

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) – PRELIMINARY

Cassadaga Wind Project

Cassadaga Wind LLC

Towns of Charlotte, Cherry Creek, Arkwright,
and Stockton, Chautauqua County, NY

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To be included prior to project construction

APPENDICES

- Appendix A – NYSDEC Notice of Intent (NOI)
- Appendix B – NYSDEC Acknowledgement of NOI Letter
- Appendix C – Location Map/Soils Information
- Appendix D – SHPO Documentation
- Appendix E – Pre-Construction Requirements
- Appendix F – Stormwater Construction Site Inspection Reports
- Appendix G – Post-Construction Maintenance Requirements
- Appendix H – Stormwater Management Memorandum
- Appendix I – NYSDEC Notice of Termination (NOT)

PRELIMINARY DESIGN DRAWINGS (BOUND SEPARATELY)

Northwest Region Drawing Set:

- NW-001 Northwest Soils Map
- NW-100 Access Road Index Sheet
- NW-101 to NW-113 Access Road Plan and Profile
- NW-200 Collection Line Index Sheet
- NW-201 to NW-215 Collection Line Plan and Profile

Northeast Region Drawing Set:

- NE-001 Northeast Soils Map
- NE-100 Access Road Index Sheet
- NE-101 to NE-116 Access Road Plan and Profile
- NE-200 Collection Line Index Sheet
- NE-201 Collection Line Plan and Profile

Center Region Drawing Set:

- CE-001 Center Soils Map
- CE-100 Access Road Index Sheet
- CE-101 to CE-107 Access Road Plan and Profile
- CE-200 Collection Line Index Sheet
- CE-201 to CE-210 Collection Line Plan and Profile

Southwest Region Drawing Set:

- SW-001 Southwest Soils Map
- SW-100 Access Road Index Sheet
- SW-101 to SW-111 Access Road Plan and Profile
- SW-200 Collection Line Index Sheet
- SW-201 to SW-203 Collection Line Plan and Profile
- SW-300 Collection Line Index Sheet
- SW-201 to SW-203 Collection Line Plan and Profile

Southeast Region Drawing Set:

- SE-001 Southeast Soils Map
- SE-100 Access Road Index Sheet
- SE-101 to SE-110 Access Road Plan and Profile
- SE-111 Laydown Area Plan
- SE-200 Collection Line Index Sheet
- SE-201 to SE-204 Collection Line Plan and Profile

C-601 to C-606 Civil Details

1. DEFINITIONS & ACRONYMS

DEFINITIONS

Commencement of construction: the initial disturbance of soils associated with clearing, grading, or excavation activities, or other construction activities that disturb or expose soils such as demolition or stockpiling of fill material.

Discharge(s): any addition of pollutant to waters of the State through an outlet or point source.

Final stabilization: all soil-disturbance activities at the site have ceased, and uniform perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established or equivalent stabilization measures such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete, or pavement.

Qualified Inspector: a person that is knowledgeable in the principles and practices of erosion and sediment control. Qualified Inspectors include:

- Licensed Professional Engineer
- Certified Professional in Erosion and Sediment Control (CPESC)
- Registered Landscape Architect
- Person working under the direct supervision of, and at the same company as, the license Professional Engineer or Register Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control (i.e. the individual has received four (4) hours of NYSDEC endorsed training in proper erosion and sediment control within the prior three (3) years).

Trained Contractor: an employee from a contracting (construction) firm that has received four (4) hours of NYSDEC endorsed training from a Soil and Water Conservation District (or other NYSDEC endorsed entity), in proper erosion and sediment control principles no later than two (2) years from the date this general permit is issued. After receiving the initial training, the trained individual shall receive four (4) hours of training every three (3) years.

Temporarily Ceased: an existing disturbed area that will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization: when exposed soil has been covered with materials to prevent the exposed soil from eroding as set forth in the NYS Standards and Specifications for Erosion and Sediment Control. Examples of materials include mulch, seed and mulch, and rolled erosion control products.

