

VANTAGE WEST SPUR LATERAL PIPELINE
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Exhibits

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1.0 Introduction

This Environmental Protection Plan (EPP) describes environmental measures to be used during construction of the Vantage West Spur Lateral Pipeline in order to minimize potential construction related impacts. The EPP contains environmental best management practices (BMPs) to be implemented by the pipeline contractor(s).

Construction of the Vantage West Spur Lateral Pipeline is scheduled to take place in the third and fourth quarter of 2015 and may extend into the first quarter 2016. Clean-up and reclamation of disturbed portions of the right-of-way (ROW) will be conducted immediately following construction or as soon as soil and weather conditions permit.

This EPP will be included in the contract documents. Selected Contractors and Vantage Pipeline US LP (Vantage) Representatives will be provided with copies of the approved EPP, including the most recent updates and revisions. Unless otherwise specified, the primary construction contractor (Contractor) will be responsible for implementing the requirements of the EPP. All contractors and subcontractors engaged in the construction are expected to follow the EPP requirements. Vantage representatives will provide pipeline construction oversight.

The following sections of the EPP include: pre-construction activities; construction activities; clean-up and reclamation; post construction monitoring; emergency and project contacts; and contingency plans. In addition, the Emergency Response Plan, Spill Prevention, Control, and Countermeasures (SPCC) Plan, Stormwater Pollution Prevention (SWPP) Plan, Waste Management Plan, and Contaminated Soils Management Plan are Exhibits to this EPP document.

2.0 Preconstruction Activities

2.1 Permitting

Required licenses and permits shall be obtained prior to construction. The North Dakota Public Service Commission (PSC) is responsible for siting facilities such as power plants and transmission lines and enforcement of safety requirements for intrastate distribution and transmission of natural gas.

2.2 Pre-Construction Meeting

This meeting will provide supervisory personnel with an overview of the key environmental issues, contingency planning, and rules and regulations applicable to the Vantage West Spur Lateral Pipeline construction. In addition, periodic meetings will be conducted with agency representatives to communicate permit related activities.

Vantage personnel and Contractor support staff will possess a thorough understanding of pipeline planning, construction methods, and their potential environmental impacts, including the timely implementation of the EPP during all critical phases (topsoil stripping and replacement, grading, soils handling, watercourse and wetland crossings, reclamation, and clean-up). Field support staff, including, but not limited to biologists, wetland specialists, soil scientists, reclamation scientists, and cultural resource specialists will be available for consultation throughout the project.

2.3 Line List

Vantage will provide the Contractor with a construction Line List that describes special requirements (e.g., soil salvage, seeding, road crossings, restoration measures, fencing requirements, etc.) as determined from the alignment location and design, in addition to any permit requirements and Landowners stipulations. The Contractor must comply with these special requirements, or take all

appropriate precautions to protect livestock and crops affected by construction. The Line List reflects requirements and comments provided by Landowners; however, it is not a comprehensive list of construction requirements. The Line List must be considered in conjunction with other project documents. The Contractor shall not make any agreements between the Contractor and the Landowner(s) without approval from Vantage.

2.4 Pre-construction Weed Control

A pre-construction weed species survey will be conducted on all lands along the pipeline route. All construction equipment shall arrive and leave the pipeline construction area in a weed free condition to minimize the risk of weed introduction. Recommendations made in the pre-construction weed survey shall be followed to limit the risk of transporting weed seeds from weed infested areas. In addition, local county officials will be contacted to obtain information about weed control and issues.

Weed growth on soil stockpiles will be monitored during construction activities. In addition, spot spraying of herbicides or weed mowing may be considered, if warranted.

2.5 Construction Stipulations

Stipulations (STIPs) constitute restrictions or a restricted activity period for construction activities. For example, a stipulation might require construction activities to stop during a specific time of year due to bird nesting. STIPs will be identified prior to initiating construction activities. All construction activities and schedules must comply with stipulations. Stipulations related to wildlife and threatened and endangered species are presented in EPP Section 8.9.

2.6 Conditions Requiring Contingency Planning

Various conditions that would require implementation of environmental protection during construction would be mitigated using the contingency plans explained in EPP Section 8 below, and the Cultural Unanticipated Discoveries Plan (Section 8.10). The conditions that may require the implementation of contingency plans are described in sections 2.6.1 to 2.6.12 below. All key personnel on the construction ROW should have an understanding of the conditions outlined below that would require contingency plan implementation, as well as any associated monitoring and reporting requirements.

2.6.1 Wet Weather

Construction activities will be suspended or modified in the event of excessively wet soil conditions in order to minimize terrain disturbance, compaction, soil structure damage, erosion, and sediment discharge. Contingency measures will be initiated if the following indicators occur: excessive rutting, wheel slip, build-up of mud on tires and cleats, and excessive tracking of mud down the road as vehicles leave the construction area. The wet weather shut-down decision will be made by Vantage as specified in the Soil Conditions Contingency Plan (Section 8.3).

2.6.2 Water Withdrawal and Dewatering

If required, the North Dakota Department of Health (NDDH) would be contacted regarding allocations for temporary water usage for the purpose of hydrostatic pressure testing. If temporary water use permits are needed, the Contractor would be required to comply with all permit requirements.

A temporary discharge permit for construction dewatering (NDDH) would be required for trench dewatering. The Contractor would be required to comply with the permit limits, and monitoring and report requirements.

2.6.3 Spill Prevention

The U.S. Environmental Protection Agency (EPA) Oil Pollution Prevention regulation (40 CFR part 112), which includes requirements for specific facilities to prepare, amend, and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans is applicable to the construction of the Vantage West Spur Lateral Pipeline (Exhibit J.3). The SPCC rules are applicable to any owner or operators of non-transportation-related facilities that: drill, produce, store, process, refine, transfer, distribute, use, or consume oil or oil products, and could reasonably be expected to discharge oil into U.S. navigable waters or adjoining shorelines. Facilities are subject to the SPCC rule if they meet at least one of the following capacity thresholds: aboveground oil storage capacity greater than 1,320 gallons, or completely buried oil storage capacity greater than 42,000 gallons. The following are exempt from the rule: completely buried storage tanks subject to all the technical requirements of the underground storage tank regulations, containers with a storage capacity less than 55 gallons and motive power containers. Further, mobile fuelers used during construction are exempt from sized secondary containment requirements, although general secondary containment requirements apply.

The details for the contractor specific SPCC plan and compliance with the SPCC rules will be developed for the specific storage requirements, equipment, activities and other factors that are controlled by the contractor. Therefore, a site specific SPCC Plan will be prepared by the Contractor so specific factors can be incorporated in the plan. A general SPCC plan is included as Exhibit J.3 to this EPP.

The Contractor(s) shall ensure that during the course of the project, no release of hazardous substances including fuel, lubricating and hydraulic fluids, methanol, antifreeze, herbicides, or other chemicals are occur on the ground or into any watercourse. In the event of a spill of any quantity, a spill report and spill cleanup will be implemented immediately as described in the spill contingency plan guidelines (Section 8.1). The SPCC plan for construction shall be prepared and administered by the primary construction contractor and should be developed to address the site specific conditions related to the contractors equipment, fueling, maintenance and fuel storage requirements. The North Dakota Department of Health (NDDH) has jurisdiction over spill reporting. The NDDH requires reporting in the event of a reportable spill. The required form is available at: <http://www.ndhealth.gov/ehs/eir/NonOilfield/>.

2.6.4 Equipment Refueling and Servicing

Spills resulting from equipment fueling and maintenance activities may result in discharge to surface and groundwater, and impacts to soils. Vantage would implement BMPs included in the SPCC Plan and the Storm Water Pollution Prevention (SWPP) Plan to mitigate potential impacts (Exhibit J.3 and J.4). Secondary containment would be placed beneath servicing and refueling equipment with the potential for accidental spills (e.g., oil changes, servicing of hydraulic systems, temporary tanks). Refueling, oil changes, and lubricating of mobile construction equipment would be conducted a minimum of 100 yards away from waterbodies or watercourses to minimize the potential for impacts. Refueling would be conducted on roads rather than on agricultural land, if feasible.

Waste oil, lubricants, and filters will be collected in labeled drums and recycled or disposed of at an approved location. Contractors will be trained on the requirements of the SPCC Plan (Exhibit J.3) and the Emergency Response Plan (Exhibit J.2). Contingency measures will include spill response and reporting, spill sorbent material, and recommended spill cleanup materials for construction.

The following measures will be employed to minimize the risk of fuel spills in water, where stationary equipment is required to operate within 100 yards of a sensitive area (e.g., wetland).

- all containers, valves, hoses, nozzles, and lubrication systems are leak free;
- all fuel nozzles are equipped with automatic shut-offs;

- no equipment washing will be allowed within 100 yards of water courses or water bodies;
- operators will be present during fueling operations within visibility of both ends; and
- fuel remaining in the hose is returned to the storage tank.

2.6.5 Noise

Equipment will be in good working condition to minimize unnecessary noise (i.e., mufflers). Pipeline construction activities performed near populated areas or rural residences will be conducted during daylight hours.

2.6.6 Wildlife Stipulations

During pipeline construction, all actions must comply with the Endangered Species Act (ESA), which includes coordination with the U.S. Fish and Wildlife Service (USFWS) and the prevention of actions that may affect a threatened or endangered species. Additionally, all actions during pipeline construction must comply with the Bald and Golden Eagle Protection Act (BGEPA), which prohibits anyone without a permit from taking bald or golden eagle including their parts, nests, or eggs. Likewise, all actions during pipeline construction must also comply with the Migratory Bird Treaty Act (MBTA) which prohibits the taking, killing, possession, and transportation (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. Stipulations to mitigate potential impacts to the listed threatened and endangered species, critical habitat, golden and bald eagles, and migratory birds are presented in the Wildlife Contingency Plan (EPP Section 8.9).

2.6.7 Garbage

All construction garbage and debris will be collected and disposed of on a routine basis (weekly) at an approved facility. Waste containers will accompany each working unit. All construction personnel will follow guidelines established in the general Waste Management Plan (Exhibit J.5) and the Contractor's site-specific Waste Management Plan.

2.6.8 Construction Roads and Access

Construction activities and traffic will be confined to the ROW areas. All roads damaged by construction vehicles will be repaired to pre-construction conditions. All traffic safety and road closure regulations will be followed in accordance with North Dakota Department of Transportation (DOT) or specific county requirements. Access route with known soils prone to compaction, rutting or other conditions that may be problematic would be identified during the pre-construction meeting.

2.6.9 Erosion and Sedimentation

Soil erosion and sedimentation will be controlled by implementing stormwater best management practices designated in the Stormwater Pollution Prevention Plan (SWPP Plan, Exhibit J.4). Vantage will obtain a Construction Stormwater Permit from the North Dakota Department of Health (NDDH) prior to the commencement of construction. The SWPP Plan will be prepared at that time in accordance with requirement of the NDDH. The construction Contractor will be responsible for implementing and monitoring the SWPP Plan and construction related BMPs during construction. A Vantage contractor will be responsible for monitoring and maintaining the SWPP plant and BMPs following construction until site stability is reached.

2.6.10 Wildlife and Livestock Encounters

Construction personnel are not allowed to have dogs on the construction ROW. Any incidents with or collisions with wildlife will be reported to the appropriate agency. Vantage and contractors personnel are not allowed to possess firearms or to hunt while engaged in construction activities.

2.6.11 Fires

Construction personnel will be made aware of proper disposal methods for ignition sources including welding rods, cigarette butts, and other flammable materials. Smoking will be permitted in specified smoking areas only. Vehicles will be in good working condition to prevent fuel leaks or other conditions that may result in fire. Precautions will be made for vehicles parked on vegetation stubble or tall grass. A water truck will be maintained on the ROW when the fire hazard is high. Mowing may be required in certain situations to alleviate fire risks. Construction crews will be equipped with fire-fighting equipment and extinguishers capable of controlling wildland fire that may occur as a result of their activities. Contact information for fire departments will be reviewed during the Pre-Construction meeting.

2.6.12 Cultural Resources

Cultural sites discovered during construction will cause pipeline construction in the proximity of the cultural site to be suspended immediately. Work in these locations would be discontinued until permission is granted by the appropriate agency as defined in the Cultural Resources Heritage Contingency Plan (Section 8.10).

2.7 Notification of Concerned Parties

2.7.1 Regulatory Agencies:

Notification of appropriate regulatory agencies will be conducted prior to construction. Coordination with key agency contacts will be maintained until project completion. Prior to the preconstruction meeting a list of personnel to serve as contacts for each agency or company will be created and provided to the Contractor. The following would be periodically contacted during the construction project:

- U.S. Army Corp of Engineers
- Divide County
- North Dakota Department of Health, Division of Water Quality
- North Dakota Department of Health, Environmental Health Section
- North Dakota Department of Transportation
- North Dakota Game and Fish
- North Dakota Public Service Commission
- North Dakota State Land Department
- Private Landowners
- USDA Farm Service Agency
- USDA Natural Resource Conservation Service
- U.S. Fish and Wildlife Service
- Utility companies
- Williams County

2.7.2 Landowner Notification

All landowner notifications and coordination will be made by land agents representing Vantage. The land agents will work closely with Vantage and the Contractor to develop a structured approach for landowner notification and coordination. Land agents will be available at all times during construction for landowner coordination. Protocols for landowner coordination will be addressed in the pre-construction meeting.

3.0 Construction Activities

3.1 Miscellaneous

3.1.1 Surveying

Boundaries of the ROW and any identified additional temporary workspace (TWS) would be staked. No additional clearing or grading will be allowed beyond the stakes unless an additional TWS authorization is obtained from the appropriate Vantage West Spur Lateral Pipeline representative. The ROWs will be staked so that watercourses and roads are crossed according to crossing agreements. Any required runoff controls will be staked to prevent erosion and stormwater problems.

Extra TWS locations will be identified on construction and environmental alignment sheets with examples including:

- sharp ROW bends, rail crossing, and road crossings;
- locations where additional soil handling and stockpiling may be required; and
- watercourse crossings to ensure sufficient room to permit storage of topsoil and spoil.

3.1.2 Fences

Temporary fencing and gates will be installed where practical or as requested by the landowner/lessees where necessary to maintain livestock containment.

3.1.3 Line Crossings

Topsoil will be salvaged prior to excavating the pipeline trench. Utility lines will be located and “daylighted” if crossings are required. In addition, hydrovac equipment will be available to assist with trenching operations through localized wet areas to minimize rutting.

3.1.4 Soil Salvage for Construction Purposes

Soil will be salvaged to the extent designated on alignment sheets. Soil salvage information is based on soil mapping unit information provided by the USDA Natural Resources Conservation Service (NRCS).

3.1.5 Road and Railroad Crossings

Roads and railroads will be crossed by either open cut or boring methods. Borrow ditch ramps and culverts will be installed in specific locations according to approved details (Exhibit J.1).

3.1.6 Watercourse Vegetation, Trees and Shrubs

Vegetation will be maintained in ecologically sensitive areas (e.g., wetlands, along watercourse) unless it is necessary to remove. Trees and vegetation will be removed in a manner to reduce damage to watercourse banks and beds, and adjacent trees. Shrubs will be salvaged for replanting or replaced within the riparian zone to provide bank stabilization. Grubbing will be restricted to within 10 feet of watercourse banks except along the trench line. Trees and shrubs removed during construction will be

replaced in accordance with North Dakota Public Service Commission requirements. Trees damaged during construction activities will be immediately removed.

3.1.7 Hay and Crops

Arrangements will be made for landowner/lessees to harvest hay or cereal grain crops prior to soil stripping, if possible. Mowing may occur along the ROW to facilitate topsoil handling.

3.2 Grading and Topsoil Salvage

3.2.1 Grading

Grading operations will be minimized along the pipeline route to reduce the erosion potential and the amount of reclamation required once the pipeline has been installed. Topsoil salvage plans, that detail how soil materials are to be stockpiled, are described on the typical detail (Exhibit J.1).

3.2.2 Roadway Ditch Ramps

When ramp construction is required for crossing roadway ditches or other obstacles, ramp construction will use only subsoil material. Topsoil salvage would be completed prior to placing fill for temporary ramps.

3.2.3 Watercourses and Wetlands

Grading operations will be performed in a manner to minimize sedimentation of watercourses and wetlands. Shrubs will be salvaged or replaced in accordance with agency requirements. Soil salvage in areas traversing watercourses and wetlands would be limited to removal of soil over the trench line only.

3.2.4 Temporary Berms and Silt Fences

Temporary berms and silt fence(s) will be placed near the base of approach slopes to wetlands and watercourses following soil salvage and grading. Inspections of temporary erosion control structures will be performed on a daily basis during construction and repaired, if warranted, in accordance with the SWPP Plan.

3.3 Cut and Fill

Fill material will not be placed within 50 feet of the crest of the slopes unless otherwise advised by a geotechnical engineer. Cut and fills slopes will be maintained within the ROW and cut slopes would be constructed in accordance with Occupational Safety and Health Administration (OSHA) standards. Grading will not be permitted in proximity to known cultural or archaeological sites. If required, a cultural resource specialist will be available during construction through areas of high archaeological value (see Section 8.10).

3.4 Topsoil Salvage and Storage

Soil salvage requirements are shown on the typical details (Exhibit J.1). Limiting factors to the soil salvage operations include the amount of topsoil, identification of boundary between topsoil and subsoil, watercourse and wetlands areas, and specific request(s) for alternative topsoil handling by landowner or lessee.

3.4.1 Topsoil Salvage Schedule

Weather conditions (e.g., high wind conditions) may require postponement of pipeline trenching and related topsoil salvage to minimize the period that soil is exposed to wind. Vantage West Spur Lateral

Pipeline representatives will determine when it is necessary to stop work due to wind erosion. Soil Erosion Contingency Plan options to mitigate erosion are described in Section 8.4.

3.4.2 Stripping Depth

Soil salvage of all available topsoil and subsoil material will be implemented in the locations identified on the construction alignment sheets and as described on the typical details (Exhibit J.1). If unexpected soil conditions are encountered, Vantage West Spur Lateral Pipeline representatives would be consulted for appropriate construction methods.

3.4.3 Topsoil Salvage

Soil salvage for cultivated prime farmland, will include stockpiling of topsoil, subsoil, and spoil material in separate windrows. Prime farmland locations have been identified on the NRCS soil survey data for Williams and Divide Counties. For all other lands (e.g., pastureland, non-prime farmland), soil salvage will be composed of two stockpiled windrows, one for topsoil and the other for subsoil/spoil material.

Various options for soil salvage are presented in the Typical Details (Exhibit J.1), and include:

- Option 1- Full width stripping (for cultivated lands, or grassland and pasture land)
- Option 2- Full width stripping (for cultivated lands, or grassland and pastureland) same as Option 1 with alternative stockpile locations.
- Option 3- No stripping within the TWS portion of the ROW (pasture or grassland).
- Option 4- Full width stripping with salvage of the A and B soil horizon (prime farmland).
- Option 5- Limited stripping over the trench line (wetland and watercourse crossings and frozen conditions).

Typical details to be used during pipeline construction are provided in Exhibit J.1, but variations of the above options may be used when the final design is completed and during construction of the pipeline.

3.4.4 Subsoil Beneficial Use and Salvage

Subsoil would be borrowed from larger areas where topsoil is stripped (i.e., crossings, graded areas) for beneficial uses such as ramp or berm construction. In areas designated as prime farmland, A and B soil horizons would be salvaged prior subsoil excavation (Exhibit J.1).

3.4.5 Windrow Gaps

Soil salvage windrow gaps will be left in obvious drainage courses and where requested to allow farm machinery, livestock, and wildlife the ability to cross the ROW. Gaps will be provided at crossings where materials are stockpiled in the TWS.

3.5 Trenching and Stringing

3.5.1 Timing

Pipeline construction work is most desirable during dry soil conditions to ensure that there is low enough soil moisture to allow trenching without causing excessive rutting or soil compaction.

3.5.2 Gaps in Pipe Set-Up

Gaps in pipe set-up, spoil piles, and trenching will be made to allow crossing opportunities for livestock, wildlife, and farm equipment within the ROW. Gaps in pipe shall be coincident with gaps in topsoil and

spoil windrows. Gaps will also be located at obvious drainages, crossings for livestock, wildlife, and farm equipment.

3.5.3 Trenching

Trenching width will be according to specifications to minimize disturbed soil and windrow requirements. Open ditch length at any one time will be minimized to reduce the risk of trench sloughing and wildlife/livestock accidents. In addition, a 2:1 sloped ramp will be built at the end of the trench each day to allow accidentally trapped wildlife/livestock with an escape route. The trench will be inspected at least twice each day for trapped wildlife/livestock.

3.5.4 Drain Tile

Locations of any drainage tile or culverts will be marked prior to pipeline construction activities to prevent clogging with soil or debris.

3.5.5 Trench Dewatering

Trench dewatering may be required periodically during high rainfall events. Water may be pumped into an approved dewatering structure or onto a stable and well-vegetated area at least 100 yards from a watercourse or wetland

3.5.6 Topsoil/Subsoil Separation

Topsoil windrow piles will be kept separate from subsoil and/or spoil piles to prevent mixing.

3.5.7 Unstable Trench Walls

Trenching may result in soil sloughing in certain areas based on soil characteristics. If sloughing is evident, a wider area for soil storage may be necessary to avoid the potential mixing of segregated soils. When unstable trench conditions occur, the time in which the trench is left open should be minimized to reduce the risk of sloughing.

3.6 Backfilling

3.6.1 Install Trench Breakers

Installation of trench breakers (e.g., sack, foam, or bentonite) may be warranted on moderate and steep slopes and at the edge of watercourses or wetlands (see details Exhibit J.1). Exact location of trench breakers will be determined in the field based on slope length and slope angle.

3.6.2 Watercourses/Wetlands

Where the trench has the potential to impact a wetland or watercourse, trench breakers will be installed to maintain the original hydrology. Care will be taken to ensure that trench crowns or subsidence are not left in these hydrological sensitive areas

3.6.3 Backfill Trench

Backfilling of the trench will be completed according to project specifications. Mixing of topsoil with spoil is not permitted in any trench backfilling location. Equipment with fine depth control will be used in backfilling operations. In general, the lower lift consists of placement of spoil and subsoil material prior to the placing the upper lift. Compact fill with equipment capable of adequately compacting the trench.

3.6.4 Excess Trench Backfill Material

Excess backfill and topsoil material from the stripped portion of the ROW will be placed or feathered out over the stripped area in a manner not to cause excessive subsidence of the trench.

3.6.5 Crown Trench

Excess soil will be placed forming a crown over the trenching to allow for settlement. Trench crown breaks will be located in obvious drainages and wherever seepage occurs to minimize interference with natural surface water drainage.

3.6.6 ROW Contouring

Grading of the ROW will be performed with a goal of restoring the contours to pre-construction grades and to reestablish the original drainage patterns. Special attention will be paid to areas comprised of wetlands, and watercourses. All temporary construction fill (e.g., ramps) will be removed.

3.6.7 Drainage Tiles

Drainage tiles or culverts damaged during trenching will be replaced.

3.7 Hydrostatic Testing

Once the pipeline has been installed, hydrostatic testing will be conducted to evaluate the integrity of the pipeline. The specific steps outlined for the hydrostatic testing procedures are as follows:

3.7.1 Notification, Sampling, and Reporting

Ensure the proper permit requirements are completed prior to dewatering activities. Adhere to applicable notification, sampling, and reporting requirements for discharge (if required) by the North Dakota Department of Health.

3.7.2 Equipment and Workers

Ensure that an adequate number of workers and equipment are available on-site to repair any rupture, leak, or erosion problem that arises during testing.

3.7.3 Isolate Pumps

Test pumps and lined storage tanks will be isolated to prevent spills of fuels or lubricants.

3.7.4 Pigging Debris

Pigging debris will be transported for approved disposal (i.e., landfill).

3.7.5 Dewatering

Proper dewatering procedures will be used to minimize erosion, flooding, and risk of water quality impacts.

3.7.6 Daylighting

Applicable measures for pipeline exposure (daylighting) monitoring will be adhered to during pipeline inspections and repairs.

3.8 Watercourse and Wetland Crossings

Pipeline construction in or near watercourses or wetlands requires special consideration due to unstable soils and protection of natural ecosystems. Whenever possible, construction activities will be minimized in wetlands including reduction of temporary work areas. Pre-construction planning will consider construction methods, timing, erosion control, and restoration/reclamation. The contractor must use the construction ROW, TWS and approved roads to access watercourse or wetland areas.

3.8.1 General Requirements

Storage of Fuels and Other Materials

No storage of fuels, lubricating oils, hazardous materials, or chemicals will be permitted in, or within 100 yards from a watercourse or wetland boundary.

Refueling and Fuel Handling

Refueling and fuel handling will be conducted in upland areas at least 100 feet from watercourse or wetland boundaries. If boring equipment is located within 100 feet of a water body, refueling would occur in accordance with requirements outlined in the SPCC Plan (Exhibit J.3).

Clearing

Clearing the construction ROW in a watercourse or wetland will be limited to topsoil salvage over the trench line. A minimum vegetative buffer of 10 feet would be provided outside of the stream bank. Typical details for flowing and non-flowing watercourse crossings are presented in Exhibit J.1. Requirements for stormwater BMPs are provided in Exhibit J.1 and in the SWPP Plan (Exhibit J.4). In locations where the ROW traverses an adjacent wetland, a buffer zone would be maintained between the wetland and the construction work area. Sediment controls in accordance with the SWPP Plan would be implemented.

Vegetation and Shrub Salvage

Live shrubs or bushes and other wetland species from the banks of all watercourses and wetland will be salvaged, if possible, in accordance with NDGF requirements.

Temporary Berms and Silt Fences

Temporary sediment control structures (berms and silt fencing) will be installed on approach slopes during crossing construction. Structures will be repaired before the end of each working day, or as needed.

All trench related drilling equipment will be equipped with spill containment kits (e.g., sorbent pads and pigs) prior to commencing construction. In addition, spill response equipment will be available for containment of fluids.

3.8.2 Watercourse or Wetland Construction Techniques

Recommended pipeline watercourse or wetlands crossing methods are referenced in the alignment sheets. In general, for non-flowing watercourse crossings traversed by the Vantage West Spur Lateral Pipeline the open cut crossing method would be used. Directional boring may be required if water is present and the open cut method is not feasible at the time of construction. Details of boring methods are provided in Exhibit J.1. Pre-construction planning will help determine equipment requirements and open cut methods for each watercourse or wetland area. Consideration should be given to soil type, moisture content,

potential for rutting, compaction, and trench sloughing. Pre-built pipe runs will generally be integrity tested prior to initiating watercourse or wetland construction.

