

### **III.D: Stormwater Management**

## D. Stormwater Management

### 1. Existing Conditions

#### a. Existing Infrastructure

For the purpose of the description of the stormwater infrastructure and the analysis of the existing and proposed stormwater runoff and impacts, the Project area consists of five (5) sites (see Exhibit III.D-1). The sites are the following:

- River Park Center - The area is bounded by Elm Street, Palisade Avenue, New Main Street and Nepperhan Avenue.
- Government Center - This area is located at the southwest corner of the intersection of New Main Street and Nepperhan Avenue.
- The Cacace Center - The area is bounded by South Broadway, New Main Street and Nepperhan Avenue. This area includes the existing parking lots north of the Cacace Justice Center that will be developed as part of this Project.
- Palisade Avenue Office Building – The area is located at the northwest corner of Elm Street and Palisade Avenue. This area includes existing building and undeveloped areas behind the buildings, adjacent to Palisades Avenue.
- Palisades Point – the approximately 5.8 acres area located west of the Metro-North Railroad and south of the existing Scrimshaw House building.

In addition to the above, stormwater issues related to Larkin Plaza are analyzed in section III.D.2.c.

The existing stormwater runoff within the Project area (with the exception of Palisades Point) is collected by the City of Yonkers combined storm and sanitary collection system, the New York State Department of Transportation (“NYSDOT”) storm drain system within Nepperhan Avenue and direct runoff to the Saw Mill River.

The combined sewers that service River Park Center are located within the surrounding streets as follows:

- *Elm Street* - Combined sewers from north and north east of Elm Street are conveyed south along Elm Street, toward Palisade Avenue, by 36-inch to 48-inch brick sewers. A 36-inch cast iron sewer is located beneath the Elm Street Saw Mill River bridge.
- *John, James & School Street and Engine Place (Chicken Island Parking Area)* - Within this area, 8-inch to 18-inch combined sewers convey flow to the Palisade Avenue combined sewer. At the present time, only the fire department building on School Street and several inlets convey stormwater to these sewers. Prior buildings in the area of Engine Place were historically connected to these combined sewers. Today, the runoff from the grass area between Palisade Avenue and Engine Place and the parking lot are collected by inlets that flow to the Saw Mill River.
- *Palisade Avenue*- 36-inch cast iron and 48-inch brick combined sewers are located along Palisade Avenue and flow toward Getty Square.

- *Nepperhan Avenue*- The combined sewer in Nepperhan Avenue conveys flows from northeast. At the intersection of Elm Street, an 18-inch clay and a 24-inch by 36-inch brick sewer flow southwest toward New Main Street and convey flows from the south and east of Nepperhan Avenue. A 12-inch and 18-inch clay sewer begins west of New Main Street and south of the Government Center site. This sewer conveys flows from City Hall and 87 Nepperhan Avenue and former buildings south of Nepperhan Avenue.
- *New Main Street*- 36-inch and 48-inch brick combined sewers convey the flow from Nepperhan Avenue and along New Main Street to Getty Square.

Within Getty Square, a regulator allows the City trunk combined sewer to overflow into the Westchester County trunk sewer. The City combined sewers are tributary to the Westchester County Main Street Pump Station located at the west end of Main Street, on the west side of the railroad. Another regulator is also located at the Main Street Pump Station site which overflows directly to the Hudson River during times of heavy rainfall. From the Getty Square regulator, the 72 inch County trunk sewer flows north to the North Yonkers County Pump Station located along the Hudson River. The North Yonkers Pump station also has an overflow to the Hudson. The overflow is chlorinated prior to discharge during times of heavy rain (see Sanitary Sewer, Section III.H.1.c, for further description of the combined sewers).

A separate storm drain system was constructed within Nepperhan Avenue when the street was previously reconstructed by the NYSDOT. This storm drain system is generally located between New Main Street and Waverly Street and discharges directly to the Saw Mill River, southwest of the Henry Herz Street bridge, Exhibit III.D-2

The description of the drainage systems serving the other Project sites is as follows:

- Government Center – The majority of this area drains to the combined storm sewer in New Main Street and Nepperhan Avenue. Some overland flow from Government Center flows toward Nepperhan Avenue and to the NYSDOT storm drain system.
- The Cacace Center – Runoff from the northeastern portion of this area flows toward Nepperhan Avenue and Broadway. There is an 18-inch clay combined sewer in Broadway that flows north toward Getty Square. The eastern portion of this area, including the Cacace Justice Center, flows in a series of 12-inch clay pipes toward the 40-inch brick combined sewer in New Main Street. This sewer continues north across Nepperhan Avenue and to Getty Square. Portions of the parking lot in the northern portion of the area flow towards Nepperhan Avenue and is picked up by the roadway drainage system.
- Palisade Avenue Office Building – A portion of the runoff from the buildings along Palisade Avenue is assumed to flow to the 15-inch clay combined sewer in Palisade Avenue. The balance of the site drains directly to the Saw Mill River.

