

Stormwater Pollution Prevention Plan (SWPPP)

South Dakota Portion of Capx2020 Brookings County to Hampton 345 kV Project

Great River Energy

South Dakota PUC Docket #: EL-10-016

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1.0 INTRODUCTION

Construction activities resulting in disturbance of 1 acre or more of land must be in compliance the NPDES permit program under the Environmental Protection Agency (EPA) to regulate point and non-point source discharges into waters of the United States. In most cases, administration of NPDES for all land, except native land, has been delegated to the states.

In South Dakota, the NPDES permit authorizing stormwater discharge associated with construction activities is administered by the South Dakota Department of Environment and Natural Resources (DENR) under General Permit No. SDR100000 (**Appendix A**). An NPDES permit will not be required by the South Dakota DENR for the South Dakota portion of the CapX2020 Brookings County to Hampton 345 kV Project because less than an acre (approximately 0.07 acre) will be disturbed in South Dakota.

As requested by the South Dakota Public Utilities Commission (PUC) in Condition 15 of the Settlement Stipulation of the Route Permit, a Stormwater Pollution Prevention Plan (SWPPP) has been prepared to meet the requirements of DENR General Permit SDR100000 to minimize erosion, and to mitigate sediment transport. A copy of the Settlement Stipulation for the PUC Facility Permit (South Dakota docket EL-10-016) is included in **Appendix B**. There are no local requirements for construction- related stormwater or erosion control management applicable to the portion of work in South Dakota.

SWPPP requirements must be incorporated into a project's final plans and specifications and/or project documentation, as appropriate. A typical SWPPP covers four (4) items:

- Temporary Erosion and Sediment Control Best Management Practices (BMPs)
- Permanent Stormwater Management
- Pollution Prevention Management Measures
- Inspection and Maintenance Conditions

2.0 SITE DESCRIPTION (§4.2.1)

2.1 Overall Facility and Type of Construction Activity (§4.2.1.a)

The proposed route for the 345 kV transmission line in South Dakota (South Dakota Facility) is located entirely in Brookings County, South Dakota. From the Brookings County Substation, the route enters/exits the substation to the east, turns south at 484th Avenue, and then turns east and parallels 207th Street. At County Road 35, the route turns north for a half mile before turning east to cross a property/field line to 487th Avenue. The route then turns north along 487th Avenue (which eventually becomes County Road 35) before turning east along State Highway 30. At the South Dakota/Minnesota border, the proposed route parallels 487B Avenue, which is an abandoned roadbed. Near the end of 487B Avenue, the route turns west for approximately 500 feet before turning north to follow a property/farm field line to 201st Street. At 201st Street, the line turns east, crossing into Minnesota. Once in Minnesota, the proposed transmission line will follow the route approved by the Minnesota Public Utilities Commission. For more information, see Order Granting Route Permit, In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota, MPUC Docket No.: ET-2/TL-08-1474, Sept. 14, 2010.

Figure 1 shows the permitted Facility route in South Dakota and connection with the permitted route in Minnesota.

Construction activities include installing erosion and sediment control BMPs, tree trimming and clearing, preparing laydown and staging areas, clearing of access paths, constructing the transmission line, upgrading the Brookings Substation, and turf establishment and revegetation. See Section 2.4 for more detailed information on construction activities.

The Brookings Substation upgrade will not require any expansion of the fence lines; therefore, construction activities associated with the expansion of the substation are not anticipated to result in any additional land disturbance. **Table 1** summarizes the CapX2020 Brookings County to Hampton Project and construction activities associated with the South Dakota Facility.