The locations of anticipated watercourse and wetland crossings are identified in Exhibit F. A description of each crossing is provided and identifies wetland type and potential for open water and flooded conditions. Ten (10) waterbodies are classified as ephemeral or intermittent waterways on the preferred route (9 on alternative route), and 61 wetlands on preferred route (69 alternative route) are Type 1 (seasonally flooded). Impacts to these areas will be minimized by constructing the pipeline during the dry season.

Table J- 1. Wetlands and waterbodies within the project 500-ft corridor.¹

	Preferred Route		Alternative Route	
	Number	Area (acres)	Number	Area (acres)
Totals Wetlands	62	19.5	69	23.2
Total Waterbodies	11	-	10	-

¹ Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated. Not all the wetlands within the 500 foot corridor will be impacted, see Exhibit F.

Open Cut Crossings

Open cut crossing will be used for non-flow and flowing waterways unless it is determined by the project engineer that use of the open cut method is not feasible. Following open cut crossings, native material/washed backfilled gravel will be placed back into the crossing as soon as possible after lowering-in of the prefabricated pipeline.

For watercourse or wetlands crossing with standing water and saturated soils, the pipeline will be assembled in upland areas. Excavation of the trench may be performed by using a backhoe supported on geotextile materials or timber mats. The prefabricated section of pipe will be positioned across the wetland and lowered into the trench followed by backfilling.

Horizontal Directional Bore Method

Directional boring methods may be used to install underground pipe runs in a prescribed path below the surface. The benefit of the push/pull boring method is the minimal impact to the surrounding area. This method allows for crossing under watercourses or roadways where open trench pipe installation is not feasible. A directional bore machine pushes a bore head, connected to hollow drill pipe, into the ground at an angle to excavate the pilot borehole. As each joint of drill pipe is pushed into the ground, a new one is added behind. Non-hazardous drilling fluid, composed of a mixture of bentonite clay and water, is used for drilling lubrication. Once the bit reaches the exit point, it is replaced with a reamer and the hole is enlarged by operating the drill in the reverse direction. After enlarging the bore, the product pipe is pulled from the exit point back to the boring machine. Once the pipe is installed, the exit and entry points are excavated if necessary with connections made as needed.

3.8.3 Construction Monitoring

Watercourse and wetlands crossings will be monitored for immediate effects of crossing construction to ensure the effectiveness of prescribed mitigation measures. Photo documentation of before and after watercourse and/or wetlands condition will be completed to establish baseline conditions and to evaluate restoration.

3.8.4 Bank Protection

Installation of temporary erosion and sediment control measures, such as silt fencing, rip-rap, temporary diversion berms, sandbags, or straw bales may be necessary to maintain bank stability. Trench breakers may also be installed if banks are composed of erodible materials.

3.8.5 Reclamation

Banks and approaches of all watercourses are to be reclaimed with appropriate seed mix identified in Section 4.7 below. Stormwater controls will be maintained at the base of approach slopes until revegetation of the ROW is complete in accordance with the SWPP Plan. Rolled erosion control products can be used if deemed necessary by the Vantage representative.

3.8.6 Post-Construction Monitoring

Erosion and sediment control measures will be monitored frequently and after significant precipitation events or rapid melt of snow as specified in the SWPP Plan (Exhibit J.4). Documentation of post-construction site conditions will be performed, including success of revegetation (Section 5).

4.0 Clean-up and Reclamation

4.1 Clean-up Schedule

Clean-up of garbage and construction debris along ROWs will occur immediately after each segments of pipeline construction is completed. Designated garbage disposal containers will be located for contractor access for solid waste clean-up each day.

4.2 Restoration of Watercourse(s)/Wetland(s)

Temporary crossings at watercourse or wetlands will be removed as quickly as practical. Appropriate erosion and sediment control BMPs will be established and maintained in accordance with the SWPP Plan until revegetation stabilizes the area. On steep banks, use of erosion control blankets (ECBs) over seeded areas will be implemented to provide bank stabilization until seeding becomes established. Application of fertilizer or mulch in or near watercourses or wetlands is prohibited.

4.3 Slopebreakers

Stormwater BMPs (e.g., slopebreakers) will be installed in selected locations to prevent run-off and subsequent erosion along the ROW. Locations for slopebreakers will be determined in the field and will be constructed of subsoil material capped with topsoil.

4.4 Grading

Grading will be performed for areas with vehicle ruts, erosion gullies, or trench settlement prior to topsoil placement, tillage, and seeding operations. Any temporary fills placed to accommodate construction access will be removed and cut materials replace in the original borrow location.

4.5 Soil Tillage and Preparation

A multi-shank ripper may be employed for compacted soils caused by excessive equipment traffic or prolonged wet weather. Tillage equipment including a chisel plow, disc, or harrow may be used to smooth the soil surface prior to seeding operations. Boulders that might interfere with topsoil placement and seeding will be removed. Disc and harrow operations will be conducted only if the site is to be seeded immediately, otherwise ripped soil provides a means of temporarily reducing the wind erosion potential.

4.6 Topsoil Placement

Topsoil will be placed evenly across the graded subsoil surface. If necessary, excess topsoil can be feathered-out over the stripped area. Topsoil placement may need to be postponed during wet weather or high winds to reduce soil loss. Seedbed preparation may be required depending on soil surface conditions and seeding equipment selection. Cultivation will be limited in areas of fine textured soils to prevent pulverization of the soil.

4.7 Seeding

Seeding of the ROW will be arranged by the Vantage representative. Traffic should be minimizing on seeded areas to allow the vegetation to become established. Seed selection will be prescribed to match the surrounding land use. Tables J-2 through J-4 contain seed mix recommendations for native grassland, pastureland, and wetland sites. Cultivated crop land will not be seeded until it is put back into production by the landowner or lessee.

Table J- 2. Seed Mix A - Native Grassland

Scientific Name	Common Name	%
<i>Hesperostipa comata</i>	Needle and thread grass	15
<i>Stipa viridula</i>	Green needle grass	15
<i>Schizachyrium scoparium</i>	Little Bluestem	15
<i>Bouteloua curtipendula</i>	Sideoats Grama	10
<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	10
<i>Pascopyrum smithii</i>	Western wheatgrass	10
<i>Elymus trachycaulus</i>	Slender wheatgrass	10
<i>Acnatherum hymenoides</i>	Indian Ricegrass	10
<i>Koeleria macrantha</i>	Junegrass	3
<i>Astragalus Canadensis</i>	Canada milk vetch	1
<i>Vicia Americana</i>	American vetch	1

Note: Drill at 14 lbs/acre if drill seeded or 28 lbs/acre if broadcast. If highly erodible soil is encountered add *Triticum aestivum* at 7 lbs/ac to Seed Mix A.

The selected seed mix will be confirmed with the landowner/lessee prior to seeding. Limited disturbance to wetland sites is anticipated where soil will be stripped from the trench line at watercourse crossings. Hand seeding in these locations would use Seed Mix B.

Table J- 3. Seed Mix B - Wetlands, Depressions and Saline Sites

Scientific Name	Common Name	%
<i>Agropyron smithii</i>	Western wheatgrass	20
<i>Agropyron trachycaulum var. trachycaulum</i>	Slender wheatgrass	20
<i>Deschampsia caespitosa</i>	Tufted hair grass	20
<i>Beckmannia syzigachne</i>	Slough grass	20
<i>Poa palustris</i>	Fowl bluegrass	20

Note: Hand seed at 15 lbs/acre equivalent and hand rake.

Seeding of disturbed soil on pasture or hay land, or CRP land will be conducted with a seed mix approved by the landowner/lessee. Seed mix C will be used if the landowner or land management agency does not specify use of other mixtures.

Table J- 4. Seed Mix C – Pasture Lands

Scientific Name	Common Name	%
<i>Elymus lanceolatus</i>	Thickspike Wheatgrass	20
<i>Bromus inermis</i>	Smooth Brome	20
<i>Elymus trachycaulus</i>	Slender wheatgrass	20
<i>Thinopyrum intermedium</i>	Intermediate wheatgrass	20
<i>Medicago sativa</i>	Alfalfa	20

Note: Drill at 14 lbs/acre if drill seeded or 28 lbs/acre if broadcast. If highly erodible soil is encountered add *Triticum aestivum* at 7 lbs/acre to Seed Mix C.

4.7.1 Seeding of Road Ditches

Seed road ditches with the same mix as adjacent land, where applicable. Vantage will coordinate with the NDDOT to determine seeding requirements for highway road crossing.

4.8 Fences

Temporary fences will be installed at locations determined by the Vantage representative and landowner/lessee to be required for livestock containment purposes.

4.9 Fertilization and Weed Control

Fertilizer and weed control practices will be used according to adjacent land use standard practices while being protective of water resources.

5.0 Post-Construction Monitoring (PCM) and Follow-up

5.1 Post-Construction Soils Assessment – Soil Parameters

A representative from Vantage with expertise in environmental science will conduct a post-construction soil assessment. Documentation of locations along the ROW will be pre-determined after having consulted available soil mapping. Soil properties including topsoil depths, problem soils, and stability, will be evaluated. Criteria to be considered in determining the locations for soils assessments may include topsoil depths, landscape variation, land use, and construction procedures. The reclaimed surface will be inspected to identify settlement of trench backfill.

Soil parameters will be assessed including but not limited to: the degree of subsoil compaction; topsoil depth; topsoil and subsoil texture; degree of topsoil and subsoil mixing; contour restoration and erosion. Field forms and photography will be used to document observations and measurements.

5.2 Reclamation Performance and Vegetation Monitoring

The ROW will be visually inspected for vegetation issues such as invasive weed infestations, poor vegetation establishment, and reduced crop growth along the ROW. If visual differences are noted on and off the ROW, then plant yield indices such as height, density and vigor will be considered. Particular attention will be paid to areas with extensive surface disturbance, moderate to steep slopes, watercourse and wetlands crossings, and areas of terrain instability that may be prone to erosion. Detailed vegetation assessments will be conducted, if warranted, at sites where reclamation problems are identified.

5.3 Watercourse Monitoring

The ROW will be inspected at all watercourse crossings during the post-construction reclamation soil and vegetation assessments. The banks and approach slopes will be monitored for stability, erosion, invasive

weed infestations, and vegetation cover. The ROW will also be monitored to determine if there is any disruption of natural drainage patterns. Photography will be used to document observations.

5.4 Mitigation Measures

Mitigation measures will be recommended if issues are identified during PCM. Vantage will implement mitigation measures as soon as feasible. Issues that cannot be mitigated immediately (e.g., subsoil compaction) will be documented in a report for future mitigation.

5.5 Documentation and Reporting

The PCM program will document all environmental issues identified for the project. Issues that have been successfully mitigated will be listed as resolved. The report will also include any locations with unresolved environmental issues and planned mitigation activities.

6.0 Operations and Maintenance Activities

Vantage's environmental and operations personnel will conduct regular inspections along the ROWs as needed to document weeds, trench subsidence, and erosion. Mitigation measures would be implemented on a timely basis during operations. Routine monitoring by Vantage personnel will continue throughout the life of the pipeline.

7.0 Emergency and Project Contacts

The following tables provide information on the emergency services available in vicinity of the proposed project area (Table J-5), project and government personnel (Table J-6), and county contact information (Table J-7)

Table J- 5. Emergency Services

Service	County	Location/ Contact	Phone Number
If it is an emergency, dial 911.			
Emergency Response Management	Divide County	P.O. Box 275 Crosby, ND 58730	701-965-6461
	Williams County	223 E. Broadway St., Suite 202 Williston, ND 58801	701-577-7707
If it is an emergency, dial 911.			
Ambulance	Divide County	Divide County Ambulance Service 107 Central Ave W Crosby, ND 58730	(701) 339-2768
	Williams County	Grenora Ambulance Service 205 Main Street Grenora, ND 58845	(701) 694-2723
		Williston Ambulance Service 317 11th St W Williston, ND 58801	701-572-3400 day 701-770-0350 evening
If it is an emergency, dial 911.			
Fire	Divide County	Crosby and Rural Fire Department 107 West Central Crosby, ND 58730	701-965-6304
		Fortuna Rural Fire Protection District 270 Main Street Fortuna, ND	701-834-2212
		Grenora Rural Fire Protection District 210 Main Street Grenora, ND	701-694-6203
		Williston Rural Fire Protection District- Ambulance 317 11 th Street W Williston, ND	701-572-3400
If it is an emergency, dial 911.			
Hospital/Health Centre	Divide County	St. Luke's Hospital 702 1 st Street SW Crosby, ND 58730	701-965-6384
	Williams County	Tioga Medical Center 810 N Welo Street Tioga, ND 58852	701-664-3308
		Mercy Medical Center 1301 15 th Ave. W Williston, ND 58801	701-774-7400
If it is an emergency, dial 911.			
County Sheriff	Divide County	Divide County Sheriff P.O. Box 275 Crosby, ND 58730	701-965-6461
	Williams County	Williams County Law Enforcement Center 223 East Broadway, Suite 301 Williston, ND 58801	701-577-7700

Table J- 6. Project Contacts

Contact	Name And Position	Address	Contact Information
Senior Manager	Charles Vincett	PEMBINA 585–8th Avenue SW Suite 4000 Calgary, AB T2P 1G1	Phone: (403) 231-7429 Fax: (403) 205-3539 Email: cvincett@pembina.com
Operations Manager	Keith Learmonth	PEMBINA 585–8th Avenue SW Suite 4000 Calgary, AB T2P 1G1	Phone: 403-691-7655 Mobile: 403-473-4204 Email: klearmonth@pembina.com
Land Management Specialist	Russ Bandemer	Vantage Pipeline US LP 113 East Broadway, Suite 1 Williston, ND 58801	Phone: (307) 532-1717 Email: rbandermer@vantageus.net
Environmental Consultant	David Cameron	KC Harvey Environmental LLC 376 Gallatin Park Drive Bozeman, MT 59715	Phone: (406) 585-7402 Fax: (406) 585-7428 Email: dcameron@kcharvey.com
Project Engineer	Cullen Colville Project Manager	Wood Group Mustang 2000, 555 – 4th Ave. SW Calgary, AB, T2P 3E7	Phone: (403) 462-5150 Email: cullen.colville@woodgroup.com
Archeologist	Lynelle Peterson	Ethnoscience, Inc 4140 King Avenue East Billings, MT 59101	Phone: (406) 252-7945 Email: lynelle@ethnoscience.com
GOVERNMENT- FEDERAL			
US Fish and Wildlife Service	Kevin Shelley Field Supervisor	U.S. Fish and Wildlife Service North Dakota Ecological Services Field Office 3425 Miriam Avenue Bismarck ND 58501	Phone: (701) 250-4481 Email: kevin_shelley@fws.gov
US Army Corp of Engineers	Daniel Cimarosti North Dakota Regulatory Program	US Army Corps of Engineers 1513 South 12th Street Bismarck, ND 58504	Phone: (701) 255-0015 x 2001 Fax: (701) 255-4917 Email: Daniel.E.Cimarosti@usace.army.mil
USDA - NRCS Divide County, North Dakota	Robert Casteel District Conservationist	NRCS Wallin Building 206 Main Street, Box 66 Crosby, ND 58730-0066	Phone: (701) 965-6491 Fax: 701-965-6064 Email: rob.casteel@nd.usda.gov
USDA - NRCS Williams County, North Dakota	Kevin Seitz District Conservationist	Williston Field Office 1106 West 2nd Street Williston, ND 58801	Phone: (701) 572-6729 Fax: 701-572-0484 Email: kevin.seitz@nd.usda.gov
USDI – BLM North Dakota Field Office	Kevin Holmes, Supervisory Natural Resource Specialist	North Dakota Field Office 99 23rd Avenue West, Suite A Dickinson, ND 58601	Phone: (701) 227-7700 Fax: (701) 227-7701 Email: kholmes@blm.gov
USDI - BOR	Joe Hall Chief of Resources and Environmental Services	USDI-BOR Dakotas Area Office PO Box 1017 Bismarck, ND 58502-1017	Phone: (701) 250-4242 Fax: (701) 250-4326 Email: jhall@usbr.gov
In the Event of a Spill	National Response Center	National Response Center c/o United States Coast Guard (CG- 5335) - Stop 7581 2100 2nd Street, SW Washington, DC 20593-0001	Toll Free: 800-424-8802 Direct: (202) 267-2675 Fax: (202) 267-1322 Email: HQS-DG-1st-NRCINFO@uscg.mil
GOVERNMENT- STATE			
North Dakota State Historical Preservation Office	Susan Quinnell Review & Compliance Coordinator	North Dakota Heritage Center 612 East Boulevard Avenue Bismarck, ND 58505-0830	Phone: (701) 328-2666 Fax: (701) 328-3510 Email: squinnell@nd.gov

Contact	Name And Position	Address	Contact Information
North Dakota Game and Fish Department	Steve Dyke Conservation Supervisor	100 North Bismarck Expressway Bismarck, ND 58501-5095	Phone: (701) 328-6224 Fax: (701) 328-6352 Email: sdyke@nd.gov
Williams County Farm Service Agency	Corey Paryzek County Executive Director	1106 West 2 nd Street Williston, ND 58801-5804	Phone: (701) 572-6729 Email: corey.paryzek@nd.usda.gov
Divide County Farm Service Agency	Pam Solem Acting County Executive Director	12 Main Street South Crosby, ND 58730	Phone: (701) 965-6001 Email: pam.solem@nd.usda.gov
North Dakota Department of Agriculture	Jody Reinke, Assistant to the Director	600 E Boulevard Ave, Dept 602 Bismarck, ND 58505	Phone: (701) 328-4754 Email: jodyreinke@nd.gov

Table J- 7. County Official and Offices

County	Contact Name	Contact Number
Divide County Commissioners	Tim Selle	701-834-2451
	Gerald Brady	701-965-6112
	Douglas Graupe	701-965-6489
Williams County Commissioners	David Montgomery	701-577-4500
	Dan Kalil	701-577-4500
	Barry Ramberg	701-577-4500
	Martin Hanson-Zahl	701-577-4500
	Wayne Aberle	701-577-4500
Williams County Highway Office	Dennis Nelson, Superintendent	701-577-4521
Crosby Municipal Highway Department	705 5th Avenue Southeast Crosby, ND 58730	701-965-6192
Williams County Weed Officer	Jim Basaraba	701-572-4883
Divide County Weed Officer	Gary Smithberg	701-925-5798

8.0 Contingency Plans

8.1 Spill Contingency Plan Guidelines

Completion of a detailed site-specific Spill Prevention Control and Countermeasures Plan (SPCC Plan) that addresses potential spills related to pipeline construction activities is the responsibility of the Vantage Pipeline Contractor. A general SPCC plan is provided with this document (Exhibit J.3). The detailed SPCC plan will address the following in the event of a release.

8.1.1 Initial Spill Response

In the event of a spill, responders are required to complete the following actions:

- Control danger to human life and appoint an on-site lead person;
- Remove the source of ignition, if safe to do so;
- Identify the source of the spill and stop or contain spill, if safe to do so;
- Conduct appropriate steps for following the Vantage Emergency Response Plans including contacting Vantage’s Spill Coordinator/Environmental Staff;

- Refer to the Spill Prevention Control and Countermeasures (SPCC) Plan section that details spill response;
- Advise Vantage’s Environmental Spill Coordinator/Environmental Staff of clean-up requirements and assist in arranging the necessary spill response equipment and/or contractors to be mobilized to control and contain the spill;
- Prevent traffic on contaminated soils; and
- Ensure the proper agencies have been contacted and spill reports have been completed.

8.1.2 General Spill Clean-up Procedure

Clean-up requirements for spills generally involve one or more of the following steps:

- Contain spilled petroleum product;
- Pump liquids into a tanker or appropriate container;
- Clean-up residual contaminated soil area with spill clean-up equipment; and
- Dispose of sorbent pads, heavily contaminated soil and vegetation at an approved facility.

8.1.3 Spill Clean-up next to Waterbodies

- Construct berm and/or trenches to contain spilled product prior to entry into a waterbody;
- Deploy booms, skimmers, sorbents etc., if feasible, to contain and recover spilled material from waterbody;
- Pick up spilled product and clean-up impacted areas including streambanks and shorelines; and
- Dispose of heavily contaminated soil and vegetation at an approved facility.

8.1.4 Spill Report Form

A spill report form is included in the contractors SPCC Plan. In addition, a link to the North Dakota spill reporting form is available at <http://www.ndhealth.gov/ehs/eir/NonOilfield/>.

8.2 Fire Contingency Plan

Prior to commencement of construction, the primary Vantage West Spur Lateral Pipeline Contractor will designate a staff member as Lead Fire Representative. Contact information for fire departments in Divide and Williams Counties are listed in Table J-8. This individual will be familiar with all fire-fighting methods and equipment, and local fire-fighting departments.

- All vehicles and equipment will be required to carry fire-fighting equipment including shovels and fire extinguishers. In addition, all motorized equipment must carry a fully charged fire extinguisher. All fire extinguishers will be checked at least monthly.
- The Lead Fire Representative will ensure the following fire prevention measures are implemented:
 - Belly pans of crawler tractors are periodically removed and cleaned;
 - Fire contact list is current and reporting requirements are understood by all crews;
 - Equipment used on-site is in good working order and does not present a fire danger; and
 - Safety meetings include basic training procedures including fire extinguisher use and maintenance.

- Crews that experience a fire will follow steps, including:
 - Perform fire suppression measures immediately upon detection of fire if safe to do so;
 - Report location, size, and current status of fire to Vantage Safety personnel and local fire department;
 - Deploy fire-fighting equipment and crew to create fire breaks or extinguish the fire directly if safe to do so; and
 - Request additional local fire department assistance if Contractor resources are insufficient.

Table J- 8. Fire Contact Information

County	Location/ Contact	Phone Number
If it is an emergency, dial 911.		
Divide County	Crosby and Rural Fire Department 107 West Central Crosby, ND 58730	701-965-6304
	Fortuna Rural Fire Protection District 270 Main Street Fortuna, ND	701-834-2212
Williams County	Alamo Rural Fire Protection District 13257 75 th Street Alamo, ND	701-528-3662
	Grenora Rural Fire Protection District 210 Main Street Grenora, ND	701-694-6203
	Williston Rural Fire Protection District- Ambulance 317 11 th Street W Williston, ND	701-572-3400

During pipeline construction, the following problems may arise which could result in loss of soil productivity if not addressed. Environmental soil handling options to reduce the potential impacts are listed in the following table.

Table J- 9. Soil Handling Environmental Protection Options

Condition/Concern	Environmental Protection Options
Wet soils	<ul style="list-style-type: none"> • Restrict construction vehicle traffic to equipment with low-ground pressure tires or wide pad tracks. • Salvage topsoil from full ROW to prevent mixing and rutting. • Shut down construction activities until conditions improve. • Use matting to minimize soil mixing
Limiting topsoil depth	<ul style="list-style-type: none"> • Salvage surface soil to a depth of first color change or depth indicated on the alignment sheets whichever is greatest.
Topsoil identification	<ul style="list-style-type: none"> • Use topsoil depths provided on typical details and alignment sheets as a guide. • Assign a construction oversight person to guide the equipment operator.
Uneven surfaces	<ul style="list-style-type: none"> • Use topsoil depths provided on typical details and alignment sheets as a guide. • Assign a construction oversight person to guide the equipment operator. • Use equipment with fine depth control.



Condition/Concern	Environmental Protection Options
Stony soils	<ul style="list-style-type: none"> • Attempt to use conventional excavation equipment to strip topsoil. • Employ backhoe, if conventional equipment fails. • Replace stones and rocks to the equivalent of surrounding land areas.
Shallow bedrock	<ul style="list-style-type: none"> • Ripping is preferable where rock trenching is required. • Excess bedrock should not be replaced in the upper 1.5 feet of the trench. • Excess bedrock will be transported for disposal at locations approved by the landowner/lessee. • Replacement backfill will be transported from a source approved by the landowner/lessee.
Unstable trench walls	<ul style="list-style-type: none"> • Strip extra width of topsoil if topsoil could slough into the trench. • Back slope the trench until stable (up to 1:1). • Prepare pipe runs prior to trenching at locations with soil prone to sloughing to minimize the time the trench is left open.
Soil pulverization	<ul style="list-style-type: none"> • Minimize traffic on ROW. • Increase topsoil stripping to full ROW if fine textured soils will be subjected to undue traffic and pulverization. • Minimize tillage operations once topsoil has been replaced. • Postpone seed bed preparation until immediately prior to seeding.
High winds	<ul style="list-style-type: none"> • Suspend topsoil handling during high wind conditions.

8.3 Soil Erosion Contingency Plan

Soil water and wind erosion contingency planning may be required during the construction of the Vantage West Spur Lateral Pipeline. The following tables provide erosion environmental protection control options that may be implemented depending on the field conditions.

Table J- 10. Soil Water Erosion Protection Options

Concern	Environmental Protection Options
Erosion by Water	
Cultivated Land/ Hay Land and Improved Pasture	<ul style="list-style-type: none"> • Construct temporary berms of subsoil, sandbags or bales during construction activities. • Salvage remaining topsoil and stockpile away from area to be regraded. • Install silt fences near the base of slopes. • Regrade rill or gully erosion. • Seed annual cover crop. • Construct temporary cross ditches on slopes following approval by landowner/lessee. • Employ erosion netting, mulch, or tackifier to keep surface soil in place.

Table J- 11. Soil Wind Erosion Protection Options

Concern	Environmental Protection Options
Erosion by Wind	
Topsoil Stockpiles	<ul style="list-style-type: none"> • Refer to alignment sheets regarding erosion prone soils. • Develop measures (e.g., daily watering) to reduce wind erosion of fine-textured loose soils that are vulnerable when stockpiled or windrowed. • Ensure that windrows do not exceed three feet in height and no steeper than 2:1. • Postpone topsoil stripping until three days prior to trenching. • Apply water to the topsoil windrow. • Install silt fences. • Seed cereal cover crop. • Employ mulch or straw crimping at recommended rates (e.g., 1 tons/ac). • Apply hydromulch or tackifier.
Watercourse or Wetlands Erosion	<ul style="list-style-type: none"> • Plant willow stakes in the spring. • Transplant willow clumps and/or install willow wattles. • Apply approved RECP. • Armor bank with rip-rap. • Install vegetated geogrid.

