

Stormwater Pollution Prevention Plan

For

850 Route 28 LLC

A Proposed

Commercial Redevelopment Project

Situate: 850 Route 28
Town of Kingston
Ulster County, New York

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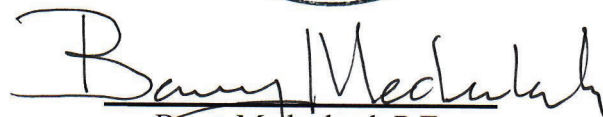

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SECTION 1: General Project Information

1.1 Project Summary:

The project sponsor proposes two buildings for steel and pre-cast concrete fabrication situated on an existing 110.6 acre parcel and is situated off NYS Route 28, near Onteora Lake in the Town of Kingston. Since the project parcel is a previously stone quarry and construction will be taking place within the previously disturbed area the project constitutes as a redevelopment project. Therefore, the project will follow the design criteria outlined in Chapter 9 of the New York State Stormwater Design Manual. Quantity and quality controls will be provided meeting the requirements of section 9.2.1 of the New York State Stormwater Management Design Manual. The SPDES coverage will be under the general permit. The project site consists mainly of exposed rock with partial revegetation. The exposed rock and broken stone rubble are remaining from the once active mine. The site also has approximately 2.3 acres of ponds and the site currently has one existing building, parking/storage area and a long driveway on approximately 3.5 acres. The existing quarry site is to be reclaimed to place two 120,000 SF steel and pre-cast fabrication buildings with storage and parking yards.

Stormwater management for the project will include temporary erosion controls during construction as well as permanent post construction controls, such as dry swales, pipe culverts, and stormwater ponds. The stormwater management practices will mitigate the impacts of the proposed development for runoff quantity and quality improvements to remove pollutants from the stormwater before it is discharges to the existing ponds (Tributary #6 to the Praymaher Brook) on site or over property line to neighboring properties. None of the ponds have any strongly defined outlets. The existing ponds are infiltrating during normal conditions. The existing ponds were constructed as settling ponds during the former mining use. During heavy rains the ponds overflow. Downstream of the ponds a stream forms from the water exiting the existing ponds. The stream flows offsite toward a four-foot diameter concrete pipe under NYS route 28. The NYSDEC recognize the string of existing ponds as a protected stream (Tributary of Praymaher Brook C[T] H-171-25-6) and are connected. A NYSDEC Stream Disturbance Permit will be required for the discharges from the two proposed Water Quality Basins to Tributary 6 of the Praymaher Brook. The Praymaher brook is a tributary to the Esopus Creek. The Esopus Creek, Middle, and minor tribs are classified as an impaired waterbody in Appendix E of the NYSDEC SPDES General Permit for Stormwater Discharges(Permit No. GP-0-15-002). The SWPPP has included the second required inspection per week in Section 5.1 and faster soil stabilization requirements in Section 2.3.

The site currently has approximately 26 acres of impervious cover between the existing driveway, existing exposed bedrock, existing building and existing parking/storage areas. There is also another approximately 31 acres of semi-impervious cover that was previously been disturbed from mining on the site but has been re-vegetation over the past 20 years. A large portion of the current impervious cover is draining to the existing ponds onsite. The majority of the existing driveway and the

existing building stormwater drains toward the DEC Wetland KW-3 and which connects to Ontario Lake. The majority of the proposed building, storage, and parking areas stormwater drains to the existing ponds onsite. The remaining portion of the property's stormwater drains offsite has no proposed improvements. The access driveway is 20 to 24 feet wide in good condition and does not need any improvements.

The proposed project is for two 120,000 SF steel and pre-cast fabrication buildings. The sides of each building have 100 ft wide paved area for truck passage and storage for materials. The ends of the buildings have 170 ft wide paved area for truck movements in and out of the proposed buildings. Each building and paved area has 9.2 acres of impervious cover. The total site will have approximately 19 acres of new roads, buildings, and parking areas. The proposed site will have a total impervious cover of approximately 31.5 acres. Each building and parking area are proposed to be surrounded by dry swales. The dry swales then discharge into two proposed stormwater ponds (water quality basins) prior to discharging to the existing ponds onsite. The stormwater ponds will be used for water quality volume and to control the flow of water from the site. When all proposed practices are constructed, they will reduce all post-development peak flows from the site to less than the peak pre-development rates. Therefore, there will be no negative impacts on downstream waters or adjacent lands from the proposed development.