Figure 1: South Dakota Facility Overview

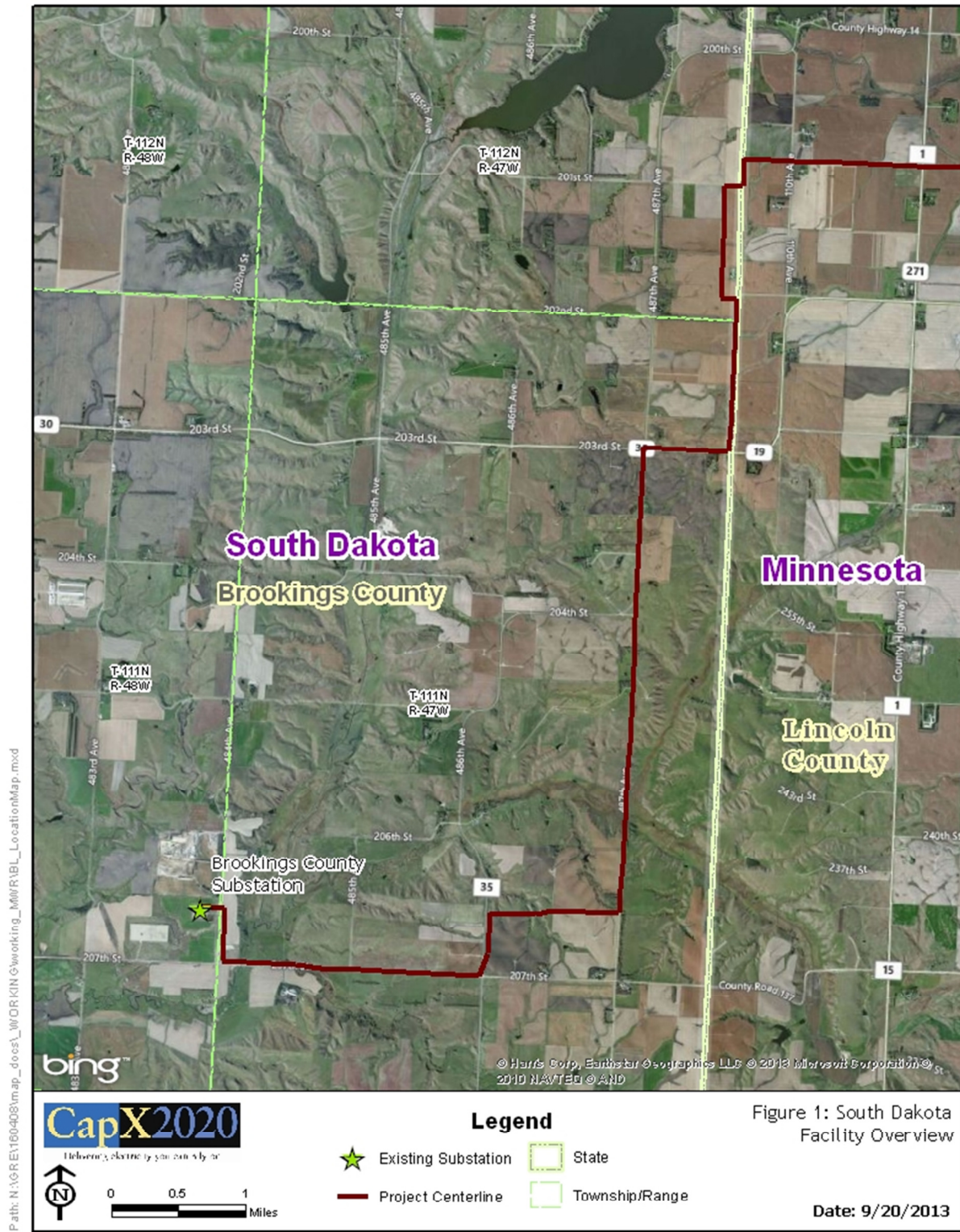


Table 1: CapX2020 Brookings County to Hampton Project and South Dakota Facility Summary

| CapX2020 Brookings County to Hampton 345 kV Project | |
|---|---|
| Project Overview | |
| Description | The Great River Energy CapX2020 Brookings County to Hampton 345 kV Project (Project) consists of construction of approximately 240 miles of new transmission line, construction of six new substations, and upgrading three existing substations. The South Dakota portion of the Project will be approximately 10.3 miles through Brookings County and includes the upgrade of one substation (Brookings Substation). |
| Construction Location | Construction will take place along the following for the South Dakota Facility (see Figure 1 for an overview): <ul style="list-style-type: none"> • Brookings Substation • 484th Avenue • 207th Street • County Road 35 • 487th Avenue • State Highway 30 • 487B Avenue • 201st Street |
| City or Township | The nearest cities to the South Dakota Facility are: <ul style="list-style-type: none"> • White, South Dakota: 5.9 miles • Bushnell, South Dakota: 6.5 miles • Astoria, South Dakota: 7.2 miles |
| State(s) | South Dakota and Minnesota (Minnesota portion is permitted separately and has a separate SWPPP) |
| Latitude and longitude of approximate centroid of project | 44°53N, 96°10W |
| Method of collection of latitude/longitude: | Data were collected using ArcGIS 10 |
| All cities where construction will occur within South Dakota | There will be no construction within any cities for the South Dakota Facility |
| All counties where construction will occur within South Dakota | Brookings County, South Dakota |
| All townships where construction will occur within South Dakota | Lake Hendricks Township, South Dakota Richland Township, South Dakota Sherman Township, South Dakota |
| Project Size within South Dakota | Project Area: 145.5 acres Disturbed Area: 0.07 acres |

| CapX2020 Brookings County to Hampton 345 kV Project | | |
|--|--|---|
| Project Type | | |
| <input type="checkbox"/> Residential | <input type="checkbox"/> Commercial/Industrial | <input type="checkbox"/> Road Construction |
| <input type="checkbox"/> Residential and Road Construction | <input checked="" type="checkbox"/> Other: Utility | |
| Cumulative Impervious Surface (SD) | Existing area of impervious surface: 0 acres Post-construction area of impervious surface: 0.04 acres | |
| Receiving Waters | | |
| Name | Type (ditch, pond, wetland, lake, stream, river, etc.) | Impaired Water |
| Unnamed | Wetlands | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Unnamed | Tributaries of Deer Creek | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Construction Schedule and Sequence | | |
| Construction Start Date | Project: October 2011 South Dakota Facility: September 2013 | |
| Estimated Completion Date | Project: March 2015 South Dakota Facility: May 2014 | |

2.1.1 Land Use

Land use across the South Dakota Facility in South Dakota is primarily rural agriculture; with meadow and farmstead tree lines common. In some portions of the South Dakota Facility there are rural residences within one-half mile of the line. There are no high densities of buildings in the area of the South Dakota Facility.

2.1.2 Soils

Slopes are relatively flat across the South Dakota Facility; however, there are minor ridges and other significant slopes. The majority of soil types along the South Dakota Facility are not highly erodible, although terrain adjacent to streams tends to have more highly erodible soils. The soils range from excessively drained to very poorly drained. See Section 2.5 for more information on specific soil types.

2.1.3 Climate and Precipitation

Average yearly rainfall in Brookings County is approximately 24 inches. Approximately 78 percent of rainfall occurs between the months of April and September. Average annual snowfall in the county is roughly 36 inches. Average winter temperature is approximately 16°F with a daily minimum average of 6°F¹. During spring, snowmelt and individual storms can produce significant quantities of runoff.

2.2 Potential Pollutant Sources (§4.2.1.b)

Table 2 lists pollutant sources and activities that have been evaluated for their potential to contribute pollutants to stormwater discharges. If the potential exists at the site, the BMPs used to control that source are listed in this table and discussed in Section 3.

¹ National Oceanic and Atmospheric Administration (NOAA). –*National Weather Service Climate*. Accessed September 10, 2013. <<http://www.nws.noaa.gov/climate/xmacis.php?wfo=fsd>>.