8.4 Instream Boring Fluids Mud Release Contingency Plan

The Vantage West Spur Lateral Pipeline is anticipated to cross some non-flowing watercourse or wetland areas. The open cut method of trenching is planned for these crossings due to limited instream water flow throughout the average year. However, in case direction drilling is required, the following contingency plan includes measures to address the potential release of drilling mud in order to minimize the environmental impacts.

8.4.1 General Measures

- Surface casing may be installed to contain a potential drilling mud release.
- Boring mud will consist of inert additives substances (e.g., bentonite).
- Berm(s) or sump(s) will be constructed at the entry point and proposed exit point with a capacity adequate to contain the anticipated volume of mud that could be released during pullback and other boring operations.
- The Contractor’s boring plan would be required to include a section that addresses boring mud clean-up. This section will be reviewed with the Contractor crews prior to boring operations. In addition, Vantage supervisory personnel will be made aware of this contingency plan and how boring mud clean up would be performed prior to initiating boring.

8.4.2 Monitoring

Supervisory personnel will be on-site at all times during boring, reaming, and pullback operations to ensure that emergency response measures will be implemented immediately and effectively. Vantage will assign personnel experienced in emergency spill response during all phases of boring the watercourse.

The amount of boring fluid returned to the mud tank will be measured. Visual inspections of both onshore and instream portions of the bore path and surrounding area will be evaluated for signs of mud release. Monitoring stations will also be established prior to boring for purposes of visual inspections and surface water quality sampling, if necessary.

On watercourses with ice cover, on-site conditions may allow visual monitoring of water quality by observing open reaches or, if safe, by auguring and maintaining an open hole in the ice for sampling.

8.4.3 Emergency Response

Sufficient quantities of the following emergency response equipment will be available on-site during boring operation: sandbags, silt fencing, T-bar posts, post pounders, straw bales, lighting towers, shovels, hydro-vac truck (optional), submersible pump, polyethylene, and water sampling equipment.

In general, boring operations will be immediately ceased if a mud release is detected. A Vantage representative will be immediately notified to address reporting requirements, and to determine the best mitigation procedures. Instream options for removal of drilling mud will likely include use of the submersible pumps or hydrovac truck. Drilling mud releases on land will be addressed similar to removal of hydrocarbon contaminated soil according to the procedures outlined in the SPCC plan.

Boring will only be allowed to resume if the potential for significant adverse impacts on the environment is low, as determined by Vantage and Agency personnel. Contacts for North Dakota Department of Health personnel are provided in the following table.

Table J- 12. Instream Emergency Contacts

Contact	Number
ND Department of Health: Environmental Health Section	701-329-5150
ND Department of Health: Division of Water Quality Karl Rockeman, Director	701-328-5210

8.5 Water Crossing Sediment Contingency Plan

Erosion and/or runoff caused by construction activities through water crossings may result in sedimentation. The watercourse bed and banks will be restored to pre-construction conditions. Habitat enhancement/compensation measures will be employed, if warranted, to ensure that the productive capacity of the watercourse.

To avoid impacts to water crossings, the following measures will be the responsibility of Vantage.

8.5.1 Fish Habitat Assessment

Review and conduct (if necessary) a fish habitat assessment of specific watercourses. Recommendations from the consulting fisheries biologist will be followed to ensure the protection of aquatic resources.

8.5.2 Notification/Approvals

Vantage will notify the NDGF and NDDH of activities that may impact streams if flowing conditions are encountered. Applicable permits would be obtained prior to construction.

8.5.3 Fish Salvaging for Instream Construction Activities

Based on field surveys completed during 2014-2015, fish salvage would not be required since fish habitat is not encountered in the watercourse crossings.

8.5.4 Contingency Crossing Method - Open Cut Crossings (Water Present)

Vantage will ensure stream flow is maintained at all times while open cutting during flowing conditions. Work may be performed from both sides of the watercourse, utilizing two backhoes if necessary, to expedite the crossing.

Excavated watercourse bottom sediment will be piled on the banks in a temporary storage area above the high watermark of the watercourse. Containment berms and spoil will be stored in accordance with requirements indicated on the typical crossing details (Exhibit J.1).

Backfill material will be replaced as soon as possible and will consist of native material/washed gravel. The watercourse streambed shall be returned to approximate pre-construction profile to ensure that flow patterns are unaltered.

Photo documentation (before and after) will provide evidence of baseline and post-construction conditions. In addition, a post construction walk through will be conducted to allow for inspection of erosion and sedimentation related to the pipeline crossing.

8.6 Winter or Frozen Conditions Contingency Plan

Winter conditions may be encountered depending on the duration/extent of pipeline construction. When working during frozen soil conditions, Vantage will ensure that there is sufficient frost or low enough soil moisture to allow construction without causing excessive rutting or soil compaction.

Vantage winter construction planning also includes snow management, topsoil salvage and stockpiling, backfilling, grading, clean-up, and reclamation/restoration practices in the event of frozen ground conditions.

8.6.1 Snow Management

Snow management may involve windrowing over the trench to prevent frost penetration along the trench line. The windrowed snow pack can be removed immediately prior to resuming trenching operations. Snow can also be graded along the ROW travel lanes to improve driving conditions.

8.6.2 Topsoil Salvage – Frozen Soil Conditions

During winter/frozen conditions, topsoil salvage will take place in an area approximately 10 feet wide over the centerline of the trench. Stripping activities will be limited to equipment capable of accurately stripping variable depths of topsoil or rip frozen topsoil to the same depth as the salvage requirements. If constructing through frozen wetlands, ensure stripped material is not stockpiled on adjacent uplands.

8.6.3 Backfilling

Backfill the pipeline trench and compact to minimize trench settlement. The lower lift of subsoil will be compacted prior to backfilling with the upper lift topsoil material. Whenever possible, mixing of soil and backfill material should be avoided. If necessary, postpone feathering-out of excess backfill until after winter conditions and soil settlement.

8.6.4 Grading

Final grading should be scheduled for spring to avoid frozen conditions that may impair restoration of the ROW.

8.6.5 Clean-Up

Final clean-up will be performed following backfilling and in the late winter or early spring once the trench soil settlement has occurred. Stockpiles and grade cuts should be stabilized to reduce wind and water induced soil erosion. Permanent stormwater BMPs (e.g., cross ditches and berms) can be installed in the spring after soils thaw, as necessary.

8.6.6 Reclamation/Restoration

Once the weather is conducive for grading operations, vehicle ruts, erosion gullies, and trench spoil will be contoured in preparation for final reclamation. Excess material can be feathered-out over the ROW to minimize soil mounds and trench crowns. Tillage and seeding operations will then be conducted in the spring to take advantage of optimum germination conditions.

8.7 Sensitive Plants Contingency Plan

The proposed Vantage West Spur Lateral Pipeline traverses a number of distinct vegetation communities, each supporting a vast array of plant species. Preliminary consultation with the USFWS did not indicate any Threatened or Endangered plant species in Divide and Williams Counties.

8.7.1 Potential Mitigation Measures

The preferred option in all cases will be avoidance of the plant species of concern. Should avoidance not be feasible, other mitigation options may include:

- Reduce the width of construction on the proposed ROW or TWS (neck down);
- Erect barrier-fencing or buffers;
- Provide protective matting or temporary bridges;
- Employ salvage, propagation and/or transplanting techniques; and
- Take measures to conserve the seed bank (soil handling practices).

8.8 Wildlife Contingency Plan

The following mitigation plan pertains primarily to issues regarding species protected under the federal Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), the Endangered Species Act (ESA), and Critical Habitat designated by the USFWS.

8.8.1 Identification of Existing Wildlife Issues

Wildlife and wildlife habitat surveys were conducted during the pipeline routing to minimize impacts. Wildlife and wildlife habitat surveys will also be conducted prior to construction, including a pre-construction survey of the proposed ROW and TWS, to locate, identify and reconfirm wildlife and habitat-related issues. Site-specific mitigation measures will be developed by professional biologists, and in consultation with appropriate government agencies, to minimize the project's potential impact(s) on the wildlife species and/or habitat. Locations for specific mitigation measures will be identified on the project environmental alignment sheets.

The project's environmental monitor will be responsible for ensuring that all recommended wildlife mitigation measures for a particular issue/species are followed during all phases of construction and reclamation.

Threatened and Endangered Species

Six federally listed Threatened and Endangered wildlife species are known to occur in Williams and Divide Counties of North Dakota. At this time, there are no federally listed threatened and endangered plant species listed for Divide or Williams Counties, North Dakota. The USFWS also lists one Proposed and one Candidate species in each county. There is no legal requirement for protecting candidate or proposed species; however, they are discussed below because of their potential to be listed. In addition,

the USFWS, Dakota Field Office identified the Dakota skipper as a species of concern in the region. (Route Permit Section B.4.1).

The grey wolf (*Canis lupus*) is an occasional visitor in North Dakota. The USFWS indicated that the wolf has been observed mainly in the Turtle Mountain area located approximately 200 miles northeast of the project area. The likelihood of seeing a wolf along the pipeline route would be a rare occurrence. If a wolf was observed it would most likely be a transitory individual and would not remain in the area. However, if a wolf is observed on the pipeline, it would be immediately reported to the U.S. Fish and Wildlife Service, Ecological Services office and a determination would be made for appropriate actions to avoid conflict while it is in the area.

The project would have no direct effect on the pallid sturgeon (*Scaphirhynchus albus*) or interior least tern (*Sterna antillarum*) which are associated with the Missouri and Yellowstone Rivers. The SWPP Plan should be implemented to minimize sedimentation into tributaries of the Missouri and Yellowstone Rivers which may indirectly impact these species.

Whooping cranes (*Grus Americana*) can occur in North Dakota during the spring and fall migration between the breeding and wintering areas. During migrations, the cranes use shallow, open-water wetlands and water-covered river sandbars for roosting during the day and night. Although no traditional staging or use areas have been identified within close proximity to the pipeline corridor, potential whooping crane habitat—wetlands in association with agricultural grain crops—is interspersed throughout the pipeline route. Construction activities may cause migratory whooping cranes to avoid the area. The USFWS recommends construction stop if whooping cranes are sighted within one mile of construction activities. Construction activities can resume when the cranes have left the area. Any sightings of whooping cranes within the construction corridor will be immediately reported to USFWS and NDGF.

Adverse effects to the whooping crane and its habitat associated with pipeline construction and operation would be minimized by project site monitoring and construction scheduling (shut-downs) for areas where whooping crane sightings are within one mile of the pipeline corridor. Implementation of approved reclamation and habitat restoration prescriptions following construction would result only in temporary loss of native and agricultural habitats form and function, between the time of pipeline construction and successful habitat reclamation.

The piping plover (*Charadrius melodus*) nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shores of saline wetlands. The proposed Vantage West Spur Lateral Pipeline route would be at least seven miles from the nearest known Critical Habitat area. Furthermore, environmental baseline surveys did not identify potential piping plover habitat on the proposed route.

Rufa red knot (*Charadrius melodus*) is listed as ‘known to or believed to occur’ in Divide and Williams Counties, North Dakota. It uses the Central Flyway on its migration and may stopover in North Dakota wetlands, which is its assumed habitat in this region although its use of habitat in North Dakota is not well documented. If this species is observed in the project area, the USFWS should be notified immediately.

The northern long-eared bat (*Myotis septentrionalis*) summer habitat includes roosting underneath bark, in cavities, or in crevices of both live and dead trees. The northern long-eared bats may also rarely use manmade structures such as barns and sheds. The species is non-migratory and hibernates in caves and mines during the winter. Route selection avoided treed areas as much as possible. Only one windbreak will be crossed by the project where trees will need to be removed to maintain a thirty foot permanent ROW. Care should be taken to avoid cutting trees during the breeding season.

The Sprague's pipit (*Anthus spragueii*) habitat includes native short- and mixed-grassland habitats for wintering and large prairie areas for nesting, both of which are present in the Vantage West Spur Lateral Pipeline project area. The short-term impact and risk to the Sprague's pipit could be minimized through: 1) construction scheduling to avoid potential nesting areas in the nesting period; 2) pre-construction measures (employed in the fall, prior to subsequent spring nesting) to remove grass cover through mowing and disking of the 100-foot-wide pipeline right-of-way; and 3) reclamation plantings (seed mix and planting prescription) to restore pre-construction grassland cover immediately following construction.

The Dakota skipper (*Hesperia dacotae*) is a small butterfly that is a federally proposed species. It is not listed in Divide or Williams Counties of North Dakota. However, during phone conversations (Shelley, Personal Communications 02/09/15), the USFWS expressed concern about this species in the West Spur project area. A habitat assessment utilizing USFWS IPAC data concluded that known critical habitat for the Dakota skipper was approximately forty-five miles southeast of the pipeline route. Furthermore, high quality native prairie containing a high diversity of wildflowers and grasses is limited along the route.

Migratory Birds

Short-term impacts to migratory birds within the habitat adjacent to the Vantage West Spur Lateral Pipeline route would consist of loss of habitat during construction of the pipeline until the restored area could support vegetation sufficient to replace habitat impacted by construction. During this period, migratory birds that would have nested or fed within, or adjacent to, the area disturbed during construction would be temporarily displaced due to construction activities, noise, and traffic. During the spring and fall, migrating birds would avoid construction-impacted areas and utilize areas not impacted by construction. The extent to which migrating birds would be impacted would be dependent upon the timing of construction. Greater impacts would occur if the start of construction occurs during the breeding and nesting period (February 1 to July 15) for ground and shrub-nesting birds. If the construction disturbance occurs outside of this period, birds would avoid the disturbed construction right-of-way since suitable habitat would not be present.

A one-mile study corridor was surveyed for active and inactive raptor nesting locations and possible nesting habitat present within the designated survey area in fall 2014. Northern harriers and red-tailed hawks were observed but no raptor nests were located.

The presence of ground-nesting bird species including northern harriers will be evaluated during the pre-construction survey. No cliff or bluff nest substrate was identified within the corridor, and tree nest substrates were limited to windbreaks. The landscape was heavily fragmented with cropland and fallow fields, leaving limited native pasture for raptor foraging and prey production.

To avoid and minimize nest destruction of ground and shrub-nesting birds within the 100-foot pipeline corridor disturbance area, it has been suggested by the USFWS that the construction corridor be mowed or disked to remove vegetation cover in the fall preceding construction to discourage ground and shrub-nesting. After construction, the site would immediately be reclaimed to pre-construction habitat conditions. If construction were to occur between February 1 and July 15, Vantage would also have a qualified biologist conduct bird surveys five days before construction begins. If migratory birds and/or raptor nests are discovered within the construction corridor, construction would cease in that immediate area and the USFWS would be consulted. To the extent possible, the 100-foot pipeline corridor disturbance area would also be pre-cleared by mowing the grasslands during the 4th quarter of the previous year. This would discourage nesting in the 70-foot pipeline corridor disturbance area during the subsequent nesting season.

Bald and Golden Eagle Protection Act

Bald and golden eagles may use the project area that would potentially be impacted during construction of the West Spur Lateral Pipeline. The USFWS recommends that a buffer of at least one-half mile should be maintained from all eagle nests during construction and that construction be scheduled between late summer and winter, to the extent practicable, in order to avoid impacts. The proposed pipeline was routed to avoid tree groves to the greatest and most practicable extent possible.

Nest location and nest occupancy surveys for the bald and golden eagles took place in May and June, 2014 documented no bald or golden eagles within a one-mile corridor along the pipeline alignment. This survey will be followed by a pre-construction survey. Should active nesting sites be identified, measures would be taken to delay construction in those sections until young are fledged from the site. With the implementation of these measures, the risk of impact to eagles is anticipated to be negligible. Reclamation and restoration standards would return the disturbed habitats to pre-construction conditions.

8.8.2 Wildlife Contingency Response

A pre-construction wildlife survey is planned for the proposed ROW and TWS for the year of construction, and will be conducted as close to the start of construction activities (including site preparation/staking) as possible. The survey will determine if ground nesting species are present within the construction limits. During the pipeline construction phase, all employees, contractors and consultants will undergo orientation regarding species and habitat of concern that potentially may occur in the project area.

The possibility exists that previously unreported wildlife issues will be discovered immediately prior to or during construction. In that event, construction activities are to be halted and the environmental monitor must be notified. If appropriate, USFWS or other applicable government agencies will be contacted. The construction activities within that area may not resume until an approved mitigation plan has been prepared.

8.8.3 Wildlife Mitigation Measures

General wildlife-related mitigation measures that will be employed throughout the entire construction phase and over the entire length of the ROW include the following:

- use of “good housekeeping” practices to maintain a garbage-free work area (refer to Waste Management Plan for full details);
- all materials, chemicals and equipment will be removed from the site at completion of the project;
- all fuel burning equipment meet emission guidelines;
- all chemicals will be stored in double-walled containers or in secondary containment;
- used chemicals are stored for transportation off site for proper handling;
- in the event of a spill, the SPCC plan will be implemented immediately;
- vehicle servicing and refueling will occur in accordance with the SPCC Plan;
- vehicles will be monitored for petroleum leaks;
- any hazardous waste material generated by project construction or operation will be disposed of in a manner specified by state and federal regulations or as outlined in the Waste Management Plan;
- spill response materials will be kept readily available onsite; and
- in order to avoid disturbance to waterfowl and other wildlife, it is recommended that clearing and construction activities occur outside of the breeding season (February 1 to July 15).

Concerns and stipulations identified by the USFWS are identified in Table J-13. Potential mitigation measures that may be utilized in response to specific potential impacts on wildlife and/or wildlife habitat as a result of construction activities are also listed in Table J-13.

Table J- 13. Recommended Wildlife Mitigation Measures

Potential Impact	Protection Measures
Disturbance of Wildlife	<ul style="list-style-type: none"> • A “no feeding or harassment of wildlife” policy will be implemented and enforced • Employees will undergo wildlife orientation, which will encompass no wildlife feeding and wildlife avoidance, among other topics • Project personnel will not be allowed to have pets on site • All project activities will be contained to the project area. Personnel movement will be restricted to the project area and access routes • Artificial lighting will be directed toward project facilities to avoid light disturbance to surrounding wildlife • Timing restrictions (daily or seasonal) will be placed on construction activities • Dust control measures will be implemented when needed • If a whooping crane is sighted within one mile of the area affected by construction of the pipeline, all work would cease within the sighted area and the USFWS would be contacted immediately. • A buffer of at least one-half mile from active bald and golden eagle nests would be maintained during construction. To the extent practicable, construction would be scheduled between late summer and winter.
Disturbance of Migratory Bird Nests	<ul style="list-style-type: none"> • In order to avoid disturbance to nesting migratory birds and other species, construction will be avoided in habitats with high potential for migratory birds during the breeding season • If this is not feasible the ROW will be cleared to prevent nesting, particularly within native prairie, pasture and shelterbelt habitats • If pre-mowing is not feasible a bird nest survey adjacent to the ROW is recommended within the 7 days prior construction; if nests of migratory birds are found on the ROW, it is recommended to avoid activities in vicinity of the nest until the young have fledged from the nest site • If construction is scheduled in areas where Sprague’s pipits have been recorded during the nesting season, it is recommended that a pre-construction survey be completed within the 7 days prior to construction. If a nest is found, USFWS would be contacted and construction may be delayed • Complete a nesting survey for bald and golden eagles during 2015 and provide the required buffers around any identified active nest site until the young have fledged.
Destruction, Degradation or Alteration of Wildlife Habitat	<ul style="list-style-type: none"> • Take measures to avoid disturbance of wildlife sensitive areas • Minimize disturbance to wetlands and drainages; maintain vegetative buffer zones around stream riparian areas by extending bore lengths • Existing trails and disturbed areas will be used where possible to minimize the addition of new linear corridors • The proposed project site will be restored to pre-project conditions. Surrounding lands with similar habitat will be used as reference sites • Protection will be provided for trees, shrubbery, and other vegetation not designated for removal during project construction • Any trees or shrubs removed during construction would be replaced in accordance with North Dakota Public Service Commission requirements.

Potential Impact	Protection Measures
	<ul style="list-style-type: none"> • Install silt fences and other BMPs as necessary for erosion control • Appropriate seed mixes will be utilized to reclaim native prairie and other uncultivated habitats along the ROW • Narrowing, rerouting or altering of proposed ROW or TWS may be necessary to avoid sensitive habitats • Coordinate with the USFWS to mitigate potential impacts to high-value habitat and obtain any Special Use or right-of-way permits required for construction • Coordinate with the Crosby Wetland Management District regarding the USFWS wetland easements • If construction were to occur between February 1 and July 15, qualified biologist will conduct bird surveys within 5 days prior to construction. If migratory birds and/or nests are discovered, construction would cease and the USFWS would be consulted.
Restriction of Wildlife Movement	<ul style="list-style-type: none"> • Minimizing open trench areas during construction will reduce the likelihood of wildlife falling into the trench • Provide 20 ft wide break in spoil pile every ¼ mile to allow wildlife movement across the pipeline ROW • Provide 2:1 sloped plugs every 1/4 mile along open trench to allow wildlife to escape from the trench • The trench should be checked at least twice daily for trapped wildlife which would be removed by the environmental monitor
Increased Risk of Wildlife Mortality	<ul style="list-style-type: none"> • Posting speed limits and signage along the ROW, access roads, and known wildlife crossings would minimize vehicle/wildlife collisions • Vehicle numbers and trips will be limited and workers will be informed of sensitive areas along the ROW • Project personnel will not be permitted to have firearms on the project site • Hunting and fishing while on the project site or in the vicinity of the project area, including during travel to and from the site is prohibited. Infringement of this policy will be reported and may result in disciplinary measures • During temporary closures, all open holes will be fenced or blocked, in order to prevent wildlife entrapment • An environmental monitor will be employed to reduce potential effects of movement barriers and wildlife mortality during construction

8.8.4 Wildlife Monitoring

A wildlife monitor will be employed during the pipeline construction to identify any potential impacts and mitigation. Pre- and post-construction surveys and monitoring would also be completed. The results of the surveys would be used to develop mitigation plans to avoid and minimize impacts on the potentially affected species. To prevent long-term loss of disturbed habitat form and function, wildlife habitat needs would be incorporated in reclamation and habitat restoration planning.

The wildlife monitor would be employed to detect any wildlife species, especially whooping cranes during the migration period, within the pipeline corridor. All monitoring will be conducted from the active work areas to detect the presence of migrating birds within one mile of the work area. If whooping cranes are sighted within this distance, work would be discontinued within the one mile buffer area until the birds have left the area.

8.9 Cultural Resources Contingency Plan

A Class III cultural resource inventory conducted along the pipeline corridor identified 24 sites. Changes to the Vantage West Spur Lateral Pipeline corridor, however, are still ongoing and additional cultural fieldwork is expected before a route is selected. Vantage plans to avoid all sites through the use of reroutes and neck-downs. Even after the route is selected, it is likely that a number of unforeseen changes in the pipeline route and/or the need for minor road improvements will be identified in advance of construction. Upon notification of potential impacts outside of the identified ROW, a cultural resource specialist will conduct a survey of the area to be impacted in a manner consistent with the methods and standards used during the 2014 survey. If a site is identified, a field consultation with Vantage personnel will be conducted to determine if changes can be implemented to avoid adversely impacting sites.

If avoidance cannot be assured, the site will undergo immediate testing for significance determination. If the site is recommended significant, a determination of impact will be conducted. A report detailing the survey results shall be generated and submitted to the PSC and State Historic Preservation Office (SHPO) for review and comment. If a significant site is present and cannot be avoided, the SHPO will work with the appropriate agencies to develop a programmatic agreement to mitigate the impacts associated with construction.

8.9.1 Procedures at Time of Discovery of Unanticipated Cultural Resources

Archaeology monitors will be present for ground disturbing activities conducted in undisturbed grasslands. They will help to ensure construction stays within the temporary workspace near cultural sites and that proper procedures are followed in the event of an unexpected discovery. The construction crew and safety inspectors will be given the appropriate contact information of the archaeologist representing Vantage, in the event that an unexpected discovery is found and a monitor is not immediately available.

If unanticipated cultural resources¹ are discovered during construction, all construction activity will immediately cease within 50 feet in all directions from the discovery. The archaeologist will ascertain the nature of the cultural material, the extent of the cultural material, and the potential for intact deposits through an examination of the ground surface, backfill piles, and exposed construction surfaces. The consulting archaeologist will also discuss the potential for additional impacts to the cultural resource with the construction manager. Based on this examination, the consulting archaeologist will make an initial determination of the significance of the discovery as: (1) not a site (e.g., not cultural, an isolated find, or less than 50 years in age); (2) a non-significant site (e.g., a sparse scatter of historic artifacts with little potential for intact deposits); (3) a significant site for which no further impacts are likely to occur; (4) a significant site (e.g. exposed hearths, house pits) that is likely to be impacted with further construction; or (5) a site for which additional information is required to ascertain extent and significance. If the discovery is not a site, the consultant archaeologist will approve the resumption of construction. If the finding is a site, the consultant archaeologist will provide information about the cultural resource to the PSC and SHPO, who will determine the most appropriate action. In the event that a cultural resource specialist or other necessary persons are not immediately available, Vantage West Spur Lateral Pipeline will require that the discovery be protected until such time that the cultural resource specialist can be present for

¹ For the purpose of this report a cultural resource is any tangible or observable evidence of human activity that is over 50 years in age, regardless of significance. Cultural resources consist of objects, sites, structures, or landscapes. Evidence of cultural activity can include artifacts (e.g. flaking debris, bone, bottle glass shards), features (e.g., charcoal stains, patterned arrangements of rock), as well as human remains and/or funerary objects.

inspection and evaluation. Construction will not resume within the no-disturbance zone until approved by the SHPO.

8.9.2 Emergency Salvage of Cultural Resources

Unstable earth conditions in trenches or other unforeseen natural or cultural events could endanger cultural resources discovered during construction of the pipeline. If cultural resources are in imminent danger of destruction, Vantage West Spur Lateral Pipeline will apply prudent methods to stabilize landforms around the unanticipated discovery. Once stabilized, the resource shall be assessed as described above in Section 8.10.1, subject to safety concerns. If the site is deemed significant and in immediate danger of destruction, then immediate excavation measures may be discussed with the SHPO and approved by phone. If the site is not in immediate danger of destruction, then a mitigation plan will be developed for later excavation. This may occur after construction is complete.