- Palisades Point – The existing drainage infrastructure on the Palisades Point site is limited to several catch basins in the existing asphalt parking area, which convey stormwater through piping to a headwall structure along the shoreline of the Hudson River. The balance of the site flows overland directly to the River.

b. Existing Stormwater Runoff

A detailed investigation of the Project sites and the surrounding areas was undertaken to provide an understanding of the surface runoff patterns on and adjacent to the Project sites (see Exhibits III.D-6 through III.D-12).

- River Park Center – This entire area has been subject to prior development and disturbance and is currently comprised of approximately 9.69 acres of buildings, roads and parking, 3.95 acres of lawn, grass and the wooded and brush area adjacent to the Saw Mill River and 0.36 acres accounting for the existing river water course. Stormwater runoff from approximately 4.36 acres of this area (designated Drainage Area A-3) currently drains directly to the Saw Mill River by overland flow. Approximately 6.68 acres drain to storm drain systems that outlet to the Saw Mill River (designated Drainage Area A-2). Historically, the majority of this area discharged to the combined sewers. However, after demolition of prior buildings, most of the area from Palisade Avenue to John Street now goes to the Saw Mill River. The remaining 2.96 acres of this area discharges to the City combined sewer system (designated Drainage Area A-1).
- Government Center - This area (designated Drainage Area B) is comprised of approximately 1.79 acres of buildings, road and parking and 1.03 acres of lawn and grass. Stormwater runoff from portions of this site flow toward Nepperhan Avenue. The balance of the runoff flows toward New Main Street where it is collected by the City combined sewer system.
- The Cacace Center- This entire area has been subject to prior development and disturbance and currently is comprised of approximately 2.55 acres of buildings roads and parking and 2.38 acres is lawn and grass. The area has been divided into two separate drainage areas for the analysis. The western portion (designated Drainage Area C-2) which flows to the intersection of South Broadway and Nepperhan Avenue where it enters the City of Yonkers combined sewer system and the eastern portion (designated Drainage Area C-1) flows to the intersection of New Main Street and Nepperhan Avenue, where portions of the overland flow enters the Nepperhan Avenue storm drain system that discharges to the Saw Mill River.
- Palisade Avenue Office Building – This entire area has been subject to prior development and disturbance and is comprised of approximately 0.52 acres of buildings and approximately 0.35 acres of brush, gravel and rock outcrops at the rear of the existing buildings. The entire site flows to the existing combined sewer in Palisades Avenue. (Designated Drainage Area D-1).
- Palisades Point - The site is partially developed with a 1.70 -acre asphalt parking lot and asphalt access road. The remaining 3.89-acres of the site are currently vacant. The vacant areas of the site consist of natural vegetation along the

shoreline and bare disturbed areas within the interior of the property that include stockpiles of building debris. The adjacent existing 0.65-acre City open space area has been included in the drainage study area. The total study area is 6.24-acres and includes 2 drainage sub-areas. The majority of the site drains to the Hudson River and the balance of the site drains to the southeast corner of the site onto the adjacent properties (see Exhibit III.D-12). The pre-development drainage tributary areas including sub-watershed limits and flow paths are indicated on Exhibit III.D-12.

Design Points were identified for each of the existing drainage areas. The Design Points represent the location where the majority of runoff from the respective drainage area exits the site. The same design points are identified in post-development conditions so that a comparison can be made between the pre- and post-development conditions. The Design Points are shown on Exhibits III.D-7 to III.D-12. A description of each of the Design Points follows:

- Design Point A – For the purpose of determining existing peak flow rates, six (6) design points were used for the analysis. The peak flows from each Design Point was combined to determine the total flow to the Hudson River and the total flow from the River Park Center area.
- Design Point B – The combined runoff from the existing Government Center parking garage, building and landscape area.
- Design Point C – Drainage Area C is divided into two (2) sub areas with separate Design Points. Design Point C-1 has been established for the runoff toward New Main Street and Design Point C-2 for the runoff toward the combined sewer in Broadway.
- Design Point D –Runoff from the entire Palisades Avenue Office Building site flows toward the combined sewer in Palisade Avenue, designated Design Point D-1
- Palisades Point- The existing runoff to the Hudson River is defined by two watersheds, designated DA-A and DA-B.

The results of the 2, 10, 25 and 100-year routed hydrographs for pre-development condition can be found in the DEIS Appendix 3.C and are summarized below in Tables III. D-1 and D-2 below

