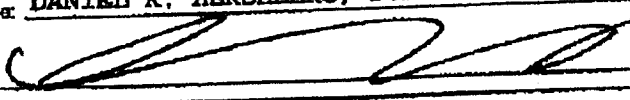


1. APPLICANT/SPONSOR Fuller Road Management Corporation	2. PROJECT NAME Extended Detention Basin CNBE & Freedom Quad
3. PROJECT LOCATION: Municipality <u>City of Albany</u> County <u>Albany</u>	
4. PRECISE LOCATION (Street address and road intersections, prominent landmarks, etc., or provide map) Tricentennial Drive adjacent to Freedom Apartments (Tax Map Parcel No. 53.00-1-4)	
5. IS PROPOSED ACTION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Expansion <input checked="" type="checkbox"/> Modification/Alteration	
6. DESCRIBE PROJECT BRIEFLY: The Reconstruction of an existing stormwater management facility utilizing an extended detention basin design. Replacement of a portion of the collection and discharge systems. Abandonment of an existing basin through filling and installation of a porous pavement.	
7. AMOUNT OF LAND AFFECTED: Initially, <u>3.0</u> acres Ultimately <u>3.0</u> acres	
8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If No, describe briefly	
9. WHAT IS PRESENT LAND USE IN VICINITY OF PROJECT? <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input type="checkbox"/> Agriculture <input type="checkbox"/> Park/Forest/Open space <input checked="" type="checkbox"/> Other Describe: <u>Institutional (College Campus)</u>	
10. DOES ACTION INVOLVE A PERMIT APPROVAL, OR FUNDING, NOW OR ULTIMATELY FROM ANY OTHER GOVERNMENTAL AGENCY (FEDERAL STATE OR LOCAL)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, list agency(s) and permit/approvals	
11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, list agency name and permit/approval	
12. AS A RESULT OF PROPOSED ACTION WILL EXISTING PERMIT/APPROVAL REQUIRE MODIFICATION? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE TO THE BEST OF MY KNOWLEDGE	
Applicant/sponsor name: <u>DANIEL R. HERSHBERG, P.E. & L.S. FOR THE APPLICANT</u>	Date: <u>11/11/10</u>
Signature: 	

[illegible]

PROJECT INFORMATION: CNSE & FREEDOM APARTMENTS (SPDES ID: NYR10T403)
 JOB No.: 10-032 INSPECTOR: MJB DATE: 02/18/11 1:50 PM
 PURPOSE OF INSPECTION: WEEKLY INSPECTION
 AMOUNT OF RAINFALL SINCE LAST INSPECTION: 0.00" (0.0" SNOW)

	LIMIT OF DISTURBANCE
	STABILIZED AREA (TEMPORARILY)
	STABILIZED AREA (PERMANENTLY)
	AREA THAT HAS NOT SEEN WORK IN 14 DAYS
	SILT FENCE

B Barber
Engineering

PO Box 454 - Nassau, New York 12123
Ph: (518) 322-3033 - Fax: (518) 766-0372
email: ken@barberpllc.com

EXISTING SITE

The existing site from which drainage is controlled by this stormwater modification is 33.49 acres. This is made up of the following four tributary areas (see Existing Tributary Area Map, Appendix 8):

Tributary Area No.	Description	Total Area (Acres)	Impervious Area (Acres)	Pervious Area (Acres)
1	NanoFab North, CESTM, NanoFab South, Annex, North half of NanoFab East Roof, Parking area between CESTM and NanoFab East, north half of Nanofab East Roof, Entrance Driveway, CUB, Parking Area in front of west half of Nanofab East	15.75	11.58	4.17
2	NanoFab Cleanroom Addition	0.72	0.72	0.00
3	South half of NanoFab East Roof, Parking Lot East of NanoFab East, , Parking Lot B on south side of Tricentennial Road including area of SWM#1, Portion of Tricentennial Road	5.67	3.12	2.55
4	Freedom Quad less portion tributary to West Parking Lot Drainage System, Areas near Freedom Quad tributary to existing detention pond, Area of existing detention pond	11.35	4.16	7.19
TOTALS		33.49	19.58	13.91

Table 1
Tributary Areas to Existing Freedom Quad Pond

In order to carry drainage computation to the Discharge Point (DP#1) which is the 12" culvert entering the Fuller Road drainage system (part of the Albany County MS₄ system) an additional tributary area must be defined. That is Existing Tributary Area 5. This includes a portion of lots facing on Mercer Street and Loughlin Street, the area of land containing the stream course from the existing detention basin to the Fuller Road culvert and lots facing on Fuller Road. The area of this Tributary Area is 12.27 acres of which 1.21 acres are impervious 11.06 acres is pervious. This tributary area includes an area modeled as a pond (P1 – Drainage Course). Water accumulating in this pond discharges partially to the 12" culvert and the balance recharges to the groundwater.