8.9.3 Unexpected Discovery of Human Remains and Funerary Objects

Human remains encountered in a discovery situation shall be handled according to the provisions of the North Dakota laws. Unless evidence proves otherwise, unmarked graves shall be considered Native American. For graves or human remains encountered, Vantage West Spur Lateral Pipeline shall follow the steps listed below:

- 1.) Immediately stop work on the location of human remains. This shall include removing all equipment from the site to an adequate distance to assure site protection. This will be site-specific, depending on the extent of the discovery and the topography of the site;
- 2.) Depending on location, either the Divide County Sheriff or the Williams County Sheriff shall be notified as per Subsection 4, NDCC 23-06-27. Divide County Sheriff at Crosby (701) 965-6461. Williams County Sheriff at Williston (701) 577-7700;
- 3.) Notify the designated representative of the State Historical Society of North Dakota within 24 hours. The representative shall examine the remains and carry out the activities described in NDAC 40-02-03-04;
- 4.) If the burial is Native American, establish a meeting that includes Native Americans (a representative of the North Dakota Intertribal Reinterment Committee), the landowner/stewards, the designated representative of the State Historical Society Board, The North Dakota State Health Department, and the appropriate federal and state agencies. In addition, a representative of Vantage Pipeline shall also be notified. To insure that both the disturbed remains receive the maximum protection and that costly delays are avoided, this meeting will be conducted, if possible, within 24 to 36 hours of discovery; and
- 5.) Protect the remains from further disturbance until a consensus for the care of the human remains has been achieved. It is anticipated that any such remains will be buried at the location designated by North Dakota Intertribal Reinterment Committee representatives.

Site avoidance is preferred and generally feasible within a pipeline construction zone. If a site can be avoided, Vantage shall establish an appropriate setback and mark it as a “no disturbance” area.

For any graves that are relocated, Vantage shall pay reinterment costs. No scientific study shall be conducted on grave remains or burials excavated for reinterment deemed disrespectful of their spiritual and sacred nature. Grave remains will not be sent to local, state or federal agencies, universities, or research institutions for scientific study, unless approved by the North Dakota burial board. Additional cultural resource contingencies may apply per the recommendations of the SHPO, concerning mitigation of discovery sites.

8.9.4 Emergency Response

In the event of an accident or malfunction that may impact cultural resources, the supervising archaeologist will be contacted once the area has been deemed safe and all necessary repairs have taken place. The archaeologist shall consult with the Contractor, Vantage, and the appropriate state agencies. If applicable, mitigation may be required to salvage or protect impacted cultural resources.

8.9.5 Curation or Disposition of Cultural Materials

All non-funerary cultural materials recovered from privately owned lands are the property of the landowner. Cultural materials will be returned to those landowners after analysis is complete. There is no provision at this time to curate non-funerary materials.

All funerary cultural materials recovered are protected under NDCC 23-06-27 and NDAC 40-02-03. Funerary cultural materials will be reinterred, curated in the county from which they were recovered, or otherwise disposed as directed by the SHPO after analysis is complete.

Exhibit J.1

Typical Details

Exhibit J.1 will be submitted as an addendum.

Exhibit J.2
Emergency Response Plan

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1.0 General Information

This is a general Emergency Response Plan (ERP) for the Vantage West Spur Lateral Pipeline project. All sub-contract personnel shall review and follow this plan. In addition, the Construction Contractor will develop a thorough site-specific ERP for the project.

1.1 Facilities and Project Location

- Name of facility: Vantage West Spur Lateral Pipeline
- Type of facility: High vapor pressure (HVP) steel pipeline.
- Facility Location: The pipeline originates from the Stateline II Gas Processing Plant owned by ONEOK Partners, LP near Williston, North Dakota. It connects to the existing Vantage ethane pipeline system near Stady, North Dakota.
- Start Point: lat 48.228046° long -103945260°
- Finish Point: lat 48.749328° long-103679005°
- Contacts: See Table 1 below.

Table 1. Project Contacts

Contact	Name And Position	Address	Contact Information
Senior Manager	Charles Vincett	PEMBINA 585–8th Avenue SW Suite 4000 Calgary, AB T2P 1G1	Phone: (403) 231-7429 Fax: (403) 205-3539 Email: cvincett@pembina.com
Operations Manager	Keith Learmonth	PEMBINA 585–8th Avenue SW Suite 4000 Calgary, AB T2P 1G1	Phone: 403-691-7655 Mobile: 403-473-4204 Email: klearmonth@pembina.com
Land Management Specialist	Russ Bandemer	Vantage Pipeline US LP 113 East Broadway, Suite 1 Williston, ND 58801	Phone: (307) 532-1717 Email: rbandermer@vantageus.net
Environmental Consultant	David Cameron	KC Harvey Environmental LLC 376 Gallatin Park Drive Bozeman, MT 59715	Phone: (406) 585-7402 Fax: (406) 585-7428 Email: dcameron@kcharvey.com
Project Engineer	Cullen Colville Project Manager	Wood Group Mustang 2000, 555 – 4th Ave. SW Calgary, AB, T2P 3E7	Phone: (403) 462-5150 Email: cullen.colville@woodgroup.com
Archeologist	Lynelle Peterson	Ethnoscience, Inc 4140 King Avenue East Billings, MT 59101	Phone: (406) 252-7945 Email: lynelle@ethnoscience.com
GOVERNMENT- FEDERAL			
US Fish and Wildlife Service	Kevin Shelley Field Supervisor	U.S. Fish and Wildlife Service North Dakota Ecological Services Field Office 3425 Miriam Avenue Bismarck ND 58501	Phone: (701) 250-4481 Email: kevin_shelley@fws.gov
US Army Corp of Engineers	Daniel Cimarosti North Dakota Regulatory Program	US Army Corps of Engineers 1513 South 12th Street Bismarck, ND 58504	Phone: (701) 255-0015 x 2001 Fax: (701) 255-4917 Email: Daniel.E.Cimarosti@usace.army.mil

Contact	Name And Position	Address	Contact Information
USDA - NRCS Divide County, North Dakota	Robert Casteel District Conservationist	NRCS Wallin Building 206 Main Street, Box 66 Crosby, ND 58730-0066	Phone: (701) 965-6491 Fax: 701-965-6064 Email: rob.casteel@nd.usda.gov
USDA - NRCS Williams County, North Dakota	Kevin Seitz District Conservationist	Williston Field Office 1106 West 2nd Street Williston, ND 58801	Phone: (701) 572-6729 Fax: 701-572-0484 Email: kevin.seitz@nd.usda.gov
USDI – BLM North Dakota Field Office	Kevin Holmes, Supervisory Natural Resource Specialist	North Dakota Field Office 99 23rd Avenue West, Suite A Dickinson, ND 58601	Phone: (701) 227-7700 Fax: (701) 227-7701 Email: kholmes@blm.gov
USDI - BOR	Joe Hall Chief of Resources and Environmental Services	USDI-BOR Dakotas Area Office PO Box 1017 Bismarck, ND 58502-1017	Phone: (701) 250-4242 Fax: (701) 250-4326 Email: jhall@usbr.gov
In the Event of a Spill	National Response Center	National Response Center c/o United States Coast Guard (CG-5335) - Stop 7581 2100 2nd Street, SW Washington, DC 20593-0001	Toll Free: 800-424-8802 Direct: (202) 267-2675 Fax: (202) 267-1322 Email: HQS-DG-1st- NRCINFO@uscg.mil
GOVERNMENT- STATE			
North Dakota State Historical Preservation Office	Susan Quinnell Review & Compliance Coordinator	North Dakota Heritage Center 612 East Boulevard Avenue Bismarck, ND 58505-0830	Phone: (701) 328-2666 Fax: (701) 328-3510 Email: squinnell@nd.gov
North Dakota Game and Fish Department	Steve Dyke Conservation Supervisor	100 North Bismarck Expressway Bismarck, ND 58501-5095	Phone: (701) 328-6224 Fax: (701) 328-6352 Email: sdyke@nd.gov
Williams County Farm Service Agency	Corey Paryzek County Executive Director	1106 West 2 nd Street Williston, ND 58801-5804	Phone: (701) 572-6729 Email: corey.paryzek@nd.usda.gov
Divide County Farm Service Agency	Pam Solem Acting County Executive Director	12 Main Street South Crosby, ND 58730	Phone: (701) 965-6001 Email: pam.solem@nd.usda.gov
North Dakota Department of Agriculture	Jody Reinke, Assistant to the Director	600 E Boulevard Ave, Dept 602 Bismarck, ND 58505	Phone: (701) 328-4754 Email: jodyreinke@nd.gov

2.0 Background

During the construction of the Vantage West Spur Lateral Pipeline, there is a potential for a variety of emergencies. The emergencies may include: spills, medical, fire, and environmental conditions.

2.1 Spill Predictions and Controls

Most of the fuels and hazardous materials involved in this construction project will remain within the vehicles and equipment. With the exceptions of dewatering pumps, light plants and generators, secondary containments are not required. Refer to the Spill Prevention, Containment, and Countermeasure (SPCC) Plan. Potential spills are likely to occur during:

- Refueling
- Equipment Failures
- Maintenance

2.2 Fire

During certain times of the year, the North Dakota environment can be dry causing wildfire conditions can become high. Low precipitation, low humidity and high winds can create a “Red Flag Warning” scenario. A Red Flag Warning is a term used by the National Weather Service that describes these conditions. The National Weather Service posts a “Red Flag Warning” on their website and through public service announcements. The potential for fire during construction can occur from:

- Steel tracks breaking rocks
- Steel tracks creating sparks
- Equipment failures
- Lightning

2.3 Medical

In the event of a medical emergency:

- Call for Help
- Care for the injured party
- Notify a supervisor

2.4 Environmental Conditions

Environmental conditions that pose a safety threat include:

- Tornados
- Severe thunderstorms and lightning
- Severe cold and wind chill
- Snow and ice
- Severe heat

3.0 Emergency Response

3.1 Evacuation Plan

Whenever an imminent danger or actual emergency situation arises and it is determined that personnel must be evacuated from the project, the superintendent will initiate the evacuation process. In the event of an emergency, all persons are to be evacuated from their work area and shall assemble at a predetermined, muster point.

3.2 Fire Emergency Plan

1. Dial 911 to alert the Fire Department.
2. Evacuate the project area and meet at the muster point if it is safe.
3. Team leaders account for all employees

Table 2. Fire Emergency Contacts.

County	Address	Phone Number
If it is an emergency, dial 911.		
Divide County	Crosby and Rural Fire Department 107 West Central Crosby, ND 58730	701-965-6304
	Fortuna Rural Fire Protection District 270 Main Street Fortuna, ND	701-834-2212
Williams County	Grenora Rural Fire Protection District 210 Main Street Grenora, ND	701-694-6203
	Williston Rural Fire Protection District- Ambulance 317 11 th Street W Williston, ND	701-572-3400

3.3 Spill Plan

Upon discovery of a spill, the response action priorities are to protect the safety of personnel and the public, minimize environmental impacts, and control costs associated with cleanup and restoration. Key actions immediately following discovery of a spill are:

- Assess the safety of the situation, both in the immediate vicinity and for the surrounding public.
- Remove sources of ignition, if it is safe to do so.
- Shut off the source of the spill, if it is safe to do so.

The person discovering a spill shall promptly notify the Spill Coordinator, the Environmental Inspector, and the Construction Superintendent. The Spill Coordinator shall implement spill control measures by following the SPCC Plan (Exhibit J.3).

Table 3. North Dakota Spill Response Contractors Contact Info

Contractor Name & Address	Phone Numbers
Garner Environmental Services, Inc. 14047 Country Lane Williston, ND 58801	Office: 701-577-1200 24-hour: 1-855-774-1200
Strata Corporation, Earthmovers Group 1225 S Broadway Minot, ND 58701	Office: 701-852-4560 24-hour: 1-800-373-5259
Clean Harbors 310 Airport Rd Williston, ND 58801	Office: (701)-774-2201 24-hour: 1-800-645-8265

3.4 Severe Weather Plan

The Construction of the Vantage West Spur Lateral Pipeline will occur in remote parts of North Dakota. Awareness of potential meteorological hazards is crucial to keeping workers safe. The National Weather Service (NWS) issues severe weather watches and warning. Table 4 describes the types of media the NWS uses to broadcast weather threats. Actions to take will depend on the type of weather threat issued (Table 5).

Table 4. Types of Media the National Weather Service Uses

Media Type	Service Provided
Internet	Specific area forecasts at http://www.weather.gov/
Television	Warning information is supplied through reading NWS warnings on the air, or by occasional scrolls providing the information.
Radio	The Emergency Alert System (EAS) is used to broadcast sever weather warnings. The EAS interrupts regular broadcast on AM/FM channels.
Cell Phone	A new service called the Wireless Emergency Alerts (WEA) sends alerts of current life-threatening situations to cell phones in an affected area. The WEA will appear on the phone as a Text.

Table 5. Definitions of National Weather Service Watches and Warnings

NWS Weather Threat Category	When It is Issued	Action to Take
Watch	Issued by NWS to give advance when conditions are favorable for the development of severe weather.	When a watch is issued for your area, pay attention to the weather and be prepared to take action should a warning be issued
Warning	Issued when severe weather is occurring or is imminent.	When a warning is issued for your area, you should take action immediately to protect your life and property.

3.5 Medical Emergency Plan

If a medical emergency is reported, dial 9-1-1 and request an ambulance. Provide the following information:

1. Number and location of victim(s)
2. Nature of injury or illness

3. Hazards involved
4. Nearest emergency access point.

Alert trained employees to respond to the victim’s location and bring a first aid kit and or Automated External Defibrillator (AED). Trained employees should know where and have access to First Aid Kits and AED’s. Table 6 provides emergency contacts.

Table 6. Emergency contacts for the West Spur Lateral Pipeline.

Service	County	Location/ Contact	Phone Numbers
If it is an emergency, dial 911.			
Emergency Response Management	Divide County	P.O. Box 275 Crosby, ND 58730	701-965-6461
	Williams County	223 E. Broadway St., Suite 202 Williston, ND 58801	701-577-7707
If it is an emergency, dial 911.			
Ambulance	Divide County	Divide County Ambulance Service 107 Central Ave W Crosby, ND 58730	(701) 339-2768
	Williams County	Grenora Ambulance Service 205 Main Street Grenora, ND 58845	(701) 694-2723
		Williston Ambulance Service 317 11th St W Williston, ND 58801	701-572-3400 day 701-770-0350 evening
If it is an emergency, dial 911.			
Hospital/Health Centre	Divide County	St. Luke’s Hospital 702 1 st Street SW Crosby, ND 58730	701-965-6384
	Williams County	Tioga Medical Center 810 N Welo Street Tioga, ND 58852	701-664-3308
		Mercy Medical Center 1301 15 th Ave. W Williston, ND 58801	701-774-7400
If it is an emergency, dial 911.			
County Sheriff	Divide County	Divide County Sheriff P.O. Box 275 Crosby, ND 58730	701-965-6461
	Williams County	Williams County Law Enforcement Center 223 East Broadway, Suite 301 Williston, ND 58801	701-577-7700

Exhibit J.3

**Spill Prevention, Containment, and Countermeasure (SPCC) Plan
for Construction of the Vantage West Spur Lateral Pipeline**

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Appendices

- Appendix A Spill Report Form
- Appendix B Emergency Response Contractors
- Appendix C Licensed Waste Disposal Facility

1.0 Introduction

Vantage Pipeline US LP (Vantage) has prepared this general Spill Prevention, Containment, and Countermeasure (SPCC) Plan to be implemented during construction of the Vantage West Spur Lateral Pipeline Project (Project). This SPCC Plan outlines specific preventive measures to be followed to reduce the likelihood of an accidental release of a hazardous or regulated liquid during construction activities. This SPCC Plan also sets forth procedures and response actions in the event of an actual release. Completion of a site-specific SPCC Plan that addresses potential spills related to West Spur Lateral Pipeline construction activities is the responsibility of the Vantage West Spur Lateral Pipeline Contractor (Contractor).

This SPCC Plan restricts the location of fuel storage, refueling activities, and construction equipment maintenance along the construction right-of-way and provides procedures, materials, and lines of communication to facilitate the prevention, containment, and cleanup of spills during construction activities. It also sets forth minimum standards for handling and storing regulated substances. The goal of the SPCC Plan is to minimize the potential for a spill of these materials, to contain any spillage to the smallest area possible, and to protect areas that are considered environmentally sensitive (e.g. streams, groundwater wells, wetlands, etc.). This SPCC Plan does not certify the Contractor or individuals as licensed waste haulers.

Measures and procedures defined in this SPCC Plan will be implemented by independent Contractors and construction inspectors hired by Vantage. These Contractors and inspectors will have day-to-day responsibility to ensure compliance with this SPCC. By completing the Delegation of Authority Form (following page), Vantage grants authority to the named parties to act on its behalf on matters pertaining to this SPCC. Any signed Delegation of Authority form shall be kept with this SPCC at all times.

Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Spill Prevention Control and Countermeasure plan, at the _____ construction site. The designee is authorized to sign any reports, storm water pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)

_____ (company)

_____ (address)

_____ (city, state, zip)

_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in _____ (Reference State Permit), and that the designee above meets the definition of a “duly authorized representative” as set forth in _____ (Reference State Permit).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

2.0 Regulated Materials Storage and Handling

The typical vehicle and equipment fuels, lubricants, and hazardous materials stored or used during construction of the pipeline are listed in Table 1. In addition the location, typical quantities, and usual methods of storage are listed for each fluid. Storage methods and quantities vary with length of construction segment, time of year, and type of terrain.

Table 1. Typical Fuel, Lubricants, and Hazardous Materials used during pipeline construction.

Fluid Uses	Fluids	Typical Quantity	Method of Storage	Storage Location
Fuels	Diesel	5,000 to 10,000 gallons	Tanks or Tankers	Contractor Yard Warehouse
	Gasoline	5,000 to 10,000 gallons	Tanks or Tankers, 5-Gallon Containers, Pick-up Tanks	Contractor Yard Warehouse
Lubricants	Engine Oil	<100 gallons	Bulk Storage Retail Packaging	Contractor Yard Warehouse Service Trucks
	Transmission/Drive Train Oil	<50 gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse Service Trucks
	Hydraulic Oil	<100 gallons	Bulk Storage Retail Packaging	Contractor Yard Warehouse Service Trucks
	Gear Oil	<50 gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse Service Trucks
	Lubricating Grease	<25 gallons	Tubes stored in paper cases	Contractor Yard Warehouse Service Trucks
Coolants, Hydraulic Fluids, Other	Ethylene Glycol	<100 gallons	Bulk Storage Retail Packaging	Contractor Yard Warehouse Service Trucks
	Propylene Glycol	<100 gallons	Bulk Storage Retail Packaging	Contractor Yard Warehouse Service Trucks
	Power Steering Fluid	<50 gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse Service Trucks
	Brake Fluid	<50 gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse Service Trucks
	Propane	25-100 gallons	Pressurized Tanks	Contractor Yard Warehouse Welding Trucks

3.0 Preventive Measures

Vantage will ensure that all practicable measures are implemented to minimize the potential for and consequences of a spill during construction of the Project and related facilities. Vantage intends to comply with applicable environmental and safety laws and regulations and to provide training and equipment designed to prevent pollution. The Contractor will ensure that a copy of this SPCC Plan is available onsite to all construction crew members. In addition, Contractors will ensure that construction crew members are properly trained in handling fuels to prevent spills and to effectively

contain spills, and that equipment required to implement the provisions of this SPCC Plan are available on site.

Vantage will provide training on the provisions of this SPCC Plan to Construction and Inspection personnel as needed.

3.1 Staging Areas/Work Yards

Fuel and hazardous liquid storage will require secondary containment structures as described below:

- The Contractor will construct temporary liners and seamless berms around aboveground bulk tanks so that in the event of a leak or spill, liquids will be contained and collected in specified areas that are isolated from water bodies. Storage tanks will not be placed in areas subject to periodic flooding and washout.
- The Contractor will visually inspect aboveground tanks frequently and whenever the tanks are filled. The Contractor will maintain inspection records for every tank.
- Secondary containment structures must be constructed so that no outlet is provided and any spill will be contained within the containment structure. Accumulated rainwater may be removed if authorized by an Environmental Inspector. Accumulated water that has a visible sheen will be collected for proper storage and disposal. The secondary containment must be able to hold the contents of the container and have a freeboard large enough to hold a 25 year precipitation event that falls within 24 hours.
- The Contractor will remove secondary containment structures at the conclusion of the Project. The Contractor is also responsible for returning the storage impoundment area to its original ground contours and appearance upon completion of the Project.
- Fuels and lubricants will be stored only at designated staging areas and in proper service vehicles. The storage area will be at least 100 feet away from the edge of a wetland or waterbody, at least 200 feet away from a private water supply well, and at least 400 feet away from a municipal water supply well, unless a larger buffer is required by governing agencies.
- Storage containers will display labels that identify the contents of the container and whether the contents are hazardous. Appropriate labels will identify the specific hazard (flammable, toxic, etc.) will be affixed to the containers and readily visible. The Contractor shall maintain and furnish copies on demand of all Material Safety Data Sheets to Vantage.
- To the extent practicable, Contractors will conduct routine equipment maintenance such as oil changes in staging areas and will dispose of waste oil in a proper manner (e.g. place in labeled, sealed containers and transport to a recycling facility).
- The Contractor will correct visible leaks in tanks as soon as possible.
- Drain valves on temporary storage tanks will be locked to prevent accidental or unauthorized discharges from tanks.
- Fuel nozzles shall be equipped with functional automatic shut-off valves.

- Drivers of tank trucks shall be responsible for spill prevention during tank truck unloading. Procedures for loading and unloading tank trucks will meet the minimum requirements established by the Department of Transportation. Drivers will observe and control the fueling operations at all times to prevent overfilling.
- Prior to departure of a tank truck, outlets of the vehicle will be examined by the driver for leakage, and tightened, adjusted, or replaced as required to prevent liquid leakage while in transit.
- The Contractor shall stock a sufficient supply of sorbent and barrier materials at the construction staging area to allow the rapid containment and recovery of a spill. Sorbent and barrier materials will be utilized to contain runoff from spill areas.
- Shovels and labeled 55-gallon drums will be kept at each of the staging areas. If small quantities of soil become contaminated within a staging area, they will be collected and placed in the drums. Large quantities of contaminated soil will be collected using heavy equipment and stored in drums or other suitable containers prior to disposal. Disposal of contaminated soil will be in accordance with applicable state and federal regulations. Typical disposal methods will include transporting the soil to a licensed disposal or treatment facility or thin-spreading in compliance with state guidelines (See Contaminated Soil Management Plan, Attachment 6 of the Environmental Protection Plan).

3.2 Right-of-Way

The following preventive measures apply to refueling and lubrication activities within the construction right-of-way:

- Refueling and lubricating of construction equipment will be restricted to upland areas located at least 100 feet from stream channels and wetlands, at least 200 feet from private water supply wells, and at least 400 feet from municipal water supply wells. Where this is not feasible, the equipment will be fueled and lubricated by designated personnel with specific training in refueling, lubricating, and spill containment and cleanup.
- Fuel trucks transporting fuel to construction areas shall travel only on approved access roads.
- Equipment shall not be washed in streams.
- Fuel and service trucks shall carry a minimum of 20 lbs. of suitable commercial sorbent and barrier materials.

3.3 Vulnerable Aquifer Areas

The Contractor's Construction Superintendent or designated Spill Coordinator must immediately notify the Vantage Representative and the Environmental Inspector of any release or spill of a petroleum product or hazardous liquid, regardless of volume. The Spill Coordinator shall implement the following response actions:

- Follow spill containment response actions described in Section 4 below.
- Immediately excavate obviously impacted soils. Store and dispose of impacted soils in accordance with this SPCC Plan.

4.0 Spill Response

The response action priorities upon discovery of a spill are to protect the safety of personnel and the public, minimize environmental impacts, and control costs associated with cleanup and restoration. Key actions immediately following discovery of a spill are:

- Assess the safety of the situation, both in the immediate vicinity and for the surrounding public.
- Remove sources of ignition if it is safe to do so.
- Shut off the source of the spill if it is safe to do so.

The person discovering a spill shall promptly notify the Spill Coordinator, the Environmental Inspector, and the Construction Superintendent. The Spill Coordinator shall implement spill control measures as described below.

4.1 Land Spill Response

Implement the following response actions for spills on land:

- Construct berms using available equipment and/or deploy barrier materials to contain the spill.
- Apply sorbent materials to the spill area.
- Minimize traffic on contaminated soils.
- Excavate contaminated soils and vegetation and transport to a licensed and approved treatment or disposal facility.

4.2 Wetland or Waterbody Spill Response

Implement the following response actions for spills in or near a wetland or waterbody:

- Implement the response actions described in Section 4.1 in shoreland areas. Excavate trenches if necessary to create collection sumps to prevent liquids from entering wetlands or waterbodies.
- If a spill occurs into a stream, lake, or other waterbodies containing standing or flowing water, the Vantage Representative shall notify the National Response Center immediately.
- Secure the services of an Emergency Response Contractor (Appendix B) if required to assist with containment and cleanup of the spill.
- Deploy booms, curtains, and sorbents to minimize the spread of the spill.
- Use skimmer pumps and holding tanks to remove released materials from the water surface.
- Excavate contaminated soils from wetlands and place on plastic sheeting in an approved containment area located at least 100 feet from the wetland and waterbodies. Cover stockpiled soil with plastic sheeting. Remove stockpiles as soon as practicable and transport to a licensed and approved treatment or disposal facility.
- Restore the contaminated area in accordance with recommendations from site remediation specialists and as required by state guidelines.

4.3 Field Coordinator

Subject to approval by Vantage, the Contractor shall appoint a Field Coordinator who will be responsible for reporting of spills, coordinating Contractor personnel for spill cleanup, completing subsequent site investigations, and preparing incident reports. The Field Coordinator will report to the designated Vantage Representative and the Environmental Inspector. The Vantage Representative will contact and report to state and federal agencies as required.

5.0 Unanticipated Discovery of Hazardous Materials

Soil contamination, not directly resulting from construction of the pipeline, may be encountered during construction of the Vantage pipeline. Locations where contamination may be present include:

- Third party pipeline crossings;
- Oil and natural gas processing facilities;
- Injection/disposal wells;
- Undocumented disposal/dump sites; and
- Agricultural equipment refueling, pesticide/herbicide loading areas, and storage areas.