**Table III. D-1**  
**Table of Existing Peak Stormwater Discharge Rates**

Location	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
<b>River Park Center (Drainage Area A)</b>				
• Design Point A-2A	• 14.0	• 21.5	• 26.5	• 33.9
• Design Point A- 3A	8.7	13.8	17.2	22.2
• Design Point A-3B	1.4	2.2	2.7	3.5
<i>Sub-total to Saw Mill River (1)</i>	<i>22.0</i>	<i>34.3</i>	<i>42.4</i>	<i>54.5</i>
• Design Point A-1A	5.2	7.7	9.3	11.7
• Design Point A-1B	2.4	3.5	4.2	5.2
• Design Point A-1C	1.4	2.1	2.5	3.1
<i>Sub-total to Combined Sewer (1)</i>	<i>9.0</i>	<i>13.2</i>	<i>16.0</i>	<i>20.1</i>
<i>Total Drainage Area A (1)</i>	<i>30.7</i>	<i>42.3</i>	<i>58.2</i>	<i>74.6</i>
<b>Government Center (Drainage Area B)</b>				
• Design Point B-1 (to Combined Sewer)	6.3	9.7	11.9	15.2
• Design Point B-2 (to Saw Mill River)	0.7	1.2	1.5	1.9
<i>Total Drainage Area B (1)</i>	<i>7.1</i>	<i>10.9</i>	<i>13.4</i>	<i>17.2</i>
<b>Cacace Center (Drainage Area C )</b>				
Design Point C-1 (toward Nepperhan Ave/River)	6.1	9.6	11.9	15.4
Design Point C-2 (to combined sewer)	5.6	8.8	10.9	14.0
<i>Total Drainage Area C (1)</i>	<i>11.7</i>	<i>18.4</i>	<i>22.8</i>	<i>29.4</i>
<b>Palisades Avenue Office Building (Drainage D)</b>				
<i>Design Point D-1 (to Combined Sewer)</i>	<i>2.4</i>	<i>3.6</i>	<i>4.3</i>	<i>5.5</i>
<b>River Park Center, Government Center, Cacace Center and Palisades Avenue Office Building Totals</b>				
<i>To Saw Mill River (1)</i>	<i>28.6</i>	<i>44.9</i>	<i>55.7</i>	<i>71.7</i>
<i>To Combined Sewers (1)</i>	<i>23.4</i>	<i>35.2</i>	<i>43.1</i>	<i>54.8</i>
<b>Palisades Point</b>				
<i>Watershed DA-A</i>	<i>7.0</i>	<i>12.3</i>	<i>14.5</i>	<i>19.2</i>
<i>Watershed DA-B</i>	<i>0.7</i>	<i>1.2</i>	<i>1.4</i>	<i>1.9</i>

(1) Total Discharge is based on sum of hydrographs

Source: PS&S and McLaren Engineering Group

c. Existing Saw Mill River Flume/Culvert

(1) Flume Inspection

In the summer of 2006, the McLaren Engineering Group conducted an inspection of the open and culverted sections of the Saw Mill River from the Hudson River upstream to the spillway located near Waring Row. The purpose of the inspection was to document the condition of the existing culvert/flume structures, prepare a condition survey report which presents the existing conditions, and make comparisons with the findings provided in the Flume Investigation Report prepared for the City of Yonkers by Cahn Engineers, Inc in December 1978. (the "Prior Flume Report").

The inspection team was comprised of a 4-man, OSHA trained and certified crew. The team was supervised by a registered Professional Engineer/Diver. Three

different locations were used as entry points into the culvert/flume from which the inspection team conducted its operations. The inspection of the lower section of the culvert/flume was staged from shore just west of the Metro North Train Station. The entry point for the inspection of the middle section of the culvert/flume was located at the foot of Mill Street. Lastly, the upper section of the culvert/flume was inspected from the upstream fascia of the Ann Street Bridge.

The inspection included a one hundred percent visual inspection of the culvert/flume structures. Areas of observed structural deficiencies and deteriorated or undermined elements of abutments and retaining wall undermining were fully documented. In addition, close attention was paid to the areas of significant deterioration noted in the Prior Flume Report. The report of the inspection is entitled “Nepperhan/Saw Mill River Culvert/Flume Inspection, Yonkers, New York” and is dated August 2006 (the “Flume Study”). The Flume Study is in Appendix 3.B of this DEIS. Representative photographs of the observed conditions are contained in the Flume Study.

(2) Existing Flume Conditions

Throughout the Project area, beginning at the Elm Street bridge, the Saw Mill River has an open section that flows in a southwesterly direction, under the bridge at John Street alley and enters a culvert at the School Street Bridge. The river proceeds under the municipal parking lot in a westerly direction parallel to Nepperhan Avenue and re-immerses west of Henry Herz Street. The river then turns north and enters the flume at Ann Street. The river falls approximately 13 feet in elevation along this length. The river bottom throughout this area is naturalized, with a cobble/boulder stream bed. The open portions of the river have a channel width between 30 and 40 feet and steep sloping or vertical banks stabilized with concrete, stone riprap or masonry walls. The bridges over the river and the culverted sections are aligned with the river and have dimensions greater than or equal to the adjacent channel width. The channel walls exhibit varying degrees of undermining and erosion and the channel bottom exhibits scour and/or aggradations and debris accumulation in many locations. (See Exhibits III.D-3 through III.D-5)

At Ann Street, the river enters the underground flume. The flume flows in a northerly direction toward Getty Square, then under buildings located along North Broadway to Manor House Square and then in a westerly direction south of and parallel to Dock Street under Larkin Plaza parking lot and the park area. It then continues under Buena Vista Avenue and the Metro-North Railroad tracks to the Hudson River.