Design point #1 is discharge toward the NYS DEC Wetland KW-3. Design point #2 is where water passes under NYS Route 28. Design points #3, #4, and #5 cross the property line at the south-east portion of the property. The Design point #6 is where the existing ponds discharge across the property line. Design point #7 is over the property line at the north-east corner of the property. Design point #8 is water from the property going to the existing pond A. See the Pre-Development Drainage area map for locations of Design points. The HydroCAD calculations can be found in Appendix H. The changes of water flow at each of these design points are indicated in the tables in Section 4.1 of this report. The table below shows the change in Peak flows of stormwater from the site for the 1, 10, and 100 year storm events.

Total Stormwater Discharge Rates (From Property)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	19.1	17.6	-8%
10 Year	228.3	214.3	-6%
100 Year	522.2	495.9	-5%

1.2 Contact Information/Responsible Parties:

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Project Manager(s) or Site Supervisor(s): (To be filled in before construction)

Company or Organization:
Contact Name:
P:
F:
E:

Emergency 24-Hour Contact:

Company or Organization:
P:

Subcontractor(s)*:

Company or Organization:
Contact Name:
Address:
City, State, Zip:
P:
F:

*Insert additional subcontractor contacts below as needed

1.3 Existing Soils, Slopes, Vegetation and Drainage Patterns:

Most of the property has been disturbed by mining activities and has no soil or has little pour draining native soil left. A large portion of the quarry is still open stone. There are also several high walls from the mining activity. Approximately 31 acres of the disturbed property has been partially revegetated with trees growing through rock rubble. There is an existing road that runs along the west side of the property which borders the NYS DEC Wetland KW-3. There is also an existing 6,500 SF storage building with a large parking area around the existing building. There is also an existing septic system to the north-west of the existing building. The part of the property that has not been disturbed is mainly wooded. The slopes on the site range from moderate to extremely steep, but most of the site is a moderate slope. The property currently has 8 basic design points that cross property line. The drainage point #1 it toward the NYS DEC Wetland KW-3. Design point #2 is where water passes under NYS Route 28. Design points #3, #4, and #5 cross the property line at the south-east portion of the property. The Design point #6 is where the existing ponds (Tributary 6 of the Praymaher Brook) discharge across the property line. Design point #7 is over the property line at the north-east corner of the property. Design point #8 is water from the property going to the existing pond A. See the Pre-Development Drainage area map in Appendix H for locations of Design points.

The site has mainly two separate soil classifications as described in the attached USDA-NRCS soil survey. The chart below shows the percentage of each hydrological soil group, the soil survey can be found in Appendix H.

Percentage of Each Hydrological Soil Group (HsG) at the MCBS DG project site				
A	B	C	D	Bare Rock - Quarry
0%	0%	34%	11%	55%

1.4 Changes in Cover Estimates:

The following are estimates of the proposed development.

Total project area:	110.6 acres
Approximate construction site area to be disturbed:	±37 acres
Percentage impervious area before construction:	23.5%
Percentage impervious area after construction:	28.3%
Future Impervious Cover:	6 acres
Conservation of natural areas:	0 acres

1.5 Receiving Waters:

The runoff from most of the proposed development will flow into several existing ponds which are part of Tributary 6 of the Praymaher Brook within the site. Tributary 6 of the Praymaher Brook then flows across the property line to the south and goes through a 4' diameter culvert under NYS Route 28 and discharges into the NYS DEC wetland KW-3. The western portion of the property discharges directly to the NYS DEC Wetland KW-3 which connects to Onteora Lake. Water from NYS DEC wetland KW-3 and Onteora Lake ultimately discharges to a tributary of the Esopus Creek. Design points #4, #5 and #7 discharges water to the north which ultimately flows to the Saw Kill and then to the Esopus Creek.

1.6 Sensitive Site Features to Be Protected:

One sensitive site features is the Tributary 6 of the Praymaher Brook, which consist of several ponds at the center at the site. There is to be no proposed disturbance to these ponds. Another sensitive feature is the NYS DEC KW-3 Wetland along the sites driveway.

1.7 Potential Sources of Pollution:

Potential sources of sediment to stormwater runoff:

- Clearing and grubbing
- Grading and site excavation
- Vehicle tracking
- Topsoil stripping and stockpiling
- Landscaping/stabilization operations

Potential pollutants and sources, other than sediment, to stormwater runoff:

- Re-fueling activities
- Minor equipment maintenance
- Sanitary facilities
- Materials storage of general building materials, solvents, adhesives, paving materials, paints, aggregates, trash, etc.