EXISTING DRAINAGE

The drainage from the four (4) existing Tributary Areas are transmitted and controlled by a drainage system of catch basins, drainage pipes, underground storage basins, a detention pond (SWM#1) and the existing Freedom Quad detention basin. This system was modeled previously in the Stormwater Management Report for SUNY Nanofab East, dated March, 2007 by Clough Harbour Associates (see Appendix 4). The size of the piping transmitting stormwater to the south and the detention gallery designed in connection with the 225,000 SF Office, Research and Technology Building (ORTB) and the 15,000 SF clean room expansion know as Nonofab East. The system surcharges under design storms and fills the subsurface detention gallery. The outfall from the subsurface storage systems (UG#1 and UG#2) is connected to a pipe which is designed to carry the overflow level from the subsurface storage systems. All of this is tributary to a detention pond which was designed to detain the 100 year storm from the developed Nanofab East site (SWM#1). A 30" HDPE pipe was constructed parallel to the existing 24" CMP to carry the 100 Year Storm overflow from these systems to the existing Freedom Quad detention basin.

During construction of the drainage system serving NanoFab East and the Cleanroom Expansion (covered by, Permit Identification Number NYR10M417 and Permit Identification Number NYR10M417), a higher than anticipated ground water table was encountered. A redesign was undertaken eliminating SWM#2 and enlarging SWM#1. The plan of this change is contained in Appendix #4. In addition a force main was installed to accommodate foundation drainage from NanoFab North and an additional bank of subsurface storage chambers was added to accommodate the Cleanroom Expansion.

A current model has been prepared and is included as Appendix 9. The existing Freedom Quad basin was not designed with adequate capacity to contain the 10 year storm from just the Freedom Apartments without an increase in flow to DP#1. Therefore the existing Freedom Quad pond is modeled with three outflows. One is exfiltration to ground water recharge. The second is outflow through a 15" culvert. The third is an overflow of the southern and eastern sides of the basin. This overflow does not occur when the 1 year storm is considered but does occur when the site is modeled for a 10 year storm, a 50 year storms and the 100 year storm. Due to pipe design beyond the underground Storage systems (UG#1 and UG#2) a backwater pond is modeled showing that water will accumulate in



front of the CESTM building and Nanofab North when modeled for the 50 and 100 year storm.

DESCRIPTION OF INTENDED SITE DEVELOPMENT AND USE

The Applicant proposes, under this SWPPP, to make no changes to either Freedom Apartments or CNSE. Provisions have been made in the design for future small changes in the site including:

- Placing porous pavement to expand the parking lot over the area where SWM#1 will be abandoned
- A future expansion of the Central Utility Building

Under this SWPPP the soil disturbance involves the area where the extended detention basin, forebay, new collection pipe and outfall pipe which will be installed. This system is designed to eliminate any existing overflows from the existing system and to control the level of discharge for all storms up to an including a 100 year storm. The proposed site from which drainage is controlled by this stormwater modification is 33.79 acres. This is made up of the following five tributary areas (see Proposed Tributary Area Map, Appendix 8):

Tributary Area No.	Description	Total Area (Acres)	Impervious Area (Acres)	Pervious Area (Acres)
A	NanoFab North, CESTM, NanoFab South, Annex, NanoFab East Roof, Parking area between CESTM and NanoFab East, north half of Nanofab East Roof, Entrance Driveway, CUB & CUB Expansion	14.12	9.93	4.19
B	NanoFab Cleanroom Addition	0.72	0.72	0.00
C	Parking Lot East of NanoFab East, , Parking Lot B on south side of Tricentennial Road, Portion of Tricentennial Road	5.54	3.00	2.54
D	Freedom Quad less portion tributary to West Parking Lot Drainage System, Areas near Freedom Quad tributary to existing detention pond, Area of existing detention pond	11.75	4.16	7.59
E	Sourh half of Nanofab East Roof, Parking Lot in front of West portion of NanoFab East	1.66	1.53	0.13
TOTALS		33.79	19.34	14.45

Table 2
Tributary Areas to Proposed Extended Detention Pond

STORMWATER TREATMENT DESIGN

The stormwater treatment practice is an Extended Detention Wet Pond (P-3).