The construction and overall dimensions of the flume varies substantially between Ann Street and Warburton Avenue and is described and photo-documented in detail in the Flume Study. West of Warburton Avenue, the flume was constructed as part of the 1920's Army Corps of Engineers project (see Exhibit III.D-1a). This portion of the flume consists of an arch concrete

structure with maximum height of 8 feet and a width of 20 feet. The culvert is made of reinforced concrete that is 12 to 15-inch thick. The foundation is supported by timber piles varying in length from 28 to 41 feet. The arch culvert enters Larkin Plaza to the east at Warburton Avenue and extends to Buena Vista Avenue. At Buena Vista Avenue, the arch culvert widens into a 29 feet wide by 10 feet high structure that extends under the street and the building to the west to the tidal basin to the Hudson River.

Overall, the flume is generally in fair condition. The Flume Study documents areas where stone masonry footings are undermined, mostly in areas of the flume where there are higher velocities or change in channel alignment. Deteriorated roof elements observed are primarily a result of the wet and humid environment and lack of preventive maintenance.

There are many locations where debris has collected within the flume. This ranges from large cobbles and stones to portions of trees and garbage. In order to restore full hydraulic capacity to the flume, it is recommended that the debris should be cleared from the flume.

The Applicant and the City do not currently have any ownership interest in the portions of the Saw Mill River and the flume that are located within private properties owned by others, and will not have any such ownership interest during construction of the Project or after its completion. The Flume Study was prepared by the Applicant's consultants for informational purposes only and is published in this DEIS solely in response to the scoping document adopted by the City Council. No property owner is entitled to rely on the Flume Study, and each property owner is encouraged to perform their own inspection of the portion of the flume within their property to determine what repairs or maintenance, if any, is warranted by current conditions.

d. Existing Known Flooding Conditions Around the Project Sites

Various officials from the City of Yonkers, including the City Engineer, City Planning Director and Commissioner of Public Works were interviewed regarding flooding in the River Park Center area, and indicated that they are not aware of any current or prior flooding problems in the Project area.

Additionally, various reports confirm that flooding has not occurred in this vicinity in the recent past. Notably, the report entitled "Daylighting Potential for Saw Mill River in Downtown Yonkers", prepared by Han-Padron Associates, LLP and dated March 2004 depicts the ordinary high water elevation and the "180 year" flood elevation at various locations along the relevant portion of the river. None of these locations show overtopping during the flood event. This information is consistent with the hydraulic modeling of flood events in the existing river performed by the Applicant's consultants.



On April 15th and 16th 2007, a Nor'easter storm impacted the region with over 7 inches of rain within a 24 hour period. This storm resulted in severe flooding conditions within the Saw Mill River Valley. In the Nepera Park section of Yonkers, the Saw Mill River Parkway was completely inundated and many homes were impacted. As the river reached peak elevation during the morning of Monday April 16th, observations were made of the river at the River Park Center site, and revealed that the flood flow was maintained below the top of bank. From Elm Street to Ann Street the adjacent properties were not flooded. This is consistent with prior data collected and with the hydraulic modeling of flood events performed by the Applicant's consultants

e. Saw Mill River Existing Conditions

(1) Saw Mill River Drainage Basin

The Saw Mill River is a tributary of the Hudson River and is located within Westchester County, New York. The river's headwaters are located in the Town of New Castle and it flows south along the Saw Mill River Parkway to the discharge point in the City of Yonkers, NY. The drainage basin is approximately 23 miles long with an average width of 1.4 miles and an average slope of 22 feet/mile. The contributing watershed is approximately 26.5 square miles and encompasses portions of New Castle, Sleepy Hollow, Tarrytown, Pleasantville, Greenburgh, Mount Pleasant, Elmsford, Irvington, Dobbs Ferry, Ardsley, and Hastings-on Hudson. In the lower reaches of the Saw Mill River, the riverbed is narrow in comparison to the upper reaches and is confined to a narrow valley with steep hills to the east and west. Within the City of Yonkers, these hills are typically between 200 and 300 feet above the riverbed.

The land use throughout the Saw Mill River watershed is comprised of approximately 63% urban use, 36% forested area or public lands and 1% agricultural use. Based on the Flood Insurance Study for the City of Yonkers, performed in January 21, 1998, 36.6% of the total land use in the City of Yonkers is comprised of residential space, 23.6% is streets, parkways, and thruways, 8.0% is commercial land, 3.5% is industrial land, 3.0% is aqueducts and railroad rights of ways, and 20.9% is public and institutional land.

The City of Yonkers has a temperate climate. The weather patterns within Yonkers are similar to the entire New York City – Westchester County area. The average annual rainfall over the entire basin is approximately 47.4 inches, and the average annual snowfall is approximately 36 inches. Rainfall distribution is fairly uniform throughout the year though slightly higher amounts of precipitation tend to accumulate during summer months. Snowfall occurs generally between November and April of each year. According to the National Weather Service Records, December, January, and February are the peak months for snowfall.

