APPENDIX D

Preliminary Stormwater Management Plan

PRELIMINARY STORMWATER MANAGEMENT PLAN

Chester Development
Town of Chester Section 2, Block 1, Lot 39
Village of Chester Section 107, Block 3, Lot 4
Section 108, Block 1, Lot 1
Section 120, Block 1, Lot 1
Orange County
New York

Prepared For:

BT Holdings LLC- Chester Development
Town and Village of Chester
Orange County, New York

Prepared By:

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River Drive Center 1
Elmwood Park, NJ 07407

25 August 2009
9123501

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

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1.0 INTRODUCTION

This report presents the conceptual stormwater management design and calculations for Chester Development project, a ± 68.43 Ac. multi-family residential project located east of New York State Route 17M, approximately one-half mile north of the intersection of Route 17M and New York State Route 94, in the Village of Chester, Orange County, New York (see Figure 1). This report provides preliminary analyses of the existing and proposed watersheds and discusses the management of the stormwater runoff and shows that adequate areas have been allocated to address water quality and quantity measures for the proposed development. Due to the conceptual nature of the project, a fully detailed design of the conveyance system or Stormwater Pollution Prevention Plan (SWPPP) that includes specific preventative measures for items such as litter control, and storage and disposal of construction materials and debris has not been prepared at this time. These documents will be provided for review and approval during the site plan approval process and conformance to state and local requirements for these items is expected.

The stormwater analyses contained herein have been prepared in accordance with the following state standards:

- New York Standards and Specifications for Erosion and Sediment Control, April 2005; and
- New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual, August 2003.

2.0 DESIGN METHODOLOGY

2.1 Stormwater Management Design

Calculations for the site's runoff were prepared using the SCS Method as contained in the USDA Soil Conservation Service Publication TR-55 "Urban Hydrology for Small Watersheds." TR-55 outlines procedures for calculating peak rates of runoff resulting from precipitation events and procedures for developing runoff hydrographs. The TR-55 procedure simulates a watershed using the drainage area, curve number (CN), and time of concentration (Tc) for each watershed. Where appropriate, large watersheds with

varying runoff characteristics (i.e., Tc's CN's) were further delineated in sub-watersheds that all drain to the same location (discharge point).

The curve number is a land-sensitive coefficient that dictates the relationship between total rainfall depth and direct storm runoff. Based on the coverage of soil groups and land use in the area, an average CN was determined for each watershed for the existing and proposed conditions.

Using the NRCS Soil Survey for Orange County, New York (see Figure 2), the soils within the watershed were divided into hydrologic soil groups (A, B, C and D). The SCS classification system evaluates the runoff potential of a soil according to its infiltration and transmission rates. "A" soils have the lowest runoff potential and "D" soils have the greatest runoff potential.

The time of concentration is defined as the time for runoff to travel from the hydraulically most distant point of the watershed to a point of interest. Values of the time of concentration were determined for existing and proposed conditions based on land cover and slope of the flow path using methods described in TR-55.

The design storm used for the TR-55 study is the 24-hour SCS Type III cumulative rainfall distribution. For this site, the 1-, 2-, 10-, and 100-year storm events were considered in accordance with the NYSDEC Stormwater Management Design Manual. Please refer to Appendix A and Appendix B for pre- & post-development summary stormwater runoff hydrographs, respectively.

2.2 Water Quality & Quantity

The water quality volume, denoted as WQ_v, is the volume of runoff dictated by NYSDEC methodology to capture and treat 90% of the average annual stormwater runoff volume to improve the quality of the runoff leaving the site. The WQ_v is directly related to the amount of impervious coverage created at a project site. This volume is calculated

using the following equation as prescribed by NYSDEC Stormwater Management Manual:

$$WQ_v = \frac{P\ R_v\ A}{12}$$

Where:

P = 90% rainfall event number (Figure 4.1 NYSDEC Manual)

R_v = 0.05 + 0.009(I), where I is percent impervious coverage

A = Site area in acres

The WQ_v was calculated for each proposed sub-watershed that will contain parts of the proposed development. These calculations can be found within Appendix C. To provide treatment of the computed water quality volume, methods in accordance with the most current NYSDEC Stormwater Management Design Manual have been evaluated and selected accordingly for this project site. Analyses of 1-year storm and 2-year storm event was prepared for pond sizing purposes, and are included in the appendices of this report.

As described in NYSDEC Stormwater Management Design Manual, stormwater quantity measures include overbank flood protection (Q_p) and extreme flood control (Q_f). Overbank flood control requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate to existing rate. The extreme flood control requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate to existing rate.

3.0 EXISTING CONDITIONS

3.1 Existing Site Description

The subject property consists of four tax parcels, one presently within Town of Chester and the remaining three in Village of Chester. The lot in the Town of Chester (to be annexed in to Village as part of the proposed action) has a Section-Block-Lot number of 2-1-39 and is 60.6 acres. The three tax lots in the Village are 107-3-4, 108-1-1 and 120-1-

1 totaling 7.7 acres. The site is bounded by New York State Highway Route 17M & Chester Mall (commercial uses) to the west, farmland to the north, another commercial facility to the southeast, and a mix residential and woodlands land to the northeast and south. The site also contains a ±3.67-Ac wetland area interior to the site (see Property Survey). The property is to be re-zoned RM (Residential Multi-Family) as part of the proposed action.

The topography of the site generally runs from two highpoints (Elev. 600 & Elev. 597) in the northeast portion of the site down towards the onsite wetland (Elev. 484), and towards the northwest of the property along Route 17M (Elev. 452). Approximately 50% of the site has slopes less than 10%, and about 20% of the site has slopes steeper than 15%. The majority of the steeper slopes are in the northwest section of the site.

Based on a preliminary soils investigation, the site is covered by surficial layer topsoil approximately 8 inches thick that overlies stiff/dense predominantly granular soils. The soils consisted of varying proportions of silt, clay, sand, gravel and cobbles which is typical of glacially deposited soils. Bedrock was not encountered during the investigation, nor was a uniform water table although locally perched water was observed in several test pits. The preliminary information gathered indicates that there should not be any significant impediments to cutting, filling, grading, or providing soil erosion measures at the site. Further geotechnical studies should be performed once the site design drawings and details have been further advanced prior to final approval and/or construction.

Under present-day condition stormwater discharges at four major locations (see Figure 3):

1. existing culvert within Route 17M at the northwest corner of the site,
2. existing basins to the west, and
3. towards adjacent northeast properties, and
4. towards adjacent properties at the northern corner of the site.

3.2 Existing Drainage

The SCS Method was used to determine existing runoff hydrographs for the 1-, 2-, 10- and 100-year, 24-hour storms. Overall watersheds, including associative off-site drainage where applicable, were analyzed to select downstream discharge locations. These analysis locations were chosen as a point in which comparison between the existing and proposed drainage can be reviewed for potential development impacts.

Based on survey information, aerial photographs, site visits and supplemental topographic information taken from record mapping sources, the site was divided into four watershed areas; A, B, C and D. Watershed D is the northwesternmost corner of the site. Because of the diminimous size of this watershed (0.42 acres) is entirely pervious in nature, and the proposed project will reduce the size of this watershed further by channeling stormwater towards the stormwater management structures, we believe the proposed development will have no negative impact on this watershed. Therefore, this report does not discuss or compare this watershed any further detail. Watersheds A, B and C were analyzed at their respective analysis points as shown in Figure 3. These analysis points consist of the following:

- 24"x18" pipe culverts located at western most property boundary for watershed A,
- a series of two existing ponds along the Chester Mall property for watershed B, and
- overland sheet flow discharge to adjacent property for watershed C.

Watershed B is divided into two subwatersheds, B-1 and B-2. Subwatershed B-1 consists of about ±65% of this watershed and drains via the onsite wetland. Subwatershed B-2 drains via overland flow towards the adjacent properties' drainage system and eventually to analysis point B.

Based on survey information, aerial photographs, and site visits, the existing on-site cover conditions were considered to be mainly contoured row-crops in good condition with some areas of grass. Any off-site areas, included as part of a watershed were assessed based upon aerial photography and supplemental topographic information taken from record mapping sources.

The existing watershed data and calculations are summarized below. Summary watershed data and hydrographs are provided in Appendix A.

SUMMARY OF EXISTING PEAK DISCHARGES

Analysis Point	Area (Ac.)	Peak Runoff (cfs)			
		1 Year	2 Year	10 Year	100 Year
A	21.99	23.96	33.08	65.40	106.87
B	51.96	29.97	45.35	104.17	184.91
C	12.01	11.99	17.10	35.71	60.10

4.0 PROPOSED CONDITIONS

4.1 Proposed Development

The proposed development will consist of a total of approximately 458 residential units, including 100 senior apartments in two 3-story building and the other 358 units in townhomes scattered throughout the site (see Conceptual Site Plan). Along with the residential units, the development will include associative site improvements such as a clubhouse, internal roadways and parking areas, stormwater ponds, stormwater conveyance system, utilities to service the buildings (water, sanitary sewer, gas, electric, and telephone), lighting and landscaping. Access to the site will be provided via a new access drive from Route 17M at the northwest corner of the site. An emergency access road is also proposed at the southeast corner of the site. The highest elevation of the site will be cut down to Elev. 595, and the lowest elevation will remain Elev. 452 along Route 17M. The estimated cut-to-fill volume is 330,000 cubic yards based on the preliminary grading and drainage plan (Drawing 21.01) with a maximum cut depth of approximate 33 feet and a maximum fill depth of approximate 20 feet.

4.2 Proposed Watershed Description

The existing topography was maintained to the extent possible when grading the site to minimize site disturbance and effects on the existing drainage patterns and discharge locations. Similar to the existing watersheds, the site was separated into 4 main watersheds (A, B, C & D) for the post-development analysis. As previously mentioned, Watershed D is very small portion of the site and will not be adversely impacted by the proposed development. Analysis points A, B and C (one for each watershed) were selected to allow for an equal comparison of existing to proposed conditions (see Figure 4). Where applicable, off-site drainage was included in the proposed watershed calculations to account for flow passing through the project site.

The post-development watersheds were broken up into subwatersheds, as necessary, to simulate the runoff generated by the uncontrolled runoff from offsite areas as well as the runoff from the site controlled by proposed stormwater management features. In the post-development condition approximately 24.5 acres of new impervious coverage will be created. Runoff associated with this new impervious coverage will be primarily collected and conveyed via drainage inlets and piping to stormwater management basins (Wet Ponds - NYSDEC Classification P-2) for water quality and water quantity treatment.

The cumulative curve numbers and times of concentrations for the proposed development were determined based upon the proposed ground cover and the grading of the site (see Figure 4). Furthermore, to accurately depict the timing of the overall watersheds, a "reach-route" extending from the confluence of each subwatershed to the downstream analysis point of the overall watershed was used to translate the hydrographs from the end of the time of concentration path to common analysis points.

4.3 Proposed Stormwater Management

The SCS method was used to determine proposed peak discharges for the 1-, 2-, 10- and 100-year storms. The following table summarizes the proposed peak runoff rates, and peak discharges to and from each of the proposed stormwater management basins.

The location of the proposed basins and discharge points are shown on the Proposed Watershed Map (see Figure 4) and the Grading and Drainage Plan (Drawing 21.01).

SUMMARY OF INFLOW & OUTFLOW PEAK DISCHARGE OF PROPOSED BASINS

Proposed Basins	Watershed Area	Area (Ac.)	Peak Runoff (cfs)							
			1 Year		2 Year		10 Year		100 Year	
			Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
A	A-1	23.53	34.25	1.57	46.38	3.23	88.37	24.60	141.43	65.94
B	B-1	21.34	30.34	0.47	39.65	1.15	71.04	16.25	110.02	67.54
C	C	10.42	14.89	2.683	19.97	10.09	37.43	34.96	59.36	57.57

SUMMARY OF PROPOSED RUNOFF

Analysis Point	Area (Ac.)	Peak Runoff (cfs)			
		1 Year	2 Year	10 Year	100 Year
A	32.37	10.12	14.32	36.07	103.84
B	43.8	12.56	19.33	46.03	179.74
C	10.42	2.83	10.20	35.00	57.57

Under standard NYSDEC criteria for attenuating the increase in discharge associated with new development, a stormwater basin (Wet Ponds - NYSDEC Classification P-2) was conceptually designed in each watershed where impervious areas are proposed (watershed A-1, B-1 and C). Channel protection has been provided within each basin by providing a low-flow orifice to detain runoff from the 1-year storm event for a minimum of 24 hours.

Discharge from proposed Basin A will be piped to the existing culvert at 17M, and discharge from proposed Basins B & C will be conveyed via onsite overland flow to downstream waters/areas. To accurately depict the timing of the flows from the overall watersheds, a "reach-route" extending from the confluence of each subwatershed to the downstream analysis point of the overall was used to translate the hydrographs from the end of the time of concentration path to the discharge point. The on-site detention basins have been conceptually designed to provide for water quality treatment as outlined in the NYSDEC Stormwater Management Design Manual for Wet Ponds (NYSDEC Classification P-2). A typical cross section of the proposed detention

ponds can be found in figure section of this report (see Figure 5). Summary hydrographs of the proposed analysis is also provided in Appendix B.

4.4 Proposed Water Quality & Quantity

The NYSDEC Stormwater Management Design Manual requires that water quality treatment of 90% of the average annual stormwater runoff volume be provided. This water quality volume (WQ_v) is directly associated to the quantity of impervious area within a project site.

Runoff from Subwatersheds A-1 and B-1 and Watershed C will be routed to proposed detention ponds as these watersheds contain nearly all of the new impervious areas. Treatment of the required water quality volumes will be provided in wet ponds with 4-foot deep pretreatment forebays. Detail water quality calculations are provided within Appendix C.

To provide stormwater quantity measures in accordance with NYSDEC, the proposed basins have also been conceptually designed to attenuate the 10-year and 100-year storm events to keep the discharge rate equal or less than existing peak at each of the analysis points.

4.5 Stormwater Conveyance

A traditional curb gutter, inlet catch basin and underground pipe system is envisioned to collect & convey stormwater safely from the project site. The conveyance system will be designed during later stages of the permitting process after the site plan has been designed in further detail. In accordance with Best Management Practices, local and state stormwater management regulations, the stormwater conveyance pipes will be sized to convey stormwater runoff from the site for the 10-year storm using the rational method.

At the proposed roadway crossing of the wetland, three open-bottom culvers are proposed. The culverts will not only convey stormwater from the wetlands on the north side of the crossing to the south side of the crossing, but will also allow for flora and habitat crossings. The size, location and orientation of these culverts will be determined as part of the ACOE permitting process that is required for the roadway wetland crossing.

4.6 Erosion and Sediment Control Measures

Temporary and permanent soil erosion and sediment control measures have been conceptually designed and located to minimize the amount of sediment carried by stormwater runoff and discharge to adjacent surface waters or to on-site drainage structures. The preliminary soil erosion and sediment control design was completed in accordance with the "New York State Standards and Specifications for Erosion and Sediment Control," August 2005. The following summarizes the planned erosion and sediment control practices for the project.

Silt Fence

A 30-inch high silt fence shall be placed along the down gradient edge of the site in conjunction with securely anchored hay bales placed in front of the fencing, as shown on the plans. The purpose of the silt fencing is to reduce the runoff velocity and encourage deposition of any sediment before it leaves the site. The filter cloth shall be embedded securely in the ground as per the standard detail. Silt fencing shall be inspected regularly for fabric integrity, embedded depth and sediment accumulation. A silt fence shall also encircle temporary stockpile areas if one is not in placed surrounding the work area.

Sediment Basins

Sediment basins minimize the amount of sediment carried by storm water runoff and discharge to nearby surface waters. Six temporary sediment basins have been conceptually designed to intercept sediment laden runoff and to trap and retain the sediment in runoff in order to reduce the total suspended solids leaving the project site.

After adequate settling time, through a basin dewatering device consisting of filter-fabric wrapped perforated piping, flow will be slowly discharged out of the sediment basins through a temporary outlet structure.

Inlet Protection

All new catch basins and area drains within the limit of disturbance or in the vicinity of construction activities shall have fabric inlet protection installed to prevent sediment-laden runoff from entering the storm drain system. The fabric will be securely fastened on a frame and staked and embedded into the ground. The filter fabric inlet protection shall be inspected regularly for fabric integrity, embedded depth and sediment accumulation.

Vegetative Measures

Any disturbed area where the earthwork is completed and not subject to construction traffic, should not be left exposed more than 14 days and shall immediately receive a temporary seeding in accordance with the "New York State Standards and Specifications for Erosion and Sediment Control", August 2005. Disturbed areas that are within wetlands or area adjacent to the wetland areas should use the seeding mix specified for wetland areas. Mulch may be used if the season prevents the establishment of a temporary cover. Permanent stabilization shall be performed as soon as possible after completion of grading.