Identification and recognition of existing contamination is the first step in the response action. During construction, indicators of possible contamination include, but are not limited to:

- Gasoline smells or other odors which emanate when the earth is disturbed;
- Stained or discolored earth in contrast with adjoining soil;
- Oily residue intermixed with earth;
- Sheen on groundwater;
- Fill material containing debris other than construction-related items;
- Household trash covered by earth or industrial waste debris;
- Rusted barrels and containers;
- Cinders and other combustion products like ash; and
- Structures such as asbestos cement (transite) pipe, abandoned oil & gas lines, and underground storage tanks also require special handling when disturbed.

When unanticipated soil contamination is discovered in the right-of-way (ROW), especially if it will be excavated, the appropriate response actions will need to be performed to address the contamination. The following are the major steps that should be taken when contamination is discovered:

- Recognize that the area may be contaminated with hazardous materials;
- Secure the site to protect workers and the public;
- Do not allow the prime contractor, subcontractor, or other personnel to handle or disturb the contaminated material or the surrounding soil;
- Notify the Environmental Inspector(s) and construction manager(s).

The Environmental Inspector will in turn notify the proper authorities (North Dakota Department of Health (NDDH) contact information Section 7). Reporting procedures are similar to those employed if a spill has occurred.

In no instance will an effort be made to characterize the contamination or begin remedial action(s), including hauling and disposal of the contaminated soil, until the NDDH has made a determination as to the appropriate action(s) to take. The Contractor shall make every effort to limit the spread of contamination and shall employ BMPs to prevent the contamination from reaching a water supply well, surface water, stockpiled material, and other construction areas.

6.0 Training

Vantage will provide spill prevention and response training and safety training to its supervisory and inspection personnel, as needed. In addition, training will be required of all Contractor construction personnel. Training will be required before construction personnel are allowed to enter the ROW. The training program will be designed to improve awareness of safety requirements, pollution control laws, proper operation and maintenance of equipment, and implementation of spill response actions.

7.0 Reporting Procedures

Vantage will prepare a Spill Report Form (Appendix A) and notify state and federal agencies as required in the event of a release. These agencies may include but are not necessarily limited to:

National Response Center (Washington, D.C.)
Phone: 800-424-8802 (24 hours)

North Dakota Department of Health
Division of Emergency Management
24-hour State Notification (State Radio)
In-State Phone: 800-472-2121; Outside North Dakota 701-328-2121

North Dakota Division of Water Quality
Phone: 701-328-5210

Vantage will coordinate with these agencies regarding contacting additional parties or agencies.

Appendix A: Spill Report Form

Date/Time of Spill: _____ Date/Time of Spill Discovery: _____

Name and Title of Discoverer: _____

Legal Description of spill location and milepost: _____

Type, estimated volume, and manufacturer's name: _____

Media in which the release exists (circle):

sand silt clay upland wetland waterbody other

Topography and surface conditions: _____

Proximity to wetlands or waterbodies (including ditches): _____

Proximity to private or public water supply wells: _____

Directions from nearest community: _____

Weather conditions at the time of release: _____

Describe the causes and circumstances resulting in the spill:

Describe the extent of observed contamination; both horizontal and vertical (i.e. spill stained soil in a 5-foot radius to a depth of 1 inch):

Describe immediate spill control and cleanup methods used and implementation schedule:

Location of excavated/stockpiled contaminated soil:

Describe the extent of spill-related injuries and remaining risk to human health and the environment:

Name, company, and telephone number of responsible party (Contractor):

Current status of cleanup actions:

Name and Company for the following: _____

Construction Superintendent: _____

Field Coordinator: _____

Vantage Representative: _____

Environmental Inspector: _____

Chief Inspector: _____

Government agencies notified:

Agency: _____ Date: _____

Agency: _____ Date: _____

Agency: _____ Date: _____

Landowner Notified: _____ Date: _____

Form Complete By: _____ Date: _____

Field Coordinator must complete this form for any spill, regardless of size, and submit the form to the Vantage Representative and Environmental Inspector within 24 hours of the occurrence. Any spill to water shall be reported IMMEDIATELY.

Appendix B: Emergency Response Contractors

The Contractor must dispose of all wastes according to applicable state and local requirements. A listing of potential Emergency Spill Response contractors is listed below. This list was developed from state-wide databases and represents firms operating at the time the database was queried. This list is presented as a service to the user and does not represent a recommendation by the state agencies or Vantage. It is the user's responsibility to assure that the emergency response contractor is properly licensed. Selection of an Emergency Response Contractor is subject to approval by Vantage.

North Dakota Contractors

Garner Environmental Services, Inc. office: 701-577-1200
14047 Country Lane 24-hour: 1-855-774-1200
Williston, ND 58801

Strata Corporation, Earthmovers Group office: 701-852-4560
1225 S Broadway 24-hour: 1-800-373-5259
Minot, ND 58701

Clean Harbors Office: (701)-774-2201
310 Airport Rd 24-hour: 1-800-645-8265
Williston, ND 58801

Out-of-State Contractors

West Central Environmental Consultants office: 320-589-2039
14 Green River Road, PO Box 594 24-hour: 800-422-8356
Morris, MN 56267

Bay West Environmental office: 651-291-0456
5 Empire Drive 24-hour: 1-800-279-0456
St. Paul, MN 55103

OSI Environmental office: 1-800-777-8542
300 Fayal Road
Eveleth, MN 55734

Appendix C: Licensed Waste Disposal Facilities

The Contractor must dispose of all wastes according to applicable state and local requirements. Licensed disposal facilities in the State of North Dakota are listed below. This list was developed from state-wide databases and represents facilities operating at the time the database was queried. This list is presented as a service to the user and does not represent a recommendation by the state agencies or Vantage. It is the Contractor's responsibility to assure that the facility is properly licensed.

North Dakota Special Waste Facilities

Dishon Disposal 701-572-9079
15242 39th Lane NW
Williston, ND 58801 (Williams County)

Praire Disposal LLC 701-664-3383
102C10 52nd St NW
Tioga ND 58801 (Williams County)

Smokey Butte Environmental LLC 887-827-0851
13310 94th St NW
Fortuna, ND 58844 (Divide County)

Indian Hills Disposal 701-774-8514
14070 43rd Street NW
Williston, ND 58801

North Dakota Landfill Facilities

Williston Municipal Landfill 701-577-6368
5176 134th Avenue NW
Williston, ND 58801

Dickinson Municipal Landfill 701-456-7783
3389 Energy Drive
Dickinson, ND 58601

McKenzie County Sanitary Landfill 701-5863445
2491 132nd Avenue NW
Watford City, ND 58854

Minot Municipal Landfill 701-857-4140
3100 20th Avenue SW
Minot, ND 58701

Noonan Landfill 701-838-1182
Noonan, ND 58765

Exhibit J.4

Stormwater Pollution Prevention (SWPP) Plan

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Regulatory Cross-Reference

This table summarizes the location of the NDR10-0000 permit requirements in this document.

Permit Section		Requirement	Location
II.C.1: Site Description	II.C.1.a.	Describe the overall project and the type of construction	Section 1.0
	II.C.1.b.	Estimate of the total area of the site and the total area expected to be disturbed	Section 1.0
	II.C.1.c.	Proposed timeline of activities that disturb soils for major portions of site	Section 1.1
	II.C.1.d.	Describe the soil within the disturbed site	Section 1.2
	II.C.1.e.	Names of surface waters and municipal storm sewer systems that may receive discharges	Section 1.3
	II.C.1.f.	Site maps	Section 1.4
	II.C.1.g.	List of 303(d) listed waterways located within 2000ft of site	Section 1.3
II.C.2: Narrative	II.C.2.a	Describe the installation, removal, and maintenance requirements of BMPs	Section 10.0
	II.C.2.b	Rationale of selected BMPs	Section 10.0
	II.C.2.c	Define whether BMPs are temporary or permanent	Section 10.0
	II.C.2.d	Explain why stormwater discharge requirements or inspection and maintenance requirements were not met	Section 6.0
II.C.3: Operational Controls	II.C.3.a	Identify a person knowledgeable and experienced in the application of erosion and sediment control BMPs who is responsible for implementation of SWPPP	Section 2.0
	II.C.3.b	Good housekeeping BMPs	Section 2.0
	II.C.3.c	Preventative maintenance BMPs	Section 2.0
	II.C.3.d	Spill prevention and response procedures	Section 2.0
	II.C.3.e	Employee training	Section 2.0
	II.C.3.f	Describe onsite concrete washout facilities	Section 2.0
	II.C.3.g	Dewatering or basin draining BMPs	Section 2.0
II.C.4: Erosion and Sediment Controls	II.C.4.a.	Selection criteria for erosion and sediment controls	Section 3.0
	II.C.4.b.	Downslope sediment control BMPs	Section 3.0
	II.C.4.c.	Temporary erosion control BMPs	Section 3.0
	II.C.4.d.	BMP selection, installation, and maintenance procedures	Section 3.0
	II.C.4.e.	Sediment escape cleanup procedures	Section 3.0
	II.C.4.f.	BMPs designed for the 2-year, 24 hour storm event	Section 3.0
	II.C.4.g.	TMDL specified BMPs	Section 1.3
II.C.5: Stormwater Management	II.C.5.a.	Stormwater ponds, natural depressions, infiltration, or sequential systems	Section 4.0
	II.C.5.b.	Velocity/energy dissipation devices	Section 4.0
	II.C.5.c.	Maintenance for on-site stormwater management features	Section 4.0
	II.C.5.d.	BMP design, installation, and use requirements	Section 13.0
II.C.6: Maintenance		BMP maintenance procedures	Section 5.0
II.C.7: Inspections		Site inspection procedures	Section 6.0
II.C.8: Plan Review and Revisions	II.C.7.a.	Plan must be signed in accordance with Part IV.A.6	Attachment D
	II.C.7.b.	Plan must be made available upon request.	Section 7.0
	II.C.7.c.	Plan amendment procedure	Section 8.0

Introduction

The North Dakota Department of Health (NDDH) oversees the administration and compliance of Stormwater Permits within the state of North Dakota authorized under the federal National Pollutant Discharge Elimination System (NPDES). The NDDH requires construction projects disturbing five or more acres to obtain a Construction General Permit (Permit No. NDR10-0000) and a Stormwater Pollution Prevention Plan (SWPPP) must be developed, approved, and implemented. The following SWPPP complies with these regulations.

1.0 Site Description

This SWPPP covers Vantage US LP's West Spur Lateral Pipeline construction operations in Williams and Divide counties, North Dakota. The owner is responsible for all terms and conditions of the permit, while the construction contractor is jointly responsible for compliance. The owner will provide environmental monitors who will be responsible for conducting the stormwater inspections outlined in the SWPPP. The environmental monitors will provide daily supervision and have the authority to modify the SWPPP.

Vantage US LP (Vantage) is proposing construction of the Vantage West Spur Lateral Pipeline (West Spur) in North Dakota. The Vantage West Spur Lateral Pipeline will transport ethane from the existing Stateline II Plant near Williston, North Dakota to the existing Vantage ethane pipeline system near Stady, North Dakota. The existing Vantage Pipeline then travels to Empress Alberta for the petrochemical industry in Alberta. The West Spur Pipeline would provide the capacity needed to transport the growing ethane production from North Dakota's Williston Basin reserves to the market in Alberta.

In North Dakota, the proposed Vantage West Spur Lateral Pipeline would require construction and operation of the following:

- Approximately 47.3 miles of new 8 inch diameter underground high vapor pressure (HVP) pipeline on Vantage West Spur Lateral Pipeline preferred route (49.1 miles on alternative route) right-of-way from near Williston, North Dakota to an existing ethane pipeline system near Stady, North Dakota;
- Two mainline valve sites;
- In-line inspection facilities;
- Associated miscellaneous works such as pipeline warning signs and markers.

Figure 1 identifies the location of the proposed pipeline within North Dakota. The proposed West Spur Pipeline would follow right-of-way along the entire route in North Dakota. The pipeline would cross portions of Williams and Divide Counties. Table 1 summarizes the length of pipeline proposed in each county. Table 2 summarizes the overall land requirements for the proposed Vantage West Spur Lateral Pipeline Project.

Table 1. Location and length of the Vantage West Spur Lateral Pipeline Route(s).

County, State	Pipeline Length (miles)	
	Preferred Route	Alternative Route
Williams County, ND	35.45	37.21
Divide County, ND	11.89	11.89
TOTAL	47.34	49.10

Table 2. Approximate land requirements for construction of the Vantage West Spur Lateral Pipeline.

Facility	Approximate Dimensions	Area Affected (acres)
Temporary Workspace	70 feet x 47.3 miles	406.24
Permanent Easement	30 feet x 47.3 miles	167.26

*Above-ground facilities associated with this project would be constructed entirely within the permanent easement.

1.1 Construction Schedule

Vantage proposes to begin construction of the project in the summer of 2015. Construction would occur over approximately 4 months. Construction generally includes the following sequence of activities:

1. Survey and staking
2. Clearing and grading
3. Topsoil stripping
4. Stringing and bending
5. Welding and coating
6. Trenching and dewatering
7. Lowering-in and backfilling
8. Hydrostatic Testing
9. Cleanup
10. Restoration and Revegetation

VANTAGE WEST SPUR LATERAL PIPELINE PROJECT
 NORTH DAKOTA PSC APPLICATION
 Exhibit J.4 – SWPP Plan
 Docket No. PU-15-XXX

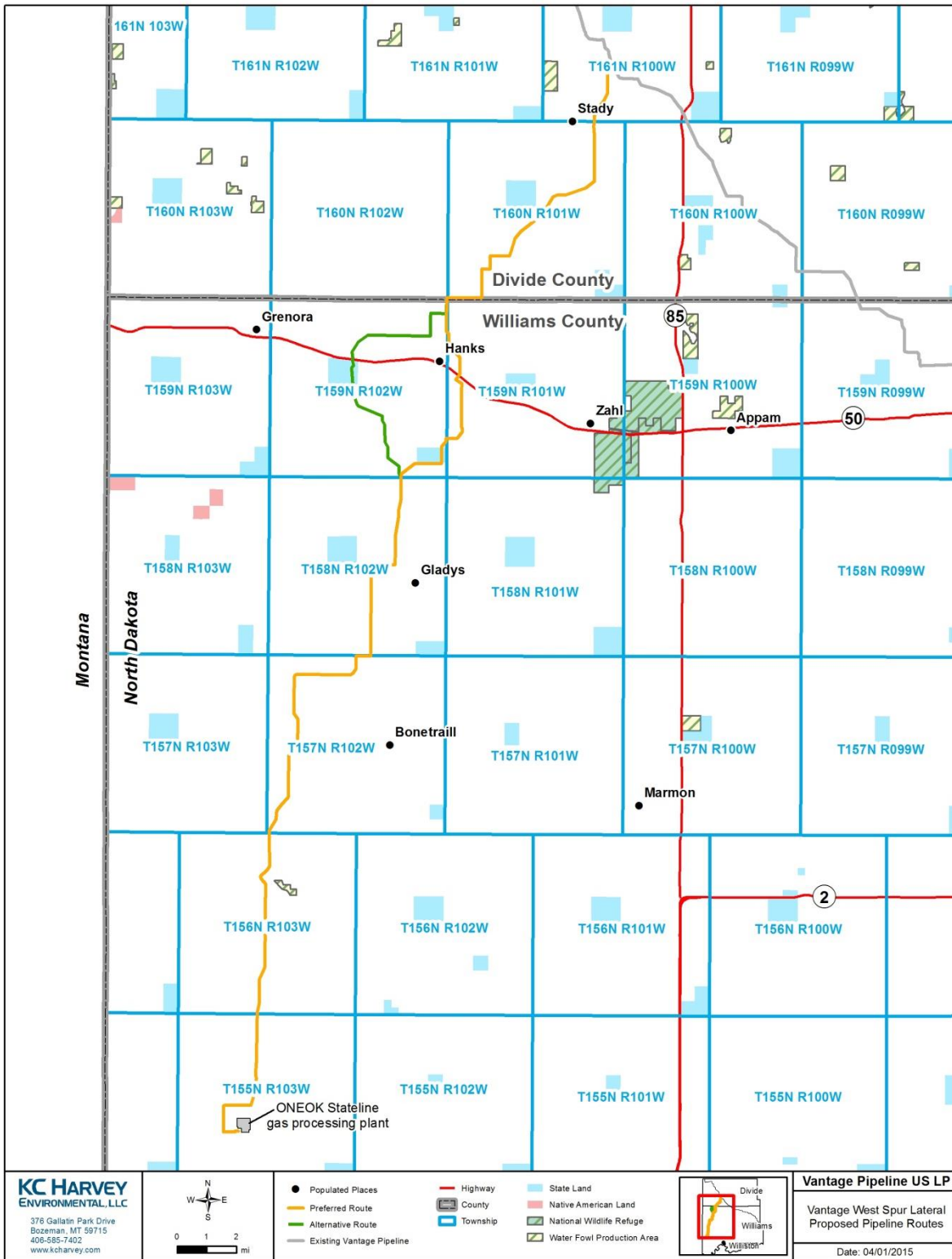


Figure 1. Project overview map.

1.2 Soils

Soil data was compiled from the SSURGO database, a database of digitized soil survey maps created by Natural Resources Conservation Service (NRCS) and National Cartography and Geospatial Center (NCGC). The SSURGO database was compiled using national field mapping standards for the purpose of natural resource planning and management, and remains the most detailed level of soil mapping available from the NRCS (NRCS, 2008). Soil characteristics of interest to the Vantage Pipeline provided by the SSURGO database include prime farmland, farmland of statewide/ local importance, hydric soils, compact prone soils, soil erodibility, texture, and thickness.

The proposed Vantage West Spur Lateral Pipeline route crosses over 30 soil associations. Dominant associations (associations that make up more than 5 percent of total soils crossed by the proposed pipeline route) make up 89 percent of soils in the project area are:

Williams-Zahl loams and Zahl-Williams loams are the most common soil associations bisected by the proposed Vantage Pipeline route. These soils are similar to the Williams Bowbell loams with the exception of some being found in depressions containing very poorly drained soils. In addition, Zahl soils found on knolls and ridges have a prominent “high lime” layer that occurs at plow depth. This light-colored, limey material often is exposed and mixed with dark-colored surface soil by cultivation.

Williams-Bowbells loams are also among the most common soils encountered along the proposed Vantage Pipeline route. They are found on undulating to rolling topography with knolls, ridges, and an occasional drainage-way. These well-drained soils have moderate amounts of surface organic matter (4 percent) and the restrictive layer is moderately low. Available water to a depth of 60 inches is high.

1.3 Waterbodies and Wetlands

The proposed Vantage West Spur Lateral Pipeline has 11 waterbodies and 62 wetlands within the preferred route survey corridor (10 waterbodies and 69 wetlands on the alternative route). However, only 7 wetlands and 8 waterbodies on the preferred route (9 wetlands and 6 waterbodies on the alternative route) are within or on the edge of the permanent right-of-way where temporary impacts may occur. No municipal storm sewer systems are located within the area of disturbance. Several unnamed flooded wetlands are located in close proximity to the pipeline. There are two named streams within the project area; Cow Creek and Cottonwood Creek.

Construction of the Vantage West Spur Lateral pipeline will not result in discharge to a water body that has a Total Maximum Daily Load (TMDL) allocation for sediment, suspended solids, or turbidity. The disturbance area does not discharge within 2000 feet of, or flow to a water body listed as impaired under section 303(d) of the federal Clean Water Act.

1.4 Site Maps

The site maps to be used with this SWPPP consist of the typical details attached in the Environmental Protection Plan (EPP) for the Vantage West Spur Lateral Pipeline (Exhibit J.1).

The site maps and associated attachments (in the EPP) for this SWPPP include the following requirements as outlined in the Construction General Permit:

1. Project boundaries;
2. Areas of ground disturbance during each phase/stage of the project;
3. Areas where disturbance will not occur, such as avoidance areas
4. Drainage patterns including: flow direction;
5. Dividing lines, discharge points, and storm sewer system inlets which the site drains to or may be affected by the activity;
6. Pre-existing and final grades;
7. Location of all temporary and permanent sediment and erosion controls during each particular phase;
8. Location of any stormwater conveyances such as: retention ponds, detention ponds, ditches, pipes, swales, stormwater diversions, culverts, and ditch blocks;
9. Location of potential sources of pollution;
10. Location of soil stockpiles;
11. Identify steep slopes;
12. Surface waters, including an aerial extent of wetland acreage;
13. Location of surface water crossings;
14. Locations where stormwater is discharged to surface waters;
15. Location of dewatering discharge points;
16. Locations of where chemical treatment of stormwater will be performed, including discharge points;
17. Fueling locations, vehicle and equipment maintenance areas, designated wash water collection site, lubricant and chemical storage, paint storage, material storage, staging areas, and debris collection area;
18. Location of any impervious surfaces upon completion of construction; and
19. Where included as part of the project, the site maps for off-site concrete/asphalt batch plants, equipment staging areas, borrow sites or excavated fill material disposal sites.

Pipeline construction will typically not intersect or affect any watercourses or major drainage areas since horizontal directional boring would be used to cross these areas. Drainage patterns and flow direction will be field identified due to the predominant undulating topography

throughout the pipeline route. BMPs will be installed specific to each field identified site. The environmental and construction alignment sheets (to be developed first and second quarter 2015) will include slopes and soil data that represent dividing lines and grades. These alignment sheets will be reviewed as construction phases and BMP use progresses. When required, the site plan will be updated and appended to the SWPPP.

2.0 Operational Controls

The SWPPP contactor will oversee the implementation of the SWPPP and the installation, inspection, and maintenance of erosion and sediment control BMPs. All operators will comply with the SWPPP from project initiation until a notice of termination is submitted to the NDDH.

Operational controls are practices that are specifically intended to reduce the amount of pollution entering surface waters. These are generally implemented to address the problem at the source and do not require any structural changes to the facility. The primary goals of this SWPPP are to protect the land surface from erosion, eliminate pollution sources, and stabilize the disturbed areas as soon as practical. Operational controls include the following:

Good Housekeeping: Good housekeeping practices maintain a clean and orderly work site and reduce the potential for materials to come in contact with stormwater. Timely removal of trash and sanitary waste from the site will reduce the potential for pollution. This may include disposal of empty containers and other rubbish generated at individual sites. Vehicle travel on muddy ground surfaces should be minimized when possible to reduce sediment transport onto public or private roads. During construction the ROW used to access the construction should be managed to reduce muddy conditions and tracking of mud from the construction to public roads. The most effective sediment control practice is to minimize disturbance. Equipment movement will be limited to the right-of-ways and access roads, when practical. Any topsoil or spoils stockpiled along the ROW will be stored away from surface waters and in areas where runoff from sloped surfaces will not enter surface waters. Breaks will be provided in soil windrows in locations where construction crosses drainage areas. Stockpiles will be maintained to prevent erosion and sediment discharge from the ROW. During construction, controls will be implemented on a site-specific basis to preserve existing vegetation. Such controls may consist of staking, flagging or fencing areas to protect adjacent undisturbed vegetation. Minimal stripping will be used in grasslands as identified on the alignment sheets.

Preventative Maintenance: Temporary or permanent on-site equipment (including vehicles, trailers, pumps, etc.) will be inspected regularly to ensure proper working order and to help reduce the risk of spills or leaks from the equipment. The contractor must ensure proper installation, operation, inspection and maintenance of stormwater control devices (diversions, sediment traps, silt fences etc.). Routine visual inspections of on-site equipment, machinery, or any stored chemicals will reduce the risk of spills or leaks. Appropriate actions will be taken, as needed, to prevent/reduce the risk of spills or leaks.

Spill Prevention Response Procedures: Chemical or other significant materials used during construction should be properly labeled and stored within secondary containment structures when appropriate. Chemicals may include, but are not limited to, the following: gasoline, diesel fuel, and petroleum products associated with maintenance (hydraulic fluid, lube oil, grease, etc.)

of construction equipment. Petroleum products stored in drums and/or storage tanks will be kept in secondary containment areas. If a spill or leak of any chemical occurs, it will be addressed following the procedures outlined in the EPP. Vantage employees and contractors are trained on Vantage's and First Responder responsibilities. If soil contamination occurs, it will be treated according to the procedures in the EPP. Any spill that may cause harm to human health or the environment will be reported to the Department of Health within 24 hours of its discovery.

Employee Training: The Contractor will be made aware of their responsibilities in implementing and maintaining the BMPs and controls in this plan such as spill response, good housekeeping, and sediment and erosion control. Training will be ongoing as new employees are hired to ensure compliance with the general permit.

Concrete Washouts: No concrete washout areas will be associated with construction of the Vantage West Spur Lateral Pipeline.

Dewatering and Basin Draining: Dewatering and basin draining related to construction activities (if required) will be managed with appropriate BMPs such that receiving waters are not adversely affected. Water discharged through such systems will only be from storm and ground water that has accumulated on the site or in the trench. Water would be pumped into an approved dewatering structure or onto a stable and well-vegetated area at least 100 yards from the watercourse or wetland as per Typical Details in Attachment 1 of the EPP. Dewatering sites, associated BMPs, and the discharge location will be inspected daily and records of inspections and any corrective actions will be kept. Temporary dewatering may be required in flooded locations or at locations where groundwater is encountered in the trench. Best management practices (BMPs) to be used during dewatering are covered in Section 10.0 below and in Attachment 1 of the EPP.

3.0 Erosion and Sediment Controls

The following sections provide a general discussion of erosion and sediment control BMPs that may be used at various locations along the pipeline. BMPs are designed based on site specific characteristics and are chosen with the expectation that they will withstand and function effectively through a 2-year, 24-hour precipitation event (1.9 inches in western North Dakota).

Erosion controls are measures that prevent concentrated flows of stormwater and reduce flow velocity to prevent sediment transport from unstable surfaces. Erosion controls are designed to increase infiltration and promote sheet flow, as opposed to concentrated flow. Sediment management controls are designed to treat stormwater before it leaves the site and reduce the amount of sediment it carries. BMPs capture, store, infiltrate, or delay stormwater runoff from the site. Sediment BMPs are not considered a substitute to erosion control. Prior planning and preparation to minimize erosion is key, and often more effective than using structural BMPs alone. Erosion sediment controls include the following:

Sediment basins/sediment traps/infiltrations structures: These structures are BMPs that store stormwater on-site allowing water to infiltrate the soil surface as sediments settle out. Infiltration structures may include retention basins, ditches, berms, or channels. These structures must be properly managed to prevent pollutants from being introduced into the local ground or surface

water systems. Use of on-site detention is not anticipated during construction but will be considered if practical.

Slope Stabilization: Slope stabilization aims to temporarily stabilize a slope or surface so vegetation can be established and become the primary BMP. Slope stabilization structures may include matting natural or synthetic fiber for temporary or permanent placement.

