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C-002	Construction Notes and Legend	August 7, 2009
C-100	Overall Existing Conditions Map	August 7, 2009
C-101	Existing Conditions Map	August 7, 2009
C-200	Demolition and Tree Removal Plan	August 7, 2009
C-300	Layout and Materials Plan	August 7, 2009
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C-809	Construction Details	August 7, 2009
E-100	Electrical Legend, Details and Division 16 Specifications	August 7, 2009
E-101	Electrical Site Plan	August 7, 2009

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C-001	Title Sheet	August 28, 2009
C-002	Construction Notes and Legend	August 28, 2009
C-100	Overall Existing Conditions Map	August 28, 2009
C-101	Existing Conditions Map	August 28, 2009
C-200	Demolition and Tree Removal Plan	August 28, 2009
C-300	Layout and Materials Plan	August 28, 2009
C-400	Grading and Drainage Plan	August 28, 2009
C-500	Utilities Plan	August 28, 2009
C-501	Subsurface Sewage Treatment System (SSTS) Plan	August 28, 2009
C-502	Sanitary Sewer Profiles	August 28, 2009
C-600	Erosion and Sediment Control Plan	August 28, 2009
C-700	Lighting Plan	August 28, 2009
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C-801	Construction Details	August 28, 2009
C-802	Construction Details	August 28, 2009
C-803	Construction Details	August 28, 2009
C-804	Construction Details	August 28, 2009
E-200	Electrical Legend, Details and Division 26 Specifications	August 28, 2009
E-201	Electrical Site Plan	August 28, 2009

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A. PROJECT INTRODUCTION

I. PROJECT DESCRIPTION

This report identifies and mitigates the potential stormwater impacts associated with Phases 1 and Phase 2 of the proposed _____ Project. The subject site is approximately 33.90 acres and is located adjacent to _____ Avenue, within the _____ in the _____, Westchester County, New York. The property is located within the Upper Long Island Sound drainage basin.

The subject site is owned by the _____ and serves as a public park. The existing facilities within the _____ include baseball fields, tennis, volleyball, and basketball courts. Other public facilities include swimming pools, pool house and patio areas, playgrounds and an asphalt parking area. The proposed project will be segmented into three separate construction Phases. Phase 1 of the proposed project includes construction of the _____ driveway, parking areas within roadway and associated site improvements. Phase 2 of the proposed _____ Project includes the construction of a ±10,325 square foot (S.F.) _____ building footprint and patio area, walkways (concrete and bituminous) and landgrading activities. The proposed utilities associated with the future Phase 2 work include the installation of electric service upgrades and communication lines (cable and telephone), on-site wastewater treatment system (OWTS), fire suppression and storage systems, water distribution lines from existing on-site wells to serve the proposed building and installation of drainage infrastructure to convey stormwater runoff from the proposed _____ rooftop and patio areas to Stormwater Management Area B (SMA-B). SMA-B is proposed to be constructed during proposed Phase 1 work. Future Phase 3 construction includes rehabilitation and reconstruction of the existing lower parking area (at _____ Entrance). The future Phase 3 work is intended to be constructed under separate funding from the Town, and will be discussed under a separate Stormwater Pollution Prevention Plan (SWPPP).

The proposed site improvements associated with Phase 1 (driveway construction) of the project include the following: surface grading, installation of drainage system and subsurface stormwater management facilities, bituminous pavement and curbing installation, electric conduit installation, additional site lighting and landscaping.

The proposed stormwater management facilities to be constructed during Phase 1 include four (4) water quality structures, and two separate subsurface stormwater management areas (SMA-A and SMA-B). Both proposed SMA's have been designed to treat and store stormwater runoff from the proposed Phase 1 and a substantial portion of Phase 2 construction.

Proposed Stormwater Management Area A (SMA-A) includes a NYSDEC approved water quality vault structure, and a closed precast box chamber detention system with an internal outlet control structure. Stormwater runoff from a portion of the proposed driveway will enter catch basins within the roadway and be conveyed via subsurface HDPE storm pipes to Water Quality Structure A-3 (WQS A-3) for pretreatment. A bypass manhole (BMH A-2) will then direct the water quality peak flow to the drainage structure WQS A-1. All flows in excess of the calculated NYSDEC water quality peak flow will bypass the weir in BMH A-2 and enter the closed box detention system (SMA-A). The proposed WQS A-1 is a vault filtration system that is expected to remove pollutants such as sediments, oil and grease, metals, organics and nutrients (phosphorus, nitrogen, etc.) prior to entering the closed box detention system. Runoff will then be stored within SMA-A and stormwater outflow from the detention system will be controlled with an internal outlet control structure (OCS A-2). Stormwater peak flow runoff rates will be attenuated for the design storm events described in this report to below pre-development peak runoff rates at the respective hydrological analysis (design) points.

Stormwater runoff from the building rooftop and rear patio area, a majority of the proposed roadway and a portion of the proposed building walkways drains to Stormwater Management Area B (SMA-B). Runoff from these areas enters proposed catch basins and is connected to subsurface drainage infrastructure that conveys flow to SMA-B via an underground HDPE storm pipe network. The proposed SMA-B consist of two (2) NYSDEC approved stormwater manufactured treatment devices (water quality structures) and a precast concrete arch chamber infiltration system connected to an outlet control structure. Water Quality Structures B-3 and C-1 are devices intended to serve as pretreatment for runoff prior to entering the subsurface infiltration/detention system. Stormwater runoff will be stored and infiltrated within SMA-B and outflow from the system will be controlled with an Outlet Control Structure (OCS B-2). Stormwater peak flow runoff rates will be attenuated for storm events up to and including the 100 year design storm. Peak flow rate attenuation to below pre-development runoff rates will be accomplished at the respective design points by detention and reduction of runoff volume (infiltration).

This report studies the pre and post-development drainage conditions of the 1, 2, 5, 10, 25, 50 and 100 year rainfall events. The proposed development will not result in an increase in peak runoff rates to adjacent on-site and off-site areas (See Appendix 'A' for existing and proposed hydrologic calculations). Stormwater quality is expected to be enhanced within the implementation of the proposed water quality structures and subsurface infiltration and detention system (SMA-B).

The proposed development requires coverage under NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-08-001) since the proposed disturbance exceeds the threshold of one (1) acre. The project is not located within a New York City East of Hudson (EOH) Watershed. The proposed _____ Project Phases discussed in this SWPPP, have been designed in accordance with the _____ Stormwater Management and Erosion and Sediment Control requirements outlined in Chapter 91B "Stormwater Management and Erosion and Sediment Control" and Chapter 60 "Flood Damage Prevention". The proposed Stormwater Management Practices (SMP's) have been designed to exceed water quality requirements and provide water quantity controls in accordance with the New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual, dated April 2003.