- General construction activities — paving, concrete pouring building construction
- Concrete Washout Areas

1.8 Historic Preservation:

In the New York State Office of Parks, Recreation and Historic Preservation's opinion that the project will have no impact on archaeological and/or historic resources. Please see the OPRHP Clearance Letters in Appendix D.

1.9 Long-Term Operation and Maintenance:

The Long Term Operation and Maintenance of the proposed projects permanent post construction controls, such as dry swales, pipe culverts, and water quality basins are the responsibility of the owner and operator as specified in Section 1.2. The owner/operator is to provide the Town of Kingston with a Maintenance agreement for the long term operation and maintenance of the post construction stormwater controls. Long-term Maintenance and Operation Guidelines are provided in Appendix G. The Dry Swales and Ponds on site shall be marked with a sign as required per Chapter 3, Section 3.5 of the 2015 NYSDEC Stormwater Management Design Manual.

SECTION 2: Erosion and Sediment Control BMPS

2.1 Minimizing Disturbed Areas, Protecting Natural Features and Soil:

Site disturbance and clearing will be kept within the limits of disturbance as indicated on the subdivision plan. Any sensitive areas such as vegetation areas to be preserved will be clearly flagged prior to disturbance. All contractors will be instructed not to disturb these sensitive areas.

All topsoil from disturbed areas will be striped prior to grading and stockpiled as indicated on the soil erosion control plans. Topsoil will be re-spread on disturbed areas after final grading is complete. A temporary seed will be applied to the topsoil during storage to prevent erosion.

2.2 Temporary BMPS:

The following temporary erosion and sediment controls will be used during construction. The locations and detailed designs of each practice is located within the accompanying construction drawings.

- Silt Fence and Filter Sock: to capture sediment in lateral sheet flow leaving disturbed areas
- Stabilized Construction Entrances: to capture sediment from vehicles leaving site
- Temporary Seeding: to stabilize inactive areas or soil stock piles
- Check Dams: to help reduce scour within a channel.

2.3 Sequence of Construction Activity:

The following sequence of soil erosion and sediment control measures shall be followed during the duration of the project. In addition, the guidelines in Section 3 of this report shall be implemented where applicable.

1. **Schedule a pre-construction meeting:** a pre-construction meeting shall be held to review plans and inspect site with town officials including the Town Engineer, Contractors, and Project Managers at least one week prior to the start of construction, equipment staging and site disturbance.
2. **Establish Limits of Clearing and Sensitive Areas to be Protected:** Prior to any construction and/or demolition activities commence all vegetation to be persevered shall be protected. In addition, the property boundaries and/or limits of clearing shall be clearly marked. A pre-construction meeting shall be held prior to any land disturbance or grading to review plans and inspect site.

- 3. Construct Stabilized Access to Site:** Install the stabilized construction entrance prior to passing the existing ponds to the existing open quarry area in order to provide access for construction traffic on and off the site.
- 4. Establish Perimeter Controls and Sediment Barriers:** Silt fences or filter socks will be installed along the perimeters of the limit of disturbance and around any topsoil stockpiles. Silt fences will be installed as per the detail on accompanying plans. Locations of installation are indicated on the soil erosion and sediment control plans for initial clearing and grading of the site.
- 5. Land Clearing and Rough Grading:** Land Clearing and Rough Grading: Begin demolition and clearing activities as per plans. The ground surface shall be cleared of all trees, stumps, brush, weeds, roots, matted leaves, small structures, debris, and any other unsuitable material, except as otherwise directed by the engineer. Material accumulated by clearing as described above shall be disposed of by the contractor in a manner satisfactory to the engineer. After clearing and demolition all topsoil shall be stripped and stockpiled for use in final grading as indicated on plans. Excess topsoil not required for final grading may be removed from the site. Rock excavation is to start on the North side of the site and to move south by advancing an east/west trending excavation face. The sedimentation basins (stormwater ponds) shall be installed prior to the rock removal beginning. The sedimentation basins shall be inspected weekly to check for sediment build up. The permanent drainage conveyance system shall be installed after all the rock has been removed. Establish temporary vegetation on any areas with soil which will not be disturbed for a period 7 days or more. Parking and driveway areas may be stabilized with road base material or bare rock. The sedimentation basins shall be cleared of all sediment after each phase of construction is completed and then re-graded if needed to be stormwater ponds.
- 6. Soil Stabilization:** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within (7) days from the date the current
- 7. Building Construction:** During the building construction maintain erosion controls.
- 8. Landscaping and Final Stabilization:** Place topsoil as indicated and stabilize with grass or landscaping.
- 9. Final Inspection and Removal of Temporary BMPS:** Perform final inspection of site to ensure all disturbed areas are stabilized. If all disturbed areas are stabilized temporary erosion control measures shall be removed.

