	80	yes	UPL
2. *Melilotus officinalis*	15	no	FACU
3. *Agropyron cristatum*	10	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	105		

Woody Vine Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**15**	x 4 = **60**
UPL species	**90**	x 5 = **450**
Column Totals:	**105** (A)	**510** (B)

Prevalence Index = B/A = **4.86**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Explain)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-21/SW-41
Upland Pit

Sampling Point: NR_DP73U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
8-20	10YR 3/2	75	7.5YR 4/6	5	C	PL	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
___ 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **NA**
Water Table Present? Yes ___ No **X** Depth (inches): **NA**
Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **NA**

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-22/SW-24
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP75U
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S8 T152N R95W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 0-8%
Subregion (LRR): LRR-F | Lat: 47.99881 | Long: -102.87473 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?	X	
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

This point was determined not to be within a wetland due to the lack of hydrophytic vegetation and wetland hydrology.

A dry year

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	90	yes	UPL
2. *Solidago rigida*	15	no	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**105**	x 5 = **525**
Column Totals:	**105** (A)	**525** (B)

Prevalence Index = B/A = **5.00**

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Explain)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-22/SW-24 Upland Pit

Sampling Point: NR_DP75U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
4-20	10YR 5/2	95	7.5YR 5/8	5	C	PL	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- X Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes X No ____

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches):	**NA**
Water Table Present?	Yes ____	No **X**	Depth (inches):	**NA**
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches):	**NA**

Wetland Hydrology Present? Yes ____ No **X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-22/SW-24 **WETLAND DETERMINATION DATA FORM - Great Plains Region**

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP74W
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S8 T152N R95W
Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave | Slope (%): 0-5%
Subregion (LRR): LRR-F | Lat: 47.99887 | Long: -102.87467 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____
Hydric Soil Present?	Yes **X**	No ____
Wetland Hydrology Present?	Yes **X**	No ____

Is the Sampled Area within a Wetland? **Yes** **X** **No** ____

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	50	yes	FACW
2. *Typha latifolia*	50	yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**50**	x 1 = **50**
FACW species	**50**	x 2 = **100**
FAC species	**0**	x 3 = **0**
FACU species	**0**	x 4 = **0**
UPL species	**0**	x 5 = **0**
Column Totals:	**100** (A)	**150** (B)

Prevalence Index = B/A = **1.50**

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Explain)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **X** **No** ____

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-22/SW-24

Sampling Point: NR_DP74W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	NONE 2/1	100	NONE NONE	N/A	N/A	N/A	Organic Soil Layer	Muck
4-12	2.5Y 2.5/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	
12-20	2.5Y 3/1	100	NONE NONE	N/A	N/A	N/A	Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- X 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches):	**0-4"**
Water Table Present?	Yes X	No ___	Depth (inches):	**1-20"**
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	**0-20"**

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

Report ID: SW-22/SW-24
Upland Pit

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Hess Hawkeye | County: McKenzie | Sampling Date: October 12, 2012
Applicant/Owner: Hess | State: ND | Sampling Point: NR_DP73U
Investigator(s): M. Fettes and G. Schonert | Section, Township, Range: S8 T152N R95W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 0-5%
Subregion (LRR): LRR-F | Lat: 47.99945 | Long: -102.87561 | Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation **NO** ,Soil **NO** ,or Hydrology **NO** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	80	yes	UPL
2. *Melilotus officinalis*	15	no	FACU
3. *Agropyron cristatum*	10	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x 1 = **0**
FACW species	**0**	x 2 = **0**
FAC species	**0**	x 3 = **0**
FACU species	**15**	x 4 = **60**
UPL species	**90**	x 5 = **450**
Column Totals:	**105** (A)	**510** (B)

Prevalence Index = B/A = **4.86**

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Explain)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes ____ No **X**

Remarks: (if observed, list morphological adaptations below).

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC− or drier).

Report ID: SW-22/SW-24 Upland Pit

Sampling Point: NR_DP73U

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100	NONE NONE	N/A	N/A	N/A	Silty Clay Loam	
8-20	10YR 3/2	75	7.5YR 4/6	5	C	PL	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5) **(LRR F)**
____ 1 cm Muck (A9) **(LRR F, G, H)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1)
____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)
____ Loamy Mucky Mineral (F1)
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

____ 1 cm Muck (A9) **(LRR I, J)**
____ Coast Prairie Redox (A16) **(LRR F, G, H)**
____ Dark Surface (S7) **(LRR G)**
____ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
____ Reduced Vertic (F18)
____ Red Parent Material (TF2)
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? Yes ____ No X

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)
____ High Water Table (A2)
____ Saturation (A3)
____ Water Marks (B1)
____ Sediment Deposits (B2)
____ Drift Deposits (B3)
____ Algal Mat or Crust (B4)
____ Iron Deposits (B5)
____ Inundation Visible on Aerial Imagery (B7)
____ Water-Stained Leaves (B9)
____ Salt Crust (B11)
____ Aquatic Invertebrates (B13)
____ Hydrogen Sulfide Odor (C1)
____ Dry-Season Water Table (C2)
____ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
____ Presence of Reduced Iron (C4)
____ Thin Muck Surface (C7)
____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Sparsely Vegetated Concave Surface (B8)
____ Drainage Patterns (B10)
____ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Geomorphic Position (D2)
____ FAC-Neutral Test (D5)
____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): NA
Water Table Present? Yes ____ No X Depth (inches): NA
Saturation Present? Yes ____ No X Depth (inches): NA
(includes capillary fringe)

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

Report ID: SW-22/SW-24 **WETLAND DETERMINATION DATA FORM - Great Plains Region**

Project/Site: Hess Hawkeye County: McKenzie Sampling Date: October 12, 2012
Applicant/Owner: Hess State: ND Sampling Point: NR_DP72W
Investigator(s): M. Fettes and G. Schonert Section, Township, Range: S8 T152N R95W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0-3%
Subregion (LRR): LRR-F Lat: 47.99938 Long: -102.87554 Datum: NAD83
Soil Map Unit Name: Zahl-Williams loams, dissected NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) No (if no, explain in Remarks.)
Are Vegetation NO ,Soil NO ,or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation NO ,Soil NO ,or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

This point was determined to be within a wetland due to the presence of all 3 wetland criteria.

A dry year

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % cover	Dominant Species?	Indicator Status
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*	NA	NA	NA
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Typha latifolia*	95	yes	OBL
2. *Elymus repens*	10	no	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*	NA	NA	NA
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	95	x 1 = 95
FACW species	0	x 2 = 0
FAC species	10	x 3 = 30
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	105 (A)	125 (B)

Prevalence Index = B/A = **1.19**

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤ 3.0[1]
- ___ 4 - Morphological Adaptations[1] (Explain)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.00).

Report ID: SW-22/SW-24

Sampling Point: NR_DP72W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	NONE 2/1	100	NONE NONE	N/A	N/A	N/A	Organic Soil Layer	Muck
1-20	10YR 2/1	100	NONE NONE	N/A	N/A	N/A	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR F)**
X 1 cm Muck (A9) **(LRR F, G, H)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**

___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(MLRA 72 & 73 of LRR H)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR I, J)**
___ Coast Prairie Redox (A16) **(LRR F, G, H)**
___ Dark Surface (S7) **(LRR G)**
___ High Plains Depressions (F16)
(LRR H outside of MLRA 72 & 73)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
Depth (inches): None

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)

___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(where not tilled)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(where tilled)
___ Crayfish Burrows (C8)
X Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	NA
Water Table Present?	X		15-20"
Saturation Present? (includes capillary fringe)	X		0-20"

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-25Up

Investigator(s): CH, JS Section, Township, Range: 155N 95W 6

Landform (hillslope, terrace, etc.): Edge of cropfield Local relief (concave, convex, none): None Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification: ___

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

Data plot is located in a roadside ditch that has been excavated and is mowed periodically.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ___)			
1. Bromus inermis	95	X	UPL
2. Cirsium arvense	5		FACU
3. Bromus inermis	5		UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	= Total Cover		
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	1	x 4 =	4
UPL species	2	x 5 =	10
Column Totals:	3	(A)	14 (B)

Prevalence Index = B/A = >3

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: SW-25Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	10YR3/1	100					L	
6-15	10YR5/3	100					L	
15-20	2.5YR5/2	85	10YR5/6	15			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No X

Remarks:

Disturbed from road ditch grading and excavating.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >20

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014
Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-25Wet
Investigator(s): CH, JS Section, Township, Range: 155N 95W 6
Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 3-5
Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______
Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:
Data plot is located in a road ditch.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Polygonum pensylvanicum	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	1 (A)		2 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: SW-25Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/1	100					L	
4-20	10YR3/1	95	10YR4/6	5			L	
20-26	2.5YR5/1	80	10YR5/6	20			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X **No** ______

Remarks:

Disturbed from road grating

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >26

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >26

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-26Up

Investigator(s): CH, JS Section, Township, Range: 155N 95W 7

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): none Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Data plot is located in a wheat field

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Triticum sp.	100	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SW-26Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/2	100					L	
12-16	10YR5/3	100					SICL	
16-20	10YR5/3	90	10YR5/6	5			L	
16-20			10YR5/1	5			L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): ______
Water Table Present?	Yes ______	No X	Depth (inches): >20
Saturation Present? (includes capillary fringe)	Yes ______	No X	Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-26Wet

Investigator(s): CH, JS Section, Township, Range: 155N 95W 7

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No , Soil No , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No , Soil No , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?**	**Yes** X **No** ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ______)			
1. Typha angustifolia	5		OBL
2. Hordeum jubatum	100	X	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	= Total Cover		
% Bare Ground in Herb Stratum 0			

Remarks:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	1	x 1 = 1
FACW species	1	x 2 = 2
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	2 (A)	3 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

SOIL

Sampling Point: SW-26Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR2/1	100					SICL	
18-24	2.5YR5/1	90	10YR5/6	10			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ______	No x	Depth (inches): ______
Water Table Present?	Yes ______	No x	Depth (inches): >24
Saturation Present? (includes capillary fringe)	Yes ______	No x	Depth (inches): >24

Wetland Hydrology Present? **Yes** x **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-27Up

Investigator(s): CH, JS Section, Township, Range: 155N 95W 18

Landform (hillslope, terrace, etc.): Agricultural field Local relief (concave, convex, none): none Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Data plot is located in a wheat field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
= Total Cover			

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Triticum sp.	100	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover			

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-27Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	100					SICL	
6-20	10YR5/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

Wheat field

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): ______
Water Table Present?	Yes ______	No X	Depth (inches): >20
Saturation Present? (includes capillary fringe)	Yes ______	No X	Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-27Wet

Investigator(s): CH, JS Section, Township, Range: 155N 95W 18

Landform (hillslope, terrace, etc.): Agricultural field Local relief (concave, convex, none): concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: PEMAd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation Yes, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No X
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Farmed wetland, wheat has drowned out due to spring wetness. Foxtail established after area dried out.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Setaria pumila	2		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	2		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 98			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes x No X

Remarks:

Drowned wheat, yellow foxtail discounted as an upland species as it appeared to establish after the area dried out.

SOIL

Sampling Point: SW-27Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/1	95	10YR4/6	5			CL	
6-20	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ________
Depth (inches): ________

Hydric Soil Present? Yes X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Drowned crops

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-28UP

Investigator(s): CH, JS Section, Township, Range: 155N 95W 30

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Livona fine sandy loam, 0 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1. Symphorocarpus albus	85	Y	UPL
2. Rosa woodsii	10		FACU
3.			
4.			
5.			
= Total Cover	95		
Herb Stratum (Plot size: ______)			
1. Poa pratensis	40	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: SW-28UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/1	100					SICL	
10-20	10YR5/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >20
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-28Wet

Investigator(s): CH, JS Section, Township, Range: 155N 95W 30

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Livona fine sandy loam, 0 to 6 percent slopes NWI classification: PEMCh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Rumex occidentalis	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	5		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 95			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: SW-28Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR2/1	100					L	
3-12	2.5YR4/1	100					SICL	
12-16	2.5YR4/1	90	2.5YR4/4	10			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes x No ______ Depth (inches): 2

Water Table Present? Yes x No ______ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes x No ______ Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-29Up

Investigator(s): CH, JS Section, Township, Range: 154N 95W 005

Landform (hillslope, terrace, etc.): Oxbow Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Straw-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1. Symphoricarpos albus	30	Y	UPL
2.			
3.			
4.			
5.			
= Total Cover	30		
Herb Stratum (Plot size: ______)			
1. Euphorbia esula	10		NI
2. Cirsium arevense	10		FACU
3. Bromus inermis	70	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	90		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 10			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-29Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR3/2	100					SL	
7-20	10YR5/4	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >20
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-29Wet

Investigator(s): CH, JS Section, Township, Range: 154N 95W 005

Landform (hillslope, terrace, etc.): intermittent stream Local relief (concave, convex, none): Concave Slope (%): 20-30

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Straw-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

Fringing wetland along stream (Dry Fork Creek)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Phalaris arundinacea	20	Y	FACW
2. Schoenoplectus americanus	20	Y	OBL
3. Carex lacustris	30	Y	OBL
4. Symphyotrichum novae-angliae	10		FACW
5. Carex hystericina	20	Y	OBL
6. Sagittaria cuneata	5		OBL
7. Juncus effusus	10		OBL
8.			
9.			
10.			
= Total Cover	115		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

SOIL

Sampling Point: SW-29Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR2/1	80	10YR5/6	20			SL	
2-15	2.5YR4/1	80	10YR4/6	20			SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
_X_ Depleted Matrix (F3)
_X_ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
_X_ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
_X_ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______
Water Table Present? Yes X No ___ Depth (inches): 16
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-30Up

Investigator(s): CH, JS Section, Township, Range: 154N 95W 005

Landform (hillslope, terrace, etc.): Low area Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Zahl-Zahill complex, 6 to 9 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Melilotus officinalis	20	Y	FACU
2. Bromus inermis	40	Y	UPL
3. Sonchus asper	5		FACU
4. Medicago sativa	15		UPL
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-30Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100					L	
4-20	2.5YR5/3	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >20

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-30Wet

Investigator(s): CH, JS Section, Township, Range: 154N 95W 005

Landform (hillslope, terrace, etc.): Low area Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Williams-Zahl-Zahill complex, 6 to 9 percent slopes NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size:)			
1. Poa pratensis	20		FACU
2. Rumex occidentalis	5		OBL
3. Beckmannia syzigachne	15		OBL
4. Ambrosia artemisiifolia	20		FACU
5. Equesetum arvense	70	Y	FAC
6.			
7.			
8.			
9.			
10.			
= Total Cover	130		
Woody Vine Stratum (Plot size:)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	2	x 1 = 2
FACW species		x 2 =
FAC species	1	x 3 = 3
FACU species	2	x 4 = 8
UPL species		x 5 =
Column Totals:	5 (A)	13 (B)

Prevalence Index = B/A = <3

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SW-30Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR2/1	100					CL	
4-14	2.5YR5/1	80	10YR5/6	20			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >14

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >14

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-31Up

Investigator(s): CH, JS Section, Township, Range: 154N 95W 005

Landform (hillslope, terrace, etc.): low area Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Williams-Zahl-Zahill complex, 6 to 9 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ____)			
1. Melilotus officinalis	30	Y	FACU
2. Cirsium vulgare	20	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	50		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 50			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: SW-31Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100					L	
4-20	2.5YR5/3	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >20
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-31Wet

Investigator(s): CH, JS Section, Township, Range: 154N 95W 005

Landform (hillslope, terrace, etc.): low area Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Zahl-Zahill complex, 6 to 9 percent slopes NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Rumex occidentalis	70	Y	OBL
2. Equisetum arvense	10		FAC
3. Carex sp.	60	Y	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	145		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum ______			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	70	x 1 = 70
FACW species		x 2 =
FAC species	10	x 3 = 30
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	80 (A)	100 (B)

Prevalence Index = B/A = 1.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

SOIL

Sampling Point: SW-31Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR2/1	100					CL	
4-14	2.5YR5/1	80	10YR5/6				SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) (**LRR F**)
__ 1 cm Muck (A9) (**LRR F, G, H**)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
__ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (**LRR I, J**)
__ Coast Prairie Redox (A16) (**LRR F, G, H**)
__ Dark Surface (S7) (**LRR G**)
__ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Very Shallow Dark Surface (TF12)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1)
__ Sediment Deposits (B2)
__ Drift Deposits (B3)
__ Algal Mat or Crust (B4)
__ Iron Deposits (B5)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Dry-Season Water Table (C2)
__ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
__ Presence of Reduced Iron (C4)
__ Thin Muck Surface (C7)
__ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

__ Surface Soil Cracks (B6)
__ Sparsely Vegetated Concave Surface (B8)
__ Drainage Patterns (B10)
__ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
__ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >14
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >14

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-32Up

Investigator(s): CH, JS Section, Township, Range: 154N 95W 008

Landform (hillslope, terrace, etc.): Steep channel Local relief (concave, convex, none): Concave Slope (%): 80

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Euphorbia esula	10	Y	UPL
2. Poa pratensis	30	Y	FACU
3. Bouteloua curtipendula	10	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	50		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 50			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-32Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100					L	
4-20	2.5YR5/3	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >20
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-05-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-32Wet

Investigator(s): CH, JS Section, Township, Range: 154N 95W 008

Landform (hillslope, terrace, etc.): Steep channel Local relief (concave, convex, none): Concave Slope (%): 80

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Eleocharis palustris	60	Y	OBL
2. Juncus effusus	1		OBL
3. Hordeum jubatum	5		FACW
4. Ranunculus cymbalaria	30	Y	OBL
5. Carex sp.	10		
6.			
7.			
8.			
9.			
10.			
= Total Cover	106		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Photo #102-2408 viewing southeast

SOIL

Sampling Point: SW-32Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR4/1	80	10YR5/6	20			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ______

Water Table Present? Yes X No ____ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 6

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-33Up

Investigator(s): CH, JS Section, Township, Range: 154N 95W 009

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope (%): 30

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1. Rosa sp.	10		
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: ___)			
1. Cirsium vulgare	20		UPL
2. Andropogon gerardii	90	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: SW-33Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100					L	
4-20	10YR4/3	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >20

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-33Wet

Investigator(s): CH, JS Section, Township, Range: 154N 95W 009

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Rumex occidentalis	10		OBL
2. Carex sp.	90	Y	
3. Symphyotrichum novae-angliae	30	Y	FACW
4. Andropogon gerardii	5		FACU
5. Glyceria striata	10		OBL
6.			
7.			
8.			
9.			
10.			
	145 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	30	x 2 = 60
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	55 (A)	100 (B)

Prevalence Index = B/A = 1.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: SW-33Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/1	100					L	
6-12	10YR5/1	80	10YR4/6	20			L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >12
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >12

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline   City/County: Williams   Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation   State: ND   Sampling Point: SW-34Wet

Investigator(s): CH, JS   Section, Township, Range: 154N 95W 009

Landform (hillslope, terrace, etc.): Swale   Local relief (concave, convex, none): Concave   Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region   Lat: ____   Long: ____   Datum: ____

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes   NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1. Symphoricarpus albus	15	Y	UPL
2.			
3.			
4.			
5.			
= Total Cover	15		
Herb Stratum (Plot size: ____)			
1. Typha angustifolia	30	Y	OBL
2. Cirsium arvense	30	Y	FACU
3. Hordeum jubatum	10		FAC
4. Bidens vulgata	30	Y	FAC
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	30	x 1 = 30
FACW species		x 2 =
FAC species	40	x 3 = 120
FACU species	30	x 4 = 120
UPL species	15	x 5 = 75
Column Totals:	115 (A)	345 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SW-34Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type¹	Loc²	Texture	Remarks
0-10	10YR5/1	85	10YR5/6	15			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
_X_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
_X_ High Water Table (A2)
_X_ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No _X_ Depth (inches): ______

Water Table Present? Yes _X_ No ___ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes _X_ No ___ Depth (inches): 0

Wetland Hydrology Present? **Yes** _X_ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Roadside ditch @ culvert, no upland data recorded.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-35Up

Investigator(s): CH, JS Section, Township, Range: 154N 95W 016

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No , Soil No , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No , Soil No , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:

Area trampled by cattle

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	20	Y	FAC
2.			
3.			
4.			
	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. Prunus virginiana	10		FACU
2. Symphoricarpos albus	30	Y	UPL
3. Rosa sp.	15		
4.			
5.			
	55	= Total Cover	
Herb Stratum (Plot size: ___)			
1. Bromus inermis	60	Y	UPL
2. Cersium arvense	25	Y	FACU
3. Thalictrum dasycarpum	15		FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	2	x 3 = 6
FACU species	2	x 4 = 8
UPL species	2	x 5 = 10
Column Totals:	6 (A)	24 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-35Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	100					L	
3-20	10YR5/4	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	>20
Saturation Present? (includes capillary fringe)		X	>20

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-35Wet

Investigator(s): CH, JS Section, Township, Range: 154N 95W 016

Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americanus	25	Y	FAC
2.			
3.			
4.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1. Cornus sericea	15	Y	FACW
2.			
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: ______)			
1. Hordeum jubatum	15		FACW
2. Scirpus atrovirens	15		OBL
3. Carex vulpinoidea	25	Y	FACW
4. Poa pratensis	40	Y	FACU
5. Cirsium arvense	10		FACU
6. Plantago major	10		FAC
7.			
8.			
9.			
10.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	1	x 1 = 1
FACW species	3	x 2 = 6
FAC species	2	x 3 = 6
FACU species	2	x 4 = 8
UPL species	0	x 5 = 0
Column Totals:	8 (A)	21 (B)

Prevalence Index = B/A = 2.625

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

SOIL

Sampling Point: SW-35Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR5/1	80	10YR4/6	20			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-36Up

Investigator(s): CH, JS Section, Township, Range: 153N 95W 010

Landform (hillslope, terrace, etc.): Steep draw Local relief (concave, convex, none): Concave Slope (%): 95

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Zahl-Cabba-Arikara complex, 9 to 70 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1. Symphoricarpus albus	30	Y	UPL
2.			
3.			
4.			
5.			
= Total Cover	30		
Herb Stratum (Plot size: ___)			
1. Hordeum jubatum	20	Y	FACW
2. Poa pratensis	50	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	70		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	1	x 2 = 2
FAC species		x 3 =
FACU species	1	x 4 = 4
UPL species	1	x 5 = 5
Column Totals:	3 (A)	11 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-36Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-25	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______
Water Table Present? Yes ___ No X Depth (inches): >25
Saturation Present? Yes ___ No X Depth (inches): >25
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: Williams Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-36Wet

Investigator(s): CH, JS Section, Township, Range: 153N 95W 010

Landform (hillslope, terrace, etc.): Steep draw Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Zahl-Cabba-Arikara complex, 9 to 70 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: ____)			
1. Rumex occidentalis	10		FAC
2. Hordeum jubatum	30	Y	FACW
3. Carex sp.	80	Y	
4. Glyceria striata	20		OBL
5.			
6.			
7.			
8.			
9.			
10.			
	140	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	30	x 2 = 60
FAC species	10	x 3 = 30
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	60 (A)	110 (B)

Prevalence Index = B/A = 1.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: SW-36Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR2/1	100					SiCL	
8-25	10YR4/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-37Up

Investigator(s): CH, JS Section, Township, Range: 153N 95W 016

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Niobell-Williams loams, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Triticum sp.	80	Y	UPL
2. Amaranthus retroflexus	30	Y	FACU
3. Chenopodium album	20		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	130		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- __ 1 - Rapid Test for Hydrophytic Vegetation
- __ 2 - Dominance Test is >50%
- __ 3 - Prevalence Index is ≤3.0[1]
- __ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: SW-37Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/2	100					L	
8-16	10YR5/3	100					L	
16-20	10YR4/1	90	10YR4/6	10			L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >20
Saturation Present? Yes ______ No X Depth (inches): >20
(includes capillary fringe)

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-37Wet

Investigator(s): CH, JS Section, Township, Range: 153N 95W 016

Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Niobell-Williams loams, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Bromus inermis	25	Y	UPL
2. Polygonum pennsylvanicum	40	Y	FACW
3. Setaria pumila	10		FACU
4. Echinochloa crus-galli	20		FAC
5. Hordeum jubatum	10		FACW
6. Symphyotrichum novae-angliae	10		FACW
7.			
8.			
9.			
10.			
= Total Cover	115		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	60	x 2 = 120
FAC species	20	x 3 = 60
FACU species	10	x 4 = 40
UPL species	25	x 5 = 125
Column Totals:	115 (A)	345 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: SW-37Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/1	100					L	
6-16	10YR5/1	95	10YR4/6	5			L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-38Up

Investigator(s): CH, JS Section, Township, Range: 153N 95W 015

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Niobell-Williams loams, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No , Soil No , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No , Soil No , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Phleum pratense	50	Y	FACU
2. Bromus inermis	40	Y	UPL
3. Symphyotrichum novae-angliae	10		FACW
4. Ambrosia artemisiifolia	10		FACU
5. Medicago sativa	5		UPL
6.			
7.			
8.			
9.			
10.			
= Total Cover	115		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ______	x 1 = ______
FACW species ______	x 2 = ______
FAC species ______	x 3 = ______
FACU species ______	x 4 = ______
UPL species ______	x 5 = ______
Column Totals: ______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: SW-38Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	100					SICL	
6-16	10YR4/2	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):
Water Table Present?	Yes ____	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): >16

Wetland Hydrology Present? Yes ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-06-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-38Wet

Investigator(s): CH, JS Section, Township, Range: 153N 95W 015

Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Niobell-Williams loams, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ______)			
1. Typha angustifolia	30	Y	OBL
2. Polygonum pennsylvanicum	40	Y	FACW
3. Symphyotrichum novae-angliae	15		FACW
4. Pascopyrum smithii	60	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	145 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

SOIL

Sampling Point: SW-38Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	100					L	
6-16	10YR5/1	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >16

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >16

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-07-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-39Up

Investigator(s): CH, JS Section, Township, Range: 153N 95W 027

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): none Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Zahl loams, 3 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Triticum sp.	70	Y	UPL
2. Sonchus asper	5		FAC
3. Bassia scoparia	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: SW-39Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100					SICL	
6-20	10YR4/4	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ____________
Depth (inches): ____________

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >20
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >20

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-07-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: SW-39Wet

Investigator(s): CH, JS Section, Township, Range: 153N 95W 027

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Zahl loams, 3 to 6 percent slopes NWI classification: PEMFd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Typha angustifolia	5		OBL
2. Chenopodium album	10		FACU
3. Hordeum jubatum	50	Y	FACW
4. Schoenoplectus americanus	10		OBL
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	75		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 25			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

SOIL

Sampling Point: SW-39Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5YR2/1	95	10YR4/6	5			SICL	
6-16	10YR4/2	70	10YR4/4	30			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: __________

Depth (inches): __________

Hydric Soil Present? Yes X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
X FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): >16
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): >16

Wetland Hydrology Present? Yes X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-42

Investigator(s): EB/TR Section, Township, Range: T156N 95 W 31

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Straw-Fluvaquents, channeled complex, 0 to 2 percetn slopes, frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Disturbed historic channel/swale due to road construction and cropfield.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Elymus repens	55	Y	FACU
2. Rumex occidentalis	30	Y	OBL
3. Hordeum jubatum	10	Y	FACW
4. Polygonum spp.	2		FACW
5. Plantago major	2		FAC
6.			
7.			
8.			
9.			
10.			
= Total Cover	99		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	30	x 1 = 30
FACW species	12	x 2 = 24
FAC species	2	x 3 = 6
FACU species	55	x 4 =
UPL species		x 5 =
Column Totals:	99 (A)	280 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

Roadside ditch, along tilled field. Road and tilling have altered drainage patterns and vegetation communities.

SOIL

Sampling Point: SW-42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0+	10yr 3/2	95		5	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________________

Depth (inches): ______________________

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- X Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ____________

Water Table Present? Yes ______ No X Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ____________

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-42 Up pt

Investigator(s): EB/TR Section, Township, Range: T156N 95 W 31

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Straw-Fluvaquents, channeled complex, 0 to 2 percetn slopes, frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Cirsium arvense	20	Y	FACU
2. Elymus repens	20	Y	FACU
3. Poa spp.	10		UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		
% Bare Ground in Herb Stratum ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: SW-42Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0+	7.5yr3/2	100					Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-43

Investigator(s): EB/TR Section, Township, Range: T156N 95 W 31

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Straw-Fluvaquents, channeled complex, 0 to 2 percetn slopes, frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:

Disturbed historic channel/swale due to road construction and cropfield.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Elymus repens	60	Y	FACU
2. Rumex occientalis	10		OBL
3. Polygonum spp.	10		FACW
4. Cirsium arvense	10		FACU
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	90		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 10			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	10	x 2 = 20
FAC species		x 3 =
FACU species	70	x 4 = 280
UPL species		x 5 =
Column Totals:	90 (A)	310 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Wetland in tilled field. Tilling and rock removal activities have altered drainage patterns and vegetation communities.

SOIL

Sampling Point: SW-43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0+	10yr2/2	100					Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X__ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ________
Depth (inches): ________

Hydric Soil Present? **Yes** X **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
X__ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
X__ Saturation Visible on Aerial Imagery (C9)
X__ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-43 Up pt

Investigator(s): EB/TR Section, Township, Range: T156N 95 W 31

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lehr-Wiliams loams, 0 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

Disturbed historic channel/swale due to road construction and cropfield.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Triticum	60	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		
% Bare Ground in Herb Stratum 40			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: SW-43Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	100					Clay	
3+	10YR5/3	100					Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________________________

Depth (inches): ______________________

Hydric Soil Present? **Yes** ______ **No** x

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): ____________

Water Table Present? Yes _____ No _____ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): ____________

Wetland Hydrology Present? **Yes** ______ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-51

Investigator(s): EB/TR Section, Township, Range: T155N 95 W 32

Landform (hillslope, terrace, etc.): Pond Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Zahl-Williams loams, 9 to 15 percent slopes/Tonka silt loam, 0 to 1 percent slopes NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Depression. Vegetation is grazed on edges on wetlands.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ___)			
1. Phalaris arundinacea	50	Y	FACW
2. Spartina pectinata	30	Y	FACW
3. Rumex occidentalis	1		OBL
4. Hordeum jubatum	5		FACW
5. Typha angustifolia	5		OBL
6.			
7.			
8.			
9.			
10.			
	91 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: SW-51

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0+	7.5yr3/1	98		2	C	M	Silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	x		0
Water Table Present?	x		0
Saturation Present? (includes capillary fringe)	x		0

Wetland Hydrology Present? **Yes** X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-51 Up pt

Investigator(s): EB/TR Section, Township, Range: T155N 95 W 32

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): Convex Slope (%): 10-15

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Williams-Zahl-Zahill complex, 6 to 9 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Poa pratensis	50	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		
% Bare Ground in Herb Stratum ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: SW-51Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0+	2.5yr3/2	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:
Surface Water Present? Yes ____ No ____ Depth (inches): ____
Water Table Present? Yes ____ No ____ Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: ______

Investigator(s): EB/TR Section, Township, Range: T154N 95 W 16

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Zahl loams, 3 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ______
Hydric Soil Present?	Yes X	No ______
Wetland Hydrology Present?	Yes X	No ______

Is the Sampled Area within a Wetland? **Yes** X **No** ______

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ______)			
1. Typha angustifolia	10		OBL
2. Hordeum jubatum	10		FACW
3. Spartina pectinata	50	Y	FACW
4. Scirpus spp.	10		OBL
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 60

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ______

Remarks:

Heavily disturbed by livestock.

SOIL

Sampling Point: SW-65

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	10yr4/4	100					Clay	
1+	Gley 1 2.5N	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- _X_ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- _X_ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 6

Wetland Hydrology Present? Yes X **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Heavily disturbed by livestock.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/15/14

Applicant/Owner: Hess State: ND Sampling Point: SW-65Up

Investigator(s): EB/TR Section, Township, Range: T154N 95 W 16

Landform (hillslope, terrace, etc.): Grassland Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Zahl loams, 3 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)

Are Vegetation x, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No x
Hydric Soil Present?	Yes ___	No x
Wetland Hydrology Present?	Yes ___	No x

Is the Sampled Area within a Wetland? **Yes** ___ **No** x

Remarks:

Heavily grazed grassland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. poa spp.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover			
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 60

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** x

Remarks:

SOIL

Sampling Point: SW-65Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
12+	7.5yr2.5/1	100					Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: __________
Depth (inches): __________

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): ________
Water Table Present? Yes _____ No _____ Depth (inches): ________
Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): ________

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/16/14

Applicant/Owner: Hess State: ND Sampling Point: SW-75

Investigator(s): EB/TR Section, Township, Range: T153N 95 W 26

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 3 to 8 percent slope NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___	**Is the Sampled Area within a Wetland?** **Yes** x **No** ___
Hydric Soil Present?	Yes x	No ___	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:

Depression area on terrace in agricultural field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Typha angustifolia	50	Y	OBL
2. Scirpus spp.	40	Y	OBL
3. Malva spp.	10		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover			
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** x **No** ___

Remarks:

SOIL

Sampling Point: SW-75

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0+	10yrs2/1	95	5yr4/4	5	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______

Water Table Present? Yes ___ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/16/14

Applicant/Owner: Hess State: ND Sampling Point: SW-75Up

Investigator(s): EB/TR Section, Township, Range: T153N 95 W 26

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Williams-Bowbells loams, 3 to 8 percent slope NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation x, Soil x, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No x	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** x
Hydric Soil Present?	Yes ____ No x	
Wetland Hydrology Present?	Yes ____ No x	

Remarks:

Agricultural field

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Triticum spp.	50	Y	UPLx
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		
% Bare Ground in Herb Stratum 50			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks:

SOIL

Sampling Point: SW-75Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12+	10yr4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______
Water Table Present? Yes ______ No ______ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/16/14

Applicant/Owner: Hess State: ND Sampling Point: SW-76

Investigator(s): EB/TR Section, Township, Range: T153N 95 W 26

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Belfield-Grail clay loams, 0 to 2 percent slopes/Zahl-Max loams, dissected, 15 to 45 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)

Are Vegetation x, Soil x, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___
Hydric Soil Present?	Yes x	No ___
Wetland Hydrology Present?	Yes x	No ___

Is the Sampled Area within a Wetland? **Yes** x **No** ___

Remarks:

Historic channel/swale in tilled agricultural field.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: ______)			
1. Elymus repens	50		FACU
2. Rumex spp.	5		FAC
3. Cirsium arvense	5		FACU
4. bromus inermis	30		UPL
5. Horduem jubautm	20		FACW
6.			
7.			
8.			
9.			
10.			
	___ = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	___ = Total Cover		
% Bare Ground in Herb Stratum ______			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	50	x 1 = 50
FACW species	20	x 2 = 40
FAC species	5	x 3 = 15
FACU species	55	x 4 = 220
UPL species	30	x 5 = 150
Column Totals:	160 (A)	475 (B)

Prevalence Index = B/A = 2.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** x **No** ___

Remarks:

Swale/historic channel in agricultural field.