ACRONYMS

DOW: Department of Water

MS4: Municipal Separate Storm Sewer System

NOI: Notice of Intent

NOT: Notice of Termination

NYSDEC: New York State Department of Environmental Conservation

SWPPP: Stormwater Pollution Prevention Plan

2. INTRODUCTION AND REGULATORY REQUIREMENTS

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared by Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR), referred to as the Engineer, to provide instruction on appropriate construction management practices that will guide **Cassadaga Wind LLC, a subsidiary of EverPower Wind Holdings, Inc**, referred to as the Owner, in its field activities and operations to minimize the discharge of pollutants in stormwater runoff and protect water quality during and after construction activities.

ALL PERSONNEL ENGAGED IN **CASSADAGA WIND PROJECT** CONSTRUCTION ACTIVITIES SHALL ABIDE BY THIS SWPPP.

This SWPPP is a requirement of New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-15-002 (General Permit), effective January 29, 2015 with an expiration date of January 28, 2020. The General Permit authorizes stormwater discharges to surface waters of the State from construction related activities. The contents of this SWPPP discuss and describe the requirements of this permit.

The SWPPP will be kept at the project site made available for review by applicable regulatory agencies, the Engineer, and Contractors. Regulatory agencies that have jurisdiction over the project site may elect to review this SWPPP and if necessary may notify the Owner that modifications to the SWPPP or site conditions are required.

The Notice of Intent (NOI), SWPPP and Inspection reports must be made available for public review by the Owner. The Owner shall produce copies of these documents for any person within five business days of the receipt of a written request. The requester is responsible for copying costs.

The General Permit requires that a review of the project be completed to determine whether stormwater discharge or construction activities would have an effect on a property that is a historic or archeological resource that is listed or eligible for listing on the State or National Register of Historic Places. Documentation of this review is included in Appendix D – State Historic Preservation Office (SHPO) Documentation.

The Owner shall retain the following documents for a period of at least five years from the date that the site achieves final stabilization:

- The SWPPP including:
 - NOI,
 - NOI acknowledgement letter,
 - Contractor Certification(s) and,
 - Notice of Termination (NOT).
- Stormwater Construction Site Inspection Reports.
- Contract Documents including Construction Drawings and Technical Specifications.
- Correspondence (from NYSDEC, town, engineer, etc.) regarding stormwater management.

3. PERMIT COVERAGE

The erosion and sedimentation control devices included in this SWPPP were selected to minimize the discharge of pollutants and to assist in the prevention of a violation of the water quality standards as discussed in the General Permit under Section 1.B for Effluent Limitations Applicable to Discharges from Construction Activities. If there are any deviations proposed, then a demonstration of equivalence must be included. The SWPPP for the project has been prepared with no deviations from the 2005 New York State Standards and Specifications for Erosion and Sediment Control.

As required in Section C of the General Permit, the post-construction stormwater management practices included in this SWPPP were selected and designed to meet the performance criteria in the 2015 New York State Stormwater Management Design Manual. The project includes no deviations from these design requirements.

The Cassadaga Wind Project site is not located within a regulated MS4 and this SWPPP has been prepared with no deviations from the 2005 New York State Standards and Specifications for Erosion and Sediment Control and the 2015 New York State Stormwater Design Manual; therefore construction related stormwater discharges from the project site will be authorized five business days from the date the electronic NOI is received by the NYSDEC, or ten business days from the date the paper NOI is received by the NYSDEC (Appendix A).

4. SWPPP REVISION REQUIREMENTS

The SWPPP must be kept up to date to accurately document the current and future erosion and sediment control and post-construction stormwater practices for the site. The Owner or the Contractors shall amend this SWPPP when modifications to the design, construction, operation, or maintenance of the project could have an effect on the potential for discharge of pollutants in stormwater runoff. Some example situations include:

- The currently installed erosion and sediment control practices are ineffective in minimizing pollutants in stormwater discharges.
- An additional Contractor will be implementing the stormwater management and/or erosion and sediment control facilities and must complete the contractor certification.
- Issues are identified by qualified inspector, a NYSDEC representative, or other regulatory authority that require a modification.