Table 2: Potential Pollutant Sources and BMPs

| Potential Pollutant Source | Potential with this Project? | | Activities Associated with this Pollutant Source and BMPs Selected to Control the Source |
|---|------------------------------|---|--|
| | Y | N | |
| All disturbed and stored soils: <ul style="list-style-type: none"> • Stockpiled soils (i.e. topsoil, embankments, etc.) • Disturbed soils (exposed areas, staging areas, parking, etc.) | Y | | Activities associated with this pollution source are the earth-disturbances during all phases of construction, including but not limited to clearing, grubbing, minor excavating, limited grading, stockpiling, landscaping, etc. <u>BMPs</u> Sediment control and stockpile containment may include usage of: erosion/sediment control logs, silt fence, sweeping, rock logs, construction entrances/exits, inlet and culvert protection or other proprietary BMPs. Erosion control may include surface roughening, mulch/mulch tackifier/hydromulch application, erosion control blankets, seeding and mulching, and vegetation and topography control. Administrative controls may include phased construction to reduce the amount of open area at any given time and limiting the number of stockpiles. |
| Vehicle tracking of sediments | Y | | Activities associated with this pollution source are the movement of vehicles from disturbed areas to paved streets during all phases of construction activities. <u>BMPs</u> Sediment control may include stabilized construction entrances (rock, geotextiles or mud mats), manual cleaning, and street sweeping. If necessary, use construction fencing to limit entry and exit points and establish perimeter and access controls. |
| Management of contaminated soils | | N | No known contaminated soils exist on-site. If contaminated soils are encountered, all activity must be stopped until the situation can be assessed. The Project Manager will be contacted for further direction. |
| Loading and unloading operations | Y | | Activities associated with this pollution source are potential spills during delivery and unloading of materials at the staging area and each pole location within the easement during all phases of construction activity. <u>BMPs</u> Loading and unloading operations should occur within the stabilized material storage and staging areas. Administrative controls may include materials management practices, personnel training, providing spill kits where needed, minimizing the number of areas where loading and unloading occur. |

| Potential Pollutant Source | Potential with this Project? | | Activities Associated with this Pollutant Source and BMPs Selected to Control the Source |
|---|------------------------------|---|---|
| | Y | N | |
| Outdoor storage activities (including building materials, fertilizers, chemicals, etc.) | Y | | <p>Activities associated with this pollution source are storage of material at the staging areas and the potential for spills and leaks from these materials.</p> <p><u>BMPs</u></p> <p>Containment of the storage or staging area may include installation of silt fence, erosion/sediment control logs, temporary berms, or other BMPs if necessary. Amendments to this SWPPP and the plan set will be made if controls are added. Secondary containment devices will be used for storage of liquids and petroleum products.</p> <p>Administrative controls may include materials management practices, personnel training, and providing spill kits where needed.</p> |
| Vehicle and equipment maintenance and fueling | Y | | <p>Activities associated with this pollution source are fueling of equipment or vehicles and equipment repair or maintenance that may occur during all phases of construction activity.</p> <p><u>BMPs</u></p> <p>Activities where fueling and equipment maintenance activities occur at the site will be limited as they are expected to take place off-site. Fueling/maintenance activities that do occur on site will be staged away from drainage swales, culverts, and waterways. Spill kits will be provided where fueling is conducted. Plastic sheeting, drip pans, dirt berms and other measures will be used to contain fluids. Material spilled will be cleaned up and disposed of immediately.</p> <p>Administrative controls may include materials management practices, and personnel training.</p> |
| Significant dust or particulate generating processes | Y | | <p>Activities associated with this pollution source are the earth-disturbing activities during all phases of construction activities, including but not limited to clearing and grubbing, excavating, limited grading, landscaping, vehicle traffic, etc. There is also the potential for wind to transport dust from disturbed areas (i.e. from access roads).</p> <p><u>BMPs</u></p> <p>Earth disturbing activities will be limited to the extent feasible. Disturbed areas and roads will be watered as-needed during construction, palliatives will be used to control dust; and interim stabilization measures, such as surface roughening, final stabilization, and other effective means will be implemented.</p> <p>Based on the soil types, and the linear nature of construction disturbance, significant dust generation is not expected to be an issue but will be controlled if necessary.</p> |

| Potential Pollutant Source | Potential with this Project? | | Activities Associated with this Pollutant Source and BMPs Selected to Control the Source |
|---|------------------------------|---|---|
| | Y | N | |
| Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc. | Y | | <p>Activities associated with this pollution source are limited due to the short term nature of utility installation activities. Fueling and maintenance activities involving vehicles and equipment and the potential for use of fuels, oils, solvents, etc., are discussed above. Seeding operations typically occur during the final phase of the project and may involve use of fertilizers and tackifiers, as needed. Fertilizers are typically brought to the site by a seeding contractor during seeding operations and any remaining material is removed from the site by the contractor. At this time, pesticides are not planned to be used at this site.</p> <p><u>BMPs</u> Liquids should be stored in secondary containment. Administrative controls may include materials management practices, and personnel training in proper use and storage of materials.</p> |
| On-site waste management practices (waste piles, liquid wastes, dumpsters, etc.) | Y | | <p>Activities associated with this pollution source are generation of waste materials during all phases of construction activities that include, but are not limited to, debris and waste generated during pole removal and construction.</p> <p><u>BMPs</u> Waste receptacles will be used. Dumpsters will not typically be used on small projects. Trash and debris removal on this job will be performed by dump or pick-up trucks and removed by employee service trucks for disposal.</p> |
| Concrete truck/equipment washing, including the concrete truck chute and associated fixtures and equipment, and Dedicated asphalt and concrete batch plants | | N | <p>Activities associated with this pollution source are concrete pouring and washout as necessary for foundation construction.</p> <p><u>BMPs</u> All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner, such as a compacted clay liner. The liquid and solid wastes must not contact the ground. There must not be any runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with DENR regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to use the proper facilities.</p> |
| Non-industrial waste sources, worker trash, and portable toilets | Y | | <p>Activities associated with this potential pollutant source include the generation of non-industrial waste such as discarded building materials, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality.</p> <p><u>BMPS</u> Good housekeeping practices and trash collected in vehicles and disposed of offsite or the use of waste containers. Portable toilets (if used) should be properly anchored and located away from waterways or storm sewers and any impermeable surfaces such as asphalt or concrete roadways.</p> |
| Other areas or procedures where potential spills can occur | | N | No other potential pollutant sources are identified at this time. |

2.3 Total and Disturbed Area (§4.2.1.c)

The total area for the South Dakota Facility is 145.5 acres with a total disturbance of approximately 0.07 acres.