SECTION 3: Good Housekeeping BMPS

3.1 General Construction Equipment and Material Storage Guidelines:

- Construction equipment and maintenance materials will be stored at a centrally located staging area when not in use around the site. Any smaller hand tools or equipment will be stored here in weatherproof containers or covered when not in use. The staging area will consist of a temporary gravel pad and all concentrated stormwater runoff will be diverted away from or around the pad.
- Large building materials such as framing material may be stored in the staging area. Such materials will be elevated on wood blocks to minimize contact with runoff.
- The storage areas shall be inspected on a weekly basis and after each storm event. Storage areas will be kept clean and well organized to minimize contamination of stormwater runoff.

3.2 General Construction Waste Management Guidelines:

- All waste building and construction waste materials will be collected and disposed of in trash dumpsters located in a central staging area. Dumpsters will be placed away from stormwater conveyances and meet all local and state solid-waste management regulations. Only trash and construction debris from the site will be deposited in the dumpsters. All personnel working on the jobsite will be instructed regarding the correct procedure for disposal of trash and construction debris. The individual who manages day-to-day site operations will be responsible for seeing that these practices are followed.
- All dumpsters will be inspected on a weekly basis and after large storm events to ensure no debris are entering stormwater runoff.
- Dumpsters will be emptied as needed and no trash will be stored outside a dumpster if it is full.
- All dumpsters will be removed from the site immediately after all waste generating construction activities are complete.

3.3 Hazardous and Sanitary Waste Management Guidelines:

- All hazardous waste materials such as oil filters, petroleum products, paint and equipment maintenance fluids will be stored in structurally sound and sealed designated hazardous material storage area(s). Secondary containment will be provided for hazardous materials in these areas in the form of spill pallets.

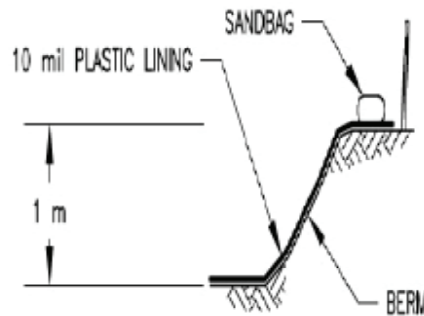
- All hazardous materials will be disposed of in accordance with local, state and federal regulations. All personnel will be instructed regarding the correct procedure for disposing of hazardous waste. The individual who manages day-to-day site operations will be responsible for seeing that these practices are followed.
- All storage areas will be kept clean, inspected weekly and after storm events, have ample cleanup supplies in the event of a spill, material safety data sheets and the contact numbers of appropriate emergency spill response personnel shall be posted in the construction office.
- If necessary, sanitary facilities will be provided at the site in the form of portable toilets. Toilets will be located away from concentrated stormwater flows and checked daily for leakage. All sanitary waste generated from the toilets will be disposed of offsite in accordance with local laws and regulations.