The Saw Mill River has been subject to various modifications throughout recent history to accommodate transportation projects and stream-side development.

During the last twenty-five years, four (4) flood control projects have been constructed along the length of the river under the auspices of the Army Corps of Engineers. Within the City of Yonkers, river modifications have included the 1980's Nepera Park and Croton Aqueduct Flood Control projects and the 1920's Army Corps of Engineers construction of a culvert over the final 2000 feet of the river prior to discharge to the Hudson River. Photographs of the construction of the culvert are shown in Exhibit III.D-1a.

The New York State Department of Environmental Conservation ("NYSDEC") classifications of the water quality of the Saw Mill River at the Project sites is discussed in Section III.C of this DEIS.

The Saw Mill River is included in the Proposed Final New York State 2006 Section 303(d) List of Impaired Waters. The Federal Clean Water Act requires states to periodically assess and report on the quality of waters in their state. Section 303(d) of the Act also requires states to identify Impaired Waters, where specific designated uses are not fully supported. For these Impaired Waters, states must consider the development of a Total Maximum Daily Load (TMDL) or other strategy to reduce the input of the specific pollutant(s) that restrict waterbody uses, in order to restore and protect such uses. The NYS Section 303(d) List indicates that the Saw Mill River is impaired with floatables due to urban runoff and impaired for fish consumption due to chlordane within contaminated sediment. Since Saw Mill River is a listed water, the project will be subject to a 60 day review by NYSDEC of the Stormwater Pollution Prevention Plan. The stormwater management plan for the Project will include water quality and soil erosion control measures that will address the noted impairments.

(2) Analysis of the Current 100-year Flood Flow within the Saw Mill River

All flood flows were obtained from the Army Corps of Engineers ("ACOE") report entitled "Saw Mill River Completed Flood Control Project at Yonkers, NY", dated February 1987 and confirmed by comparing the Federal Emergency Management Agency ("FEMA") Flood Insurance Study, last revised January 21, 1998. The FEMA and the ACOE Studies only provide a detailed analysis of the flows within the Saw Mill River prior to the Saw Mill River gauge, which is upstream of Elm Street. An analysis of the topographic mapping downstream of the limit of the FEMA study determined the additional drainage area to the river at Palisade Avenue is 183 acres and to Larkin Plaza is 91 acres. Much of this area drains to the City combined sewers and does not reach the river or underground flume. However, to provide a conservative design flow for the Project area, the entire area was assumed to drain into the river. This additional drainage was added to the 100-year flood hydrograph contained in the ACOE study. For the analysis of the Project, a 100-year design flow of 1540 cubic feet per second (CFS) has been used.

The hydraulics for the existing conditions within the Saw Mill River were analyzed using HEC-RAS software. A summary of the base flow, 10-year and 100-year design flow rates, water surface elevations, channel slope and channel velocity with the Project area are shown in Table III.D-2 below.

**Table III. D-2**  
**Existing Conditions–Saw Mill River**

	Design Flow (CFS)	Water Surface Elevation	Main Channel Slope	Main Channel Velocity (CFS)
75 Feet Upstream of Ann Street (HEC-RAS Station 205.98)				
Base Flow	30	45.9	1.1%	2.4
10-year	1015	50.3		8.7
100-year	1540	52.7		8.5
72 Feet Upstream of School Street (HEC-RAS Station 800.98)				
Base Flow	30	54.0	0.9%	4.1
10-year	1015	58.7		12.4
100-Year	1540	60.0		14.5
Downstream of Elm Street Bridge (HEC-RAS Station 1224.26)				
Base Flow	30	57.8	1.8%	2.0
10-year	1015	62.7		5.9
100-Year	1540	64.3		11.0

The results of the HEC-RAS analysis indicate that the river will remain within the banks during the 100-year design storm. This is consistent with the observations made during the April 2007 Storm. Figures D & E show photographs of the river during the April 16, 2007 storm and during normal conditions upstream of Ann Street and School Street. The total 24-hour rainfall during the April 16<sup>th</sup> storm was approximately 7.5 inches of rainfall (per Westchester Airport NOA records). This rainfall is consistent with a 100-year storm.

## 2. Anticipated Impacts

### a. Post-Development Stormwater Runoff (Except Palisades Point)

Based on the building program for the Project, an analysis of the proposed stormwater runoff conditions was performed to determine the impact of the Project on the existing City combined sewer system and to the Saw Mill River.