SOIL

Sampling Point: SW-76

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	5yr 2/1	95	5 yr 4/4	5	C	M	Clay Loam	
8+	5 yr 2/1	95	7.5 yr 6/2	5	C	M	Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hess Hawkeye Pipeline City/County: Williams Sampling Date: 10/16/14

Applicant/Owner: Hess State: ND Sampling Point: SW-76Up

Investigator(s): EB/TR Section, Township, Range: T153N 95 W 26

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 3 to 8 percent slope NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)

Are Vegetation x, Soil x, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No x	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** x
Hydric Soil Present?	Yes ___ No x	
Wetland Hydrology Present?	Yes ___ No x	

Remarks:

Agricultural field

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: ___)			
1. Triticum spp.	50	Y	UPLx
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	___ = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		
% Bare Ground in Herb Stratum 50			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** x

Remarks:

SOIL

Sampling Point: SW-75Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
12+	10yr4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ______ No x

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:
Surface Water Present? Yes ______ No ______ Depth (inches): ______
Water Table Present? Yes ______ No ______ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-07-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: UP-1

Investigator(s): CH, JS Section, Township, Range: 152N 95W 008

Landform (hillslope, terrace, etc.): Agriculture Field Local relief (concave, convex, none): None Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ______ NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

In a field of safflower crop.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Carthamus tinctorius	10		NI
2. Convolvulus arvensis	10		NI
3. Setaria pumila	20	Y	FACU
4. Ambrosia artimisiifolia	10		FACU
5. Cersium arvense	5		FACU
6. Sonchus asper	5		FAC
7.			
8.			
9.			
10.			
= Total Cover	60		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Crop partially drowned out

SOIL

Sampling Point: UP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/1	100					SICL	
8-22	10YR3/3	100					SICL	
22-26	10YR4/2	90	10YR4/6	10			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >26

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >26

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Hawkeye Pipeline City/County: McKenzie Sampling Date: 08-07-2014

Applicant/Owner: Hess Corporation State: ND Sampling Point: UP-2

Investigator(s): CH, JS Section, Township, Range: 152N 95W 008

Landform (hillslope, terrace, etc.): Agriculture field Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Northern Great Plains Spring Wheat Region Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:

In a field of safflower crop.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: ___)			
1. Carthamus tinctorius	60		NI
2. Cirsium arvense	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	65		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			
% Bare Ground in Herb Stratum 35			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Crop stunted

SOIL

Sampling Point: UP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/1	100					SICL	
8-22	10YR3/3	100					SICL	
22-26	10YR4/2	90	10YR4/6	10			SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres on Living Roots (C3)
(**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): >26

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >26

Wetland Hydrology Present? **Yes** ______ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C1 and C2

Paleontological Resources Report and Addendum

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.®

Paleontological Assessment for the Hess Corporation Hawkeye Pipeline Project, Williams and McKenzie Counties, North Dakota

Prepared for

Hess Corporation

and

Bureau of Land Management, North Dakota Field Office

Prepared by

SWCA Environmental Consultants

January 2013

Paleontological Assessment for the Hess Corporation Hawkeye Pipeline Project, Williams and McKenzie Counties, North Dakota

Prepared for

Hess Corporation
3015 16th Street SW, Suite 20
Minot, North Dakota 58701

and

Bureau of Land Management, North Dakota Field Office

Prepared by

Georgia. E. Knauss, B.S., Shawna L. Johnson, M.S., and Paul C. Murphey, Ph.D.
Permit M102444

SWCA Environmental Consultants
1892 South Sheridan Avenue
Sheridan, Wyoming 82801
307.673.4303

SWCA Paleontological Report #ND12-16779-03

January 9, 2013

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1.0 PROJECT SUMMARY

This report presents the results of the paleontological field survey completed for the Hess Corporation Hawkeye Pipeline Project (Project). The Project is located on U.S. Army Corps of Engineers (USACOE)-administered lands in Sections 21, 22, and 34, Township (T) 154 North, Range (R) 95 West, Williams County, and Section 34, T154N, R95W, McKenzie County; North Dakota State (State)-administered land in Section 16, T154N, R95W, Williams County; privately owned surface lands in Sections 17, 20, 29, 32, and 33, T155N, R95W, and Sections 4 and 9, T154N, R95W, Williams County; and U.S. Forest Service (USFS)-administered lands in Section 34, T154N, R95W, and Sections 3, 4, and 10, T153N, R95W, McKenzie County, North Dakota. The report covers the pre-field analysis of existing data and paleontological field surveys completed for the Project on August 21 and 22, and October 19, 2012. This analysis was conducted at the request of the Bureau of Land Management (BLM) North Dakota Field Office and the Hess Corporation. Because the BLM is the lead agency, BLM's paleontological resource management policies were followed on all lands.

An analysis of existing data was completed prior to the field survey, and the search area for the analysis included the Townships in which the Project area is located. Eleven previously recorded fossil localities or fossiliferous stratigraphic columns within 1 mile of the Project area were identified during the paleontological records and literature searches. However, based on the available information, it does not appear that any of these are located within the Project corridors. Based on published geologic mapping (Carlson 1985; Freers 1970), the Project area is underlain by the Paleocene-age Bullion Creek and Sentinel Butte formations of the Fort Union Group and Quaternary surficial deposits. These formations were ranked using the Potential Fossil Yield Classification (PFYC) system. Both the Sentinel Butte and Bullion Creek Formations of the Fort Union Group have high and very high paleontological potential (PFYC Class 4 and Class 5 respectively), whereas Quaternary surficial deposits have low paleontological sensitivity (PFYC Class 2).

The objective of the field survey was to provide surface paleontological clearance through a detailed examination of the proposed area of potential effect for the presence of surface fossils and exposures of paleontologically sensitive geologic units. The area of potential effect is defined as the location of the proposed pipeline plus associated buffers. The paleontological survey area encompassed a 400-foot-wide corridor on USFS land (200 feet on either side of the centerline), and a 200-foot-wide corridor (100 feet on either side of the centerline) on USACOE, State, and private land where the aerial photo and geologic map review indicated the potential for exposures of paleontologically sensitive bedrock (PYFC Classes 4 and 5). The Project area location was determined on the basis of geographic information systems shapefile data provided by Hess. In total, approximately 18.3 acres were surveyed on USACOE land, 350.0 acres on USFS land, 19.0 acres on State land, and 103.0 acres on private land. The field survey was conducted by SWCA Environmental Consultants paleontologists Shawna L. Johnson, M.S., and Wayne A. Thompson, Ph.D., under the direction of Principal Investigator Dr. Paul C. Murphey.

Two non-significant fossil occurrences were documented on State land and two non-significant fossil occurrences were documented on USFS land during the field surveys. All of these were found in the Fort Union Group, two in an area previously documented (Carlson 1985) as containing exposures of the Bullion Creek Formation, and two in an area mapped (Freers 1970) as the Sentinel Butte Formation, but may also represent exposures of the Bullion Creek Formation. Fossils documented during the field survey include non-significant shells of moderately well preserved invertebrates (gastropod and bivalve) shells, and non-significant fragments of silicified wood. Based on the analysis of existing data, which yielded 11 previously recorded fossil localities or fossiliferous stratigraphic columns (none of which are vertebrate) within 1 mile of the Project area, and the limited amount of bedrock exposed in the Project area, in combination with the field survey results (four non-significant fossil occurrences, see Section 7.0 and Appendix C for data), immediate surface and subsurface paleontological clearance for the Project is recommended. Paleontological monitoring during construction is not recommended because the analysis of existing data and field survey did not produce results that indicate a high likelihood for significant subsurface fossil occurrences, and monitoring for this specific project is therefore not justified. Nevertheless, because any new significant fossil discoveries from the Bullion Creek and Sentinel Butte formations would have great scientific importance, paleontological resource analyses are recommended for all future surface-disturbing actions in the area.

2.0 INTRODUCTION

This report presents the results of the paleontological field survey completed for the Hess Corporation Hawkeye Pipeline Project (Project). The Project is located on U.S. Army Corps of Engineers (USACOE)-administered lands in Sections 21, 22, and 34, Township (T) 154 North, Range (R) 95 West, Williams County, and Section 34, T154N, R95W, McKenzie County; North Dakota State (State)-administered land in Section 16, T154N, R95W, Williams County; privately owned surface lands in Sections 17, 20, 29, 32, and 33, T155N, R95W, and Sections 4 and 9, T154N, R95W, Williams County; and U.S. Forest Service (USFS)-administered lands in Section 34, T154N, R95W, and Sections 3, 4, and 10, T153N, R95W, McKenzie County, North Dakota (Figure 1). The objective of the field survey completed for the Project was to provide surface paleontological clearance through a pedestrian examination of the Project area, which included a 400-foot-wide corridor on USFS land (200 feet on either side of the centerline), and a 200-foot-wide corridor (100 feet on either side of the centerline) on USACOE, State, and private land where the aerial photo and geologic map review indicated the potential for exposures of paleontologically sensitive bedrock, which was ranked using the Potential Fossil Yield Classification (PFYC) system as PYFC Class 4 and Class 5) (see Figure 1 and Appendices A and B). According to previous geological mapping, the Project corridor is underlain by the highly sensitive Paleocene-age Bullion Creek (PFYC Class 5) and Sentinel Butte formations (PFYC Class 4) of the Fort Union Group and Quaternary surficial deposits (PFYC Class 2).

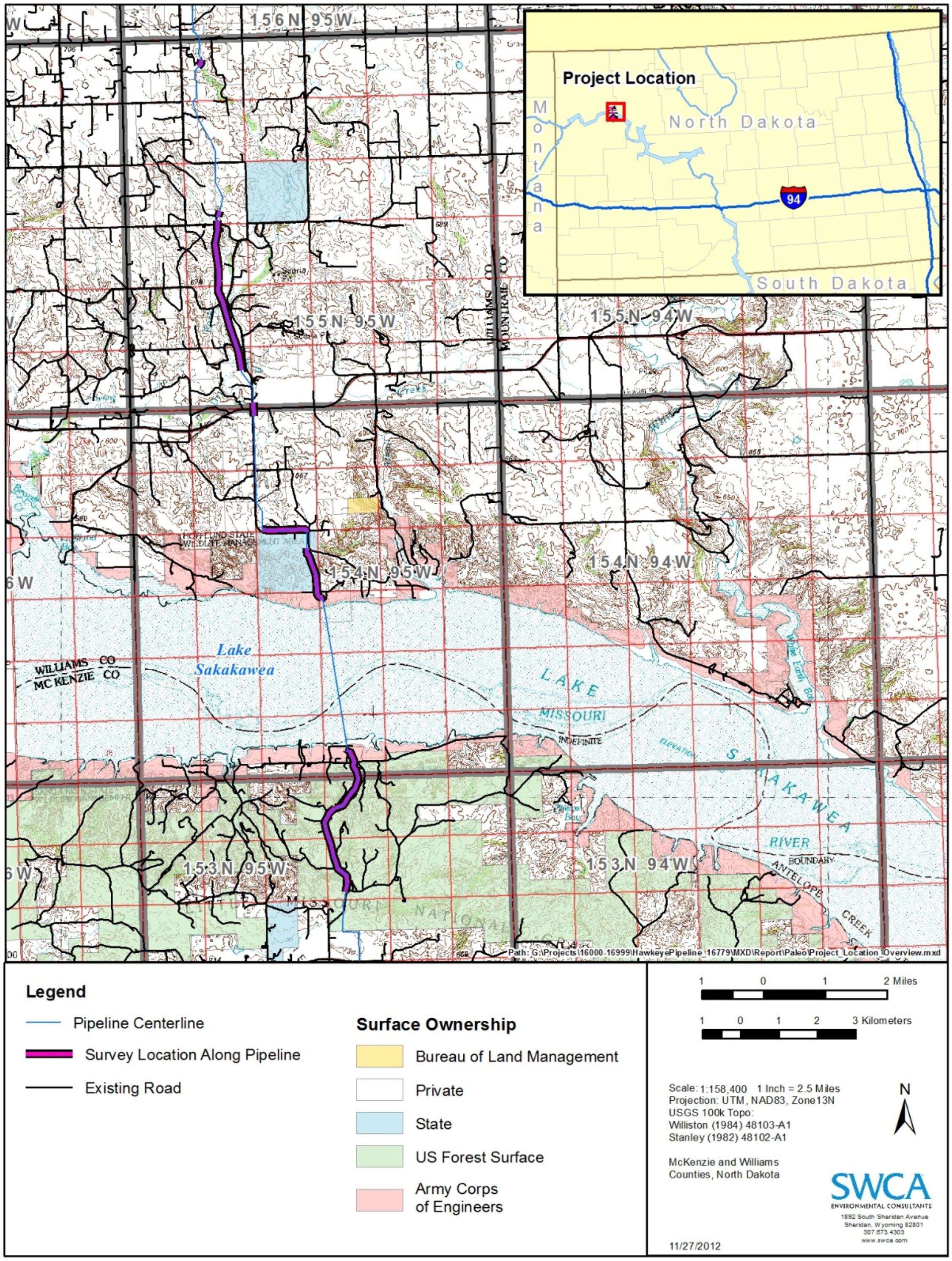

Figure 1. Paleontological Survey Locations within the Hawkeye Pipeline Project.

3.0 DEFINITION AND SIGNIFICANCE OF PALEONOTLOGICAL RESOURCES

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or un-mineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources include not only fossils themselves but also the associated rocks or organic matter and the physical characteristics of the fossils' associated sedimentary matrix.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced (Murphey and Daitch 2007). Fossils are important scientific and educational resources and can be used to:

- study the phylogenetic relationships amongst extinct organisms, as well as their relationships to modern groups;
- elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- reconstruct ancient environments, climate change, and paleoecological relationships;
- provide a measure of relative geologic dating which forms the basis for biochronology and biostratigraphy, and which is an independent and corroborating line of evidence for isotopic dating;
- study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- study patterns and processes of evolution, extinction, and speciation; and
- identify past and potential future human-caused effects to global environments and climates (Murphey and Daitch 2007).

4.0 METHODS

4.1 BLM AUTHORITIES AND STANDARDS

This paleontological assessment, consisting of a literature and records search and a field survey, was conducted at the request of the Bureau of Land Management (BLM) (the lead agency for the Project) and in accordance with their policies. Various laws, regulations, and standards govern how fossils on public lands may be collected and preserved. The BLM currently uses the Federal Land Management and Policy Act of 1976 as the legislative authority for its paleontological resource policies. Additionally, the BLM's Instructional Memorandum (IM) 2008-009 (2007), Manual H-8720-1 (1998), and IM 2009-011 (BLM 2008) provide general procedural guidelines for the management of paleontological resources. Management objectives include locating, evaluating, managing, and protecting paleontological resources, as well as ensuring that proposed land-use projects do not inadvertently damage or destroy important paleontological resources.

Implementing regulations for the Paleontological Resources Preservation Subtitle of the Omnibus Public Lands Act of 2009 (PRPA), Title VI, Subtitle D, are currently being developed. Under PRPA, the Secretaries (Interior and Agriculture) shall manage and protect paleontological resources on federal land using scientific principles and expertise. The PRPA is modeled after the Archaeological Resources Protection Act and incorporates the recommendations of the May 2000 report of the Secretary of the Interior, Assessment of Fossil Management on Federal and Indian Lands, regarding future actions to formulate a consistent paleontological resources management framework. With the passage of the PRPA, congress officially recognized the importance of paleontological resources on federal lands by declaring that fossils from federal lands are federal property. The PRPA essentially codifies existing policies of the BLM, National Park Service, USFS, Bureau of Reclamation, and U.S. Fish and Wildlife Service. The PRPA provides the following.

- Uniform definitions for *paleontological resources and casual collecting.*
- Uniform, minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants).
- Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands.
- Uniform requirements for curation of federal fossils in approved repositories.

According to BLM's IM 2009-011 (BLM 2008, p. 1-19 to 1-20) a Significant Paleontological Resource is defined as

> Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities.

4.2 PERSONNEL

The field survey was completed by SWCA Environmental Consultants (SWCA) paleontologists Shawna L. Johnson, M.S., and Wayne A. Thompson, Ph.D., under the direction of Principal Investigator Dr. Paul C. Murphey. This report was prepared by Georgia

E. Knauss, Shawna L. Johnson, and Paul C. Murphey. The map was produced by Arjun K. Dongre, M.S.

4.3 ANALYSIS OF EXISTING DATA

The paleontological sensitivity of each geologic unit within the Project area was evaluated using the PFYC system. These assignments were based on the taxonomic diversity and abundance of previously recorded, scientifically significant fossil occurrences from each geologic unit, and the potential for future discoveries.

The PFYC system was originally developed by the Forest Service's Paleontology Center of Excellence and the Region 2 Paleontology Initiative in 1996. Modifications have been made by the BLM's Paleontological Resources staff in subsequent years. The PFYC version used for this analysis was approved as policy by the BLM (2007).

Prior to the field survey, the Project area was the subject of thorough background research and analysis. The records search was conducted to 1) determine whether any previously recorded fossil localities occur in the project area; 2) assess the potential for disturbance of these localities during construction; and 3) evaluate the paleontological sensitivity in the Project area of potential effect (APE). Dr. Allen Kihm at Minot State University provided information about previously recorded paleontological localities near the Project area.

4.4 FIELD SURVEY METHODS

The survey was designed to document previously unknown significant vertebrate fossils and/or noteworthy occurrences of invertebrate, plant, or trace fossils; and evaluate potential adverse impacts to subsurface paleontological resources during construction.

The paleontological assessment covered the Project APE, as displayed on Geographic Information Systems (GIS) data provided by Hess (see Figure 1). The assessment included a 400-foot-wide corridor on USFS land (200 feet on either side of the centerline), and a 200-foot-wide corridor (100 feet on either side of the centerline) on USACOE, State, and private land. The Project APE was inspected for 1) surface fossils, 2) exposures of potentially fossiliferous rock, and 3) areas in which fossiliferous rock would be exposed or otherwise impacted during construction. The survey included pedestrian coverage of linear features on federal and State lands, and pedestrian and visual coverage of linear features on private land (Figure 1 and Appendices A and B). Areas excluded from the pedestrian and/or visual survey were limited to those areas that were determined through a review of aerial photography and geologic maps to be underlain by geologic units with low paleontological sensitivity (PFYC Class 2) and/or to be heavily vegetated with no exposures of geologic units with high or very high paleontological sensitivity (PFYC Classes 4 and 5).

It is SWCA's standard operating procedure to record all fossils discovered during the course of field surveys as either significant fossil localities (SFLs) or non-significant fossil occurrences (NFOs). An SFL documents the location, identification, and description of significant paleontological resources along with geologic context. However, the presence of highly weathered, fragmentary, or otherwise unidentifiable fossils is recorded as an NFO in order to communicate the presence of fossils in a manner that does not unnecessarily trigger additional mitigation measures. NFOs typically consist of fragments of turtle shell, unidentifiable bone and tooth fragments, and unidentifiable plant fossils and fragments of fossilized wood. Fossil locality data are sensitive and are exempt from the Freedom of Information Act. Therefore, detailed locality information including locality forms are only appended to the agency copies of the report (Appendix C).

With the completion of the field survey, recommendations were made for each survey area. Typical post-survey recommendations include one or more of the recommendations listed in Table 1.

Table 1. Types of Post-Field Survey Paleontological Recommendations.

Clearance	Based on pre-field survey research and/or field survey results, if adverse impacts on paleontological resources are anticipated to be non-existent or below the level of significance for a given surface-disturbing action in a given area, and no further consideration of paleontological resources is deemed necessary, immediate paleontological clearance will be recommended. A clearance recommendation can be made for an entire project area or any portion thereof (surface and/or subsurface), depending on paleontological sensitivity.
Salvage	If isolated medium- or large-sized fossils are discovered within a project area during field surveys or mitigation monitoring, and they are determined to be scientifically significant, they should be salvaged. Fossil salvages typically involve the systematic excavation of fossil remains, determined on a case-by-case basis, and salvage excavations should be designed in such a way as to prevent delays to project schedules, while properly collecting the fossil and associated data.
Avoidance	If the cost of salvage or other mitigation options is determined to be too high, or permanent damage to the resource caused by surface disturbance is considered to be unavoidable, it may be necessary to "avoid" or "reroute" the portion of the project right-of-way that intersects the fossil locality in order to prevent adverse impacts on the resource. Avoidance should also be considered if a known fossil locality appears to contain critical scientific information that should be left undisturbed for subsequent scientific evaluation. Avoidance for later scientific research is the typical mitigation recommendation made for scientifically significant unanticipated paleontological discoveries.

Monitoring	If significant (well-preserved, uncommon, and/or identifiable) paleontological resources are known to be present in an area, or if there is a high likelihood that subsurface fossils are present in geologic formations within a given project area, based on prior field surveys, museum records, or scientific or technical literature, paleontological monitoring during surface-disturbing actions, such as construction excavations, may be recommended. Monitoring may involve the systematic inspection of graded cut slopes and other rock or surficial sediment surfaces exposed during excavation for the presence of fossils and the salvage and documentation of these fossils before they are destroyed by further excavation activity. There are two types of monitoring: "on-site" monitoring is typically used in the most paleontologically sensitive geographic areas/geologic units (PFYC Classes 4 and 5); "spot-check" monitoring is typically used in geographic areas/geologic units of moderate or unknown paleontological sensitivity (PFYC Class 3). The purpose of monitoring is to provide subsurface paleontological clearance. Sampling, salvage, and avoidance of fossils may occur during any monitoring program. During construction, the Paleontological Principal Investigator should have the authority to downgrade the monitoring level of effort if the sensitivity of the area is less than anticipated. On federally managed lands, the appropriate Project Manager or paleontological contact shall be notified if the Paleontological Principal Investigator determines the downgrading of monitoring effort in a certain area is warranted. A telephone call with an email follow-up should provide adequate documentation to support the decision. Additionally, during the pre-construction worker environmental training, construction personnel should be instructed that if any subsurface bones or other potential fossils are found, they must cease work in the immediate area and notify their supervisor immediately. The supervisor will then notify the Environmental Inspector, who will notify the respective jurisdictional agency(s). The Paleontological Principal Investigator or Paleontological Field Supervisor/Agent will inspect the fossils and make further recommendations in consultation with the agency. Location-specific recommendations are provided in Appendix A.
Sampling	Scientifically significant microfossils (vertebrate, invertebrate, plant, or trace fossils) may be identified in rock matrix during a field survey, or, if they are known to occur elsewhere in the same geologic unit or type of deposit in the general area, a determination of their presence or absence may require the use of test sampling of rock matrix for screen-washing in a paleontological laboratory, even if microfossils are not visible in the field. The fossils found, if any, will then be inspected and evaluated to determine their significance and whether additional mitigation recommendations are necessary. Mitigation may include collection of additional matrix for screen-washing. The decision to sample may not be made until monitoring is occurring, because it is usually triggered by conditions in the field.

4.5 DISTRIBUTION OF DATA

Copies of this report will be submitted to the BLM North Dakota Field Office, and Hess. It is assumed that as the lead agency the BLM will distribute copies to the USFS and North Dakota Geological Survey (NDGS). An electronic file will be retained at SWCA's office in Sheridan, Wyoming, and on SWCA's corporate server along with relevant field notes, maps, and other data.

5.0 LITERATURE REVIEW

The Project area is located in the central portion of the Williston Basin, west of the Nesson Anticline, a north/south-trending asymmetrical fold which began forming in what is now North Dakota during the Cambrian and continued until the mid-Tertiary. Three geologic units underlie the Project area: the Paleocene-age Bullion Creek and Sentinel Butte formations, and surficial deposits of Pleistocene to Holocene age (see Appendix B maps). The fossils contained within the Paleocene age units, together with the sediments in which they are preserved, provide evidence of the history of life in the western interior of North America during the earliest Cenozoic. These units were deposited in a terrestrial setting after the Western Interior Seaway, which had covered much of central North American during the Cretaceous, underwent its final major regressive depositional cycle, and strand line, estuarine, beach, and marine sediments gave way to fully terrestrial predominantly alluvial and floodplain deposits. From Quaternary to recent times, the landscape was altered as the result of erosion by water and wind, and the modern topography was formed.

The general geology and paleontological content of the geologic units within the Project area is described in this section of the report.

5.1 FORT UNION GROUP (OR FORMATION)

Although recognized by the U.S. Geological Survey (USGS) as a formation, the Fort Union is recognized by the NDGS as a group, and is divided into the Ludlow, Cannonball, Slope, Bullion Creek (or Tongue River), and Sentinel Butte formations (Hartman et al. 2002). The Fort Union Group (or Formation) is an expansive 'unit' and has been mapped using surficial exposures and well logs in Montana, South Dakota, Wyoming, North Dakota, and Colorado.

The Bullion Creek and Sentinel Butte formations are mapped within the Project area (Carlson 1985; Clayton et al. 1980; Freers 1970). The following subsections describe the stratigraphy, fossils, and paleontological sensitivity of these two units. In general the Bullion Creek is composed of light colored rocks (bright colored siltstone and mudstones), while the Sentinel Butte is darker gray and the boundary between the two is often noted by a lignite or "clinker" if it has burned. The Fort Union is conformably underlain by the Hell Creek Formation (mapped using well log data; Freers 1970), and unconformably overlain in the study area by Quaternary surficial deposits. Minor exposures of the Golden Valley Formation, composed of brightly colored beds, lie conformably on the Sentinel Butte Formation to the east and south of the Project area.

5.1.1 Bullion Creek Formation (or Tongue River Formation)

Exposed throughout western North Dakota and westward into Montana as far as the Cedar Creek anticline (Clayton et al. 1977), the Bullion Creek is recognized by the NDGS as a formation, while the USGS considers it an informal member of the Fort Union Formation (Group). The type area is near Bullion Butte, in Golden Valley County, North Dakota. The name Bullion Creek was proposed in 1977 for rocks that were previously thought to be equivalent to all or a portion of the Tongue River Formation (Clayton et al. 1977). However, this nomenclature is not widely accepted, as a review of recent literature revealed that several authors have reverted to attributing these beds to the Tongue River Formation (Hunter and Hartman 2004; Peppe 2010). The Bullion Creek Formation consists of yellow-brown siltstone, claystone, sandstone, and lignite beds (usually 1 to 4 meters [m] thick) which were deposited in a variety of environments including deltas, rives, and lakes (Clayton et al. 1977). Although sandstones comprise a small percentage of the formation, sandstone beds form prominent features, usually preserved as recognizable channel deposits composed of cross-stratified, fine- to medium-grained lenticular sandstone bodies. The Bullion Creek Formation has a maximum thickness of approximately 600 feet (183 m) in subsurface logs near the middle of the Williston Basin and thins to the east and west (Clayton et al. 1980; Clayton et al. 1977). It conformably underlies the Sentinel Butte Formation and unconformably overlies the Slope Formation (“Rhame Bed”) in the western part of North Dakota, and the Cannonball Formation in the central portion of the state.

Fossil from the Bullion Creek Formation include mammals, reptiles, fish, fossil trackways, invertebrates, and plants (Hanks et al. 2002; Erickson 1991; Hartman 1984). There are a number of highly productive vertebrate fossil localities from the Bullion Creek Formation. Wannagan Creek, the best known Bullion Creek locality, was first collected in 1971 by the Science Museum of St. Paul, and has produced thousands of fossil vertebrates including a famous reptilian fauna (Erickson 1982a, 1982b, 1991). The Judson locality is an important mammal-rich locality which was for a time thought to be within the Slope Formation (Hartman and Kihm 1991; Kihm and Hartman 2004). Fossils collected indicate that the Bullion Creek is of Torrejonian and Tiffanian North American Land Mammal Age (NALMA) (Hartman and Kihm 1995). Fossils are relatively abundant in the Bullion Creek Formation. Therefore, it is considered to be highly sensitive and designated as PFYC Class 5.

5.1.2 Sentinel Butte Formation

The Sentinel Butte is considered to be a member by the USGS, but regarded as a formation by the NDGS. The type area is located along the northeastern slope of Sentinel Butte in Golden Valley County, North Dakota (Clayton et al. 1977). Rocks of the Sentinel Butte Formation consist primarily of poorly cemented gray-brown claystone, mudstone, siltstone, sandstone, and lignite with locally present, isolated, well-lithified channel sandstone beds. These sediments were deposited in lakes, rivers, and swamps. Conformably lying on the Bullion Creek Formation, the Sentinel Butte Formation was differentiated from the Bullion Creek Formation by the following criteria: 1) located above the HT Butte lignite and the lignite (sometimes clinker), where present, and defines the contact between the two formations; 2) in general the Sentinel Butte is composed of grayish brown units and appears drab in comparison to the bright yellowish brown of the Bullion Creek; 3) weathered surfaces of the Sentinel Butte are often steep with narrow gullies and rills, while the Bullion Creek weathered surfaces are usually smooth; and 4) silicified wood is common and widespread in the Sentinel Butte, especially at the base, but uncommon in the Bullion Creek (Biek and Gonzalez 2001). While buried, some of the rocks within the Sentinel Butte Formation were baked as adjacent coal seams burned. These baked rocks (clinker) are common within the Sentinel Butte Formation and individual beds can reach a thickness of 40 feet (12 m). The thickness of the clinker deposits is dependent on the minerals and grain size; coal thickness; and length, quality, and type of burn (Biek and Gonzalez 2001). The total thickness of the Sentinel Butte Formation varies from 600 to 750 feet (183 to 229 m) (Clayton et al. 1980). At least four marker beds are recognized within the Sentinel Butte and these include the "blue" bentonitic bed and the low and high yellow markers.

Mammal fossils are known including a number of specimens of *Titanoides* (Pantodonta) from the lower Sentinel Butte Formation (Hartman and Kihm 1991). The mammal fossils collected from the Red Springs Quarry in central North Dakota indicate a late Tiffanian NALMA for the Sentinel Butte Formation (Kihm et al. 1993). In addition to the mammals, other vertebrate fossils are known and have been collected from the Sentinel Butte Formation; however, the majority of these fossils are known from unpublished fossil collections located primarily in the North Dakota State Fossil Collection (personal communication with Dr. John Hoganson). A soft-shell turtle death assemblage was collected by the NDGS, and was the subject of an unpublished master's thesis (Kays 1999). Several molluscan fossil localities were also found near the Red Springs Quarry and are known from elsewhere in west-central North Dakota (Hartman 1984). While leaves and other plant fossils including fruits have been documented during stratigraphic studies and collections have been made from a few well-preserved and diverse silicified floras including Almont (Morton County, North Dakota) and Beicegel Creek (McKenzie County, North Dakota), these collections remain largely unpublished (Crane et al. 1990; Stull et al. 2012; Pigg et al. 2008; Pigg and DeVore 2005). Silicified wood as indicated above is prominent within the formation and much of it has been referred to as conifer (Taxodiaceae, sequoia family), including those specimens analyzed within two units in the lower Sentinel Butte which preserve silicified stumps in upright position and are exposed in the southern portion of Theodore Roosevelt National Park (Fastovsky and McSweeney 1991). The Sentinel Butte Formation is considered to have moderate sensitivity and designated as PFYC Class 4.

5.2 QUATERNARY DEPOSITS

Pleistocene and Holocene surficial deposits were deposited in stream channels, during glacial events, and on floodplains and alluvial fans. In the Project area the following four units are mapped: Sheet Moraine, Alluvial Floodplain, and Alluvial Terrace deposits; as well as deposits of the Coleharbor Group. The Sheet Moraine deposits and the Coleharbor Group deposits are composed mostly of till that was draped over the pre-existing topography. In the southern portion of the Project the till is described as yellowish brown unsorted clay, silt, sand, pebbles, cobbles and boulders (Carlson 1985). The Alluvial Terraces are defined as flat or gently sloping benches above and adjacent to the floodplain of the Missouri River which are composed of brownish gray silt and clay with some sand and gravel sized sediment; whereas the floodplains are defined as level to gently undulating accumulations of stream deposits that are generally stratified and adjacent to a stream (Carlson 1985; Freers 1970).

Pleistocene-age surficial deposits, particularly alluvium, may contain mineralized or partially mineralized animal bones, invertebrates, and plant remains of paleontological significance. With the exception of some caves, hot springs, and tar deposits, these fossils typically occur in low density and usually consist of scattered and poorly preserved remains. Erratics and glacial outwash vary in thickness and glacial outwash sands and gravels have produced fossils including those of plants (spruce and aspen), animals including the giant ground sloth (*Megalonyx jeffersoni*), horses, deer, *Bison latifrons*, and insects (Hoganson and Murphy 2003). However, most deposits of Pleistocene age in North Dakota contain few fossils, and are considered to have low paleontological sensitivity (PFYC Class 2). Holocene-age alluvium and colluvium may contain the unfossilized remains of modern taxa but are too young to contain in situ fossils. Therefore, deposits of Holocene age have low paleontological sensitivity and are designated as PFYC Class 2.

6.0 RECORDS SEARCH RESULTS

This section of the report presents the results of the record search completed for the Project (Table 2). The locality data were compiled from stratigraphic and locality data provided by Dr. Allen Kihm (personal communication, Minot State University 2012) which included localities documented by Ted White during the survey he conducted for the United States National Museum prior to the construction of Garrison Dam, Dr. Joseph Hartman's unpublished dissertation (1984), and stratigraphic notes from the geologic maps of McKenzie and Williams Counties (Carlson 1985; Freers 1970). Eleven previously documented localities or fossiliferous stratigraphic columns are located within 1 mile of the Project area. However, based on the available information, it does not appear that any of these are located within the Project corridors.

Table 2. Previously Recorded Fossil Localities (or Stratigraphic Columns) within 1 Mile of the Hawkeye Project Area (includes all land regardless of ownership).