3.4 On-Site Equipment Fueling and Maintenance Guidelines:

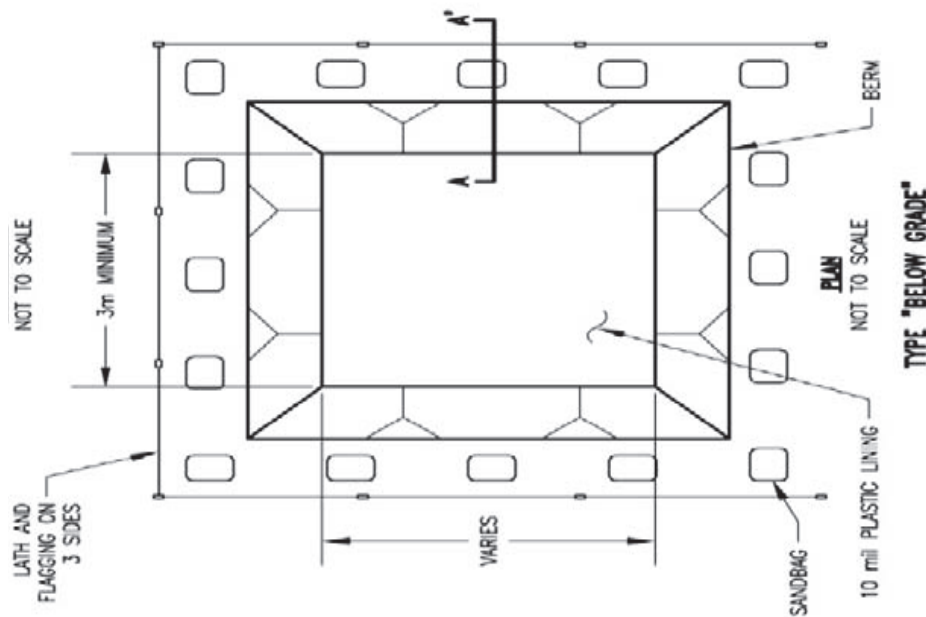
- Several types of vehicles and equipment will be used on-site throughout the project, including graders, excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes, drilling rigs etc. All major equipment/vehicle fueling, and maintenance will be performed on-site at the existing garage. A small pickup bed fuel tank will be kept on-site in the combined staging area. When vehicle fueling must occur on-site, the fueling activity will occur in the staging area. All equipment fluids generated from maintenance activities will be disposed of into designated drums stored on spill pallets in accordance with Section 3.3. Absorbent, spill-cleanup materials and spill kits will be available at the combined staging and materials storage area. Drip pans will be placed under all equipment receiving maintenance.
- Equipment/vehicle storage areas and fuel tanks will be inspected weekly and after storm events. Vehicles and equipment will be inspected on each day of use. Leaks will be repaired immediately, or the problem vehicle(s) or equipment will be removed from the project site. Ample supplies of spill-cleanup materials will be kept on-site to immediately clean up any spill.

3.5 Concrete Washouts:

- Designated temporary, below ground concrete washout facilities will be constructed as shown below. Washouts will be centrally located at the discretion of the individuals who manage day to day construction activities. Washouts shall have a minimum length and width of 10 feet but must have enough volume to contain all liquid concrete wastes generated from washout operations. The washout areas will be lined with plastic sheeting at least 10 mils thick and free of any holes or tears. Signs will be posted marking the location of the washout areas.



Section A-A



Washout Plan View

- Temporary concrete washout facilities will be located a minimum of (50 feet) from storm drain inlets.
- The washout areas will be inspected daily to ensure that all concrete washing is being discharged into the washout area, no leaks or tears are present, and to identify when concrete wastes need to be removed. The washout areas will be cleaned out once the area is filled to 75 percent of the holding capacity. Once the area's holding capacity has been reached the concrete wastes will be allowed to harden, the concrete will be broken up, removed, and disposed in accordance with local regulations. The plastic sheeting will be replaced if tears occur during removal of concrete wastes from the washout area.

SECTION 4: Post-Construction BMPS

4.1 Post-Development Drainage Improvements and Mitigation:

To mitigate all of the potential stormwater impacts of the project a drainage study has been performed and a stormwater pollution prevention plan has been prepared in accordance with the New York State Stormwater Management Design Manual (NYSSMDM), SPDES general permit for stormwater discharges GP-0-20-001. Post-development drainage calculations are included in Appendix H. All nodes have the prefix 2-x with descriptions of each sub catchment provided in the calculations. A detailed work sheet is included in Appendix H showing the location of all post development nodes.

When complete the proposed drainage system and re-development will reduce peak runoff rates to less than pre-development levels. The proposed drainage improvements will also reduce pollutant levels in the runoff through several proposed treatment practices. The following sections give a detailed description of the proposed drainage system and on-site mitigations.

4.1.1 Peak Runoff Rate Reduction:

To mitigate the impacts of increased runoff rates after development the project will use dry swales, and water quality basin practices to reduce post-development runoff rates to less than pre-development rates. As required by the NYSSMDM the proposed drainage system will provide the required, overbank flood protection, and extreme storm protection.

We utilized Dry Swales (O-1), and two stormwater ponds, Wet Extended Detention Pond (P-3) to capture water and release it gradually.

