

H. Stormwater Management

The project site lies within the Bronx River Drainage Basin. Location within the Bronx River Basin requires that the stormwater system be designed to meet the requirements of New York State Department of Environmental Conservation's (NYSDEC) Phase II Stormwater Management Regulations. As illustrated on the project plans included in Appendix F of this DEIS, the stormwater treatment Best Management Practice (BMP) proposed is an "organic filter" system as permitted by the NYSDEC Phase II Stormwater Management Regulations and a 75,000 gallon concrete storage basin to attenuate flows. The complete Stormwater Management report, including a description of the study methodology, is included in **Appendix F** of this DEIS.

1. Existing Conditions

a. Existing Drainage Patterns

The existing project site is completely covered by impervious surfaces. Most of the site is an asphalt parking lot with a few small garage type buildings.

Three (3) design points were identified for the analyses designated Design Points 1, 2 and 3. These three (3) points include runoff from the entire project site, as well as off-site areas tributary to the property. Design Point 1 is located at the MTA property line at the existing drainage discharge location. This point is approximately 490 feet from the southern end of the site. The design point includes all runoff both on and off-site, which presently discharges directly to the MTA property. Design Point 2 is also located along the MTA property line, approximately 220 feet north of the southern boundary of the site. The area includes on-site runoff tributary to the MTA property via surface runoff. Design Point 3 is located at the existing Village catch basin on Kensington Road at the intersection with Sagamore Road. It includes existing on and off-site runoff tributary to the Village drainage system. Watershed areas contributing to these points were delineated.

The watershed to Design Point 1 was divided into two (2) subareas. Subarea DA1-1 consists of 4.10 acres of land off-site and east of Kensington Road. This area drains to the existing drainage system in Kensington Road. The subarea consists of mostly developed lands of dense residential and some commercial land uses. Subarea DA1-2 includes 0.71 acre of the project site and adjacent perimeter lands. Watershed DA-1 includes flows which discharge directly to the MTA Railroad property at Design Point 1.

The watershed to Design Point 2 consists of 0.60 acre of mostly on-site land, which basically includes the middle one third of the site. There are two (2) existing drywells with inlets, which collect runoff from this watershed. Runoff within this watershed is discharged to the drywell

system within smaller storm events and directly to the MTA Railroad property in larger events.

The watershed to Design Point 3 includes 1.06 acres, which consists of approximately half on-site and half off-site lands. The off-site land use is commercially developed property. The on-site area consists of the southern one third of the project site. Runoff is collected within a small drainage collection system, which discharges it to the existing Village system.

b. Existing Rates of Runoff for 2, 10, 25 and 100-year Storm Events
Table III.H-1 presents existing rates of runoff for 2, 10, 25 and 100 year storm events and required volumes of treatment.

2. Potential Impacts

In the proposed conditions, a 61-unit apartment complex will be built on the site with two (2) levels of underground parking garages. The apartment complex shall replace the existing parking lot and buildings, which are 100 percent impervious.

The strategy to manage stormwater runoff in the proposed conditions is to reduce the volume of runoff presently discharging to the railroad. This will be accomplished by directing runoff from the entire project site to the Village drainage system at Design Point 3 and providing on-site stormwater detention to ensure that there is no increase in discharge rate to the Village system for all design storms.

Off-site land that presently drains to the railroad will continue to do so via a proposed 24" diameter drainage system that will route runoff around and north of the MTA building. The total area of runoff to the railroad shall, therefore, be reduced from the present condition, as the on-site lands that presently discharge to the railroad shall be directed to the Village drainage system.

Therefore, in the proposed conditions' watershed models, there are only two (2) design points, Design Point 1 and Design Point 3. Design Point 1 will consist only of the above-mentioned off-site land presently draining to the railroad. This land is approximately 4.44 acres in size. Design Point 3 will consist of all the remaining lands from the existing conditions' watershed model, but divided up into three (3) subareas due to physical breaks in the drainage collection system.

Flow to the railroad shall be further mitigated through the use of infiltrating of initial flush at the discharge point. Mitigation of on-site flows shall be provided through storm filters for the initial flush and subsurface storage facilities to attenuate flows.

a. Post Development Drainage Patterns

Storm flows discharging to MTA lands shall be reduced. Presently, flows to MTA include off-site runoff inclusive of Kensington Road, the northern parking lot via piping and central lot via drywells. The proposed drainage system shall direct only off-site flows to MTA lands, thereby reducing the contributing drainage area.

A new discharge shall be constructed north of the MTA building. The discharge shall include a low flow infiltration trench with overflow to the existing drainage ditch. Table III.H-1 presents existing and proposed flows to the MTA property and to the Village of Bronxville.

As described in detail in Section IV.A.7 of this DEIS, the Applicant will require an Entry Permit from MTA Metro North for construction work on the project site. The project will abide by all procedures and guidelines established by the MTA for construction work, which occur adjacent to the railroad. These procedures are detailed in MTA Metro-North Railroad's "General Procedure for Access to Railroad Property and Metro-North's specifications for Individuals and Companies working on or adjacent to railroad property", which is included in Appendix J.