FOREBAY DESIGN

The total tributary area to the redesigned system is 33.79 acres for which the Extended Detention Pond is the selected Wetland Pond type⁸ recommended in NYSSWDM. The forebay is sized to contain more than the required volume of 10% of WQv which would be 0.14 acre-feet. The storage below the permanent pool in the forebay is 0.28 acre-feet.

EXTENDED DETENTION POND DESIGN

The permanent pool in the extended detention pond is sized to contain more than the required volume of 50% of WQv below the permanent pool elevation. This would require storage of 0.71 acre feet below the permanent pool elevation where 1.59 acre-feet is provided below the permanent pool. The ratio of the treatment system to the total tributary area is 1:24 (4.16% of tributary area). The required area would be 1:100 (1% of tributary area). A non-linear design is chosen for the detention basin and the permanent pool is designed to extend the flow length for water entering the extended detention pond.

ORIFICE CONTROL STRUCTURE DESIGN AND OVERFLOW PIPES

The permanent pool basin is provided with a pond drain pipe which is fitted with a gate valve. This valve is to remain closed except to drain the pond. The extended detention pond is equipped with an orifice control structure which has a 15" pipe flowing out of it to the east. This is protected with a wire trash rack. The orifice control structure has a weir wall separating the inflow pipe from the outflow pipe. There is a 4" reverse pipe at the pool elevation of 253.5. There is also a 4 foot overflow weir in the sidewall of the orifice control structure at the elevation of 257.5. This arrangement of pipes will maintain the pond level at design permanent pool level of 253.5. When a storm occurs, water will be retained and outfall controlled by the flow through the orifice control structure. The basin level rises to detain excess flow. At 100 year storm the pond will rise to a level of 258.34 feet.

⁸ Ibid., Page 6-20



The top of the embankment is set at 259.0 to provide 0.66 foot of freeboard.

NOTIFICATION REQUIREMENTS FOR DRAINING PERMANENT POOL FOR MAINTENANCE

In the event that the permanent pool is to be drained for maintenance, the County of Albany Department of Public Works and the New York State Department of Environmental Conservation must receive 3 days (72 hour) advance notification.

STORMWATER DETENTION DESIGN IMPACT ON OUTFLOWS

The storm water detention design is governed by the storm water quantity transmitted from the existing developed CNSE site and Freedom Apartment sites tributary to the existing 12" culvert at Fuller Road. The impact of this change is controlled by the capacity of the 12" culvert. (DP#1) The following tables are prepared from the comparisons between the existing conditions and the proposed conditions as shown on the HydroCAD®8.50 contained in Appendix 8 and 9. Table 3 compares the discharge and overflows from existing Freedom Quad pond with proposed Extended Detention Pond. Table 4 compares the discharge to DP#1 from the existing system to the proposed system. Table 5 compares the volume of water accumulating in the area of the stream course from the existing Freedom Quad pond to DP#1.

Storm Frequency.	Discharge from the existing Freedom Quad Pond (CFS)	Discharge from the proposed Extension Detention Pond (CFS)
1	5.06	0.48
10	48.66	1.43
50	139.86	8.86
100	144.51	10.48

Table 3
Comparison of discharge or overflow from existing Freedom Quad pond with proposed Extended Detention Pond



Storm Frequency.	Discharge to DP#1 from the existing system (CFS)	Discharge to DP#1 from the proposed system (CFS)
1	3.59	1.41
10	5.93	3.97
50	6.55	5.66
100	6.62	5.81

Table 4
Comparison of discharge to DP#1 from existing Freedom Quad pond with proposed Extended Detention Pond

Storm Frequency.	Volume accumulating in Drainage Course Pond – P1 from the existing condition (CF)	Volume accumulating in Drainage Course Pond – P1 from the proposed system (CF)	Per Centage Reduction in Drainage Course Pond - P1 Volume
1	5,922	449	92.4%
10	59,789	8,916	85.1%
50	124,870	44,111	64.7%
100	135,176	51,078	62.2%

Table 5
Comparison of Volume accumulating in Drainage Course Pond – P1

The results from Table 5 are shown graphically in maps contained in Appendix#11 through Appendix #16.