The Contractor is responsible for the installation of all erosion and sediment control devices as specified in this SWPPP.

If changes in site conditions occur as a result of the workmanship or actions of the contractor, time of year, and/or weather conditions, the contractor will be responsible to revise the SWPPP Documents, implement all SWPPP revisions, and install all additional or revised stormwater management, and erosion and sediment control devices at their own cost. All SWPPP revisions will be completed within seven (7) days of receiving notification that revisions are necessary. Revisions shall be reviewed and accepted by the Owner and the Engineer prior to implementation.

If existing site conditions observed by the contractor are different than what is shown in the SWPPP documents, the contractor shall report in writing all discrepancies to the Owner prior to any site disturbance. The Owner shall review the documented discrepancies and provide in writing acceptance or denial of discrepancies to the contractor. When the Owner provides written acceptance of any agreed upon discrepancies prior to any site disturbance, the Owner shall revise the SWPPP Document and provide it to the Contractor within three (3) days. The contractor shall review the revised SWPPP within three (3) days of receipt, and document in writing any changes to the negotiated contract. After acceptance by the Owner, the contractor shall be responsible for full implementation of the revised SWPPP's stormwater management, and erosion and sediment control practices. All SWPPP revisions will be completed within seven (7) days of receiving notification to proceed with the revisions.

All SWPPP revisions must be marked the revision date and distributed by the Owner or the Contractors to the involved parties (i.e., subcontractors, Engineer, and municipality).

5. SITE INFORMATION

5.1 – SITE & PROJECT DESCRIPTION

The Owner is constructing a commercial-scale 126 MW wind power project in multiple locations in the Towns of Charlotte, Cherry Creek, Arkwright, and Stockton, in Chautauqua County, NY. Proposed project features include: the installation and operation of up to 58 wind turbines, together with the associated collection lines (below grade and overhead), access roads, meteorological towers, operation and maintenance (O&M) building, and related facilities including collection and point of interconnect (POI) substations

The soils information for this site is located in Appendix C.

The Project site is located in the regional Allegheny River and Niagara River-Lake Erie watersheds. Stormwater from the site discharges into a variety of tributaries, including Clear and Cassadaga Creeks, that ultimately discharge into the Allegheny River, Niagara River, or Lake Erie.

5.2 – SITE LOCATION AND OWNER/OPERATOR CONTACT INFORMATION

Contact information for the site is as follows:

Owner/Operator: Cassadaga Wind LLC, a subsidiary of EverPower Wind Holdings, Inc.
Contact: Seth Wilmore
Address: 1251 Waterfront Place, 3rd floor
Pittsburgh, Pennsylvania, 15222
Phone No.: (412) 253-9419

5.3 – CONTRACT DOCUMENTS

The Contract Documents include Construction Drawings as listed in the Table of Contents, technical specifications, and this SWPPP.

6. SWPPP CONSTRUCTION REQUIREMENTS

6.1 – PRE-CONSTRUCTION REQUIREMENTS

Prior to construction, the owner shall have the Contractors and subcontractors identify at least one person from their company, who meets the requirements of a trained contractor, that will be responsible for the implementation of the SWPPP and the inspection of the erosion and sediment controls in accordance with the New York Standards and Specifications for Erosion & Sediment Controls. The Owner's Representative shall ensure that at least one trained contractor is on-site on a daily basis when soil disturbance activities are being performed. The trained contractor shall inspect the sites erosion and sediment control practices on a daily basis to ensure these facilities are in effective operating condition at all times.

Pre-construction Requirements to be followed by the Owner and Contractors prior to the commencement of any construction activities are described in Appendix E.