Distance (miles) from Project Area	Fossil Locality or Stratigraphic Column ID	Geologic Unit[1]	Fossil Description
0.98	Unknown (Stratigraphic Column)	Tongue River (Ttr)	Invertebrates (shells), Plants (leaves)
0.02	L915	Bullion Creek (Ttr)	*Viviparus meeki*
0.95	Unknown (Stratigraphic Column)	Tongue River (Ttr)	Invertebrates (shells), Plants (leaves)
0.41	32W113-R2	Fort Union	Cetacean vertebra*
0.06	L931	Bullion Creek	*Viviparus leai*, *Viviparus retusus*, *Viviparus meeki*
0.86	L1175	Bullion Creek (Ttr)	*Viviparus leai*; *Viviparus meeki* (Wenz, float)
0.86	L1176	Bullion Creek (Ttr)	*Viviparus leai*; *Campeloma nebrascense nebrascense*?
0.86	L1177	Bullion Creek (Ttr)	*Viviparus leai*; *Viviparus* sp.
0.90	L1178	Bullion Creek (Ttr)	*Viviparus meeki*, apical specimens

Distance (miles) from Project Area	Fossil Locality or Stratigraphic Column ID	Geologic Unit[1]	Fossil Description
0.90	L1179	Bullion Creek (Ttr)	*Viviparus leai*, *Viviparus meeki*
0.92	Unknown (Stratigraphic Column)	Tongue River (Ttr)	Invertebrates (shells), Plants (leaves)

[1] Geologic Unit Details: Area was originally recorded as undivided Fort Union Formation, in later publications it was divided into the Tongue River and Sentinel Butte formations of the Fort Union Group; and even later the Tongue River was split and renamed in part as the Bullion Creek Formation (and Slope Formation southwest of the Project area). Therefore, the geologic units are reported here as reported in the associated publications and/or locality forms.

*Most likely misidentified since cetaceans are not known from this time period, current status of fossil is unknown.

7.0 FIELD SURVEY RESULTS

This section of the report presents the results of the field survey completed on August 21 and 22, and October 19, 2012. The survey was completed by Shawna L. Johnson and Wayne A. Thompson. All areas surveyed are listed in Appendix A and mapped in Figure 1 and Appendix B. The survey area totaled 490.3 acres.

Four non-significant fossil occurrences were documented during the field surveys. All four localities were found in the Fort Union Group, two in an area previously documented (Carlson 1985) as containing exposures of the Bullion Creek Formation and two in an area mapped (Freers 1970) as the Sentinel Butte Formation, but may also represent exposures of the Bullion Creek. Two of the localities occur on State land, and two occur on USFS land. Fossils documented during the field survey include remains of invertebrates (gastropod and bivalve shells) and silicified wood. The localities are summarized in Table 3, and fossil locality forms, maps, and photographs are provided in Appendix C. Note that the confidential Appendix C is only included in agency copies of this report because they include sensitive location data that are exempt from the Freedom of Information Act.

Table 3. Fossil Localities Documented during the Paleontological Field Surveys Conducted for the Hawkeye Pipeline Project.

(NFO = non-significant fossil occurrence; I = invertebrate; P = plant; Tb = Bullion Creek Formation; Tsb =Sentinel Butte Formation, Fort Union Group (mapped as by Carlson 1985); Tfu = mapped as undifferentiated Fort Union Formation, description and stratigraphic position indicates Tb (Freers 1970)

Field No.	Fossil Locality Type	General Fossil Type	Geometry	Fossil Description	Associated Project Infrastructure	Infrastructure Name	Within Disturbance Area	Ownership	Sec.	T	R	Geologic Formation	Length/ Area (m)	Fossils collected?	Mitigation Recommendations
F5-120822-01	NFO	I	Point	Gastropoda undet.- shells	Segment A – USFS - old	Hawkeye Pipeline	No	USFS - Little Missouri Natl Grassland	3	153N	95W	Tsb (possibly Tb)	< 1	No, fossils not significant	Immediate surface and subsurface clearance. Paleontological resource analyses are recommended for all future surface disturbing actions in the area.
F5-120822-02	NFO	I	Point	Bivalvia undet.- shell and shell fragments	Segment A – USFS - old	Hawkeye Pipeline	No	USFS - Little Missouri Natl Grassland	3	153N	95W	Tsb (possibly Tb)	< 1	No, fossils not significant	
F4-121019-01	NFO	I	Point	Gastropoda undet.- shell fragments	Segment A - State	Hawkeye Pipeline	Yes	State of North Dakota	16	154N	95W	Tfu	< 1	No, fossils not significant	
F4-121019-02	NFO	P	Point	Plantae undet.- silicified wood	Segment A - State	Hawkeye Pipeline	Yes	State of North Dakota	16	154N	95W	Tfu	< 1	No, fossils not significant	

8.0 POTENTIAL IMPACTS TO PALEONTOLOGICAL RESOURCES

In general, surface-disturbing actions have the potential to result in adverse impacts on surface and subsurface paleontological resources in rock units and overlying sediments known to contain such resources. Direct impacts include destruction due to breakage and crushing as the result of surface and subsurface disturbance. Indirect impacts typically include those effects which result from the continuing implementation of management decisions and resulting activities, including normal ongoing operations of facilities within a given project area. They also occur as the result of the construction of new roads and trails in areas that were previously less accessible. This increases public access and therefore increases the likelihood of the loss of paleontological resources through vandalism and unlawful collecting. Cumulative impacts are incremental effects and constitute the long-term loss to society as whole of the scientific information that would have been available if surface-disturbing actions in the general vicinity of the Project area had not taken place.

In the course of this paleontological resources investigation, background research has determined the paleontological sensitivity of the geologic units within the Project area; and a paleontological field survey was completed to identify and survey exposures of potentially sensitive geologic units for surface fossils. These actions have been implemented in order to reduce adverse effects on significant paleontological resources in the Project area to a less than significant level. Without these measures, significant fossils, and the paleontological data they would provide, could have been adversely impacted, rendering them permanently unavailable for scientific research, education, and display.

9.0 RECOMMENDATIONS

Fossils documented during the field survey include non-significant shells of moderately well preserved invertebrates (gastropod and bivalve) shells, and non-significant fragments of silicified wood. Based on the analysis of existing data, which yielded 11 previously recorded fossil localities or fossiliferous stratigraphic columns (none of which are vertebrate) within 1 mile of the Project area, and the limited amount of bedrock exposed in the Project area, in combination with the field survey results (four NFOs, see Table 3 and Appendix C for data), immediate surface and subsurface paleontological clearance for the Project is recommended. Paleontological monitoring during construction is not recommended because the analysis of existing data and field survey did not produce results that indicate a high likelihood for significant subsurface fossil occurrences, and monitoring for this specific project is therefore not justified. Nevertheless, because any new significant fossil discoveries from the Bullion Creek and Sentinel Butte formations would have great scientific importance, paleontological resource analyses are recommended for all future surface-disturbing actions in the area.

All Project personnel should be instructed that if any mineralized bones or other potential fossils are discovered by Project personnel during construction activities and a paleontological monitor is not present, the fossils should be left in place untouched, and the Environmental Inspector or Construction Foreman and a qualified and BLM permitted paleontologist should be contacted immediately to assess the discovery and make further recommendations. Generally, it is recommended that for future surface- and subsurface-disturbing actions on paleontologically sensitive geologic units within this area continue to be evaluated for the presence of significant paleontological resources and that adverse effects to these resources continue to be mitigated.

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APPENDIX A

Summary of Field Survey Results
(Including Survey Area Summaries and Field Photos)

Table 1. Summary of Infrastructure Surveyed for the Hawkeye Pipeline Project.
(SFL = significant fossil locality; NFO = non-significant fossil occurrence; A = Alluvial Floodplain; At = Alluvial terrace; Qct = Coleharbor Group (Till facies); S = Sheet Moriane; Tfu = Fort Union Group; Tsb = Sentinel Butte Formation; Tb = Bullion Creek Formation (Ttr = Tongue River Formation))

Survey Area	County	Sec.	T (N)	R (W)	Ownership	Land Owner	Survey Date	Survey Type		Mapped Formation/s	% Bedrock Exposed	Topography	Bedrock Exposures Locations (and/or ground cover details)	Lithology	Project Mitigation Recommendations[1]		SFLs	NFOs	Photo Point(s)
								Visual %	Pedestrian %						Surface	Subsurface			
Segment A-USACOE	McKenzie	34	154	95	Federal	USACOE	8/22/2012	0	100	At	0	Flat to low/rolling flats	none	NA	Immediate clearance	Immediate clearance	0	0	P5-120822-01; Figure 1, Page A-3
Segment A-USFS-B	McKenzie	10	153	95	Federal	USFS- Little Missouri Grassland	8/22/2012	10	90	Tsb, Qct	0	Rolling flats and hills, and small drainage valleys	none	NA	Immediate clearance	Immediate clearance	0	0	P5-120822-05 Figure 2, Page A-4
Segment A-USFS-new	McKenzie	3, 4	153	95	Federal	USFS- Little Missouri Grassland	8/22/2012	0	100	Ttr, Tsb, Qct	0	Flat rolling hills on top of a large ridge and flat system, then drops down a steep hill and into a rolling valley/ floodplain floor	none	NA	Immediate clearance	Immediate clearance	0	0	P5-120822-04 Figure 3, Page A-5
Segment A-USFS-old	McKenzie	3	153	95	Federal	USFS- Little Missouri Grassland	8/22/2012	0	100	Tfu, Tsb, Qct	10	Steep nearly vertical slopes	Exposed along nearly vertical slope sides	1) buff/orange buff-weathering, well sorted, moderately lithified, popcorn to massive, variegated mudstones and siltstones; 2) black-weathering, well sorted, poorly lithified, blocky, coal; 3) buff tan/tan-weathering, subrounded, well sorted, moderately lithified, popcorn to massive, variegated mudstones and sandstones; 4) buff/ orange buff-weathering, well sorted, moderately lithified, popcorn to massive, variegated mudstones and siltstones; 5) orange, orange-weathering, well sorted, well lithified, platey, siltstone; 6) tan/brownish-green tan-weathering, well sorted, poorly lithified, popcorn, mudstone; 7) orange, orange-weathering, well sorted, well lithified, platey, siltstone; 8) buff tan/tan-weathering, subrounded, well sorted, moderately lithified, popcorn to massive, variegated mudstones and sandstone; 9) black-weathering, well sorted, poorly lithified, hackly, coal/charcoal; and 10) brown, tan, orange-weathering, well sorted, poorly lithified, popcorn, variegated mudstones with orange concretions	Immediate clearance	Immediate clearance	0	2	P5-120822-03 Figure 4, Page A-6
Segment A-Private	Williams	9	154	95	Private	NA	10/19/2012	100	0	S	0	Flats to rolling flats	none	NA	Immediate clearance	Immediate clearance	0	0	None used

Survey Area	County	Sec.	T (N)	R (W)	Ownership	Land Owner	Survey Date	Survey Type		Mapped Formation/s	% Bedrock Exposed	Topography	Bedrock Exposures Locations (and/or ground cover details)	Lithology	Project Mitigation Recommendations[1]		SFLs	NFOs	Photo Point(s)
								Visual %	Pedestrian %						Surface	Subsurface			
Segment A-State	Williams	16	154	95	State	North Dakota	10/19/2012	0	100	S, Tfu	5	Inclined flats to moderate terraced hills to steep grass-covered slope, with a drainage running down the middle of slope	Exposed on a terraced hill and erosional basin all along base	1) orange and buff, tan and buff-weathering, well sorted, poorly lithified, "popcorn" weathered silty claystone; 2) black, black-weathering, well sorted, poorly lithified, loose/ hackly coal with gypsum crystals; 3) gray, orange, buff, gray, tan, buff-weathering, well sorted, poorly lithified, "popcorn" weathered silty claystone; 4) and buff and orange, buff and tan-weathering, well sorted, poorly lithified, "popcorn" weathered silty claystone	Immediate clearance	Immediate clearance	0	2	S4-121019-01 Figure 5, Page A-7
Segment B-Private	Williams	33,4	155, 154	95	Private	NA	10/19/2012	100	0	S, A	0	Rolling flats to gentle slopes/hills	none	NA	Immediate clearance	Immediate clearance	0	0	None used
Segment C-Private	Williams	29, 32	155	95	Private	NA	10/19/2012	100	0	S	0	Flats to gently rolling hills	none	NA	Immediate clearance	Immediate clearance	0	0	None used
Segment C-USACOE	Williams	21,22	154	95	Federal	USACOE	8/21/2012	0	100	At	1	Flats to a small steep hill, into a well-developed drainage, and up to a moderate hill	Exposed in a small slump along a slope and a blowout in the drainage bottom	buff-weathering, subrounded, well sorted, poorly lithified, loose, weathered silty sandstone	Immediate clearance	Immediate clearance	0	0	P5-120821-01 Figures 6 and 7, Page A-8
Segment D-Private-A	Williams	17	155	95	Private	Krogen Trust	8/21/2012	0	100	S	1	Broad moderate hills and a well-developed drainage in between	Exposed on the side of drainage on a south-facing small slope	tan-weathering, subrounded, well sorted, poorly lithified, loose, weathered silty sandstone	Immediate clearance	Immediate clearance	0	0	P5-120821-02 Figure 8 Page A-9
Segment D-Private-B	Williams	17, 20	155	95	Private	Krogen Trust	8/21/2012	20	80	S	0	Rolling hills and well-developed drainages, into a flat/rolling valley floor	none	NA	Immediate clearance	Immediate clearance	0	0	None used
Segment D-Private-C	Williams	5	155	95	Private	Ramberg	8/21/2012	50	50	S	0	Rolling hills (low) along a well-developed drainage	none	NA	Immediate clearance	Immediate clearance	0	0	None used
Segment E-Private	Williams	5	155	95	Private	NA	10/19/2012	100	0	S	0	Gentle slopes and hills, small valley	none	NA	Immediate clearance	Immediate clearance	0	0	None used

[1] Mitigation recommendations are specific to this Project. Paleontological resource analyses are recommended for all future surface-disturbing actions in the area

Figure 1. View of centerline survey area, Segment A-USACOE (at point P5-120822-01).
Photo Direction- Northwest

Figure 2. View of centerline survey area, Segment A-USFS-B (at point P5-120822-05). Photo Direction- Northwest

Figure 3. View of centerline reroute survey area, Segment A-USFS-new (at point P5-120822-04). Photo Direction- Northeast

Figure 4. View of large slumped area of outcrop, Segment A-USFS-old (at point P5-120822-03). Photo Direction- Southwest

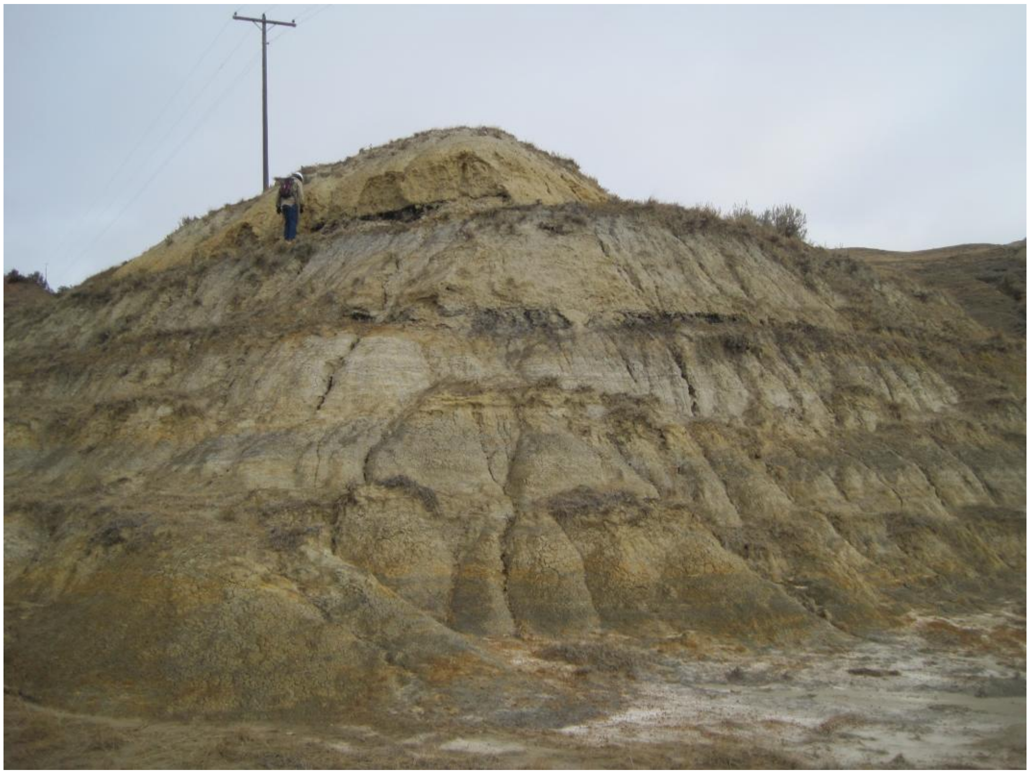

Figure 5. View of terraced outcrop of mostly silty claystones, Segment A- State (at point S4-121019-01). Photo Direction- Northeast

Figure 6. View of centerline survey area looking from USACOE land into State land across road, Segment C-USACOE (at point P5-120821-01). Photo Direction- North

Figure 7. View of centerline survey area, Segment C-USACOE (at point P5-120821-01). Photo Direction- Southeast

Figure 8. View of centerline survey area, Segment D-Private-A (at point P5-120821-02). Photo Direction- North

APPENDIX B

Maps Illustrating Field Survey Areas

APPENDIX C

Fossil Locality Summary and Forms for Newly Recorded Fossil Localities

(Confidential: For Agency Only)

This appendix has been redacted as it is confidential information.

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Paleontological Assessment for the Hess Corporation Hawkeye Pipeline Project, Williams and McKenzie Counties, North Dakota: Addendum 1 (Reroute)

Prepared for

Hess Corporation

and

Bureau of Land Management
North Dakota Field Office

Prepared by

SWCA Environmental Consultants

October 2014

Paleontological Assessment for the Hess Corporation Hawkeye Pipeline Project, Williams and McKenzie Counties, North Dakota: Addendum 1 (Reroute)

Prepared for

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SWCA Paleontological Report Number ND14-16779-04

October 7, 2014

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1.0 INTRODUCTION

This report presents the results of the paleontological desktop analysis completed by SWCA Environmental Consultants (SWCA) for the Hess Corporation (Hess) Hawkeye Pipeline Project reroute (Project). The Project is located on U.S. Army Corps of Engineers (USACOE)-administered lands in Township (T) 154 North, Range (R) 95 West, Williams and McKenzie Counties, North Dakota; state-administered lands in T154N, R95W, Williams County; privately owned surface lands in T154N, T155, and T156N, R95W, Williams County, and T152N, T153, and T154N, R95W, McKenzie County; and U.S. Forest Service (USFS)-administered lands in T153N and T154N, R95W, McKenzie County, (Figure 1). This analysis was conducted at the request of the Bureau of Land Management (BLM) North Dakota Field Office (NDFO) and the Hess Corporation. Because the BLM is the lead agency, the BLM's paleontological resource management policies were followed on all lands.

Based on published geologic mapping (Carlson 1985; Freers 1970), the Project area is underlain by the Paleocene-age Bullion Creek and Sentinel Butte formations of the Fort Union Group and Quaternary surficial deposits. These formations were ranked using the Potential Fossil Yield Classification (PFYC) system. Both the Sentinel Butte and Bullion Creek Formations of the Fort Union Group have high and very high paleontological potential (PFYC Class 4 and Class 5 respectively), whereas Quaternary surficial deposits have low paleontological sensitivity (PFYC Class 2).

The objective of the desktop analysis completed for the Project was to determine whether additional pedestrian pre-construction surveys would be needed and to provide surface paleontological clearance of the Project area within a 400-foot-wide corridor on USFS land (200 feet on either side of the centerline), and a 200-foot-wide corridor (100 feet on either side of the centerline) on USACOE, state, and private land. A report summarizing the results of the analysis of existing data and field survey for the original route was completed by SWCA Environmental Consultants in 2013 (Knauss et al. 2013) Additional paleontological surveys were determined unnecessary because aerial photo and geologic map review indicated no potential for exposures of paleontologically sensitive bedrock within these corridors outside of the previously surveyed locations.

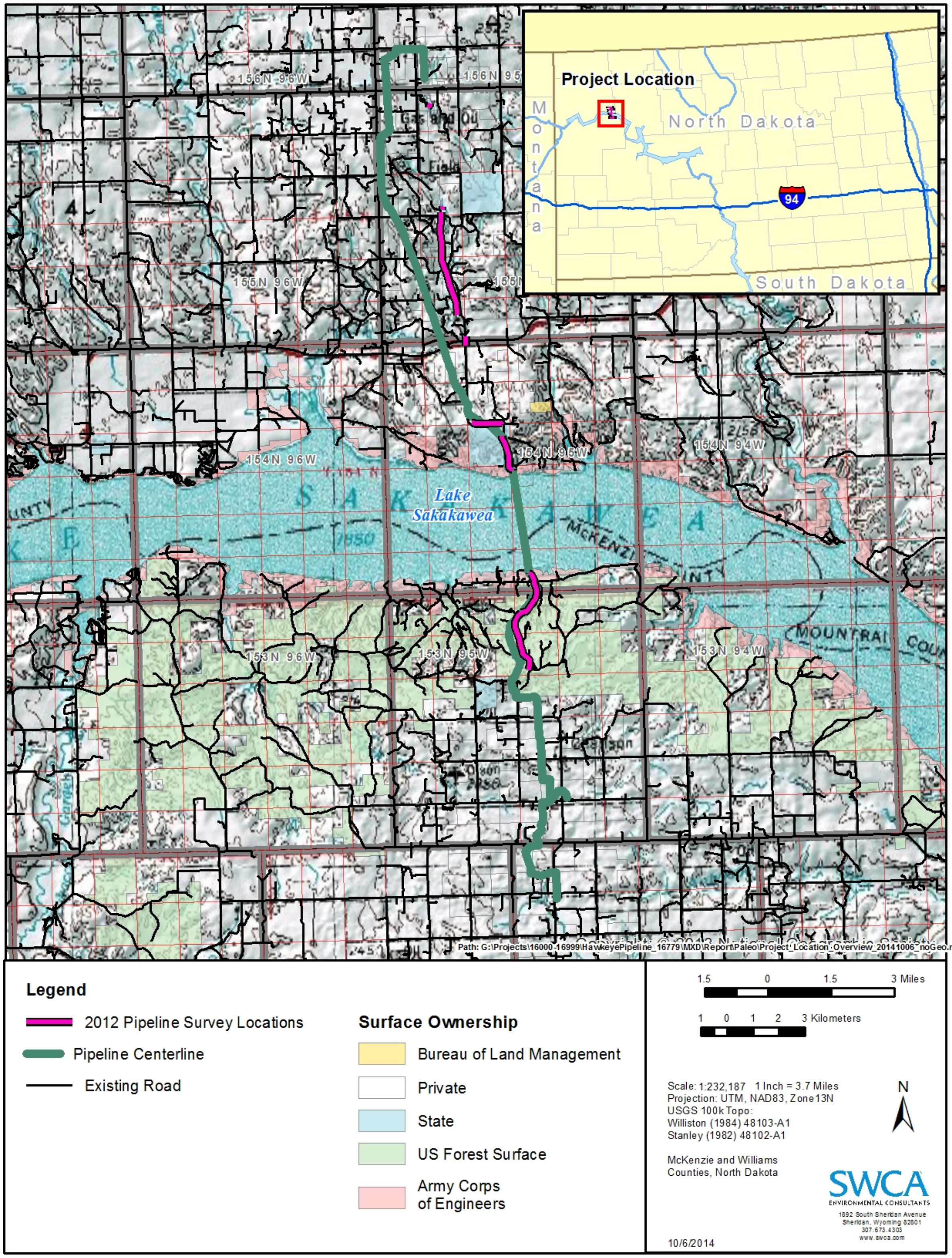

Figure 1. Map of the Hawkeye Pipeline with a new centerline and the 2012 paleontological survey locations for comparison.

2.0 DEFINITION OF PALEONTOLOGICAL RESOURCES

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or un-mineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources include not only fossils themselves but also the associated rocks or organic matter and the physical characteristics of the fossils' associated sedimentary matrix.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced (Murphey and Daitch 2007). Fossils are important scientific and educational resources and can be used to:

- study the phylogenetic relationships among extinct organisms, as well as their relationships to modern groups;
- elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- reconstruct ancient environments, climate change, and paleoecological relationships;
- provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy and serves as an independent and corroborating line of evidence for isotopic dating;
- study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- study patterns and processes of evolution, extinction, and speciation; and
- identify past and potential future human-caused effects to global environments and climates (Murphey and Daitch 2007).

3.0 METHODS

3.1 BLM AUTHORITIES AND STANDARDS

This paleontological assessment, consisting of a literature and records search and review of aerial photographs and geologic maps, was conducted at the request of the BLM (the lead agency for the Project) and in accordance with the agency's policies. The BLM currently uses the Federal Land Management and Policy Act of 1976 as the legislative authority for its paleontological resource policies. Additionally, the BLM's Instructional Memorandum (IM) 2008-009 (2007), Manual H-8720-1 (1998), and IM 2009-011 (BLM 2008) provide general procedural guidelines for the management of paleontological resources. Management objectives include locating, evaluating, managing, and protecting paleontological resources, as well as ensuring that proposed land-use projects do not inadvertently damage or destroy important paleontological resources.

Implementing regulations for the Paleontological Resources Preservation Subtitle of the Omnibus Public Lands Act of 2009 (PRPA), Title VI, Subtitle D, are currently being developed. Under PRPA, the Secretaries (Interior and Agriculture) shall manage and protect paleontological resources on federal land using scientific principles and expertise. The PRPA is modeled after the Archaeological Resources Protection Act and incorporates the recommendations of the May 2000 report of the Secretary of the Interior, Assessment of Fossil Management on Federal and Indian Lands, regarding future actions to formulate a consistent paleontological resources management framework. With the passage of the PRPA, congress officially defines fossils as paleontological resources and reaffirms that fossils from federal lands are federal property. The PRPA essentially codifies existing policies of the BLM, National Park Service, U.S. Forest Service, Bureau of Reclamation, and U.S. Fish and Wildlife Service. The PRPA provides the following:

- Uniform definitions for *paleontological resources* and *casual collecting*
- Uniform, minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants)
- Uniform criminal and civil penalties for illegal sale, transport, theft, and vandalism of fossils from federal lands
- Uniform requirements for curation of federal fossils in approved repositories

According to BLM's IM 2009-011 (BLM 2008:1-18 to 1-19) a Significant Paleontological Resource is defined as:

> Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities.

3.2 ANALYSIS OF EXISTING DATA

In the time since the initial analysis of existing data and field survey for this project, the geologic units (bedrock formations and surficial sedimentary deposits) have been assigned a Potential Fossil Yield Classification System (PFYC) ranking by the BLM Regional Paleontologist. These assignments were based on the taxonomic diversity and abundance of previously recorded, scientifically significant fossil occurrences from each geologic unit and the potential for future discoveries.

Prior to the field survey, the project area was the subject of thorough background research and analysis. The research included geologic map and literature reviews, previous locality data searches, and discussion with paleontologists doing active research in the area. The purpose of the review was to evaluate the paleontological sensitivity of the project area in order to identify known fossil resources within it and nearby in the same geologic formations.

3.3 DESKTOP SURVEY METHODS

The desktop analysis was designed to determine if additional pre-construction surveys are necessary and to evaluate the potential for adverse impacts to subsurface paleontological resources during construction. Aerial photographs, geologic maps, and observations/results from the field survey completed on August 21 and 22 and October 19, 2012 (Knauss et al. 2013) were reviewed.

The paleontological assessment covered the Project area of potential effect (APE), as displayed on Geographic Information Systems (GIS) data provided by Hess on September 2, 2014 (see Figure 1). The review included a 400-foot-wide corridor on USFS land (200 feet on either side of the centerline) and a 200-foot-wide corridor (100 feet on either side of the centerline) on USACOE, state, and private land. The Project APE was inspected for 1) surface fossils, 2) exposures of potentially fossiliferous rock, and 3) areas in which fossiliferous rock would be exposed or otherwise impacted during construction.

It is SWCA's standard operating procedure to record all fossils discovered during the course of field surveys as either significant fossil localities (SFLs) or non-significant fossil occurrences (NFOs). An SFL documents the location, identification, and description of significant paleontological resources along with geologic context. However, the presence of highly weathered, fragmentary, or otherwise unidentifiable fossils is recorded as an NFO in order to communicate the presence of fossils in a manner that does not unnecessarily trigger additional mitigation measures. NFOs typically consist of fragments of turtle shell, unidentifiable bone and tooth fragments, and unidentifiable plant fossils and fragments of fossilized wood. Fossil locality data are sensitive and are exempt from the Freedom of Information Act.

With the completion of this analysis, recommendations were made for the Project alignment see Section 6.0. Typical recommendations include one or more of the recommendations listed in Table 1.

Table 1. Types of Post-Field Survey Paleontological Recommendations.

Survey	Analysis of existing data indicates that there is potential for exposures of paleontologically sensitive bedrock that should be surveyed before final pre-construction recommendations are made.
Clearance	Based on pre-field survey research and/or field survey results, if adverse impacts on paleontological resources are anticipated to be non-existent or below the level of significance for a given surface-disturbing action in a given area, and no further consideration of paleontological resources is deemed necessary, immediate paleontological clearance will be recommended. A clearance recommendation can be made for an entire project area or any portion thereof (surface and/or subsurface), depending on paleontological sensitivity.
Salvage	If isolated medium- or large-sized fossils are discovered within a project area during field surveys or mitigation monitoring, and they are determined to be scientifically significant, they should be salvaged. Fossil salvages typically involve the systematic excavation of fossil remains, determined on a case-by-case basis, and salvage excavations should be designed in such a way as to prevent delays to project schedules, while properly collecting the fossil and associated data.
Avoidance	If the cost of salvage or other mitigation options is determined to be too high, or permanent damage to the resource caused by surface disturbance is considered to be unavoidable, it may be necessary to "avoid" or "reroute" the portion of the project right-of-way that intersects the fossil locality in order to prevent adverse impacts on the resource. Avoidance should also be considered if a known fossil locality appears to contain critical scientific information that should be left undisturbed for subsequent scientific evaluation. Avoidance for later scientific research is the typical mitigation recommendation made for scientifically significant unanticipated paleontological discoveries.

Monitoring	If significant (well-preserved, uncommon, and/or identifiable) paleontological resources are known to be present in an area, or if there is a high likelihood that subsurface fossils are present in geologic formations within a given project area, based on prior field surveys, museum records, or scientific or technical literature, paleontological monitoring during surface-disturbing actions, such as construction excavations, may be recommended. Monitoring may involve the systematic inspection of graded cut slopes and other rock or surficial sediment surfaces exposed during excavation for the presence of fossils and the salvage and documentation of these fossils before they are destroyed by further excavation activity. There are two types of monitoring: "on-site" monitoring is typically used in the most paleontologically sensitive geographic areas/geologic units (PFYC Classes 4 and 5); "spot-check" monitoring is typically used in geographic areas/geologic units of moderate or unknown paleontological sensitivity (PFYC Class 3). The purpose of monitoring is to provide subsurface paleontological clearance. Sampling, salvage, and avoidance of fossils may occur during any monitoring program. During construction, the Paleontological Principal Investigator should have the authority to downgrade the monitoring level of effort if the sensitivity of the area is less than anticipated. On federally managed lands, the appropriate Project Manager or paleontological contact shall be notified if the Paleontological Principal Investigator determines the downgrading of monitoring effort in a certain area is warranted. A telephone call with a follow-up email should provide adequate documentation to support the decision. Additionally, during the pre-construction worker environmental training, construction personnel should be instructed that if any subsurface bones or other potential fossils are found, they must cease work in the immediate area and notify their supervisor immediately. The supervisor will then notify the Environmental Inspector, who will notify the respective jurisdictional agency(s). The Paleontological Principal Investigator or Paleontological Field Supervisor/Agent will inspect the fossils and make further recommendations in consultation with the agency. Location-specific recommendations are provided in Appendix A.
Sampling	Scientifically significant microfossils (vertebrate, invertebrate, plant, or trace fossils) may be identified in rock matrix during a field survey, or, if they are known to occur elsewhere in the same geologic unit or type of deposit in the general area, a determination of their presence or absence may require the use of test sampling of rock matrix for screen-washing in a paleontological laboratory, even if microfossils are not visible in the field. The fossils found, if any, will then be inspected and evaluated to determine their significance and whether additional mitigation recommendations are necessary. Mitigation may include collection of additional matrix for screen-washing. The decision to sample may not be made until monitoring is occurring, because it is usually triggered by conditions in the field.

3.4 DISTRIBUTION OF DATA

Copies of this report will be submitted to the BLM Montana and Dakotas State Office, the BLM NDFO, and Hess. It is assumed that as the lead agency, the BLM will distribute copies to the USFS and North Dakota Geological Survey (NDGS) as applicable. An electronic file and relevant data will be retained on SWCA's corporate server.

4.0 RESULTS

4.1 LITERATURE SEARCH RESULTS

The Project area is located in the central portion of the Williston Basin, west of the Nesson Anticline, a north-south-trending asymmetrical fold, the formation of which began in what is now North Dakota during the Cambrian and continued until the mid-Tertiary. Three geologic units underlie the Project area: the Paleocene-age Bullion Creek and Sentinel Butte formations and surficial deposits of the Pleistocene to Holocene age. The fossils contained within the Paleocene age units, together with the sediments in which they are preserved, provide evidence of the history of life in the western interior of North America during the earliest Cenozoic. These units were deposited in a terrestrial setting after the Western Interior Seaway, which had covered much of central North American during the Cretaceous, underwent its final major regressive depositional cycle, and strand line, estuarine, beach, and marine sediments gave way to fully terrestrial predominantly alluvial and floodplain deposits. From Quaternary to recent times, the landscape was altered as the result of erosion by water and wind, and the modern topography was formed.

For a full description of the literature results regarding the project area and geology, please see Knauss et al. (2013).

4.2 RECORDS SEARCH RESULTS

This section of the report presents the results of the record search completed for the Project (Table 2). This information was originally presented in Knauss et al. (2013); however, re-routing shifted the Project alignment more than a mile in some areas.

The locality data were compiled from stratigraphic and locality data provided by Dr. Allen Kihm (personal communication, Minot State University 2012) which included localities documented by Ted White during the survey he conducted for the United States National Museum prior to the construction of Garrison Dam, Dr. Joseph Hartman's unpublished dissertation (1984), and stratigraphic notes from the geologic maps of McKenzie and Williams Counties (Carlson 1985; Freers 1970). Nine previously documented localities or fossiliferous stratigraphic columns are located within 1 mile of the Project area. However, based on the available information, it does not appear that any of these are located within the Project corridors.

Table 2. Previously Recorded Fossil Localities (or Stratigraphic Columns) within 1 Mile of the Hawkeye Project Area (Includes All Land Regardless of Ownership).