To meet overbank flood protection and extreme storm protection requirements the proposed drainage improvements will provide extended detention and release post-development runoff for the 10- and 100-year storms at less than pre-development rates.

When the proposed practices are constructed it will reduce all post-development peak flows from the proposed developed site to less than pre-development rates. Therefore, there will be no negative impacts on downstream waters or adjacent lands caused by increased peak flow rates. A detailed description of each practice to be used is provided in section 4.4 Post Development BMP's.

4.1.2 Pre- and Post-development Runoff Rate Comparison:

The tables below show the change in pre- and post-development total runoff rates. Runoff rates are calculated in HydroCAD at each of the eight discharge points indicated on the pre and post development maps.

Design Point #1 (NYS DEC Wetland KW-3)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	23.8	23.8	0%
10 Year	56.7	56.7	0%
100 Year	107.2	107.2	0%

Design Point #2 (Water to culvert under NYS Route 28)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	73.4	48.5	-34%
10 Year	206.8	151.0	-27%
100 Year	385.1	276.3	-28%

Design Point #3 (Crossing Southern Property line)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	2.4	2.4	0%
10 Year	5.8	5.8	0%
100 Year	11.1	11.1	0%

Design Point #4 (Crossing Northern Property line)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	4.4	4.4	0%
10 Year	12.2	12.2	0%
100 Year	24.6	24.6	0%

Design Point #5 (Crossing Northern Property line)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	16.2	16.2	0%
10 Year	44.3	44.3	0%
100 Year	89.8	89.8	0%

Design Point #6 (Water Crossing property line toward NYS Route 28)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	77.5	50.8	-34%
10 Year	190.8	137.0	-28%
100 Year	353.2	246.8	-30%

Design Point #7 (Crossing Northern Property line)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	17.2	12.0	-30%
10 Year	42.1	28.5	-32%
100 Year	80.6	54.0	-33%

Design Point #8 (Discharge going to Pond A)			
Storm	Pre-development (cfs)	Post-development (cfs)	% Change
1 Year	7.5	1.7	-77%
10 Year	18.0	3.8	-78%
100 Year	34.0	7.0	-79%

4.1.3 Runoff Calculation Methodology:

Drainage analyses performed for the 1-, 10- and 100-year design storms used the Runoff Curve Method as developed by the Soil Conservation Service (SCS), with peak discharge rates, hydrographs, and routing analyses generated using HydroCAD based upon the SCS TR-20 method. Curve numbers and times of concentration were determined using methodology in the SCS Technical Release 55. These calculations are detailed in Appendix H. Curve numbers were selected from soil type and ground cover which were determined from infield inspections and USGS Soil report. The rain fall depths used in the HydroCAD calculations was taken off the Isohyet maps in Section 4 of the 2015 New York State Stormwater Design Manual.

4.2 Runoff Reduction and Water Quality Volumes:

To mitigate the impacts of pollutants in stormwater from the proposed project swales, dry swales and two stormwater ponds will be used to treat stormwater from the project and remove pollutants before they are discharged into existing ponds. According to section 9.2 of the NYSSMDM the proposed project is a construction project that includes both new development and redevelopment activities and requires treatment of 25% of the existing, disturbed impervious area and full treatment for all of the new development. We are proposing to treat 100% of the Water Quality Volume (WQv) and minimum required Runoff Reduction Volume (RRv) for the new development portion of the project. We are also proposing to treat over 4 times the required Water Quality Volume of the existing disturbed area.

The new development portion of the project has is approximately 6.6 acres of the proposed disturbed site. The other approximate 30.4 acres to be disturbed do not require any runoff reduction per the section 9.2 of the 2015 NYSSMDM. The 30.4 acres area has been previously disturbed during the rock mining on the site. The RRv for the 6.6 acres is calculated as a percentage of the required WQv. The percentage depends on the sites soils Hydraulic conductivity classification. See Table 3.5 Runoff Reduction Capacity for standard SMPs in the NYSSMDM. The proposed site has limited soil to no soil. Dry swales are proposed around and in between the two buildings sites.

The Dry Swales will provide the required runoff reduction prior to discharging into Water Quality Basin #1 and Water Quality Basin #2 as per the site plans. The dry swales RRVs was calculated using 20% of the required WQv toward the RRv.

The Water Quality Volume is being treated by using dry swales and the two stormwater ponds. A detailed description of each practice and their treatment methods is provided in the following section. Below is a table with the required and provided RRV and WQv.