The Extended Detention Pond is located in an area with a high ground water level of 252.0 (see Appendix 17). The infiltration rates of the soils in this vicinity were very high indicative of Hydrolgic Class A soil. Therefore, both the forebay and the extended detention basin will be lined 12 inches of clay soil (minimum 50% passing the #200 sieve and a maximum permeability of 1×10^{-5} cm/sec).

STREAM CHANNEL PROTECTION VOLUME

The stream channel protection volume (Cp_v) is provided for the extended detention of the one year, 24 hour storm event. The discharge is limited to a maximum rate of 1.41 CFS through the 4" reverse pipe from the extended detention basin. This is less than unit peak discharge (Q_u) computed in accordance with the New York State Stormwater Management Design Manual.⁹

⁹Ibid. Appendix B



1 year 24 hour storm (inches)	Proposed Discharge Average (CFS)	Storage Required (CF)	Storage Provided (CF)
2.50	1.42	44,264	244,063

Table 6
Stream Channel Protection Volume

OVERBANK FLOOD CONTROL CRITERIA

The overbank flood control criteria (Q_p) is met through controlling discharge from the ten year, 24 hour storm event to no greater than the predevelopment level considering the tributary areas tributary to the existing and new detention basin at Freedom Apartments and the outfall from that to the stream course and the 12" culvert at Fuller Road. These rates are controlled by the small diameter of the outfall culvert (DP-1).

10 year 24 hour storm (inches)	Existing Discharge (CFS)	Proposed Discharge (CFS)
4.50	5.93	3.97

Table 7
Overbank Flood Control Criteria

EXTREME FLOOD CONTROL CRITERIA

The extreme flood control criteria (Q_f) is met through controlling discharge from the hundred year, 24 hour storm event to no greater than the predevelopment level considering the tributary areas tributary to the existing and new detention basin at Freedom Apartments and the outfall from that to the stream course and the 12" culvert at Fuller Road. These rates are controlled by the small diameter of the outfall culvert (DP-1).



100 year 24 hour storm (inches)	Existing Discharge (CFS)	Proposed Discharge (CFS)
6.20	6.62	5.81

Table 8
Extreme Flood Control Criteria

DESIGN CONSIDERATIONS

The design of the storm water quantity and quality system for the subject site considered the following critical factors:

1. Stream Channel Protection Flow, Overbank Flood Control Criteria and Extreme Flood Control Criteria must be met for the site including portion of CNSE and Freedom Apartments tributary to the redesigned detention pond (33.79 acres)
2. The outflow from the revised system to the drainage course between the Freedom Quad Pond and the culvert at Fuller Road is reduced for the entire system to the original design level from the Freedom Quad Pond (11 CFS) for all storms up to an including a 100 year storm. The discharge at a 100 year storm is held to 10.48 CFS. This will be a significant improvement over the original design which would have overflowed from the existing basin at all storms exceeding a 10 year storm.
3. The outflow from the revised system to the drainage course between the Freedom Quad Pond and the culvert at Fuller Road is reduced for the entire system to 0.48 CFS for a 1 year storm which is a 90% reduction from the existing condition outflow of 5.06 CFS..
4. The outflow from the revised system to the drainage course between the Freedom Quad Pond and the culvert at Fuller Road is reduced for the entire system 1.43 CFS for a 10 year storm which is a 97% reduction from the existing condition outflow of 48.66 CFS.
5. The outflow from the revised system to the drainage course between the Freedom Quad Pond and the culvert at Fuller Road is reduced for the entire system 8.86 CFS for a 50 year storm which is a 94% reduction from the existing condition outflow of 139.86 CFS.



6. The outflow from the revised system to the drainage course between the Freedom Quad Pond and the culvert at Fuller Road is reduced for the entire system 10.48 CFS for a 100 year storm which is a 93% reduction from the existing condition outflow of 144.51 CFS.
7. Treatment requirements are based upon GP#0-10-001 without any reliance on the Redevelopment Standards which would have reduced the size and efficiency of the extended detention pond design.