6.2 – CONSTRUCTION REQUIREMENTS

6.2a – Area of Disturbance

Construction activity will not disturb greater than five (5) acres of soil at any one time without prior written permission of the Owner's Representative and the Department of Water (DOW) Water (SPDES) Program contact at the Regional NYSDEC office contact. To obtain approval from the Regional NYSDEC office, the Owner will submit a written request to DOW Water (SPDES)

Program contact at the Regional NYSDEC office that contains the following information:

- A phasing plan that defines:
 - The maximum disturbed acres per phase;
 - The required cuts and fills;
 - Any additional erosion and sediment control measures that will be implemented; and
 - Identification of additional water quality treatment practices to be installed.
- An explanation of why the five (5) acre disturbance limit must be exceeded;
- Acknowledgement that a qualified inspector will conduct at least two (2) site inspections every seven (7) days. The inspections must be separated by a minimum of two (2) calendar days.
- Acknowledgement that where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures, in conformance with the New York State Standards and Specifications for Erosion and Sediment Control, shall be installed within seven (7) days from the date the soil disturbance activity ceased.
- Acknowledgement that the Owner/Operator shall install any additional practices to protect water quality based as necessary based on site conditions.

If the current site disturbance is reduced to less than five (5) acres, then the inspection frequency can be reduced to the required frequency as identified in Section 6.2c. The Owner shall notify the DOW Water (SPDES) Program contact at the Regional NYSDEC office in writing prior to reducing the frequency of inspections.

6.2b – Construction Sequence

1. Install temporary stabilized construction entrances.
2. Establish limits of site disturbance, including site clearings, stockpiled soil, access road, turbine work areas.
3. Install silt fence, and all other necessary erosion and sediment control practices, prior to up-gradient soil disturbances.
4. Clear and grub project limits of disturbance.
5. Strip topsoil and create stabilized stockpile onsite.
6. Establish rough grade for the access road, stormwater management practices, and turbine work areas. Leave slope surfaces slightly roughened to a depth of 1-2 inches. Do not back blade slopes.
7. Install additional temporary erosion and sediment practices as needed, and permanent soil stabilizing practices as detailed on drawings.
8. Complete access road construction.
9. Complete Soil Restoration per Section 5.1.6 of the Design Manual on all areas that disturbed areas that will be vegetated in its final state and on existing access roads identified to be restored.
10. Apply permanent seed and mulch.
11. When site has reached final stabilization, and after review and confirmation by the Owner's representative, the Contractor shall remove temporary erosion and sediment control measures.

6.2c – Construction Site Inspection

The Owner will be responsible to provide a qualified inspector to inspect erosion and sediment control practices, post-construction stormwater management practices that are under construction, disturbed areas, and all points of discharge from the construction site. Specifically the qualified inspector shall:

- Inspect all erosion and sediment control practices to ensure integrity and effectiveness,
- Verify that erosion and sediment control practices required by the SWPPP and the General Permit have been installed as appropriate for the phase of work and conditions at the site,
- Ensure that post-construction stormwater management practices are installed in accordance with the SWPPP,

- Inspect all areas of disturbance that have not achieved final stabilization, and
- Observe all points of discharge from the site, including natural surface waterbodies located within or immediate adjacent to the construction site, conveyance systems and overland flow.

The qualified inspector shall also take digital photographs, with date stamp, that clearly show the conditions of erosion and sediment control practices and stormwater management practices that have been identified as needing corrective actions and of practices that have had corrective actions since the last inspection. These photographs shall be attached to the inspection form within seven calendar days of the inspection.

If corrective actions are needed, the qualified inspector must notify the Owner and the appropriate Contractor within one business day of completing the inspection. The Contractor shall begin implementing the corrective action within one (1) business day of receiving notification and complete it within seven (7) calendar days following the date of the inspection. Additional mitigation measures are to be implemented by the Contractors if necessary due to site conditions to minimize sediment transport or discharge of sediment laden runoff off-site.