2.4 Proposed Sequence for Major Activities (§4.2.1.d)

Construction activities slated for the South Dakota Facility involve activities that will expose soil to erosion. The activities covered in the SWPPP include the following:

Installation of erosion and sediment control BMPs: Erosion and sediment control measures, such as perimeter control and culvert protection, must be installed prior to land-disturbing activities at construction sites. Where applicable, construction exits/entrances will be installed to prevent sediment tracking on public paved roads.

Tree trimming and clearing: Great River Energy, or other assigned operator, will minimize the number of trees removed and preserve, to the maximum extent practicable, windbreaks, shelterbelts, and living snow fences.

Preparation of laydown and staging areas: Construction staging and laydown preparation will be determined at the discretion of Great River Energy and/or the Contractor.

Clearing of access paths: Temporary access paths are required throughout the Project limits. Access paths will consist of areas of cleared vegetation and are anticipated to be approximately 16 feet wide. The paths will follow the natural terrain and will not result in increased impervious area.

Construction of transmission line: Transmission line construction will follow standard construction practices, which include topsoil stripping and excavation of additional material for foundation construction. The transmission poles will be approximately 6 feet in diameter with a concrete foundation. After the erection of the poles, stringing of the transmission line will take place. No grading will be done around the poles except for minor grading of the immediate terrain as necessary for the safe access and operation of vehicles or installation equipment. The structures will be assembled on the ground, along with insulator assemblies, and then raised into position.

Upgrades to the Brookings Substation: No ground disturbances are anticipated during upgrades at the Brookings Substation.

Turf establishment/revegetation: The disturbed soils will be stabilized as indicated in Section 3.1.1.7 for Turf Establishment.

Removal of temporary erosion controls: All temporary BMPs will be removed after construction is completed and final stabilization of upstream areas is reached.

2.4.1 Construction Schedule

Table 3 provides the anticipated construction schedule for the South Dakota Facility.

Table 3: Construction Schedule for the South Dakota Facility

| Segment / Substation | Name | Construction Start | Construction End |
|----------------------|---|--------------------|------------------|
| Segment | South Dakota/Minnesota Border to Brookings Substation | September 2013 | May 2014 |
| Substation | Brookings Substation upgrade | April 2014 | October 2014 |

2.5 Existing Soils Data (§4.2.1.e)

Soils within the South Dakota Facility can be grouped by soil associations. An association is a group of individual soil series that occur together in a characteristic geographic pattern or a distinctive pattern of soils, relief, and drainage. Each soil association is typically composed of one or more major soils and one or more minor soil components. Soil associations are defined by each county’s Natural Resources Conservation Service (NRCS) office. Within the South Dakota Facility area, four soil associations occur (Schaefer, 1995):

Buse-Barnes-Lamoure Association: Soils within this association are generally well drained, somewhat poorly drained and poorly drained and of loamy and silty textures. They occur on level to steep slopes and are typically located in floodplains and on moraines. This association would be crossed by the proposed transmission line facility east and northeast of Deer Creek along the moderate to steep slopes of the stream valleys in these areas.

Kranzburg-Brookings Association: Soils within this association are generally well drained and moderately well drained and of a silty texture. They occur on nearly level to gentle slopes on till plains. This association would be crossed by the proposed transmission line facility east of the Deer Creek Stream Valley on gently sloped uplands.

Lamoure-Moritz-Divide Association: Soils within this association are generally poorly drained to somewhat poorly drained and of loamy and silty textures. They occur in level to nearly level areas in floodplains. This association would be crossed by the proposed transmission line facility in the vicinity of the Deer Creek Stream Valley.

Singsaas-Buse-Waubay Association: Soils within this association are moderately well drained to well drained and of silty and loamy textures. They occur in nearly level to gently sloped till plains and moraines. This association would be crossed by the proposed transmission line facility where it parallels the South Dakota/Minnesota border, in the vicinity of South Dakota Highway 30.

The South Dakota Facility will cross 32 soil series. Kranzburg-Brookings Silty Clay Loams, Singaas-Waubay Silty Clay Loam and Singaas-Buse Complex are the most common soil types, comprising approximately one-third of the footprint of the Facility in South Dakota.

Approximately 57 percent of the land within the proposed transmission line ROW in South Dakota is listed as prime farmland, approximately 11 percent of the soil is listed as prime farmland if drained, and a negligible percentage is prime farmland if irrigated. Prime farmlands are determined by the South

Dakota NRCS to have suitable pH, adequate water supply, growing season length and temperature for growing crops, and are not excessively erodible or wet throughout the growing season.

2.6 Receiving Waters (§4.2.1.f)

Hydrologic features in the South Dakota Facility area are generally linear and limited to the toe slopes and stream valleys where intermittent or perennial streams are present. However, there are many depressional basins/wetlands concentrated along the north/south segment of the Facility between the unnamed Deer Creek tributary (approximately 3.2 miles northeast of the Brookings County Substation) and State Highway 30.

The South Dakota Facility is almost entirely located within the Deer Creek – Medary Creek and the Lake Hendricks watersheds. The Deer Creek – Medary Creek watershed flows southwest towards the Big Sioux River, while the Lake Hendricks watershed drains to the northeast into the Lac Qui Parle River. Approximately 0.4 miles of the Facility, where it parallels State Highway 30, is located within the County Ditch #8 Watershed that drains to the Minnesota River.