II. EXISTING CONDITIONS

The subject site is approximately 33.90 acres. The site is currently developed and serves as a _____ with baseball fields, tennis courts, volleyball courts, basketball courts, swimming pools and a playground area with associated parking area, storage sheds and open grass space. The majority of the site is pervious consisting mainly of lawn.

For hydrologic analysis purposes, the existing drainage boundaries have been identified as "EDA–1", "EDA-2" "EDA-3" and "EDA-4". As part of the TR-55 methodology, the areas analyzed under existing conditions are identical to the areas analyzed under proposed conditions. An SCS curve number and a time of concentration were calculated for pre and post development conditions. The existing drainage patterns were analyzed to provide a comparison to the post-development peak runoff rates generated by the project area at the Design Points.

Existing Drainage Area "EDA-1" - is approximately 3.84 acres in size and is located at the northwest portion of the property. An SCS curve number of 71 and a time of concentration of 9.2 minutes were calculated for this drainage area. This area consists of lawn, woods, portion of asphalt pavement parking area, and asphalt and gravel walking path areas. Stormwater runoff from this area generally flows in a northwest direction. Runoff within this area travels via overland flow (sheet and shallow concentrated), enters into an existing catch basin in the parking area, and is conveyed via pipe flow to an on-site existing pond (Design Point 1).

Existing Drainage Area "EDA-2" - is approximately 2.33 acres in size and is located in the northern portion of the property. An SCS curve number of 61 and a time of concentration of 10.4 minutes were calculated for this drainage area. Stormwater runoff from this area generally flows in a southern direction. Runoff within this area travels via overland flow (sheet and shallow concentrated), and is ultimately conveyed to an existing off-site pond located to the rear of the existing _____ Town House (Design Point 2).

Existing Drainage Area "EDA-3" - is approximately 1.93 acres in size and is located in the northern portion of the property. An SCS curve number of 76 and a time of concentration of 7.5 minutes were calculated for this drainage area. Stormwater runoff from this area generally flows in a northwestern direction. Runoff within this area travels via overland flow (sheet and shallow concentrated), and is ultimately conveyed to the on-site playground and pool area (Design Point 3).

Existing Drainage Area "EDA-4" - is approximately 0.81 acres in size and is located in the northeastern portion of the property. An SCS curve number of 65 and a time of concentration of 7.9 minutes were calculated for this drainage area. Stormwater runoff from this area generally flows in a eastern direction. Runoff within this area travels via overland flow (sheet and shallow concentrated), and is conveyed to an adjacent onsite area (Design Point 4) that eventually discharges to an existing on-site wetland.

A graphical representation of the existing drainage areas discussed above can be found in Appendix N, Drawings EDA -1 entitled "Existing Drainage Area Map -1" and EDA - 2 entitled "Existing Drainage Area Map – 2."

The peak runoff rates for the 1, 2, 5, 10, 25, 50 and 100 year recurrent storm events at Design Points 1, 2, 3 and 4 are summarized in Table 1 below:

Table 1

Summary of Peak Runoff Rates – Existing Conditions at Design Points 1, 2, 3 and 4

(All Flows in Cubic Feet per Second)

Storm Recurrence Frequency (years)	Peak Rate of Runoff (cfs)			
	Design Point 1	Design Point 2	Design Point 3	Design Point 4
1	2.21	0.33	1.76	0.56
2	3.94	0.94	2.83	0.97
5	6.76	2.19	4.51	1.63
10	8.27	2.90	5.38	1.99
25	11.45	4.46	7.19	2.73
50	14.76	6.15	9.04	3.50
100	16.45	7.04	9.97	3.89

III. PROPOSED CONDITIONS

The proposed _____ project will be segmented into three separate construction Phases. Phase 1 of the proposed project includes construction of the _____ driveway, parking areas within the roadway and associated site improvements. Phase 2 of the proposed _____ Project includes the construction of a ±10,325 square foot (building footprint) _____ and patio area, walkways (concrete and bituminous) and landgrading activities. The proposed utilities associated with the future Phase 2 work include

the installation of electric service upgrades and communication lines (cable and telephone), on-site wastewater treatment system (OWTS), fire suppression and storage systems, water distribution lines from existing on-site wells to serve the proposed building and installation of drainage infrastructure to convey stormwater runoff from the _____ rooftop and patio areas to Stormwater Management Area B (SMA-B). SMA-B is proposed to be constructed during the Phase 1 work. Future Phase 3 construction includes rehabilitation and reconstruction of the existing lower parking area (at _____ Entrance). This future phase (Phase 3) of work is intended to be constructed under separate funding from the Town, and will be discussed under a separate Stormwater Pollution Prevention Plan (SWPPP).

The proposed site improvements associated with Phase 1 (driveway construction) of the project include the following: surface grading, installation of drainage system and subsurface stormwater management facilities, bituminous pavement and curbing installation, electric conduit installation, additional site lighting and landscaping. The proposed stormwater management facilities to be constructed during Phase 1 include four (4) water quality structures, two (2) outlet control structures, and two (2) separate subsurface Stormwater Management Areas (SMA-A and SMA-B). Both proposed SMA's have been designed to treat and store stormwater runoff from the proposed Phase 1 and a substantial portion of Phase 2 construction.

Stormwater runoff from the proposed driveway, building rooftop, rear patio and walkways will be collected and conveyed via drainage structures and underground storm pipes to the proposed subsurface Stormwater Management Areas (SMA-A and SMA-B).

The drainage improvements associated with the construction of the proposed _____ and driveway include the installation of proposed subsurface Stormwater Management Practices (SMP's) designed to both store and treat stormwater runoff from the proposed disturbed areas and a portion of the undisturbed areas. Once runoff reaches and flows through the proposed Stormwater Management Practices (SMP's), pollutants such as sediments, oil and grease, metals, organics and nutrients are expected to be removed through media filtration and subsurface soil infiltration. An HDPE storm pipe conveyance system will route subsurface runoff from the areas described above to the proposed SMA's.

The proposed subsurface infiltration area (SMA-B) and Water Quality Structure (WQS A-1) have been designed to exceed the NYSDEC water quality volume requirements associated with the development. The proposed HDPE storm pipe conveyance system has been designed to accommodate stormwater flow rates up to and including the 100 year storm event.