Construction Entrance

A stabilized pad of aggregate underlain with filter fabric will be located at the site entrance to reduce or eliminate the tracking of sediment onto public streets. The pad thickness shall be constantly maintained to the specified dimensions by adding rock. At the end of each construction day, all sediment deposited on public streets will be removed and returned to the site.

Temporary Stockpile

The maximum slope for the temporary stockpile shall be three horizontal to one vertical. The stockpile shall be within the work area, encircled with a silt fence to prevent the

spread of sediment from the stockpile to the rest of the site outside of the work area. To the extent practicable, stockpiles shall be located at least 50 feet from the site property line boundaries. Any temporary stockpile inactive for more than 14 days shall be stabilized or covered.

Dust Control

Generation of dust shall be minimized by limiting the extent of exposed soils and re-establishing vegetative cover in these areas as soon as possible. Additional temporary methods to minimize dust may include wetting, mulching, spray adhesives, stone covering, and wind barriers. The Contractor shall maintain all stockpiles; haul roads, access roads, and equipment storage areas as necessary to keep the work area free from visible dust which would cause a hazard or nuisance, at all times including after working hours, on weekends and holidays.

Details associated with the implementation of the proposed stormwater facilities and erosion control measures during construction are conceptually shown on the design plans (see drawing 23.01 & 23.02). This also includes a construction sequence to guide the contractor in the installation of the erosion control measures as well as the site plan features. Due to the size of the project and the significant amount of cut-to-fill that will be required for the project, we anticipate a waiver from the 5-acre maximum disturbance limit will be sought from NYSDEC simultaneously within the filing of the SPDES application.

4.7 Stormwater Management Facility Maintenance

Stormwater management facilities for the project site have been conceptually designed for long-term water quality and water quantity performance. Below is a description of the methods to be implemented by the project sponsor during and after construction. Sample checklists have been provided as part of Appendix D:

- Stormwater collection and conveyance systems (i.e., catchbasins and pipes) will be inspected at least once annually and cleaned as necessary to maintain a free-flowing

conveyance to downstream treatment ponds. This includes a visual inspection and the clearing of any blockages within proposed swales and subsurface drainage pipe to respective networks.

- Stormwater Wet Ponds will be visually inspected after every major storm event and at least semi-annually for the following items:
    - Clogging of orifice or overflow weirs;
    - Erosion of pond embankments and inlet/outlet pipes;
    - Substantial vegetative growth that may inhibit the pond volume or outflow;
    - Accumulation of sediment within the basin bottom and/or around the proposed outlet structure; and
    - Other miscellaneous items identified on the checklist in Appendix D.

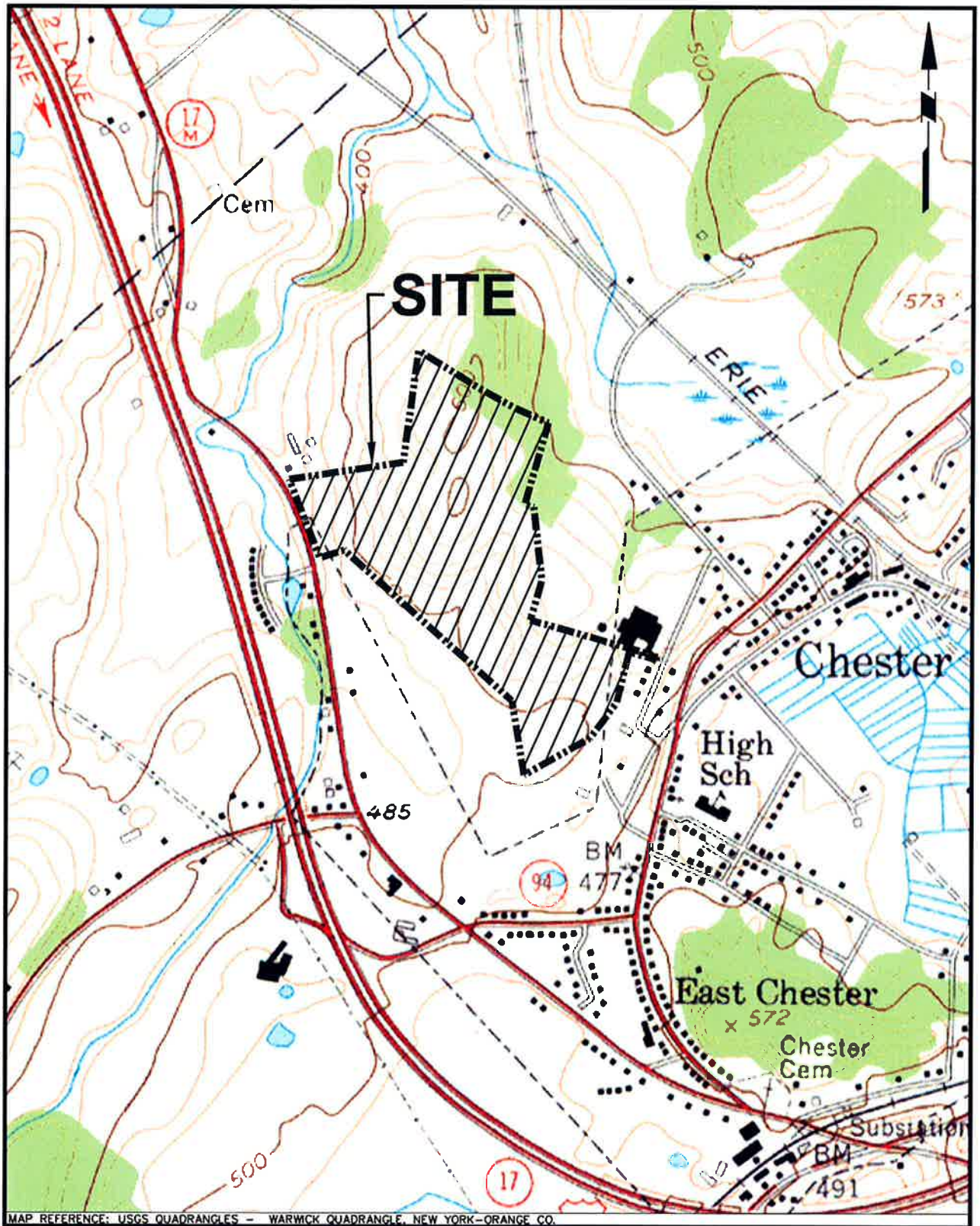
5.0 CONCLUSION

The proposed management systems have been conceptually designed to attenuate peak discharges from the site to be equal to or below the existing peak discharge routes for the 1-, 2-, 10-, and 100-year storms in accordance with NYSDEC quality control requirements. Water quality measures have been provided in accordance with NYSDEC Stormwater Management Design Manual for the water quality volume (WQ_v) of runoff. Channel protection has been provided within each basin by providing a low-flow orifice to detain runoff from the 1-year storm event for a minimum of 24 hours. The proposed conveyance system will include traditional curb gutters, inlet catch basins and an underground pipe system to collect and convey stormwater runoff to the appropriate above-ground detention ponds.

Temporary and permanent soil erosion and sediment control measures have been conceptually designed and located to minimize the amount of sediment carried by stormwater runoff and discharging to adjacent surface waters or to on-site drainage structures. The preliminary soil erosion and sediment control design was completed in

accordance with the "New York State Standards and Specifications for Erosion and Sediment Control", August 2005.

FIGURES



MAP REFERENCE: USGS QUADRANGLES – WARWICK QUADRANGLE, NEW YORK–ORANGE CO.

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NJ Certificate of Authorization No: 24GA27996400

Project **USGS SITE LOCATION MAP**
CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	12-2-08	1"=1000'	FIGURE-1

Filename: G:\Data5\9123501\Cadd Data – 9123501\Dwg\9123501 Figure USGS.dwg Date: 12/2/2008 Time: 14:09 User: hhoq Style Table: Langan.stb Layout: A Size Sheet (Bottom)

LEGEND

SYMBOL		SOIL TYPE
	Ab	ALDEN SILT LOAM 0 TO 3 % SLOPES
	ErB	ERIE GRAVELLY SILT LOAM, 3 TO 8 % SLOPES
	Ma	MADALIN SILT LOAM 0 TO 3 % SLOPES
	MdB	MARDIN GRAVELLY SILT LOAM, 3 TO 8 % SLOPES
	MdC	MARDIN GRAVELLY SILT LOAM, 8 TO 15 % SLOPES
	MdD	MARDIN GRAVELLY SILT LOAM, 15 TO 25 % SLOPES
	MNE	MARDIN SOILS, 25 TO 35 % SLOPES
	OVE	OTISVILLE AND HOOSIC SOILS, 25 TO 45 % SLOPES

300 0 150 300

SCALE IN FEET

NOTE: SOIL INFORMATION BASED ORANGE COUNTY SOIL SURVEY GIS MAPPING.

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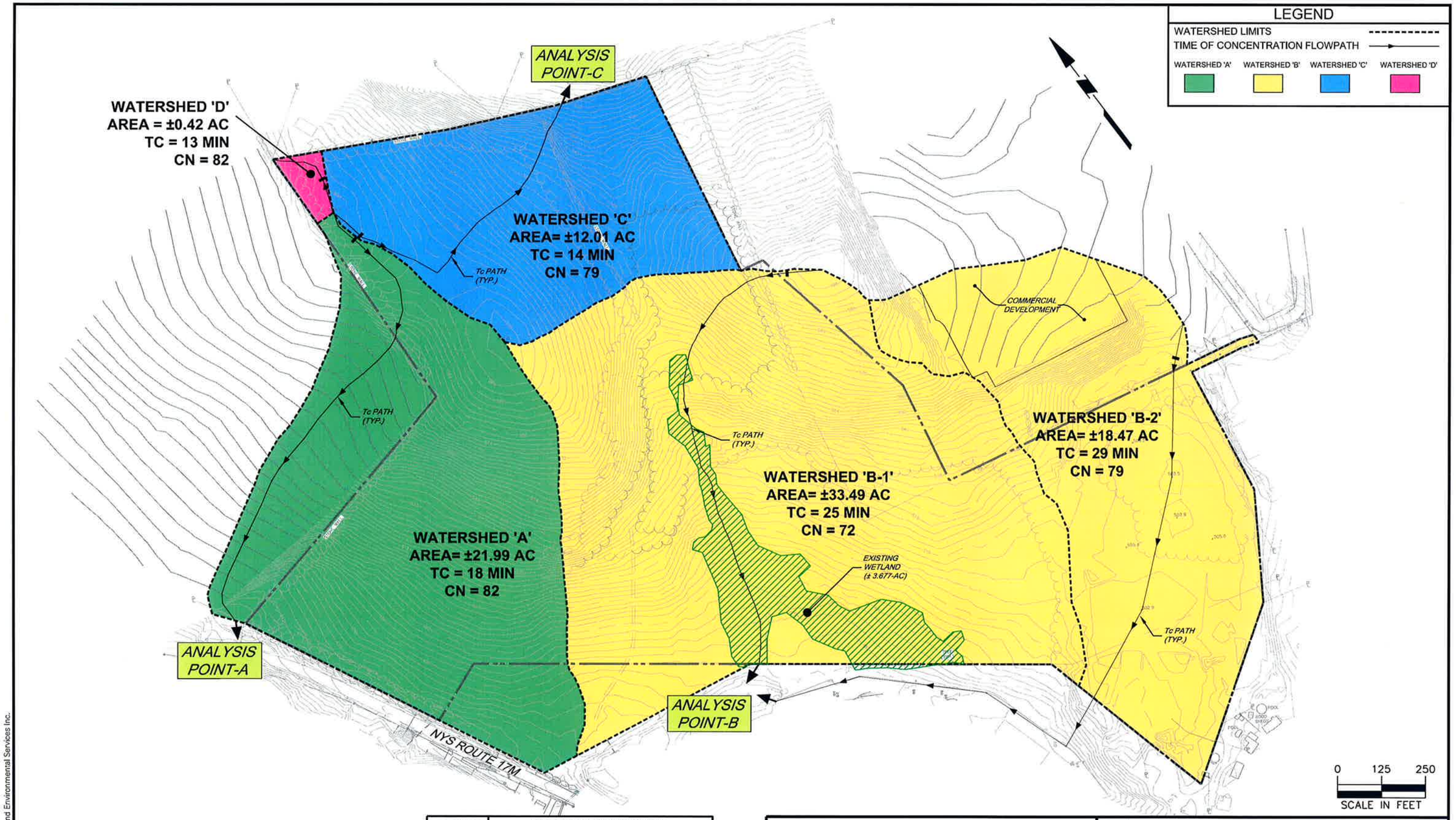
Project

SOILS MAP
CHESTER DEVELOPMENT
VILLAGE OF CHESTER

ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	12-2-08	1"=300'	FIGURE-2

Filename: G:\Data5\9123501\Cadd Data - 9123501\Dwg\9123501 Figure ChesterSoil.dwg Date: 12/2/2008 Time: 15:57 User: hhoq Style Table: Langan.stb Layout: B Size Sheet (Bottom)



ANALYSIS POINT	EXISTING DISCHARGE RATE		
	1-YEAR	10-YEAR	100-YEAR
A	23.96 CFS	65.40 CFS	106.87 CFS
B	29.97 CFS	104.17 CFS	184.91 CFS
C	11.99 CFS	35.71 CFS	60.10 CFS

NOTES:
1. EXISTING TOPOGRAPHIC INFORMATION BASED ON A DIGITAL SURVEY PREPARED BY LANC & TULLY, DATED JUNE 7, 2005 AND LAST REVISED MAY 17, 2006. SUPPLEMENTAL OFFSITE CONTOURS TAKEN FROM GOOGLE TERRAIN.

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Project
EXISTING WATERSHED MAP
CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	12-2-08	1" = 250'	FIGURE-3

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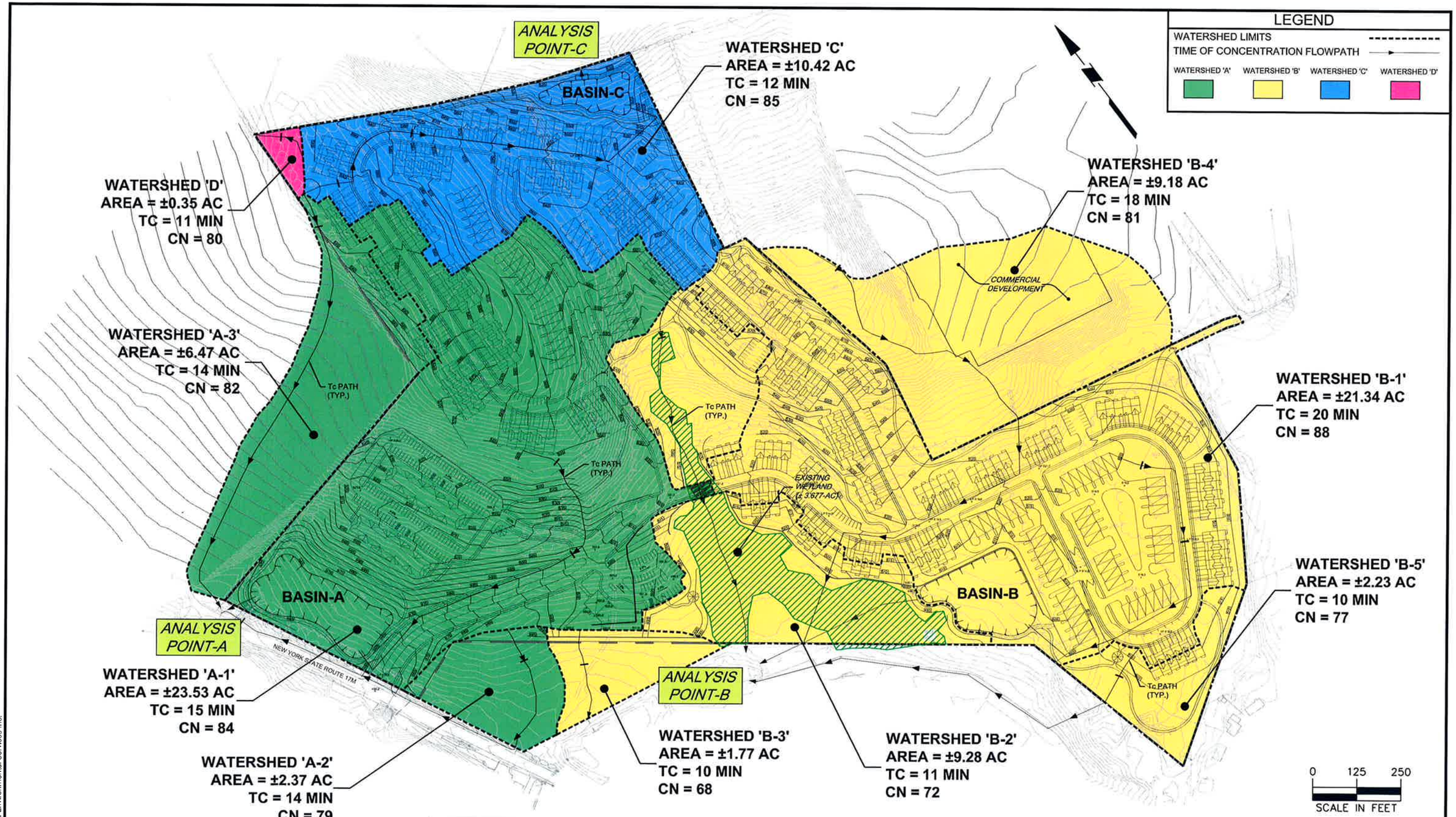

ANALYSIS POINT	PROPOSED DISCHARGE RATE		
	1-YEAR	10-YEAR	100-YEAR
A	10.13 CFS	30.91 CFS	100.36 CFS
B	12.56 CFS	46.03 CFS	179.74 CFS
C	2.69 CFS	34.96 CFS	57.57 CFS

NOTES:
1. EXISTING TOPOGRAPHIC INFORMATION BASED ON A DIGITAL SURVEY PREPARED BY LANC & TULLY, DATED JUNE 7, 2005 AND LAST REVISED MAY 17, 2006. SUPPLEMENTAL OFFSITE CONTOURS TAKEN FROM GOOGLE TERRAIN.
2. PROPOSED LAYOUT BASED A GRADING PLAN PREPARED BY LANGAN ENGINEERING & ENVIRONMENTAL SERVICES INC. DATED 11-24-08.