To the extent possible, the drainage from the developed sites will be conveyed by new separate storm drains and discharged to the Saw Mill River to reduce the runoff to the City combined sewer system. A description of the impact of the Project on the stormwater runoff is as follows (See Exhibits III.D-13 through III.D-15):

- River Park Center – The runoff from the proposed development will be directed to discharge directly to the Saw Mill River. The only portions of the site that will continue to discharge to the City’s combined sewers will be the property on the southeast corner of New Main Street and Palisade Avenue (designated Drainage Area A-1A) and the Church property along Nepperhan Avenue (designated Drainage Area A-1C), which are not part of the Project. The area of runoff to the combined sewers is reduced from 3.2 acres to approximately 0.71 acres. The runoff from building and parking garages will be conveyed to outlets along the riverwalk at the site. Runoff from the pedestrian areas along the Saw Mill River will drain directly to area drains and then to the river. All discharges will pass through water quality structures. The River Park Center development (designated Drainage Area A-1A) includes the turf baseball field on the roof of the building. This will encompass approximately 3 acres of turf area. With the construction of the ballpark, the amount of impervious area within this portion of the Project will not increase over existing conditions.
- Government Center - This area (designated Drainage Area B) will include the new parking garage. Runoff from the entire garage will be conveyed in a new storm drain and outlet to the Saw Mill River. The construction of the garage will result in an increase of approximately 0.9 acres of impervious area. The runoff from the garage will pass through an underground filtering device prior to discharge to the River.
- The Cacace Center – The construction in this area will be comprised of the parking garage, Fire Department Headquarters building and the office building/hotel. In order to not impact the peak stormwater discharge toward the South Broadway combined sewer, runoff from the entire garage structure will be directed to the Nepperhan Avenue and New Main Street storm drains and discharge to the Saw Mill River. As shown in Table III. D-3 below, the stormwater runoff to the combined sewer will be reduced.

**Table III. D-3**  
**Comparison of Peak Runoff to South Broadway Combined Sewer from Cacace Center**

Drainage Area C-2 Discharge to Broadway Combined Sewer	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
Existing Condition	5.6	8.8	10.9	14.0
Developed Condition	4.1	6.6	8.2	10.6
Difference	-1.5	-2.1	-2.6	-3.3

Source: McLaren Engineering Group

The total impervious area will increase by approximately 0.5 acres. Runoff will be directed to water quality and underground-filtering structures prior to discharge enters the Nepperhan Avenue storm drain system and discharged to the Saw Mill River.

- Palisade Avenue Office Building - This entire area will discharge to the proposed storm drain system in Palisades Avenue. See Section III-H 3.b for further discussion of separation of combined sewers.

A summary of the post-development condition peak stormwater peak discharge rates from each of the sites (except Palisades Point) is provided in Table III. D-4.

**Table III. D-4**  
**Post Development Peak Stormwater Discharge Rates**

Location	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
<b>River Park Center (Drainage Area A)</b>				
• Design Point A-2A (to Saw Mill River)	36.5	54.1	65.7	83.0
• Design Point A-1A (to combined sewer)	0.9	1.3	1.5	1.9
• Design Point A-1C (to combined sewer)	1.2	1.7	2.1	2.6
<i>Sub-total to Combined Sewer (1)</i>	<i>2.1</i>	<i>.0</i>	<i>3.6</i>	<i>4/5</i>
<i>Total Drainage Area A (1)</i>	<i>38.6</i>	<i>57.1</i>	<i>69.3</i>	<i>87.6</i>
<b>Government Center (Drainage Area B)</b>				
• Design Point B (to Saw Mill River)	8.1	11.8	14.2	17.8
<b>Cacace Center (Drainage Area C)</b>				
• Design Point C-1 (to Saw Mill River)	9.1	13.1	15.7	19.7
• Design Point C-2 (to combined sewer)	4.1	6.6	8.2	10.7
<i>Total Drainage Area C (1)</i>	<i>13.2</i>	<i>19.7</i>	<i>24.0</i>	<i>30.4</i>
<b>Palisade Avenue Office Building</b>				
<i>Design Point D1 (to River)</i>	<i>2.4</i>	<i>3.6</i>	<i>4.3</i>	<i>5.5</i>
<b>River Park Center, Government Center, Cacace Center and Palisade Avenue Office Building Totals</b>				
<i>To Saw Mill River(1)</i>	<i>56.1</i>	<i>82.5</i>	<i>100.0</i>	<i>126.0</i>
<i>To Combined Sewers (1)</i>	<i>6.1</i>	<i>9.6</i>	<i>11.8</i>	<i>15.2</i>

(1) Total Discharge is based on sum of hydrographs  
Source: McLaren Engineering Group

The Project will result in a decrease in stormwater runoff to the City combined sewers; see Section III.H, Utilities, for a further discussion of the impacts to the combined sewer system and mitigation.

A summary of the total existing and proposed peak discharge to the Saw Mill River is shown in Table III. D-5.