Distance (miles) from Project Area	Fossil Locality or Stratigraphic Column ID	Geologic Unit[1]	Fossil Description
0.17	L915	Bullion Creek (Ttr)	*Viviparus meeki*
0.17	L931	Bullion Creek	*Viviparus leai*, *Viviparus retusus*, *Viviparus meeki*
0.51	32W113-R2	Fort Union	Cetacean vertebra*
0.78	Unknown (Stratigraphic Column)	Tongue River (Ttr)	Invertebrates (shells), plants (leaves)
0.79	Unknown (Stratigraphic Column)	Tongue River (Ttr)	Invertebrates (shells), plants (leaves)
0.91	Unknown (Stratigraphic Column)	Tongue River (Ttr)	Invertebrates (shells), plants (leaves)
0.94	L1175	Bullion Creek (Ttr)	*Viviparus leai*; *Viviparus meeki* (Wenz, float)
0.94	L1176	Bullion Creek (Ttr)	*Viviparus leai*; *Campeloma nebrascense nebrascense*?
0.94	L1177	Bullion Creek (Ttr)	*Viviparus leai*; *Viviparus* sp.

[1] Geologic Unit Details: Area was originally recorded as undivided Fort Union Formation; in later publications it was divided into the Tongue River and Sentinel Butte formations of the Fort Union Group, and even later the Tongue River was split and renamed in part as the Bullion Creek Formation (and Slope Formation southwest of the Project area). Therefore, the geologic units are reported here as reported in the associated publications and/or locality forms.

* Most likely misidentified since cetaceans are not known from this time period, current status of fossil is unknown.

4.3 DESKTOP REVIEW RESULTS

This section of the report presents the results of the aerial photograph and geologic map review completed on September 2014. In addition to aerial photographs and geologic maps, this review utilized the observations from and results of the 2012 field surveys (Knauss et al. 2013).

Four non-significant fossil occurrences were documented during the 2012 surveys and summarized in Knauss et al. 2013. Two of these (F4-121019-01, F4-121019-02), which included the remains of invertebrates (gastropod and bivalve shells) and silicified wood fragments, are within 25 feet of the proposed centerline; the other two are at least 350 feet from the proposed centerline. Both localities within the APE occur on state land in the Fort Union Group (Freers 1970) and may represent exposures of the Tongue River Formation (or Bullion Creek), which is mapped on the south side of Lake Sakakawea (Carlson 1985).

While the alignment shifted up to 1 mile in places, the majority of the route shifts occurred in areas where bedrock of high to very high paleontologically sensitivity is not exposed and is covered by vegetation and/or Quaternary glacial deposits of low to moderate sensitivity. Where bedrock is exposed, specifically the embankment along the northern shore of Lake Sakakawea, the route change is minimal and well within the originally surveyed alignment. Therefore additional paleontological surveys were deemed unnecessary.

5.0 POTENTIAL IMPACTS TO PALEONTOLOGICAL RESOURCES

In general, surface-disturbing actions have the potential to result in adverse impacts on surface and subsurface paleontological resources in rock units and overlying sediments known to contain such resources. Direct impacts include destruction due to breakage and crushing as the result of surface and subsurface disturbance. Indirect impacts typically include those effects that result from the continuing implementation of management decisions and resulting activities, including normal ongoing operations of facilities within a given project area. They also occur as the result of the construction of new roads and trails in areas that were previously less accessible. This increases public access and therefore increases the likelihood of the loss of paleontological resources through vandalism and unlawful collecting. Cumulative impacts are incremental effects and constitute the long-term loss to society as whole of the scientific information that would have been available if surface-disturbing actions in the general vicinity of the Project area had not taken place.

In the course of this paleontological resources investigation, background research has determined the paleontological sensitivity of the geologic units within the Project area; and a the 2012 paleontological field surveys were completed to identify and survey exposures of potentially sensitive geologic units for surface fossils. These actions have been implemented in order to reduce adverse effects on significant paleontological resources in the Project area to a less-than-significant level. Without these measures, significant fossils, and the paleontological data they would provide, could have been adversely impacted, rendering them permanently unavailable for scientific research, education, and display.

6.0 RECOMMENDATIONS

The original recommendations for this Project have been modified to reflect additional information provided by the BLM. In the time since the onset of this project, the BLM (and other federal agencies, including the UACOE) has required paleontological surveys and monitoring for projects occurring on federal land or as a result of the recovery of or exploration for federal minerals in northwestern North Dakota, and the agency has requested that recommendations for the Fort Union formation in this area take into account other projects. Based on the analysis of existing data, which yielded nine previously recorded fossil localities or fossiliferous stratigraphic columns (none of which are vertebrate) within 1 mile of the Project area, and the limited amount of bedrock exposed in the Project area, in combination with the field survey results (four NFOs; see Knauss et al. 2013), immediate surface and subsurface paleontological clearance is recommended throughout the Project except for four areas near the shores and drainages of Lake Sakakawea (Sections 3, 4, 9, 10, and 16 T153N, R95W, and Section 16, T154N, R95W; Figure 2). While paleontological monitoring is not recommended for the majority of the Project because the analysis of existing data and 2012 field surveys produced no results indicating a high likelihood for significant subsurface fossil occurrences, any new significant fossil discoveries from the

Bullion Creek and Sentinel Butte formations would have great scientific importance. Therefore, monitoring is recommended for surface disturbance where previously undisturbed bedrock occurs at or near the surface. If Project construction in these areas consists of subsurface bores or horizontal directional drilling and not open trenches then paleontological monitoring is not recommended, as the fossils would be pulverized prior to exposure. In addition, in areas with previous subsurface disturbance (existing pipelines), monitoring is not recommended.

In addition, all Project personnel should be instructed that if any mineralized bones or other potential fossils are discovered by Project personnel during construction activities and a paleontological monitor is not present, the fossils should be left in place untouched, and the Environmental Inspector or Construction Foreman and a qualified and BLM permitted paleontologist should be contacted immediately to assess the discovery and make further recommendations.

Generally, it is recommended that for future surface- and subsurface-disturbing actions that disturb paleontologically sensitive geologic units, potential effects to significant paleontological resources should be evaluated and mitigated as appropriate prior to and during construction.

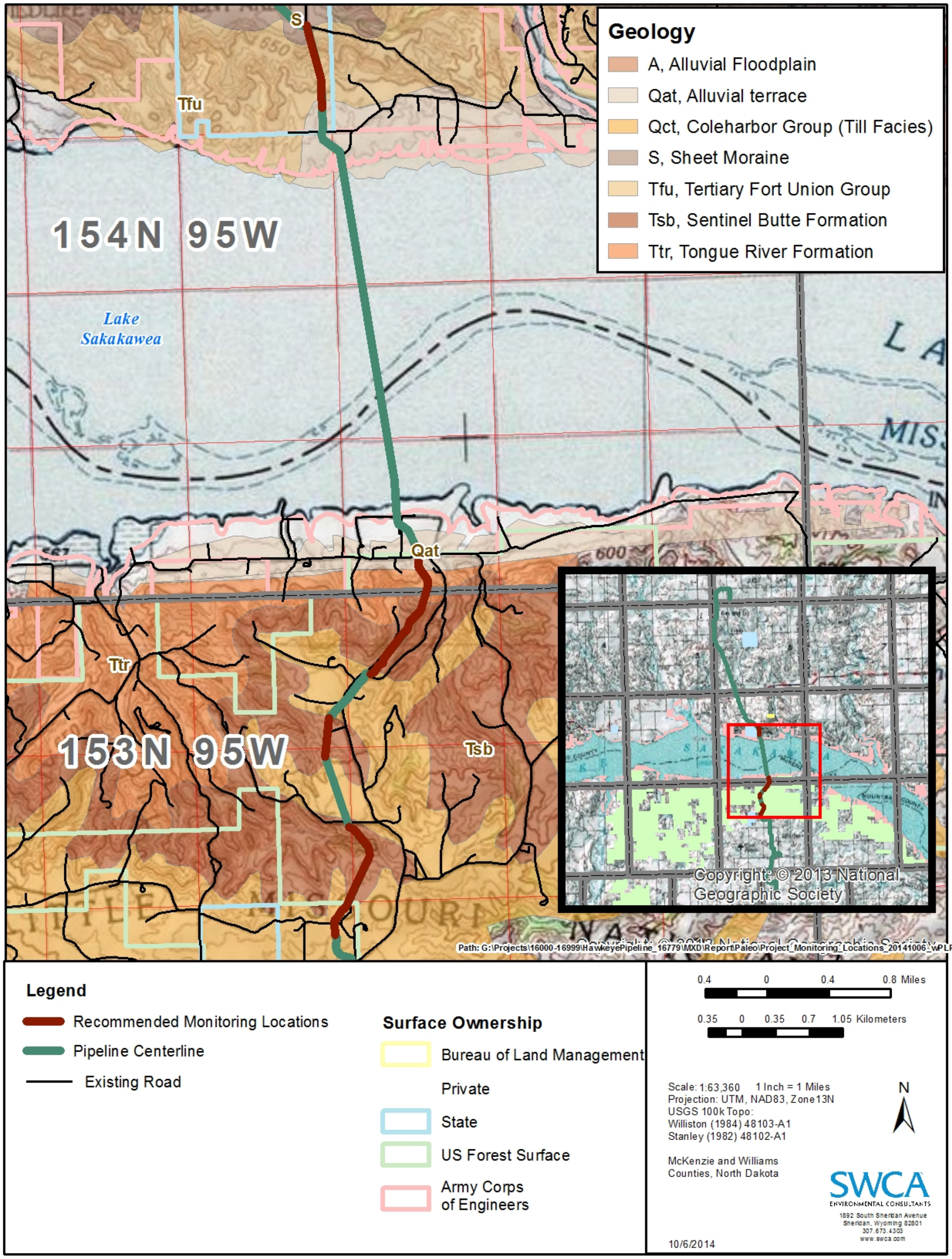

Figure 2. Recommended paleontological monitoring locations along the Hawkeye Pipeline.

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Appendix D

Spill Risk Assessment

Spill Risk Assessment (to be provided to the North Dakota PSC under separate cover)

Appendix E

Environmental Protection Measures

Environmental Protection Measures

Hess has committed to specific environmental protection measures as part of the Project to minimize potential impacts during construction and operation. **Table E-1** summarizes these protection measures by resource. Additionally, the construction ROW would be 100 feet wide on private and state lands, but would be reduced to a width of 50 feet wide with numerous neckdowns (ROW width reductions to confine the work areas) to further minimize impacts on lands managed by the USFS and USACE and at crossings of wetlands, riparian areas, and waters of the U.S.

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
Air Quality	Water or chemical soil binders would be used to control dust along the ROW and access roads during construction in accordance with federal, state, and local requirements.
	Construction will be performed using methods and equipment to minimize the discharge of smoke, dust, or other contaminants to the atmosphere in accordance with federal, state, and local requirements.
Geology and Minerals	The HDD construction method would be used to avoid impacts to landslide areas associated with the bluffs on the north and south sides of Lake Sakakawea. Where needed geotechnical investigations would be used to ensure protection from underground coal mines during construction of the pipeline ROWs.
Soils	Soil erosion will be minimized by implementing procedures described in the Storm Water Pollution Prevention Plan (SWPPP), and Construction, Mitigation, and Reclamation Plan (CMRP).
	For storm water events during construction, vehicle traffic and equipment will be restricted to prevent rutting in areas where topsoil is intact (excluding areas where topsoil has been removed/segregated).
	Use of temporary roads across agricultural lands may result in some compaction and seasonal loss of crops. When necessary, compacted soils will be disked following project completion and landowners will be compensated for crop loss per their easement agreement.
	During construction, topsoil and subsoil will be segregated. Topsoil will be stripped and stored separately from the subsoil, which will be replaced with minimum handling. In rocky areas, an assessment of the soil handling requirements will be made by Hess.
	On agricultural land, subsoil will be chisel-plowed, rock-picked, and leveled prior to the replacement of topsoil.
Water Resources and Wetlands	The SWPPP and BMPs will be implemented to minimize storm water transport of sediment from disturbed areas to streams and wetlands. All project-related storm water discharges will be in compliance with a NPDES permit.
	Wetland and riparian areas will be identified and signs posted at the edges of the wetland/waterbody features prior to construction to indicate to crews the limits of these areas so that specific BMPs and work practices are adhered to.
	No aboveground facilities or staging areas will be constructed within wetlands, riparian areas, or other waters of the U.S.
	Additional temporary workspace will be located a minimum of 50 feet outside wetland boundaries. Protection measures (including installation of erosion control devices) will be utilized at wetland and waterbody crossings to minimize sedimentation. For areas where additional setbacks are deemed necessary to protect the resource, the applicability of the appropriate setback will be determined in consultation with agencies on a site-specific basis.

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
Water Resources and Wetlands (continued)	No refueling or lubricating will occur within 100 feet of wetlands and/or perennial/intermittent/ephemeral waterbodies. Hazardous materials, chemicals, fuels, etc., will not be stored within 100 feet of wetlands or perennial/intermittent waterbodies.
	Hydraulic, fuel, and lubricating systems on operating equipment will be kept in good repair to avoid leakage of petroleum products into watercourses.
	No debris will be placed or left where it will enter a river or stream. Earthen material will not be dumped into rivers or waterways.
	Depositing harmful substances in or adjacent to wetlands or waterbodies is prohibited.
	Application of herbicides or pesticides within the vicinity of wetlands and waterbodies will follow pesticide use protocol and restrictions outlined in the Noxious Weed Management Plan.
	For dry crossings, topsoil within the trench line will be segregated from subsoil in wetland and riparian areas for use in reclamation as specified in the Reclamation Plan.
	Where crossings of riparian or wetland areas cannot be reasonably avoided, horizontal directional drill (HDD) methodology will be utilized for the crossings.
	To control Aquatic Invasive Species (AIS), equipment will be washed to remove all vegetation matter and AIS prior to arrival at the construction site and after constructing through stream water, where water is evident within the channel.
	To minimize surface disturbance, temporary drainage alteration will take place for the shortest time possible, and streams and ditches will be reclaimed to the extent practicable.
	The HDD/bore crossing method would be used at a total of forty-five locations to avoid sensitive areas such as waterbodies (13), cultural resources (2), and steep topography (3), county roads (25), and two combined road/waterbodies.
	Water used for hydrostatic testing, dust control during construction, etc., will be obtained from a licensed contractor. The installation or abandonment of wells is not anticipated. Surface water or groundwater appropriation is not anticipated.
	Based on coordination with the USACE, a Section 404 permit is not required. However, if a Section 404 permit is obtained and mitigation is required, mitigation areas will be monitored for a minimum of 5 years. Annual reports will be submitted to the North Dakota Corps of Engineers regulatory office. Successful performance criteria will be developed in a Mitigation and Monitoring Plan that will be submitted with the 404 permit application.
Vegetation	Revegetation seed mixes will be developed in coordination with the agencies and private landowners. The Reclamation Plan will outline the procedures to be followed for returning the land to pre-existing vegetative cover and land uses.
	Trees and shrubs will be replaced in accordance with the Public Service Commission's (PSC's) tree and shrub mitigation specifications. Hess will coordinate with the appropriate agencies to identify efficient restoration and mitigation measures following construction.
	Reclamation monitoring will be conducted for the first growing season following reclamation and every other year, for 5 years thereafter. Reclamation success will be based on the revegetation to 70 percent of the background cover as stipulated in the SWPPP and the applicable permits obtained.
Noxious Weeds	A Noxious Weed Management Plan will be implemented to minimize the spread of noxious weeds. A Pesticide Use Proposal (PUP) will be included in the Noxious Weed Management Plan in the event pesticides are used.
	Reclamation monitoring for noxious weeds post-construction will be conducted in conjunction with ROW monitoring of reclamation success.

Table E-1 Summary of Environmental Protection Measures for the Project

<table>
<tr><th>Resource</th><th>Environmental Protection Measures</th></tr>
<tr><td rowspan="7">Wildlife and Fisheries</td><td>Appropriate wildlife and fisheries protection measures will be implemented during all phases of construction in coordination with jurisdictional agencies.</td></tr>
<tr><td>No firearms, dogs, or pets will be brought onto the ROW by anyone involved with the project and that no harassment or depredation of any wildlife species or livestock takes place.</td></tr>
<tr><td>Hess would construct escape ramps every 0.5 mile to reduce the potential for livestock and wildlife becoming trapped in the pipeline trench.</td></tr>
<tr><td>Construction activities will not be conducted during the migratory bird breeding season (between February 1 and July 15); or, if construction occurs during bird breeding season, Hess will either: 1) mow and maintain vegetation within the project disturbance area prior to and during the breeding season to deter migratory birds from nesting in the project area until construction is underway; or 2) conduct a breeding bird survey within 5 days of construction activities. If evidence of breeding is identified, Hess will coordinate with the BLM and applicable federal agencies to determine appropriate actions to protect breeding birds.</td></tr>
<tr><td>Any open posts (1.5-inch-diameter or greater), which may be utilized in pipeline construction or operation (such as markers, signs, stacks, etc.), would be permanently covered or filled with sand or gravel. This is necessary to prevent wildlife mortalities by entrapment.</td></tr>
<tr><td>To avoid/minimize impacts to nesting bald eagles from construction activities, Hess would: 1) maintain a minimum 0.5-mile buffer between the activity and any bald eagle nest if no landscape buffer exists; 2) maintain a minimum 660-foot buffer and landscape buffer or natural area between the activity and around the nest tree; and 3) avoid activities during the bald eagle nesting season (February 1 to July 15).</td></tr>
<tr><td>To avoid/minimize impacts to golden eagles, Hess would conduct surveys prior to any on-the-ground activities to determine the extent of any golden eagle breeding territories in the area that may be impacted by the Project. Hess would conduct an aerial nest survey (preferably by helicopter) within 1 mile of the Project ROW to identify any occupied and unoccupied golden eagle nest sites in proximity to the Project area. Aerial surveys would be conducted between March 1 and May 15, before leaf-out, so that nests are visible and their status (active or inactive) can be determined. A nesting territory or inventoried habitat would be designated as unoccupied by golden eagles only after at least two complete aerial surveys in a single breeding season. Aerial surveys would include the following:

1. Due to the ability to hover and facilitate observations of the ground, helicopters are preferred over fixed-wing aircraft, although small aircraft also may be used. Hess would report any golden eagle nests, as well as other nests of any other raptors found during the survey. Where possible, Hess would utilize two observers to conduct the surveys.
2. Hess would record any observations of golden eagle nest sites using a global positioning system (GPS). The date, location, nest condition, activity status, and habitat would be recorded for each sighting.
3. Hess would share the qualifications of the biologist(s) conducting the survey, method of survey, and results of the survey with the USFWS.

Alternatively, Hess may conduct ground surveys to identify golden eagle nests within 1 mile of the Project ROW between March 1 and May 15. However, ground surveys are much less reliable than aerial surveys, even during leaf-off conditions, and 75 percent of golden eagle nests present may be missed. Hess would conduct at least two ground observation periods lasting at least 4 hours or more per linear mile to designate inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and</td></tr>
</table>

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
Wildlife and Fisheries (continued)	monitored. If a golden eagle nest is observed, Hess would contact the USFWS for further consultation to determine appropriate protection measures and possible "take" permit implications.
Special Status Species	Prior to the initiation of construction, applicable biological surveys will be conducted through areas of suitable habitat for specific species during the appropriate season, as determined by the jurisdictional agencies (e.g., BLM and USFWS) and survey results reported in compliance with Section 7 of the ESA.
	If threatened, endangered, candidate, or sensitive plant species are identified in proposed disturbance areas prior to construction, appropriate protection measures will be determined in consultation with agencies.
	Surface use is prohibited from March 1 through June 15 within 1 mile (line of sight) of a sharp-tailed grouse display ground.
	If construction were to occur during the interior least tern or piping plover breeding season (April 1 through August 31), Hess would conduct surveys in suitable habitat within 0.5 mile of the Lake Sakakawea crossing location. A qualified biologist would survey no more than 5 days prior to construction-related activities to identify occupied breeding territories and/or active nest sites. If occupied breeding territories and/or active nest sites are identified, the USFWS would be notified. Appropriate protection measures, such as seasonal constraints and the establishment of a spatial buffer area, would be implemented on a site-specific basis in coordination with the USFWS. Similar constraints and/or mitigation measures may apply to pipeline maintenance activities if conducted during the breeding season within 0.5 mile of the Project area.
	If construction occurs during spring or fall migration, Hess would provide whooping crane monitors in suitable habitat along the ROW. If a whooping crane is sighted within 1 mile of a pipeline or associated facilities during construction, all work would cease within 1 mile of the area and the USFWS would be contacted immediately. In coordination with the USFWS, work would resume after the bird(s) leave the area.
	The loss of special status plant species individuals or populations may occur as a result of adjacent noxious weed-related herbicide application treatments. To effectively mitigate this impact, consultation between the special status plant species jurisdictional agency and the weed control specialists would be completed prior to treatments. The location of known special status plant species and noxious weed species individuals and populations would be confirmed prior to treatments. In addition, techniques for special status plant species avoidance via direct and indirect applications would be developed.
	To prevent the spread of aquatic nuisance species during construction and operation, Hess would remove aquatic plants and animals from equipment prior to entering and before leaving any waterbody. Project staff would spray/wash equipment with high pressure hot water when leaving a wetland/waterbody, or would dry equipment for at least 5 days before use at a different wetland/waterbody.
	In order to reduce impacts to the Dakota skipper, Ottoe skipper, regal fritillary, and tawny crescent, disturbance to native prairie would be reclaimed to its original condition using native seed mixes specified by applicable state and federal agencies. The objective is for no net loss of native prairie habitat to occur. In addition, the following protection measures would be implemented to minimize impacts to the special status butterfly species: 1) Restrict workspaces where the ROW crosses native prairie habitat; 2) Salvage and segregate topsoil in native prairie to maintain the native seed sources for re-vegetation of the ROW in native prairie;

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
Special Status Species (continued)	3) Control noxious and invasive plant species as addressed in the Noxious Weed and Invasive Weeds and Aquatic Nuisance Species Control Plan; and 4) Prohibit herbicide and pesticide use where special status butterfly species are found.
	To reduce impacts to potential habitat for the Dakota skipper, Hess has routed the Project to avoid large tracts of undisturbed native prairie and followed existing pipeline and road ROWs for approximately 80 percent of the Project route. Hess has also committed to constructing forty-five HDD/bore segments that would avoid impacts to 0.77 miles of native prairie habitat potentially suitable for Dakota skippers. This would result in a 10.5 percent decrease in overall impacts to potential native prairie habitat.
	The revegetation plan would include a commitment to reseed disturbed native prairie with a comparable native grass/forb seed mixture and planting a diverse mixture of native cool- and warm-season grasses and forbs.
	Obtain a seed source that is as local as possible to insure the particular cultivars are well adapted to the local climate. Follow an existing disturbed route (e.g., pipeline corridor, existing road system) throughout as much of the Project as possible. Reduce the construction ROW to the greatest extent possible and commit to a revegetation and monitoring protocol to ensure that the habitat along the Project ROW is returned to pre-Project conditions.
	Monitor reseeded areas to ensure that these areas are successfully revegetated without the establishment of invasive or noxious species.
	Hess would reduce the construction ROW width from 100-feet to 75-feet in three areas (MP 14.0 to 14.5, MP 14.8 to 16.2, MP 16.5 to 19.5) to reduce impacts to potential native prairie habitat. To the extent practical, Hess would utilize the existing high pressure natural gas pipeline ROW for additional temporary workspaces.
	In areas along the Project route where woodlands would be crossed, Hess would conduct acoustic bat surveys between May 1 and August 31, in coordination with the USFWS, to determine if northern long-eared bats are present within the Project area.
	If acoustic surveys indicate the presence of northern long-eared bats, Hess would conduct surveys prior to construction to identify potential roosting trees/snags within and immediately adjacent to the Project ROW that are potentially suitable habitat for the northern long-eared bat. Once identified, Hess would not construct in these areas from June 1 to August 15, when there may be young present. In the case that construction occurs between June 1 and August 15, Hess would implement additional measures to ensure potential roosting trees/snags are not impacted by Project activities, including fencing-off and/or monitoring.
Land Use	Any range improvements such as fences, gates, cattle guards, and developed water sources that are damaged during construction and are located within the project's disturbance area or access roads will be repaired to the satisfaction of the agency or private landowner.

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
Land Use (continued)	If construction disturbs or destroys a natural barrier used for livestock control, the opening will be temporarily closed during construction and permanently closed following construction, as required by the agency or private landowner.
	Hess will coordinate with landowners to minimize impacts to their lands. Lands will be restored to original use following the construction phase of the project.
	Construction personnel will be directed to stay within the approved ROW or will follow designated access roads to prevent disturbance beyond the ROW and approved access routes.
	Hess would reduce the ROW width on USFS and USACE lands to 50-feet.
Recreation and Visual Resources	Measures will be implemented to minimize the visual effects of construction on high value road, river, and trail crossings as identified by the BLM, USFS, or USACE.
	To prevent unauthorized use of the ROW by off-road vehicles and subsequent potential impacts to soil, vegetation, and wildlife resources, access will be blocked at locations specified by agencies and /or private landowners.
Transportation	All major highway crossings will be bored to limit traffic interruptions.
	All roads, including unpaved roads, will be bored subject to approval of local road authorities.
	Temporary access areas will avoid sensitive features such as wetlands. Areas used for temporary roads or staging areas during construction will be restored to their original condition to the extent practicable.
Cultural and Paleontological Resources	Prior to project construction, cultural and paleontological resource inventories will be conducted on all proposed disturbance areas not previously inventoried. All cultural resources recorded during the inventories will be evaluated for eligibility to the NRHP. Avoidance is recommended for cultural resources listed on the NRHP or evaluated as eligible for listing on the NRHP. If avoidance is not possible, a treatment plan will be developed by the BLM in consultation with the North Dakota State Historic Preservation Office, USFS/USACE (if on their lands), and interested tribes. The treatment plan will be implemented prior to project construction.
	If cultural resources, including human remains, are discovered during project construction, all work will stop in the area of the discovery and the procedures outlined in the Unanticipated Discoveries Plan (POD, Appendix D) will be followed. BLM written permission stating that work in this area no longer presents a hazard to cultural resources will be required before work can resume in the area of the discovery. If paleontological resources are discovered during project construction, all work will cease and a certified paleontologist permitted by the State of North Dakota will be contacted to determine appropriate resource identification and protection procedures. Construction will resume upon written authorization from the BLM.
	To minimize indirect impacts to cultural and paleontological resources, project-related personnel will be educated as to the sensitive nature of the resources, and a strict policy of prohibiting collection of these resources will be implemented.
Noise	The project route will be at least 500 feet from occupied houses and structures. At this distance, noise created during construction should be below ambient background levels, especially near highways and railroad lines.
Public Safety and Environmental Protection	The project will be located a minimum distance of 500 feet from residences to minimize hazards to human health and safety. Also, isolation valves will be installed along the pipeline in accordance with federal regulations to isolate the pipeline during a potential leak to minimize the release. At Lake Sakakawea, isolation valves will: 1) be remotely operated to reduce

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
Public Safety and Environmental Protection (continued)	potential spill volume; 2) have pressure sensors that are capable of detecting leaks with slow release rates; and 3) have pressure detectors equipped with acoustic detection capabilities, capable of identifying the location of a release within 6 feet of its actual location, thereby reducing environmental disturbance.
	A Spill Risk Assessment has been completed to identify high consequence areas (HCAs) and potential impacts as a result of an accidental release of crude oil during pipeline operation.
	Equipment will be maintained on-site to contain, capture, and clean up any accidental release of harmful chemicals, pollutants or other materials into the environment. Spills will be cleaned up immediately. Spills on water that cause a sheen on the water require notification to the U.S. Environmental Protection Agency (USEPA) and will be removed by the appropriate containment and cleanup technologies. Spills will be cleaned up using an absorbent material, vacuum trucks, and other equipment, and the contaminated material either drummed in marked 55-gallon drums or hauled to an authorized disposal area.
	The use of hazardous materials will be carefully controlled. Such materials will be clearly labeled and used only by authorized personnel trained in the transportation, handling, use and storage of the specific hazardous materials. Storage sites for fuels and hazardous materials will be located a minimum distance of 500 yards from wetlands and waterbodies and shall be selected to ensure that risk of contamination of waterbodies or other sensitive environments resulting from an accidental spill at the site is reduced, and that leakage will be readily detected and contained.
	Storage sites of fuels or chemicals designed to hold in excess of 300 barrels will be surrounded by an impermeable berm, which will be of sufficient capacity to contain 150 percent of the volume of liquid stored. All hazardous chemicals, regardless of volume (including pesticides) will be stored on or in a secondary containment vessel capable of containing 150 percent of the volume of liquid stored.
	Hess will be responsible (or have contracts with companies with equipment and capabilities) for maintaining a sufficient supply of spill containment and clean-up equipment, including suitable commercial absorbent material on the work site with the responsibility to adequately respond to a loss of containment event.
	Hess will implement fire prevention and control measures including, but not limited to: 1) ensuring that sufficient suppression equipment and qualified personnel are present during hot work jobs; 2) requiring construction crews to carry fire extinguishers in their vehicles and/or equipment; 3) training construction crews in the proper use of fire extinguishers; and 4) coordinating with the local fire district to provide fire response services.
USFS Specific Mitigation Measures	Keep disturbance to a minimum to reduce impacts to suitable sensitive species habitat and native vegetation communities in general, and also to reduce spread of invasive species.
	Where the disturbance area would intersect noxious weeds or patches of invasive species, treat the noxious weeds or invasive species at least 2 weeks prior to construction, or salvage and stockpile the topsoil from these sites separately to isolate the vegetative propagules and seed. These areas should be identified to ensure they are monitored after reclamation.
	Use a USFS-approved native seed mix for reclamation; monitor to ensure proper establishment. Monitor annually for 5 years following reclamation to ensure reclamation success and to identify noxious weeds and invasive species establishment. If, at any time during the 5-year monitoring period, revegetation is deemed successful by the USFS, no additional monitoring would be conducted.

Table E-1 Summary of Environmental Protection Measures for the Project

Resource	Environmental Protection Measures
USFS Specific Mitigation Measures (continued)	If invasive species are found on reclaimed sites that are in areas mostly dominated by native species, treat the invasive species sites and reseed if necessary.
	If noxious weeds are found on reclaimed sites, treat the weeds and reseed if necessary.
	Clean vehicles and equipment used for construction at approved water or air wash stations (monitored by an EI) prior to entering the National Grassland to remove all seeds and plant propagules (seeds and vegetative parts that may sprout) in order to prevent the potential spread of noxious weeds and invasive species. Approved wash stations would include commercial car washes and on-site locations. This mitigation would be applied when moving equipment from an area containing invasive species to an area that does not contain invasive species.
	Clearly mark (stake/fence/flag) sensitive plant populations within or very near the ROW prior to construction and note them on alignment sheets to ensure that they are avoided. Ensure that such marking is still visible prior to reclamation activities.
	Any discovery of sensitive or watch plants within the Project area should be reported to the McKenzie Ranger District Office. Sensitive plant populations discovered after Project approval should be protected; therefore, last-minute alterations of the Project design or access route may be requested in order to avoid negative impacts to such populations.

Appendix F

Exclusion, Avoidance, and Selection Criteria Figures

Legend

- Desktop Analysis Area
- 200-foot-wide Corridor
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline
- Existing Facility
- Match Line
- Piping Plover Critical Habitat
- Sensitive Plant or Plant Community Occurrence
- NDGFD Boat Ramp

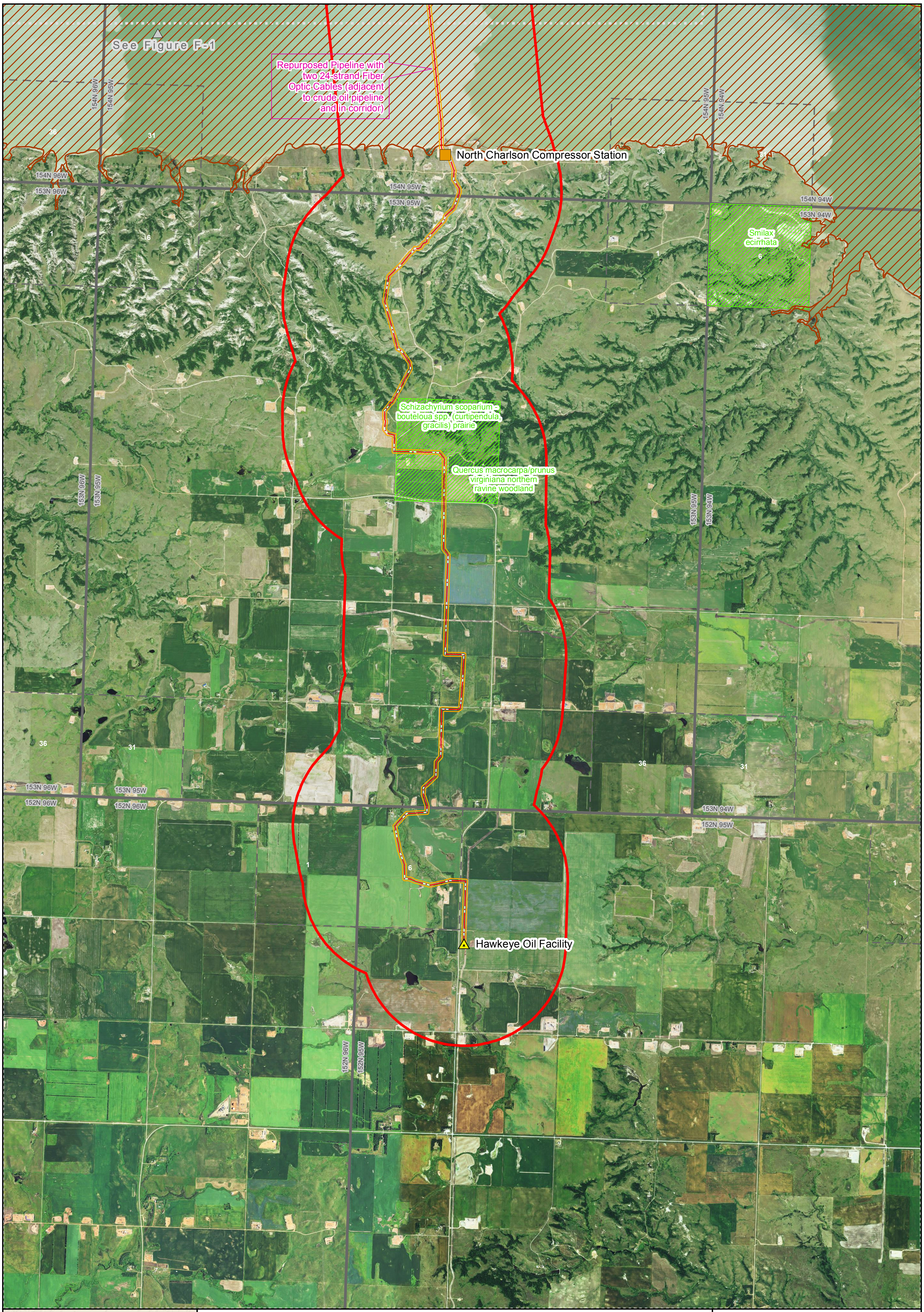
Sources: Hess 2014; NDNHI 2014; LWCF 2009; USFWS 2011.