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Project
PROPOSED WATERSHED MAP
CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	12-2-08	1"=250'	FIGURE-4

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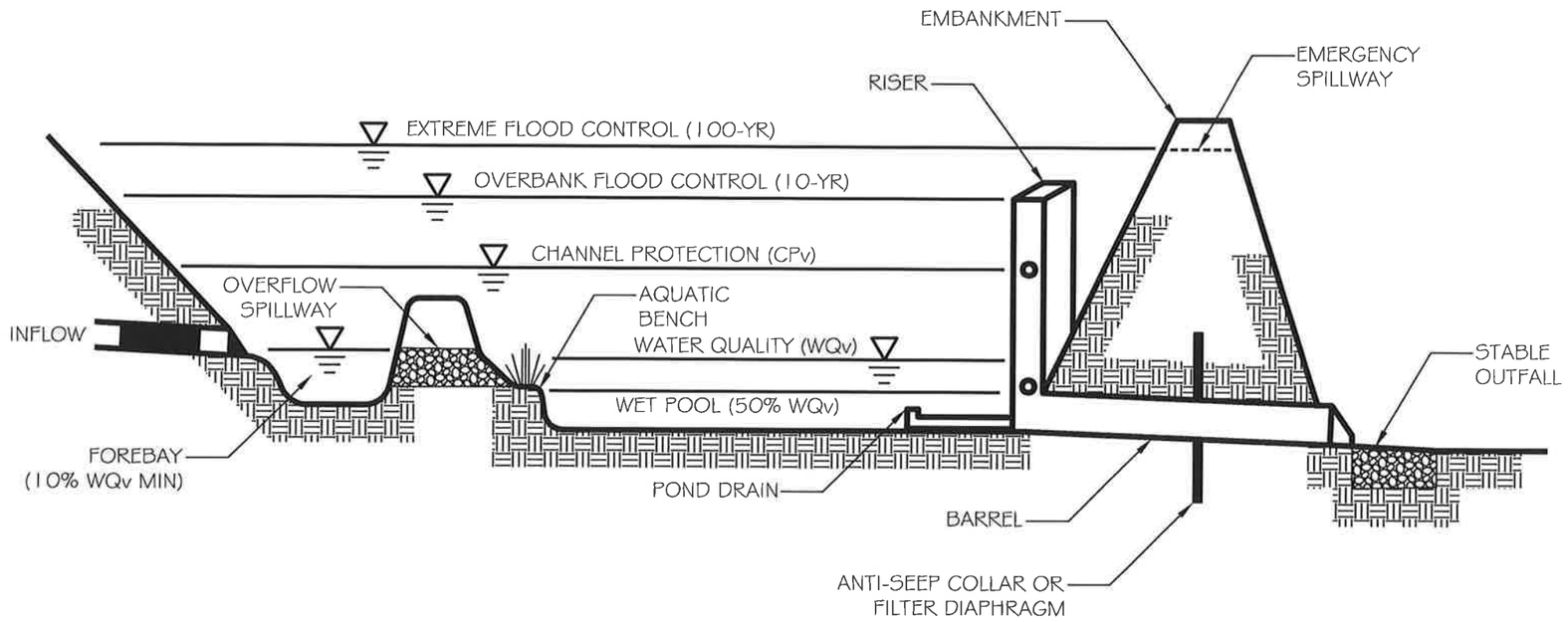
TYPICAL STORMWATER MANAGEMENT BASIN

STORMWATER BASIN DISCHARGE & VOLUME SUMMARY								
WATERSHED	WQv (ac-ft)		CPv (ac-ft)		10-YR FLOW (CFS)		100-YR DISCHARGE (CFS)	
	Required	Provided	Required	Provided	Inflow	Outflow	Inflow	Outflow
WATERSHED A-1	1.10	1.45	1.87	1.88	88.37	24.60	141.43	65.94
WATERSHED B-1	1.15	1.37	1.08	1.15	71.04	16.25	110.02	67.54
WATERSHED C	0.49	0.73	0.83	0.84	37.43	34.96	59.36	57.57



NOTES:
1. THIS TYPICAL DETAIL IS FOR SCHEMATIC PURPOSE ONLY AND NOT FOR CONSTRUCTION. SITE SPECIFIC DESIGN AND SPECIFICATION PENDING FURTHER COORDINATION WITH GEOTECH & OTHER STUDIES.
2. WATER QUALITY AND CHANNEL PROTECTION VOLUMES SHOWN ABOVE ARE BASED ON PROPOSED GRADING AND DRAINAGE PLAN PREPARED BY LANGAN ENGINEERING, DATED PRELIMINARY 11-24-08, AND MAY CHANGE UPON ANY REVISIONS MADE TO THE PROPOSED PLAN.

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NEW JERSEY PENNSYLVANIA NEW YORK CONNECTICUT FLORIDA NEVADA
NJ Certificate of Authorization No: 24GA27996400

Project
CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Project No.	Date	Scale	Dwg. No.
9123501	12-02-08	N.T.S.	FIGURE-5

Filename: G:\Data3\9123501\Cadd Data - 9123501\Dwg\9123501 23.02.dwg Date: 12/2/2008 Time: 13:41 User: khoq Style Table: Langan.stb Layout: Detention Basin Figure

DRAWINGS

NOTES:

1. THIS SURVEY IS SUBJECT TO ANY FINDINGS OF A TITLE SEARCH.
2. SUBSURFACE STRUCTURES AND UTILITIES NOT VISIBLE AT THE TIME OF SURVEY HAVE NOT BEEN SHOWN.
3. REFERENCES:

   MAP ENTITLED "PLAN OF SUBDIVISION OF CHESTER KNOLLS, VILLAGE OF CHESTER, ORANGE COUNTY, NEW YORK," DATED MARCH 7, 1957, LAST REVISED APRIL 18, 1957 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON APRIL 26, 1957 AS FILED MAP NO. 1703.

   MAP ENTITLED "MINOR SUBDIVISION FOR COLONIAL DEVELOPERS, VILLAGE OF CHESTER, TOWN OF CHESTER, ORANGE COUNTY, NEW YORK," DATED APRIL 11, 1980 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON JUNE 13, 1980 AS FILED MAP NO. 5287.

   MAP ENTITLED "SUBDIVISION PLAN SHEET I, SHEET II, HAMBLETONIAN AVE. SUBDIVISION, HAMBLETONIAN AVENUE, TOWN OF CHESTER, ORANGE COUNTY, NEW YORK," SHEET I DATED NOVEMBER 2, 1994, LAST REVISED JUNE 5, 1996, SHEET II DATED JULY 5, 1995, LAST REVISED JUNE 6, 1996 AND FILED IN THE ORANGE COUNTY CLERK'S OFFICE ON OCTOBER 17, 1997, AS FILED MAP NO. 231-97.

4. CONTOURS SHOWN ARE THE RESULT OF AN ACTUAL FIELD SURVEY PERFORMED BY LANC & TULLY, ENGINEERING AND SURVEYING P.C. ELEVATIONS ARE BASED ON APPROXIMATE U.S.G.S. DATUM.

RECORD OWNER:

BT PARTNERSHIP
C/O B. NASSBAUM
575 PARK AVE. # 104
NEW YORK, NY 10021
L. 2321 P. 201
TOWN OF CHESTER
2 – 1 – 39
VILLAGE OF CHESTER
107 – 3 – 4
108 – 1 – 1

AREAS:

TOWN OF CHESTER

TAX LOT 2 – 1 – 39	60.568± AC.
VILLAGE OF CHESTER	
TAX LOT 107 – 3 – 4	3.407± AC.
TAX LOT 108 – 1 – 1	0.582± AC.
TOTAL:	64.557± AC.

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

CERTIFICATION:

I HEREBY CERTIFY TO THE PARTIES OF INTEREST LISTED BELOW THAT THIS MAP SHOWS THE RESULTS OF AN ACTUAL FIELD SURVEY COMPLETED ON APRIL 6, 2006.

BERNARD NUSSBAUM
FRANK NUSSBAUM
BT PARNERSHIP

BY: _____
RODNEY C. KNOWLTON, L.S.
NEW YORK STATE LICENSE NO. 50276

LANC & TULLY
ENGINEERING AND SURVEYING, P.C.
P.O. Box 687, Rt. 207
Goshen, N.Y. 10924
(845) 294-3700

SURVEY PREPARED FOR

BT PARTNERSHIP
TOWN OF CHESTER
VILLAGE OF CHESTER
ORANGE COUNTY, NEW YORK

Date:	JUNE 7, 2005
Revisions:	MAY 4, 2006 MAY 17, 2006
CAD File:	BTPARTNERSSVY.DWG
Layout:	SVY
Sheet No.:	1 OF 1
Drawn By:	JW
Checked By:	
Scale:	1" = 100'
Tax Map No.:	AS NOTED
Drawing No.:	A – 05 – 0038 – 01

DEVELOPMENT STATICS:

BUILDING TYPES:

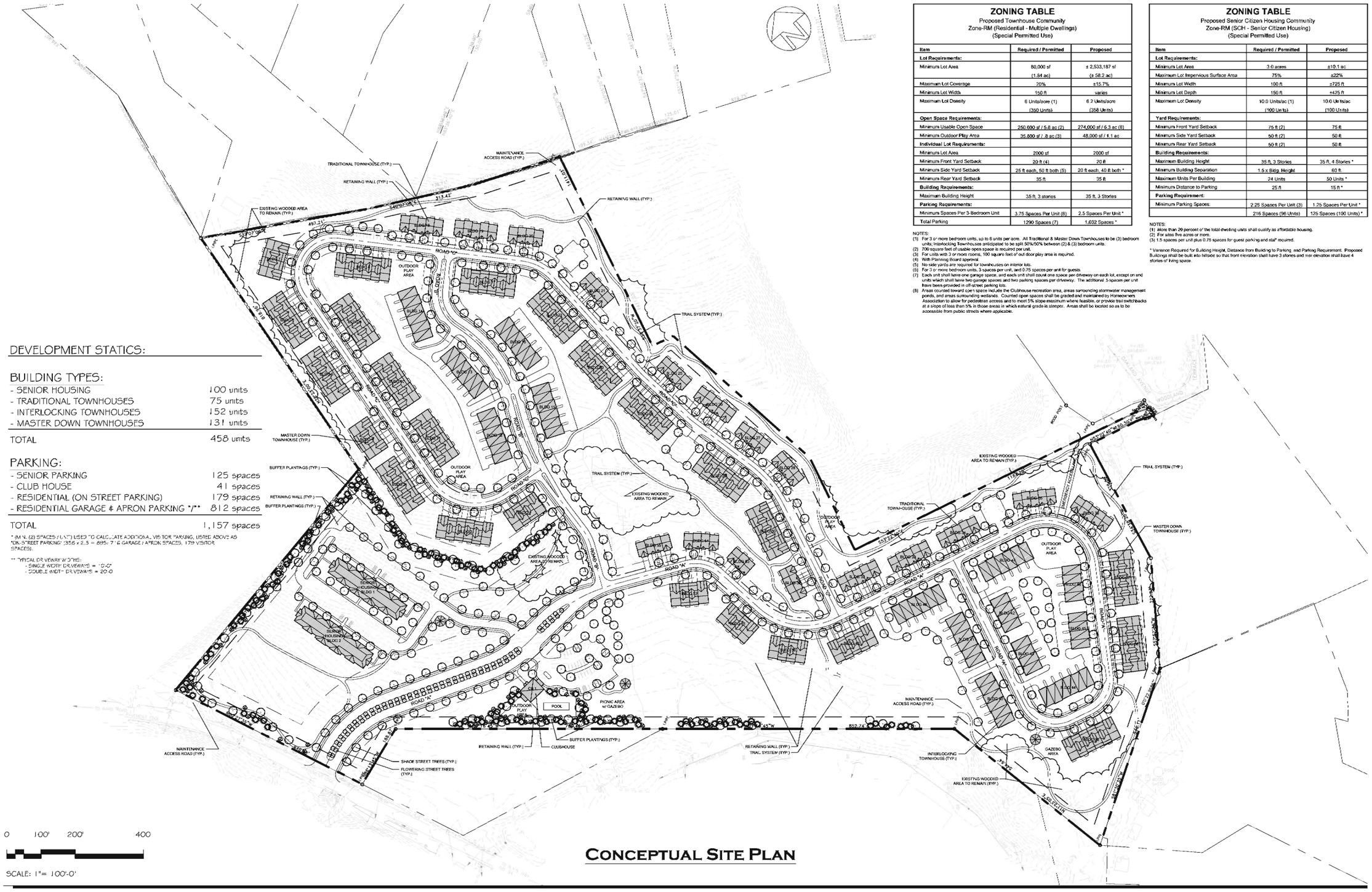
- SENIOR HOUSING	100 units
- TRADITIONAL TOWNHOUSES	75 units
- INTERLOCKING TOWNHOUSES	152 units
- MASTER DOWN TOWNHOUSES	131 units
TOTAL	458 units

PARKING:

- SENIOR PARKING	125 spaces
- CLUB HOUSE	41 spaces
- RESIDENTIAL (ON STREET PARKING)	179 spaces
- RESIDENTIAL GARAGE & APRON PARKING */**	812 spaces
TOTAL	1,157 spaces

* (M.N. (2) SPACES / UNIT) USED TO CALCULATE ADDITIONAL VISITOR PARKING, LISTED ABOVE AS "ON-STREET PARKING" (358 x 2.5 = 895 / 716 GARAGE / APRON SPACES, 179 VISITOR SPACES).