The most significant drainage feature crossed by the Facility is Deer Creek, approximately one-half mile southeast of the Brookings Substation. This feature is contained within a distinct stream valley with steep slopes, and a flat valley floor approximately 0.4 miles wide. Some emergent wetlands are identified by the National Wetlands Inventory (NWI) within this stream valley. These wetlands are identified as palustrine emergent temporarily or seasonally flooded (U.S. Fish and Wildlife Service, 2008).

Another feature is an unnamed tributary to Deer Creek, crossed approximately 3.2 miles northeast of the Brookings County Substation between Structures 31 and 32. This stream is located within a stream valley with similar characteristics of the main channel of Deer Creek. However, the NWI has identified more extensive emergent wetlands along this tributary. These wetlands are similar to those along the main channel of Deer Creek; however, some wetlands along this unnamed tributary have been identified as palustrine forested wetlands with temporary or seasonally flooded conditions.

The Facility will also cross several other coulees that contain minor tributaries to Deer Creek or the unnamed tributary discussed above. While not mapped on the NWI, some of these coulees may contain areas that would qualify as wetlands.

2.7 Site Map (§4.2.1.g)

The Erosion Control Plan (Site Map) is included in **Appendix C** and is intended to comply with the requirements of Section 4.2.1.g of General Permit SDR100000 listed below.

1. Drainage patterns with flow directions marked with arrows;
2. Approximate slopes anticipated after major grading activities;
3. Areas of soil disturbance, noting any phasing of construction activities;
4. Location of major structural and nonstructural controls identified in the SWPPP;
5. Location of areas where stabilization practices are expected to occur;
6. Surface waters, including an aerial extent of wetland acreage;
7. Locations where storm water is discharged to surface water;

8. Locations of any spills, leaks, or soil contamination that could impact the storm water runoff from the site; and
9. Areas of concern including, but not limited to: fueling stations, waste storage, and concrete washout areas. The permittee will provide designated areas for these activities.

3.0 CONTROLS (§4.2.2)

This South Dakota Facility disturbs less than 10 acres, therefore the use of sediment basins and/or sediment traps is not anticipated. At a minimum, silt fences, vegetative buffer strips or equivalent sediment controls will be used for down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area (§3.2.1).

3.1 Erosion and Sediment Controls (§4.2.2.a)

The SWPPP provides structural and non-structural activity-specific sediment and erosion control BMPs. BMPs selected for each activity are based on expected construction conditions and methods, and may be modified in accordance with actual conditions encountered in the field, as determined by the qualified person².

Before land-disturbing activities occur, there are several principles that can be followed to help control erosion and sediment. They include:

- Clearly label areas not to be disturbed with flags, stakes, or other equivalent markers. This includes buffer zones and the construction limits boundary.
- Install downslope and sideslope perimeter controls. These should not be removed until all upstream areas reach final stabilization.
- Do not disturb an area until it is necessary for construction to proceed.
- Schedule construction activities to limit impact from seasonal climate changes or weather events.
- Plan to cover or stabilize disturbed areas as soon as possible.

3.1.1 Stabilization Practices (§4.2.2.a.1)

3.1.1.1 *Protecting Soil Stockpiles*

All exposed soil must be stabilized as soon as possible to limit soil erosion, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, unless earth-disturbing activities will resume within 21 days. Temporary soil stockpiles without significant silt, clay, or organic components, and the constructed base components of roads, parking lots, and similar surfaces, are exempt from this requirement, but must have silt fence or other effective sediment controls, and cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches, unless there is a bypass in place for stormwater.

Some excavated materials will be suitable for backfill and site restoration. Topsoils and organic soils stripped prior to excavation will be stockpiled separately from materials suitable for backfill. Unsuitable material will be promptly removed from the site or stockpiled until removal is possible. Perimeter

² Qualified person refers to a person knowledgeable in the principles and practice of erosion and sediment control such as a licensed engineer or other knowledgeable person who possesses the skills to assess conditions at the construction site that impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activities.

control will be installed around the entire soil stockpile to prevent sediment from escaping. Geotextile fabric can be used underneath the material or to cover the stockpile, if necessary.

3.1.1.2 Temporary Seeding

When disturbed soils are left exposed and permanent turf establishment is not possible due to proposed construction activities or seasonal restrictions, the appropriate seed mix for the time of year should be sowed and mulch or other appropriate erosion control applied. Temporary seeding will be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case later than 14 days after construction has ended for that portion of the site, unless earth-disturbing activities will resume within 21 days. In cropland areas, temporary seeding may not be necessary; the land will likely be restored to accommodate existing agricultural practices. Seeding methods are described in the Project's Vegetation Management Plan.

3.1.1.3 Preservation of Existing Vegetation

Preserving vegetation provides buffer zones and stabilizes the area, which helps control erosion, protect water quality, and enhance aesthetic benefits. This practice is beneficial near sensitive resources.

3.1.1.4 Ditch Stabilization

Drainage ditches and swales may be used to control surface water runoff and must comply with stabilization requirements. The normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water. Stabilization of the remaining portions of any temporary or permanent ditches or swales should be completed as soon as practicable after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased. Temporary or permanent ditch swales that are being used as a sediment containment system (with properly designed rock ditch checks, bio rolls, silt dikes, etc.) do not need to be stabilized. These areas must be stabilized within 24 hours after no longer being used as a sediment containment system.

3.1.1.5 Mulch

Mulch protects exposed soil from erosion caused by rainfall and overland water flow, and promotes growth of seeded areas by protecting the seed and fostering germination. Mulch should be applied to bare or exposed soil, to slopes with high erosion potential, or to disturbed areas where plants are slow to develop. Mulch materials and application method will follow South Dakota Department of Transportation (SDDOT) guidance.