Sediment Control Structures: Sediment control structures are BMPs that slow water velocity and allow heavier suspended sediment to settle out of the water before storm water leaves the site. Sediment control structures include sediment traps, silt fence, straw bales, straw or rock wattles, rip rap, or check dams (made of rock, straw bales, wattles, or other).

Vegetation Buffer Zones: Vegetation buffer zones use plants to remove or slow down the transport of pollutants, including sediment, from stormwater. Vegetation buffer zones may be used to treat sheet flow originating from disturbed areas. Established vegetation, whether seeded or recruited, may be used to create buffer zones.

Seeding: After construction is complete, disturbed areas will be seeded as soon as practical. Seeding activities will be scheduled to maximize germination and avoid conditions that may result in excessive exposure to wind and water erosion or other conditions that could reduce re-vegetation success. Seed mixes for grasslands, wetlands, and pasture lands are provided in Section 4.7 of the Environmental Protection Plan (EPP).

Runoff Control: Runoff controls prevent concentrated flows and minimize erosion and sediment transport from disturbed surfaces. Runoff controls include temporary diversions, berms, and dikes.

Diversion Structures: Diversion structures direct stormwater away from erosion prone surfaces, sloped areas, and/or stockpiles. Diversion structures may include ditches, berms, chutes, culverts, and pipes.

Grading: Grading techniques for temporary erosion control can minimize erosion and facilitate infiltration. Grading techniques may include surface roughening, ripping, and use of slope breakers. These techniques are frequently used to reduce slope length and increase surface roughness to slow water movement and promote infiltration.

Erosion and sediment control BMPs will be installed according to the guidelines found in Section 10.0 below (Guidelines for selected best management practices). All BMPs will be maintained and inspected as described in Sections 5.0 (Maintenance) and Section 6.0 (Inspections) of this document.

4.0 Stormwater Management

After construction, revegetation will be the best way to manage runoff in the future. Disturbed areas will be reclaimed based on site specific requirements. Seed mixes will contain appropriate perennial species for the native vegetation in the area. If slopes are too steep to use a seeder, those areas will be broadcast seeded and the area will be raked or chained afterwards to cover the seed. Seeding will begin as soon as practical following completion of construction activities.

While native vegetation is establishing, stormwater inspections will be completed to assess existing BMPs effectiveness and new BMP needs. The inspections will also identify BMPs in need of maintenance and repair. If other post-construction management features or velocity/energy dissipation devices are required when construction is completed the permittee will maintain the features until a Notice of Termination is filed (NOT) within local, state, and federal requirements.

5.0 Maintenance

Erosion and sediment controls will be maintained in effective operating condition. Maintenance will be completed in a timely manner, as needed. Maintenance activities may include, but are not limited to the following:

Sediment Removal: Sediment build-up behind silt fence, straw bales, wattles, or similar devices will be removed when the sediment has reached approximately one-third (1/3) of the device height. The removed sediment will be placed on-site in an area where it will not be transported to sediment control devices or surface water. Off-site sediment discharge should also be removed as indicated in the general permit.

Sediment Traps: Outfalls from sediment traps will be inspected for signs of erosion and repaired or modified as needed. Additional BMPs may be added to the sediment trap.

Silt Fence: Silt fence will be inspected for damage and damaged fencing will be repaired as soon as possible.

Fiber Wattles and Straw Bales: Wattles will be inspected for damage and accumulation of excess sediment and will be repaired or maintained as soon as possible.

Down-slope Conveyance BMPs: Down-slope conveyance BMPs, such as culverts or riprap rock chutes, will be checked for erosion, at the top and base of the chute, and proper function. If there is an area of blockage, the blockage will be removed and the rip rap will be reoriented as needed. Any erosion issues will be addressed as appropriate.

Berms & Ditches: These will be checked for damage that could block water flow through the ditch, or breach the berm. If a ditch is blocked or a berm breached, material will be removed or added to make the device function properly.

If a BMP does not effectively reduce erosion, offsite accumulations would be removed in a manner and at a frequency which minimizes offsite impacts and the SWPPP would be modified to prevent further erosion or offsite deposition. Control devices such as silt fence or fiber rolls must be repaired or replaced when sediment reaches 1/3 the height of the device. Repairs must be made within a reasonable period of time after discovery or as soon as conditions allow. The site specific plan will be revised using the SWPPP Monitoring and Inspection Form (Attachment A) to reflect such changes. Maintenance activities will be documented on the Maintenance Log in Attachment B.

6.0 Inspections

The General Permit for Stormwater Discharges Associated with Construction Activities, NDR10-0000, outlines the inspection requirements for active and inactive sites. During the construction time period while construction activities are actively occurring along the pipeline, inspections will occur on the intervals outlined below.

- *Active construction sites:* Inspections will occur once every calendar 14 days and within 24 hours of a rainfall or snow melt event of 0.5 inches or greater per 24 hour period. Repairs must be made within 24 hours of discovery, or as soon as field conditions allow access. As per the permit requirements, a rain gauge located within five miles of the stormwater discharge point for active construction sites will be used to identify rainfall events.
- *Inactive construction sites:* Inactive sites will be inspected once a month for completed areas that do not meet the 70% of pre-existing vegetative cover criteria for final stabilization. Inspections will not be performed in winter months when the sites are covered by snow or the ground is frozen and melting conditions do not exist. If an inspection is not practical due to severe weather conditions (i.e., lightning and severe thunderstorms) the inspector will note the condition on the report and an inspection will be performed as soon as conditions allow. Repairs must be made within 14 days of discovery or as soon as field conditions allow access.

The inspection schedules for active and inactive construction as described above will be used during the construction period beginning in 2015 until construction is completed. During the post construction period an alternative monitoring plan will be followed on the revegetated grassland areas along the right-of-way. Areas consisting of active cropland will not be monitored since these areas would be returned to agricultural production following construction. All areas monitored under the alternative monitoring schedule would be monitored until the sites (a site would be defined as a segment of right-of-way) have established vegetation and meet the vegetation cover criteria for final stabilization. If a site has meet the final stabilization criteria it will be signed off as being in “Final Reclamation” on the last inspection form and monitoring will no longer be required.

If an alternative plan is sought, the permittee may submit an alternative inspection plan for long, narrow, linear construction projects such as pipeline or utility line inspection, and similar projects in remote areas where vehicle traffic is restricted or could compromise native vegetation or stabilization measures. A copy of the SWPPP and proposed inspections plan shall be submitted to the NDDH 30 days prior to implementing an alternative inspection plan. Any alternative plan must provide for the timely recognition and repair of erosion and sediment damage.

Qualified stormwater monitoring personnel will perform the site inspections at the frequency intervals outlined above. The inspection will complete the following:

- Assessment of the condition and utility of the BMPs on the site;
- Evaluation of BMP effectiveness in erosion prevention and sediment control;

- Examination of stormwater outfall areas for measurable quantities of sediment or other pollutants that may be transported off-site; and
- Visual survey and estimation of vegetative cover onsite as well as at adjacent undisturbed areas.

An inspection report in the format of a monitoring and inspection form will be completed during the site inspection. Attachment A contains the SWPPP Monitoring and Inspection Form that will be used to monitor BMPS during active and inactive construction. The inspection forms will be appended to the SWPPP. Upon request, Vantage can present current inspection records. During construction the SWPPP will be maintained onsite by Vantage’s environmental inspector. Each inspection record will, at a minimum:

- Identify the inspector, the inspection date, the inspection time, and the reason for the inspection;
- Report findings of inspections, including recommendations for corrective actions;
- Report the date and amount of all rainfall events greater than 0.50 inches in 24 hours; and
- A drawing of the site indicating erosion issues and maintenance or new BMPs required.

If the inspection does not identify any issues of non-compliance, the inspection report will contain a certification statement that the site is in compliance with this SWPPP and NDR10-0000 issued by NDDH. The report will be signed by an authorized representative or the on-site SWPPP administrator. The SWPPP Monitoring and Inspection Form included in Attachment A.

If a BMP requires maintenance, it will be documented on the Monitoring and Inspection Form (Attachment A) and as “maintenance required” in the SWPPP Inspection and Maintenance Record (Attachment B) and corrected as soon as possible. Maintenance completed will be logged in the SWPPP Inspection and Maintenance Record (Attachment B). During construction, the completed SWPPP Monitoring and Inspection Forms and the SWPPP Inspection and Maintenance Records will be kept by Vantage’s environmental inspector. Following construction, a record of completed repairs will be stored and maintained.

7.0 Records Location and Retention

The following records will be kept at the construction site:

- A copy of the completed and signed Notice of Intent (NOI)
- The coverage letter from the NDDH
- SWPPP
- Site inspection and maintenance records
- The construction general permit, NDR10-0000

The SWPPP and inspection records will be made available to the NDDH upon request. All records will be maintained for a minimum of three years.

8.0 Plan Review and Revisions

In accordance with Part II.C.8. of the NDR10-0000 permit, the plan will be signed and made available to the NDDH or the United States Environmental Protection Agency upon request. The required signatures are included in Attachment D and permit documents and relevant correspondence with the NDDH will be attached document to this document upon submittal to the NDDH. The plan will be amended if there are changes in design, construction, operation, or maintenance that could discharge pollutant to waters of the state. All changes will be documented in the SWPPP Revision Record (Attachment B).

9.0 Final Stabilization

Inspections will be performed until the disturbed area reaches final stabilization (defined in Part II E of the NDR10-0000 permit) and vegetative canopy cover is equal to 70 percent of the pre-construction conditions or 70 percent of the adjacent undisturbed vegetation. After final stabilization requirements are met, temporary BMPs are no longer required for sediment or erosion control and the BMPs should be removed, if necessary.

10.0 Guidelines for Selected Best Management Practices

Temporary Seeding

Objectives and Applications

To establish temporary vegetation cover on disturbed areas by seeding with appropriate and rapid growing annual grasses, usually annual ryegrass.

Temporary seeding is used to stabilize the soil and reduce erosion from wind and/or water until the site can be permanently stabilized. Sites that will be bare and susceptible to erosion for more than thirty days are ideal candidates for temporary seeding. The site should be graded prior to seeding. Seed may be applied by hand or with mechanical methods such as hydro-seeding and drill-seeding. If needed, mulch and fertilizer may be used to increase germination and plant growth. If permanent seeding is scheduled later in the growing season, temporary seeding may not be required.

Common Failures - Generally due to faulty installation or maintenance.

Poor seed germination due to inappropriate amounts of water, mulch or fertilizer. Plant growth is poor or spotty due to uneven seed application.

Other Considerations

Proper seedbed preparation and the use of high quality seed are essential to the success of this practice. State certified weed-free seed must be used. Temporary seeding should take place as soon as practicable after the last ground-disturbing activity in an area. Once seeded, protect the area from foot and equipment traffic. Temporary seeding is not recommended if permanent seeding will be completed in the same growing season; in such cases other temporary stabilization measures should be considered.

Relationship to Other ESC Measures

Temporary seeding may occur in conjunction with mulching, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from seeded areas using diversions.

Alternate Sediment Control Measures

Erosion Control Mats

Design

Seed Selection: use native or crop species.

Seed Application Rate: 60 lbs/acre (average rate, adjust based on seed type and site specific conditions).

Fertilizer Application Rate: 600 lbs/acre for a 20N -20P₂O₅-10K fertilizer (average rate, adjust based on site specific conditions).

Materials

Seed, fertilizer, mulch.

Installation

Prior to seeding, the seedbed must be prepared. Material used in the seedbed should be a uniform size, without large clods. Seeding should occur on contour, if possible. Surface roughening techniques, such as disking, are desirable. Mechanical ripping may be required to alleviate soil compaction. Small depressions may be used to enhance water retention in seeded areas. An ideal seedbed provides adequate soil-seed contact (uniform particle size) and surface roughness (disking or depressions) to prevent runoff and improve moisture retention. Fertilizer can be used to increase plant growth. If the site will be hydro-seeded, mix seed, mulch, fertilizer, and water according to the manufacturer's instructions. Apply the slurry following manufacturer's recommendations.

Inspection

Inspect recently seeded areas on a regular basis and increase inspection frequency when risk of erosion is higher.

Maintenance

Reseed areas where plant growth is absent or inadequate. Provide additional fertilizer if needed. Provide water, if needed, to ensure successful seed germination.

Removal

Removal of temporary vegetation is usually not necessary. Continue inspections and remedial action until the site is stabilized by permanent vegetation.

Mulching

Objectives and Applications

Mulching is the application of a uniform protective layer of straw, wood fiber, wood chips, or other acceptable material on or incorporated into the soil surface of a seeded area to provide immediate protection of the seed bed.

The purpose of mulch is to protect the soil surface from the forces of raindrop impact and overland flow, foster the growth of vegetation, increase infiltration, reduce evaporation, insulate the soil, and suppress weed growth. Mulch also helps hold fertilizer, seed, and topsoil in place in the presence of wind, rain, and runoff, and improves moisture retention. Mulch may be utilized in areas that have been seeded either for temporary or permanent cover.

There are two basic types of mulches, organic mulches and chemical mulches. Organic mulches include straw, hay, wood fiber, paper fiber, wood/paper fiber blends, peat moss, wood chips, bark chips, shredded bark, manure, compost and corn stalks. This type of mulch is usually spread by hand or by machine (mulch blower) after seed, water, and fertilizer have been applied. Chemical mulches, also known as soil binders or tackifiers, are composed of a variety of synthetic materials, including emulsions or dispersions of vinyl compounds, rubber, asphalt, or plastics mixed with water. Chemical mulches are usually mixed with organic mulches as a tacking agent to aid in the stabilization process, and are not used as the only mulch, except in cases where temporary dust and erosion control is required. Hydroseeding, sometimes referred to as hydromulching, consists of mixing a tackifier, specified organic mulch, seed, water, and fertilizer together in a hydrosurry and spraying a layer of the mixture onto a surface or slope with hydraulic application equipment. The choice of materials for mulching should be based on soil conditions, season, type of vegetation, and the size of the area.

Common Failures - Generally due to faulty installation or maintenance.

- Mulches are not properly watered after application, resulting in drying out and possible blowing or washing away of materials.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
- Hydroseeding slurry not applied uniformly, resulting in spotty germination and inadequate ground cover.

Other Considerations

- Mulch should be applied immediately after seeding to improve seed germination.
- Hydroseeding can be performed in one step, and is effective provided that materials are properly mixed and equipment is in good working order.
- Depth of the applied mulch should be not less than 1 in. and not more than 2 in.
- Chemical soil stabilizers or soil binders, when used alone, are less effective than other types of mulches. These products are primarily used for tacking organic mulches.
- A tackifier may be used in conjunction with seeding, fertilizing, and mulching or hydro-seeding on slopes steeper than 3:1.

Relationship to Other ESC Measures

Mulching may be performed in conjunction with seeding, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from mulched areas.

Alternate Sediment Control Measures

Erosion Control Blankets

Other Names

Hydromulching, chemical stabilization

Design

Design life: 1 season (6 months) or less

Site applicability: Areas that have been disturbed and require temporary or permanent cover

Materials

Most Commonly Specified Mulches – Wood Fiber, Paper Fiber, Wood/Paper Fiber Combination Blends, Peat Moss

Other Mulches – Straw, Hay, Wood Chips, Bark Chips, Shredded Bark, Corn Stalks, Compost, Manure

Tackifiers – Vinyl Compounds, Rubber, Asphalt, or Plastics mixed with water

Installation

Complete the required grading as shown on the plans and ensure that erosion control measures intended to minimize runoff over the area to be mulched are in place. Apply mulch at the rates specified in the special provisions either by hand or by machinery immediately after the seed and fertilizer have been applied (two step method), or as part of the hydroslurry incorporating seed, fertilizer, mulch, and water (one step method). Apply specified tackifier if not already incorporated into the mulch matrix or hydroslurry. Provide additional watering as specified to ensure optimal seed germination conditions.

Inspection

Inspect mulches on a regular basis and increase inspection frequency when risk of erosion is higher.

Maintenance

Replace mulch that has been loosened or dislodged. In addition, reseed areas if necessary. Water mulched areas periodically to ensure that moisture content is maintained and seed germination and grass growth will continue.

Removal

Mulch is usually left in place to naturally decompose.

Surface Roughening and Terracing

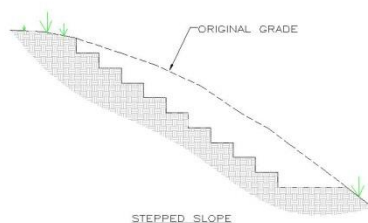
Objectives and Applications

Surface roughening and terracing includes establishing a rough soil surface by creating horizontal grooves, furrows, depressions, steps, or terraces running parallel to the contour over the entire face of the slope. These measures are intended to aid in the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion and provide for sediment storage. They provide simple, inexpensive and immediate short-term erosion control for bare soil where vegetative cover is not yet established. A rough, loose soil surface provides more favorable moisture conditions than compacted, smooth surfaces and aids in seed germination. The measure chosen to achieve these goals depends on the grade of the slope, the type of slope (cut or fill), soil and rock characteristics, future mowing and maintenance requirements, and type of equipment available. The most common measures utilized include:

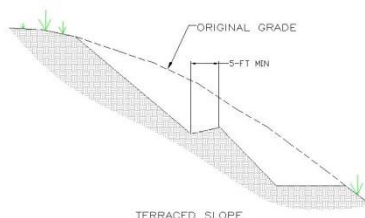
Tracking –run machinery (such as bulldozers) up and down slopes to leave horizontal depressions in the soil, and is generally limited to sandy soils in order to avoid undue compaction of the soil surface.

Contour Furrows –cut furrows (a series of ridges and depressions) along the contour of a slope, and if applicable to any area that will safely accommodate disks, tillers, or a spring harrow.

Stair Step Grading – completed by cutting “steps” along the contour of a slope, and is applicable to slopes with a gradient greater than 3:1 which have material soft enough to be bulldozed and which will not be mowed.



NOTES:
VERTICAL STEP NOT TO EXCEED HORIZONTAL.
VERTICAL STEP NOT TO EXCEED TWO FOOT IN HEIGHT.



NOTE:
LIMIT VERTICAL TERRACE HEIGHT TO 20 FEET.

Common Failures - Generally due to faulty installation or maintenance.

Roughening washed away by heavy rain, necessitating additional roughening and possibly reseeded. Failure of upslope control measures (diversions), resulting in soil erosion due to excessive flows on the area.

Other Considerations

Surface roughening techniques are effective for moderate storms; during large storm events surface roughening may not be sufficient. Surface roughening measures may not be suitable for noncohesive or highly erodible soils. Fill material should be appropriately-compacted to reduce erosion, slippage, settlement, subsidence, and other related problems. Use slope breaks, such as diversions, benches, or contour furrows to reduce the length of cut and fill slopes to limit sheet and rill erosion.

Relationship to Other ESC Measures

Diversions at the upper perimeter of the roughened area function to prevent runoff from causing erosion on the exposed soil. Perimeter control and sediment basins at the lower perimeter of the area function to prevent off site sedimentation.

Installation

Cut slope roughening (areas not to be mowed):

On slopes steeper than 3:1 use excavation equipment to create stair steps or grooves on the contour of the slope. Use stair step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes with soft rock and subsoil are particularly well-suited to stair step grading. The vertical cut distance should be less than the horizontal distance; the horizontal position of the step should be slope in toward the vertical wall. Do not make individual vertical cuts more than two feet high in soft materials or more than three feet high in rocky materials. For slopes that are less than 3:1 grooves are suitable. Construction equipment is used to create a series of ridges and depressions, or grooves that run across the slope, on the contour.

Fill slope roughening (areas not to be mowed):

For slopes greater than 3:1, ensure that the face of the slope consists of loose, non-compacted fill four to eight inches deep. Use contour furrows or tracking to roughen the face of the slope on the contour, if necessary. Do not blade or scrape the final slope face.

Cuts, Fills, and Graded Areas (to be mowed):

Slopes in mowed areas are typically less than 3:1. Roughen these areas to create shallow grooves on the contour with tilling, disking, or harrowing implements. Grooves should be close to one another and evenly spaced. Groove should be less than 12 inches wide and at least one inch deep. Avoid excessive roughness on areas to be mowed.

Roughening With Tracked Machinery:

Limit roughening with tracked machinery to sandy soils in order to avoid undue compaction of the soil surface. Operate machinery up and down the slope to leave horizontal depressions in the soil. Do not back blade during the final grading operation.

Inspection

Inspect roughened areas after each significant rainfall event (produces runoff) during construction operations.

Vegetation Buffer Strip

Objectives and Applications

A vegetation buffer strip is an undisturbed or planted area, with sufficient vegetation so that runoff velocities are reduced and sediment is controlled.

Buffer strips are living sediment filters that intercept and detain stormwater runoff. They reduce the velocity of surface runoff, promote infiltration, and reduce pollutant discharge by capturing and holding sediment and other pollutants in the runoff water. They may be natural, or may be graded and planted with grass or other vegetation; and may be placed at many locations between the source of sediment (road surface, side slopes) and a natural or constructed waterway or other drainage area that could be impacted by deposits of sediment. Buffer strips may be used at any site that can support vegetation, but are best suited where soils are well drained and where the

bedrock and water table are well below the surface. Buffer strips are particularly effective on flood plains, along stream banks, and at the top and bottom of a slope. Buffer strips may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

Introduction of stormwater flows onto buffer strip before vegetation is established.

Other Considerations

Not effective for filtering high velocity flows from large, paved areas, steep slopes, or hilly areas. May be more viable than silt fence where silt fence installation and removal will cause more harm than good. Avoid flow concentration. In general, buffer strips only trap coarse sediments. Depending upon vegetative type, clay and fine silt particles may pass through a buffer strip during periods of heavy rain. Preserve natural vegetation in clumps, blocks or strips where possible, particularly in areas adjacent to waterways. Do not use planted or seeded ground as a buffer strip until the vegetation is established.

Relationship to Other ESC Measures

Buffer strips are used in conjunction with diversion measures such as earth dikes, diversions, and slope drains for slope protection. Upslope BMPs may prevent sediment overload.

Alternate Sediment Control Measures

Fiber wattles, ditches, earth berms, silt fence

Design

Location: Should be determined by considering slope, soil type, anticipated flow, and vegetation type.

Capacity: 2-year 24-hour storm event

Width: 18 ft. - 60 ft., depending on type of vegetation and length of slope. In North Dakota, vegetative buffer strips must have a minimum width of 25 feet for every 125 feet of disturbed area which drains to the buffer. The width of the buffer shall have a slope of 5% or less and the area draining to the buffer shall have a slope of 6% or less.

Grading: smooth and uniform

Permitting: Wetlands used for a vegetation buffer strip requires approval from the Corps of Engineers.

Flow Distribution: evenly distributed; avoid concentrated flows.

Materials

In North Dakota, buffers shall consist of dense grassy vegetation, 3 to 12 inches tall with uniform coverage over 90% of the buffer. Woody vegetation shall not be counted for the 90% coverage. No more than 10 % of the overall buffer may be comprised of woody vegetation.

Installation

Natural Vegetation:

Delineate undisturbed areas of vegetation with flagging prior to construction activities. Ensure that other BMPs to be used in conjunction with the buffer strip are in place and functioning properly. Minimize construction activities and traffic on the buffer strip and adjacent areas.

Seeded Buffer Strip:

Ensure that sediment control measures such as wattles and diversions are in place to protect waterways or drainage areas until the buffer strip is established. Clear and grade the land according to the plans. Establish vegetation using specified seed, mulch and fertilizer, irrigate site to establish vegetation if possible.

Inspection

Inspect natural vegetation buffer strip at regular intervals to check for damage. Inspect new buffer strips to assess germination and plant growth. Ensure that water flowing through the area is not forming puddles, rills, or gullies due to erosion within the buffer strip.

Maintenance

Repair any damage by equipment or vehicles. Provide additional seed, fertilizer, and water to ensure adequate establishment of vegetation. Repair and reseed areas damaged by erosion or provide drainage for areas with standing water.

Rolled Erosion Control Products

Objectives and Applications

Rolled erosion control products (RECPs) are manufactured sheets or covers that can be installed on slopes where erosion control or soil stabilization is needed. RECPs are used where temporary seeding and mulching alone are inadequate, or where mulch must be anchored and other methods such as crimping or tackifying are not possible. Applications range from covers for temporarily inactive construction sites to long term protection of steep slopes. Long-fibered mulches are woven or held by netting on one or both sides to create RECPs of various sizes. Common RECPs are made from straw, wood shavings (excelsior), flax, coconut fiber (coir) and jute.

Common RECP categories include:

Temporary RECPs are designed for short term use (< 1 year is generally preferred) and made from biodegradable materials. Each fiber has different characteristics and breakdown patterns.

Semi-permanent RECP last 4-8 years and are commonly made from coconut fiber (coir) products

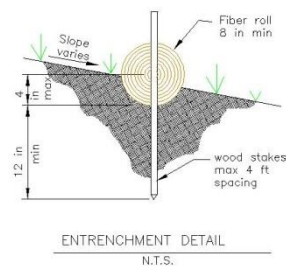
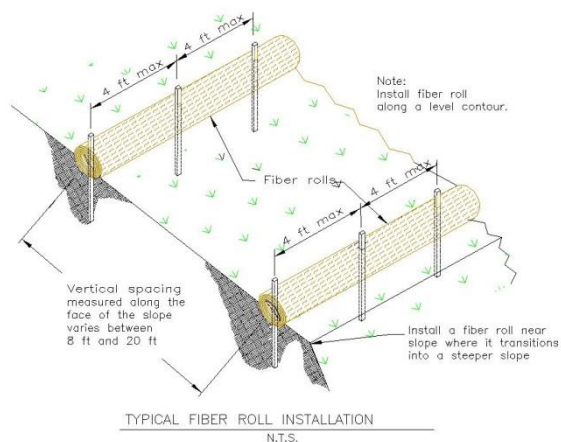
Permanent RECPs do not decompose for 10 years or more and include synthetic turf protection mats, which are made from synthetic polymers to form a continuous mesh. Mats are thick, heavy, and durable. Some products are designed to structurally support vegetation.

Common Failures - Generally due to faulty installation or maintenance.

Seed washout/soil erosion due to water flow beneath poorly secured RECPs.

Failed/inhibited growth of vegetative cover

The RECP is damaged by equipment, the elements, livestock, or wildlife etc.