** TYPICAL DRIVEWAY WIDTHS:
- SINGLE WIDTH DRIVEWAYS = "9-0"
- DOUBLE WIDTH DRIVEWAYS = 20-0



CONCEPTUAL SITE PLAN

ZONING TABLE

Proposed Townhouse Community
Zone-RM (Residential - Multiple Dwellings)
(Special Permitted Use)

Item	Required / Permitted	Proposed
Lot Requirements:		
Minimum Lot Area	80,000 sf (1.84 ac)	± 2,533,187 sf (± 58.2 ac)
Maximum Lot Coverage	20%	±15.7%
Minimum Lot Width	150 ft	varies
Maximum Lot Density	6 Units/acre (1) (350 Units)	6.2 Units/acre (358 Units)
Open Space Requirements:		
Minimum Usable Open Space	250,600 sf / 5.8 ac (2)	274,000 sf / 6.3 ac (6)
Minimum Outdoor Play Area	35,800 sf / .8 ac (3)	48,000 sf / 1.1 ac
Individual Lot Requirements:		
Minimum Lot Area	2000 sf	2000 sf
Minimum Front Yard Setback	20 ft (4)	20 ft
Minimum Side Yard Setback	25 ft each, 50 ft both (5)	20 ft each, 40 ft both *
Minimum Rear Yard Setback	35 ft	35 ft
Building Requirements:		
Maximum Building Height	35 ft, 3 stories	35 ft, 3 Stories
Parking Requirements:		
Minimum Spaces Per 3-Bedroom Unit	3.75 Spaces Per Unit (6)	2.5 Spaces Per Unit *
Total Parking	1290 Spaces (7)	1,032 Spaces *

NOTES:
(1) For 3 or more bedroom units, up to 6 units per acre. All Traditional & Master Down Townhouses to be (3) bedroom units; Interlocking Townhouses anticipated to be split 50%/50% between (2) & (3) bedroom units.
(2) 700 square feet of usable open space is required per unit.
(3) For units with 3 or more rooms, 100 square feet of out door play area is required.
(4) With Planning Board approval.
(5) No side yards are required for townhouses on interior lots.
(6) For 3 or more bedroom units, 3 spaces per unit, and 0.75 spaces per unit for guests.
(7) Each unit shall have one garage space, and each unit shall count one space per driveway on each lot, except on end units which shall have two garage spaces and two parking spaces per driveway. The additional .5 spaces per unit have been provided in off-street parking lots.
(8) Areas counted toward open space include the Clubhouse recreation area, areas surrounding stormwater management ponds, and areas surrounding wetlands. Counted open spaces shall be graded and maintained by Homeowners Association to allow for pedestrian access and to meet 5% slope maximum where feasible, or provide trail switchbacks at a slope of less than 5% in those areas in which natural grade is steeper. Areas shall be located so as to be accessible from public streets where applicable.

ZONING TABLE

Proposed Senior Citizen Housing Community
Zone-RM (SCH - Senior Citizen Housing)
(Special Permitted Use)

Item	Required / Permitted	Proposed
Lot Requirements:		
Minimum Lot Area	3.0 acres	±10.1 ac
Maximum Lot Impervious Surface Area	75%	±22%
Minimum Lot Width	100 ft	±725 ft
Minimum Lot Depth	150 ft	±425 ft
Maximum Lot Density	10.0 Units/ac (1) (100 Units)	10.0 Units/ac (100 Units)
Yard Requirements:		
Minimum Front Yard Setback	75 ft (2)	75 ft
Minimum Side Yard Setback	50 ft (2)	50 ft
Minimum Rear Yard Setback	50 ft (2)	50 ft
Building Requirements:		
Maximum Building Height	35 ft, 3 Stories	35 ft, 4 Stories *
Minimum Building Separation	1.5 x Bldg. Height	60 ft.
Maximum Units Per Building	24 Units	50 Units *
Minimum Distance to Parking	25 ft	15 ft *
Parking Requirement:		
Minimum Parking Spaces:	2.25 Spaces Per Unit (3)	1.25 Spaces Per Unit *
	216 Spaces (96 Units)	125 Spaces (100 Units) *

NOTES:
(1) More than 20 percent of the total dwelling units shall qualify as affordable housing.
(2) For sites five acres or more.
(3) 1.5 spaces per unit plus 0.75 spaces for guest parking and staff required.

* Variance Required for Building Height, Distance from Building to Parking, and Parking Requirement. Proposed Buildings shall be built into hillside so that front elevation shall have 3 stories and rear elevation shall have 4 stories of living space.

LABRADOR PROPERTIES
NEW YORK, NEW YORK

CHESTER DEVELOPMENT
VILLAGE OF CHESTER, NEW YORK

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PROJECT NUMBER
1B.05160
DATE
12.03.08

PRELIMINARY
12-11-08

Date	Description	No.
Revisions		

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N. Certificate of Authorization No: 24GA27996400

Project
CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Drawing Title
GRADING AND DRAINAGE PLAN

Project No.	9123501
Date	--
Scale	1"=100'
Drn. By	BDH
Last Revised	—

Drawing No.
21.01
Of

Filename: C:\Data5\9123501\Cadd Data – 9123501\Dwg\9123501 21.01.dwg Date: 12/11/2008 Time: 15:17 User: bhunter Style Table: Langan.stb Layout: E Size Sheet (Bottom)

SEDIMENT AND EROSION CONTROL NOTES AND CONSTRUCTION SEQUENCING

1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES WHERE SHOWN ON THE PLAN.
2. INSTALL SEDIMENT BARRIERS/SWALES/DITCHES/DIKES AT DOWN SLOPE AREAS FROM ALL PROPOSED GRADING OPERATIONS, AND INSTALL OTHER SEDIMENTATION AND EROSION CONTROL STRUCTURES OR MEASURES AS SHOWN ON THE DRAWINGS.
3. LAND DISTURBANCE SHALL BE LIMITED TO ONLY THAT AREA NECESSARY FOR DEVELOPMENT. NO MORE THAN FIVE (5) ACRES OF UNPROTECTED SOIL SHALL BE DISTURBED AT ONE TIME WITHOUT NYSDEC CONSENT. PREVIOUS EARTHWORK SHALL BE STABILIZED AS SPECIFIED BEFORE ADDITIONAL AREA IS EXPOSED.
4. CLEAR EXISTING TREES AND VEGETATION FROM AREAS TO BE EXCAVATED OR FILLED, THEN STRIP AND STOCKPILE TOPSOIL FROM ALL AREAS TO BE DISTURBED. SEED STOCKPILED TOPSOIL, WITH TEMPORARY RYEGRASS COVER AS SPECIFIED BELOW (SEE NOTE 8), AND ERECT A SILT FENCE AROUND THE STOCKPILE.
5. PROTECT ALL TREES WHICH ARE TO REMAIN AND WHICH ARE IN OR NEAR CONSTRUCTION AREAS AS DIRECTED IN THE FIELD BY SNOW FENCING PLACED AROUND THE TREE TRUNK. PLACE SNOW FENCING AT THE DRIP LINE SURROUNDING TREES, IF POSSIBLE, OR TO MAINTAIN A MINIMUM DIAMETER OF 10 FEET AROUND TREES. WHERE FENCING MUST BE PLACED CLOSER THAN THE DRIP LINE, PLACE 4 INCHES OF WOOD CHIPS OVER ROOT ZONE TO EXTEND TO THE DRIP LINE. MAINTAIN THIS WOOD CHIP PROTECTION FOR THE DURATION OF CONSTRUCTION.
6. PERFORM NECESSARY EXCAVATION OR FILL OPERATIONS TO BRING SITE TO DESIRED SUBGRADE. INSTALL STORM DRAINAGE SYSTEM.
7. INSTALL SEDIMENT BARRIERS AROUND ALL STORM DRAIN INLETS, OR MODIFY SEDIMENT CONTROL MEASURES INSTALLED IN #2 ABOVE AND MAINTAIN UNTIL ALL DISTURBED AREAS ARE STABILIZED WITH VEGETATION AND ALL PAVEMENTS ARE PAVED WITH A BASE COURSE.
8. SEED ALL DISTURBED AREAS WHICH WILL REMAIN UNDISTURBED FOR A PERIOD OF 14 DAYS OR MORE AND WHICH WILL NOT BE UNDER CONSTRUCTION WITHIN 30 DAYS WITH TEMPORARY RYEGRASS COVER, AS FOLLOWS (METHOD OF SEEDING IS OPTIONAL):
   A. LOOSEN SEEDBED BY DISCING TO A 4" DEPTH.
   B. SEED WITH 8 LB. PER ACRE PERENNIAL OR ANNUAL RYEGRASS.
   C. MULCH WITH 100-200 BALES PER ACRE OF BLOWN AND CHOPPED HAY BOUND IN PLACE WITH 2000 LB. PER ACRE CELLULOSE FIBER MULCH, AND WITH AN APPROVED TACKIFIER BINDER.
9. IF CONSTRUCTION IS SUSPENDED OR COMPLETED, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED IMMEDIATELY. ALL SLOPES STEEPER THAN ONE ON THREE (V/H) AND PERIMETER TRENCHES AND TRAP EMBANKMENTS SHALL, ON COMPLETION, BE IMMEDIATELY STABILIZED WITH TEMPORARY SEEDING AND MULCHING.
10. AFTER COMPLETION OF SITE CONSTRUCTION, FINE GRADE AND SPREAD TOPSOIL ON ALL LAWN AREAS AND SEED WITH PERMANENT LAWN MIX AS FOLLOWS (SEE LANDSCAPE PLAN FOR OTHER PLANTING INFORMATION):
    A. LIME TOPSOIL TO pH 6.0.
    B. FERTILIZE WITH 20 LB. PER 1000 SQ. FT. OF 5-10-10, 50% WATER SOLUBLE NITROGEN FERTILIZER.
    C. SEED WITH 5 LB. PER 1000 SQ. FT. OF THE FOLLOWING MIXTURE, OR OTHER MIXTURE APPROVED BY THE LANDSCAPE ARCHITECT: 40% JAMESTOWN CHEWINGS FESCUE, 40% BARON KENTUCKY BLUEGRASS AND 20% YORKTOWN PERENNIAL RYEGRASS.
    D. MULCH AS DESCRIBED FOR TEMPORARY SEEDING (NOTE 8 ABOVE).
    E. FERTILIZE 4 WEEKS AFTER GERMINATION WITH 10 LB. 20-10-10 FERTILIZER PER 1000 SQ. FT.
11. DURING THE PROGRESS OF CONSTRUCTION, MAINTAIN ALL SEDIMENT TRAPS, BARRIERS, AND FILTERS AS NECESSARY TO PREVENT THEIR BEING CLOGGED UP WITH SEDIMENT.
12. AFTER PAVEMENTS ARE INSTALLED AND PERMANENT VEGETATIVE COVER AND PLANTINGS ARE ESTABLISHED, REMOVE SEDIMENT BARRIERS AND SEED THOSE DISTURBED AREAS.
13. MAINTAIN ALL SEEDED AND PLANTED AREAS TO INSURE A VIABLE STABILIZED VEGETATIVE COVER.
14. STRUCTURAL MEASURES MUST BE MAINTAINED TO BE EFFECTIVE. IN GENERAL, THESE MEASURES MUST BE PERIODICALLY INSPECTED TO INSURE STRUCTURAL INTEGRITY, TO DETECT VANDALISM DAMAGE, AND FOR CLEANING AND REPAIR WHENEVER NECESSARY.
15. DURING CONSTRUCTION, ALL STRUCTURES SHOULD BE INSPECTED WEEKLY AND AFTER EVERY RAIN. REMOVE ACCUMULATED SEDIMENT AND STOCKPILE AND STABILIZE IN AN AREA NOT SUBJECT TO FURTHER EROSION.
16. AFTER CONSTRUCTION IS COMPLETED, PERMANENT SEDIMENT OR EROSION CONTROL STRUCTURES SHOULD BE INSPECTED AT LEAST SEMIANNUALLY AND AFTER EVERY RAIN.

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE PAD
- S.I.T. FENCE
- L.O.D. OF DISTURBANCE
- RIP RAP OUTLET PROTECTION
- EROSION CONTROL MATTING

CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE (SCE) (SEE DETAIL)
CONSTRUCT TEMPORARY SEDIMENT BASIN 'C' (SEE DETAILS)
TEMPORARY RIP-RAP SPILLWAY
PROVIDE EROSION CONTROL MATTING ON 3:1 SLOPES LONGER THAN 30' (TYP) (SEE DETAIL)
TEMPORARY SOIL STOCK PILE LOCATION
SILT FENCE (TYP)
LIMIT OF DISTURBANCE NO DISTURBANCE BEYOND THIS POINT
NO DISTURBANCE
CONSTRUCT TEMPORARY SEDIMENT BASIN 'A' (SEE DETAILS)
USE EXISTING SITE ENTRANCE UNTIL NEW CONSTRUCTION ENTRANCE IS INSTALLED
CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE (50' X 100') UNTIL PERMANENT ENTRANCE HAS BEEN ESTABLISHED
EXISTING WETLANDS 3.6775 AC.
CONSTRUCT TEMPORARY SEDIMENT BASIN 'B' (SEE DETAILS)
PROPOSED RIP-RAP OUTLET PROTECTION (SEE DETAIL)
CONSTRUCT TEMPORARY SEDIMENT BASIN RISER (SEE DETAILS)

TOTAL AREA OF DISTURBANCE = ±56.5 ACRES

SCALE: 1" = 100'

PRELIMINARY
12-11-08

Date	Description	No.
Revisions		

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NJ Certificate of Authorization No: 24GA1996400

Project: CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Drawing Title: SOIL EROSION & SEDIMENT CONTROL PLAN

Project No.	9123501	Drawing No.
Date	--	23.01
Scale	1"=100'	
Drn. By	BDH	
Last Revised	---	Of

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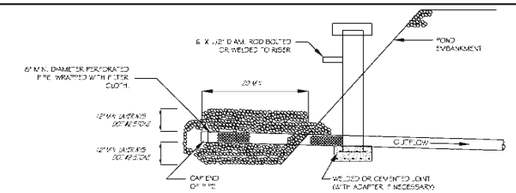
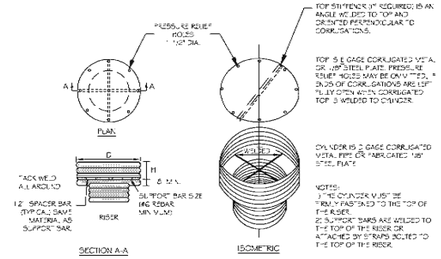
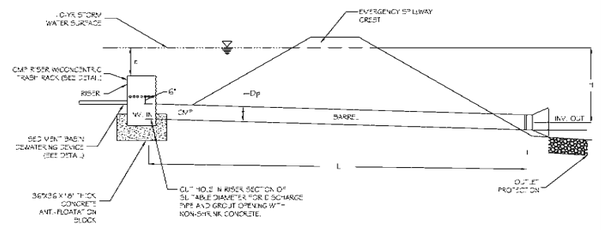


SEDIMENT BASIN DEWATERING DETAIL N.T.S



CONCENTRIC TRASH RACK N.T.S



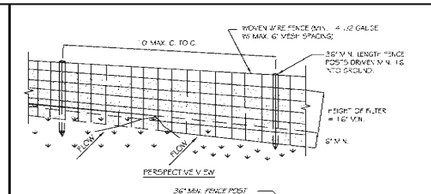
h = HEAD OVER RISER CREST, ft.

L = LENGTH OF PIPE IN ft. FROM RISER TO FIRST MANHOLE

Dp = DIAMETER OF PIPE CONDUIT (BARREL)

Dr = DIAMETER OF RISER

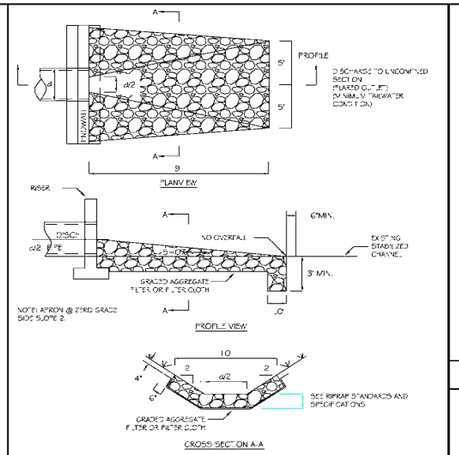
SEDIMENT BASIN OUTLET CONTROL STRUCTURE N.T.S



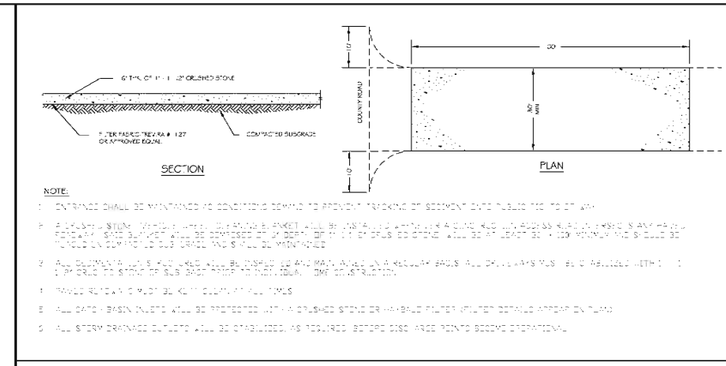
CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

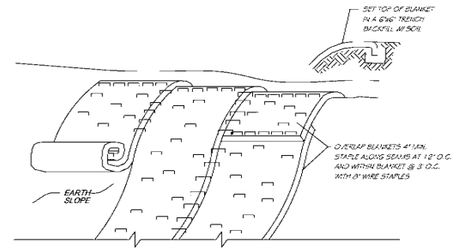
SILT FENCE



RIPRAP OUTLET PROTECTION EXAMPLE



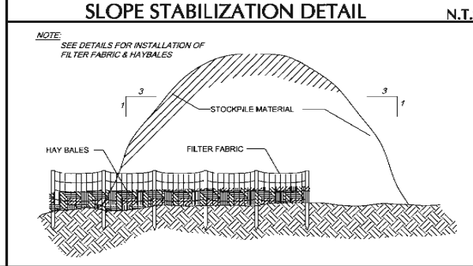
STABILIZED CONSTRUCTION ENTRY N.T.S



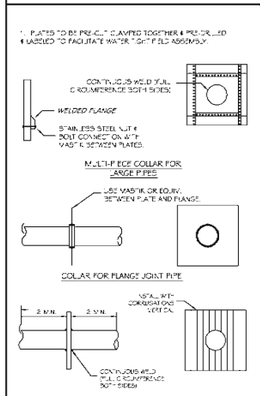
NOTES:

1. STABILIZE PREPARED EARTHEN SLOPE WITH A BIODEGRADABLE NATURAL FIBER NETTING APPROVED TYPES ARE AS FOLLOWS:
   - C350 - NORTH AMERICAN GREEN # 1-800-772-2040
   - SCOOP R 9000- EASTERN PRODUCTS, INC. #1-231-234-5050
   - ERO-MAT V 250- EROSION CONTROL TECH. #1-800-243-0551
   - ALL SLOPE RESTORATION TO GET 4" TOPSOIL
2. SEED SLOPE PRIOR TO INSTALLING EROSION CONTROL NETTING.
3. AFTER NETTING IS INSTALLED, PLANT GROUND COVER, TREES & FORSYTHIA THROUGH SLITS CUT IN FABRIC.