Hawkeye Pipeline System Project

Figure F-1

Crude Oil Pipeline Route Exclusion Areas

0 0.25 0.5 1
Miles



Legend

- Desktop Analysis Area
- 200-foot-wide Corridor
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline
- Proposed Facility
- Existing Facility
- Match Line
- Piping Plover Critical Habitat
- Sensitive Plant or Plant Community Occurrence

Sources: Hess 2014; NDNHI 2014; LWCF 2009; USFWS 2011.

Hawkeye Pipeline System Project

Figure F-2

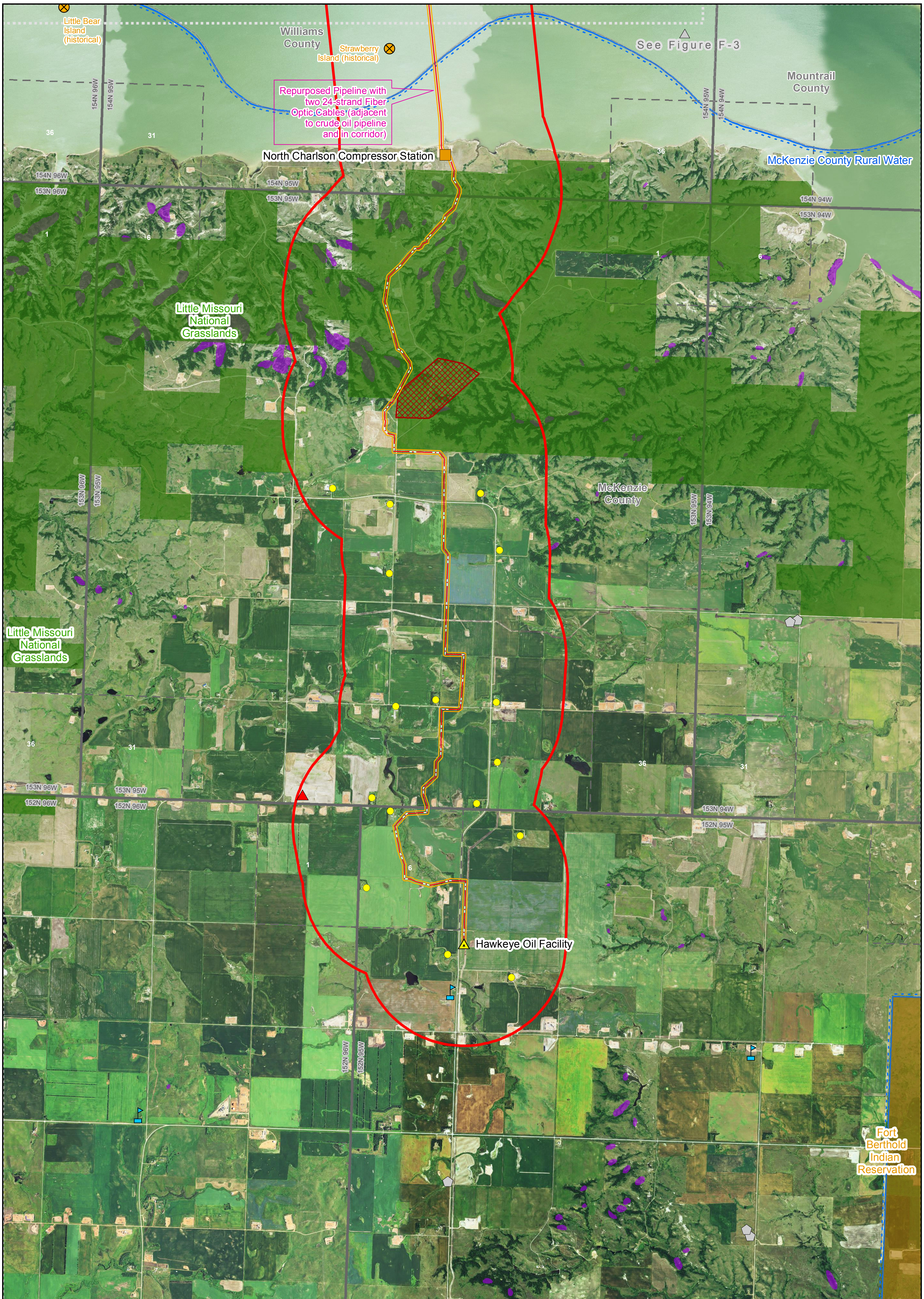
Crude Oil Pipeline Route Exclusion Areas

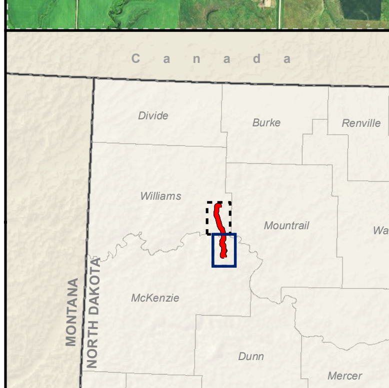
0 0.25 0.5 1
Miles

Hawkeye Pipeline System Project

Figure F-3

Crude Oil Pipeline Route Avoidance Areas





Legend

- Desktop Analysis Area
- 200-foot-wide Corridor
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline
- Proposed Facility
- Existing Facility
- Match Line
- Cemetery
- Church
- Schoolhouse
- Vacant Schoolhouse
- Residence
- Historical Site
- Landslide Area
- Rural Water Association
- Elm Tree Historic Archaeological District
- U.S. Forest Service Land
- Tribal Land

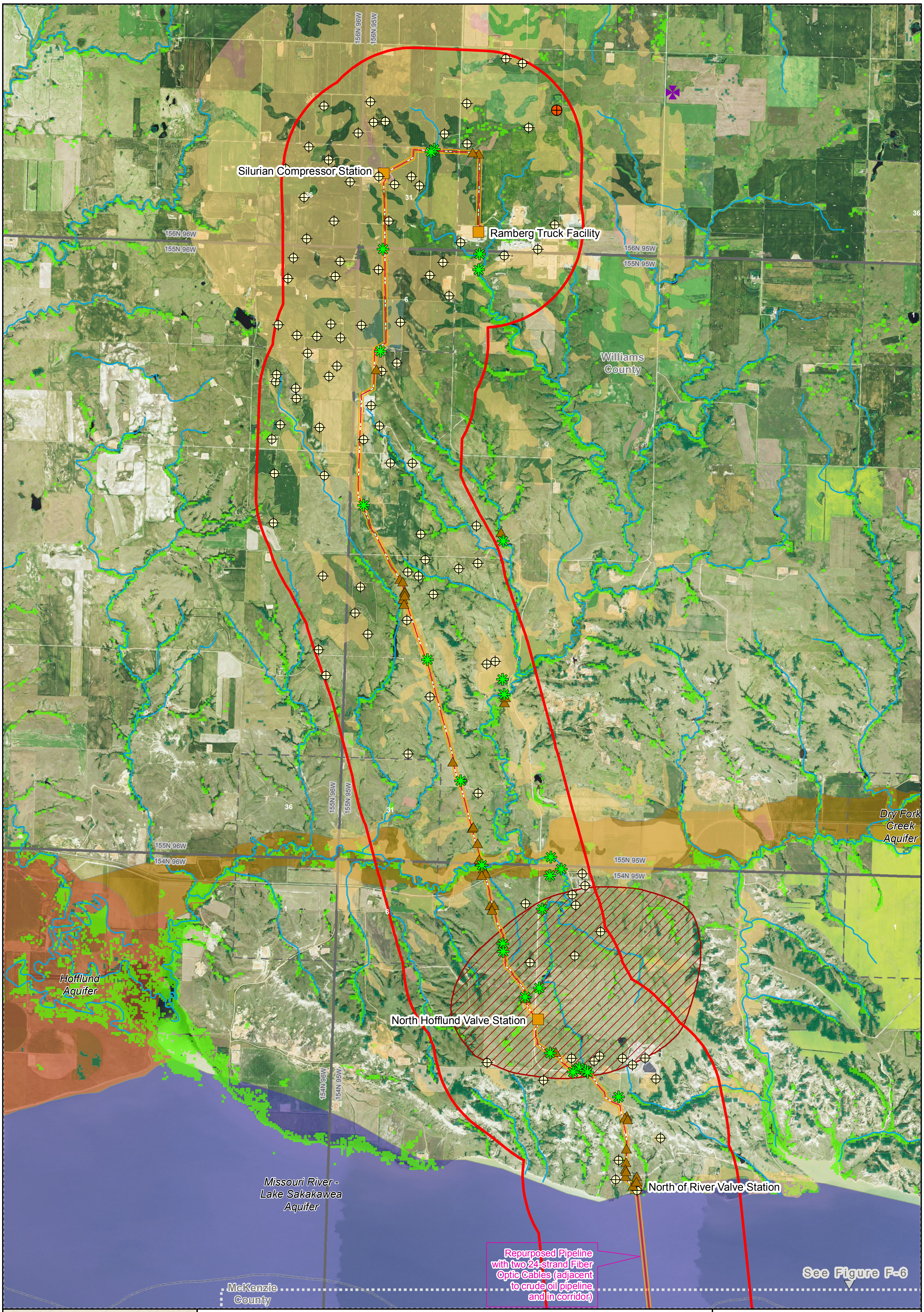
Sources: Hess 2014; NDDOT 2008; NDDTL 2014; NDGF 2011; NDSWC 2008; USGS 2008.

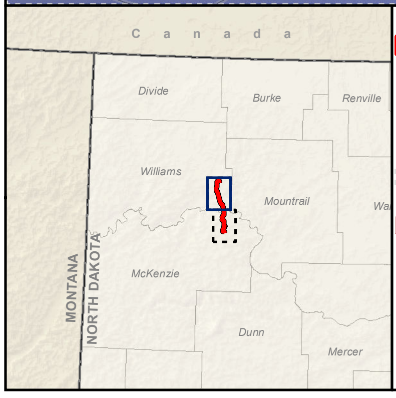
Hawkeye Pipeline System Project

Figure F-4

Crude Oil Pipeline Route Avoidance Areas

0 0.325 0.65 1.3
Miles





Legend

- Desktop Analysis Area
- 200-foot-wide Corridor
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline
- Existing Facility
- Match Line

Mineral Deposits/Development
- Mineable Lignite

Surficial Aquifers
- Dry Fork Creek
- Hofflund
- Missouri River - Lake Sakakawea

Farmland Class
- Prime Farmland
- Farmland of Statewide Importance

Other Features
- Antenna
- Oil/Gas Well Pad
- Microwave
- Wetland (Field Surveyed)
- Woodland (Field Surveyed)
- Stream
- Wetland
- Woodland

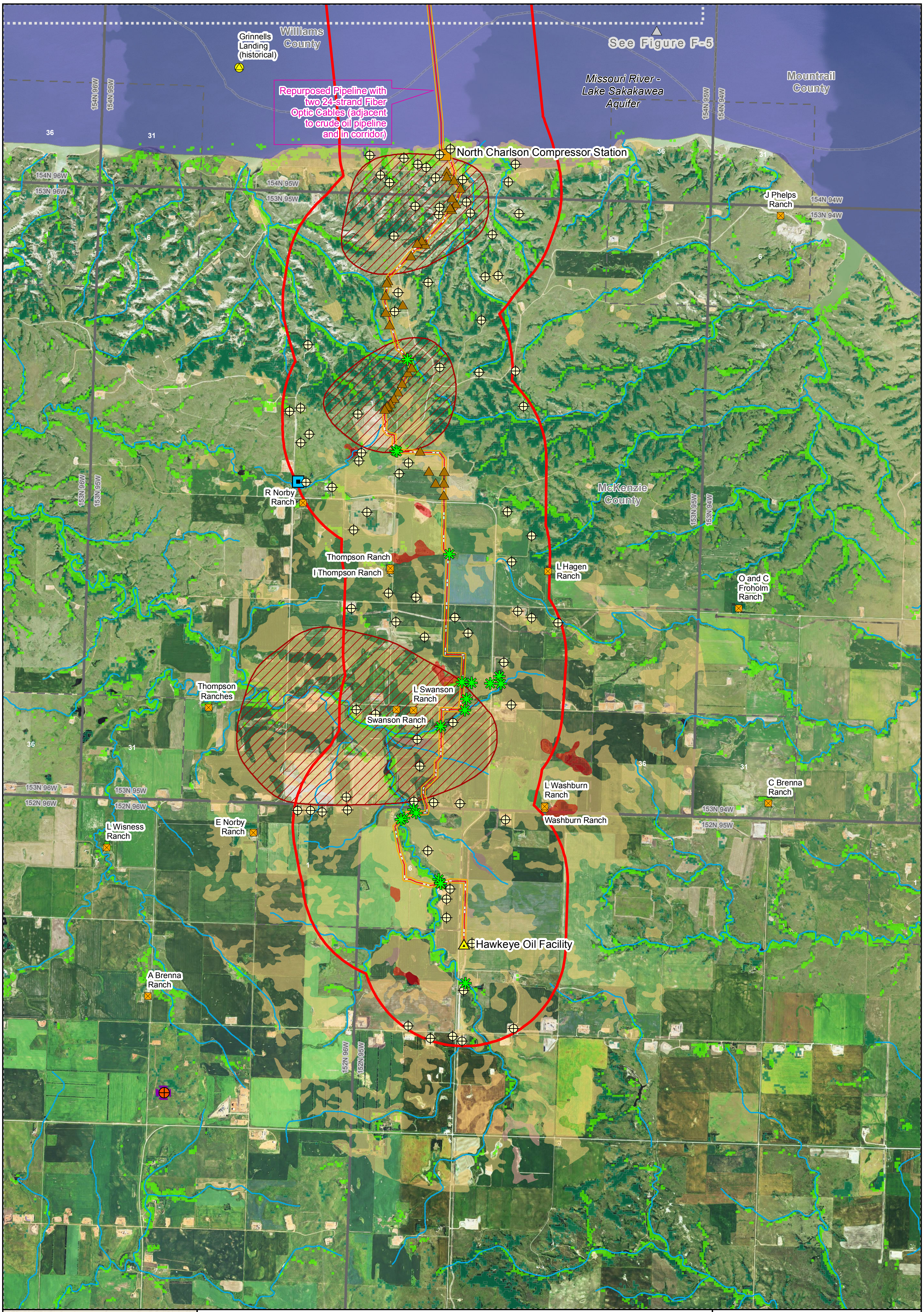
Sources: Hess 2014; NDGS 1980; SSURGO 2003; USGS 2008, 2010 .

Hawkeye Pipeline System Project

Figure F-5

Crude Oil Pipeline Route Selection Criteria

0 0.325 0.65 1.3
Miles



Legend

- Desktop Analysis Area
- 200-foot-wide Corridor
- Repurposed 8-inch-diameter Crude Oil Pipeline
- Proposed 12-inch-diameter Crude Oil Pipeline
- Proposed Facility
- Existing Facility
- Match Line

Mineral Deposits/Development

- Mineable Lignite

Surficial Aquifers

- Missouri River - Lake Sakakawea

Farmland Class

- Prime Farmland
- Farmland of Statewide Importance
- Prime Farmland if Drained

Other Features

- Antenna
- Ranch
- Oil/Gas Well Pad
- Microwave
- Mobile Radio
- Historical Site
- Wetland (Field Surveyed)
- Woodland (Field Surveyed)
- Stream
- Wetland
- Woodland

Sources: Hess 2014; NDGS 1980; SSURGO 2003; USGS 2008, 2010 .

Hawkeye Pipeline System Project

Figure F-6

Crude Oil Pipeline Route Selection Criteria

0 0.325 0.65 1.3
Miles

Appendix G

Special Status Species

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
MAMMALS								
Northern long-eared bat	*Myotis septentrionalis*	FP	Habitat generally includes many trees, where northern long-eared bats roost during the day, either singly or colonially. Northern long-ear bats are opportunistic roosters, readily roosting in live trees of multiple species, snags, and isolated instances of using manmade structures as roosts. Trees and snags generally are considered good roosts if they have suitable cavities or retain bark, under which the bats often roost.	Shrublands, woodlands, and riparian areas.	Yes. Suitable habitat is present within the Project area.	No.	McKenzie and Williams.	Stantec 2014; USFWS 2014a.
Black-footed ferret	*Mustela nigripes*	FE	This species is an obligate of prairie dog colonies, which provide both shelter (i.e., burrows) and a prey base to support ferret populations.	Black-tailed prairie dog colonies.	No.	Yes. Suitable habitat does not exist in the Project area.	None.	Hagen 2005; SWCA Environmental Consultants 2013a,b; Stantec 2014.
Gray wolf	*Canis lupis*	FE	This species occurs in a wide range of habitats with large ungulates present. Gray wolves utilize mixed hardwood- coniferous forests in wilderness and sparsely settled areas, to forest and prairie landscapes dominated by agricultural and pasture lands.	Wide variety of habitats with sufficient prey base.	No.	Yes. The gray wolf is an occasional visitor in North Dakota, but no breeding records have been documented in the state.	McKenzie and Williams.	Hagen 2005.
Black-tailed prairie dog	*Cynomys ludovicianus*	USFS	The species inhabits prairie communities with short vegetation and flat topography. Black-tailed prairie dogs are often found in areas grazed by livestock and other disturbed areas with exposed soil.	Short and mixed grasslands, usually well- grazed lands.	Yes. No colonies have been documented near the Project area; however, suitable habitat exists within the Project area.	No.	McKenzie.	Hagen 2005; SWCA Environmental Consultants 2013a,b; Stantec 2014.
Rocky Mountain bighorn sheep	*Ovis canadensis*	USFS	Bighorn sheep inhabit steep, precipitous, rocky terrain and feed on grasses and forbs. Bighorn sheep require considerable acres of rough terrain and limited disturbance for lambing habitat.	Steep, rocky terrain; badlands.	No.	Yes. The known range of this species in North Dakota does not overlap with the Project area.	McKenzie.	Armstrong et al. 2011; Leier 2009; NDGFD 2013.
BIRDS								
Interior least tern	*Sterna antillarum athalassos*	FE	This species inhabits sparsely vegetated sandbars or shoreline salt flats of lakes along the Missouri River System. The Missouri River, Lake Sakakawea, and Lake Oahe are the only areas in North Dakota known to support interior least tern populations. Interior least terns are present in	Sparsely vegetated sandbars or shorelines.	Yes. Potential habitat exists at Lake Sakakawea.	No.	McKenzie and Williams.	Hagen 2005; USFWS 2013.

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
			North Dakota from mid-May to mid-August. The peak breeding season occurs from early June to mid-July.					
Whooping crane	*Grus americana*	FE	This species primarily utilizes wetlands and cropland ponds for roosting and feeding during migration. Spring and fall migration through the Project area generally occurs from April to mid-May and from mid-September to October, respectively. The Project route would intersect a known whooping crane migration route that includes 75-percent of all reported whooping crane sightings in North Dakota.	Wetlands bordered by agricultural fields.	Yes. The Project area is at the western edge of the species' migratory route through North Dakota.	No.	McKenzie and Williams.	Hagen 2005; SWCA Environmental Consultants 2013a.USFWS 20014b.
Piping plover	*Charadrius melodus*	FT	This species nests on exposed, sparsely vegetated shores and islands of shallow, alkali lakes and impoundments. Nests are placed in sand or gravel, generally near a clump of grass, rock, or small log. The peak breeding season occurs from late May to mid-July.	Sand or gravel beaches, alkaline wetlands.	Yes. Designated critical habitat exists along the Missouri River in McKenzie and Williams counties. Potential habitat exists at Lake Sakakawea.	No.	McKenzie and Williams.	Hagen 2005; USFWS 2002; USFWS 2014.
Rufa red knot	*Calidris canutus* ssp. *rufa*	FT	This shorebird breeds in the central Canadian Arctic, with primary breeding grounds in Nunavut Territory. The rufa red knot winters along the Atlantic coasts of Argentina and Chile, the north coast of Brazil, and further north into Mexico and the southeast U.S. During migration (July-August and March-June), the rufa red knot primarily follows the Atlantic coastline to and from breeding and wintering grounds. However, geolocator results from red knots wintering in Texas showed that some birds migrate using a central flyway across the midwestern U.S. and may have a northern Great Plains stopover.	Sand or gravel beaches, alkaline wetlands.	Yes. Potential stop-over habitat occurs at Lake Sakakawea and wetlands crossed by the Project.	No.	McKenzie and Williams.	NDNHI 1998; USFWS 2014b.
Sprague's pipit	*Anthus spragueii*	FC	This species requires large expanses of native grasslands of intermediate height and sparse to intermediate vegetation density, low forb density, and little bare ground but low litter depth. The abundance of this species is positively correlated with the percent of clubmoss cover and dominant native grass species. Sprague's pipit is present in North Dakota from mid-April to mid-October. Peak	Large expanses of native grasslands.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie and Williams.	Hagen 2005; Stantec 2014.

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
			breeding season occurs from early May to mid-August.					
Baird's sparrow	*Ammodramus bairdii*	USFS	This species inhabits extensive tracts of native prairie, but will utilize idle, agricultural grasslands and lightly to moderately grazed pastures. Baird's sparrow is present in North Dakota from May to August. The peak breeding season occurs from early June to late July.	Grasslands and pastures.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie and Williams.	Hagen 2005; SWCA Environmental Consultants 2013a.
Bald eagle	*Haliaeetus leucocephalus*	USFS	This species typically occurs near large waterbodies, which supports suitable roosting, nesting, and foraging habitat. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal and nocturnal roosts. Nest sites are usually located in mature trees close to open water. Bald eagles are present in North Dakota year-round. Peak breeding season occurs from early March to July.	Large rivers and waterbodies with mature stands of trees.	No.	Yes. Suitable nesting habitat does not occur within the Project area. The nearest nest is approximately 7 miles west of the Project area near Lake Sakakawea. Occurrence would be limited to migrating or foraging individuals.	McKenzie and Williams.	Hagen 2005; USFS 2014.
Burrowing owl	*Athene cunicularia*	USFS	This species inhabits open grasslands with short vegetation and bare ground. Burrowing owls rely exclusively on burrowing mammals (primarily prairie dogs) to create burrows for nest sites. The species is present in North Dakota from April to September. Peak breeding season occurs from early May to mid-August.	Short-grass/bare ground.	Yes. While preferred habitat (i.e., black-tailed prairie dog colonies) does not occur within the Project area, burrowing owls can also inhabit other mammalian burrows.	No.	McKenzie and Williams.	Hagen 2005; Stantec 2014.
Greater prairie chicken	*Tympanuchus cupido*	USFS	This species inhabits grassland and agricultural lands. Leks are located in areas of bare ground or short vegetation. Peak breeding season occurs from late April to early July.	Grasslands, short-grass/bare ground.	No.	Yes. The Project area is outside the known range for this species.	None.	Hagen 2005; USFS 2011.
Greater sage-grouse	*Centrocercus urophasianus*	USFS	This species primarily inhabits big sagebrush communities. Riparian, upland meadows and agricultural land are also utilized, especially for brood-rearing habitat. Leks are located in areas of bare ground or short vegetation. Peak breeding and nesting season occurs from mid- March to mid-July.	Big sagebrush, short-grass/bare ground, meadows, and agricultural land.	No.	Yes. The Project area is outside the known range for this species.	None.	Connelly et al. 2000; Hagen 2005; USFS 2011.
Loggerhead shrike	*Lanius ludovicianus*	USFS	This species inhabits open country with thickets of small trees, shrubs, and shelterbelts. The loggerhead shrike is present in North Dakota from	Open country with intermittent woody vegetation.	Yes. Potential habitat occurs within the Project Area.	No.	McKenzie and Williams.	Hagen 2005; SWCA Environmental

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
			mid-March to October. Peak breeding season occurs from early May to mid-July.					Consultants 2013a.
Long-billed curlew	*Numenius americanus*	USFS	This species inhabits expansive short-grass prairie with topography that is open, flat to gently rolling, or sloping. Proximity to water is an important habitat component. Nests are usually located near cowpies or other conspicuous objects for concealment and are often on hummocks for improved visibility. Peak breeding season occurs from early May to early July.	Grasslands.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie.	Hagen 2005; SWCA Environmental Consultants 2013a.
INVERTEBRATES								
Dakota skipper	*Hesperia dacotae*	FT	This species inhabits wet tall-grass or mixed-grass native prairies, often with mountain death camas. The larvae feed on grasses, especially little bluestem. Dakota skippers produce one brood in mid-June to early July.	Native prairie containing a high diversity of wildflowers and grasses.	Yes. Potential habitat occurs within the Project area. Proposed critical habitat is located 3.1 miles west and 1.9 miles east of the Project area on USFS-administered lands south of Lake Sakakawea.	No.	McKenzie.	Royer 2004; Stantec 2014.
Argos skipper	*Atrytone arogos iowa*	USFS	This species inhabits mesic, undisturbed tall- to mixed-grass native bluestem prairies. Caterpillars hibernate and pupate the following spring. Adult flight is one brood from June to July.	Native prairie.	No.	Yes. The Project area is outside the known range for this species.	None.	Butterflies and Moths of North America 2014; Royer 2004.
Broad-winged skipper	*Poanes viator*	USFS	This species inhabits oxbow marshes with hairy sedge and swamp milkweed. Adult flight is one brood from late June to early August.	Oxbow marshes.	No.	Yes. The Project area is outside the known range for this species.	None.	Butterflies and Moths of North America 2014; Royer 2004.
Dion skipper	*Euphyes dion*	USFS	This species inhabits marshes with sedge, swamp milkweed, and cattails. Adult flight is one brood in July.	Marshes.	No.	Yes. The Project area is outside the known range for this species.	None.	Royer 2004; SWCA Environmental Consultants 2013a.
Mulberry wing	*Poanes massasoit*	USFS	This species inhabits woody hummock meadows with sedge and dogwood. Adult flight is one brood in July.	Sedge meadows.	No.	Yes. The Project area is outside the known range for this species.	None.	Royer 2004; SWCA Environmental Consultants 2013a.
Ottoe skipper	*Hesperia ottoe*	USFS	This species inhabits ungrazed or lightly grazed native prairie hilltops, often found on purple	Native prairie.	Yes. Potential habitat occurs within the Project	No.	McKenzie and Williams.	Royer 2004; SWCA

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
			coneflower blooms. The larvae feed on bluestem, grama, stipa, and bluegrass. The Ottoe skipper produces one brood in mid-June to early July.		area.			Environmental Consultants 2013a.
Powesheik skipperling	*Oarisma powesheik*	USFS	This species inhabits native tall-grass meadows.	Tallgrass meadows.	No.	Yes. The Project area is outside the known range for this species.	None.	Royer 2004.
Regal fritillary butterfly	*Speyeria idalia*	USFS	This species inhabits native prairie, feeding on milkweed, thistle, and blazing star. The larvae feed on birdfoot violet. The regal fritillary overwinters shortly after enclosure. Adult flight occurs in late June (males) through August (mostly females).	Native prairie.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie and Williams.	Royer 2004; SWCA Environmental Consultants 2013a.
Tawny crescent	*Phyciodes batesii*	USFS	This species inhabits woodland roadsides, usually near bluestem prairie, feeding on dogbane and leafy spurge. The larvae feed on aster. The tawny crescent produces one brood, which usually emerges during the first week in June.	Woodland.	Yes. Potential habitat occurs within the Project area. This species has been documented near the Project area at milepost 20.4.	No.	McKenzie.	Royer 2004; USFS 2013.
FISH								
Pallid sturgeon	*Scaphirhynchus albus*	FE	This species is generally found in large, slow moving turbid rivers. Chutes between sandbars are commonly utilized. Spawning occurs from June through August.	Large, turbid rivers with sand substrate.	Yes. Potential habitat exists in Lake Sakakawea and the Missouri River upstream of Lake Sakakawea.	No.	McKenzie and Williams.	Hagen 2005; Ashton and Dowd 2008.
Northern Redbelly Dace	*Phoxinus eos*	USFS	This species inhabits cold, clear, spring- fed streams.	Cold, clear headwater streams.	No.	Yes. The Project area is outside the known range for this species.	McKenzie.	Hagen 2005.
PLANTS								
Smooth goosefoot	*Chenopodium pallescens*	USFS	The species inhabits sandbars, terraces, and dune complexes along rivers and creeks. Exposed sandy substrates in uplands, blowouts, outcrops, colluvium, etc. Elevation range 656 to 3,609 feet amsl. Flowering period: June to September.	Sand dunes.	No.	Yes. Potential habitat for this species is not present within the Project area.	N/A – No known populations within the Project- affected counties.	eFloras 2008; Mohlenbrock 2002; USFS 2011b.
Blue lips	*Collinsia parviflora*	USFS	This species inhabits woody understories, including green ash/elm draws, Rocky Mountain juniper, mesic shrub communities, and occasional xeric shrub communities. Elevation range unknown. Flowering period: March to June.	Woodlands and shrublands.	Yes. Potential habitat occurs within the Project area.	No.	N/A – No known populations within the Project- affected counties.	Elle and Carney 2003; NatureServe 2014; USFS 2011b
Torry's cryptantha	*Cryptantha torreyana*	USFS	This species inhabits open areas at low to mid-elevation ranges within dry plains and pine slopes. Within the Little Missouri National Grassland, the	Varies.	No.	Yes. Potential habitat for this species is not present within the Project	N/A – No known populations within the	Jepson 1993 NatureServe 2014; USFS 2011b.

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
			species has been reported from scoria ridgelines, dry plains, rocky outcrops, escarpments, and pine slopes. Elevation range 1,148 to 6,562 feet amsl. Flowering period May to July.			area.	Project- affected counties.	
Nodding wild buckwheat	*Eriogonum cernuum*	USFS	This species inhabits exposed sand substrates with low plant cover in grasslands, hillsides, and sandstone outcrops. Elevation range 1,970 to 10,170 feet amsl. Flowering period: late June to September.	Sandy substrates	No.	Yes. Potential habitat for this species is not present within the Project area.	N/A – No known populations within the Project- affected counties.	Jepson 1993; Niehaus, 1998; USFS 2011b.
Dakota buckwheat	*Eriogonum visheri*	USFS	This species inhabits relatively exposed clay/silt substrate with low plant cover such as outwash zones around eroding buttes, saddles, steep convex slopes, and erosional breaks on prairie slopes. Occasional populations among dense saltgrass communities. 1,886 to 2,707 feet amsl. Flowering period: June to late September.	Barren, Prairie.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie.	eFloras, 2014; Ladyman 2006; Montana Field Guide 2014; NatureServe 2014; USFS 2011b.
Missouri pincushion cactus	*Escobaria missouriensis*	USFS	This species inhabits prairie slopes and plains and stony to loamy to clayey short-grass to mixed-grass prairies. Also reported in woodlands of ponderosa pine or *Quercus* spp. Elevation range unknown. Flowering period April to June.	Prairie, Woodlands.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie.	eFloras 2014; NRCS 2014; USFS 2011b.
Sand lily	*Leucocrinum montanum*	USFS	This species inhabits shortgrass communities with fine textured substrates but also found in crested wheatgrass communities. Reported from open coniferous woodlands and hillsides, sagebrush scrub, and sandy flats. Elevation range 2,620 to 7,875 feet amsl. Flowering period March to June.	Varies.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie.	eFloras 2014; NatureServe 2014; USFS 2011b.
Golden stickleaf	*Mentzelia pumila*	USFS	This species inhabits scoria exposures and colluvium with low plant cover. Also reported on slopes and sandy plains; occasionally on hard clays and rocky soils. Elevation range unknown. Flowering period: June to early July.	Varies.	Yes. Potential habitat occurs within the Project area.	No.	N/A – No known populations within the Project- affected counties.	Nature Serve 2014; Montana Field Guide 2014; USFS 2011b.
Alyssum-leaved phlox	*Phlox alyssifolia*	USFS	This species inhabits sandy or gravelly soil on and around Bullion Butte. Also reported on clay banks and limestone ridges of open prairie. Elevation range unknown. Flowering period May.	Prairie, sandy and gravelly substrates.	Yes. Potential habitat occurs within the Project area.	No.	Williams.	NPWRC 2013; NatureServe 2010; USFS 2011b.
Limber pine	*Pinus flexilis*	USFS	This species inhabits semi-arid exposed rocky ridges and foothills in the Limber Pines RNA, likely of native-American origin. Elevation range 4,000 to	Rocky ridges, Foothills.	No.	Yes. Potential habitat for this species is not present within the Project	N/A – No known populations within the	Johnson 2001; NRCS 2014; USFS 2011b.

Table G-1 Special Status Species Potentially Occurring along the Project Route

Species	Scientific Name	Status[1]	Habitat Association	Primary Habitat	Potential for Occurrence Within Project Area	Eliminated from Detailed Analysis	Counties	Source
			12,500 feet amsl. Fruiting period: August-September.			area.	Project- affected counties.	
Lance-leaf cottonwood	*Populus acuminata*	USFS	This species inhabits mesic woody draws, often with springs/seeps, and is found occasionally near springs on open hillsides, floodplains, and stream banks. Elevation range 4,921 to 7,874 feet. Flowering period: April-May.	Riparian.	No.	Yes. Potential habitat for this species is not present within the Project area.	N/A – No known populations within the Project- affected counties.	NatureServe 2014; eFloras, 2014; NRCS 2014; USFS 2011b.
Alkali sacaton	*Sporobolus airoides*	USFS	This species inhabits secondary succession on clay outwash where tolerant of saline conditions, also on dry to moist sandy or gravelly soil. Elevation range 2,500 to 8,000 feet. Flowering period: June to October.	Desert, Prairie.	No.	Yes. Potential habitat for this species is not present within the Project area.	N/A – No known populations within the Project- affected counties.	Johnson, 2000; Brakie 2007; NatureServe 2014; USFS 2011b.
Stemless townsend daisy	*Townsendia exscapa*	USFS	This species inhabits dry plains and hillsides, often with loamy or increased soil development and increased plant cover relative to T. *hookeri*. Elevation range: up to 10,000 feet amsl. Flowering period: April to May.	Plains.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie.	NPWRC 2013; NatureServe 2014; NRCS 2014; USFS 2011b.
Hooker's townsendia	*Townsendia hookeri*	USFS	This species inhabits areas with low to moderate plant cover on dry plains, hillsides, gravelly benches and weathered scoria, but often clay matrix subsoil 2,296 to 5,905 feet amsl. Flowering period: March to June.	Plains.	Yes. Potential habitat occurs within the Project area.	No.	McKenzie.	eFloras 2014; NatureServe 2014; USFS 2011b.