The qualified inspector shall complete inspection at least once every seven (7) calendar days. If authorization to disturb greater than five (5) acres of soil at one time is received, the qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days. There shall be a minimum of two (2) full calendar days between inspections. An Inspection Report Form for conducting the inspections is included in Appendix F. Completed inspection reports are to remain on file at the site in Appendix F.

Temporary Construction Shutdown

If soil disturbing activities have been temporarily suspended, such as for winter shutdown, and temporary stabilization measures have been applied to all disturbed areas, the Owner may reduce inspections to a minimum of one (1) inspection every thirty (30) calendar days. The Owner shall notify the DOW Water (SPDES) Program contact at the NYSDEC Regional Office in writing prior to reducing the frequency of inspections. The Owner shall resume inspections in accordance with this section as soon as soil disturbance activities resume.

Final Site Inspection

The qualified inspector shall perform a final inspection of the site to certify that:

- All disturbed areas have achieved final stabilization;
- Temporary erosion and sediment control practices have been removed; and
- Post-construction stormwater management practices have been constructed in conformance with the SWPPP.

Prior to certification, the Contractors at their own cost, shall supply as-built topographic surveys of all post-construction stormwater management practices to document that the stage/storage relationship has been met. As-builts shall also show rims, inverts, orifice, pipe sizes and elevations, etc. Upon satisfactory completion of the final site inspection, the qualified inspector shall sign the appropriate sections of the Notice of Termination (NOT) form (Appendix I).

6.2d –Authorized Non-Stormwater Discharges

Discharges from the following sources are authorized provided that they are directed to a sediment trapping device:

- Clean wash water (does not contain soaps, detergents or solvents) from cleaning construction vehicles and equipment.
- Site dewatering (ground water) from pits, excavations, and trenches.

Sediment trapping devices shall be designed and located by the Contractor and approved by the Owner and the Engineer prior to installation.

If clean, potable water discharged from the site for any reason, it shall be directed over a grassed area prior to reaching off-site areas. Potable water shall not be discharged directly to a natural waterbody or watercourse.

Water used for dust control shall be applied using appropriate quantities and methods. No chemicals, soaps, detergents, and etc., shall be used.

6.2e – Prohibited Non-Stormwater Discharges

The following discharges are prohibited:

- Wastewater from washout and cleanout of concrete, stucco, paint, form release oils, curing compounds, and other construction materials. (It is a requirement of this SWPPP that these materials be washed out into a containment area or tank on site. All waste material must be disposed of off-site in accordance with Federal, State, and local requirements);
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- Soaps or solvents used in vehicle and equipment washing; and
- Toxic or hazardous substances from a spill or other release.

6.2f – Maintaining Surface Water Quality

It is expected that compliance with this SWPPP and the General Permit, will prevent discharges of pollutants which would cause or contribute to a violation of the surface water quality standards contained in Parts 700 through 705 of Title 6 of Official Compilation of Codes, Rules and Regulations of the State of New York. Potential violations include:

- An increase in turbidity that will cause substantial visible contrast to natural conditions;
- An increase of suspended, colloidal or settleable solids that will cause deposition or impair surface waters for their best usages; and
- A residue from oil and floating substances, visible oil film, or globules of grease.

If there is evidence indicating that the stormwater discharges authorized by the General Permit are causing, have reasonable potential to cause, or are contributing to a violation of surface water quality standards; the owner or operator must take appropriate corrective action within one business day. The corrective action must be documented in the next SWPPP inspection report. To address the surface water quality standard violation, the owner or operator may need to provide additional information, include and implement appropriate controls from this SWPPP to correct the problem, or obtain an individual SPDES Permit.

6.2g – Chemical and Oil Management

Secondary containment for oil containers shall be provided. If total oil storage on-site exceeds a cumulative total of 1,320-gallons, a spill prevention control and countermeasure (SPCC) plan is to be prepared by the Contractors and maintained on-site.