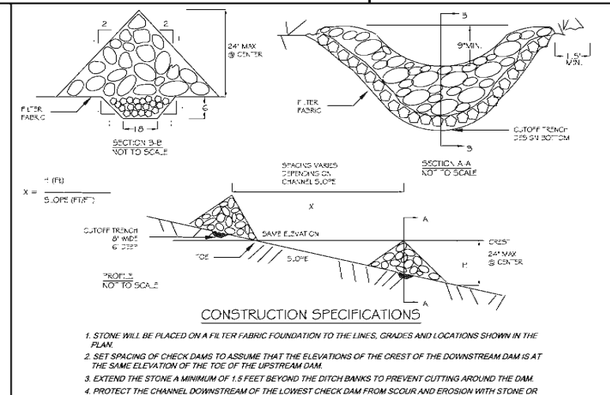
SLOPE STABILIZATION DETAIL N.T.S



STOCKPILE DETAIL N.T.S



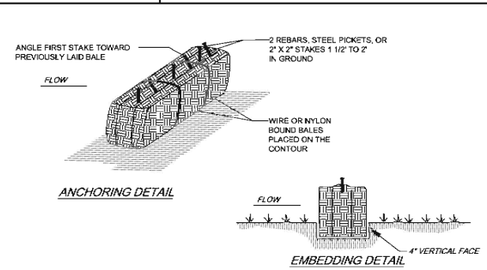
ANTI-SEEP COLLARS



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE. MAXIMUM DRAINAGE AREA 2 ACRES.

STONE CHECK DAM

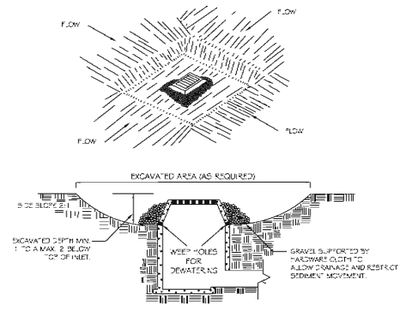


NOTES:

1. BALES SHALL BE PLACED IN ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4"
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STRAW BALE SEDIMENT BARRIER

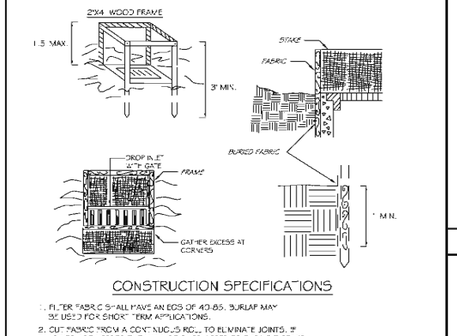
EXCAVATED DROP INLET PROTECTION



CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.
   MAXIMUM DRAINAGE AREA 1 ACRE

FILTER FABRIC DROP INLET PROTECTION



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIAL SHALL BE STANDARD 2" x 4" WOOD OR EQUIVALENT, METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM OF 8 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1' FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.
   MAXIMUM DRAINAGE AREA 1 ACRE

PRELIMINARY
12-11-08

Date	Description	No.

Revisions

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Project
CHESTER DEVELOPMENT
VILLAGE OF CHESTER
ORANGE COUNTY NEW YORK

Drawing Title
SOIL EROSION & SEDIMENT CONTROL DETAILS

Project No.	9123501
Date	--
Scale	1"=100'
Drn. By	BDH
Last Revised	--

Drawing No. 23.02 Of

APPENDIX A

PRE-DEVELOPMENT WATERSHED HYDROGRAPHS

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	23.96	1	733	102,651	----	------	------	Analysis Pt. A (Watershed A)
3	SCS Runoff	16.88	1	740	91,085	----	------	------	Existing Watershed B-1
4	SCS Runoff	13.91	1	742	74,816	----	------	------	Existing Watershed B-2
5	Reach	13.87	1	744	74,814	4	------	------	B2 to Roadway
6	Reach	13.69	1	748	74,813	5	------	------	B2 to Analysis B
7	Combine	29.97	1	744	165,898	3, 6	------	------	Analysis Pt. B
9	SCS Runoff	11.99	1	731	48,649	----	------	------	Analysis Pt. C (Watershed C)
12	SCS Runoff	0.51	1	729	1,952	----	------	------	Existing Watershed D

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	33.08	1	733	140,678	----	------	------	Analysis Pt. A (Watershed A)
3	SCS Runoff	26.59	1	739	136,268	----	------	------	Existing Watershed B-1
4	SCS Runoff	19.86	1	741	104,993	----	------	------	Existing Watershed B-2
5	Reach	19.81	1	743	104,992	4	------	------	B2 to Roadway
6	Reach	19.68	1	746	104,991	5	------	------	B2 to Analysis B
7	Combine	45.35	1	743	241,259	3, 6	------	------	Analysis Pt. B
9	SCS Runoff	17.10	1	731	68,271	----	------	------	Analysis Pt. C (Watershed C)
12	SCS Runoff	0.71	1	729	2,675	----	------	------	Existing Watershed D

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	65.40	1	732	278,570	----	------	------	Analysis Pt. A (Watershed A)
3	SCS Runoff	64.72	1	738	314,815	----	------	------	Existing Watershed B-1
4	SCS Runoff	41.52	1	740	217,005	----	------	------	Existing Watershed B-2
5	Reach	41.46	1	742	217,004	4	------	------	B2 to Roadway
6	Reach	41.40	1	743	217,003	5	------	------	B2 to Analysis B
7	Combine	104.17	1	740	531,819	3, 6	------	------	Analysis Pt. B
9	SCS Runoff	35.71	1	730	141,106	----	------	------	Analysis Pt. C (Watershed C)
12	SCS Runoff	1.40	1	729	5,298	----	------	------	Existing Watershed D

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	106.87	1	732	462,432	----	------	------	Analysis Pt. A (Watershed A)
3	SCS Runoff	118.20	1	737	570,697	----	------	------	Existing Watershed B-1
4	SCS Runoff	70.06	1	740	369,284	----	------	------	Existing Watershed B-2
5	Reach	69.95	1	741	369,283	4	------	------	B2 to Roadway
6	Reach	69.95	1	742	369,283	5	------	------	B2 to Analysis B
7	Combine	184.91	1	739	939,982	3, 6	------	------	Analysis Pt. B
9	SCS Runoff	60.10	1	730	240,124	----	------	------	Analysis Pt. C (Watershed C)
12	SCS Runoff	2.29	1	729	8,794	----	------	------	Existing Watershed D

Project **Chester Development** By **BDH** Date **7/18/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Existing Watershed A**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Row Crops (C - good)**	**82**			**21.35**	**1750.70**
C	**Woods (fair)**	**73**			**0.64**	**46.72**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**21.99**	**1797.42**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1797.42}{21.99} =$ 81.74 Use CN = **82**

Project **Chester Development** By **BDH** Date **7/18/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Existing Watershed A**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID					
1. Surface description (table 3-1)			Cultivated Soil (>20%)				
2. Manning's roughness coeff., n (table 3-1)			0.170				
3. Flow Length, L (total L ≤ 100 ft)		ft	100				
4. Two-yr 24-hr rainfall, P_2		in	3.4				
5. Land slope, s		ft/ft	0.010				
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.231	+		=	0.231
Shallow concentrated flow		Segment ID					
7. Surface description (paved or unpaved)			Unpaved				
8. Flow length, L		ft	1316				
9. Watercourse slope, s		ft/ft	0.1121				
10. Average velocity, V (figure 3-1)		ft/s	5.4				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.068	+		=	0.068
Channel flow		Segment ID					
12. Cross sectional flow area, a		ft^2					
13. Wetted perimeter, p_w		ft					
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft					
15. Channel slope, s		ft/ft					
16. Manning's roughness coeff., n							
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s					
18. Flow length, L		ft					
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		=	0.000
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)							hr 0.299
							min 18

Project **Chester Development** By **BDH** Date **7/18/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Existing Watershed B-1**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Row Crops (C - good)**	**65**			**1.34**	**87.10**
C	**Row Crops (C - good)**	**82**			**7.45**	**610.90**
D	**Row Crops (C - good)**	**86**			**0.51**	**43.86**
A	**Woods (fair)**	**36**			**0.35**	**12.60**
C	**Woods (fair)**	**73**			**10.32**	**753.36**
C	**Brush (good)**	**65**			**12.44**	**808.60**
D	**Brush (good)**	**73**			**1.08**	**78.84**
						0.00
						0.00
1 Use only one CN source per line				Totals =	**33.49**	**2395.26**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{2395.26}{33.49} =$ 71.52 Use CN = **72**

Project	**Chester Development**	By	**BDH**	Date	**7/18/2008**
Location	**Village of Chester, NY**	Checked		Date	

Circle One: Present Developed

Circle One: T_c T_t through subarea **Existing Watershed B-1**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID						
1. Surface description (table 3-1)			Woods (Lt. Underbrush)					
2. Manning's roughness coeff., n (table 3-1)			0.400					
3. Flow Length, L (total L ≤ 100 ft)		ft	100					
4. Two-yr 24-hr rainfall, P_2		in	3.4					
5. Land slope, s		ft/ft	0.023					
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.328	+		=	0.328	
Shallow concentrated flow		Segment ID						
7. Surface description (paved or unpaved)			Unpaved					
8. Flow length, L		ft	1309					
9. Watercourse slope, s		ft/ft	0.0872					
10. Average velocity, V (figure 3-1)		ft/s	4.8					
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.076	+		=	0.076	
Channel flow		Segment ID						
12. Cross sectional flow area, a		ft^2						
13. Wetted perimeter, p_w		ft						
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft						
15. Channel slope, s		ft/ft						
16. Manning's roughness coeff., n								
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s						
18. Flow length, L		ft						
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		=	0.000	
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)							hr	0.404
							min	25

Project **Chester Development** By **BDH** Date **7/18/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Existing Watershed B-2**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Brush (fair)**	**70**			**0.58**	**40.60**
D	**Brush (fair)**	**77**			**2.40**	**184.80**
C	**Woods (fair)**	**73**			**7.67**	**559.91**
D	**Woods (fair)**	**79**			**4.58**	**361.82**
						0.00
	Impervious	**98**			**3.24**	**317.52**
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**18.47**	**1464.65**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1464.65}{18.47} =$ 79.30 Use CN = **79**

Project	**Chester Development**	By	**BDH**	Date	**7/18/2008**
Location	**Village of Chester, NY**	Checked		Date	

Circle One: Present Developed

Circle One: T_c T_t through subarea **Existing Watershed B-2**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)		Woods (Lt. Underbrush)		
2. Manning's roughness coeff., n (table 3-1)		0.400		
3. Flow Length, L (total L ≤ 100 ft)	ft	100		
4. Two-yr 24-hr rainfall, P_2	in	3.4		
5. Land slope, s	ft/ft	0.060		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr	0.224	+	= 0.224

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)		Unpaved		
8. Flow length, L	ft	1012		
9. Watercourse slope, s	ft/ft	0.0049		
10. Average velocity, V (figure 3-1)	ft/s	1.1		
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr	0.256	+	= 0.256

Channel flow

		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		+	= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.479

min 29

Project **Chester Development** By **BDH** Date **7/18/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Existing Watershed C**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Row Crops (C - good)**	**82**			**7.87**	**645.34**
C	**Woods (fair)**	**73**			**4.14**	**302.22**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**12.01**	**947.56**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{947.56}{12.01} =$ 78.90 Use CN = **79**

Project	**Chester Development**	By	**BDH**	Date	**7/18/2008**
Location	**Village of Chester, NY**	Checked		Date	

Circle One: Present Developed

Circle One: T_c T_t through subarea **Existing Watershed C**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)			Segment ID					
1. Surface description (table 3-1)				Cultivated Soil (>20%)				
2. Manning's roughness coeff., n (table 3-1)				0.170				
3. Flow Length, L (total L ≤ 100 ft)			ft	100				
4. Two-yr 24-hr rainfall, P_2			in	3.4				
5. Land slope, s			ft/ft	0.021				
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$		Compute T_t	hr	0.172	+		=	0.172
Shallow concentrated flow			Segment ID					
7. Surface description (paved or unpaved)				Unpaved				
8. Flow length, L			ft	853				
9. Watercourse slope, s			ft/ft	0.0894				
10. Average velocity, V (figure 3-1)			ft/s	4.85				
11. $T_t = \frac{L}{3600\ V}$		Compute T_t	hr	0.049	+		=	0.049
Channel flow			Segment ID					
12. Cross sectional flow area, a			ft^2					
13. Wetted perimeter, p_w			ft					
14. Hydraulic radius, r	$r = \frac{a}{p_w}$	Compute r	ft					
15. Channel slope, s			ft/ft					
16. Manning's roughness coeff., n								
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$		Compute V	ft/s					
18. Flow length, L			ft					
19. $T_t = \frac{L}{3600\ V}$		Compute T_t	hr		+		=	0.000
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)							hr	0.221
							min	14

Project **Chester Development** By **BDH** Date **7/18/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Existing Watershed D**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Row Crops (C - good)**	**82**			**0.42**	**34.44**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.42**	**34.44**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{34.44}{0.42} =$ 82.00 Use CN = **82**

Project	**Chester Development**	By	**BDH**	Date	**7/18/2008**
Location	**Village of Chester, NY**	Checked		Date	

Circle One: Present Developed

Circle One: T_c T_t through subarea **Existing Watershed D**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)			Segment ID					
1. Surface description (table 3-1)				Cultivated Soil (>20%)				
2. Manning's roughness coeff., n (table 3-1)				0.170				
3. Flow Length, L (total L ≤ 100 ft)			ft	100				
4. Two-yr 24-hr rainfall, P_2			in	3.4				
5. Land slope, s			ft/ft	0.014				
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$		Compute T_t	hr	0.202	+		=	0.202
Shallow concentrated flow			Segment ID					
7. Surface description (paved or unpaved)				Unpaved				
8. Flow length, L			ft	164				
9. Watercourse slope, s			ft/ft	0.0793				
10. Average velocity, V (figure 3-1)			ft/s	4.5				
11. $T_t = \frac{L}{3600\ V}$		Compute T_t	hr	0.010	+		=	0.010
Channel flow			Segment ID					
12. Cross sectional flow area, a			ft^2					
13. Wetted perimeter, p_w			ft					
14. Hydraulic radius, r	$r = \frac{a}{p_w}$	Compute r	ft					
15. Channel slope, s			ft/ft					
16. Manning's roughness coeff., n								
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$		Compute V	ft/s					
18. Flow length, L			ft					
19. $T_t = \frac{L}{3600\ V}$		Compute T_t	hr		+		=	0.000
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)							hr	0.212
							min	13