Other Considerations

Installation requirements, location, installer experience, and maintenance requirements all factor into the total cost of an RECP. Thus, expensive RECPs aren't necessarily more effective than lower cost RECPs. The strength, durability, and degradation rate of the RECP should be suitable for the intended use. Installed RECPs must also support plant growth, if applicable. Prior to seeding or RECP installation, environmental factors and practical constraints must be addressed to ensure successful seed germination. Environmental factors include: soil physical and chemical characteristics, soil moisture, and soil temperature. Practical constraints may include slope length and grade, seed-bed preparation activities, fertilizer applications, snow or water management systems (i.e. snow fence or other BMPs). Additionally, potential interactions with wildlife (nesting, or grazing) need to be considered.

Relationship to Other ESC Measures

RECPs can complement seeding and revegetation. Decomposed RECP products that remain on the surface, or become incorporated into the soil, may improve moisture retention in the soil. RECPs can be used in conjunction with benches or other BMPs used to reduce slope length. RECPs may aid dust control.

Alternate Sediment Control Measures

Other techniques used to reduce runoff volume and velocity by decreasing slope length or grade. These techniques may include: slope breakers, benches, terraces, diversions ditches, tackifier, and seeding.

Other Names

Terms are often used interchangeably and may include trade names. Examples include: matting, erosion control blankets and erosion control geo-textiles.

Design

Consult product distributors for recommendations regarding RECP selection and performance criteria.

To determine suitability, evaluate the following:

Time frame: temporary, semi-permanent, or permanent.

Slope length and grade

Soil type and erodibility

Plant growth factors, especially where germination conditions are not optimal.

Use RECPs on grades greater than 2:1 subject to high stress. Synthetic turf protection mats may be used to distribute loads across saturated fill slopes and reinforce root systems. Use when slope protection is needed at least 2 years. Permanent or semi-permanent RECPs are best-suited for use on: highly erodible slopes (>3:1), for areas with heavy and/or high velocity runoff, landfills, high elevation areas, drought areas, long cut or fill slopes, bridge abutments, etc.

Nets and Mats: In general, plastic nets do not retain adequate moisture or heat. Straw mulch or other materials are often used in conjunction with plastic nets to create conditions that are more often supportive of plant growth. In areas where runoff velocities are greater than 7 feet per second, plastic nets and wood fiber mulches are not recommended unless additional BMPs are used. Jute mats can be used to increase seed germination and/or control dust. However, jute mats are not suitable in areas with substantial runoff.

Materials

RECP Materials include: burlap, jute mesh fabric, woven paper, Sisal mesh net, knitted straw mat, woven or curled wood blanket. Commonly used anchors include: U-shaped wire staples, and wooden stakes.

Installation

Installation procedures vary for each product, and all products will be installed according to the directions provided by the manufacturer. In general the following procedure is used:

1. Prepare slope for RECP installation. The soil surface should be smooth and free of large obstacles. If applicable, seeding should occur prior to RECP installation. Adequate surface preparation is critical to ensure that the RECP is effective.
2. Excavate an anchor trench on a level area well above the shoulder of the slope.
3. Place RECP into the anchor trench. Backfill and compact the trench to ensure that the RECP is securely anchored in the trench. Gaps must be eliminated to prevent runoff from undercutting the RECP.
4. Lay the RECP on the slope, parallel to the grade and runoff path. Follow the surface contours as closely as possible; do not stretch the RECP too tightly over depressions.
5. If additional layers of RECP are needed to continue down slope, additional anchor trenches must be created; use the procedure described above to install the next section of RECP. A minimum overlap of 16 inches should be provided at the junction of the two sections. If possible, stagger the junctions across the slope.

6. Anchor or staple the RECP perimeter according to the manufacturer's guidelines. Be sure to consider slope length, grade, soil type, and runoff volumes and velocities. Provide adequate overlap between RECP sections. Stagger staple patterns on adjacent sections to increase stability. Additionally, staples and stakes must maintain firm contact with the underlying surface and the RECP.
7. Install an anchor trench on the toe of the slope to secure the ends RECP; use the procedure described above. Ensure that the entire slope has continuous coverage.
8. If necessary provided additional BMPs at the toe of the slope.

Inspection

Check that fastenings are secure. Ensure that the RECP has continuous contact with the soil surface. Look for evidence of runoff, tenting, damaged areas and exposed soil surfaces. Pay special attention to seams and uphill edges.

Maintenance

Repair, re-anchor, or replace RECP as needed. Re-seed if necessary.

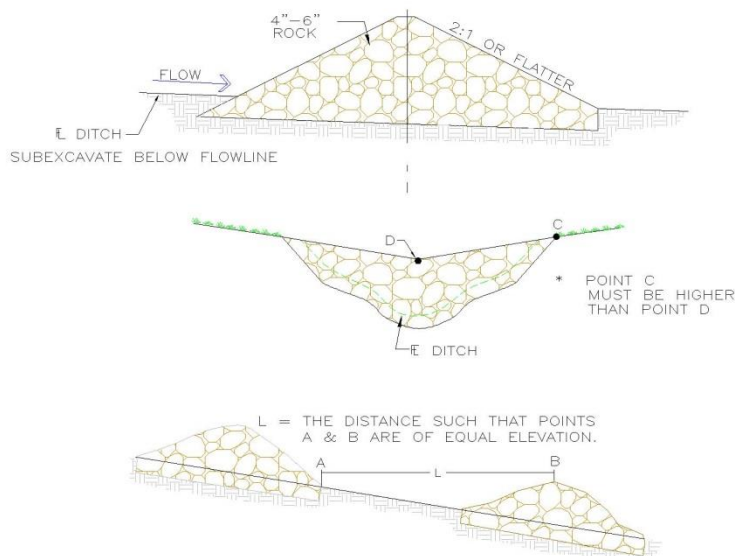
Removal

Non-degradable RECPs must be removed manually when no longer useful and disposed of at an offsite landfill or by other approved methods. Degradable RECPs deteriorate over time and removal is not required. Degradable RECPs may improve moisture retention on the surface.

Rock Check Dam

Objectives and Applications

A rock check dam is a temporary measure to protect narrow erosion-susceptible waterways and/or reduce the sediment loads in channels. Check dams may also be used as permanent measures. Temporary check dams are placed in ditches, swales, gullies, or other minor drainages intended to be filled or stabilized at a later time. Check dams are used to slow stormwater velocities and reduce scour of channel surfaces. When pooled behind the check dam larger-sized sediment falls out from the stormwater to reduce the total sediment load. Small sediment particles may become lodged in the dam's structure. Permanent check dams may be used to decrease the gradient of steep channels, which reduces the potential for erosion and sediment transport. Check dams are commonly used in ditches adjacent to roadways.



Common Failures - Check dams are vulnerable to failure from concentrated flow.

Undercut or washout of channel banks beside the structure due to improper installation (e.g. dam not built high enough onto the banks).

Increased bank erosion (e.g. at channel bends) or inadequate protection of channel surfaces due to improper location or installation of check dams.

Water backup and bank overflow due to overly tall dam structure.

Rocks washed downstream may clog culverts, misdirect flow, etc.

Check dams installed in grass lined structures may kill the vegetative lining if siltation is excessive or the vegetation remains submerged for extended periods of time.

Other Considerations

Depressions in the channel above the check dam allow for more water storage and increased sediment removal.

In channels with established vegetation, depressions should not be created, because the vegetation also removes sediment.

Rock check dams are best suited for narrow ditches and gullies. Straw bales are used primarily in wide swales.

Rock check dams may be more costly to install than straw bale check dams.

Rocks may interfere with plant growth in the channel and the channel is subject to disturbance when check dams are removed.

Rock check dams left as permanent structures may prohibit some maintenance (ex: mowing).

The area downstream of the last dam should be stabilized or flow should be diverted.

Relationship to Other ESC Measures

As part of the perimeter control, check dams are used to protect channels prior to the installation of permanent or temporary erosion controls. Although check dams filter some sediment, they are not intended to replace sediment filters or basins.

Alternate Sediment Control Measures

Diversion ditches

Protective channel liners examples include: concrete, rock, RECPs and vegetation.

Other techniques include: straw bale check dams, sediment settling ponds, permanent ditch blocks, sand bag check dams or combinations of these measures.

Design

Rock check dams are high on the sides and extend up the bank of the channel with a low point in the center to provide an outlet for stormwater. This design directs stormwater flow to the center of the channel to prevent erosion of the channel banks. Check dams are used to reduce flow velocities by decreasing the local slope of the channel (i.e. the slope between check dams). To prevent excessive erosion or channel change, check dams should not be installed near abrupt bends in the channel. Check dams should be sized accommodate the 2-year 24-hour stormwater runoff without flooding or failure. Check dams that are too large may seriously change flow characteristics of the channel and may lead to erosion or channel change. The following dimensions provide guidelines for check dam design—the guidelines should be modified for site-specific conditions.

Standard Check Dam

Maximum drainage area: not to exceed 10 acres.

Normal flow velocity: less than 6 ft/sec.

Maximum height at dam center (low point of dam): half of the channel depth, or 2 feet whichever is less.

Minimum height of the sides: center height plus 6 inches.

Structure slope: do not exceed 2:1.

Distance between check dams: The elevation of the outlet of the downstream check dam should be equal to the base of the upstream check dam to create a local slope of zero percent. Given a channel slope of 2, 4 and 6 % check dams should be spaced 100, 50 and 33 feet, respectively.

Materials

Clean, hard, angular rock usually two to three inches in size. Larger channels may require larger rock. Use only clean materials and avoid fine materials. Alternative materials may include logs, brush, and sandbags.

Installation

Install dams when drainage routes are established. Create a trench across the channel and up the banks to serve as an anchor for the check dam. The trench should be a minimum of 6 inches deep and 1 foot wide; size varies by location. Place rock by hand or mechanical means into the trench and extend to the desired height and width. Place smaller rocks on the upstream side to prevent sediment transport. Extend the dam up the banks beyond the high water mark to prevent erosion and undercutting of the banks. In unlined channels, a small depression on the upstream side of the dam may increase sediment collection and reduce the need for sediment removal.

Inspection

Observe dam function during or after each rainfall event that produces runoff. Note the condition of channel and dam surfaces. Inspect channel banks for evidence of erosion or undercutting. The dam should be stable and capable of withstanding high flows. Look for dam deterioration and for

migration of structural components downstream. Observe level of sediment buildup behind dam. It should not exceed ½ dam height. Compare water velocities at several locations along the channel. Use the observations to determine if other BMPs are necessary.

Maintenance

Repair the check dam and surrounding banks, as needed. Periodically remove sediment deposits. If rocks have been dislodged from the check dam it may be necessary to remove them from the channel to prevent problems (i.e. rocks block culvert).

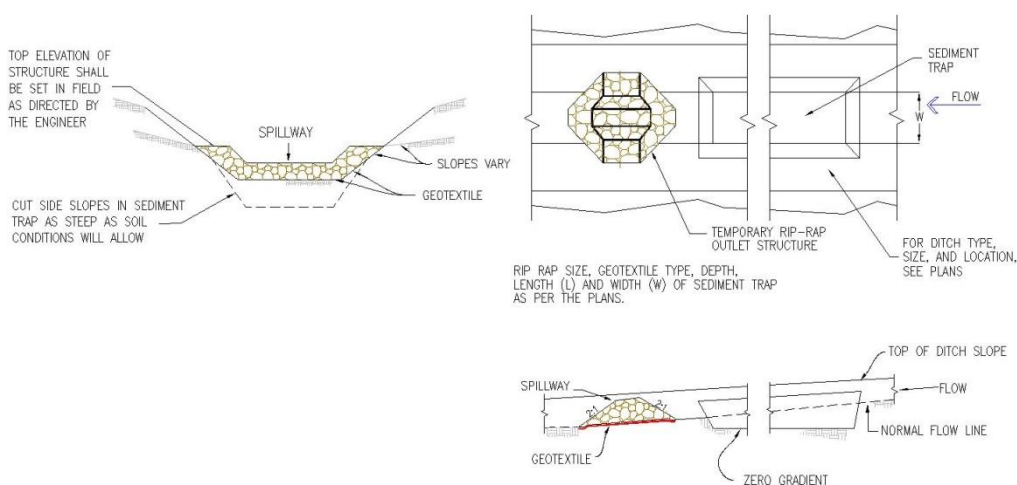
Removal

The waterway surfaces may be damaged when check dams are removed. Extra care should be taken to prevent damage to the waterway and adjacent areas. Unprotected or damaged areas should be seeded (or install another appropriate BMP) immediately after the check dam is removed. Some check dams may be left as permanent control measures.

Temporary Sediment Basin

Objectives and Applications

A sediment basin is a temporary structure that is used to detain runoff from small drainage areas so that sediment can settle out. Runoff from the disturbed site enters the sediment trap through ditches, slope drains, diversion dikes, or other BMPs. An outlet is provided to control runoff exiting the sediment basin. Temporary sediment basins are created by excavating below grade and/or by constructing an earth berm; natural depressions on site may also be used, if sufficiently sized. Sediment basins are generally used for drainage areas less than five acres. The design life is approximately six months. Access to the basin should be provided for sediment removal, if necessary. Sediment basins should be maintained until the site is permanently protected against erosion.



Common Failures - Generally due to faulty installation or maintenance

Inadequate storage capacity; which reduces sediment removal potential and may lead to failure of the structure.

Poor basin construction (i.e. berms or basin sides poorly compacted) may result in additional erosion or allow stormwater flow to bypass the basin.

Poor outlet construction may result in erosion below the dam.

Sediment accumulation may decrease storage capacity and impair function.

Other Considerations

Locate sediment traps based on the topography of the site.

Naturally occurring low spots may be an ideal location for sediment basins; such locations may minimize the need for excavation.

Provide access for sediment removal.

Temporary sediment basins remove sand particles, but are less effective at removing silt and clay particles.

Relationship to Other ESC Measures

Temporary sediment basins are usually located at the outlets of stormwater ditches that discharge sediment laden water.

Alternate Sediment Control Measures

An engineered retention pond should be considered if the drainage area exceeds five acres.

Retention ponds may be either temporary or permanent.

Design

Design life: 1 season (6 months) or less.

Drainage area: not to exceed 5 acres.

Depth: 2-4 feet.

Ideal shape: rectangular and shallow, with a length to width ratio of 2:1 or greater.

Berm: compacted earth, maximum height 5 feet.

Slopes: 2:1 or less.

Outlet: rock, gravel, or other coarse material.

Materials

Excavation equipment and rock, gravel, or other coarse material to line the outlet

Installation

Clear the area the basin and berm area to reduce debris buildup and facilitate cleanout. Excavate to create the necessary storage volume. Use excavated material to construct a berm on the low side of the basin. Compact the berm frequently during construction to prevent settling after construction. Provide an outlet for stormwater, use coarse materials.

Inspection

Inspect temporary sediment traps after significant storm or melt events. Check for signs of excessive erosion or sediment accumulation.

Maintenance

Remove sediment as needed. Deposit sediment removed from the basin in a suitable area and in such a manner that it will not erode and cause sedimentation problems. Add additional rock or gravel to the spillway, if needed.

Removal

Remove sediment basins after the drainage area is stabilized. Grade the area, if necessary, and seed following removal.

Lined Stormwater Conveyance Channel

Objectives and Applications

A stormwater conveyance channel is lined with vegetation, riprap, or other material designed to convey concentrated surface runoff to a receiving system without creating erosion. The main design considerations are the volume and velocity of the water expected in the channel. Other factors to consider include availability of land, safety, maintenance requirements, and soil characteristics. The channel cross-sections are typically triangular or trapezoidal. Conveyance channels should discharge through a stabilized outlet to prevent erosion. Channel liners, vegetation, riprap or gravel, and mats, protect the drainage channels against erosion. The liner should be selected based upon the design flow.

Common Failures - Generally due to faulty maintenance.

Sediment accumulation may reduce channel capacity and result in flooding or erosion.

Other Considerations

Channels should be located to conform with and use the natural drainage system.

Grass lined channels should not receive sediment from disturbed areas. Grass-lined channels may be unsuitable if the average channel slope exceeds five percent, continuous or prolonged flows occur, in areas with traffic, or where soils are erosive. Vegetation should be established before flows are introduced in grass lined channels. When using riprap as a liner, a geotextile blanket or one or more layers of granular material should be installed beneath the riprap.

Relationship to Other ESC Measures

All channels should discharge through a stabilized outlet. The outlet should prevent scour and protect the receiving channel.

Alternate Sediment Control Measures

Rock check dams, Temporary sediment basins, Diversion ditches.

Design

Basic design will include:

1. Establish channel location
2. Determine cross section dimensions, based on expected discharge for design storm
3. Determine channel slope
4. Select channel liner, if needed
6. Stabilize outlet points

Materials

Depends upon the type of channel liner and may include the following: Rock or gravel, geotextile or mat, or seed, mulch and fertilizer.

Installation

Remove unsuitable material. Excavate the channel as shown in the plans. Compact fill material to prevent settling and erosion (do not compact grass lined channels excessively). Remove any excess soil from the channel.

Grass lined channels: seed, mulch and fertilize.

Riprap lined channels: Place a geotextile filter blanket or a granular filter beneath riprap.

Mat lined channels: Install mats according to the manufacturer's instructions. If appropriate, seed and fertilize.

Inspection

Inspect channels after major rainfall events for sediment accumulation, bank failures, and scour.

Maintenance

Grass Lined Channels: during initial establishment, grass lined channels should be repaired, if necessary. After the grass is established, inspect the channel periodically to determine if the grass withstands the flow. The channel should be repaired if scour is present, and any debris or sediment should be removed.

Riprap Lined Channels: should be checked periodically to ensure that scour has not occurred beneath the riprap layer, and that the channel is still intact. Sediment should be removed from the channel if it reduces the capacity of the channel.

Mat Lined Channels: Inspect the channel periodically to determine if the matting is continuous.

Removal

Temporary channels: Fill in channel. Seed the area.

Permanent channels: Remain after reclamation. During reclamation inspect the channel and complete any necessary maintenance.

Outlet Protection

Objectives and Applications

Outlet protection structures control erosion at the outlet of a pipe or ditch by reducing flow velocity and dissipating energy. Outlet protection is necessary where discharges may create erosion in the receiving channel or area. A riprap lined spillway is commonly used because of its low cost and ease of installation. Design will vary based on discharge rates and receiving stream conditions. Outlet Protection may be temporary or permanent.

Common Failures - Generally due to faulty design, installation or maintenance.

Inadequate spillway length may result in erosion

Riprap is too small to reduce water velocity and scour occurs downstream of outlet

Other Considerations

The spillway should extend far enough downstream to ensure stable, non-erosive conditions. If a discharge occurs in a well-defined channel, the side slopes of the channel should not be excessively steep.

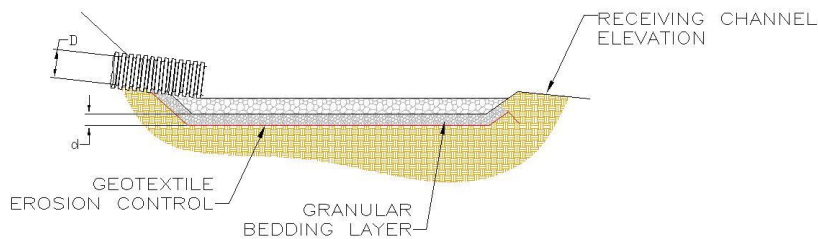
Sediment basins or plunge pools should be considered where outlets are perched above the channel or where high flows would require excessive apron length.

Relationship to Other ESC Measures

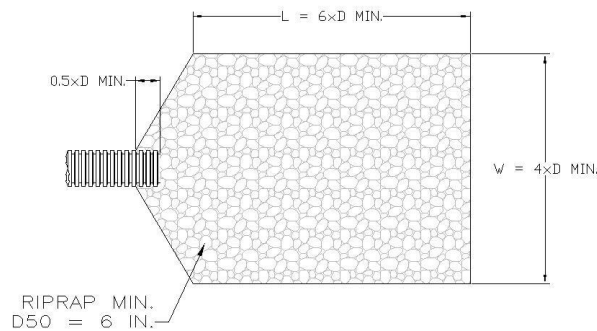
Outlet protection may be installed at the discharge points of ditches, stormwater conveyance channels, sediment basins, or other BMPs.

Alternate Sediment Control Measures

Other structural energy dissipaters, such as sediment basins, baffle wall basins or T-fittings for pipe outlets.



TYPICAL SECTION



PLAN VIEW

NOTE:
LENGTH OF APRON (L) SHALL PROVIDE SUFFICIENT
AREA TO DISSIPATE ENERGY.

Design

Capacity: roughly equal to the design discharge of the water conveyance structure
Spillway length: approximately six times the diameter of the outlet pipe or channel.
Spillway width: approximately four times the diameter of the outlet pipe or channel.
Slope: less than or equal to the receiving channel grade, preferably a flat (0%) slope. Steeper grades may require alternative measures such as sediment basins, or other energy dissipaters.
Alignment: straight throughout the entire length.

Materials

Rock riprap; and geotextile filter cloth.

Installation

Prepare the subgrade for the filter and riprap according to plan specifications. Install the filter cloth before the riprap. Riprap may be placed with excavation equipment, but take care not to damage the filter cloth. Ensure that the riprap consists of a well-graded mixture of stones. On the downstream end, the riprap should be level with, or slightly below, the receiving area. If a curve is needed to fit site conditions, place it in the upper section of the spillway. Stabilize the disturbed areas with vegetation after construction.

Inspection

Inspect outlet protection periodically and after heavy rains for erosion around or below the riprap; also look for sediment accumulation.

Maintenance

Make necessary repairs if erosion has occurred. Sediment should be removed when it fills the voids between rocks.

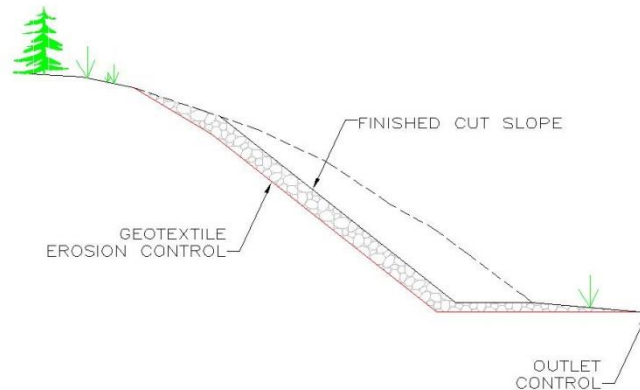
Removal

Restore ground to existing or constructed grade. Outlet protection may be left in place if specifications allow.

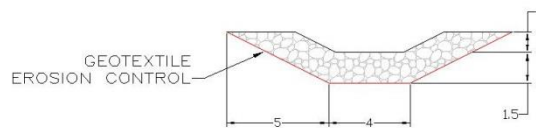
Rock Flume

Objectives and Applications

A rock flume is a riprap-lined channel to convey water down a relatively steep slope without causing erosion on or below the slope. Flumes serve as permanent elements of a stormwater system that receives drainage from above a relatively steep slope. Typically stormwater is conveyed by diversions, channels, or natural drainage ways to the flume. Stormwater flows down the rock flume and into a stabilized outlet, sediment trap, or other BMP.



NOTE:
RIPRAP FLUME SECTION UNLESS BEDROCK IS ENCOUNTERED IN EXCAVATION.
SIZE FLUME SECTION FOR DESIGN FLOW.



ROCK FLUME

Common Failures - Generally due to faulty installation or maintenance.

Stones may be displaced if the stones are too small or the backslope is too steep, which may lead to erosion. Sediment accumulation reduces capacity. Channel is too narrow, resulting in over topping and erosion.

Other Considerations

Provide both inlet and outlet protection to minimize erosion at these locations. Rock flumes should be used in conjunction with diversion dikes to convey runoff from the drainage area. Consider soil stability and the stability of the downstream channel.

Relationship to Other ESC Measures

Stormwater runoff collected in other BMPs is channeled into rock flumes to direct runoff down slope and prevents erosion.

Alternate Sediment Control Measures

Stormwater conveyance channel

Design

Drainage area: less than 10 acres per rock flume.

Depth: at least 1 foot.

Alignment: straight.

Inlet protection: riprap and geotextile, or flared metal end section.

Outlet protection: riprap and geotextile.

Materials

Riprap, geotextile, flared metal end section (if necessary).

Installation

Remove all unsuitable material, such as trees, brush, roots, or other obstructions prior to installation. Construct the channel according to the plans. To prevent settling compact fill material in the channel. Install geotextile before placing riprap.

Inspection

Inspect rock flumes after major precipitation or snow melt events for sediment accumulation, material displacement, and scour at the inlet or outlet.

Maintenance

Sediment should be removed from the riprap lined channel if it reduces the capacity of the channel.

Removal

Rock flumes will normally be left in place after construction is completed.

Diversion Ditch

Objectives and Applications

A diversion ditch is an excavated channel constructed across a slope, or around the perimeter, that intercepts and diverts run-on to a stabilized area. This measure should be used in construction areas where run-on can be diverted to prevent erosion. Diversion ditches are often used to protect disturbed slopes or to provide a slope break on long slopes. Diversion ditches may also be used to intercept runoff from the construction site. Diversion ditches may be either temporary or permanent.

Common Failures - Generally due to faulty installation or maintenance.

Berm not properly compacted, resulting in uneven settling.

Sediment accumulation in the channel or on the berm reduces function.

Other Considerations

In areas where slopes exceed 10 percent, diversion ditches may require additional BMPs to prevent excessive flow velocities.

Outlet protection should be provided to prevent sediment from leaving the site.

Relationship to Other ESC Measures

Diverted runoff must be released to a stabilized outlet, such as a sediment basin, or check dam.

Outlet protection should be provided following construction of the diversion ditch.

Alternate Sediment Control Measures

Fiber wattles, sandbag berms, slope drain (can also be used in association with this measure).

Design

Location: Commonly follows site boundary. Be sure to consider topography, land use, soil type and outlet conditions.

Size the ditch and or berm based on anticipated flow conditions.

Installation

Diversion Ditch

Remove vegetation or other surface material. Fill and compact any ditches, swales, or gullies that will be crossed, reinforce ditch and berm in these sections. Excavate, and stabilize the diversion ditch. Assure that berms are compacted to prevent settling and seepage. Seed the areas adjacent to the diversion ditch after construction.

Inspection

Inspect the diversion after large rainfall events. Ensure that the diversion effectively directs stormwater without excessive erosion or sediment accumulation.