For purposes of hydrologic analysis, the drainage areas under proposed conditions have been identified as seven (7) sub-drainage areas; "PDA–1A", "PDA-1B", "PDA-1C", "PDA-2A", "PDA–2B" "PDA-3" and "PDA-4". As in existing conditions, the drainage areas discharge stormwater to the on-site existing pond, off-site existing pond to the south, the adjacent on-site area and again the existing on-site area (Design Points 1, 2, 3 and 4 respectively). A significant portion of the proposed parking and driveway areas, building rooftop, walkways and rear patio runoff will be routed through the proposed subsurface infiltration system (Stormwater Management Area – B). The lower half (northern portion) of the proposed driveway will be routed through the subsurface vault filtration (WQS A-1) and closed box detention systems (Stormwater Management Area – A). A description of the proposed drainage areas are as follows:

Drainage Area "PDA–1A" - is approximately 0.80 acres in size and is located at the southwestern portion of the property. An SCS curve number of 69 and a time of concentration of 6.8 minutes were calculated for this drainage area. This area consists of the existing wooded and lawn areas. Stormwater runoff from this area generally flows in the northwest direction. Runoff from this area travels via overland flow (sheet and shallow concentrated) to the on-site existing pond (Design Point 1). There is no proposed land disturbance within this drainage area.

Drainage Area "PDA–1B" – is approximately 0.47 acres and contains a portion (lower half) of the proposed asphalt concrete driveway. This area is located on the northern part of the site. An SCS curve number of 80 a time of concentration of 8.1 minutes were calculated for this drainage area. Stormwater runoff from PDA-1B travels via overland (sheet and shallow concentrated) and is routed through the storm pipe network (pipe flow) to water quality structures (WQS A-3 and A-1) and subsurface Stormwater Management Area A (SMA-A). The NYSDEC water quality peak flow for drainage area PDA-1B is 0.28 cubic feet per second (cfs). The NYSDEC water quality volume is 1,054 cubic feet (See Appendix B for water quality volume and flow calculations). Stormwater will be pretreated through a Terre Kleen™ TK01 water quality structure. The pretreatment structure has been sized to pretreat 100% of the water quality flow. However, NYSDEC Stormwater Regulations require the pretreatment of only 25% of the water quality flow prior to entering a filtration practice. The required water quality pretreatment flow (25%) is 0.07 cfs. The provided water quality pretreatment flow is 1.7cfs. The Terre Kleen™ TK01 water quality structure will be implemented to serve as pretreatment for runoff prior to entering the media filtration system (WQS A-1) as required by the NYSDEC. The required 100% water quality peak flow will be treated through a proposed NYSDEC verified proprietary practice (media filtration system) selected for this development. The Contech® Stormwater Solutions StormFilter Media Filtration System (MFS) will be implemented to serve as a water quality control for runoff prior to entering the subsurface closed box detention system (SMA-A). Water quantity requirements will be provided by detaining the 1, 2, 5, 10 (overbank control), 25, 50 and the 100 (extreme flood control) year storm events. The NYSDEC Channel Protection Volume (Cp_v) required is 1,183 cubic feet (cf). The Channel Protection Volume (Cp_v) requirement has been waived since the resulting diameter of the extended detention (ED) orifice was too small. A one-inch (1") outlet control orifice was required for 24-hour ED of the post development, 1-year storm. This ED requirement can be waived as stated in Section 4.3 "Stream Channel Protection Volume Requirements (Cp_v) of the New York State Stormwater Management Design Manual, dated April 2003. The proposed outlet control structure (aluminum plate within box system) will include a 3 inch orifice at elevation 461.83 and a 1.5 foot wide broad crested weir at elevation 465.16. OCS A will slowly discharge stormwater to a proposed 15 inch HDPE culvert connected to an existing catch basin within the existing lower parking area. This proposed 15 inch culvert ultimately conveys runoff to an existing on-site pond (Design Point 1). The proposed water quality and quantity controls have been designed in accordance with the design guidelines of the New York State Stormwater Management Design Manual, dated April 2003.

Drainage Area "PDA–1C is approximately 2.54 acres and is located at the northern portion of the property. An SCS curve number of 71 and a time of concentration of 9.2 minutes were calculated for this drainage area. This area consists of lawn and a portion of the existing asphalt parking area. Stormwater runoff from PDA-1C travels via overland (sheet and shallow concentrated) to the existing parking area and enters an existing catch basin within the existing parking lot. This runoff is routed through an existing 12" PVC pipe that discharges to the existing on-site pond (Design Point 1).

Drainage Area "PDA–2A" - is approximately 1.73 acres and contains existing woods and proposed lawn areas. This area is located on the southern portion of the site. An SCS curve number of 61 a time of concentration of 10.4 minutes were calculated for this drainage area. Stormwater runoff from this area generally flows to the southwest. Stormwater runoff from PDA-2A travels via overland (sheet and shallow concentrated) and ultimately discharges to an off-site existing pond to the south of the property (Design Point 2).

Drainage Area "PDA–2B" - is approximately 2.07 acres and contains the upper half of the proposed asphalt concrete driveway and parking area, the proposed _____ Building and existing lawn area. This area is located on the eastern-central portion of the site. An SCS curve number of 83 a time of concentration of 6.0 minutes were calculated for this drainage area. Stormwater runoff from PDA-2B travels via overland (sheet and shallow concentrated) and is routed through the storm pipe network (pipe flow), to water quality structures (WQS B-3 and WQS C-1) and subsurface Stormwater Management Area B (SMA-B). The required NYSDEC water quality peak flow for drainage area PDA-2B is 1.53 cubic feet per second (cfs). The required NYSDEC water

quality volume 5,352 cubic feet (See Appendix B for water quality volume and flow calculations). Stormwater will be pretreated through two (2) Terre Kleen™ water quality structures selected for this development. Water Quality Sstructure B-3 (WQS B-3) will be a Terre Kleen™ 01 and Water Quality Sstructure B-3 (WQS C-1) will be a Terre Kleen™ 09. The treated (provided) water quality flow is 0.71 cfs and 12.73 cfs for WQS B-3 and WQS C-1 respectively. The pretreatment structures have been sized to pretreat 100% of the water quality flow, since soil infiltration rates in this area exceed 5.00 inches/hour. The Terre Kleen™ water quality structures will be implemented to serve as pretreatment for runoff prior to entering the subsurface infiltration system (SMA-B). Water quality goals will be achieved through infiltration within the subsurface precast conrtete arch chambers. Water quantity requirements will be provided by detaining the 1, 2, 5, 10 (overbank control), 25, 50 and the 100 (extreme flood control) year storm events. The NYSDEC Channel Protection Volume (Cp_v) required is 10,129 cubic feet (cf). The provided Channel Protection Volume (Cp_v) is 10,812 cubic feet. The proposed outlet control structure (OCS B-1) will include a 3 inch orifice at elevation 485.67, three-(4) inch orifii at elevation 486.67, five-(4) inch orifii at elevation 487.50 and a 4 foot wide broad crested weir at elevation 488.33. OCS B-1 will slowly discharge stormwater to a proposed 18 inch HDPE culvert and riprap apron, and ultimately convey runoff to the existing off-site pond to the south of the property (Design Point 2). The proposed water quality and quantity controls have been designed in accordance with the design guidelines of the New York State Stormwater Management Design Manual, dated April 2003.