APPENDIX B

POST-DEVELOPMENT WATERSHED HYDROGRAPHS

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	34.25	1	728	124,707	----	------	------	Proposed Watershed A-1
2	SCS Runoff	2.37	1	731	9,600	----	------	------	Proposed Watershed A-2
3	SCS Runoff	7.65	1	731	30,549	----	------	------	Proposed Watershed A-3
4	Reservoir	1.57	1	954	81,789	1	460.49	84,940	A-1 to Pond A
5	Combine	10.12	1	731	121,939	2, 3, 4	------	------	Analysis Point A
8	SCS Runoff	30.34	1	734	133,980	----	------	------	Proposed Watershed B-1
9	SCS Runoff	6.32	1	729	25,690	----	------	------	Proposed Watershed B-2
10	SCS Runoff	0.87	1	728	3,699	----	------	------	Proposed Watershed B-3
11	SCS Runoff	9.47	1	733	40,756	----	------	------	Proposed Watershed B-4
12	SCS Runoff	2.27	1	727	8,114	----	------	------	Proposed Watershed B-5
13	Reservoir	0.47	1	1442	50,159	8	495.52	115,904	B-1 to Pond B
14	Reach	0.47	1	1449	49,904	13	------	------	Pond B to Dis Pt B
15	Reach	9.11	1	737	40,754	11	------	------	B-4 to Discharge B (pipe)
16	Reach	8.11	1	744	40,750	15	------	------	B4 to Dis Pt B
17	Reach	0.47	1	1445	50,092	13	------	------	B-5 to Roadway
18	Reach	0.47	1	1472	48,746	17	------	------	B-5 Roadway to Dis Pt B
19	Combine	12.56	1	738	168,789	9, 10, 14, 16, 18	------	------	Analysis Point B
22	SCS Runoff	14.89	1	729	56,022	----	------	------	Proposed Watershed C
23	Reservoir	2.83	1	761	36,303	22	520.92	29,361	Analysis C (Pond C)
26	SCS Runoff	0.41	1	728	1,520	----	------	------	Proposed Watershed D

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	46.38	1	728	168,355	----	------	------	Proposed Watershed A-1
2	SCS Runoff	3.37	1	731	13,472	----	------	------	Proposed Watershed A-2
3	SCS Runoff	10.57	1	730	41,867	----	------	------	Proposed Watershed A-3
4	Reservoir	3.23	1	858	124,643	1	460.96	102,578	A-1 to Pond A
5	Combine	14.32	1	731	179,982	2, 3, 4	------	------	Analysis Point A
8	SCS Runoff	39.65	1	733	175,741	----	------	------	Proposed Watershed B-1
9	SCS Runoff	9.99	1	729	38,434	----	------	------	Proposed Watershed B-2
10	SCS Runoff	1.51	1	728	5,791	----	------	------	Proposed Watershed B-3
11	SCS Runoff	13.21	1	733	56,288	----	------	------	Proposed Watershed B-4
12	SCS Runoff	3.32	1	727	11,580	----	------	------	Proposed Watershed B-5
13	Reservoir	1.15	1	1083	81,184	8	496.19	140,752	B-1 to Pond B
14	Reach	1.15	1	1096	80,930	13	------	------	Pond B to Dis Pt B
15	Reach	12.93	1	736	56,286	11	------	------	B-4 to Discharge B (pipe)
16	Reach	11.62	1	742	56,283	15	------	------	B4 to Dis Pt B
17	Reach	1.15	1	1087	81,115	13	------	------	B-5 to Roadway
18	Reach	1.14	1	1128	80,409	17	------	------	B-5 Roadway to Dis Pt B
19	Combine	19.33	1	734	261,846	9, 10, 14, 16, 18------		------	Analysis Point B
22	SCS Runoff	19.97	1	729	75,077	----	------	------	Proposed Watershed C
23	Reservoir	10.20	1	743	55,355	22	521.10	31,670	Analysis C (Pond C)
26	SCS Runoff	0.58	1	728	2,116	----	------	------	Proposed Watershed D

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	88.37	1	728	324,355	----	------	------	Proposed Watershed A-1
2	SCS Runoff	7.05	1	730	27,845	----	------	------	Proposed Watershed A-2
3	SCS Runoff	20.90	1	730	82,904	----	------	------	Proposed Watershed A-3
4	Reservoir	24.60	1	752	279,500	1	462.44	163,242	A-1 to Pond A
5	Combine	36.07	1	745	390,249	2, 3, 4	------	------	Analysis Point A
8	SCS Runoff	71.04	1	733	321,149	----	------	------	Proposed Watershed B-1
9	SCS Runoff	24.31	1	728	88,792	----	------	------	Proposed Watershed B-2
10	SCS Runoff	4.14	1	727	14,413	----	------	------	Proposed Watershed B-3
11	SCS Runoff	26.58	1	732	113,036	----	------	------	Proposed Watershed B-4
12	SCS Runoff	7.20	1	727	24,661	----	------	------	Proposed Watershed B-5
13	Reservoir	16.25	1	765	222,903	8	498.26	183,009	B-1 to Pond B
14	Reach	15.93	1	773	222,777	13	------	------	Pond B to Dis Pt B
15	Reach	26.46	1	734	113,036	11	------	------	B-4 to Discharge B (pipe)
16	Reach	24.25	1	739	113,033	15	------	------	B4 to Dis Pt B
17	Reach	16.24	1	767	222,862	13	------	------	B-5 to Roadway
18	Reach	16.19	1	770	222,799	17	------	------	B-5 Roadway to Dis Pt B
19	Combine	46.03	1	731	661,813	9, 10, 14, 16, 18	------	------	Analysis Point B
22	SCS Runoff	37.43	1	729	142,713	----	------	------	Proposed Watershed C
23	Reservoir	35.00	1	732	122,985	22	521.49	36,965	Analysis C (Pond C)
26	SCS Runoff	1.19	1	728	4,311	----	------	------	Proposed Watershed D

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	141.43	1	728	529,915	----	------	------	Proposed Watershed A-1
2	SCS Runoff	11.86	1	730	47,385	----	------	------	Proposed Watershed A-2
3	SCS Runoff	34.12	1	730	137,623	----	------	------	Proposed Watershed A-3
4	Reservoir	65.94	1	741	484,326	1	463.70	219,653	A-1 to Pond A
5	Combine	103.84	1	733	669,335	2, 3, 4	------	------	Analysis Point A
8	SCS Runoff	110.02	1	733	508,798	----	------	------	Proposed Watershed B-1
9	SCS Runoff	44.31	1	728	160,963	----	------	------	Proposed Watershed B-2
10	SCS Runoff	7.95	1	727	27,212	----	------	------	Proposed Watershed B-3
11	SCS Runoff	43.87	1	732	189,178	----	------	------	Proposed Watershed B-4
12	SCS Runoff	12.36	1	727	42,695	----	------	------	Proposed Watershed B-5
13	Reservoir	67.54	1	747	409,082	8	499.45	234,731	B-1 to Pond B
14	Reach	65.03	1	751	408,995	13	------	------	Pond B to Dis Pt B
15	Reach	43.82	1	733	189,177	11	------	------	B-4 to Discharge B (pipe)
16	Reach	40.79	1	738	189,174	15	------	------	B4 to Dis Pt B
17	Reach	67.44	1	749	409,051	13	------	------	B-5 to Roadway
18	Reach	67.43	1	750	409,026	17	------	------	B-5 Roadway to Dis Pt B
19	Combine	179.74	1	748	1,195,369	9, 10, 14, 16, 18	------	------	Analysis Point B
22	SCS Runoff	59.36	1	729	231,341	----	------	------	Proposed Watershed C
23	Reservoir	57.57	1	731	211,607	22	521.73	40,160	Analysis C (Pond C)
26	SCS Runoff	1.97	1	728	7,274	----	------	------	Proposed Watershed D

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed A-1**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
	Impervious	**98**			**11.04**	**1081.92**
A	**Open Space (good)**	**39**			**0.56**	**21.84**
C	**Open Space (good)**	**74**			**8.62**	**637.88**
						0.00
A	**Pasture/grassland (good)**	**39**			**0.13**	**5.07**
C	**Pasture/grassland (good)**	**74**			**2.45**	**181.30**
A	**Woods (fair)**	**73**			**0.21**	**15.33**
C	**Woods (fair)**	**79**			**0.52**	**41.08**
						0.00
1 Use only one CN source per line		Totals =			**23.53**	**1984.42**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1984.42}{23.53} =$ 84.34 Use CN = **84**

Project: **Chester Development** By: **BDH** Date: **11/14/2008**

Location: **Village of Chester, NY** Checked: _____ Date: _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed A-1**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)		Grass (Dense)		
2. Manning's roughness coeff., n (table 3-1)		0.240		
3. Flow Length, L (total L ≤ 100 ft)	ft	100		
4. Two-yr 24-hr rainfall, P_2	in	3.4		
5. Land slope, s	ft/ft	0.020		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr	0.231	+	= 0.231

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)		Unpaved	Paved	
8. Flow length, L	ft	235	63	
9. Watercourse slope, s	ft/ft	0.2043	0.0794	
10. Average velocity, V (figure 3-1)	ft/s	7.3	5.7	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr	0.009	+ 0.003	= 0.012

Channel flow

		Segment ID	24" Pipe	36" Pipe
12. Cross sectional flow area, a		ft^2	3.14	7.07
13. Wetted perimeter, p_w		ft	6.28	9.42
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft	0.5	0.7505308
15. Channel slope, s		ft/ft	0.063	0.04
16. Manning's roughness coeff., n			0.01	0.01
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s	23.56	24.61
18. Flow length, L		ft	665	74
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.008 + 0.001	= 0.009

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.251

min 15.0

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed A-2**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Pasture/grassland (fair)**	**79**			**2.37**	**187.23**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**2.37**	**187.23**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{187.23}{2.37} =$ 79.00 Use CN = **79**

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed A-3**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
	Impervious	**98**			**0.33**	**32.34**
C	**Open Space (good)**	**74**			**0.64**	**47.36**
						0.00
C	**Pasture/grassland (good)**	**74**			**0.10**	**7.40**
C	**Row Crops (C - good)**	**82**			**5.40**	**442.80**
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**6.47**	**529.90**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{529.90}{6.47} =$ 81.90 Use CN = **82**

Project: **Chester Development** By: **BDH** Date: **11/14/2008**

Location: **Village of Chester, NY** Checked: _____ Date: _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed A-2**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID					
1. Surface description (table 3-1)			Cultivated Soils (>20%)				
2. Manning's roughness coeff., n (table 3-1)			0.170				
3. Flow Length, L (total L ≤ 100 ft)		ft	100				
4. Two-yr 24-hr rainfall, P_2		in	3.4				
5. Land slope, s		ft/ft	0.090				
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.096	+		=	0.096
Shallow concentrated flow		Segment ID					
7. Surface description (paved or unpaved)			Unpaved				
8. Flow length, L		ft	1127				
9. Watercourse slope, s		ft/ft	0.0257				
10. Average velocity, V (figure 3-1)		ft/s	2.6				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.120	+		=	0.120
Channel flow		Segment ID	15" Pipe				
12. Cross sectional flow area, a		ft^2	1.23	2.625			
13. Wetted perimeter, p_w		ft	3.93	4.5			
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft	0.3129771	0.5833333			
15. Channel slope, s		ft/ft	0.05	0.107			
16. Manning's roughness coeff., n			0.013	0.4			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s	11.81	0.85			
18. Flow length, L		ft	40	28			
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.001	+	0.009	=	0.010
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)						hr	0.226
						min	13.6

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Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed A-3**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

Segment ID				
1. Surface description (table 3-1)		Grass (Dense)		
2. Manning's roughness coeff., n (table 3-1)		0.240		
3. Flow Length, L (total L ≤ 100 ft)	ft	100		
4. Two-yr 24-hr rainfall, P_2	in	3.4		
5. Land slope, s	ft/ft	0.044		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	0.168	+	= 0.168

Shallow concentrated flow

Segment ID				
7. Surface description (paved or unpaved)		Unpaved		
8. Flow length, L	ft	1163		
9. Watercourse slope, s	ft/ft	0.1238		
10. Average velocity, V (figure 3-1)	ft/s	5.6		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.058	+	= 0.058

Channel flow

Segment ID				
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, r $r = \frac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.226

min 14.0

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed B-1**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
	Impervious	**98**			**11.71**	**1147.58**
C	**Open Space (good)**	**74**			**6.53**	**483.22**
D	**Open Space (good)**	**80**			**1.78**	**142.40**
						0.00
						0.00
C	**Woods (fair)**	**73**			**1.32**	**96.36**
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**21.34**	**1869.56**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1869.56}{21.34} =$ 87.61 Use CN = **88**

Project: **Chester Development** By: **BDH** Date: **11/14/2008**

Location: **Village of Chester, NY** Checked: _____ Date: _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed B-1**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)		Grass (Dense)		
2. Manning's roughness coeff., n (table 3-1)		0.400		
3. Flow Length, L (total L ≤ 100 ft)	ft	100		
4. Two-yr 24-hr rainfall, P_2	in	3.4		
5. Land slope, s	ft/ft	0.035		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr	0.278	+	= 0.278

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)		Unpaved	Paved	
8. Flow length, L	ft	85	214	
9. Watercourse slope, s	ft/ft	0.0176	0.0079	
10. Average velocity, V (figure 3-1)	ft/s	2.1	1.9	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr	0.011	+ 0.031	= 0.043

Channel flow

		Segment ID		
12. Cross sectional flow area, a	ft^2	18" Pipe	24" Pipe	
		1.767	3.14	
13. Wetted perimeter, p_w	ft	4.71	6.28	
14. Hydraulic radius, $r = \frac{a}{p_w}$	Compute r ft	0.3751592	0.5	
15. Channel slope, s	ft/ft	0.0075	0.0466	
16. Manning's roughness coeff., n		0.01	0.01	
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s	6.71	20.26	
18. Flow length, L	ft	399	294	
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr	0.017	+ 0.004	= 0.021

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.341

min 20.4

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed B-2**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Woods (fair)**	**73**			**1.51**	**110.23**
C	**Brush (good)**	**65**			**3.36**	**218.40**
D	**Brush (good)**	**73**			**1.08**	**78.84**
						0.00
	Impervious	**98**			**0.48**	**47.33**
C	**Open Space (good)**	**74**			**2.85**	**210.90**
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**9.28**	**665.70**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{665.70}{9.28} =$ 71.71 Use CN = **72**

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed B-2**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)			Woods (Lt. Underbrush)	
2. Manning's roughness coeff., n (table 3-1)			0.240	
3. Flow Length, L (total L ≤ 100 ft)	ft		100	
4. Two-yr 24-hr rainfall, P_2	in		3.4	
5. Land slope, s	ft/ft		0.105	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr		0.119 +	= 0.119

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)			Unpaved	
8. Flow length, L	ft		916	
9. Watercourse slope, s	ft/ft		0.0699	
10. Average velocity, V (figure 3-1)	ft/s		4.2	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		0.061 +	= 0.061

Channel flow

		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		+	= 0.000
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)				hr 0.179
				min 10.8

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed B-3**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Pasture/grassland (good)**	**74**			**0.67**	**49.58**
C	**Brush (good)**	**65**			**1.10**	**71.50**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**1.77**	**121.08**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{121.08}{1.77} =$ 68.41 Use CN = **68**

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed B-3**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)			Cultivated Soils (>20%)	
2. Manning's roughness coeff., n (table 3-1)			0.170	
3. Flow Length, L (total L ≤ 100 ft)	ft		100	
4. Two-yr 24-hr rainfall, P_2	in		3.4	
5. Land slope, s	ft/ft		0.070	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr		0.106 +	= 0.106

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)			Unpaved	
8. Flow length, L	ft		158	
9. Watercourse slope, s	ft/ft		0.0316	
10. Average velocity, V (figure 3-1)	ft/s		2.9	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		0.015 +	= 0.015

Channel flow

		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		+	= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.121

min 7.3

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed B-4**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Woods (fair)**	**73**			**3.63**	**264.99**
C	**Brush (fair)**	**70**			**2.31**	**161.70**
						0.00
	Impervious	**98**			**3.24**	**317.52**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**9.18**	**744.21**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{744.21}{9.18} =$ 81.07 Use CN = **81**

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed B-4**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)		Woods (Lt. Underbrush)		
2. Manning's roughness coeff., n (table 3-1)		0.400		
3. Flow Length, L (total L ≤ 100 ft)	ft	100		
4. Two-yr 24-hr rainfall, P_2	in	3.4		
5. Land slope, s	ft/ft	0.040		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr	0.263	+	= 0.263

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)		Unpaved		
8. Flow length, L	ft	728		
9. Watercourse slope, s	ft/ft	0.096		
10. Average velocity, V (figure 3-1)	ft/s	5.02		
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr	0.040	+	= 0.040