3.1.1.6 Erosion Control Blanket

An erosion control blanket is a temporary protective blanket of degradable materials, usually with a plastic or degradable mesh or netting on one or both sides. Erosion control blankets are typically used in place of mulch for steeper slopes, those greater than 3:1 (H:V), or areas with greater erosion potential. Erosion control blankets should be rolled out in the direction of flow with overlapping edges when multiple devices are used in series (**Appendix D**).

3.1.1.7 Turf Establishment

Permanent turf will be established in all areas disturbed by construction-related activities in accordance with the Project's Vegetation Management Plan. Landowners may be consulted on the specific seed mixes areas adjacent to agricultural fields. The following elements will be completed as part of permanent turf establishment:

- **Seedbed preparation:** The area to be seeded will be made reasonably smooth and firm. The seedbed will be worked to a depth of three (3) to five (5) inches. The seedbed will be dragged or packed to break up large clods. Prior to seeding, required fertilizer will be applied and mixed with the soil surface to a depth of 3 inches. The seedbed should be firm enough that penetration of approximately 1/2 inch would be obtained by walking over the seedbed. The Contractor will suspend operations when the soil is too wet.
- **Seeding:** Seed mixes and application will be selected based on the natural vegetation and the time of year. Planting will be done in a staggered pattern to minimize erosion. Seed selection and application methods will generally follow SDDOT or USDA guidance.
- **Mulch:** All permanent seeding applications will be mulched upon completion of application or planting. Erosion control blankets should be substituted for mulch on slopes greater than 3:1 (H:V) or wherever highly erosive conditions exist (e.g. in drainage swales or waterbody shorelines). When planting ground covers, it may be advantageous to apply mulch or erosion control blanket prior to planting. Plants should then be tucked into the soil through slits or holes.
- **Turf Maintenance:** Turf areas will be maintained until the site has undergone final stabilization, which will include watering, reseeding, and reapplying mulch as needed. Surface rills and gullies or other damage will be repaired by regrading or reseeding within 24 hours of discovery. Care of turf may extend into the next growing season.

3.1.2 Structural Diversion Practices (§4.2.2.a.2)

3.1.2.1 Culvert Protection

Where appropriate, culvert protection should be installed on the upstream end of a culvert to prevent sediment from traveling through the system. This consists of traditional perimeter control devices or the installation of riprap. The downstream end of a culvert will need energy dissipation to eliminate the potential for scour and erosion when water exits the structure and must be provided with temporary or permanent energy dissipation within 24 hours after connection to surface water. Sod or riprap is typically effective at the culvert outlet for energy dissipation. For low-velocity flows, sod can be used. When installing culvert protection, the device should surround the culvert entrance/exit completely. When riprap is used, an erosion control blanket should be placed underneath the rock to prevent erosion when installing and removing the rock.

3.1.2.2 Ditch Checks

Ditch checks may be used to trap sediment and/or reduce runoff velocities in ditches and drainageways. Ditch checks (**Appendix D**) are commonly composed of riprap or other rock, biorolls, or hay bales. If rock ditch checks are used, an erosion control blanket should be inserted underneath the ditch check to prevent erosion of the ditch bottom when installing and removing the structure. **Table 4** provides

guidance for ditch check spacing. Spacing for ditch grades flatter than what is illustrated in the table may be determined by extrapolating the spacing information.

Table 4: Ditch Check Spacing

| Ditch Grade (%) | Spacing (ft) |
|-----------------|--------------|
| 2 | 150 |
| 3 | 100 |
| 4 | 75 |
| 5 | 50 |

3.1.2.3 Diversion Mounds and Berms

Temporary mounds divert runoff from a work area toward a filtration area with existing vegetation or other BMPs. Diversion structures constructed of soil will need to be temporarily stabilized with seed and/or mulch. Outfalls of diversion structures will often require energy dissipation to reduce downstream scour and erosion. Diversion mounds and berms are cost-effective solutions when applicable, requiring little effort for installation, maintenance, and removal. They have potential to serve as backfill for structure excavations. If these structures are created in agricultural fields, they can be plowed into the existing contour to immediately return the site to agricultural land.

3.1.2.4 Inlet Protection

All storm drain inlets must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Inlet protection consists of a filtering measure placed around an inlet or drain to trap sediment, or around an upstream impounding area to prevent sediment from entering a storm drain system. Typical sediment barriers such as biorolls, sandbags, gravel, or sod can function as effective inlet protection devices. Manufactured products are also available that are designed to trap sediment at the point of entry into a storm drain. Drain inserts are usually composed of filter fabric, wire, metal, or plastic bags or racks that hang down into a catch basin or inlet. Inserts should be cleaned regularly to maintain full protection capacity.

3.1.2.5 Perimeter Control

Perimeter control measures should be installed downslope from anticipated construction activities and land disturbances before construction begins. This includes locations around staging areas, stockpiles, disturbed areas, roadside ditches, and nearby trees to protect them from damage. Common forms of perimeter control include: silt fence, biorolls, straw bales, and silt curtains. If silt fence is used, it should be machine sliced into the soil or installed by hand. The edge of hand-installed silt fence will be buried or weighted by sand bags, rocks, or similar appropriate material. Perimeter control detail sheets are provided in **Appendix D**.

3.2 Storm Water Management (§4.2.2.b)

The South Dakota Facility disturbs less than 10 acres draining to a common location, therefore the use of sediment basins and/or sediment traps is not anticipated. The linear nature of the Project and the

minimal disturbance and impervious area created will achieve permanent treatment through natural vegetated buffers that occur throughout the Facility route.

3.3 Other Controls (§4.2.2.c)

3.3.1 Control of Surface Water and Runoff Management

Control of surface water is not anticipated for this Project. If control of surface water is necessary, it may be diverted around or through construction activities by earthen berms or trenches.