**Table III. D-5**  
**Comparison of Total Peak Runoff to the Saw Mill River from Project Sites**

	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
Existing Condition	28.6	44.9	55.7	71.7
Proposed Condition	56.1	82.5	100.0	126.0
Difference	+27.5	+37.6	+44.3	54.3

Source: McLaren Engineering Group

As shown in Table III. D-5, the increase of peak discharge to the Saw Mill River ranges from approximately 27.5 CFS for a 2-year design storm to 54.3 CFS for the

100-year storm. The 29 acre drainage area studied for the Project represents 0.1 percent of the total Saw Mill Drainage Basin. Based on information contained in the ACOE study entitled “Flood Control Study, Detailed Project Report, Saw Mill River, Nepera Park/Yonkers, Westchester County, New York July 1986”, the peak discharge for the Saw Mill River occurs in Yonkers approximately 38 hours after the beginning of a storm event or approximately 20-24 hours after the peak rainfall. Since the Project is located proximate to the Saw Mill River, the runoff from the Project will enter the river very quickly. This peak discharge from the Project will occur at approximately 12 hours after the beginning of the rain event or within 10 to 20 minutes after the peak rainfall. When considering the Project discharge combined with the upstream flow from the Saw Mill River, there will only be an increase of approximately 19cfs during a 100-year storm. This nominal increase (1% +/-) will result in less than 0.1 foot change to the water surface elevation and less than 0.1 feet per second change in the River flow downstream of the project (See Appendix 3.C). Therefore, the minor increase in impervious area as a result of the Project and the diversion of runoff to the Saw Mill River will not have an impact of the drainage conditions downstream or adjacent to the Project.

b. Palisades Point - Post-Development Stormwater Runoff

The proposed development will introduce two (2) new buildings each with an attached multi-story parking structure, new roadways, parking areas and associated walkways. The existing asphalt parking area and roadway will be removed. Impervious coverage will increase to 4.27-acres while pervious coverage will decrease to 1.40-acres.

The proposed plan divides the site into three (3) drainage sub-areas. Area PR DA-A (north end of site) will discharge at the existing headwall. While Area PR DA-B (central) and PR DA-C (south) will each discharge to new headwall structures. The post-development drainage tributary areas including sub-watershed limits and flow paths are indicated on Exhibit III.D-16.

The results of the 2, 10, 25 and 100-year routed hydrographs for post-development conditions can be found in the DEIS Appendix 3.C and are summarized in Table III.D-6 below. Water Quality Volume and Water Quality Flow calculations for each respective drainage area are also included in the Appendix.

Since the Palisades Point site discharges directly to the Hudson River, there is no impact due to any increase in peak discharge. The proposed water quality facilities will provide treatment of runoff prior to discharge to the river.

**Table III. D-6**  
**Post Development Peak Stormwater Discharge Rates**

Watershed	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
PR DA - A	1.8	2.7	3.1	3.9
PR DA - B	4.0	6.9	8.0	10.6
PR DA - C	5.1	8.0	9.3	11.8

Source: PS&amp;S

## c. Larkin Plaza – Post Development Stormwater Runoff

The improvements to Larkin Plaza would result in approximately 0.68 acres of impervious area, including the daylighted portion of the Saw Mill River. This represents a 44 % reduction of impervious area over the existing conditions. A summary of the existing and proposed development peak runoff from the Larkin Plaza project site is shown in Table III.D-7 (See Appendix 3.C for Larkin Plaza calculations)

**Table III. D-7**  
**Comparison of Total Peak Runoff for Larkin Plaza Project Site**

	Design Year Storm (CFS)			
	2-Year	10-Year	25-Year	100-Year
Existing Condition	4.0	5.9	7.2	9.1
Proposed Condition	2.8	4.8	6.1	8.0
Difference			-1.1	-1.1

The stormwater quantity and quality requirements for the Project will be subject to the New York State Stormwater Management Design Manual, Chapter 9 “Redevelopment Projects.” The New York State Department of Environmental Conservation criteria state that if redevelopment results in no increases of impervious area or changes to hydrology that increase the discharge rate, the ten-year and hundred-year criteria do not apply. This is true because the calculated discharge of existing versus post-development flows results in a decrease in stormwater discharge. Also, the water quality requirements can be achieved if the plan proposes a reduction of impervious cover by a minimum of 25% of the existing total site impervious area. A reduction in site imperviousness will reduce the volume of stormwater runoff, thereby achieving, at least in part, stormwater criteria for both water quality and quantity. Since the Projects will result in the disturbance of more than 1 acres, a Stormwater Pollution Prevention Plan will be prepared to address the above requirements and will provide for the required sediment and erosion control measures and phasing of the Project.

## d. General Permit for Stormwater Discharges from Construction Activity

Since the proposed Project will result in the disturbance of one (1) acre or more of total land area, the stormwater management and erosion control measures must comply with the New York State Department of Environmental Conservation State Pollution Discharge Elimination System for Discharges from Construction Activity, General Permit No. GP-02-01 (the “General Permit”). To be covered under the General Permit, the Project is required to conform with the technical standards for stormwater quantity and quality controls presented in the New York State Stormwater Management Design Manual (“DEC Design Manual”), including Chapter 9, (“Redevelopment Projects”) of the DEC Design Manual. Stormwater management practices in redevelopment projects balance 1) maximizing improvements in site design that can reduce the impacts of stormwater runoff, and 2) providing a maximum

level of on-site treatment that is feasible given site constraints. The primary focus of Chapter 9 is to identify alternative practices and their sizing criteria.