[1] FE = Federally Endangered.
FT = Federally Threatened.
FC = Federal Candidate.
FP = Federally Proposed
USFS = USFS Region 1 Sensitive Species.

Note: There are no greater sage-grouse leks along the Project route (SWCA Environmental Consultants 2013a).

Appendix H

Hess' Ten-Year Plan

HESS CORPORATION
Tioga Office Complex
10384 68th St NW
Tioga, North Dakota 58852
701-664-6200

June 24, 2014

PUBLIC SERVICE COMMISSION – State Capitol
Director of Administration
600 East Boulevard, Dept 408
Bismarck, ND 58505-0480

RE: HESS CORPORATION – 2014 Ten-Year Plan

Dear Director of Administration:

On behalf of HESS CORPORATION ("HESS"), we hereby submit HESS's Ten-Year Plan pursuant to North Dakota Century Code § 49-22-04 and North Dakota Administrative Code Chapter 69-06-02.

SECTION A: Existing Energy Conversion Facilities.

HESS has completed the Tioga Gas Plant expansion. This project was approved by the North Dakota Public Service Commission in Case No. PU-10-120.

SECTION B: Energy Conversion Facilities Under Construction.

HESS has no energy conversion facilities currently under construction.

SECTION C: Proposed Energy Conversion Facilities on Which Construction is Intended Within the Ensuing Five Years.

HESS has no proposed energy conversion facilities during the next five-year time period.

SECTION D: Proposed Energy Conversion Facilities During the Next Ten-Year Time Period.

HESS has no other proposed energy conversion facilities during the next ten-year time period.

SECTION E: Existing Transmission Facilities (Electric).

HESS has no existing electrical transmission facilities.

SECTION F: Existing Transmission Facilities (Pipeline).

1. Location: HESS currently has in operation a pipeline beginning at its gas plant located at Tioga, North Dakota, extending southerly under Lake Sakakawea and then extending in a southwesterly direction to an interconnect point with the Northern Border pipeline south of Watford City, North Dakota. This pipeline was constructed pursuant to Public Service Commission Certificate of Site Compatibility for Transmission Facility Corridor #62 issued on March 11, 1992, and Public Service Commission Permit for the Construction of a Transmission Facility #72 issued on July 21, 1992. Upon completion of the pipeline HESS provided the Commission with a copy of the design specifications for the construction of the pipeline showing the location of the pipeline as built as required in the Findings of Fact, Conclusions of Law and Order dated July 21, 1992, as issued by the Commission in Case No. PU-476-92-138. Attached hereto is a system map showing the location of the actual pipeline route.

a) Type and Capacity: The design specifications for the facility are as follows:

i) Product Type - natural gas
ii) Length of Facility in Miles - approximately 61
iii) Pipe Size - 10.75 inches O.D.
iv) Maximum Design Operating Pressure - 1440 pounds per square inch gage (psig)
v) Maximum Design Flow Rate - 65 million standard cubic feet per day (mmscfd)
vi) Compressor or pumping station specifications, including type, horse power, output pressure, and capacity –

(1) Tioga Compressor Station
  (a) Type: 3 centrifugal
  (b) Suction Pressure: 700 psig
  (c) Discharge Pressure: 1300 psig
  (d) Station Horsepower: 6750 hp
  (e) Maximum Capacity: 99 mmcfd

(2) Cherry Creek Compressor Station
  (a) Type: (2) reciprocating
  (b) Suction Pressure: 875 psig
  (c) Discharge Pressure: 1420 psig
  (d) Station Horsepower: 1600 hp
  (e) Maximum Capacity: 65 mmcfd

b) Minimum Cover Over Pipe - 48 inches, except in a situation where rock makes 48 inches impractical.

c) In-service date for the pipeline was December, 1992.

d) There is no projected retirement date during the next ten-year period for the pipeline facility.

2. HESS completed installation of three NGL Product sales pipelines approximately 3.6 miles from the Hess Tioga Gas Plant to the newly constructed Hess Tioga Rail Terminal west of the city of Tioga at an estimated cost of $33 million. The intent is to sell propane, butane, and natural gasoline liquid products by rail cars at the Tioga Rail Terminal now that the Tioga Gas Plant expansion is complete. This project was approved by the North Dakota Public Service Commission in Case #PU-11-104.

3. Hess has converted three existing pipeline segments, once used as gathering pipelines, into a crude oil transmission pipeline connecting the Ramburg Truck Facility ("RTF") to the Tioga Rail Terminal ("TRT"). The pipeline totals 10.2 miles in length and consists of 14" nominal diameter steel pipe. This project was approved by the North Dakota Public Service Commission in Case No. PU-12-683.

SECTION G: Proposed Transmission Facilities on Which Construction is Intended Within the Ensuing Five Years (Electric).

HESS has no proposed electric transmission facilities on which construction is intended within the ensuing five years.

SECTION H: Proposed Transmission Facilities on Which Construction is Intended Within the Ensuing Five Years (Pipeline).

1. Hess Corporation (Hess) is proposing to construct an approximately 25-mile-long pipeline system connecting Bakken production fields south of Lake Sakakawea to existing processing facilities north of the Lake. New pipeline construction will tie into the existing pipeline infrastructure to cross Lake Sakakawea. The new and repurposed pipeline system will transport crude oil as well as two 24-strand fiber optic cables from south of Lake Sakakawea in McKenzie County, North Dakota, to the Ramberg Truck Facility (crude oil).
   i) The proposed Hawkeye Pipeline System Project crosses lands managed by the U.S. Forest Service (USFS) and the U.S. Army Corps of Engineers (USACE), State of North Dakota, as well

as private lands. Pursuant to the Mineral Leasing Act of 1920, as amended (43 CFR Subpart 2884.21J1), when an applicant applies for a ROW that crosses lands administered by two or more Federal agencies, the BLM will process the application and issue all grants, temporary use permits, amendments, and assignments. As such, the BLM is the designated lead federal agency for issuing the ROW grant and preparation of the NEPA document, the Environmental Assessment (EA).

ii) Hess is currently preparing an EA with an anticipated Decision Record in late 2013. Additionally, a Biological Assessment/Biological Evaluation for compliance with Endangered Species Act (Section 7) and a preliminary Spill Risk Analysis suitable for NEPA is being prepared. BLM is managing tribal consultation in compliance with Section 106 of the National Historic Preservation Act of 1966.

iii) Hess will submit an application for a corridor certificate and route permit or a request for jurisdictional determination to the North Dakota Public Service Commission in the near future.

SECTION I: Proposed Transmission Facilities During the Next Ten-Year Time Period (Electric and Pipeline).

HESS has no proposed electric or pipeline transmission facilities proposed during the next ten-year time period other than what is mentioned in Section H.

SECTION J: Regional Coordination.

One of the purposes of the pipeline is to deliver gas into the existing pipeline facility of the Northern Border Pipeline Company for transportation of such gas to HESS's customers. However, HESS's pipeline is not part of a single regional plan.

SECTION K: Environmental Information.

The gas pipeline has been constructed in strict accordance with the requirements of the U.S. Department of Transportation Pipeline Safety Regulations found at CFR Title 49, Part 192, "Transportation of Natural and Other Gases by Pipeline: Minimum Federal Safety Standards," and ASME B31.8, "Gas Transmission and Distribution Piping Systems." The pipeline was hydrostatically tested in accordance with CFR Title 49, Part 192, Sub-part J to establish the maximum allowable operating pressure of 1440 psig.

HESS CORPORATION has also installed a fiber optic communications system which allows for 24-hour monitoring of the pipeline and compressor operations. The pipeline is also designed to accommodate the use of instrumented internal inspection devices that can be propelled through the pipeline by the flowing gas stream and can effectively detect and record the type and location of corrosion or other defects in the pipe wall. In conjunction HESS has in place a regular pipeline cathodic protection program.

Wooded areas and shelter belts that were removed have been replanted with approximately 300 new trees. This is two new trees for every one removed during construction.

HESS has made an agreement with the U.S. Fish and Wildlife Service for provisions relative to the rehabilitation of wooded draw habitat on U.S. Forest Service land as mitigation for habitat disturbed during the pipeline construction.

HESS's obligation to reclaim and maintain the right-of-way shall continue throughout the life of the pipeline facility.

SECTION L: Projected Demand for Service.

The projected future supplies of oil and gas entering these pipelines will be produced from (a) several fields located in Divide, Williams, Mountrail, McKenzie and Burke Counties, (b) the Winnipeg and Deadwood formations from certain wells to be located in the McKenzie and Williams Counties, and (c) the expansion of the plant and pipeline facilities in conjunction with the growth of the Bakken development taking place in North Dakota.

Respectfully submitted the day and year set forth above.

HESS CORPORATION
Tioga Office Complex
10384 68th St NW
Tioga, North Dakota 58852

By Dale Weathersby
Dale Weathersby

Enc.
cc: - County Auditors of McKenzie and Williams Counties
- State Agencies and Officers designated in § 69-06-01-05, ND Adm Code "Notice of Filing"
- Brent Lohnes, Director Operations - Minot, ND

HESS CORPORATION
Tioga Office Complex
10384 68th St NW
Tioga, North Dakota 58852
701-664-6200

June 24, 2014

PUBLIC SERVICE COMMISSION – State Capitol
Director of Administration
600 East Boulevard, Dept 408
Bismarck, ND 58505-0480

RE: HESS CORPORATION – 2014 Ten-Year Plan

Dear Director of Administration:

Enclosed for filing please find the original and required copies of HESS CORPORATION's 2014 Ten-Year Plan.

Very truly yours,

Dale Weathersby

Dale Weathersby
Regulatory Advisor, Bakken

Enclosure

Appendix I

Agency Correspondence

1) U.S. Army Corps of Engineers
    a. Jurisdictional Determination Letter
    b. Response Letter: none
2) U.S. Forest Service
    a. USFS Request Letter
    b. Response Letter: none
    c. Botany and Wildlife Survey Requirements Letter
3) U.S. Fish and Wildlife Service
    a. USFWS Request letter
    b. Response Letter
4) North Dakota Game and Fish Department
    a. NDGFD Request Letter (2)
    b. Response Letter: none
5) North Dakota Natural Heritage Inventory, North Dakota Parks and Recreation Department
    a. NDNHI Request Letter
    b. Response Letter
6) Farm Service Agency (FSA), Williams County (USDA)
    a. Correspondence via website (entered November 17, 2014)
    b. Response: none
7) North Dakota Department of Trust Lands
    a. Email correspondence with Mr. Mike Brand (Surface Management Division)
    b. Email correspondence with Mr. Jerry Saude (Department of Trust Lands)

Stantec Consulting Services Inc.
2950 East Harmony Road, Suite 290
Fort Collins CO 80528
Tel: (970) 482-5922
Fax: (970) 482-6368

May 12, 2014

Mr. Jason Renschler
U.S. Army Corps of Engineers
North Dakota Regulatory Office
1513 South 12th Street
Bismarck, ND 58504

Reference: Additional Maps to Support JD Request for Aquatic Features along the Hess Haykeye Pipeline Route, Williams and McKenzie Counties

Jason:

Enclosed, please find two revised 1:24k topographic maps depicting all (26) field- delineated aquatic features identified along the length of the Project to aid in your jurisdictional determination. These new maps depict the field-delineated features in colors which correspond to the data collection firm, and are labeled with the wetland codes assigned on the individual field data sheets. I am hopeful that these new maps will allow you to more easily match the features displayed on the maps with their appropriate data forms.

If there is any additional information required for your analysis, we will be happy to quickly provide it.

Regards,

STANTEC CONSULTING SERVICES INC.

Randy Walsh

J. Randall (Randy) Walsh, M. Sc.
Senior Ecologist
Phone: (970) 449-8626
randy.walsh@stantec.com

Attachment: 1:24,0000 topographic maps (2)

c. Lowell Hassler, BLM
Murray Jackson, Hess Corporation

No response received from letter to USACE dated May 12, 2014.

Stantec

Stantec Consulting Services Inc.
2950 East Harmony Road Suite 290
Fort Collins, Colorado 80528
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Fax: (970) 482-6368

May 24, 2013

Kim Grotte
McKenzie Ranger District
U.S. Forest Service
1901 S. Main Street
Watford City, North Dakota 58854

Reference: Hawkeye Pipeline Project

Dear Mr. Grotte,

Stantec Consulting Services Inc. (Stantec), on behalf of the Bureau of Land Management (BLM), would like to request input on Hess Corporation's (Hess) proposed Hawkeye Pipeline Project (Project). Hess has filed a ROW application proposing to construct, operate, maintain, and decommission the proposed Project on federal lands in McKenzie and Williams Counties, North Dakota, as shown in **Figure 1**. The proposed project would include the construction of an approximately 25.5-mile-long pipeline system consisting of the following four segments:

- **Segment A** (10.6 miles): Hawkeye to North Charlson (South Side of the Lake) consisting of the conversion of an existing 8" HP Gas line to NGL service and installation of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment B** (2.5 miles) North Charlson (South Side of the Lake) to North Side of the Lake including tie-ins into three (3) existing 8" lines under Lake Sakakawea for HP Gas, HP Oil and NGL's as well as installation of two (2) 24 strand fiber optic lines.
- **Segment C** (2.4 miles) North Side of the Lake to Hofflund including conversion of an existing 8" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment D** (10.1 miles) Hofflund to Ramberg (HP Oil) and Silurian (HP Gas and NGL's) including conversion of an existing 10" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.

The proposed Hawkeye pipeline system would transport oil, gas and NGL from the existing Hawkeye Central Station through a transfer point at the existing North Charlson Compressor Station located south of Lake Sakakawea (Segment A). The system would use existing pipelines to transport oil, gas and NGL beneath Lake Sakakawea to the North River Crossing Compressor Station located north of Lake Sakakawea (Segment B). From the North River Compressor Station the pipelines would trend north before terminating at either the existing Hess Ramberg Truck Facility or the Silurian Compressor station, located approximately 8 and 7 miles respectively, south of Tioga, Williams County, North Dakota (Segments C & D). All connection points would occur within existing Hess facilities.

In total, approximately 4.1 miles of the proposed alignment occurs on federal lands. The remaining alignment is proposed on private land and State of North Dakota-owned lands. The proposed pipeline would be buried and follow existing pipeline and utility easements to the extent practicable.

Reference: Hawkeye Pipeline Project

Species Information Request

Stantec has enclosed an overview map of the entire proposed route through west-central North Dakota. The Project is located in **McKenzie** and **Williams** counties, North Dakota.

Stantec will be evaluating Project-related and cumulative effects to both aquatic and terrestrial biological resources. Because of the mobility of wildlife species, resource issues will be examined beyond the proposed Project boundary. Stantec is requesting information on pertinent resource data from federal and state agencies in order to address potential impacts to aquatic and terrestrial species. We would like to provide an opportunity for the U.S. Forest Service (USFS) biologists and botanists to identify prominent terrestrial and aquatic resource issues or concerns that may occur within or adjacent to the Project area, focusing on species that either are sensitive (i.e, USFS sensitive species), have high economic value (e.g., big game, waterfowl), or are considered important by federal and state agencies (e.g., raptors, rare plants, migratory birds). Please forward this request to the applicable specialists (e.g., fisheries and/or wildlife biologists, botanists etc.) so they may provide information and input. Resource information provided by the USFS will be incorporated into the NEPA analysis for the proposed Project.

Stantec is also requesting sensitive resources information from the North Dakota Natural Heritage Inventory, North Dakota Game and Fish Department, and U.S. Fish and Wildlife Service. If you have any questions regarding this request, please call me at (970) 449-8627. Thank you in advance for your prompt response to this request.

Regards,

Matthew a Brekke

Matt Brekke
Senior Wildlife Biologist
Tel: 970-449-8627
Fax: 970-482-6368
matt.brekke@stantec.com

Attachment: Figure 1. Pipeline Segment Map

cc. Lowell Hassler (BLM)
Peggy Roberts (Stantec)
Scott Patti (Stantec)

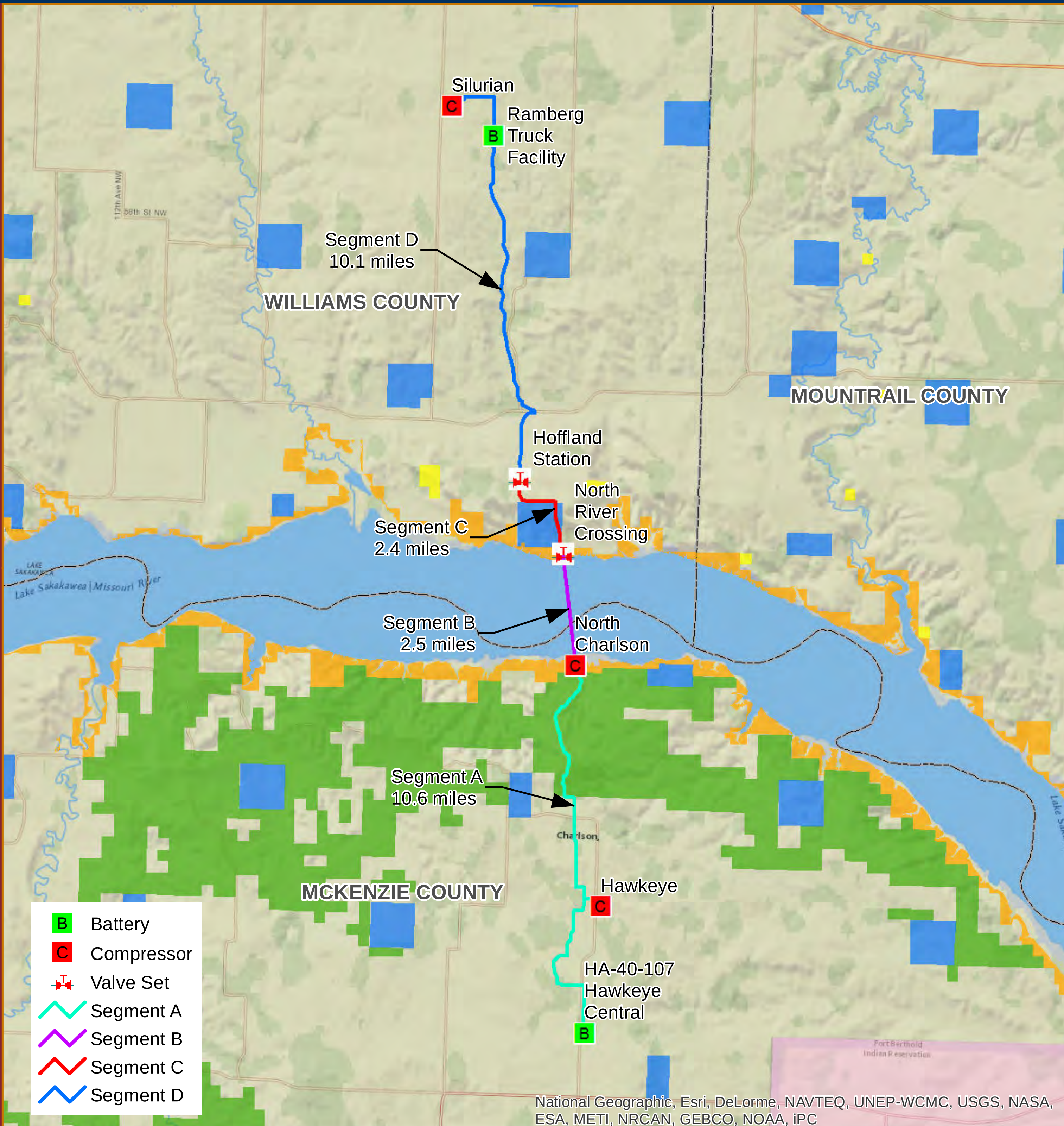
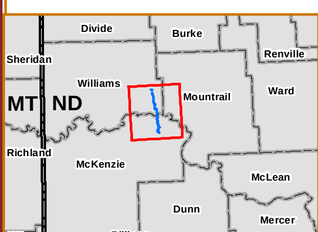


Figure 1. Pipeline Segment Map



Map Area Shown in Red

Location

Williams & McKenzie Co., ND

Project Information

Project Number: 212205020

Last Modified: May 23, 2013

0 1.5 3

Miles

Legend

- Army Corps of Engineers Lands
- State Lands
- Bureau of Land Management Lands
- US Forest Service Lands
- Tribal Lands

Data Sources include: Hess, Stantec, USGS, USFWS, and ESRI.

	Initials	Date
Prepared by	BLC	05/23/2013
Peer Review by	-	-
Final Review by		

No response received from letter to USFS dated May 24, 2013.

USDA United States Department of Agriculture | Forest Service | Dakota Prairie Grasslands
1200 Missouri Ave
Bismarck, ND 58504

File Code: 2600
Date: March 19, 2014

Stantec
Attn: Scott J. Patti
2950 East Harmony Rd, Suite 290
Fort Collins, CO 80528

Dear Mr. Patti:

This letter is being sent to inform environmental consultants on requirements for botanical and wildlife surveys and respective Biological Evaluations (BE) for **new project proposals** on the USDA Forest Service Medora and McKenzie Ranger Districts of the Little Missouri National Grassland during 2014. Wildlife and botanical consulting on the Sheyenne and Grand River Ranger Districts would follow similar requirements to those outlined in this letter and enclosures; however, please contact appropriate District personnel regarding specific requirements for working on those Districts.

There have been a few changes to our requirements for surveys and reports from past years (including minor changes to the sensitive plant form, updates to the invasive plant list, etc.), so please read this letter and the enclosures carefully. **Surveys and reports that do not comply with these requirements may be rejected or returned for edits.**

The U. S. Fish and Wildlife Service should be contacted for the most current list of federally endangered, threatened, and proposed species and critical habitat locations. The 2011 Regional Forester's Sensitive Species list for plants, and the Federally Listed and Sensitive Animal Species of the Little Missouri NG for wildlife, are the most current sensitive species lists and all 2014 surveys and BE's should address these species. The lists are enclosed. Please note that the only sensitive fish species that occurs on the Dakota Prairie Grasslands is the northern red-bellied dace (*Phoxinus eos*).

Also enclosed are the botany requirements for field surveys, report protocols, qualifications for botanical consultants, and botany survey forms. These botany documents, along with updated GIS shapefiles of known sensitive plant locations, will be also be sent electronically to known botanical consultants. If you do not receive an email with the electronic information by early May, please contact one of the District botanists.

The 2014 sensitive plant survey season for the Little Missouri National Grassland will commence on May 15 and extend through September 15, weather and growth conditions permitting. Plant surveys should be conducted at the appropriate period(s) to identify sensitive and watch plant species with potential to occur in the survey area, and to accurately describe the vegetation community. If Forest Service Botanists determine that the season needs to be changed, consultants will be notified.

Biological evaluations are needed for new projects or additions and are **not needed for existing developments and infrastructure.** Sensitive plant surveys may also be exempted for proposed projects that have been covered by previous surveys within the last 3-5 years, projects proposed in areas with a low potential for the occurrence of any sensitive plant species, or projects that would result in a low degree of disturbance or potential to appreciably affect current conditions. Any waivers of plant surveys must be approved in writing by the appropriate Forest Service Botanist.

Botany surveyors are required to report new sensitive plant locations and potential impacts to sensitive plant populations from a proposed project to the Forest Service District Botanist within seven days of the site survey. In an effort to expedite project planning and mitigation efforts, additional surveys should be conducted in alternate project locations or portions thereof to avoid adverse effects to sensitive plant populations or high quality sensitive plant habitat. Consultants should coordinate with company representatives and Forest Service personnel for acceptable alternate project locations. See Points D and E under Survey Protocol in the attached botany enclosures.

For additional questions involving the Medora Ranger District, contact Joe Washington (Botanist) or Arden Warm (Wildlife Biologist), at 701-227-7800. For questions about the McKenzie Ranger District, contact Libby Knotts (Botanist) or Gary Foli (Wildlife Biologist), at 701-842-2393. For questions regarding the Grand River or Sheyenne Ranger Districts, contact Sean Dunlap (Acting Grasslands Biologist), at (701) 989-7305.

Sincerely,

Dennis D Nietzke

DENNIS NIETZKE
Grasslands Supervisor

Enclosures – Federally Listed and Sensitive Animal Species of the Little Missouri Grassland
2014 USDA Forest Service Little Missouri National Grassland Botany Survey and Biological Evaluation Protocols (Contractor Qualifications, Survey Protocols, BE/Report Protocols, Sensitive Plant List, Plant Watch List, Sensitive/Watch Plant Population Survey Form, Invasive Species List, Site and Setting Form, and Plant Survey Form)

cc: Joe Washington, Arden Warm, Libby Knotts, Gary Foli, Sean Dunlap

Federally Listed and Sensitive Animal Species of the Little Missouri Grassland, DPG

Last modified, 3/13/2014

Scientific Name	Common Name	Taxa	Federal Status[1]	State Status		Notes
				ND	SD	
Ammodramus bairdii	Baird's Sparrow	Bird	RFS	S1	S2B SZN	Listed in SD CWCS and level 1 species in ND CWCS
Anthus spragueii	Sprague's Pipit	Bird	Candidate	S3	S2B SZN	Listed in SD CWCS and level 1 species in ND CWCS
Athene cunicularia	Burrowing Owl	Bird	RFS	SU	S3 S4B SZN	Listed in SD CWCS and level 2 species in ND CWCS
Atrytone arogos iowa	Arogos Skipper	Insect	RFS	SU	S2	
Canis lupus	Gray Wolf	Mammal	Endangered			Remains Fed. Listed in ND and SD
Centrocercus urophasianus	Greater Sage-grouse	Bird	RFS	SU	S2	Listed in SD CWCS and level 2 species in ND CWCS
Cynomys ludovicianus	Black-tailed Prairie Dog	Mammal	RFS	SU	S4	ND CWCS
Euphyes dion	Dion Skipper	Insect	RFS	S1		
Haliaeetus leucocephalus	Bald Eagle	Bird	RFS	S1	S1B S2N	Listed in SD CWCS and level 1 species in ND CWCS
Hesperia dacotae	Dakota Skipper	Insect	Proposed Threatened	S2	S2	
Hesperia ottoe	Ottoe Skipper	Insect	RFS	SU	S2	SD CWCS
Lanius ludovicianus	Loggerhead Shrike	Bird	RFS	SU	S3	ND CWCS level 2 species
Myotis septentrionalis	Northern Long-eared Bat	Mammal	Proposed Endangered	SU	S3	
Numenius americanus	Long-billed Curlew	Bird	RFS	S2	S3B SZN	SD CWCS
Oarisma poweshiek	Poweshiek Skipperling	Insect	Proposed Endangered	SU	S2	SD CWCS. Only found on the Sheyenne Grassland.
Ovis canadensis	Bighorn Sheep	Mammal	RFS	S2		
Phoxinus eos	Northern Redbelly Dace	Fish	RFS	S2	S2	
Phyciodes batesii	Tawny Crescent	Insect	RFS	S3	S2	
Poanes massasoit	Mulberry Wing	Insect	RFS	S2	S1	
Poanes viator	Broad-winged Skipper	Insect	RFS	S2	S2	
Speyeria idalia	Regal Fritillary	Insect	RFS	S2	S3	SD CWCS

1 RFS is Regional Forester's Sensitive

Tympanuchus cupido	Greater Prairie Chicken	Bird	RFS	S2	S4	Listed in SD CWCS and level 2 species in ND CWCS

1 RFS is Regional Forester's Sensitive

2014 USDA Forest Service Little Missouri National Grassland (LMNG) Botany Survey and Biological Evaluation (BE) Protocols

1. Contractor Qualifications

a. A degree in Botany or Plant Ecology, or thoroughly demonstrated botanical experience and knowledge to accurately inventory and document plant species and vegetation conditions.

b. Demonstrated skill in plant identification, use of plant taxonomic keys, and rare plant surveys. Knowledge of flora and plant habitat of the northern Great Plains.

c. Ability to analyze the effects of a proposed project on botanical resources through knowledge of ecological theory and plant community dynamics in response to disturbance.

d. Ability to prepare technical reports and apply Forest Service procedures and directives in the preparation of BEs.

e. Ability to apply Standards and Guidelines identified in the Dakota Prairie Grasslands Land and Resource Management Plan (2001) to proposed projects.

2. Survey Protocol

Sensitive plant surveys must be conducted in a manner that provides a high probability of locating any sensitive or watch plant species that may be present. The survey botanist must obtain an accurate map of the site and proposed areas of disturbance from the permit applicant, and the field site must be accurately marked or flagged prior to the survey. All habitat likely to be disturbed by the proposed project must be systematically surveyed.

The following guidelines must be followed when conducting plant surveys.

a. Plant surveys must be conducted when sensitive species are most identifiable, such as during periods of flowering or phenological stages that facilitate their discovery. Compromises inevitably occur because there are fourteen sensitive plant species with different periods of growth and flowering. However, survey periods of May 15 through September 15 span a period of active growth or identifiable litter for most sensitive plant species on the LMNG. These dates encompass the acceptable survey season unless otherwise specified by the Forest Service. Sensitive plant surveys must be delayed or discontinued during adverse weather conditions such as delayed spring growth, drought, or plant-killing frost, and reasonable effort must be given to revisiting sites at a more appropriate time when these situations occur. If in doubt, the Forest Service botanist should be contacted.

If potential occurrences of a sensitive species are noted but cannot be ascertained due to the growth stage, it may be necessary for the contractor to revisit the site during another time of year or following year to identify the species. Exceptions may occur if the proposed development was relocated to avoid the suspected population, but the Forest Service must be notified of the suspected occurrence and any avoidance actions.

b. Watch species have the potential to occur on the LMNG but there are no currently documented and substantiated occurrences; if so, they would be moved to the sensitive list. Survey botanists must be familiar with characteristics of the twenty-four watch species listed for the LMNG and document any occurrences in the same manner as sensitive plant species. A determination of effects for watch plant species is not required within a BE unless one of the species is discovered.

c. Developments such as roadways, pipelines, and utility lines must be surveyed a minimum distance of 125 ft on each side of the centerline of disturbance. However, survey widths can be decreased to 50 ft on either side of electric lines, fiber optic cables, or other utilities that are plowed into place with low degrees of disturbance, **if** the entire route is accurately and clearly flagged. If the route is not field marked the survey corridor remains at 250 ft. A minimum of ten acres must be surveyed around well sites where one bore hole is anticipated, but the survey area should be increased for sites where multiple bore holes and larger well pads are expected. **The total area of survey is referenced as the *project area*.**

d. If a sensitive or watch plant species is discovered within an area that would be adversely affected by the project, the surveyor must contact the Forest Service within seven days. If the occurrence is not reported within seven days it could result in delaying concurrence of the survey and BE until the next year's survey season.

If a sensitive/watch plant discovery is made within an area that would be directly disturbed by the project, there is a high potential that it will be redesigned to alleviate adverse effects to the species. In such cases, it may be appropriate for the contract botanist to survey potential alternate routes or site locations. However, it is the contractor's responsibility to coordinate project location adjustments with Forest Service personnel and company representatives requesting the survey to ensure that alternate project locations will be acceptable.

e. The contractor must complete a *Sensitive/Watch Plant Population Survey Form* whenever a sensitive or watch plant species is discovered. Copies of the completed form must be submitted to the Forest Service Botanist within seven days. Copies should also be submitted to the North Dakota Natural Heritage Program. Include a topographic map or aerial photograph that delineates the plant population. ArcMap GIS shape files in NAD83 datum of all sensitive or watch species locations should be emailed to the appropriate Forest Service Botanist. Photographs and any additional notes on the occurrence should be included.

It is not necessary to GPS each sensitive plant in a small area and record the lat/long for each. Field GPS units are not adequate to consistently relocate or differentiate a specific plant from an adjacent plant located 10 or even 30 ft away. If we decide to monitor any of the populations, it would be by delineating the extent of the population polygon and counting all individuals. It is therefore more useful to GPS a polygon around the population after its extent has been identified with flags etc., and report the number of individuals within the polygon.

However, new polygons or individual plants appreciably distant from other plants or subpopulations should be GPS'd. The decision to GPS additional sites should consider whether it makes sense to extend the polygon to those sites without including large areas without any plants. Is there excessive distance, crossing of prominent landforms, or changes in aspect, slope, or topographic position between subpopulations that would limit the potential for cross-pollination or dispersal of seed between the sites? If so, than a new polygon or point should be established.

To facilitate annual updating of the Forest Service sensitive plant GIS shapefiles, please ensure that each sensitive plant population described on a sensitive plant form can be easily matched to its location on associated maps and shapefiles. Use the "Population ID" field on the sensitive plant form to provide a unique ID for each population in the survey (for example, TOHO A, TOHO B, etc), and use the same ID on maps and shapefiles.

f. The following are a few other plant species that we want to track for potential inclusion on the sensitive list. Please treat any discovered occurrences of these species as a sensitive species with completion of the Sensitive Plant Survey Form, etc.

Oxytropis spp. - We have not been able to positively verify or differentiate white to cream-colored *Oxytropis* between *campestris and sericea.* Moderately intense collections including seed pods sent to the University of Wyoming Herbarium have remained inconclusive. We will continue to track occurrences of all *Oxytropis* other than *lambertii* with the potential of *sericea* and/or *campestris* being added to the sensitive list in the future.

Orobanche spp. – Confusion was created in 2012 regarding *O. ludoviciana* versus *O. multifora* and which species belongs on the watch list. We are primarily interested in the potential occurrence of *O. multiflora*, which the NRCS plants database recently updated as *O. ludoviciana* ssp. *multiflora*. This nomenclature will be followed.

One siting of *O. ludoviciana* ssp. *multiflora* was reported during 2011 but has not been verified. The FS will continue to check this site. We are also interested in tracking any occurrences of *O. uniflora and O. fasciculata*. *O. ludoviciana* remains of interest but is not currently considered for potential listing.