3.3.2 Dewatering

During excavation and other construction activities, dewatering may be required in areas with surface water or a high water table to facilitate construction, to prevent erosion and sediment transport, and/or to prevent groundwater pollution. Water from the area to be dewatered must pass through a sediment control device or trap to settle out sediment before the water is discharged. Sediment traps are small, temporary ponding areas, usually with gravel outlets, that detain sediment-laden runoff and allow the majority of debris to settle out of the water. Sediment traps typically apply to areas that drain 10 acres or less and should be periodically cleaned out to maintain at least 50 percent capacity. Dewatering devices will be sized and operated to allow pumped water to flow through the device without exceeding its design criteria. Additional sediment barriers must be used to trap sediment if the perimeter control device cannot handle the flow. The following dewatering methods will be used as appropriate:

- Method 1: Pump directly into a temporary sedimentation basin, overflow protection by rock or super-duty silt fence system;
- Method 2: Chitosan or flock sock installed onto a pump or hose section, which will be directed into a temporary sedimentation basin with outflow protection;
- Method 3: Pump head placed into a barrel with filtering holes and rock;
- Method 4: Pump head and gravity inlet installed on a floating head skimmer;
- Method 5a: Pump into a plastic lined dumpster, with Chitosan treatment and floating head discharge;
- Method 5b: Pump into an engineered, treatment-plastic-lined dumpster, with Chitosan or starch floc treatment and filter fence liner;
- Method 6: Sand media particulate filter with inline Chitosan sock; or
- Method 7: Alternative method engineered to meet specific circumstances.

3.3.3 Work in or near Waters and Streams

Construction crews must exercise caution when equipment is within 50 feet of waterways and will not drive equipment through rivers or streams. If necessary, vegetation in these areas is to be selectively cleared by hand. Any buffer zones of preserved vegetation will be delineated by orange safety fence or silt fence. Other perimeter control devices will be used for added protection as necessary. Buffer zones will be measured from the top of stream bank.

For work near waters identified as impaired under Section 303(d) of the federal Clean Water Act for phosphorus (nutrient eutrophication biological indicators), turbidity, dissolved oxygen, or aquatic biota

(fish bio-assessment, aquatic plant bio-assessment and aquatic macroinvertebrate bio-assessment), discharges must incorporate the following BMPs:

- During construction, all exposed soil areas must be stabilized as soon as possible to limit soil erosion, but in no case later than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.
- Temporary sediment basins must be provided for common drainage locations that serve an area with 10 or more acres disturbed at one time. This situation is not anticipated for the South Dakota Facility.

3.3.4 Work in or near a Wetland

When wetlands are present in the South Dakota Facility area or encountered between work sites, appropriate measures should be taken to maintain the hydraulic and hydrologic features of the wetlands. Construction impacts must be minimized to preserve wetland characteristics to the maximum extent practical. Clearing and grading within wetlands must be limited to topsoil segregation and enhancing natural revegetation. Soil stockpiles must not be placed in existing wetlands. To preserve wetland hydrology, construction activities must be minimized in wetlands, or low ground-pressure equipment used to reduce soil compaction. Open water wetlands are not anticipated within the South Dakota Facility.

Construction equipment will only use temporary wetland crossings to access the construction site and such crossings must be removed from the wetland area when not in use. Temporary wetland crossings in South Dakota will be accomplished using wood mats. Wood mats are individual cants (logs with one squared side), sawn dense hardwood (oak), or round logs cabled together to make a single-layer crossing. Wood mats provide a surface that protects wetlands during hauling or equipment-moving operations. A 3-m (10-foot) long, 10- by 10-cm (4- by 4-inch) center log is the recommended minimum size. If the surface of the crossing becomes slippery, expanded metal grating may be added to provide traction.

3.3.5 Dust Control

Measures must be taken to prevent fugitive dust during construction activities. Dust control measures depend on the site's topography and land cover, soil characteristics, and expected precipitation. Construction sequencing and disturbing only small areas at a time can greatly reduce the amount of fugitive dust. The following are some of the control measures that can be used as appropriate³:

- Sprinkling/irrigation: Wetting exposed soils is an effective dust control method, especially for unpaved access roads. Sprinkling will be done carefully to avoid excess runoff from the site and to prevent vehicles tracking mud onto public paved roads.
- Vegetative cover: Where possible, vegetative stabilization will be used for disturbed soil.

³ Environmental Protection Agency (EPA). *Dust Control*. <<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=52>>. Accessed September 10, 2013.

- Rolled-on or hydro mulch: This is a quick and effective dust control measure for a recently disturbed area.
- Wind breaks: Trees and shrubs left in place during site clearing work well to reduce wind velocity through a site. Constructed wind breaks include snow fencing, tarp curtains, hay bales, and sediment walls.
- Gravel: This is an effective means of dust control for construction entrances and access roads.
- Spray-on chemical soil treatments (palliatives): These can be used only on mineral soils. Palliatives include anionic asphalt emulsion, latex emulsion, resin-water emulsions, and calcium chloride. The potential effects of a palliative treatment's chemical biodegradability and water-solubility on the surrounding environment will be determined before its use.

3.3.6 Street Sweeping

Cleaning tracked sediments and debris on paved roads prevents unwanted materials from washing into surface waters and improves the appearance and safety of public roadways. Paved roads in front of construction entrances/exits should be inspected at the end of each day and tracked soil must be removed within 24 hours of discovery, or, if applicable, within a shorter time.

3.3.7 Temporary Construction Entrances/Exits

Vehicle tracking of sediment from the construction site (or onto streets within the site) must be minimized by BMPs such as stone pads, concrete or steel wash racks, or equivalent systems (**Appendix D**). Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto the street.

3.4 Compliance with Local Requirements (§4.2.3.d)

There are no local requirements for stormwater pollution prevention for the South Dakota Facility.

4.0 SITE INSPECTION (§3.12)

4.1 Inspection Schedule

Routine inspections will be conducted at least once every 7 days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. Following a rainfall inspection, the next inspection will be conducted within 7 days. Once a site has been temporarily stabilized and construction has ceased for the winter, such inspections may be conducted at least once per month. Inspections must resume within 24 hours after runoff occurs at the site or upon resuming construction, whichever comes first.