CONSTRUCTION SEQUENCING & SEDIMENTATION AND EROSION CONTROL DURING CONSTRUCTION

- ✓ Assure that copy of SWMR & SWPPP is on the site.
- ✓ Establish Qualified Individual who will be performing site inspection.
- ✓ Establish Trained Contractor who will be on site. At least one Trained Contractor must be on site whenever ground disturbing activities are being undertaken.
- ✓ Establish contact person for Contractor/Subcontractor.
- ✓ Install sedimentation fence as indicated on the plan. A plan showing sedimentation and erosion protection is contained in this report (see Attachment No. 7).
- ✓ Clear and grub areas as shown on the Project Plans.
- ✓ Grade and prepare construction entrance from the parking lot adjoining Freedom Apartments.
- ✓ The existing pavement must be kept swept clean to avoid tracking materials onto any streets.
- ✓ Maintain this area clean of debris.
- ✓ Any construction materials, chemicals or construction debris must be stored in sealed receptacles, trailers or buildings. Any storage piles of materials meant for installation (i.e., sand, etc.) must be surrounded by sedimentation fence. The list of anticipated materials stored on site during construction is provided below and must be updated if any additional materials are utilized:
 - Select Fill
 - Rip-rap
 - Fencing Materials
 - Concrete Structures
 - Pipes
 - Pipe Solvents
- ✓ MSDS sheets must be available on site for all materials used or imported to the site.



- ✓ Any chemical spills must be contained immediately on site and reported to NYSDEC.
- ✓ Oil and grease spills from equipment shall be treated immediately.
- ✓ Conduct any test pits to verify whether any utility relocation will be required to install the proposed collection system.
- ✓ Install 15" outfall pipe from a point near the orifice control structure (riser structure) to its end at the stream course to receive any discharge from dewatering efforts.
- ✓ Set up dewatering system discharging through a silt sack. Check the silt sack at least twice daily and replace as required.
- ✓ Install a standpipe at the location of the orifice control structure (riser structure) to allow the basin to act as a temporary sedimentation basin. The volume available in this sedimentation basin must equal or exceed 3600 cubic feet per disturbed acre.
- ✓ Grade the forebay and the extended detention basin to subgrade.
- ✓ Stockpile sufficient topsoil for use to complete the project.
- ✓ Protect topsoil stockpile with sedimentation fence.
- ✓ Stockpile sufficient excess excavation for use to fill SWMM#1.
- ✓ Protect excess fill stockpile with sedimentation fence.
- ✓ Truck any excess oil off site.
- ✓ Place clay lining in forebay and extended detention basin. Use 12 inches of clay soil (minimum 50% passing the #200 sieve and a maximum permeability of 1×10^{-5} cm/sec,
- ✓ Commence installation of collection system at end of 60" pipe working northward towards Tricentennial drive.
- ✓ Connect relocated catch basins from Freedom Apartment Parking Lots when pipe extends to the connection point.
- ✓ Install Manhole #3 and connect force main and relocated catch basin to this new manhole.
- ✓ Extend 54" pipe from MH#3 to MH#2.. Leave 36" pipe in place and temporarily connect to MH#2.
- ✓ Install 18" pipe and MH#1. Connect existing 18" pipe from CB in Tricentennial Drive to this new manhole.
- ✓ Install new CB#1 and connect to MH#1
- ✓ Install 2 new 42" pipes across Tricentennial Drive. Schedule with FRMC to minimize traffic disruptions.
- ✓ Build new structure at north end of 42" pipes and connect existing pipes to this new structure.
- ✓ Restore pavement and lawns.
- ✓ Install orifice control structure(riser structure)
- ✓ Spread topsoil to cover area of the site where lawns are to be restored or new vegetation planted.
- ✓ Seed and mulch.
- ✓ Establish fine grade in area of maintenance road.



- ✓ Install gravel in area of maintenance road.
- ✓ Clean the forebay and basins of any sedimentation and debris.
- ✓ Install fence and gates
- ✓ File NOT.