The Kensington development project will also require an easement agreement between MTA and the Village of Bronxville for a relocated storm drain. A list of required permits, reviews, approvals and easements is included in Table I-1, Required Permits, Reviews and Approvals in Chapter I of this DEIS, Introduction and Executive Summary.

b. Proposed Stormwater Management System

A stormwater management system is proposed to collect, detain and treat all stormwater runoff from the site for storm events up to the 100 year storm. The system located below grade under the first level of parking shall collect, treat and discharge site runoff to Design Point 3, the Village System. A diverting manhole shall direct water quality volume (WQv) to the treatment system and larger flows to the detention system.

Detained runoff will be provided in both the pre-treatment and detention tanks. The tanks, which will be constructed as part of the underground parking garage, will be located in the southeastern corner of the site and will detain all storms through the 100 year event, permitting discharge only at a rate below the discharge rates of the existing conditions at Design Point 3. An outlet control structure shall regulate such flows at the discharge end of the tank through an orifice and weir. This control structure will ensure discharge rates do not exceed those of the existing conditions at Design Point 3. The tank will provide 11,000 cubic feet of storage volume and will measure 91 feet by 22 feet by 5.5 feet deep.

III.H. Stormwater Management

The treatment system portion of the stormwater management system will consist of a 1,440 cubic foot pretreatment settling tank. This tank will measure 26 feet by 16 feet by 3.5 feet deep. Runoff will flow through an organic filter manufactured by Stormwater Management, Inc. The filter system is an organic type filter. It consists of a concrete vault containing seven (7) filter cartridges. The cartridges are filled with a media primarily made from dried, shredded and compacted leaves in a pellet form. This media has been selected to provide the best removal rates for the pollutants of concern. After leaving the filter, the cleaned water will discharge to the Village drainage system at Design Point 3.

Water quality shall be provided based on 25 percent of the water quality volume (WQv), as required under the NYSDEC Phase II Stormwater Regulations for redevelopment properties. As a result, there shall be a significant reduction of pollutants that currently flows from the property.

The proposed system shall require maintenance, which shall include the removal of sediments and replacement filters. A regular monitoring and maintenance program shall be developed within the project's Stormwater Pollution Prevention Plan. The stormwater plan shall be submitted to NYSDEC prior to construction within the project's Notice of Intent.

c. Compliance with Requirements of the Phase II Stormwater Regulations.

Management of all regulated stormwater runoff for quality and discharge rate mitigation will be within NYSDEC approved best management practices and methods to demonstrate "design compliance with the SPDES General Permit for Stormwater Discharge from Construction Activities" (GP-02-01). Stormwater runoff will be treated for pollution mitigation with an "...organic filter" system in accordance with the NYSDEC's "Stormwater Management Design Manual", August 2003. Stormwater runoff rates will be controlled to rates that are equal to or less than those of the existing site via a detention basin located in the underground parking structure.

The proposed project is not located within a flood plain, and is not subject to flooding. As such, Chapter 156 of the Bronxville Village Code, Flood Damage Prevention does not apply.

**Table III.H-1
Summary of Hydrological Analysis Results**

Drainage Area	Existing Conditions					Proposed Conditions					Total 100 Year Estimated Storage Volume (Including 1 Year) (ac-ft)	25% WQv (ac-ft)
	Peak Discharge by Storm Return Frequency (c.f.s.)					Peak Discharge by Storm Return Frequency (c.f.s.)						
	100	25	10	2	1	100	25	10	2	1		
DA1	29.50	23.05	18.73	12.21	9.16	26.48	20.62	16.68	10.73	7.96	N/A	N/A
DA2	4.31	3.45	2.87	1.99	1.59	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DA3	7.65	6.05	4.98	3.36	2.59	6.48	5.25	4.42	3.14	2.50	0.23	0.038
Flow to MTA lands: Existing: 29.5 + 4.31 = 33.81 c.f.s (100 year) Proposed: 26.48 (100 year)												
Flow to Village System: Existing: 7.65 (100 year) Proposed: 6.48 c.f.s (100 year)												
Provided Storage Volume: 0.23 ac-ft (approx. 10,000 cf)												

3. Proposed Mitigation

a. Description of Proposed Drainage Facilities and Methods to Treat First Flush Runoff Volumes

The drainage collection detention and treatment systems have been designed in accordance with NYSDEC regulations, as described in their “Stormwater Management Design Manual,” August 2003. The drainage collection system shall consist of catch basins, surface inlets and pipes. This system will deliver runoff to a diversion manhole. This structure shall divert low flows to the proposed treatment system and high flows to the detention system.

The detention system will consist of an 11,000 c.f. stormwater detention tank and an outlet control structure. The outlet control structure will control the rate of discharge for all design storms so that discharge rates will not exceed those of existing conditions.

The treatment system will consist of a 1,440 c.f. pre-treatment tank and a filter unit of the “organic” type, as described in the NYSDEC’s “Stormwater Management Design Manual”. The pre-treatment tank has been designed to contain 25% of the calculated water quality volume (WQv) in accordance with NYSDEC Phase II Regulations for re-development sites. This volume includes the “first flush” volume.

As stated, the diversion manhole will initially direct all incoming flow to the pre-treatment tank. As flow through the filters is relatively slow, water will back up into the pre-treatment tank. Only when the pre-treatment tank is full, will water reach a level in the diversion manhole to be diverted to the detention system.

Thus, this system as designed, will ensure treatment of “first flush” and all regulated WQv volumes and detention of all runoff to pre-existing rates, in accordance with NYSDEC regulations.