Drainage Area "PDA–3" - is approximately 0.49 acres in size and is located in the northeastern corner of the site. An SCS curve number of 71 and a time of concentration of 6.9 minutes were calculated for this drainage area. This area consists of existing lawn areas and an existing (asphalt and gravel) pathway. Stormwater runoff from this area generally flows in a northern direction. Runoff within this area travels via overland flow (sheet and shallow concentrated) to the adjacent onsite area (Design Point 3). There is no proposed land disturbance within this drainage area.

Drainage Area "PDA-4" - is approximately 0.81 acres in size and is located in the northeastern portion of the property. An SCS curve number of 65 and a time of concentration of 7.9 minutes were calculated for this drainage area. Stormwater runoff from this area generally flows in a eastern direction. Runoff within this area travels via overland flow (sheet and shallow concentrated), and is conveyed to an adjacent onsite area (Design Point 4) that eventually discharges to an existing on-site wetland.

Please refer to Appendix N, Drawings PDA -1 entitled “Proposed Drainage Area Map -1” and PDA - 2 entitled “Proposed Drainage Area Map – 2.” for a graphical representation of the "Proposed Conditions" drainage areas discussed above.

The peak runoff rates for the 1, 2, 5, 10, 25, 50 and 100 year storm events at Design Points 1, 2, 3 and 4 are summarized in Table 2 on the following page:

Table 2

Summary of Peak Runoff Rates – Proposed Conditions at Design Points 1, 2, 3 and 4

(All Flows in Cubic Feet per Second)

Storm Recurrence Frequency (years)	Peak Rate of Runoff (cfs)			
	Design Point 1	Design Point 2	Design Point 3	Design Point 4
1	2.00	0.24	0.31	0.25
2	3.53	0.70	0.54	0.55
5	6.02	1.63	0.94	1.09
10	7.36	2.15	1.15	1.39
25	10.16	3.40	1.58	2.04
50	13.20	4.85	2.04	2.73
100	14.70	5.97	2.28	3.08

A comparison of Tables 1 and 2 indicates a decrease in the peak rates of runoff generated by the site for the 1, 2, 5, 10, 25, 50 and 100 year design storms, upon implementation of the proposed Stormwater Management Practices (SMP's). The reduction in peak rates is a result of the large volume of water infiltrated or detained in the proposed subsurface Stormwater Management Areas (SMA's). Tables 3, 4, 5 and 6 below summarize this comparison:

Table 3

Summary of Existing and Proposed Peak Runoff Rates for Design Point 1

(All Flows in Cubic Feet per Second)

Storm Recurrence Frequency (Years)	Existing Conditions	Proposed Conditions	Net Change (%)
	Design Point 1	Design Point 1	Design Point 1
1	2.21	2.00	-9.50
2	3.94	3.53	-10.41
5	6.76	6.02	-10.95
10	8.27	7.36	-11.00
25	11.45	10.16	-11.27
50	14.76	13.20	-10.57
100	16.45	14.70	-10.64

Table 4

Summary of Existing and Proposed Peak Runoff Rates for Design Point 2

(All Flows in Cubic Feet per Second)

Storm Recurrence Frequency (Years)	Existing Conditions	Proposed Conditions	Net Change (%)
	Design Point 2	Design Point 2	Design Point 2
1	0.33	0.24	-27.27
2	0.94	0.70	-25.53
5	2.19	1.63	-25.57
10	2.90	2.15	-25.86
25	4.46	3.40	-23.77
50	6.15	4.85	-21.14
100	7.04	5.97	-15.20

Table 5

Summary of Existing and Proposed Peak Runoff Rates for Design Point 3

(All Flows in Cubic Feet per Second)

Storm Recurrence Frequency (Years)	Existing Conditions	Proposed Conditions	Net Change (%)
	Design Point 3	Design Point 3	Design Point 3
1	1.76	0.31	-82.39
2	2.83	0.54	-80.92
5	4.51	0.94	-79.16
10	5.38	1.15	-78.62
25	7.19	1.58	-78.03
50	9.04	2.04	-77.43
100	9.97	2.28	-77.13

Table 6

Summary of Existing and Proposed Peak Runoff Rates for Design Point 4

(All Flows in Cubic Feet per Second)

Storm Recurrence Frequency (Years)	Existing Conditions	Proposed Conditions	Net Change (%)
	Design Point 4	Design Point 4	Design Point 4
1	0.56	0.25	-55.36
2	0.97	0.55	-43.30
5	1.63	1.09	-33.13
10	1.99	1.39	-30.15
25	2.73	2.04	-25.27
50	3.50	2.73	-22.00
100	3.89	3.08	-20.83

B. ANALYSIS METHODS

Runoff depths were calculated based upon standards set forth by the United States Department of Agriculture Soil Conservation Service (SCS) Technical Release 55, Urban Hydrology for Small Watersheds (TR-55), dated June 1986 and the TR-20 method. The methodology set forth in TR-55 considers a multitude of characteristics for watershed areas including soil types, soil permeability, vegetative cover, time of concentration, topography, rainfall intensity, ponding areas, etc.

The 100 year storm recurrence was reviewed in the design of the proposed storm pipe network, water quality structures, subsurface infiltration/detention system (SMA-B) and closed box detention system (SMA-A).

In analyzing the impact of the proposed development on downstream waters, the peak rates of runoff were quantified for the 1, 2, 5, 10, 25, 50 and 100 year storm events. Stormwater runoff rates were then examined for both existing and proposed conditions in the design of the proposed Stormwater Management Practices (See Appendix A–Existing and Proposed Hydrologic Calculations).

Future drainage conditions were analyzed based on the increased rate and volume of runoff resulting from the proposed improvements associated with the site development.

Base Data and Design Criteria

For the stormwater management analysis the following base information and methodology were used:

1. Site's downstream outfall facilities were inspected by _____ to gather background data and confirming existing mapping of the watershed areas.