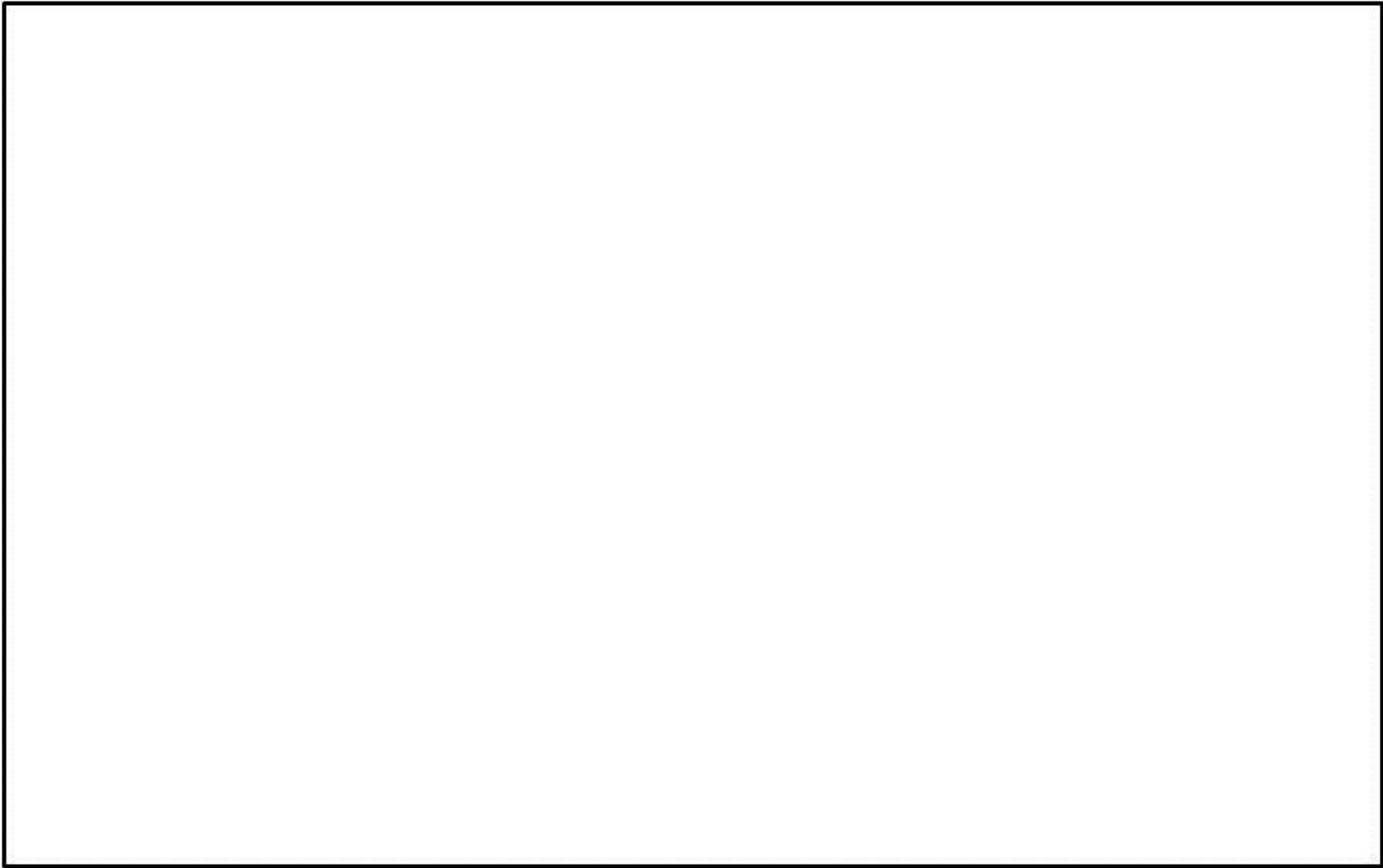
Maintenance

Remove any sediment or other obstructions from the diversion channel. Repair outlets as necessary. Reseed areas that fail to establish vegetation.

Removal

Fill in temporary ditches and seed the disturbed area.

**Attachment A:
SWPPP Monitoring and Inspection Form**



Notes: _____

**Attachment B:
SWPPP Revision Record**

**Attachment C:
Permit Documents and NDDH Correspondence**



**Vantage Pipeline US LP, North Dakota SWPPP
Duly Authorized Representative Identification**

I hereby certify that I am qualified under the regulatory definition to be the responsible corporate officer for the Vantage West Spur Lateral Pipeline Operations and stormwater management program for the pipeline route in western North Dakota.

Specifically, I, _____:
(Type or print name)

- () am an officer of the corporation.
My job title is _____.
- () perform policy or decision-making functions similar to that of an officer of the corporation. My job title is _____.

I hereby designate _____ as a duly authorized representative to act in my Stead as SWPPP Administrator for the Vantage Pipeline US LP North Dakota operations.

This individual's job title is: _____

I also certify that this individual will be provided the training and resources to comply with the requirements of the general permit to discharge storm water associated with construction activities under the North Dakota Pollutant Discharge Elimination System permit NDR10-0000.

Signature of Responsible Official

Signature of Duly Authorized Representative

Date

Date

Attachment D: Signatures

Certification Instructions

The stormwater pollution prevention plan (SWPPP) must be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

The SWPPP may be signed by a duly authorized representative of the individual described above if:

- The authorization is made in writing by the person described above and submitted to the North Dakota Department of Health; and
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the plant manager, the superintendent, a position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name _____ Title _____

Signature _____ Date _____

Attachment E: Copy of the Notice of Intent

(To be attached after the submittal of the SWPPP to the NDDH)

Attachment F: Copy of the Coverage Letter from the NDDH

(To be attached after the submittal of the SWPPP to the NDDH)

Attachment G: Construction Stormwater General Permit, NDR10-0000

The North Dakota Department of Health is currently updating the Construction Stormwater General Permit, NDR10-0000. When the updated document is complete, it will be inserted to this document.

Exhibit J.5
Waste Management Plan

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1.0 General Information

This Plan serves as a general Waste Management Plan (WMP) for the Vantage West Spur Lateral Pipeline project (Project). All sub-contract personnel shall review and follow this plan. In addition, the Construction Contractor (Contractor) will develop a thorough site-specific WMP for the Project.

The Vantage West Spur Lateral Pipeline is a proposed high vapor pressure (HVP) 8-inch steel pipeline to transport ethane from the Stateline II Gas Processing Plant owned by ONEOK Partners, LP near Williston, North Dakota (lat: 48.228046°; long: -103.945260°) to the existing Vantage ethane pipeline system near Stady, North Dakota (lat: 48.749328°; long: -103.679005°).

2.0 Background

Pipeline construction crews and machinery create waste during pipeline construction and operation. Generated wastes include excess construction materials, solid and fluid waste from the operation and maintenance of equipment, and human waste. Crews will strive to minimize the waste generated and ensure any waste generated is properly labeled, stored, and disposed.

3.0 Waste Types and Disposal

Construction and operation of the Vantage West Spur Lateral Pipeline may generate a variety of wastes including antifreeze, inert waste (general construction waste such as metal or geotextile fabric), rags, solvents, used oil, used oil filters, used oil sorbents, and human waste. There is no Resource Conservation and Recovery Act (RCRA)-defined hazardous waste anticipated on the project site.

3.1 Inert Wastes

Inert wastes that may be produced during the construction of the Vantage West Spur Lateral Pipeline include organic materials from clearing the ROW and excess construction materials such as metal.

North Dakota Solid Waste Management Rules NDAC 33-20-01.1-03 defines inert waste as waste which will not contaminate water or form a contaminated leachate. Examples of inert wastes include:

- Construction and demolition material such as metal, wood, bricks, masonry and cement concrete
- Asphalt concrete
- Metal
- Tree branches
- Bottom ash from coal fired boilers
- Waste coal fines from air pollution control equipment
- Cloth or paper rags

3.1.1 Container and Labeling Requirements

There are no specific container requirements for inert wastes.

3.1.2 Labeling Requirements

There are no specific labeling requirements for inert wastes.

3.1.3 Storage Area Requirements

There is minimal environmental risk associated with the storage of inert wastes. However, there should be a designated storage area at each facility to minimize potential safety hazards and address aesthetic concerns. Recommended practices for storing inert wastes are:

- Store large pieces of inert wastes outdoors and away from high traffic areas.
- Smaller pieces can be accumulated in a dumpster or other container.
- Wood and flammable inert wastes should be stored away from ignition sources prior to disposal.

3.1.4 Disposal

Disposal of inert wastes should be handled by contact the North Dakota Department of Health for assistance in locating an inert waste landfill or in determining the classification of wastes you have generated.

3.1.5 Record Keeping Requirements

Record keeping requirements for inert wastes include:

- Retain and file any paperwork related to the generation of the waste.
- File the yellow copy of the landfill disposal report with your other waste management records.

3.1.6 Waste Minimization

Every attempt should be made to minimize the amount of inert wastes generated from a project. It is recommended that materials be reused or recycled as often as possible.

Clean fill, which includes soil, sand, gravel, rocks, and re-bar free concrete is used to adjust or modify ground surface features for agricultural or construction purposes. It is not required that clean fill be disposed of at licensed disposal facility. Asphalt, wood, mixed construction debris and all other types of solid waste are not clean fill.

3.2 Solvents

A variety of solvents are used during construction. This includes fluids and lubricants needed to clean, maintain, and operate equipment and fitting and testing the pipeline.

Examples of waste solvent and related materials include the following:

- Antifreeze - Triethylene glycol, Ethylene glycol, and Propylene glycol. Antifreeze is used in vehicles and equipment used for pipeline construction and is toxic if swallowed.
- Stoddard Solvent, Mineral Spirits, and Naphtha - These are examples of solvents that are collectively referred to as “Aliphatic Hydrocarbons.” These solvents can have the hazardous waste characteristic of ignitability due to low flash points (i.e., below 140°F). Some of these may have a flash point higher than 140°F and be non-hazardous before use, however, they may become contaminated during use. For example, solvents used in parts washers may become contaminated with metals.
- Toluene, Xylene, and Benzene - These are examples of solvents that are collectively referred to as “Aromatic Hydrocarbons.” These solvents are listed hazardous wastes.
- Methylene Chloride, Trichloroethane - These are examples of solvents that are collectively referred to as “Halogenated” solvents. Halogenated solvents contain a halogen element, which is usually chlorine, and you may hear these products referred to as “chlorinated solvents.” Products such as SS-25 and SS-80 are chlorinated solvents. These solvents are listed hazardous wastes.

- Citrus Solvents - These solvents have a citrus base (i.e., lemons or oranges) and can be less toxic to use. However, citrus solvents can have the hazardous waste characteristic of ignitability due to a low flash point (i.e., below 140°F). Or, they may become contaminated during use.
- Rags - Rags are used to apply solvent and clean surfaces or to absorb excess solvent. Management of rags should reflect that of the chemical they absorbed.
- Sorbents - Sorbents are used to absorb solvent drips and spills. Management of sorbents, like rags, should reflect that of the chemical they absorbed.

3.2.1 Container Requirements

The following containers shall be used to accumulate solvent waste material:

- Liquid Solvent Waste - Store in a double bunged 55-gallon drum (UN1A1 or equivalent).
- Aerosol Solvent Cans - Empty cans may be placed in the dumpster or garbage can. If the cans are not empty, accumulate in an open-top, 55-gallon barrel (UN1A2 or equivalent).
- Rags - If rags are used to absorb a hazardous material, accumulate in an open top, 55-gallon barrel (UN1A2). Rags used for non-hazardous materials may be placed in a garbage can if free liquid is not dripping from them.
- Sorbents - If sorbents are used to absorb a hazardous material, accumulate in an open top, 55-gallon barrel (UN1A2). Sorbents used for non-hazardous materials may be placed in a garbage can if free liquid is not dripping from them.

3.2.2 Labeling Requirements

Following are the labeling requirements for containers containing solvent waste material:

- Liquid Solvent Waste - Use a “Hazardous Waste” label. If a label is not available, write or stencil “Hazardous Waste” on the drum.
- Aerosol Solvent Cans - For partially empty cans accumulated in a drum, use a “Hazardous Waste” label on the drum. If a label is not available, write or stencil “Hazardous Waste” on the drum.
- Rags - If rags are hazardous, use a “Hazardous Waste” label, or write or stencil “Hazardous Waste” on the container. If the rags are not hazardous, write or stencil “Used Rags” on the container.
- Sorbents - If sorbents are hazardous, use a “Hazardous Waste” label, or write or stencil “Hazardous Waste” on the container. If the sorbents are not hazardous, write or stencil “Used Sorbents” on the container.

3.2.3 Storage Area Requirements

The storage of waste materials shall be removed from the ROW as soon as possible. If waste materials are produced on the ROW, storage of the material should be kept on or in an appropriate vehicle, until it can be removed.

3.2.4 Disposal

Disposal of solvent waste should consider the following;

- Liquid Solvent Waste - Contact a hazardous waste pick-up and disposal.
- Aerosol Solvent Cans - For partially empty cans accumulated in a drum, contact a hazardous waste transporter or the Environmental Support Group to arrange for pick-up and disposal.

- Rags - If rags are hazardous, contact a hazardous waste transporter or the Environmental Support Group to arrange for pick-up and disposal. Rags used for non-hazardous materials may be able to be placed in the garbage can if free liquid is not dripping from them. Call the Environmental Support Group for assistance on a case-by-case basis.
- Sorbents - If sorbents are hazardous, contact a hazardous waste transporter or the Environmental Support Group to arrange for pick-up and disposal. Sorbents used for non-hazardous materials may be able to be placed in the garbage can if free liquid is not dripping from them. Call the Environmental Support Group for assistance on a case-by-case basis.

3.2.5 Record Keeping Requirements

The following records shall be kept for a minimum of three years:

- Waste Accumulation Logs
- Laboratory Test Results
- Waste Manifests (signed by the final disposal facility)
- Inspection Logs (for Small Quantity Generator facilities)

3.2.6 Waste Minimization

In order to minimize the quantity of waste solvent and related materials generated, use the following guidelines.

- If possible, contract with a solvent vendor, such as Safety-Kleen, to provide a parts washer, solvent delivery, and disposal.
- Pre-clean grossly greasy or dirty items with towels or rags.
- Be conservative when using solvents. Don't generate unnecessary waste by over cleaning parts. Rigorous cleaning should only be used for parts that require it.
- Don't dispose of solvent too soon. Solvents will still retain cleaning action with up to 10% solids. Solvents may be filtered and reused.
- Keep hazardous and non-hazardous waste separate.
- Don't allow aerosol solvents to drip on shop floors or into floor sumps.
- Don't pre-clean parts with chlorinated or "listed" solvents before putting them in a parts washer filled with a non-listed solvent (e.g. citrus solvent, stoddard solvent). The introduction of the listed solvent into the parts washer will classify the entire contents as a listed hazardous waste upon disposal.

3.3 Used Oil

Oil is required on location for maintaining and operating equipment during construction. Used oil is not hazardous unless hazardous substances are added to it. Examples of used oil for construction activities include the following:

- Lubricating oil
- Crankcase oil
- Hydraulic oil
- Synthetic oil

3.3.1 Container Requirements

Management of used oil waste includes the following:

- Accumulate used oil in closed top, double bunged drums such as the UN1A1 or equivalent.
- If bulk tanks are used for used oil storage, inspect at least weekly for possible leaks.

- Underground storage tanks shall not be used to store used oil.
- Cap the drum securely with its bungs. Regulations require that bungs be in place at all times other than when oil is being added to the drum.

3.3.2 Labeling Requirements

All containers used to store used oil should be labeled as follows:

- All storage containers such as 55-gallon drums or bulk tanks, must be labeled “USED OIL” and not as “waste” or “scrap” oil.
- If testing confirms that the contents of the drum are hazardous, the drum must also be labeled with the standard yellow and red hazardous waste label or stenciled with the words “HAZARDOUS WASTE.”
- If the flash point of the used oil is greater than 100°F and less than 200°F, a combustible label must also be attached to the container.
- Appropriate hazard communication labels, such as the National Fire Protection Association (NFPA) label, are useful in providing specific safety and health information on used oil containers and may also be affixed to the drum.

3.3.3 Storage Area Requirements

The storage of waste materials shall be removed from the ROW as soon as possible. If waste materials are produced on the ROW, storage of the material should be kept on or in an appropriate vehicle, until it can be removed.

3.3.4 Disposal

Used oil is not considered a hazardous waste unless a hazardous substance, such as a chlorinated solvent, is added to the oil. Used oil can be moved off-site using one of the following methods.

- Self-transport of Used Oil. Used oil collection generators may transport up to 55 gallons of used oil in their own vehicles to a collection center.
- Using a Transporter. Used oil collection centers using a commercial transporter must ensure that the transporter has an EPA identification number and a current North Dakota solid waste transporter permit.
- Records of Shipments. Collection centers are not required to keep records of shipments unless the collection center conducts other used oil activities, such as marketing, and processing or acts as a transfer station. The Department encourages record keeping of the date and amount of used oil shipped, the transporter, and the end destination in order to manage any future liability.

Mixing of other wastes with used oil. The regulations state that used oil containing 1,000 ppm or more total halogens is presumed to be mixed with regulated hazardous wastes. Conditionally exempt small quantity generators of hazardous waste may manage these wastes by mixing them with their used oil. A collection center may also rebut the presumption if they can document that no hazardous wastes have been mixed with the used oil.

3.3.5 Record Keeping Requirements

A used oil accumulation log should be kept for a period of three years. Records of how much used oil was shipped off site should also be kept. Bills of landing or invoices are acceptable.

3.3.6 Waste Minimization

To minimize the generation of hazardous waste instead of easy-to-manage used oil, use the following guidelines:

- Whenever possible, use a servicing facility to change oil and filters.
- Clearly label drums so that it is not easy to accidentally deposit solvents into used oil drums.
- Immediately record all additions of used oil on the accumulation log sheet.
- Always keep drum bungs securely in place unless oil is being added to the container.

3.4 Used Oil Filters and Sorbents

Used oil filters and sorbents are solid waste materials that are saturated in lubricating, crankcase, hydraulic, or synthetic oils. Examples of used oil filters and sorbents include:

- Vehicle oil filters
- Compressor oil filters
- Cuno-type oil filters
- Miscellaneous filters
- Sheets
- Pigs
- Pillows
- Booms
- Sweeps

3.4.1 Container Requirements

Accumulate used oil filters in 55-gallon open-top drums (UN1A2). Used sorbents should be stored in 55-gallon open-top drums (e.g., UN1A2 or equivalent) that are in good condition. If large booms or other oil saturated sorbents cannot be easily accumulated in 55-gallon drums, provide alternative containment to prevent oil from leaking and creating an additional cleanup situation. Heavy duty Visqueen® plastic sheeting can be used to wrap used oil sorbents or to line larger containers prior to disposal.

3.4.2 Labeling Requirements

Label all containers “USED OIL FILTERS” or “USED OIL SORBENTS”. There is no regulatory need to provide information on accumulation dates on the container unless desired by the operator.

3.4.3 Storage Area Requirements

Used oil filter containers should be stored in the following manner:

- If possible, store used filter containers in mechanic trucks.
- If drums are stored outdoors, keep the drum top securely in place except when filters are being added to the container.

The storage area requirements for used oil sorbent containers include:

- Store in a designated, low traffic area.
- Maintain the area in a clean, well-organized manner.
- Keep the area free of flammable materials and ignition sources.

3.4.4 Disposal

An exemption, provided by the EPA in 40 CFR Part 261, allows for used oil filters to be managed in the following manner:

- When it is time to change oil, run vehicle, compressor, or other oil lubricated equipment until it reaches normal operating temperature.

- After shutdown, change oil filter and completely drain hot oil into the appropriate used oil drum.
- After the oil filter is empty, crush it, then properly dispose in a dumpster. Oil filter crushers are available commercially for this purpose.

Sorbent pads are primarily used to contain oil leaks from equipment or containers and to soak up oil from spills. After the sorbents have served their intended purpose, the sorbents may be disposed of as a solid waste at a special waste landfill (Section 5).

3.4.5 Record Keeping Requirements

Used oil filter and sorbent shipping records should be maintained in the appropriate waste management file.

3.4.1 Waste Minimization

Used oil sorbents, in some cases, can be pressed to remove oil and reused. Otherwise, they are normally burned for energy recovery. Their use in oil spill response activities is necessary and cannot be avoided.

3.5 Human Waste

Portable toilets will be placed at regular intervals along the anticipated pipeline route for human use. Food wastes and other inert garbage will be collected daily and transported to appropriate off-site receptacles.

4.0 Reporting Spills

Spills of any size will be reported to the project lead. Please refer to the Vantage West Spur SPCC Plan (Attachment 3, Environmental Protection Plan) for further instructions.

5.0 Waste Facilities

Wastes will be brought to waste disposal landfills. Every effort shall be made to use recycling and/or reuse measures to reduce the amount of waste and other materials sent to landfills. Soils contaminated with waste oils will be taken to designated landfills or landfarms (See Contaminated Soils Management Plan, Attachment 6 of the Environmental Protection Plan).

Table 1. Hazardous waste management companies in North Dakota.

Contractor	Phone	Address
Waste Recovery Services	701-575-8520	PO Box 910 Belfield, ND 58622
Safety-Kleen Systems Bismarck	701-222-8262	3704 Saratoga Ave Bismarck, ND 58503
Safety-Kleen Systems Fargo	701-237-9070	PO Box 1367 Fargo, ND 58107

Table 2. Antifreeze recyclers in North Dakota.

Contractor	Phone	Address
Safety-Kleen Systems Bismarck	701-222-8262	3704 Saratoga Ave Bismarck, ND 58503
Safety-Kleen Systems Fargo	701-237-9070	PO Box 1367 Fargo, ND 58107

Table 3. Solid waste facilities for refined petroleum-contaminated soils.

Contractor	Phone	Address
Dishon Disposal INC	701-572-9079	15242 39 th Lane NW Williston, ND 58801
IHD Solids Management LLC	701-774-8514	14070 43 rd St NW. Alexander, ND 58831
Prairie Disposal LLC	701-664-3383	102C10 52 nd St NW Tioga, ND 58852

Table 4. Municipal and Special Waste Landfills near the Project in North Dakota.

Landfill Name	Phone	Address	Municipal Waste	Special Waste	Out of County	Hydrocarbon Impacted Soils
Williston Municipal Landfill	701-580-1210	5176 134 th Ave NW Williston, ND 58801	Yes	No	Yes	No
McKenzie County Landfill	701-586-3445	2491 132 nd Ave NW Amegard, ND 58835	Yes	No	Yes	No
Noonan Landfill	701-838-1182	160 County Road 21 NW Noonan, ND 58765	Yes	No	Yes	No
Dishon Disposal	701-572-9079	15242 39 th Lane NW Williston, ND 58801	No	Yes	Yes	Yes
IDH	701-580-6617	14070 43 rd St. NW Alexander, ND 58831	No	Yes	Yes	Yes
Smokey Butte Environmental	1-877-827-0851	13310 94 th St. NW Fortuna, ND 58844	No	Yes	Yes	Yes
Prairie Disposal	701-664-3383	102C10 52 nd St. NW Tioga, ND 58801	No	Yes	Yes	Yes

Exhibit J.6
Contaminated Soils Management Plan

General Information

This Plan serves as a general Contaminated Soils Management Plan for the Vantage West Spur Lateral Pipeline project. All sub-contract personnel shall review and follow this plan. In addition, the Construction Contractor will develop a thorough site-specific Contaminated Soils Management Plan for the project.

Any spill or discharge of liquid or solid waste which has the potential to cause pollution to the waters of the state of North Dakota including surface and ground water, must be reported immediately (NDAC 33-16-02.1-11 paragraph 4, bottom of page 22). The owner, operator, or person responsible for the spill or discharge must notify the North Dakota Department of Health as soon as possible at (701) 328-5210.

All soil and or fill material contaminated by petroleum hydrocarbons that exceeds a total of 100 parts per million (ppm) total petroleum hydrocarbons (TPH) requires that action by the contractor be taken to remove or treat the soil.

Mobile spills should be contained as soon as possible by the construction of earthen dams or by the placement of mechanical barriers. Free oil may be removed from the ground by the use of a vacuum truck. Sumps or trenches may be dug to intercept or drain free oil. Remaining free oil may be removed from the ground by the use of oil absorbent materials. When all free oil has been removed the affected soil containing over 1.0 percent TPH by weight should be delineated, both vertically and horizontally. All soil containing over 1.0 percent TPH should then be excavated for remediation or disposal.

To prevent storm water contamination, all impacted soils containing in excess of 1.0 percent TPH should be placed in an approved disposal site or in a secure interim storage location for future remediation or disposal, unless more immediate on-site techniques can be implemented. Placing the impacted soil on a sheet of plastic and providing appropriate cover, diking, or storm water diversion, is acceptable.

A final cleanup level of 1.0 percent TPH should be achieved as soon as practicable. Several methods are acceptable for cleanup of oil contaminated soil; regulatory agencies may specify which methods are appropriate.

Shovels and labeled 55-gallon drums will be kept at each of the staging areas. If small quantities of soil become contaminated within a staging area, they will be collected and placed in the drums. Large quantities of contaminated soil will be collected using heavy equipment and stored in drums or other suitable containers prior to disposal. Disposal of contaminated soil will be in accordance with applicable state and federal regulations. Typical disposal methods will include transporting the soil to a licensed disposal or treatment facility (Table 1) or thin-spreading in compliance with state guidelines.

Table 1. Licensed disposal and treatment facilities near the Project.

Landfill Name	Phone	Address	Municipal Waste	Special Waste	Out of County	Hydrocarbon Impacted Soils
Williston Municipal Landfill	701-580-1210	5176 134 th Ave NW Williston, ND 58801	Yes	No	Yes	No
McKenzie County Landfill	701-586-3445	2491 132 nd Ave NW Amegard, ND 58835	Yes	No	Yes	No
Noonan Landfill	701-838-1182	160 County Road 21 NW Noonan, ND 58765	Yes	No	Yes	No
Dishon Disposal	701-572-9079	15242 39 th Lane NW Williston, ND 58801	No	Yes	Yes	Yes
IDH	701-580-6617	14070 43 rd St. NW Alexander, ND 58831	No	Yes	Yes	Yes
Smokey Butte Environmental	1-877-827-0851	13310 94 th St. NW Fortuna, ND 58844	No	Yes	Yes	Yes
Prairie Disposal	701-664-3383	102C10 52 nd St. NW Tioga, ND 58801	No	Yes	Yes	Yes