Penstemon grandiflorus - The species is reportedly widespread in the central and eastern portions of the state but only two widely spaced locations have been recently reported on the LMNG and there are no previous reports.

Mentzelia dispersa - This species has only been found on scoria outcrops with minimal total plant cover while looking for *M. pumila*. It may eventually be added to the sensitive list.

g. Any collections of sensitive or watch plant species must be approved in a Forest Service permit. 36CFR261.9(d) prohibits "removing any plant that is classified as a threatened, endangered, sensitive, rare, or unique species", with a fine in ND of $100. Details of collection will be outlined in the permit that can be obtained at a local Forest Service office. However, it is important to evaluate the effect of collecting on potentially rare or small plant populations. If in doubt, collect the smallest quantities possible and/or only portions of individual plants. If there is a question about the possible identification of a sensitive species, the surveyor should contact the local Forest Service Botanist.

The collection of any plant species for personal use (not for resale) and not covered under 36CFR261.9(d) also requires a Forest Service permit,. A Forest Products Free Use Permit to collect plant specimens for personal use or species identification can be obtained at no charge from a local Forest Service office.

h. A *Site and Setting Field Form* and *Plant Survey Form* must be completed for every proposed project for which a field survey is conducted. Latitude and longitude in degrees, minutes, and seconds, in **NAD83 datum**, must be recorded for each site.

Contractors must submit shapefiles of all survey areas either for each survey, or compile a single comprehensive shapefile of all areas surveyed during the field season. These shapefiles need to be submitted by the end of the year. Similarly, shapefiles for sensitive plant populations discovered during the year must also be submitted. Shapefiles must be in NAD83 datum. Sensitive plant locations may be submitted as points or polygons depending on the size of plant populations. Botany survey areas should be polygons. Data should be submitted by e-mail to the appropriate District Botanist and the Forest Service Botany Data Manager, Kelly Privratsky.

Prominent plant communities across the survey site must be verbally (written description) or graphically identified with respect to their location of occurrence within the area of the proposed action. Habitat locations with the potential to support sensitive plant populations must be verbally or graphically identified.

The occurrence of any invasive plant communities within the project area must also be accurately identified. A native-dominated plant community with consistent occurrences of invasive species inclusions should be described as such, while the extent and location of invasive-dominated communities should be accurately described and delineated on site maps. This type of information is used to determine final project layout and mitigation requirements, such as site relocations or invasive species treatments. Accurate descriptions of dominant plant community locations are therefore critical, as inaccurate descriptions can lead to unnecessary or poor mitigation planning.

Invasive species are defined as non-native species that have the capacity to displace or dominate native plant communities. On the LMNG, invasive species include those on the North Dakota noxious weed list such as leafy spurge and Canada thistle, as well as palatable species such as sweet clover, crested wheatgrass, Kentucky and Canada bluegrass, and smooth brome. See the attached list of invasive plant species that must be identified if occurring on a project site.

i. An assessment must be conducted for cumulative effects to vegetation resources that include sensitive/watch plant species as well as native plant communities. It is suggested that a 0.5 mile radius extending from all areas of likely disturbance associated with the project be used as the ***analysis area*** for cumulative effects. However, other areas or distances could be used if they logically represent past, present, and reasonably foreseeable future effects surrounding the project area.

An intensive ground survey of the analysis area is not expected, but the amount and type of active and reclaimed roads, well sites, utility lines, and other developments must be estimated within the analysis area. These estimates are derived from a combination of field observations during survey work, aerial photographs, topographic maps, and GIS layers provided by the

Forest Service that depict existing well sites, pipelines, water tanks and other developments, and vegetation characteristics such as broken land likely planted to crested wheatgrass. It is important to discuss the extent and type of plant communities observed on and around these sites, particularly with increasing proximity to the survey site.

j. All activities on National Forest System lands are required to conform to the Federal Code of Regulations and applicable laws. It is the responsibility of surveyors to be aware of any special orders for the Dakota Prairie Grasslands or individual Ranger Districts in effect. Contact the local Ranger District for information on special orders or to obtain any required permits.

Off-road permits and collection permits must be retained at all times while on National Forest System lands.

3. Biological Evaluation / Report Protocol

The following information must be included in the BE and/or any forms specified for completion.

a. The BE must have a date and contain the name, address, and contact information of the company submitting the report. The project name should be identified on the cover page and the beginning of the BE/report. If the BE/report is acting on the behalf of another company for a lease or permit application with the Forest Service, the applicants name and contact information must be included.

b. The proposed action must be identified, i.e. construction of a well pad and 1.1 miles of access road, or upgrading of an existing two-track road to serve as the access road, etc. This includes the manner of action, i.e. a trackhoe will be used to dig a 3 ft wide trench, a utility line will be plowed into place, or dozers will blade 5 acres to remove the A soil horizon and level the site. A description of the action is required for adequate effects analysis. Without this description it may be assumed there is no knowledge of the proposed action and the effects analysis is incomplete.

c. State **exactly** where the staked road, pipeline, or other development is in relation to previously disturbed corridors and affected plant composition. What is the vegetation within the previously disturbed area, and is the proposed development within or outside of this area? If outside, how far outside? If the route is not staked then it cannot be confidently stated that the project will be placed within the previously disturbed corridor. However, if there appears to be sufficient space to place the project within the disturbed corridor, that can be stated as a suggested mitigation measure.

A legal description by Section, Quarter Section, Township, and Range, of the proposed project location must be included. Include legible topographic/aerial photographs of the project area that depict current developments.

d. The date of the field survey and name of the botanist(s) must be identified, along with the type of survey methodology utilized. The Site and Setting Survey Form must be included in the BE/report or attached as an appendix.

e. The current list of LMNG Sensitive and Watch plant species and a brief description of the preferred habitat for each sensitive species must be included in the BE/report or appendix.

However, do not include watch plant species in the effects analysis and determination unless they are found during the survey.

f. A site-specific narrative description of the existing plant communities found within the survey area must be included. The description must be logical and cohesive, such that the reader is provided with an accurate picture of vegetation composition and conditions within and around the project area. Dominant and co-dominant species by life form within distinct community types must be identified. The potential climax vegetation as identified through habitat types or ecological sites should be discussed. Aspects, topographic positions, and dominant soil textures should be included in these descriptions.

Site photographs are important but don't overdo it. A broad view of the well pad with at least some corners or center stake highlighted in some way may be as useful as several photos in each cardinal direction. Consider including photographs with the text of site descriptions for greatest usefulness and interpretation, rather than placing all the photographs at the end of the document. Landscape level photographs of sensitive population sites are equally or more important than plant close-ups. Flagged plant locations are helpful in the photographs.

g. A complete floristic list of all plant species identified during the field survey must be provided. A field checklist is acceptable. Nomenclature should follow that of the USDA Natural Resource Conservation Service PLANTS Database, available online at http://plants.usda.gov. In addition to including the species list in the report, we request that contractors also provide an end of year comprehensive spreadsheet of all species recorded by survey site. This information is helpful to the Forest Service in tracking general species occurrences over time and space.

h. A completed copy of the *Sensitive/Watch Plant Population Survey Form* is required in the report if any new populations are discovered. Unoccupied but apparently suitable habitat for sensitive plant species must be identified in Biological Evaluations (BEs) with respect to its location within the project area.

i. The occurrence and extent of invasive species within the project area must be discussed. It is particularly important to identify areas where project disturbances are likely to intersect with invasive plant communities. Maps showing the extent of high invasive species occurrences across the project area are critical. See 2h above. The analysis should discuss the project's potential impacts on invasive species' occurrence and distribution, and should relate this to potential impacts to sensitive plants and habitats, as well as the maintenance of native plant communities.

j. Determination of Effects: Effects to sensitive plant species fall into the following categories. Contractors must utilize these categorical statements rather than paraphrase. A summary table of determinations for each species must be included in the BE/report.

   1. <u>No Impact:</u>

A determination of "No Impact" for sensitive species occurs when a project or activity will have no environmental effects on habitat, individuals, a population or a species. If any effects are listed for a sensitive species, then a "No Impact" conclusion is not appropriate.

2. May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing Or Cause a Loss of Viability To the Population or Species:

   Impacts to individuals or habitat of sensitive species should be given careful consideration. The loss of populations or metapopulations is often the basis for eventual species extinction. Rationale should be provided regarding **why** the effects would not contribute to federal listing or cause a loss of viability to the population or species.

3. Will Impact Individuals Or Habitat With A Consequence That The Action Will Contribute To A Trend Towards Federal Listing Or Cause a Loss of Viability To the Population or Species:

   Loss of individuals or habitat can be considered significant when the potential effect may contribute to a trend toward federal listing. The loss of individuals is significant when there are few populations and/or few individuals within populations. For these situations, any effects to the species may lead to a loss of viability and contribute towards federal listing.

   Projects or activities that adversely affect many individuals of a species with limited population numbers, or even a few individuals with a limited number of small populations should probably receive this conclusion.

4. Beneficial Impact: Projects or activities that are designed or happen to benefit sensitive species should receive this conclusion.

The BE must provide a logical context for the determination of effects, considering ecological principles of habitat fragmentation, population dynamics, number of known species populations, and apparent species viability. The absence of sensitive plant species in the project area does not necessarily equate to no impact. If suitable but unoccupied habitat exists for a particular sensitive plant species that is likely to be disturbed by the project, the determination will usually fall under Category 2 due to decreased habitat for dispersal. However, rationale for Category 2 should also include reasons why the project would not contribute to federal listing. For example, there may be documented populations in other areas of the LMNG that would not be affected, habitat within the project area is marginal, suitable habitat that would not be disturbed is extensive immediately adjacent to the project area, etc.

Be careful of exaggerating the number of species with Determination #2 - may impact individuals or habitat etc. This should not be used as a shotgun approach to cover all the bases. It should be increasingly obvious that the text books, floras, and other references do not provide a very accurate description of habitat for several of the listed species. Your own judgment and experience of past population sites, as well as shapefiles of currently documented sites and surrounding habitat is likely to be more accurate assessment of potential habitat compared to existing sources for most species.

Determinations must consider direct and indirect effects of the proposed project as well as cumulative effects of the proposed project when considered with other effects. Effects on native plant communities and habitats must also be addressed in the BE, as these ultimately effect sensitive plant habitat. Examples of these effects include direct disturbance, habitat fragmentation, invasive plant expansion, decreased plant diversity, and loss of unique habitat difficult to reclaim to pre-disturbance conditions.

k. A cumulative effects analysis is used to determine the extent to which the proposed project's direct/indirect effects contribute to other effects on the species in question. If there are no direct or indirect effects to the species or habitat, then there would be no contribution to cumulative effects and an analysis is not necessary. However, an analysis of the cumulative effects must be addressed with respect to past, present, and reasonably foreseeable future effects whenever there are any direct/indirect effects to sensitive plant species or native plant resources. A one-half mile radius around the project site should be used as an analysis area unless a more logical and defendable area can be identified.

Once the analysis area is defined, confine effects discussions within this area. There is no need to discuss the number of wells within an oil field unless that is your analysis area. If an oil field is the chosen analysis area, then be prepared to discuss the acreage of pipelines, water tanks, and all other influential factors within the field. Increasing agricultural production, industrialization, and urban development across North Dakota are outside the influence of a typical analysis area on the LMNG - are these activities really increasing within the analysis area? Past homesteading, agriculture (broken land), intermingled private land, livestock grazing, and recent and future expansion of oil and gas development continue to influence the LMNG, but many of the other activities that have been discussed in past reports are not applicable to a reasonably sized analysis area surrounding projects that are being analyzed.

Recorded field observations from the *Site and Setting Form* will include the presence and vegetative characteristics of lands influenced by the above uses, and should include the extent, location, and general amount of invasive species occurrences. GIS layers will be helpful in quantifying the land area that has been influenced by these activities, as well as the potential contribution of the proposed project and its effects. Contractors may not have complete knowledge of conditions across the entire analysis area, but they should carry the analysis as far as possible from field observations and data sets to which they have access. At a minimum, recorded observations should include vegetation composition on at least a portion of existing or reclaimed developments adjacent to the project site and within the analysis area.

Linear disturbances such as roads and pipelines have a width, and therefore an acreage that can be estimated. In many cases the zone of past disturbance can be measured from air photos.
There may be no known sensitive plant populations within the defined analysis area, but habitat conditions for several sensitive species are likely to have been effected by past disturbances to which the proposed development would contribute. Observations and reporting of plant communities on areas of past disturbance are therefore critical. Besides

stating the number of acres that these developments comprise, discuss the effects in terms of current plant composition.

There have been about 25 instances of direct disturbances to existing sensitive plant populations across the LMNG in recent years of increased development. Adverse effects primarily involved populations of *Escobaria missouriensis* and *Townsendia* spp., and two populations of *Eriogonum visheri*. In the vast majority of cases, these disturbances affected only a portion of a given population and mitigation involving site relocations was implemented to decrease the level of adverse effect. The level of adverse effects were not sufficient to threaten the continued viability of any of the four species on the LMNG due to the relatively high number of population occurrences and/or high number of individuals within a population.

In regards to the maintenance of native plant communities, there is ample evidence of previous roads, well sites, and other developments contributing to the establishment and spread of invasive species. If there is a high potential for the project to result in an increase of invasive species, then it would contribute to the cumulative effects across the landscape in the analysis area. It is therefore incorrect to conclude that the individual project would not result in cumulative effects due to its small size of a few acres, or that when viewed on its own the project would have negligible impacts on the landscape. The point of cumulative effects is the comprehensive effect on the landscape, not the significance of each project analyzed separately.

Miles of woody draw drainages or wetland acres are not applicable to cumulative effects. These are more of a description of existing plant communities or habitat types. Why not also list the acreage of all other habitat types? Exceptions might include the acreage of man-made dugouts, or broken land etc., but the effect on native plant communities should be identified or described.

l. Design Criteria: The report should include suggested design criteria, or mitigation, to alleviate adverse effects and avoid unnecessary disturbances to sensitive plant species and native plant communities. Examples include recommendations for avoiding impacts to certain plant communities or species, or incorporating the control of invasive species within the scope of project development and design. Be as specific as possible with design criteria. Identifying adverse effects in the analysis but concluding that no mitigation measures are necessary is illogical. If herbicide treatments or infested soil containment are warranted, specify where they should be conducted. Rational for invasive species treatments decreases when areas surrounding the project area are increasingly dominated by invasive species. For instance, it would not be very effective to pre-treat a well site for crested wheatgrass if the surrounding area is overwhelmingly dominated by the same species with a certainty of re-invading the site.

Mention if the original project location has already been adjusted or relocated to avoid or mitigate for adverse effects based on initial field surveys.

m. Bibliography of literature or references cited. Include only those cited in the text of the report.

SITE AND SETTING FORM

Site and Setting Form for Inventory Information

SITE/PROJECT NAME:
DATE (MMDDYYYY)

LAST Name	FIRST Name	
Ownership		
Region 01	National Forest/Grassland 18	District
State North Dakota	County Name	

Location Information

Township / Range / Section		
Q SEC	QQ SEC	QQQ SEC

Geodetic Datum NAD83 is required (Generally at center of survey area, Use start and end points for long linear surveyed area)

Lat dms:	Degrees ______ N	Minutes __ __	Seconds __ __.__ __
Long dms:	Degrees _______ W	Minutes __ __	Seconds __ __.__ __
Lat dms:	Degrees ______ N	Minutes __ __	Seconds __ __.__ __
Long dms:	Degrees _______ W	Minutes __ __	Seconds __ __.__ __

Existing Vegetation Information

Please enter major dominance types found on the project area.

Dominant Life Form ®
Dominance Type
Dominance Type
Dominance Type
Dominance Type

Potential Vegetation Information

Habitat Type Name
Habitat Type Name
Habitat Type Name
Habitat Type Name
Habitat Type Name
Habitat Type Name

Description of past & current land use practices including reclaimed or active oil wells, roads, utility corridors, misc. developments, and apparent livestock grazing patterns. Include observations of species composition in regards to native versus non-native (invasive).

Estimate current acreage or mileage of active and reclaimed access roads, utility corridors, or other developments within ½ mile radius of project area. Document source of data as observed or compiled from GIS software and/or aerial photographs.

ACTIVE

RECLAIMED

Other Comments

Plant Survey Form

Area Surveyed (acres)	Survey Type

Invasive Plants and Noxious Weeds

Species:	Extent (area):
Description & Location:	
Species:	Extent:
Description & Location:	
Species:	Extent:
Description & Location:	
Species:	Extent:
Description & Location:	
Species:	Extent:
Description & Location:	
Species:	Extent:
Description & Location:	

Plant Species List (use additional format if needed)

Plant Name	Comments

Habitat Type Code and Habitat Type Name

LMNG Habitat Type Names
Agropyron smithii-Stipa viridula
Agropyron smithii-Stipa viridula-Bouteloua gracilis
Agropyron smithii-Stipa comata
Andropogon scoparius-Carex filifolia
Andropogon gerardii
Calamovilfa longifolia-Carex
Distichlis spicata
Puccinellia nuttalliana-Distichlis spicata
Stipa comata-Carex filifolia
Artemisia arbuscula-Bouteloua gracilis
Artemisia cana-Agropyron smithii
Artemisia tridentata wyomingensis-Agropyron smithii
Artemisia tridentata wyomingensis-Agropyron spicatum
Atriplex confertifolia-Artemisia tridentate wyomingensis
Juniperus horizontalis-Andropogon scoparius
Potentilla fruticosa-Andropogon scoparius
Rhus aromatica-Agropyron spicatum
Rhus aromatica-Muhlenbergia cuspidate
Sarcobatus vermiculatus-Agropyron smithii
Sarcobatus vermiculatus-Agropyron spicatum
Shepherdia argentea
Symphoricarpos occidentalis
Quercus macrocarpa/Corylus sp.
Quercus macrocarpa/Prunus virginiana
Populus tremuloides/Prunus virginiana
Fraxinus pennsylvanica/Prunus virginiana
Fraxinus pennsylvanica/Ulmus americana/Prunus virginiana
Fraxinus pennsylvanica/Symphoricarpos occidentalis
Juniperus scopulorum/Oryzopsis micrantha
Juniperus scopulorum/Agropyron spicatum
Pinus flexilis/Agropyron spicatum
Pinus ponderosa/Prunus virginiana
Pinus ponderosa/Juniperus communis
Pinus ponderosa/Agropyron spicatum
Pinus ponderosa/Carex heliophilia

Survey Type Enter the type of survey that was conducted. Enter one or more of the following. You may enter up to three survey types.

Code	Description
Aquatic	Aquatic surveys are confined to surveys within water bodies such as streams, lakes, ponds and irrigated canals. Vegetation can be classified as emergent, floating, hydrophytic, or submergent. For surveys that include the transition zone to uplands and areas of seasonal or periodic flooding also record riparian surveys.
Cursory	The cursory survey is appropriately used to confirm the presence of objects of interest identified in previous surveys and the prefield analysis step. By its nature, the cursory visit is rapid, but does not provide in-depth environmental information. The entire area is traversed at least once. For example, stand condition as seen in aerial photography can be verified by a cursory visit to a location. Also, a cursory visit can be used to determine if a population that had been previously cataloged at a site remains present or intact
Features	The surveyed focused on area in and adjacent to developed features such as road, trails, campgrounds, parking lots and boat launches.
Field Check	Field Check is where the area is given a quick "once over" but do not walk completely through the project area. The entire area is not examined.
General	The area is given a closer look by walking through the area and perimeter or by walking more than once through the area. Most of the area is examined
Focused (Intuitive Controlled)	The intuitive controlled survey is the most commonly used and most efficient method of surveying. During pre-field analysis, potential suitable habitat is identified for each species of interest and the survey effort is focused in those areas. This method requires adequate knowledge of suitable habitat in order to accurately select the areas of focused search. When conducting intuitive controlled surveys, an area somewhat larger than the identified suitable habitat should be searched to validate current suitable habitat definitions.
Random	Random surveys employ an undirected traverse through a project area. They are employed either when there is inadequate natural history information about a species to discern its suitable habitat and the surveyor is simply searching for occurrences, or when a target species is very abundant within a search area and the surveyor is attempting to make estimates of population parameters such as intra-patch variations in density or the occurrence of predation or herbivory. However, a stratified random survey may be more efficacious in these cases.
Riparian	These are surveys that follow the shoreline of water bodies such as lakes, streams and rivers. Riparian areas are defined as those areas that form the transition between permanently saturated wetlands and upland areas. For plants or areas that are obligatory in standing or moving water use aquatic survey.
Stratified Random	The stratified random survey is most often used within known population areas of target species or when an area of unknown suitability to be surveyed is relatively large. Stratified random surveys employ a series of randomly selected plots of equal size within a project area that are each thoroughly searched for target species. When conducting a stratified random survey, it is important to search an adequate number of sites that are of sufficient size to represent an adequate sample.
Systematic	The systematic survey is typically used in limited areas where the likelihood of occurrence of a target species is evenly distributed throughout the survey area. Systematic surveys are often employed either within focused search areas (e.g., stratified random and intuitive controlled methods), or when a proposed project is likely to produce significant habitat alterations for species that are especially sensitive to the proposed activities.

INVASIVE / NOXIOUS PLANT SPECIES
TO BE REPORTED WHEN OCCURRING ON A
PROJECT SURVEY SITE ON THE LITTLE MISSOURI NATIONAL GRASSLAND

(Report species from any site where they are found, regardless of where they are listed as noxious.)

Scientific Name	Common Name	State/County where Noxious or other Status
FORBS		
Acroptilon repens	Russian Knapweed	ND State
Arctium minus	Common Burdock	Billings, Golden Valley, McKenzie
Artemisia absinthium	Absinth Wormwood	ND State
Astragalus cicer	Cicer milkvetch	Non-native invasive
Cardaria draba	Hoary Cress	Billings, Golden Valley
Carduus acanthoides	Plumeless Thistle	Non-native invasive
Carduus nutans	Nodding Plumeless Thistle or Musk Thistle	ND State
Centaurea diffusa	Diffuse Knapweed	ND State
Centaurea stoebe ssp. *micranthos*	Spotted Knapweed	ND State
Centaurea solstitialis	Yellow Star-thistle	Non-native invasive
Cirsium arvense	Canada Thistle	ND State
Convolvulus arvensis	Field Bindweed	Billings County
Cynoglossum officinale	Houndstongue	Billings, Golden Valley, McKenzie, Slope
Euphorbia esula	Leafy Spurge	ND State
Halogeton glomeratus	Halogeton	McKenzie
Gypsophila paniculata	Baby's Breath	McKenzie
Hyoscyamus niger	Black Henbane	Billings, Golden Valley, McKenzie, Slope
Linaria genistifolia	Dalmatian Toadflax	ND State
Linaria vulgaris	Yellow Toadflax	ND State
Lythrum salicaria	Purple Loosestrife	ND State
Melilotus officinalis.	Yellow or White Sweetclover	Non-native invasive
Sonchus spp.	Sowthistle	Non-native invasive
Tamarix spp.	Saltcedar	ND State
Verbascum thapsus	Common Mullein	Golden Valley
GRASSES		
Agropyron cristatum	Crested Wheatgrass	Non-native invasive
Bromus arvensis	Field Brome (Japanese)	Non-native invasive
Bromus inermis	Smooth Brome	Non-native invasive
Bromus tectorum	Downy Brome / Cheatgrass	Non-native invasive
Elymus repens	Quackgrass	Non-native invasive
Poa pratensis	Kentucky bluegrass	Non-native invasive
Poa compressa	Canada bluegrass	Non-native invasive
Thinopyrum intermedium	Intermediate Wheatgrass	Non-native invasive
Thinopyrum ponticum	Tall Wheatgrass	Non-native invasive

SENSITIVE/WATCH PLANT POPULATION SURVEY FORM

SPECIES:____POPULATION ID:_______________________________________
(Scientific Name) (Ex: TOHO A, TOHO B, etc; to differentiate populations at site)

DATE OF SURVEY: ____________________OBSERVER(S): ____
(Name, title, company

LOCATION (**ATTACH COPY OF TOPOGRAPHIC MAP WITH POPULATION LOCATIONS. COLLECT GPS DATA USING **NAD83** DATUM AND SUBMIT A SHAPEFILE.):

TOWNSHIP: __________ RANGE: ____________ SEC.(S): __________ 1/4 SEC.: ______________________________

LATITUDE:__________________________________ LONGITUDE:____
(degrees, minutes, seconds, with NAD83 Datum)

OR UTM at Zone 13 Northing ______________________________ Easting ___________________________

GPS MODEL____

NATIONAL FOREST: ______LMNG__________________ RANGER DISTRICT: ______________________________

LAND OWNERSHIP/MANAGEMENT (IF NOT FS):____

PROJECT/SITE NAME (usually well name or adjacent landmark):____

HABITAT:

ASPECT (S, SE, NNW, etc.): ___________________ % SLOPE: ____

LIGHT EXPOSURE (full sun, partial shade, full shade.): ____

SLOPE POSITION (backslope, footslope,shoulder, summit, toeslope.): _____________________________________

TYPICAL SOIL MOISTURE CONDITIONS (dry, moist, wet. Do not reflect current precipitation conditions.)
____

SOIL TEXTURE (see attatchment): ____

VEGETATION STRUCTURE WITHIN POPULATION AREA:

TOTAL TREE COVER (%) ____________________________TOTAL SHRUB COVER (%)______________________
TOTAL FORB COVER (%) ____________________________TOTAL GRAMINOID COVER (%) ___________________
TOTAL MOSS/LICHEN COVER (%) ___________________TOTAL BARE GROUND (%) ________________________

ASSOCIATED PLANT COMMUNITY (dominant species):____
____
____
____

INVASIVE SPECIES IN VICINITY:____
____

HABITAT TYPE (if known): ____

POPULATION SIZE:

ESTIMATED # OF INDIVIDUALS (or exact count, if feasible; if plants are spreading vegetatively, indicate number of aerial stems):

____

OF SUBPOPULATIONS (if applicable): ______________________________

SIZE OF POPULATION AREA (acres): ______________________________

BIOLOGY:

PHENOLOGY (% flower, fruit, dispersed fruit, vegetative): ______________________________

ANY SYMBIOTIC OR PARASITIC RELATIONSHIPS?: ______________________________

EVIDENCE OF DISEASE, PREDATION OR INJURY?: ______________________________

EVIDENCE OF SEED DISPERSAL AND ESTABLISHMENT: ______________________________

____

____

DOCUMENTATION:

PHOTOGRAPH TAKEN? (if so, indicate photographer and repository): ______________________________

____

SPECIMEN TAKEN? (if so, list collector, collection #, and repository): ______________________________

____

IDENTIFICATION (list name of person making determination, and/or name of flora or book used): ______________________________

____

____

EVIDENCE OF DISTURBANCE: ______________________________

____

____

MEASURES FOR PROTECTION: ______________________________

____

____

____

____

OTHER COMMENTS/SKETCHES/ETC:

Codes for Sensitive/Watch Plant Population Survey Form

Light Exposure Code	Name	Description
SUN	Full Sun	Full Sun characterizes the predominant light exposure condition across the EO.
PSH	Partial Shade	Partial Shade characterizes the predominant light exposure condition across the EO.
FSH	Full Shade	Full Shade characterizes the predominant light exposure condition across the EO.

Slope Position Code	Name	Description
BS	Backslope	The steepest portion of the slope where material is generally in transit.
FS	Footslope	The lower portion of the slope where material is generally re-deposited.
SH	Shoulder	The upper slope where material generally moves through creep processes.
SU	Summit	The uppermost slope.
TS	Toeslope	The lowermost slope position where material moves generally through alluvial processes.

Soil Moisture Code	Name	Meaning
D	Dry	No moisture observed, at the wilting point (>15 bars of tension, realizing that various perennials, shrubs, trees and other native vegetation have wilting points up to 66 bars of tension).
M	Moist	Moisture state is between the wilting point and field capacity.
W	Wet	The moisture state is at field capacity or wetter.

Soil Texture Code	Name	Description
C	clay	A term used in the U.S. and by the International Society of Soil Science for a rock or mineral particle in the soil, having a diameter less than 0.002 mm (2 microns)
CL	clay loam	A soil containing 27-40% clay, 20-45% sand, and the remainder silt.
L	loam	A rich, permeable soil composed of a friable mixture of relatively equal and moderate proportions of clay, silt, and sand particles, and usually containing organic matter
S	sand	A term used in the U.S. for a rock or mineral particle in the soil, having a diameter in the range of 0.05-2 mm.
SI	silt	A rock or mineral particle in the soil, having a diameter in the range of 0.002-0.05 mm.
SIL	silt loam	A soil containing 50-88% silt, 0-27% clay, and 0-50% sand; e.g. one with at least 50% silt and 12-27% clay, or one with 50-88% silt and less than 12% clay.
SL	sandy loam	A soil containing 43-85% sand, 0-50% silt, and 0-20% clay, or containing at least 52% sand and no more than 20% clay and having the percentage of silt plus twice the percentage of clay exceeding 30, or containing 43-52% sand, less than 50% silt, and less than 7% clay.
GR	gravel	Rock fragments between 2 and 75 mm in diameter.

Sensitive Plant Species of the Little Missouri National Grassland

From February 25, 2011 USDA Forest Service Northern Region Sensitive Plant Species list

NRCS Code	Scientific Name	Common Name	Conserv. Ranking	Documented Habitat on the LMNG
CHSU2	*Chenopodium subglabrum*	smooth goosefoot	G2G4/S1	Sandbars, terraces, and dune complexes along rivers and creeks. Exposed sandy substrates in uplands, blowouts, outcrops, colluvium, etc.
COPA3	*Collinsia parviflora*	blue lips	G5/S2	Woody understories, including green ash/elm draws, Rocky Mountain juniper, mesic shrub communities, and occasional xeric shrub communities.
CRTO4	*Cryptantha torreyana*	Torrey's cryptantha	G5/S1	Two population sites discovered during 2013 were located along scoria ridgelines, Also reported from dry plains, rock outcrops, escarpments, pine slopes.
ERCE2	*Eriogonum cernuum*	nodding buckwheat	G5/S1	Exposed sand substrates with low plant cover in grasslands, hillsides, sandstone outcrops.
ERVI14	*Eriogonum visheri*	Dakota buckwheat	G3/S2S3	Relatively exposed clay/silt substrates with low plant cover such as outwash zones around eroding buttes, saddles, steep convex slopes, erosional breaks on prairie slopes. Occasional populations among dense saltgrass communities.
ESMI3	*Escobaria missouriensis*	Missouri foxtail cactus	G5/SNR	Prairie slopes and plains, stony to loamy to clayey short-grass to mixed-grass prairies. Also reported in woodlands of ponderosa pine or Quercus spp.
LEMO4	*Leucocrinum montanum*	sand lily	G5/S2	Generally shortgrass communities with fine textured substrates but also found in crested wheatgrass communities. Reported from open coniferous woodlands and hillsides, sagebrush scrub, and sandy flats, but common name seems to be a misnomer.
MEPU3	*Mentzelia pumila*	dwarf mentzelia	G4/S1	Scoria exposures and colluvium with low plant cover. Also reported on slopes and sandy plains; occasionally on hard clays and rocky soils.
PHAL3	*Phlox alyssifolia*	alyssum-leaved phlox	G5/S1S2	Sandy or gravelly soil on and around Bullion Butte. Also reported on clay banks and limestone ridges of open prairie.
PIFL2	*Pinus flexillis*	limber pine	G5/S1	Semi-arid exposed rocky ridges and foothills in the Limber Pines RNA, likely of native-American origin.
POAC5	*Populus x acuminata*	lanceleaf cottonwood	HYB/S2	Mesic woody draws, often with springs/seeps, occasional near springs on open hillsides. Floodplains and stream banks.
SPAI	*Sporobolus airoides*	alkali sacaton	G5/S2	Secondary succession on clay outwash where tolerant of saline conditions, also on dry to moist sandy or gravelly soil.
TOHO	*Townsendia hookeri*	Hooker's Townsendia	G5/S1	Low to moderate plant cover on dry plains, hillsides, gravelly benches and weathered scoria, but often clay matrix subsoil.
TOEX2	*Townsendia exscapa*	Easter daisy	G5/SNR	Dry plains and hillsides, often with loamy or increased soil development and increased plant cover relative to T. hookeri.

Watch Plant Species of the Little Missouri National Grassland

NRCS Code	Scientific Name	Common Name	Conservation Ranking
AGEX	*Agrostis exarata*	spike bentgrass	G5/S1
ASAU4	*Astragalus australis* *(Astragalus aboriginum)*	Indian milkvetch	G5/S2S3
ASDR3	*Astragalus drummondii*	Drummond's milkvetch	G5/S1
ASVE5	*Astragalus vexilliflexus*	bentflower milkvetch	G4/S3
EPPY4	*Epilobium pygmaeum* *(Boisduvalia glabella)*]	smooth spike-primrose	G5/S1S2
BRCA5	*Bromus carinatus*	mountain brome	G5/S1
CASI12	*Carex siccata* (*Carex feonea)*	dry spike sedge	G5/SNR
CASCS8	*Carex scirpoidea* (*Carex scirpiformi)*	bulrush sedge	G5/S1S2
CLCOT	*Clematis columbiana var. tenuiloba* (*Clematis tenuiloba)*	rock clematis	G5?T4?/S1
ERDI4	*Erigeron divergens*	spreading fleabane	G5/S1
ERRA2	*Erigeron radicatus*	taproot fleabane	G3G4/S1
FRPU2	*Fritillaria pudica*	yellow fritillary	G5/SH
MYAPM	*Myosurus apetalus* var. *montanus*	bristly mousetail	G5T3T5/S1
OELA	*Oenothera laciniata*	cutleaf evening primrose	G5/SA?
ORLUM	*Orobanche. ludoviciana,* ssp. *multiflora*	manyflowered broomrape	G5/S1
OXSE	*Oxytropis sericea*	white locoweed	G5/S1
PHPA29	*Phemeranthus parviflorus* (*Talinum parviflorum*)	prairie fameflower	G5/S2
PODI	*Potamogeton diversifolius*	pondweed	G5/S2S3
PODI2	*Potentilla diversifolia*	varileaf potentilla	G5/S1
POJA2	*Populus x jackii*	Balm-of-Gilead	GNA/SNR
SITR3	*Sibbaldiopsis tridentata* *(Potentilla tridentata)*	shrubby fivefingers	G5/S1
RACA4	*Ranunculus cardiophyllus*	heartleaf buttercup	G4 S1
ROCA	*Rorippa calycina*	persistent sepal yellowcress	G3/SH
SMEC	*Smilax ecirrhata*	upright carrionflower	G?/S1S2

Stantec Consulting Services Inc.
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May 24, 2013

Carol Aron
North Dakota Ecological Services
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, North Dakota 58501

Reference: Hawkeye Pipeline Project

Dear Ms. Aron,

Stantec Consulting Services Inc. (Stantec), on behalf of the Bureau of Land Management (BLM), would like to request input on Hess Corporation's (Hess) proposed Hawkeye Pipeline Project (Project). Hess has filed a ROW application proposing to construct, operate, maintain, and decommission the proposed Project on federal lands in McKenzie and Williams Counties, North Dakota, as shown in **Figure 1**. The proposed project would include the construction of an approximately 25.5-mile-long pipeline system consisting of the following four segments:

- **Segment A** (10.6 miles): Hawkeye to North Charlson (South Side of the Lake) consisting of the conversion of an existing 8" HP Gas line to NGL service and installation of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment B** (2.5 miles) North Charlson (South Side of the Lake) to North Side of the Lake including tie-ins into three (3) existing 8" lines under Lake Sakakawea for HP Gas, HP Oil and NGL's as well as installation of two (2) 24 strand fiber optic lines.
- **Segment C** (2.4 miles) North Side of the Lake to Hofflund including conversion of an existing 8" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment D** (10.1 miles) Hofflund to Ramberg (HP Oil) and Silurian (HP Gas and NGL's) including conversion of an existing 10" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.