2. An existing drainage area map was developed from a topographical survey prepared by _____, last revised June 15, 2009. The drainage area map reflects the existing conditions on the property and surrounding area.

3. U.S.G.S. Quadrangle Map for _____ Quadrangle, New York – Connecticut, last revised

1960.

4. USDA National Resource Conservation Service (NRCS) Web Soil Survey.

5. New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual, last revised August 2010.

6. New York State Standards and Specifications for Urban Erosion and Sediment Control, dated August 2005.

7. Hydrologic and Hydraulic calculations were performed with the HydroCAD Stormwater Modeling software package version 8.5.

8. The storm flows for the 1, 2, 5, 10, 25, 50 and 100 year recurrence interval storm were analyzed for the total watershed area. The Type III distribution design storm for the 24-hour duration was used and the mass rainfall for each design storm is as follows:

Design Storm	Inches of Rainfall
1 year	2.8
2 Year	3.5
5 Year	4.5
10 Year	5.0
25 Year	6.0
50 Year	7.0
100 Year	7.5

C. PROJECT MAPS/DRAWINGS

Relevant project maps are attached in Appendices E and N and include the following:

1. Erosion and Sediment Control Plan (Drawing C-600)

2. Existing Drainage Area Maps (Drawing EDA – 1 and EDA - 2)

3. Proposed Drainage Area Maps (Drawing PDA – 1 and PDA - 2)

A full set of project drawings prepared by _____ will accompany the SWPPP.

D. STORMWATER MANAGEMENT PRACTICES (SMP's)

The proposed Stormwater Management Practices (SMP) for the project include four (4) precast concrete vault water quality structures (WQS A-3, WQS A-1, WQS B-3 and WQS C-1) and two (2) subsurface infiltration/detention systems (SMA-A and SMA-B). The proposed Stormwater Management Areas have been designed to attenuate the increase in peak rates of runoff for the 1, 2, 5, 10 (overbank control), 25, 50 and 100 (extreme flood control) year storm events.

Stormwater Management Area A (SMA-A) will consist of closed precast concrete box chambers at invert elevation 461.83, and will store and detain runoff volumes for various storm events. Risers will be provided above the distribution boxes at certain locations on the system for maintenance purposes. An aluminum outlet control plate bolted within the box chamber containing the system outlet pipe (OCS A) will slowly release the

stormwater as the water elevation increases within the subsurface storage boxes. The outlet control structure (OCS A) will include a 3 inch orifice at elevation 461.83 and a 1.5 foot wide broad crested weir at elevation 465.16. The 1.5 foot overflow weir will allow flows from storms including and greater than the 100 year event to bypass the subsurface stormwater detention system. The internal aluminum outlet control plate will slowly discharge stormwater to an existing catch basin in the lower parking area via a proposed 15 inch HDPE culvert. This 15 inch culvert is designed to safely pass rainfall events up to the 100 year design storm. Runoff will ultimately be conveyed to an existing on-site pond located adjacent to the western property line along Westchester Avenue.

Stormwater Management Area B (SMA-B) will consists of precast concrete arch storage chambers at invert elevation 484.10, and will infiltrate and detain runoff volumes for various storm events. Risers will be provided above the distribution manifolds at certain locations on the system for maintenance purposes. A precast concrete outlet control structure (OCS B-1) will be connected to the arch chambers system and will slowly release stormwater as the water elevation increases within the subsurface stormwater system. The proposed outlet control structure (OCS B-1) will include a 3 inch orifice at elevation 485.67, three-(4) inch orifii at elevation 486.67, five-(4) inch orifii at elevation 487.50 and a 4 foot wide broad crested weir at elevation 488.33. The 4 foot overflow weir will allow flows from storms including and greater than the 100 year event to bypass the system. OCS B-1 will slowly discharge stormwater through a proposed 18 inch HDPE culvert. The 18 inch culvert is designed to safely pass rainfall events up to the 100 year design storm. Runoff will discharge freely from the culvert and ultimately be conveyed off-site to an existing pond south of the property (behind the _____ Town House).

Stormwater runoff from PDA-1B is routed through proposed Stormwater Management Area A (SMA-A) located beneath the _____'s existing lower parking area. SMA-A has been designed as a subsurface closed box detention system, in accordance with the design guidelines in Chapter 4 Section 4.3 "Stream Channel Protection Volume Requirements (Cp_v)", 4.4 "Overbank Flood Control Criteria (Qp)" and 4.5 "Extreme Flood Control Criteria (Qf) in the New York State Stromwater Management Design Manual", dated August 2003. The proposed closed box detention system incorporates the "required elements" identified in Chapter 4 of the design manual, including Overbank Flood Control (Qp) and Extreme Flood Control (Qf). Stream Channel Protection (Cp_v) requirement has been waived since the resulting diameter of the extended detention orifice in the outlet structure was less than 3 inches. A one-inch orifice was required for 24 hours ED of the post development 1-year storm. This Stormwater Management Practice is acceptable for stormwater quantity goals and is coupled with a NYSDEC verified proprietary Stormwater Management Practice to meet water quality objectives.

Water quality requirements will be achieved through a stormwater manufactured treatment device. The proposed water quality structure is the Contech Stormwater Solutions StormFilter Media Filtration System (MFS). This unit is approved by the NYSDEC as a stormwater management practice that can be used as a standard treatment system in new projects. The StormFilter water quality structure will remove a variety of pollutants including sediments, oil and grease, metals, organics and nutrients. Pollutant removal is achieved utilizing variable flow controls, media filled cartridges and a storage sump to capture and retain a broad spectrum of pollutants. For additional information on the proposed water quality structure, refer to Appendix I of this report.

The water quality volume for PDA-1B is 1,054 cubic feet and the water quality flow is 0.28 cubic feet per second (cfs). The entire water quality flow will be treated though the system (rate based approach). The NYSDEC water quality volume and flow calculations are provided in Appendix B of this SWPPP.