Channel flow

		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		+	= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.303

min 18.2

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed B-5**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Woods (fair)**	**73**			**1.02**	**74.46**
D	**Woods (fair)**	**79**			**0.27**	**21.33**
						0.00
	Impervious	**98**			**0.12**	**11.76**
C	**Open Space (good)**	**74**			**0.20**	**14.80**
D	**Open Space (good)**	**80**			**0.62**	**49.60**
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**2.23**	**171.95**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{171.95}{2.23} =$ 77.11 Use CN = **77**

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed B-5**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

Segment ID			
1. Surface description (table 3-1)		Grass (Dense)	
2. Manning's roughness coeff., n (table 3-1)		0.240	
3. Flow Length, L (total L ≤ 100 ft)	ft	100	
4. Two-yr 24-hr rainfall, P_2	in	3.4	
5. Land slope, s	ft/ft	0.090	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	0.126 +	= 0.126

Shallow concentrated flow

Segment ID			
7. Surface description (paved or unpaved)		Unpaved	
8. Flow length, L	ft	81	
9. Watercourse slope, s	ft/ft	0.1	
10. Average velocity, V (figure 3-1)	ft/s	1.6	
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	0.014 +	= 0.014

Channel flow

Segment ID			
12. Cross sectional flow area, a	ft^2		
13. Wetted perimeter, p_w	ft		
14. Hydraulic radius, r $r = \frac{a}{p_w}$ Compute r	ft		
15. Channel slope, s	ft/ft		
16. Manning's roughness coeff., n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s		
18. Flow length, L	ft		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	+	= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.140

min 8.4

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed C**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
	Impervious	**98**			**4.90**	**480.20**
C	**Open Space (good)**	**74**			**5.37**	**397.38**
						0.00
C	**Pasture/grassland (good)**	**74**			**0.15**	**11.10**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**10.42**	**888.68**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{888.68}{10.42} =$ 85.29 Use CN = **85**

Project: **Chester Development** By: **BDH** Date: **11/14/2008**

Location: **Village of Chester, NY** Checked: _____ Date: _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed C**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)			Grass (Dense)	
2. Manning's roughness coeff., n (table 3-1)			0.240	
3. Flow Length, L (total L ≤ 100 ft)	ft		100	
4. Two-yr 24-hr rainfall, P_2	in		3.4	
5. Land slope, s	ft/ft		0.037	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr		0.181 +	= 0.181

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)			Paved	
8. Flow length, L	ft		251	
9. Watercourse slope, s	ft/ft		0.051	
10. Average velocity, V (figure 3-1)	ft/s		4.6	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		0.015 +	= 0.015

Channel flow

		Segment ID	18" Pipe	24" Pipe
12. Cross sectional flow area, a	ft^2		1.767	3.14
13. Wetted perimeter, p_w	ft		4.71	6.28
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r ft		0.3751592	0.5
15. Channel slope, s	ft/ft		0.0851	0.0551
16. Manning's roughness coeff., n			0.01	0.01
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s		22.61	22.03
18. Flow length, L	ft		364	508
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		0.004 +	0.006 = 0.011

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.207

min 12.4

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed D**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Pasture/grassland (good)**	**74**			**0.35**	**25.90**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.35**	**25.90**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{25.90}{0.35} =$ 74.00 Use CN = **74**

Project **Chester Development** By **BDH** Date **11/14/2008**

Location **Village of Chester, NY** Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea **Proposed Watershed D**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

		Segment ID		
1. Surface description (table 3-1)			Grass (Dense)	
2. Manning's roughness coeff., n (table 3-1)			0.240	
3. Flow Length, L (total L ≤ 100 ft)	ft		100	
4. Two-yr 24-hr rainfall, P_2	in		3.4	
5. Land slope, s	ft/ft		0.042	
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t hr		0.171 +	= 0.171

Shallow concentrated flow

		Segment ID		
7. Surface description (paved or unpaved)			Unpaved	
8. Flow length, L	ft		76	
9. Watercourse slope, s	ft/ft		0.1158	
10. Average velocity, V (figure 3-1)	ft/s		5.7	
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		0.004 +	= 0.004

Channel flow

		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr		+	= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19) hr 0.175

min 10.5

APPENDIX C

WATER QUALITY CALCULATIONS

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Prepared By: HH
Checked By:

Water Quality (WQv) Computations

From Section 4.2 of New York State Stormwater Management Design Manual:

Required:

$$WQ_v = \frac{(P)\,(R_v)\,(A)}{12}$$

Where: P = 90% Rainfall Event Number
$R_v = 0.05 + 0.009(I)$, where I is percent impervious cover
A = site area in acres
WQ_v = water quality volume (in acre-feet)

For Watershed A-1:

$$WQ_v = \frac{(P)\,(R_v)\,(A)}{12}$$

Where: P = 1.2 inches
A = 23.53 Acres
A_i = Area impervious = 11.04 Acres
I = Impervious coverage = $(A_i / A) \times 100$ = 47%
$R_v = 0.05 + 0.009(47) = 0.47$

$$WQ_v = \frac{(1.2)\,(0.47)\,(23.53)}{12}$$

WQ_v = 1.10 ac-ft (47,916 cf)

For Watershed B-1:

$$WQ_v = \frac{(P)\,(R_v)\,(A)}{12}$$

Where: P = 1.2 inches
A = 21.34 Acres
A_i = Area impervious = 11.71 Acres
I = Impervious coverage = $(A_i / A) \times 100$ = 55%
$R_v = 0.05 + 0.009(55) = 0.54$

$$WQ_v = \frac{(1.2)\,(0.54)\,(21.34)}{12}$$

WQ_v = 1.15 ac-ft (50,094 cf)

For Watershed C:

$$WQ_v = \frac{(P)\,(R_v)\,(A)}{12}$$

Where: P = 1.2 inches
A = 10.42 Acres
A_i = Area impervious = 4.9 Acres
I = Impervious coverage = $(A_i / A) \times 100$ = 47%
$R_v = 0.05 + 0.009(47) = 0.47$

$$WQ_v = \frac{(1.2)\,(0.47)\,(10.42)}{12}$$

WQ_v = 0.49 ac-ft (21,344 cf)

Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, Aug 20 2009, 10:26 PM

Pond No. 3 - Detention Pond A

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft) (ABOVE WET POND)
0.00	458.00 = WATER	30,000	0	0
1.00	459.00 SURFACE	33,525	31,763	31,763 ← WQ_v = 47,916 CF
2.00	460.00 ELEV OF	36,180	34,853	66,615
3.00	461.00 WET POND	38,880	37,530	104,145
4.00	462.00	41,625	40,253	144,398
5.00	463.00	44,433	43,029	187,427 ← MAX STORAGE FOR 100 YR
6.00	464.00	47,277	45,855	233,282 STORM = 219,653 CF
7.00	465.00	50,184	48,731	282,012 @ EL 463.76

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 18.00	4.00	0.00	0.00
Span (in)	= 24.00	4.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 458.00	459.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 462.00	459.40	0.00	0.00
Weir Coeff.	= 3.33	0.88	0.00	3.33
Weir Type	= Riser	65 degV	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	458.00	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.00	31,763	459.00	0.00	0.00	---	---	0.00	---	---	---	---	0.00
2.00	66,615	460.00	0.00	0.38	---	---	0.00	0.25	---	---	---	0.63
3.00	104,145	461.00	0.00	0.57	---	---	0.00	2.85	---	---	---	3.42
4.00	144,398	462.00	0.00	0.71	---	---	0.00	9.58	---	---	---	10.29
5.00	187,427	463.00	28.00	0.82	---	---	28.00	21.61	---	---	---	50.44
6.00	233,282	464.00	32.24	0.92	---	---	32.24	39.89	---	---	---	73.05
7.00	282,012	465.00	35.24	1.01	---	---	35.24	65.23	---	---	---	101.49

Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, Aug 20 2009, 10:30 PM

Pond No. 7 - Detention Pond B

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft) (ABOVE WET POND)
0.00	493.00 = WATER	29,000	0	0
1.00	494.00 SURFACE	31,104	30,052	30,052 ← WQv = 50,094 CF
2.00	494.00 ELEV OF	33,300	32,202	62,254
3.00	495.00 WET POND	35,550	34,425	96,679
4.00	496.00	37,845	36,698	133,377
5.00	498.00	40,185	39,015	172,392
6.00	499.00	42,588	41,387	213,778 ← MAX STORAGE FOR 100 YR STORM = 234,731 CF @ EL 499.45
7.00	500.00	50,000	46,294	260,072

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 30.00	4.00	5.00	0.00
Span (in)	= 30.00	4.00	5.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 494.00	494.00	495.70	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 498.80	495.70	0.00	0.00
Weir Coeff.	= 3.33	1.38	0.00	0.00
Weir Type	= Riser	90 degV	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	493.00	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.00	30,052	494.00	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
2.00	62,254	494.00	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
3.00	96,679	495.00	0.39	0.37	0.00	---	0.00	---	---	---	---	0.37
4.00	133,377	496.00	0.77	0.54	0.20	---	0.00	0.07	---	---	---	0.81
5.00	172,392	498.00	1.76	0.79	0.95	---	0.00	11.07	---	---	---	12.81
6.00	213,778	499.00	6.82	0.84	1.15	---	4.77	27.30	---	---	---	34.06
7.00	260,072	500.00	49.62	0.25	0.38	---	48.99	52.91	---	---	---	102.53

Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, Aug 20 2009, 10:28 PM

Pond No. 11 - Detention Pond C

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft) (ABOVE WET POND)
0.00	518.00 = WATER	7,700	0	0
1.00	519.00 SURFACE	9,250	8,475	8,475
2.00	520.00 ELEV OF	10,890	10,070	18,545 ← WQv = 21,344 CF
3.00	521.00 WET POND	12,600	11,745	30,290 ← MAX STORAGE FOR 100YR
4.00	522.00	14,375	13,488	43,778 STORM = 40,160 CF
5.00	523.00	16,200	15,288	59,065 @ EL 521.73
6.00	524.00	18,080	17,140	76,205
7.00	525.00	20,800	19,440	95,645

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 32.00	3.00	0.00	9.00
Span (in)	= 32.00	3.00	0.00	12.00
No. Barrels	= 1	1	0	1
Invert El. (ft)	= 518.00	520.00	0.00	522.30
Length (ft)	= 15.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	Yes

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 18.00	20.00	0.00	0.00
Crest El. (ft)	= 520.80	521.60	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Rect	Rect	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	518.00	0.00	0.00	---	0.00	0.00	0.00	---	---	---	0.00
1.00	8,475	519.00	0.00	0.00	---	0.00	0.00	0.00	---	---	---	0.00
2.00	18,545	520.00	0.00	0.00	---	0.00	0.00	0.00	---	---	---	0.00
3.00	30,290	521.00	0.23	0.22	---	0.00	5.36	0.00	---	---	---	5.58
4.00	43,778	522.00	0.33	0.32	---	0.00	78.79	16.85	---	---	---	95.97
5.00	59,065	523.00	2.47	0.40	---	1.99	195.59	110.33	---	---	---	308.31
6.00	76,205	524.00	4.71	0.47	---	4.16	343.12	247.63	---	---	---	595.37
7.00	95,645	525.00	6.08	0.52	---	5.51	515.93	417.54	---	---	---	939.50

APPENDIX D

EXCERPTS FROM THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. 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: _____

c. 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: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator 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. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam "As-Built"		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants "choked" with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

Actions to be Taken:

Sand/Organic Filter Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
Filtration facility clean of debris		
Inlet and outlets clear of debris		
2. Oil and Grease (Monthly)		
No evidence of filter surface clogging		
Activities in drainage area minimize oil and grease entry		
3. Vegetation (Monthly)		
Contributing drainage area stabilized		
No evidence of erosion		
Area mowed and clipping removed		
4. Water Retention Where Required (Monthly)		
Water holding chambers at normal pool		
No evidence of leakage		
5. Sediment Deposition (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Filter chamber free of sediments		
Sedimentation chamber not more than half full of sediments		
6. Structural Components (Annual)		
No evidence of structural deterioration		
Any grates are in good condition		
No evidence of spalling or cracking of structural parts		
7. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion (if draining into a natural channel)		
8. Overall Function of Facility (Annual)		
Evidence of flow bypassing facility		
No noticeable odors outside of facility		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

Section 4.2 Water Quality Volume (WQ_v)

The Water Quality Volume (denoted as the WQ_v) is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount of impervious cover created at a site. Contour lines of the 90% rainfall event are presented in Figure 4.1.

The following equation can be used to determine the water quality storage volume WQ_v (in acre-feet of storage):

$$WQ_v = \frac{(P)\,(R_v)(A)}{12}$$

where:

WQ_v = water quality volume (in acre-feet)
P = 90% Rainfall Event Number (see Figure 4.1)
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = site area in acres (contributing area)

A minimum Rv of 0.2 will be applied to regulated sites.