4.2 Documenting Inspections

All inspections will be documented and the records kept in **Appendix E**. Inspections will be conducted by personnel who are familiar with the General Permit conditions and with the proper installation and operation of stormwater controls.

Routine inspections will include:

- All areas disturbed by construction activity and areas used for storage of materials that are exposed to precipitation,
- Discharge locations, and where those are inaccessible, nearby downstream locations to the extent that such inspections are practicable, and
- Locations where vehicles enter or exit the site for evidence of off-site sediment tracking.

These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system, and the erosion and sediment control measures identified in this SWPPP will be observed to ensure that they are operating correctly and sediment is not tracked offsite.

Records will be kept for each inspection and maintenance activity and will contain the following information:

- Date and time of inspection;
- Name, title, and qualifications of person(s) conducting inspection;
- Date, duration, and amount of all rainfall events that produce more than 0.5 inches of rain in a 24-hour period, and whether any discharges occurred;
- Findings of the inspections, including recommendations for corrective action including implementation dates;
- Corrective actions taken;
- Locations of the following:
 - Discharges of sediment or other pollutant from the site;
 - BMPs that need to be maintained;
 - BMPs that have failed to operate as designed or proved inadequate for a particular location;

- BMPs that are needed and did not exist at the time of inspection;
- Documented changes to SWPPP; and
- Inspector's signature.

The SWPPP will be revised if any non-compliance with effluent limits is identified during site inspections. The changes will be implemented at the site within 7 calendar days following the inspection. Where an inspection does not identify any incidents of non-compliance, the report will contain a certification that the site is in compliance with the SWPPP and the General Permit. The report will be signed in accordance with the signatory requirements in Section 9.0 of this SWPPP.

An Inspection Log is provided in **Appendix E**. Great River Energy will keep the SWPPP along with the inspection records for 3 years after the Notice of Termination (NOT) is submitted.

Representatives from the SDPUC or other regulatory entities are permitted on site, pending completion of environmental awareness and safety training.

5.0 MAINTENANCE (§4.2.3 AND §6.1.4)

Silt fences and other temporary erosion and sediment controls will be kept in working order throughout Project construction. All maintenance conducted during construction must be recorded in writing and these records must be kept in **Appendix E**. If any controls are not operating effectively, maintenance must be performed as necessary to maintain continued effectiveness of the controls before the next anticipated storm event or within seven (7) days of identifying the need for maintenance, whichever comes first. Maintenance will include the following:

- Excess sediment behind silt fences and biorolls will be removed and properly disposed of when sediments reach 1/2 the height of the structure.
- Construction site vehicle exit locations will be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment will be removed from all paved surfaces within 24 hours of discovery, or if applicable, within a shorter time.
- Surface waters, including drainage ditches and conveyance systems, will be inspected for evidence of erosion and sediment deposition. Evidence of erosion and/or sediment deposition will be addressed within 7 days.
- Infiltration areas will be maintained to ensure no compaction or sedimentation occurs.
- Construction entrances will be maintained daily.
- Turf will be maintained until final stabilization is established, which will include watering, reseeding, and re-applying mulch, as needed.

All remaining temporary erosion and sediment controls and accumulated sediments from silt fences will be removed within 30 days of achieving final stabilization at the site.

6.0 FINAL STABILIZATION

Final stabilization must be completed prior to filing a Notice of Termination (NOT). Final stabilization means that:

1. All soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of 70% of the native cover for unpaved areas and areas not covered by permanent structures has been established, or equivalent permanent stabilization measures (such as the use of gravel, riprap, gabions, or geotextiles) have been employed; or
2. When background native vegetation will cover less than 100 percent of the ground (e.g., arid areas), the 70 percent coverage criteria is adjusted as follows: if the native vegetation covers 50 percent of the ground, 70 percent of 50 percent ($0.70 \times 0.50 = 0.35$) would require 35 percent total cover for final stabilization. On sites with no natural vegetation, no vegetative stabilization is required.
3. For construction projects on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its pre-construction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the state, and areas that are not being returned to their pre-construction agricultural use will meet the final stabilization criteria in (1) or (2) above.

7.0 SWPPP AMENDMENTS (§4.3.1)

Great River Energy will amend the SWPPP to address the following conditions:

- Changes in design, construction, operation, maintenance, weather, or seasonal conditions that have a significant effect on the discharge of pollutants to surface waters or underground waters;
- Inspections or investigations by site operators, or by local, state or federal officials, indicate the SWPPP is not effective in eliminating or significantly minimizing the discharge of pollutants to surface waters or underground waters or that discharges are causing water quality standard exceedances;
- The SWPPP is not achieving the general objectives of minimizing pollutants in stormwater discharges associated with construction activity, or the SWPPP is not consistent with the terms and conditions of this permit, or
- Owner or operator changes.

Revisions to the SWPPP will be completed within 7 calendar days following determination of cause for the amendment. Revisions to the SWPPP must be documented in **Appendix F**.

8.0 RECORD RETENTION (§6.8)

The SWPPP (original or copies) including all changes to it and inspection and maintenance records will be kept at the site during construction. After construction activities are complete and the Notice of Termination (NOT) has been submitted, the SWPPP will be kept on file for 3 years and made available to federal, state, and local officials within 72 hours upon request.

9.0 SIGNATORY REQUIREMENTS (§6.9)

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 qualified personnel properly gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

| | |
|---------------|--|
| Name | Mike Ryan, EIT |
| Signature |  |
| Firm | HDR Engineering, Inc. |
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| Address | 701 Xenia Avenue South, Suite 600, Minneapolis, MN 55416 |
| Training | University of Minnesota Erosion and Stormwater Management Certification |
| Program Name | Design of Construction Stormwater Pollution Prevention Plans Construction Site Management |
| Instructor(s) | Dwayne Stenlund and Leo Holm |
| Dates | May 2011 |