Stormwater runoff from PDA-2B is routed through proposed Stormwater Management Area B (SMA-B) located beneath the existing upper parking area within the proposed driveway. SMA-B has been designed as a subsurface infiltration and detention system, in accordance with the design guidelines in Section 6.3 "Stormwater

Infiltration" and Table 7.2 “Physical Feasibility Matrix” in the New York State Stormwater Management Design Manual, dated August 2003. The subsurface infiltration system design incorporates the "required elements" identified in Chapter 6, Section 6.3 of the design manual, including underlying soils having an infiltration rate of at least 0.5 inches per hour, and pretreating 100 percent of the water quality flow since soil infiltration rates are greater than 5.0 inches/hour. This stormwater management practice is acceptable for water quality since it provides groundwater recharge and removes stormwater pollutants as stated in Chapter 6: “Performance Criteria” of the NYSDEC stormwater manual. The proposed subsurface concrete chamber system will capture and treat 100% of the water quality volume (WQv) for PDA-2B. The required water quality volume for PDA-2B is 5,352 cubic feet and the water quality flow is 1.53 cubic feet per second (cfs). The provided NYSDEC water quality volume is 9,699 cubic feet for the 1 year storm event and up to 30,569 cubic feet for the 100 year storm event. The water quality volume will be stored within the crushed stone reservoir and subsurface concrete chambers and infiltrated into the subsoil strata through a level subgrade bed. The NYSDEC water quality volume calculations are provided in Appendix B of the SWPPP.

PDA-4 requires a water quality volume (WQv) of 191 cubic feet. SMA-B provides 9,699 cubic feet of water quality volume (1-year storm) which exceeds the water quality volume (WQv) requirement for PDA-2B by 4,347 cubic feet. The required water quality volume (WQv) for PDA-4 is treated within the 4,347 additional infiltration volume provided within SMA-B. This water quality treatment includes rainfall events up to the 100-year storm.

Table 7

Summary of Maximum Water Surface Elevation (WSEL) – Subsurface Closed Box Detention System (SMA-A)

(All Elevations in Feet)

Storm Recurrence Frequency (years)	Maximum Water Surface Elevation (WSEL) (feet)
1	462.63
2	463.13
5	463.95
10	464.40
25	465.27
50	465.50
100	465.59

Table 8

Summary of Maximum Water Surface Elevation (WSEL) – Subsurface Infiltration Chambers (SMA-B)

(All Elevations in Feet)

Storm Recurrence Frequency (years)	Maximum Water Surface Elevation (WSEL) (feet)
1	484.47
2	484.99
5	485.84
10	486.26
25	487.05
50	487.73
100	487.99

E. EROSION AND SEDIMENT CONTROL

The plans provide for specific erosion and sediment controls to be employed during construction. It is the intent to provide effective erosion control by minimizing land disturbance at any given time, containing sediment from disturbed areas, treating runoff where possible, and stabilizing disturbed soils as soon as possible. Construction of the proposed development can potentially impact soils and by erosion and transport of sediment. An Erosion and Sediment Control Management Program has been established to mitigate these impacts, beginning at the start of construction and continuing to the completion of the project, as outlined in the New York Guidelines for Urban Erosion & Sediment Control, dated August 2005. A continuing maintenance program will be implemented for the control of sediment transport and erosion control for the duration of the project as well as after construction.

EXISTING TOPOGRAPHIC FEATURES OF SITE AREA

The existing topography is shown on _____ Drawing C-100 "Overall Existing Conditions Map" at a scale of 1"=60' and C-101 "Existing Conditions Map", C-200 "Demolition and Tree Removal Plan", C-400 "Grading and Drainage Plan", C-401 "Driveway Profile", and C-600 "Erosion and Sediment Control Plan" at a scale of 1"=30'. Two foot contour intervals are provided on the plans. The plans include the location of the project with respect to roads, waterbodies and other identifiable land features.

SOIL DESCRIPTION

Based on the information obtained from the USDA Soil Survey, the soil type located within the project area consists of Charlton Loam (ClB, ClC), Charlton-Chatfield complex (CrC), Chatfield-Charlton complex (CsD), Hollis-Rock outcrop complex (HrF), Udotrthents (Ub) and Urban land-Woodbridge (UwB).

Charlton Loam 2 to 8 percent slopes, very stony

The Charlton component makes up 80 percent of the map unit. Slopes are 2 to 8 percent. This component is on hills, ridges, till plains. The parent material consists of acid loamy till derived mainly from schist, gneiss, or granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained.

Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Charlton Loam 8 to 15 percent slopes, very stony

The Charlton component makes up 80 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, ridges, till plains. The parent material consists of acid loamy till derived mainly from schist, gneiss, or granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Charlton-Chatfield complex, rolling, very rocky

The Charlton component makes up 50 percent of the map unit. Slopes are 2 to 15 percent. This component is on hills, ridges, till plains. The parent material consists of acid loamy till derived mainly from schist, gneiss, or granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

The Chatfield component makes up 30 percent of the map unit. Slopes are 2 to 15 percent. This component is on hills, ridges. The parent material consists of loamy till derived mainly from granite, gneiss, or schist. Depth to a root restrictive layer, bedrock (lithic), is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 1 percent.

Chatfield-Charlton complex, hilly, very rocky

The Chatfield component makes up 45 percent of the map unit. Slopes are 15 to 35 percent. This component is on hills, ridges. The parent material consists of loamy till derived mainly from granite, gneiss, or schist. Depth to a root restrictive layer, bedrock (lithic), is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 1 percent.

The Charlton component makes up 35 percent of the map unit. Slopes are 15 to 35 percent. This component is on hills, ridges, till plains. The parent material consists of acid loamy till derived mainly from schist, gneiss, or granite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained.

Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Hollis-Rock outcrop complex, very steep

The Hollis component makes up 60 percent of the map unit. Slopes are 35 to 60 percent. This component is on hills, ridges. The parent material consists of a thin mantle of loamy till derived mainly from schist, granite, and gneiss. Depth to a root restrictive layer, bedrock (lithic), is 10 to 20 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

The Rock outcrop component makes up 20 percent of the map unit. Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Udorthents (Ub)

The Udorthents (Ub), smoothed makes up 75 percent of the map unit. Slopes are 0 to 8 percent. Depth to a root restrictive layer, bedrock (lithic), is 40 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during January, February, March, April, May, November and December. Organic matter content in the surface horizon is about 2 percent. This soil does not meet hydric criteria.

Urban Land-Woodbridge Complex 2 to 8 percent slopes

The Urban Land component makes up 55 percent of the map unit. Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

The Woodbridge component makes up 25 percent of the map unit. Slopes are 2 to 8 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy acid till derived mainly from crystalline rock. Depth to a root restrictive layer, densic material, is 20 to 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. This soil does not meet hydric criteria.