Figure 4.1 90% Rainfall in New York State

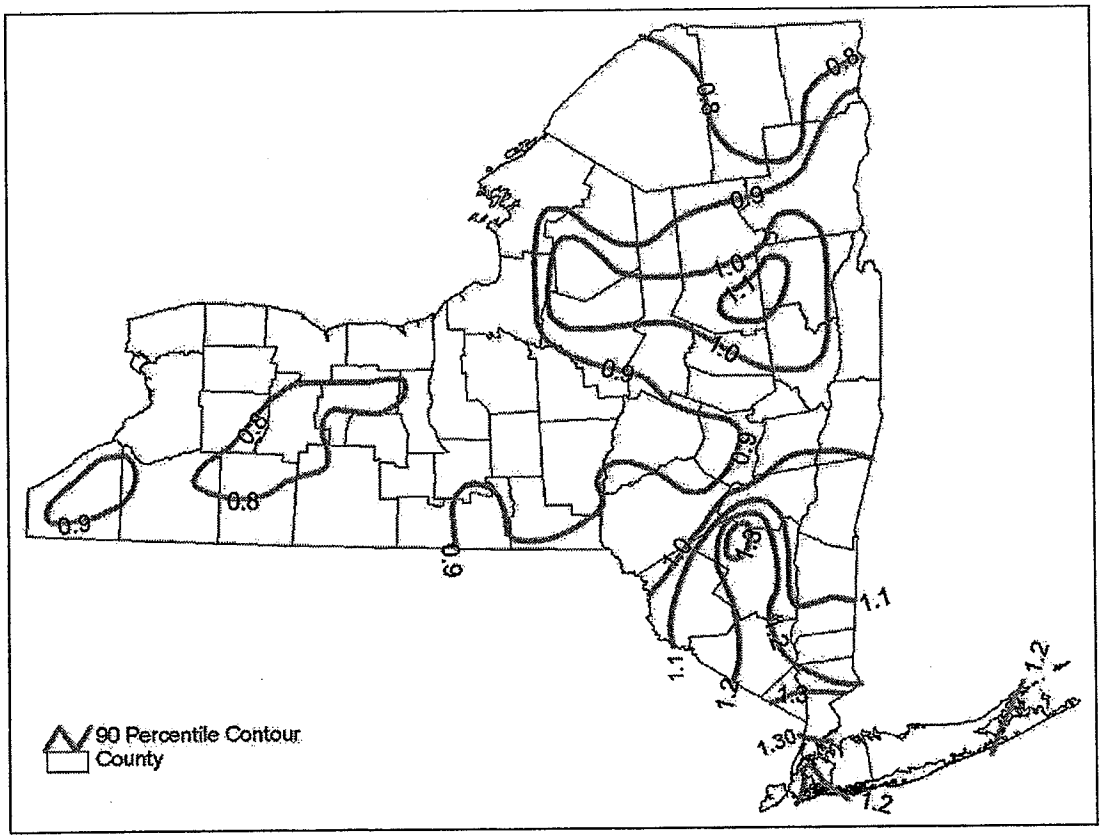


Figure 4.4 One-Year Design Storm

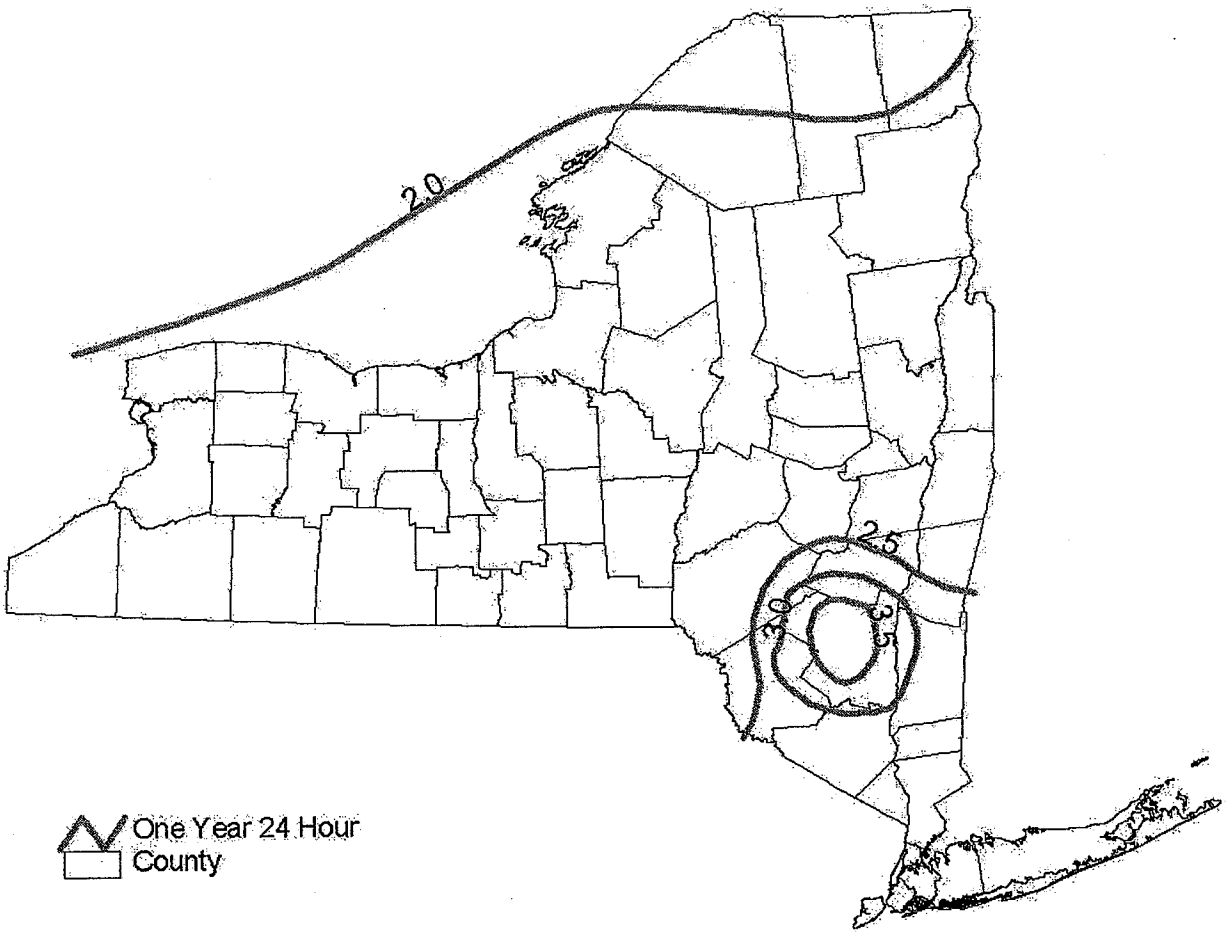
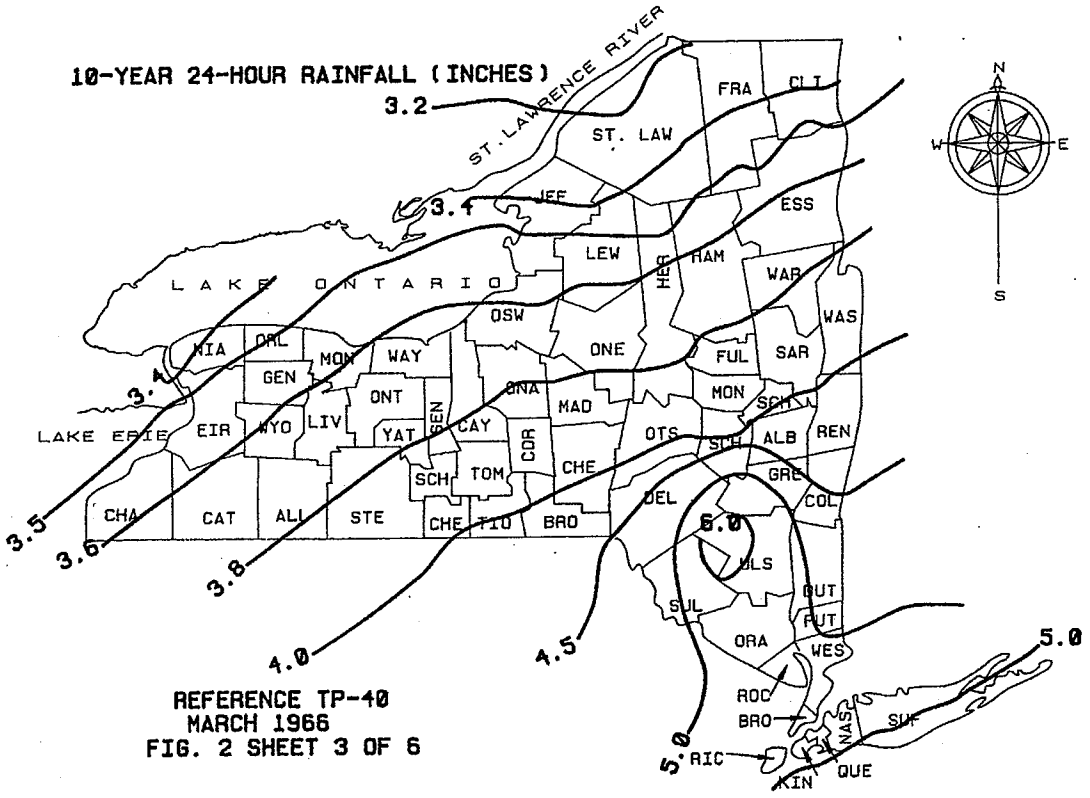


Figure 4.5 10-Year Design Storm



- When determining storage required to safely pass the 100-year flood, model off-site areas under ultimate conditions.

Figure 4.6 100-Year Design Storm

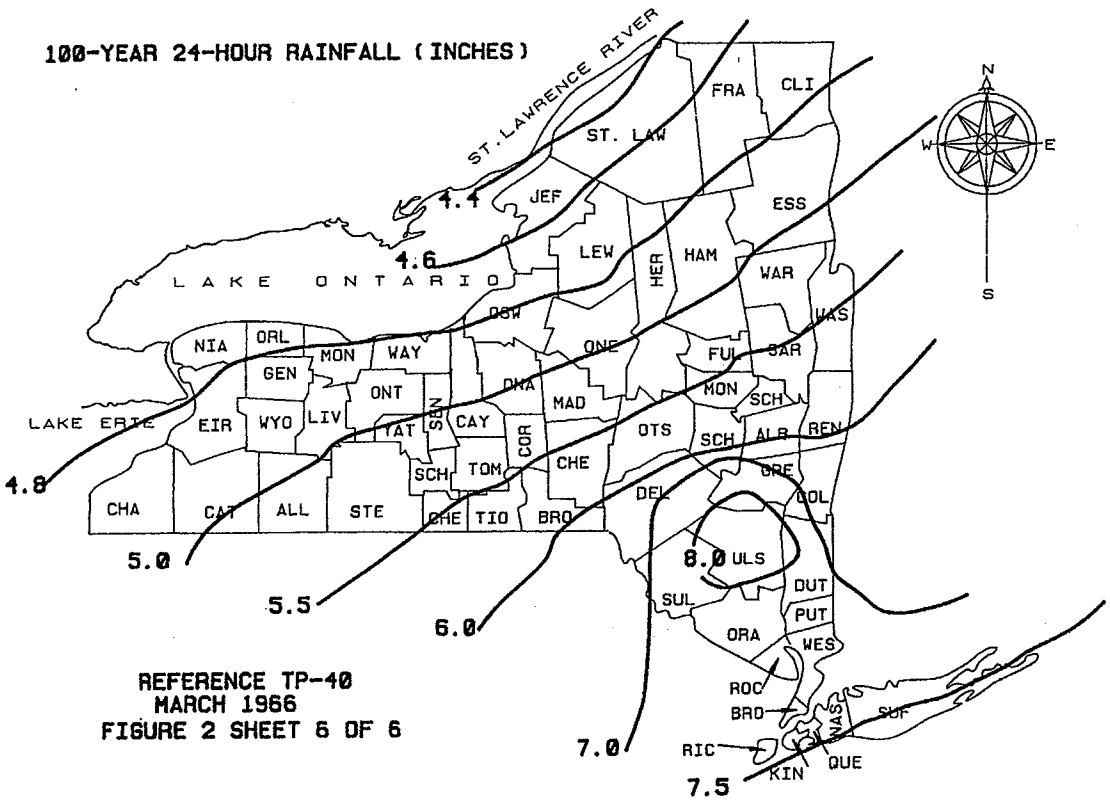


Table 5.1 Stormwater Management Practices Acceptable for Water Quality

Group	Practice	Description
Pond	Micropool Extended Detention Pond (P-1)	Pond that treats the majority of the water quality volume through extended detention, and incorporates a micropool at the outlet of the pond to prevent sediment resuspension.
	Wet Pond (P-2)	Pond that provides storage for the entire water quality volume in the permanent pool.
	Wet Extended Detention Pond (P-3)	Pond that treats a portion of the water quality volume by detaining storm flows above a permanent pool for a specified minimum detention time.
	Multiple Pond System (P-4)	A group of ponds that collectively treat the water quality volume.
	Pocket Pond (P-5)	A stormwater wetland design adapted for the treatment of runoff from small drainage areas that has little or no baseflow available to maintain water elevations and relies on ground water to maintain a permanent pool.
Wetland	Shallow Wetland (W-1)	A wetland that provides water quality treatment entirely in a wet shallow marsh.
	Extended Detention Wetland (W-2)	A wetland system that provides some fraction of the water quality volume by detaining storm flows above the marsh surface.
	Pond/ Wetland System (W-3)	A wetland system that provides a portion of the water quality volume in the permanent pool of a wet pond that precedes the marsh for a specified minimum detention time.
	Pocket Wetland (W-4)	A shallow wetland design adapted for the treatment of runoff from small drainage areas that has variable water levels and relies on groundwater for its permanent pool.
Infiltration	Infiltration Trench (I-1)	An infiltration practice that stores the water quality volume in the void spaces of a gravel trench before it is infiltrated into the ground.
	Infiltration Basin (I-2)	An infiltration practice that stores the water quality volume in a shallow depression, before it is infiltrated it into the ground.
	Dry Well (I-3)	An infiltration practice similar in design to the infiltration trench, and best suited for treatment of rooftop runoff.
Filtering Practices	Surface Sand Filter (F-1)	A filtering practice that treats stormwater by settling out larger particles in a sediment chamber, and then filtering stormwater through a sand matrix.
	Underground Sand Filter (F-2)	A filtering practice that treats stormwater as it flows through underground settling and filtering chambers.
	Perimeter Sand Filter (F-3)	A filter that incorporates a sediment chamber and filer bed as parallel vaults adjacent to a parking lot.
	Organic Filter (F-4)	A filtering practice that uses an organic medium such as compost in the filter, in the place of sand.
	Bioretention (F-5)	A shallow depression that treats stormwater as it flows through a soil matrix, and is returned to the storm drain system.
Open Channels	Dry Swale (O-1)	An open drainage channel or depression explicitly designed to detain and promote the filtration of stormwater runoff into the soil media.
	Wet Swale (O-2)	An open drainage channel or depression designed to retain water or intercept groundwater for water quality treatment.

APPENDIX E

BLANK NOTICE OF INTENT (NOI)

3358554733

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR ☐☐☐☐☐☐
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-08-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State ☐☐ Zip ☐☐☐☐☐ - ☐☐☐☐

Phone (Owner/Operator) ☐☐☐ - ☐☐☐ - ☐☐☐☐

Fax (Owner/Operator) ☐☐☐ - ☐☐☐ - ☐☐☐☐

Email (Owner/Operator)

FED TAX ID ☐☐ - ☐☐☐☐☐☐☐ (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

Side of Street

○ **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip - County DEC Region

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Project In Relation to Cross Street

○ **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site go to the dropdown menu on the left and choose "Get Coordinates". Click on the center of your site and a small window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

Y Coordinates (Northing) 4

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in imperviousness**

○ **Redevelopment with no increase in imperviousness**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ OTHER

4. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law ? ○ **Yes** ○ **No**

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ○ **Yes** ○ **No**

6. Is this property owned by a state authority, state agency or local government? ○ **Yes** ○ **No**

7. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	**Acreage To Be Disturbed**	**Existing Impervious Area Within Disturbed**	**Future Impervious Area Within Disturbed**
.	.	.	.

8. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ○ **No**

9. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	%	%	%

10. Is this a phased project? ○ Yes ○ No

11. Enter the planned start and end dates of the disturbance activities. Start Date __/__/____ - End Date __/__/____

12. Identify the nearest, natural, surface waterbody(ies) to which construction site runoff will discharge.

Name

12a. Type of waterbody identified in Question 12?

- ○ Wetland / State Jurisdiction On Site (Answer 12b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 12b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

12b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment in Appendix E of GP-0-08-001? ○ Yes ○ No

14. Is this project located in one of the Watersheds identified in Appendix C of GP-0-08-001? ○ Yes ○ No

15. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? **If no, skip question 16.** ○ Yes ○ No

16. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ○ No
If Yes, what is the acreage to be disturbed?

17. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ○ No

18. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ Yes ○ No ○ Unknown
(If No, skip question 19)

19. What is the name of the municipality/entity that owns the separate storm sewer system?

20. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ○ No ○ Unknown

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book) ? ○ Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) ○ Yes ○ No
(If No, skip questions 23 and 27-35)

23. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance with the current NYS Stormwater Management Design Manual ? ○ Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ○ **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - - Fax - -

Email

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-08-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name **MI**

Last Name

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Water Quality and Quantity Control

Important: Completion of Questions 27-35 is not required if response to Question 22 is No.

Post-Construction Stormwater Management Practices

27. Indicate **all** Stormwater Management Practice(s) that will be installed/constructed on this site:

Ponds
- ○ **Micropool Extended Detention (P-1)**
- ○ **Wet Pond (P-2)**
- ○ **Wet Extended Detention (P-3)**
- ○ **Multiple Pond System (P-4)**
- ○ **Pocket Pond (P-5)**

Filtering
- ○ **Surface Sand Filter (F-1)**
- ○ **Underground Sand Filter (F-2)**
- ○ **Perimeter Sand Filter (F-3)**
- ○ **Organic Filter (F-4)**
- ○ **Bioretention (F-5)**
- ○ **Other**

Alternative Practice
- ○ **Rain Garden**
- ○ **Cistern**
- ○ **Green Roof**
- ○ **Stormwater Planters**
- ○ **Permeable Paving (Modular Block)**

Wetlands
- ○ **Shallow Wetland (W-1)**
- ○ **Extended Detention Wetland (W-2)**
- ○ **Pond/Wetland System (W-3)**
- ○ **Pocket Wetland (W-4)**

Infiltration
- ○ **Infiltration Trench (I-1)**
- ○ **Infiltration Basin (I-2)**
- ○ **Dry Well (I-3)**
- ○ **Underground Infiltration System**

Open Channels
- ○ **Dry Swale (O-1)**
- ○ **Wet Swale (O-2)**

Verified Proprietary Practice
- ○ **Hydrodynamic**
- ○ **Wet Vault**
- ○ **Media Filter**

28. Describe other stormwater management practices not listed above or explain any deviations from the technical standards.

29. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

30. Provide the total water quality volume required and the total provided for the site.

WQv Required ___.___ **acre-feet**

WQv Provided ___.___ **acre-feet**

31. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required ___.___ **acre-feet**

CPv Provided ___.___ **acre-feet**

31a. The need to provide for channel protection has been waived because:

○ **Site discharges directly to fourth order stream or larger**

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development ___.___ **CFS**

Post-development ___.___ **CFS**

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development ___.___ **CFS**

Post-development ___.___ **CFS**

31b. The need to provide for flood control has been waived because:

○ **Site discharges directly to fourth order stream or larger**

○ **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. ___ %

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. ___ %

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed. ___

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems) ___

36. Identify other DEC permits that are required for this project.

DEC Permits

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Other SPDES
- ○ Solid Waste
- ○ None
- ○ Other
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15

37. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ○ **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

38. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ○ **No**
(If No, skip question 39)

39. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

40. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] **MI** [ ]

Print Last Name [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Owner/Operator Signature

Date [ ][ ] / [ ][ ] / [ ][ ][ ][ ]