The proposed Hawkeye pipeline system would transport oil, gas and NGL from the existing Hawkeye Central Station through a transfer point at the existing North Charlson Compressor Station located south of Lake Sakakawea (Segment A). The system would use existing pipelines to transport oil, gas and NGL beneath Lake Sakakawea to the North River Crossing Compressor Station located north of Lake Sakakawea (Segment B). From the North River Compressor Station the pipelines would trend north before terminating at either the existing Hess Ramberg Truck Facility or the Silurian Compressor station, located approximately 8 and 7 miles respectively, south of Tioga, Williams County, North Dakota (Segments C & D). All connection points would occur within existing Hess facilities.

In total, approximately 4.1 miles of the proposed alignment occurs on federal lands. The remaining alignment is proposed on private land and State of North Dakota-owned lands. The proposed pipeline would be buried and follow existing pipeline and utility easements to the extent practicable.

Species Information Request

Stantec has enclosed an overview map of the entire proposed route through west-central North Dakota. The Project is located in **McKenzie** and **Williams** counties, North Dakota.

Stantec would like to request a list of federally listed, federally proposed, and federal candidate species potentially associated with the Project. In addition, Stantec would also like to give the United States Fish and Wildlife Service an opportunity to provide comments on the Project.

Stantec is also requesting sensitive resources information from the North Dakota Game and Fish Department, North Dakota Natural Heritage Inventory, and U.S. Forest Service. If you have any questions regarding this request, please call me at (970) 449-8627. Thank you in advance for your prompt response to this request.

Regards,

Matthew a Brekke

Matt Brekke
Senior Wildlife Biologist
Tel: 970-449-8627
Fax: 970-482-6368
matt.brekke@stantec.com

Attachment: Figure 1. Pipeline Segment Map

cc. Lowell Hassler (BLM)
Peggy Roberts (Stantec)
Scott Patti (Stantec)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

JUN 18 2013

Matt Brekke
Senior Wildlife Biologist
Stantec Consulting Services, Inc.
2950 East Harmony Road, Suite 290
Fort Collins, Colorado 80528

Re: Hawkeye Pipeline Project, Hess Corporation
In reply please reference TAILS #2012-CPA-0614

Dear Mr. Brekke:

This is in response to your request for comments received May 24, 2013, regarding a proposed approximate 25.5 mile-long pipeline system to transport oil, gas, and Natural Gas Liquids (NGL) in McKenzie and Williams County, ND. Hess Corporation (Hess) proposes to build the pipeline in four segments. The system would start at the existing Hawkeye Central Station through a transfer point at the existing North Charlson Compressor Station located south of Lake Sakakawea (Segment A). The system would use existing pipelines to transport oil, gas, and NGL beneath Lake Sakakawea to the North River Crossing Compressor Station located north of Lake Sakakawea (Segment B). From the North River Crossing Compressor Station, the pipeline would trend north before terminating at either the existing Hess Ramberg Truck Facility, or the Silurian Compressor station, located approximately 8 and 7 miles, respectively, south of Tioga, Williams County, ND (Segments C and D). The letter states that 4.1 miles of the proposed pipeline are on federal land. Your analysis should include the potential impacts on the entire proposed project, not just that portion which crosses federal land.

The U.S. Fish and Wildlife Service (Service) offers the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", the Endangered Species Act (ESA) (16 U.S.C. 1531 *et seq.*), the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), Executive Order 11990 "Protection of Wetlands", the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250), and the National Environmental Policy Act (NEPA) (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended).

Below are recommendations to assist in complying with each of these authorities. Your plans should integrate these recommendations to the extent practicable to insure compliance. Recommendations addressing the trust resources under Service authorities are tailored to address protective measures for a variety of species. As such, recommended timing restrictions are not identical and the federal action agency or project proponent should evaluate the trust resources that may be affected by the proposed project and use the appropriate protective timing restriction accordingly.

Threatened, Endangered and Candidate Species

To obtain information on Service trust resources including federally threatened, endangered and candidate species and designated critical habitat that may occur in the identified areas, or may be affected by the proposed activities, we recommend you access the North Dakota Ecological Service Field Office website at (http://www.fws.gov/northdakotafieldoffice/). You may also access the Service Information, Planning, and Conservation System (IPaC) website at (http://ecos.fws.gov/ipac/).

If a federal agency authorizes, funds, or carries out a proposed action, the responsible federal agency, or its designated representative, is required to evaluate whether the action "may affect" listed species. If the federal agency determines the action "may affect, is likely to adversely affect" listed species, then the federal agency shall request formal section 7 consultation with this office, or work with this office to remove the likely adverse effects before proceeding. If the evaluation shows a "no effect" determination on listed species, further consultation is not necessary.

If a non-federal entity receives federal funding for an activity, or if any federal permit or license is required, the federal agency may designate, in writing, the fund recipient or permit applicant as its representative for purposes of informal section 7 consultation. The funding, permitting, or licensing federal agency is responsible to ensure that its actions comply with the ESA, including obtaining concurrence from the Service for any action that may affect a threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat. The BLM designated Stantec Consulting Services Inc. (Stantec) to represent the BLM in a letter dated May 9, 2013, for informal Section 7 consultation under the ESA. Therefore, the Service is responding to you as the designated non-Federal representative.

Sprague's pipit (*Anthus spagueii*) was added to the candidate species list in 2010. According to the Service's data, we expect there to be suitable habitat for the Sprague's pipit along the proposed route. Candidate species such as the Sprague's pipit are not protected under the ESA. However, Sprague's pipit as a migratory bird is still protected under the MBTA.

Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4 and 12 inches. The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly to heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within your proposed project area, the Service requests that you and the Federal action agency document any steps taken to avoid and minimize disturbance of this habitat, and that you share this information with our office.

Suitable habitat for the Dakota skipper (*Hesperia dacotae*) may also occur along the proposed project route. The Dakota skipper is a small to medium-sized hesperiine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needlegrasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Because of the difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat.

For candidate species such as the Sprague's pipit and the Dakota skipper, Federal agencies and non-federal applicants have the option of requesting a conference with the Service to ensure that their actions minimize and mitigate effects to candidate species.

Least terns (*Sternula antillarum*) and piping plovers (*Charadrius melodus*) nest along the shoreline and on sandbars on Lake Sakakawea. Those areas that meet the definition have been designated as piping plover critical habitat. Pallid sturgeon (*Scaphirhynchus albus*) may be anywhere within the reservoir.

While a spill anywhere along the pipeline may have impacts on threatened or endangered species as well as other trust resources, a spill that reaches Lake Sakakawea has the potential for significant impacts on threatened and endangered species as well as on other trust resources such as migratory birds and the interjurisdictional fishery of Lake Sakakawea. We recommend that the NEPA document and associated Section 7 ESA consultation include the following; a thorough evaluation of the proposed project's probability of a leak, either in Lake Sakakawea or elsewhere along the route; information about safety features included to minimize the likelihood of a leak; and a thorough spill response plan under all weather and water (ice, open water) conditions. The probability and consequences of a leak should inform your NEPA and Section 7 analysis.

Fish and Wildlife Service Property

The Service administers Waterfowl Production Areas owned in fee title as well as wetland and grassland easements throughout North Dakota. A review of Service realty records indicates that the Service does not have property interests in the planning area. However, the Service has an ongoing easement acquisition program and we recommend that for Williams and McKenzie Counties, you contact David Gillund, Project Leader, Crosby Wetland Management District, 10100 Hwy 42 NW, Crosby, ND 58730, (701-965-6488, david_gillund@fws.gov) for more specific information relative to Service easements and up-to-date realty records.

Migratory Birds

The MBTA prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing incidental take, the Service realizes that some birds may be killed during project construction and operation even if all known reasonable and effective measures to protect birds are used. The Service Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and agencies that have taken effective steps to avoid take of migratory birds, and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals, companies, and agencies that take migratory birds without identifying and implementing all reasonable, prudent, and effective measures to avoid that take. Individuals, companies, or agencies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

To the extent practicable, schedule construction for late summer or fall/early winter so as not to disrupt migratory birds during the breeding season, February 1 to July 15 (note that the least tern and piping plover breeding season extends through August 31). If work is proposed to take place during the breeding season, there may be take of migratory birds, their eggs, or active nests. Another alternative would be to have a qualified biologist conduct bird/nest surveys within five days prior to the initiation of construction. If active nests are identified, Hess should cease or suspend construction, maintain a sufficient buffer around active nests to avoid disturbing breeding activities and contact the Service immediately. The Service recommends that Hess implement all practicable measures to avoid all take, such as suspending construction where necessary, and/or maintaining adequate buffers to protect the birds until the young have fledged. The Service further recommends that if Hess chooses to conduct field surveys for nesting birds with the intent of avoiding take, that they maintain any documentation of the presence of migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the survey(s), and any avoidance measures implemented at the project site. Should surveys or other available information indicate a potential for take of migratory birds, their eggs, or active nests, the Service requests that Hess contact this office for further coordination on the extent of the impact and the long-term implications of the intended use of the project on migratory bird populations.

Our GIS analysis of the proposed project shows that it crosses a number of wetlands and native prairie. These habitat types provide important ecological services, including nesting and foraging habitat for migratory birds. Wetlands take at least two to three years for the vegetation to return, and at least this long for full functionality to be recovered. Native prairie can take a decade or more to recover, and even then, the replanted area is not as diverse as the original habitat. Additionally, non-natives which become established when the project area is disturbed may spread into the adjacent prairie.

To help ameliorate these impacts, the Service suggests that Hess develop a conservation plan for migratory birds to compensate for the impacts associated with the construction, operation, and maintenance of the proposed project. We recommend that the conservation plan include the following: an analysis of the type and acreage of each habitat impacted; a discussion of how impacts on native habitat (wetlands, native prairie, woody draws) will be avoided or minimized to the extent practicable; a plan to reclaim the native habitat that cannot be avoided; a monitoring plan to ensure that reclamation is successful and that non-natives do not take over; and a compensation plan for the impacts on native habitat that cannot be avoided. As part of the conservation plan, we recommend that Hess may consider purchasing perpetual grassland and wetland easements or perform additional habitat mitigation to ensure that the overall amount and quality of native habitat does not decline as a result of this project. In addition to benefitting migratory birds, the actions in the conservation plan may also benefit any candidate species that may be affected. Prairie conversion was a major factor in the decision to add the Sprague's pipit, Dakota skipper and Poweshiek Skipperling to the list of candidate species, so efforts to compensate for native prairie habitat loss could also be included as part of the conference on candidate species, if applicable.

Bald and Golden Eagles

Bald and Golden Eagles are federally-protected under both the BGEPA and the MBTA. The BGEPA prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs. The BGEPA provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. The BGEPA defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

The Service's overall management objective for golden eagle and bald eagle populations is to ensure no declines in breeding populations of either species. Numerous relatively minor disruptions to eagle behaviors from multiple activities, even if spatially or temporally distributed, may lead to disturbance that would not have resulted from fewer or more carefully sited activities. The accumulation of multiple land development projects or siting of multiple infrastructures that may be hazardous to eagles can cumulatively reduce the availability of alternative sites suitable for breeding, feeding, or sheltering, resulting in a greater than additive risk of take to eagles.

If your proposed activity is anticipated to result in take of bald or golden eagles, you must first apply for, and receive a permit to take prior to the taking. The determination of the likelihood of take will entail identifying the impacts of your proposed activity.

Recommendations Specific to Bald Eagles

The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there are little or no forested or topographical buffers, such as in North Dakota, distance alone must often serve as the buffer. To avoid/minimize impacts to nesting bald eagles from construction activities, the Service recommends: (1) keeping a minimum ½-mile buffer between the activity and any bald eagle nest if no landscape buffer exists; (2) keeping a minimum 660-foot buffer and maintaining a landscape buffer or natural areas between the activity and around nest trees; and (3) avoiding activities during the bald eagle breeding season (February 1 – July 15). The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest sites and provide for alternative or replacement nest sites. The Service's May 2007, National Bald Eagle Management Guidelines contains detailed information on protecting bald eagles from disturbance due to human activity. The guidelines can be accessed on the Service's website at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

Recommendations Specific to Golden Eagles

Information available to the Service regarding all existing and recent breeding territory data indicates that golden eagles may be present in your proposed activity area. Therefore, we recommend that you make every effort to avoid impacts to golden eagles. If activities are planned within a golden eagle territory, an assessment of the potential for take of a golden eagle will need to be made in conjunction with this office. This entails identifying your proposed activities that may occur in a golden eagle breeding territory, and sharing that information with this office.

The Service recommends that surveys be conducted prior to any on-the-ground activities to determine the extent of any golden eagle breeding territories in the area that may be affected by the proposed activity. The Service recommends that aerial nest surveys (preferably by helicopter) be conducted within a one-mile wide evaluation corridor or buffer to identify any, occupied and unoccupied eagle nest sites in proximity to the proposed project area, including any proposed new access roads. Aerial surveys should be conducted between March 1 and May 15, before leaf-out, so that nests are visible, and so their status (active or inactive) can be determined. A nesting territory or inventoried habitat should be designated as unoccupied by golden eagles ONLY after at least two complete aerial surveys in a single breeding season. Aerial surveys should include the following:

1. Due to the ability to hover and facilitate observations of the ground, helicopters are preferred over fixed wing aircraft, although small aircraft may also be used. The Service requests that Hess report any eagle nests found, as well as nests of any other raptors found during the survey. Whenever possible, two observers should be used to conduct the surveys.
2. Observations of any eagle nest sites should be recorded using GPS. The date, location, nest condition, activity status, and habitat should be recorded for each sighting.
3. We request that you share the qualifications of the biologist(s) conducting the survey, method of survey, and results of the survey with the Service.

Alternatively, Hess could conduct ground surveys to identify golden eagle nests within a one-mile wide evaluation corridor or buffer between March 1 and May 15. However, be aware that ground surveys are much less reliable than aerial surveys, even during leaf-off conditions, and typically may miss ¾ of eagle nests present. At least two ground observation periods lasting at least four hours or more per linear mile are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. If a golden eagle nest is observed, Hess should contact the Service for further consultation.

Please note that maintenance of a minimum ½-mile buffer around active nests may not be adequate to ensure avoidance of take of golden eagles. If Hess or the federal action agency, if applicable, in conjunction with the Service, determines that any level of take is anticipated, including take due to disturbance, you should work with this office to modify your activity to avoid the take, or apply for a take permit and include the following information:

1. Collect and synthesize relevant project and biological data.
2. Document project avoidance and minimization measures.
3. Quantify the anticipated take.
4. Submit an application and furnish all required information (Contact the Migratory Bird Office for more information at 303-236-4407)

High Value Habitat Avoidance

Our review of the National Wetland Inventory (NWI) maps and photographs indicates the proposed planning area includes a number of wetland basins. You may access the NWI data directly through their website (wetlands.fws.gov). The Service recommends that all wetlands and water bodies along the proposed project route, regardless of land ownership, be avoided through re-routing or by directionally drilling under the feature. Construction activities should be conducted in a manner that will avoid/minimize impacts to the existing habitat in the project area. The following recommendations are intended to reduce construction related impacts.

- Make no stream channel alterations or changes in drainage patterns.
- Locate construction to avoid placement of fill in wetlands.
- Replace unavoidable loss of wetland habitat with functionally equivalent wetland
- Install and maintain appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.
- In replanting native prairie or other grassland habitat, the Service recommends planting a diverse mixture of native cool and warm season grasses and forbs. Recent research has suggested that a more diverse mix, including numerous forb species, is not only ecologically beneficial but is also more weed resistant, allowing for less intensive management and chemical use. In essence, the more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants. The seed source should be as local as possible, preferably collected from the nearby native prairie. If seeds and/or plants are obtained commercially, we recommend obtaining seed stock from nurseries within 250 miles of the project area to ensure the particular cultivars are well adapted to the local climate. The Natural Resources Conservation Service (NRCS) compiles a list of vendors in North Dakota that supply conservation seed and plants at http://plant-materials.nrcs.usda.gov/pubs/ndpmcmt8152.pdf. Additional information on native grasses and forbs may be found at the NRCS Bismarck Plant Materials Center website at http://www.plant-materials.nrcs.usda.gov/ndpmc/.

Thank you for the opportunity to comment on this project. If additional information is required, please contact Carol Aron of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

cc: Lostwood Wetland Management District, Kenmare, ND, Attn: D. Gillund
U.S. Army Corps of Engineers, Riverdale, ND, Attn: R. Newman
U.S. Forest Service, Bismarck, ND, Attn: D. Neitzke
Bureau of Land Management, Lewistown, MT, Attn: L. Hassler
Migratory Bird Office, Denver, CO, Attn: K. Kritz

Stantec Consulting Services Inc.
2950 East Harmony Road Suite 290
Fort Collins, Colorado 80528
Tel: (970) 482-5922
Fax: (970) 482-6368

May 24, 2013

Bruce Kreft
North Dakota Game and Fish Department
406 Dakota Avenue
Riverdale, North Dakota 58565

Reference: Hawkeye Pipeline Project

Dear Mr. Kreft,

Stantec Consulting Services Inc. (Stantec), on behalf of the Bureau of Land Management (BLM), would like to request input on Hess Corporation's (Hess) proposed Hawkeye Pipeline Project (Project). Hess has filed a ROW application proposing to construct, operate, maintain, and decommission the proposed Project on federal lands in McKenzie and Williams Counties, North Dakota, as shown in **Figure 1**. The proposed project would include the construction of an approximately 25.5-mile-long pipeline system consisting of the following four segments:

- **Segment A** (10.6 miles): Hawkeye to North Charlson (South Side of the Lake) consisting of the conversion of an existing 8" HP Gas line to NGL service and installation of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment B** (2.5 miles) North Charlson (South Side of the Lake) to North Side of the Lake including tie-ins into three (3) existing 8" lines under Lake Sakakawea for HP Gas, HP Oil and NGL's as well as installation of two (2) 24 strand fiber optic lines.
- **Segment C** (2.4 miles) North Side of the Lake to Hofflund including conversion of an existing 8" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment D** (10.1 miles) Hofflund to Ramberg (HP Oil) and Silurian (HP Gas and NGL's) including conversion of an existing 10" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.

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In total, approximately 4.1 miles of the proposed alignment occurs on federal lands. The remaining alignment is proposed on private land and State of North Dakota-owned lands. The proposed pipeline would be buried and follow existing pipeline and utility easements to the extent practicable.

Species Information Request

Stantec has enclosed an overview map of the entire proposed route through west-central North Dakota. The Project is located in **McKenzie** and **Williams** counties, North Dakota..

Stantec will be evaluating Project-related and cumulative effects to both aquatic and terrestrial resources. Because of the mobility of wildlife species, resource issues will be examined beyond the proposed Project boundary. Stantec is requesting information on pertinent resource data from federal and state agencies in order to address potential impacts to aquatic and terrestrial species. We would like to provide an opportunity for the North Dakota Game and Fish Department (NDGFD) biologists to identify prominent terrestrial and aquatic resource issues or concerns that may occur within or adjacent to the Project area, focusing on species that either are sensitive, have high economic value (e.g., big game, waterfowl), or are considered important by the state (e.g., raptors, bats). Please forward this request to the applicable specialists (e.g., fisheries and/or wildlife biologists, habitat biologists, etc.) so they may provide information and input. Resource information provided by the NDGFD will be incorporated into the NEPA analysis for the proposed Project.

Stantec is also requesting sensitive resources information from the North Dakota Natural Heritage Inventory, U.S. Fish and Wildlife Service, and U.S. Forest Service. If you have any questions regarding this request, please call me at (970) 449-8627. Thank you in advance for your prompt response to this request.

Regards,

Matthew a Brekke

Matt Brekke
Senior Wildlife Biologist
Tel: 970-449-8627
Fax: 970-482-6368
matt.brekke@stantec.com

Attachment: Figure 1. Pipeline Segment Map

cc: Dave Fryda (NDGFD)
Lowell Hassler (BLM)
Peggy Roberts (Stantec)
Scott Patti (Stantec)

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2950 East Harmony Road Suite 290
Fort Collins, Colorado 80528
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Fax: (970) 482-6368

May 24, 2013

Dave Fryda
North Dakota Game and Fish Department
406 Dakota Avenue
Riverdale, North Dakota 58565

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Regards,

Matthew A Brekke

Matt Brekke
Senior Wildlife Biologist
Tel: 970-449-8627
Fax: 970-482-6368
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Attachment: Figure 1. Pipeline Segment Map

cc: Bruce Kreft (NDGFD)
Lowell Hassler (BLM)
Peggy Roberts (Stantec)
Scott Patti (Stantec)

No response received from letters to NDGFD dated May 24, 2013.

Stantec Consulting Services Inc.
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Fax: (970) 482-6368

May 24, 2013

Christine Dirk
North Dakota Natural Heritage Inventory
North Dakota Parks and Recreation Department
1835 Bismarck Expressway
Bismarck, North Dakota 58504

Reference: Hawkeye Pipeline Project

Dear Ms. Dirk,

Stantec Consulting Services Inc. (Stantec), on behalf of the Bureau of Land Management (BLM), would like to request input on Hess Corporation's (Hess) proposed Hawkeye Pipeline Project (Project). Hess has filed a ROW application proposing to construct, operate, maintain, and decommission the proposed Project on federal lands in McKenzie and Williams Counties, North Dakota, as shown in **Figure 1**. The proposed project would include the construction of an approximately 25.5-mile-long pipeline system consisting of the following four segments:

- **Segment A** (10.6 miles): Hawkeye to North Charlson (South Side of the Lake) consisting of the conversion of an existing 8" HP Gas line to NGL service and installation of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment B** (2.5 miles) North Charlson (South Side of the Lake) to North Side of the Lake including tie-ins into three (3) existing 8" lines under Lake Sakakawea for HP Gas, HP Oil and NGL's as well as installation of two (2) 24 strand fiber optic lines.
- **Segment C** (2.4 miles) North Side of the Lake to Hofflund including conversion of an existing 8" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.
- **Segment D** (10.1 miles) Hofflund to Ramberg (HP Oil) and Silurian (HP Gas and NGL's) including conversion of an existing 10" HP Gas line to NGL service and construction of new 10" HP Oil and 12" HP Gas lines as well as two (2) 24 strand fiber optic lines.

The proposed Hawkeye pipeline system would transport oil, gas and NGL from the existing Hawkeye Central Station through a transfer point at the existing North Charlson Compressor Station located south of Lake Sakakawea (Segment A). The system would use existing pipelines to transport oil, gas and NGL beneath Lake Sakakawea to the North River Crossing Compressor Station located north of Lake Sakakawea (Segment B). From the North River Compressor Station the pipelines would trend north before terminating at either the existing Hess Ramberg Truck Facility or the Silurian Compressor station, located approximately 8 and 7 miles respectively, south of Tioga, Williams County, North Dakota (Segments C & D). All connection points would occur within existing Hess facilities.

In total, approximately 4.1 miles of the proposed alignment occurs on federal lands. The remaining alignment is proposed on private land and State of North Dakota-owned lands. The proposed pipeline would be buried and follow existing pipeline and utility easements to the extent practicable.

Species Information Request

Stantec has enclosed an overview map of the entire proposed route through west-central North Dakota. The Project is located in **McKenzie** and **Williams** counties, North Dakota.

In order to address potential impacts to sensitive ecological resources as a result of implementing the proposed Project, Stantec would like to request sensitive wildlife species occurrence data within 5 miles of the Project route and sensitive plant species occurrence data within 3 miles of the Project route. In addition, Stantec would also like to give the North Dakota Natural Heritage Inventory an opportunity to provide comments on the Project.

Stantec is also requesting sensitive resources information from the North Dakota Game and Fish Department, U.S. Fish and Wildlife Service, and U.S. Forest Service. If you have any questions regarding this request, please call me at (970) 449-8627. Thank you in advance for your prompt response to this request.

Regards,

Matthew a Brekke

Matt Brekke
Senior Wildlife Biologist
Tel: 970-449-8627
Fax: 970-482-6368
matt.brekke@stantec.com

Attachment: Figure 1. Pipeline Segment Map

cc. Lowell Hassler (BLM)
Peggy Roberts (Stantec)
Scott Patti (Stantec)

Jack Dalrymple, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

June 5, 2013

Matt Brekke
Stantec
2950 East Harmony Road, Suite 290
Fort Collins, CO 80528

Re: Hess Hawkeye Pipeline Project

Dear Mr. Brekke:

Thank you for your interest in the Department's Natural Heritage Inventory biological conservation database. The Department did not conduct an environmental review for this particular project site but only conducted a search in our database which includes data only for species of concern and significant ecological communities. Other lands and projects that are owned or managed by the ND Parks & Recreation Department were not included in this search such as: state parks, state nature preserves, Recreational Trails Program projects, and Scenic Byways and Backways.

The North Dakota Natural Heritage Inventory (NDNHI) biological conservation database has been reviewed to determine if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within five miles of the project area. Based on this review, several occurrences have been identified within or adjacent to the project area. Please see the attached shapefiles and documents for more information. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service. For a description of the significant ecological communities please see this NatureServe link http://www.natureserve.org/library/northdakotasubset.pdf. For more information regarding any species or community please visit this link to the NatureServe web site http://www.natureserve.org/index.jsp.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Attached to this email message you will find the following documents:

- Shapefiles with heritage species and communities - points and polygons
    - The reason we have two shapefiles, a point and a polygon, is because several years ago we implemented a new software program called Biotics. Our data had always been point, but the new software allows polygons. We are in the process of changing our points to polygons but currently have a mix of the two shape types.
- *EORep_DS_fieldnames.xls* – a document to help explain field names in the heritage shapefiles
- *Methodology_guide_2012.doc* – a document with the NDNHI methodology and a guide to the species of concern lists
- *Animal SOC list 2012.xls* and *Plant SOC list 2012.xls* – NDNHI Species of Concern lists
- Shapefile with Land and Water Conservation Fund data within one mile of project area

Thank you for the opportunity to provide data for the project site. Please contact me if additional information is needed.

Sincerely,

Kathy Duttenhefner
Coordinator/Biologist
Natural Resource Program
Natural Areas Registry/Natural Heritage Inventory
701-328-5370 (office)
701-220-3377 (cell)
kgduttenhefner@nd.gov
R13-28

Play in our backyard!

AskFSA *Your Online Knowledge Base*

FARM SERVICE AGENCY

Submit a question to our support team.

Email Address *

taylor.robinson@stantec.

Subject *

CRP/GRP lands

Question *

I am currently writing a Public Service Commission Application for a proposed pipeline in Williams and McKenzie counties. I need to verify whether or not the pipeline crosses any CRP or GRP land. If you can aid in this effort it would be very helpful. If not, I would greatly appreciate being put into contact with someone who can.

Attach Documents

Browse...

Product

Select a product

Category

Conservation Programs

State Name

North Dakota

County Office Name

Williams and McKenzie

Continue...

No response received from FSA regarding website correspondence dated November 17, 2014.

Robinson, Taylor

From: Brand, Mike D. <mbrand@nd.gov>
Sent: Tuesday, November 18, 2014 9:02 AM
To: Robinson, Taylor
Cc: Haupt, Michael L.
Subject: RE: trust land

Taylor,

Mike Haupt will be working on this pipeline. Please be aware that the ND Department of Trust Lands will need to be consulted concerning the route on trust lands at the earliest possible time. Final approval of the route on Trust Lands is with the Department of Trust lands. By consulting us early on the proposed route, we can come to an agreement before the Public Service Commission approves the routing. If you wait too long you would have to go back to the Public Service Commission for an amendment to the route if our approved route does not match the PSC's approved route.

You can submit an online application for a route across trust land at http://www.land.nd.gov/surface/Right-of-Way.aspx I suggest that the application be submitted as soon as possible. If an application is not submitted, your surveyors will not have authorization to go onto the property.

If you have any questions, please call. We look forward to your application. An application is not a commitment but it simply makes sure that your project is in the queue and that good communication is maintained.

Sincerely,
Michael D. Brand, Ph.D., Director
Surface Management Division
ND Department of Trust Lands
701-328-1918

Note: You can track the real time status of your right-of-way application 24/7 at http://www.land.nd.gov/surface/right-of-way.aspx ***by entering either the ROW number or by entering at least the first three letters of the company name. By checking this site you can find the name, telephone number and email address of the person working on the application as well as its current status in real time.***

From: Robinson, Taylor [mailto:Taylor.Robinson@stantec.com]
Sent: Monday, November 17, 2014 4:14 PM
To: Brand, Mike D.
Subject: RE: trust land

Thank you very much. I appreciate your prompt response. I will be sending a more detailed map to Mr. Saude shortly.

Sinclerely,

Taylor Robinson
Environmental Scientist
Stantec
2950 East Harmony Road Suite 290 Fort Collins CO 80528-3429
Phone: (970) 449-8636 ext 636
Cell: (970) 214 6407
Taylor.Robinson@stantec.com

From: Brand, Mike D. [mailto:mbrand@nd.gov]
Sent: Monday, November 17, 2014 2:54 PM
To: Robinson, Taylor
Cc: Saude, Jerry M.
Subject: RE: trust land

Jerry Saude from our office will provide that information for you.

Sincerely,
Michael D. Brand, Ph.D., Director
Surface Management Division
ND Department of Trust Lands
701-328-1918

From: Robinson, Taylor [mailto:Taylor.Robinson@stantec.com]
Sent: Monday, November 17, 2014 3:52 PM
To: Brand, Mike D.
Subject: trust land

Hello Mr. Brand,

I am currently writing a Public Service Commission Application for a proposed pipeline in Williams and McKenzie counties. I need to verify whether or not the pipeline crosses any Trust land. If you can aid in this effort it would be very helpful. If not, I would greatly appreciate being put into contact with someone who can.

The pipeline overview map is attached. I can provide any additional GIS layers you may require.

Thank you.

Taylor Robinson
Environmental Scientist
Stantec
2950 East Harmony Road Suite 290 Fort Collins CO 80528-3429
Phone: (970) 449-8636 ext 636
Cell: (970) 214 6407
Taylor.Robinson@stantec.com

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Please consider the environment before printing this email.

Robinson, Taylor

From: Saude, Jerry M. <jsaude@nd.gov>
Sent: Tuesday, November 18, 2014 7:24 AM
To: Robinson, Taylor
Subject: RE: PSC Pipeline application questions concerning School Trust Lands
Attachments: 2014 MCK WIL Pipeline1.xlsx

I have only found one section of school trust land that this route will impact. Please note the attached spreadsheet of the route I identified, based on the map you supplied to me.

I would encourage you to review the existing Rights-of-Ways that are active on this section 16. You can access our inventory by search the section on this location.

You can also apply online by following the instructions on our ROW and Surface Damage Agreement page.

Please reply to this email address or call us at your convenience.

Jerry M Saude
Trust Land Specialist
ND Department of Trust Lands
Investing for Education- *Since 1889*
www.land.nd.gov 701.328.1919

From: Robinson, Taylor [mailto:Taylor.Robinson@stantec.com]
Sent: Monday, November 17, 2014 4:32 PM
To: Saude, Jerry M.
Subject: RE: PSC Pipeline application questions concerning School Trust Lands

Thank you very much. I really appreciate it.

Taylor Robinson
Environmental Scientist
Stantec
2950 East Harmony Road Suite 290 Fort Collins CO 80528-3429
Phone: (970) 449-8636 ext 636
Cell: (970) 214 6407
Taylor.Robinson@stantec.com

Please consider the environment before printing this email.

From: Saude, Jerry M. [mailto:jsaude@nd.gov]
Sent: Monday, November 17, 2014 3:30 PM
To: Robinson, Taylor
Subject: RE: PSC Pipeline application questions concerning School Trust Lands

This will be fine. I'll start on it in the morning and send a spreadsheet of trust land tracts that are proposed to be crossed by these projects.

From: Robinson, Taylor [mailto:Taylor.Robinson@stantec.com]
Sent: Monday, November 17, 2014 4:26 PM
To: Saude, Jerry M.
Subject: RE: PSC Pipeline application questions concerning School Trust Lands

Hello Mr. Saude,

Attached is a more detailed map of the pipeline route. It includes township/range etc. Let me know if this does not include enough data. Thank you very much for your assistance.

Sincerely,

Taylor Robinson
Environmental Scientist
Stantec
2950 East Harmony Road Suite 290 Fort Collins CO 80528-3429
Phone: (970) 449-8636 ext 636
Cell: (970) 214 6407
Taylor.Robinson@stantec.com

From: Saude, Jerry M. [mailto:jsaude@nd.gov]
Sent: Monday, November 17, 2014 3:01 PM
To: Robinson, Taylor
Subject: PSC Pipeline application questions concerning School Trust Lands

Mike Brand asked me to assist you in your routing questions. I looked at the map, but I will need a map that shows Township, Range and Sections in order to determine if your proposed route crosses our surface.

If you have a ground survey or a more detailed map, I can work from that also. As you may know, most of our land will be in sections 16 and/or 36 in these counties.

Jerry M Saude

Trust Land Specialist
ND Department of Trust Lands
Investing for Education- *Since 1889*
www.land.nd.gov 701.328.1919