Table 8 below summarizes the characteristics of the on-site soils:

Table 9

On-Site Soil Characteristics

Map Unit	Soil Name	Erosion Hazard	Hydrologic Group	Surface Runoff Potential	Depth to Restrictive Feature (in)	Depth to Seasonal Water table (in)
ClB	Charlton Loam (2-8% Slopes)	Slight	B	Moderate	>78	>60
ClC	Charlton Loam (8-15% Slopes)	Slight	B	Moderate	>78	>60
CrC	Charlton-Chatfield	Slight	B	Moderate	>78	>60
CsD	Chatfield-Charlton	Moderate	B	Moderate	30	>60
HrF	Hollis-Rock	Severe	C/D	Moderate to High	15	>60
Ub	Udorthents	Slight	-	-	50	-
UwB	Urban Land-Woodbridge	Not Rated	C	Moderate to High	>78	18-30

I. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

Temporary Erosion & Sediment Control Measures will be used throughout the construction of the proposed improvements to control on-site erosion and sediment transfer. These measures include a stabilized construction entrance, silt fence, dust control, temporary seeding and mulching and storm drain inlet protection.

The temporary erosion & sediment controls that will be used during the development of the site include the following:

- Stabilized Construction Entrance – will be constructed at the entrance to the area of construction and will consist of AASHTO No. 1 rock. The rock entrance will be a minimum of 50 feet in length by 20 feet in width by 8 inches in depth.

- Silt Fence at downgradient slopes and around stockpile areas – is a temporary geotextile fabric used to intercept sediment laden runoff from small drainage areas.

- Storm Drain Inlet Protection – is a permeable barrier placed around the drain inlet to reduce the amount of sediment entering the storm drainage system.

- Dust Control – consisting of spraying the ground surface with water to prevent dust emissions from vehicular and construction traffic.

- Seeding – will be used to create a vegetative surface and disturbed areas to reduce soil loss due to storm events. These areas will be mulched with straw at a rate of 3 tons per acre such that the mulch forms a continuous blanket. Mulch must be placed after seeding or within 48 hours after seeding is completed. The temporary seeding will be placed within the proposed parking area only.

- Mulching – is used as an anchor for seeding and disturbed areas to reduce soil loss due to storm events. These areas will be mulched with straw at a rate of 3 tons per acre such that the mulch forms a continuous blanket. Mulch must be placed after seeding or within 48 hours after seeding is completed.

- Erosion & Sediment Control Notes – Construction sequencing is included on the Erosion and Sediment Control Plan to direct the contractor how to proceed during construction to prevent and minimize erosion.

II. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES

The intent of the permanent erosion and sediment control measures is to permanently stabilize the ground surface via vegetative and structural practices, while controlling and reducing runoff velocities. Towards the completion of the development of the site, permanent erosion and sediment control measures will be developed for long term erosion protection. The _____ will be the responsible party for the long term maintenance of the permanent control measures. The following permanent control measures will be developed for long term erosion protection:

- Erosion Control Matting – will be used to protect the side slopes of the proposed terrace against erosion. These erosion control components are capable of slowing down runoff velocities and provide cover to slopes that may be vulnerable to erosion.

- Seeding – at least 70% perennial vegetative cover will be used to produce a permanent uniform erosion resistant surface. The seeded areas will be mulched with straw at a rate of 3 tons per acre such that the mulch forms a continuous blanket. Optimum times for planting are the early spring and fall; however plantings can be started in the summer provided adequate mulch and moisture is supplied.

- Landgrading – is the reshaping of the existing land surface in accordance with the Grading and Drainage Plan. Proper grading will ensure the intended drainage areas are directed to the Stormwater Management Practices (SMP's). Landgrading also includes the removal of stockpile soils from the site which are in excess to project needs, and the removal of assorted brush designated in areas to be cleared.

- Sumps – will be used to remove some of the coarse sand and grit sediment before entering the proposed drainage system. Catch basin drainage structures will be constructed with an 18 inch deep sump.

- Water Quality Structure – is a precast concrete vault structures verified by the NYSDEC as a proprietary Stormwater Management Practice (SMP) to screen, separate and trap debris, sediment, oil and grease, metals, nutrients, etc. from stormwater runoff. This permanent structure will provide water quality treatment of stormwater and pretreatment of runoff prior to entering the subsurface detention and detention/infiltration systems.

F. MAINTENANCE AND INSPECTION REQUIREMENTS

Maintenance and inspections are required in order to ensure the stormwater and erosion and sediment control practices are performing as designed. Temporary and permanent maintenance and inspection requirements are further discussed below. Proper maintenance and inspections will ensure the longevity and effectiveness of the SWPPP and Erosion and Sediment Control Plan.

I. SHORT AND LONG TERM MAINTENANCE AND INSPECTION REQUIREMENTS

Inspections during construction should be performed to verify all practices are functioning properly; correctly maintained, and accumulated sediment is removed from all structures. The contractor will also examine the site for any evidence of soil erosion, the potential for pollutants to enter the storm drain system, turbid discharges at all outfalls, and the potential for soil and other materials to be transported on the public roadway at the site entrance. In addition to these guidelines, the project plans will provide more specific erosion control guidelines, as well as a construction sequence to serve as a general guide for the contractor though the construction process. The contractor shall be responsible for maintaining the temporary erosion and sediment control measures through out construction. This maintenance will include, but not be limited to, the following tasks:

a. SHORT TERM MAINTENANCE AND INSPECTION REQUIREMENTS

- The construction entrance should be checked to ensure no sediment is being deposited onto the public roadway. Should sediment be observed, it should be removed from the street, and the stone in the construction entrance replaced.

- Inlet protection will be inspected to check for debris and sediment buildup and clogging. In the event debris and sediment buildup and clogging is observed, the wire mesh and crushed stone are to be cleaned and/or replaced in order to guarantee proper function of the drainage system.

- Inlets and outlets to subsurface drainage pipes are to remain clear at all times. An inspection is to be made to ensure that pipes are functioning and that stormwater flow is unrestricted. In the event material is found to have clogged subsurface pipes, all attempts should be made to clear such debris. In the event material is out of reach, appropriate measures must be taken to ensure pipes are cleared and actions taken to prevent such incidents from reoccurring.

- Trenches are also to be inspected to ensure proper movement of stormwater. Any large debris or collections of sediment are to be removed and properly disposed.

- For dust control purposes, moisten all exposed graded areas with water at least twice a day in those areas where soil is exposed and cannot be planted with a temporary cover due to construction operations or the season (December through March).

- Inspection of erosion and sediment control measures shall be performed at the end of each construction day and immediately following each rainfall event. All required repairs shall be immediately executed by the contractor.

- Sediment deposits shall be removed when they reach approximately 1/3 the height of the silt fence. All such sediment shall be properly disposed of in fill areas on the site, as directed by the Owner's Field Representative. Any damaged or torn fence shall be replaced. Fill shall be protected following disposal with mulch, temporary and/or permanent vegetation and be completely circumscribed on the downhill side by silt fence.