Spills of petroleum products, chemicals and other hazardous materials shall be reported in accordance with State, Federal, and local regulations. If a spill occurs at the site during construction the Contractors shall contact the NYSDEC Spill Hotline (1-800-457-7362). The following material management practices are to be used by the Contractors to reduce the risk of spills or other accidental exposure of pollutants to stormwater runoff during construction:

- Products including, but not limited to, building materials, building products, construction waste, trash, landscaping materials, fertilizers, pesticides, herbicides, detergents, and sanitary waste shall be stored under a roof or other cover.

- Products shall be securely stored in their original containers, or as recommended by the manufacture, and labeled appropriately.
- The amount of product stored on site will be appropriate for usage on the site. Do not bring excessive quantities to the site for storage.
- Whenever practical, products are to be used up or containers resealed before proper disposal of contents and containers off-site.
- Substances are not to be mixed with one another unless recommended by the manufacturer.
- Dispose of surplus product and empty containers in accordance with manufacturers' recommendations and applicable regulations and/or permit conditions. Do not discharge any substances into the storm sewer.
- On-site vehicles are to be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage of petroleum products. Petroleum products are to be stored in closed containers that are clearly labeled.
- Used oils are to be disposed of properly.

In addition to the material management practices discussed above, the following practices are to be followed by the Contractors for spill preparedness and cleanup.

- Spills are to be reported and cleaned up immediately after discovery.
- Manufacturers' recommended methods for spill cleanup are to be followed in case of a spill, including the use of appropriate Personal Protective Equipment (PPE). Material Safety Data Sheets (MSDS) for materials at the site provide information on spill cleanup and should be stored in the project office or other accessible location.
- Materials and equipment necessary for spill cleanup are to be kept in designated material storage areas onsite. Spill response materials are to include items such as brooms, dust pans, mops, rags, gloves, goggles, spill control materials, sand, sawdust, disposal containers specifically for spill cleanup, and other response materials dependent on the materials stored at the site.
- If a spill does occur at the site, a spill report is to be completed and filed with this SWPPP. Include the date, a description of the spill, the cause, and the corrective actions taken.

6.3 – Post-Construction Maintenance Requirements

A Notice of Termination (NOT) shall be filed with the NYSDEC when the project is permanently stabilized. The NOT requires certification from the inspector that the site has been stabilized and that all post-construction practices have been constructed in conformance with the SWPPP. **Cassadaga Wind LLC** will maintain control of the stormwater facilities via easements and/or use agreements, and are required to have a maintenance plan in place. Preliminary Post-Construction maintenance and inspection checklists have been included in Appendix G for reference.

7. STORMWATER MANAGEMENT DURING CONSTRUCTION

Anticipated locations for the erosion and sediment control practices are shown on the Construction Drawings. These practices, and any practices added due to conditions at the site, are to be installed and maintained in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (NYSDEC 2005).

The Contractor is to provide a construction stabilization schedule (see Appendix E) to detail when construction activities are anticipated to start and when areas will be stabilized. This record is to become part of this SWPPP as Appendix E.

7.1 – EROSION AND SEDIMENT CONTROLS

Proposed erosion and sediment control practices were designed in accordance with the following documents:

- New York State Standards and Specifications for Erosion and Sediment Control (NYSDEC 2005).
- New York State Stormwater Management Design Manual (the Design Manual) NYSDEC (June 2015).

- NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-15-002) (effective date January 29, 2015).

The erosion and sediment control practices are identified in the Contract Documents and must be installed and maintained to meet the requirements of the SWPPP.

Practices that must be directed to a temporary sediment trapping device that was not identified in the Contract Drawings shall be designed by the Contractor. Prior to installing these practices, the contractor shall provide a detail and proposed location of the sediment trap to be approved by the owner prior to installation.