Runoff Reduction Volume and Water Quality Volume			
Required WQv (cubic feet)	Provided Storage of WQV (cubic feet)	Required Runoff Reduction Volume (cubic feet)	Provided Runoff Reduction Volume (cubic feet)
61,350	±201,700	6,719	8,106

4.3 Channel Protection Volume:

Channel protection volume is the 24-hour extended detention of post-developed 1-year, 24-hour storm event; remaining after runoff reduction. According to Section 9.2 of the NYSSMDM, channel protection for redevelopment activities is not required. The proposed project is a redevelopment project and does not increase discharge of stormwater off the property.

4.4 Post-Development BMP's:

4.4.1 Dry Swale:

- **Feasibility:** Dry swales (0-1) will be used to treat the runoff throughout the project site. The swale was selected for the project because the dry swales can provide runoff reduction and water quality volume.
- **Conveyance:** The dry swale has been designed to handle storms up to the 10-year while providing a minimum of 6" of free board. The swale will have a maximum side slope of 3:1 and typically be 12 inches in depth. Runoff will be conveyed to the swale as sheet flow or as shallow concentrated flow.
- **Pretreatment:** The majority of runoff will enter the swales as lateral sheet flow and be pretreated by grass filter strips and gravel check dams.
- **Treatment:** To meet water quality requirements the dry swales will capture and infiltrate the required water quality volume through the swale floor. Treated runoff will absorb into the sub soils or discharge over a rip rap berm. Calculated water quality volume is the available storage in the swale below the crest of the overflow. Calculations for determining the required water quality volume and Runoff Reduction are included in Appendix H.

- **Landscaping:** All swales will be seeded with a permanent grass seed when complete.
- **Maintenance:** Grass within the dry swales will be mowed as needed during the growing season to maintain a height of 4 to 6 inches. Sediment removal will be performed when the swales capacity has decreased by 25%.

4.4.2 Stormwater Pond

- **General Description:** Two ponds are proposed to provide water quality treatment for the proposed construction of impervious area. The pond was selected for use due to the size of the post-development watersheds. To meet overbank flood protection and extreme storm protection requirements the pond will provide extended detention and release post-development runoff for the 10- and 100-year storms at less than pre-development rates. The pond will accomplish this through detaining the runoff and releasing it through an outlet structure designed to release the stormwater gradually over a period of time.
- **Practice Feasibility:** As mentioned before the pond was selected for use due to the size of the post-development watersheds which will discharge into it. The stormwater pond will be lined with a clay liner capable of holding water. Each pond will have an aquatic bench and a safety bench on any uphill side of the pond. The following table provides a summary of the watershed area for the proposed ponds.

Pond Drainage Areas		
Water Quality Basin (Type)	Suggested Contributing Drainage Area (Per NYSSMDM)	Actual Drainage Area
WQB #1 (P-3)	25 Ac.	17.4 Ac.
WQB #2 (P-3)	25 Ac.	22.3 Ac.

- All proposed stormwater ponds will be located outside of jurisdictional waters and onsite wetlands.
- **Conveyance:** The pond has been designed to have a bench on either side. The internal flow path between the forebay and the ponds drainage structure is 1.5 times the width of the pond or greater.
- **Inlet Protection:** Inlet protection for the pond will be provided in the form of a forebay for the point where concentrated flow enters the pond. The inlets into the forebay will be stabilized with riprap.

- **Outfall Protection:** The outfall point from the proposed pond will be stabilized with rip-rap energy dissipaters and all culvert outfalls will have flared end sections or headwalls.
- **Pretreatment:** Pretreatment of concentrated flow into the pond will be provided in the form of a forebay. The forebay will be a minimum of four feet deep and be separated from the mircopool by and earthen weir. The forebay the inflow point has been sized to contain a minimum of 10% of the required water quality volume.
- **Minimum Water Quality Volume:** Runoff entering the pond will be treated through settling and biological uptake of pollutants. The table below indicates the required and provided water quality volume for the water quality basins. The provided water quality volume is the volume below the low flow orifice and volume between the low flow orifice and overflow riser for extended detention. The NYSSMDM only allows for 50% of WQV to come from extended detention.