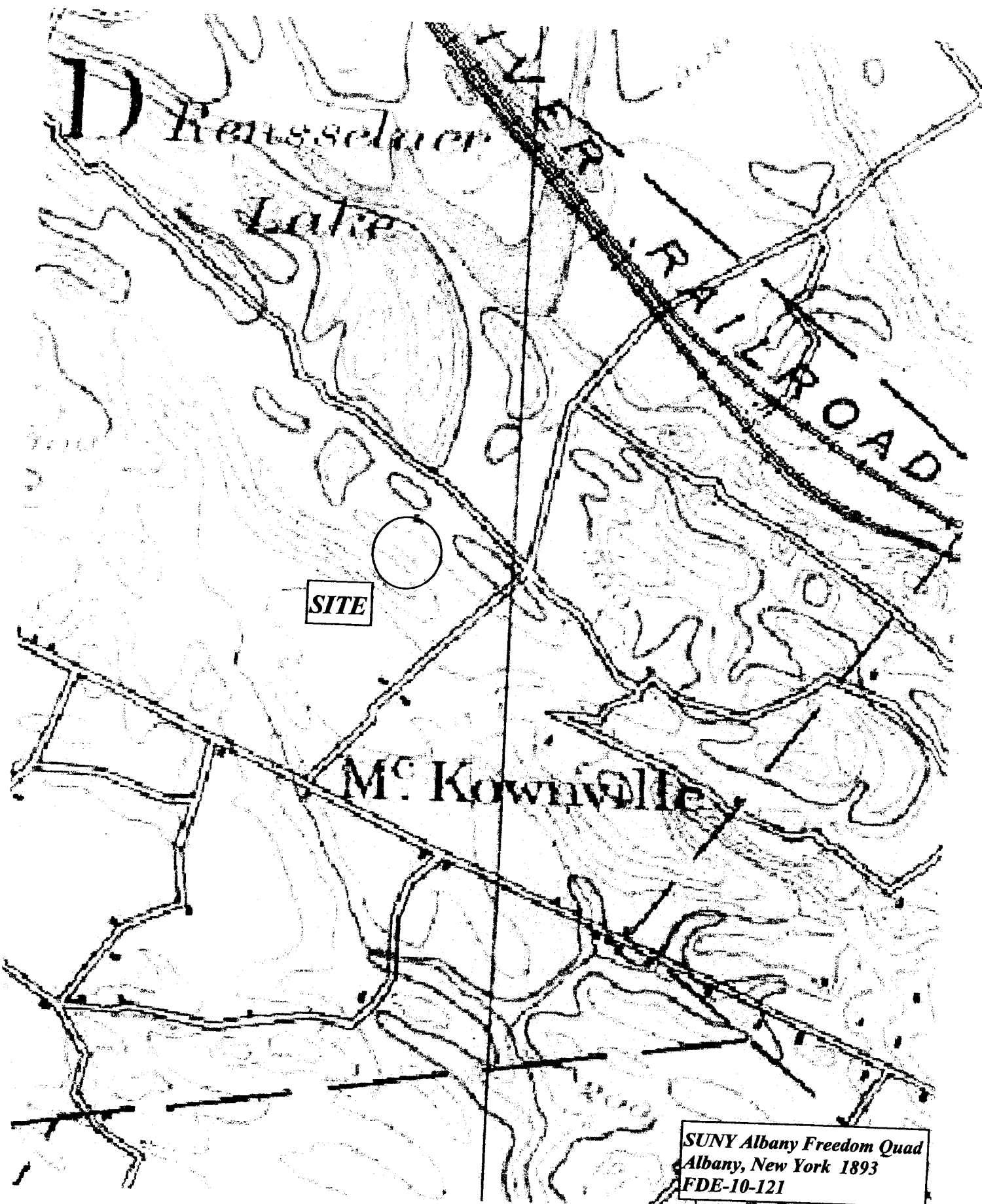
CERTIFICATIONS

By filing this report the preparer certifies that he is a Professional Engineer licensed in the state of New York and is a qualified individual as defined in SPDES General Permit #GP-0-10-01. The Engineer is Daniel R. Hershberg, P.E. & L.S., of the firm of Hershberg & Hershberg with offices located at 18 Locust Street, Albany, New York, 12203. The phone number is 518-459-3096 and the fax number is 518-459-5683. The Engineer certifies that this design conforms with standards set forth in the *New York State Stormwater Management Design Manual* published by the New York State Department of Environmental Conservation, Albany, New York June, 2010.

Through completion of the Certification by the Contractor/Subcontractor (see Attachment No. 3), the Contractor/Subcontractor is certifying that the entity executing this certification is responsible for activities involving clearing, grading, installation of storm water quality controls. If multiple Contractors/Subcontractors have responsibility for grading or construction of stormwater quality control facilities, every Contractor/Subcontractor must complete a certification. Certifications must be with the SWPPP and maintained on the construction site.

Through completion of the Certification by the Owner/Developer (see Attachment No. 4), the Owner/Developer is certifying that the entity executing this certification is responsible for retaining the Contractor, retaining the Engineer to perform inspections required and for the maintenance of storm water quality controls. This certification must be with the SWPPP and maintained on the construction site. The applicant for approval of this project is Fuller Road Management, having its office at University Hall 212, University at Albany, 1400 Washington Avenue, Albany, NY 12222.





SUNY Albany Freedom Quad
Albany, New York 1893
FDE-10-121