Structural erosion and sediment control practices should generally be inspected weekly by a qualified inspector and after storms by the trained contractor.

7.2 – STABILIZATION PRACTICES

The following stabilization practices, per the 2005 New York State Standards and Specifications for Erosion and Sediment, will be employed by the contractor as follows:

- For portions of the site where soil disturbance activities have temporarily or permanently ceased, stabilization measures must be initiated by the end of the next business day and completed within 14 days from the date the most recent soil disturbance activity ceased, or within 7 days if the current project disturbance is 5 acres or greater.
- If the site is snow covered and/or frozen then stabilization measure shall be implemented as soon as practicable.

7.3 – ADDITIONAL STORMWATER CONTROLS

The following are additional Best Management Practices to be implemented at the site to minimize pollutant transport:

- Material Transport – take proper precautions to prevent spilling materials during transport. Any spilled materials will be swept or removed as soon as practicable so that they do not enter a surface and subsurface drainage systems.
- Dust Control – provide dust control measures to prevent dust from leaving the site. Measures may include water application or mulching but shall not include use of chemical additives. Any sediment that is tracked off of the site shall be removed using a hand broom or other cleaning equipment.
- Solid Waste Management – store waste in covered dumpsters or other appropriate containers. Waste is to be disposed of regularly and properly in accordance with local, state, and/or federal regulations.
- Portable toilets – install and clean portable toilets regularly with their contents properly disposed. Locate portable toilets where they will not be impacted by construction activities.
- Building materials storage – properly store and contain building materials on-site.

8. POST-CONSTRUCTION STORMWATER MANAGEMENT

8.1 STORMWATER QUALITY

The increased emphasis on a holistic approach to stormwater has resulted in a change in stormwater management practices and techniques. The Design Manual requires stormwater management designs to use the Green Infrastructure “Five Step” Process:

- 1- Site Planning – Conserve of Natural Areas and Reduce Impervious Cover
- 2- Determine Water Quality Volume (WQv)
- 3- Meet Runoff Reduction Volume (RRv) Requirements – Apply Green Infrastructure Techniques and Standard Stormwater Management Practices (SMPs) with RRv Capacity
- 4- Apply Standard Stormwater Management Practices to Address Remaining WQv

- 5- Meet Rate Reduction Requirements – Apply Volume Control Practices as necessary to meet pre-construction discharge rates

This project is a long linear project that will increase impervious cover in various watersheds within the Towns of Charlotte, Cherry Creek, Arkwright, and Stockton. Due to the nature of the project, the following green infrastructure practices were selected to provide both stormwater quality and quantity controls: Dry Swales, Vegetative Filters, and Level Spreaders. Dry swales will treat stormwater for sections of the access roads that drain to swales/ditches along the road edge. These dry swales will discharge to level spreaders that will convey stormwater in a sheet flow fashion and will allow for a natural distribution of stormwater runoff. Most of the project will benefit from vegetative filters. Runoff from the access roads will sheet flow across these filters and provide RRV for the stormwater requirements for the project. An analysis of the applicability of each practice will be developed later, when construction documents are prepared for these facilities. The calculation will be located in an Attachment to the Stormwater Management Engineering Memo (Appendix H).

8.2 STORMWATER QUANTITY

Stormwater quantity requirements include the following:

- Channel Protection Volume (Cpv) – extended detention of the one (1) year storm to protect stream channels from erosion.
- Overbank Flood Control (Qp) – attenuate the ten (10) year storm post-construction peak discharge rate to pre-construction rates.
- Extreme Flood Control (Qf) – attenuate the one hundred (100) year storm post-construction peak discharge rate to pre-construction rates.

An analysis of stormwater as it relates to quantity control will be developed when construction documents are prepared for these facilities. Dry swales, stormwater detention, and culverts for conveyance are some of the possible SMP that may be employed. There is sufficient room to provide both stormwater quality treatment, as well as quantity control for this project.