Treatment Volumes				
Water Quality Basin (Type)	Required WQv (cubic feet)	Provided WQv (cubic feet)	% WQv In Permanent Pool (Required)	% WQv In Extended Detention (Required)
WQB #1 (P-3)	52,190	81,920	40,960 (50% Min.)	40,960 (50% Max.)
WQB #2 (P-3)	58,114	81,096	40,548 (50% Min.)	40,548 (50% Max.)
Total WQV:	110,304	163,016	81,508	81,508

- **Pond Benches:** All permanent pools 4 feet or greater in depth will have an Aquatic bench extending 10-15 feet outward from the permanent pool. Then the slope above the aquatic bench is proposed to be 4(H) to 1(V). Therefore, the pond is exempt from needing a safety bench. However, the ponds are designed to have an access road on the uphill side that will act as a safety bench between the pond and proposed slope above the ponds.
- **Landscaping Plan:** When complete the pond will be seeded with a mix of wetland species to promote a diverse habitat.
- **Pond Maintenance:** Long term maintenance schedules for the ponds have been provided.

SECTION 5: Inspections

5.1 Site Inspection Frequency:

The owner or operator shall have a qualified inspector conduct site inspections in conformance with the following requirements.

- When soil disturbances are on going inspections shall be conducted by a qualified professional at least two (2) inspections every seven (7) calendar days.
- When soil disturbance activities have been temporarily suspended (winter shutdown etc.) and temporary stabilization measures have been applied to all disturbed areas, the qualified inspector shall conduct a site inspection at least once every thirty (30) calendar days. The owner or operator must notify the NYS DEC Regional Office in writing prior to reducing the inspection frequency.
- For sites where the soil disturbance activities have been shut down with partial project completion, the qualified inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completion of the project portion are in place and constructed in accordance with the SWPPP. The owner or operator shall notify the NYS DEC Regional Office in writing prior to the shutdown. If soil disturbance is not resumed within 2 years from the shutdown date the owner operator shall have the qualified inspector perform a final inspection to certify all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the “Final Stabilization” and “Post-Construction Stormwater Management Practice” certification statements on the Notice of Termination. The completed Notice of Termination shall be submitted to NYS DEC.

5.2 Site Inspection Reports:

The qualified inspector shall prepare an inspection report subsequent to every inspection. All Inspection reports must be signed by the qualified inspector. At a minimum, the inspection report shall include and/or address the following:

1. Date and time of inspection;
2. Name and title of person(s) performing inspection;

3. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
4. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
5. Identification of all erosion and sediment control practices that need repair or maintenance;
6. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
7. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
8. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards; and
9. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s).

(See Appendix B for Inspection Forms)

5.3 Corrective Actions:

Within one business day of the completion of an inspection, the qualified inspector shall notify the owner or operator and appropriate contractor (or subcontractor) of any corrective actions that need to be taken. The contractor (or subcontractor) shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

(See Appendix C for Corrective Action Log)

SECTION 6: Reporting and Retention of Records

6.1 Record Keeping:

The following documents shall be retained for a period of five (5) years from the date the site achieves final stabilization:

1. Notice of Intent
2. Notice of Intent Acknowledgment Letter
3. SWPPP
4. MS4 SWPPP Acceptance Form
5. Reports and inspections generated during implementation of the plan
6. Notice of Termination

SECTION 7: Stabilization

7.1 Final Stabilization:

Permanent seeding will be applied immediately after the final design grades are achieved on portions of the site but no later than 14 days after construction activities have permanently ceased. Construction debris, trash and temporary BMPs (including silt fences, material storage areas, sanitary toilets, and inlet protection etc.) will also be removed and any areas disturbed during removal will be seeded immediately.

Seedbed Preparation:

1. In areas where disturbance results in subsoil being the final grade surface, topsoil will be spread over the finished area at minimum depth of 2 to 6 inches.
2. The seedbed will be free of large clods, rocks, woody debris and other objectionable materials.
3. Fertilizer and lime will be applied to the seedbed according to the manufacturer's recommendations or soil tests.
4. The top layer of soil will be loosened to a depth of 3–5 inches by raking, tilling, disking or other suitable means.

See accompanying plans for seed and application rates.

SECTION 8: Certifications

▪ Operators Certification

"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. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print): _____

Title _____ Date: _____

Address: _____

Phone: _____ Email: _____

Signature: _____

▪ Qualified Professional's Credentials & Certification

" I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ Date: _____

Address: _____

Phone: _____ Email: _____

Signature: _____

▪ Contractors Certification

" I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards"

Name (please print): _____

Title _____ Date: _____

Address: _____

Phone: _____ Email: _____

Signature: _____