- Rake all exposed areas parallel to the slope during earthwork operations to minimize concentrated flow across unstabilized areas.

- Following final grading, the disturbed area shall be stabilized with a permanent surface treatment (i.e. grass, pavement, sidewalk, etc.). During rough grading, areas which are not to be disturbed

for (7) seven or more days shall be stabilized with the temporary seed mixture, as defined on the plans.

b. LONG TERM MAINTENANCE AND INSPECTION REQUIREMENTS

TERRE KLEEN™ WATER QUALITY STRUCTURE

- During the first year after installation, inspections shall be performed every three (3) months to determine the type and amount of pollutants collected. Site and weather conditions will influence the rate of pollutant capture. After the first year of installation, maintenance inspections for sediment and debris accumulation shall be conducted bi-annually (twice a year).
- The gross pollutants, such as litter and the oil absorption booms shall be removed first. A vacuum truck or similar equipment will then be utilized to remove the water and the sediment.
- Disposal of all removed pollutants shall be properly documented in accordance with all applicable local, state and federal regulations.
- Removal shall be done anytime after a rain event.
- No confined space entry is required to enter the structure.
- Cleaning in the sediment sump areas shall occur when the sediment reaches 16" in depth.
- Proper documentation shall include: Dates and results of each inspection, proposed and installed repairs, renovations, improvements, type and amount of captured pollutants, procedure for disposal of pollutants, preparation and submittal of reports, documentation of nutrient and sediment reduction credits.
- Sparks and flames shall be kept away from system at all times, as it may contain flammable material.
- Manhole covers and inlet grates shall be replaced securely to their frames after inspection or maintenance.
- Refer to Appendix F of the SWPPP for site specific inspection and maintenance procedures outlined by the manufacturer.

CONTECH STORMWATER SOLUTIONS STORMFILTER MEDIA FILTRATION SYSTEM (MFS)

- During the first year after installation, inspections shall be performed before the winter season and after major storms to determine the type and amount of pollutants collected. Site and weather conditions will influence the rate of pollutant capture. After the first year of installation maintenance inspections shall be conducted yearly to determine amount of sediment buildup in vault and condition of filter cartridges.
- If disposal is required during maintenance, samples of the accumulated sediments and media shall be obtained for testing so material is properly disposed of in accordance with all applicable local, state and federal regulations.
- Replacement of the filter cartridges and removal of accumulated sediments shall be performed during periods of dry weather.

- Proper documentation shall include: Dates and results of each inspection, proposed and installed repairs, renovations, improvements, type and amount of captured pollutants, procedure for disposal of pollutants, preparation and submittal of reports, documentation of nutrient and sediment reduction credits.

- Manhole covers and inlet grates shall be replaced securely to their frames after inspection or maintenance.

- Refer to Appendix I of the SWPPP for site specific inspection and maintenances procedures outlined by the manufacturer.

G. CONCLUSION

The Stormwater Pollution Prevention Plan (SWPPP) for the proposed _____ Project will provide water quality treatment for stormwater, and attenuate peak runoff rates for the 1, 2, 5, 10, 25, 50 and 100 year storm events in accordance with the _____ requirements, and the NYSDEC New York State Stormwater Management Design Manual, dated April 2003. The proposed subsurface closed box detention system (SMA-A) will attenuate peak flow rates for storm events up to the 100 year design event. This closed box detention system will be coupled with NYSDEC verified proprietary pretreatment and water quality structures. The water quality structures will remove pollutants such as sediments, oil and grease metals, organics and nutrients. Water quality is expected to be enhanced prior to discharge into the existing on-site pond (Design Point 1).

The proposed subsurface infiltration chambers (SMA-B) are expected to enhance water quality through the removal of pollutants such as Phosphorus, Nitrogen, Metals and Pathogens. The proposed detention/infiltration system (SMA-B) will temporarily store and infiltrate stormwater runoff in subsoil strata. This will provide an overall reduction in runoff volume at Design Point 3 (ultimately discharges to off-site pond to the south behind the _____ Town House). The two (2) proposed water quality structures for SMA-B will provide pretreatment of the stormwater entering SMA-B, thus further removing pollutants and improving water quality at the proposed infiltration chamber outfall point.

The Stormwater Management Practices (SMP's) incorporated into this project together with a properly implemented maintenance program will effectively mitigate any potential adverse impacts of stormwater runoff from the proposed improvements. The downstream existing pond areas and adjacent properties are not expected to be adversely affected by the project with the implementation of the proposed Stormwater Pollution Prevention Plan (SWPPP).

Sincerely,

APPENDIX A

EXISTING AND PROPOSED HYDROLOGIC CALCULATIONS

APPENDIX B

NYSDEC WATER QUALITY VOLUME AND WATER QUALITY PEAK FLOW CALCULATIONS

APPENDIX C

STORMWATER PERCOLATION TEST AND TEST PIT DATA SHEET

APPENDIX D

STORMWATER PERCOLATION TEST AND TEST PIT PLAN

APPENDIX E

EROSION AND SEDIMENT CONTROL PLAN

APPENDIX F

TERRE KLEEN™ WATER QUALITY STRUCTURE PRODUCT DATA SHEET, SIZING AND MAINTENANCE GUIDELINES AND NJCAT TECHNOLOGY VERIFICATION

APPENDIX G

TERRE ARCH™ 48 SUBSURFACECONCRETE CHAMBER PRODUCT DATA SHEET

APPENDIX H

TERRE BOX™ PRECAST CONCRETE BOX SYSTEM PRODUCT DATA SHEET

APPENDIX I

CONTECH STORMWATER SOLUTIONS INC. STORM FILTER MEDIA FILTRATION SYSTEM (MFS) PRODUCT DATA SHEET, SIZING DESIGN CRITERIA AND INSPECTION AND MAINTENANCE PROCEDURES

APPENDIX J

NYSDEC VERIFIED PROPRIETARY MANAGEMENT PRACTICES (RELEASE DATE MAY 2009)

APPENDIX K

NJDEP STORMWATER MANAGEMENT TREATMENT MANUFACTURED TREATMENT DEVICES CERTIFIED BY THE NJDEP

APPENDIX L

MS4 SWPPP ACCEPTANCE FORM

APPENDIX M

CONTRACTOR CERTIFICATION STATEMENT

APPENDIX N

DRAINAGE AREA MAPS

APPENDIX O

USDA SOIL SURVEY MAPS AND INFORMATION