As a Municipal Separate Stormwater System, the City has developed a Stormwater Management Program (“SWMP”). The SWMP includes a listing of the Best Management Practices (“BMPs”) that will be implemented by the City to achieve the regulatory standard of reducing pollutants in the City’s stormwater to the maximum extent possible. With respect to construction activities, the BMPs include implementation of education and training of construction site operators; implementation of site plan review that includes ensuring that sediment and erosion control are part of the construction process; conducting site inspections and enforcing compliance with the issued building permit, approved site plans and the City Erosion and Sediment Control Code. The Applicant’s compliance with the General Permit will meet these objectives.

The General Permit requires the preparation of a Stormwater Pollution Prevention Plan (“SWPPP”). The SWPPP must include a certification by a licensed/certified professional and shall, at a minimum:

- Provide background information about the scope of the project, including the location, type and size of project;
- Provide a site map/construction drawing(s) for the project, including a general location map. The site map should show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s), wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharge;
- Provide a description of the soil(s) present at the site;
- Provide a construction-phasing plan describing the intended sequence of construction activities, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance. Consistent with the New York Guidelines for Urban Erosion and Sediment Control there shall not be more than five (5) acres of disturbed soil at any one time without prior written approval from the NYSDEC;
- Provide a description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a pollutant source in the storm water discharges;
- Include the name and classification of receiving waters and identify any that are listed as 303(d) impaired waters.
- Provide a description of construction and waste materials expected to be stored on-site with updates as appropriate, and a description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response;
- Describe the temporary and permanent structural and vegetative measures to be used for soil stabilization, runoff control and sediment control for each stage of the project from initial land clearing and grabbing to project close-out;



- Identify and show on a site map/construction drawing(s) the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- Provide the dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins;
- Identify temporary practices that will be converted to permanent control measures;
- Provide an implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and the duration that each practice should remain in place;
- Provide a maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practices;
- Provide a delineation of SWPPP implementation responsibilities for each part of the site;
- Provide a description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable; and
- Provide any existing data that describes the stormwater runoff characteristics at the site.
- Provide a description of each post-construction stormwater control practice;
- Identify and show on a site map/construction drawing(s) the specific location(s) and size(s) of each post-construction stormwater control practice;
- Provide a hydrologic and hydraulic analysis for all structural components of the stormwater control system for the applicable design storms;
- Provide a comparison of post-development stormwater runoff conditions with pre-development conditions;
- Provide the dimensions, material specifications and installation details for each post-construction stormwater control practice;
- Provide a maintenance schedule to ensure continuous and effective operation of each post-construction stormwater control practice. The person or entity responsible for maintenance of the post-construction measures shall be identified.

A Preliminary Stormwater Pollution Prevention Plan is included in the DEIS Appendix 3.C. The SWPPP will be further refined as the final design and construction sequence of the Project is developed and it will be filed with the City and NYSDEC for approval as required.

A summary of the responsibilities of the owner's engineer, property owner, general contractor, and subcontractors to comply with the measures set forth in the General Permit and the SWPPP are outlined below:

*Owner's Engineer*

- Prepare the SWPPP using good engineering practices, best management practices and in compliance with the General Permit.
- Prepare Notice of Intent ("NOI") for the owner for submission to the NYSDEC prior to issuance of the building permit.

- Provide copies of the SWPPP and the “Acknowledgement of Notice of Intent” to the local government agencies having jurisdiction or regulatory control over the project.
- Review the site prior to the beginning of construction and certify in an inspection report that the appropriate pre-construction erosion and sediment control measures outlined herein and that are required by the General Permit have been installed and will operate as designed.
- Conduct on-site inspections, by a qualified professional as defined by the General Permit, every 7 days and within 24 hours of 0.5 inches or greater of rainfall for general compliance with the SWPPP and the General Permit. Inspection reports will be provided to the owner within 24 hours of the field inspection. Any problem areas or areas in need of additional stabilization shall be made clear to the owner.
- Update the SWPPP each time there is a significant modification to the design or construction which may have a significant effect on the potential for discharge of pollutants into receiving waters.
- When construction is complete, provide the owner with certification that an inspection has been completed verifying that the site has undergone final stabilization.
- When the site has undergone final stabilization, prepare the Notice of Termination (“NOT”) for the owner for submission to the NYSDEC.

*Owner/Operator/Permittee*

- Sign the NOI and certify the SWPPP by signing the Owner’s Certification statement. Submit the NOI to NYSDEC.
- When the owner receives a letter of “Acknowledgement of Notice of Intent” from the NYSDEC, post a copy of this letter at the site in a prominent place for the public viewing.
- In accordance with the requirements of the General Permit, the owner/operator shall maintain a record of all inspection reports in a site log book. The site log book shall be maintained on site and be made available to the permitting authority upon request. The site log book shall contain the following documents:
  - NYSDEC Notice of Intent
  - NYSDEC Notice of Acknowledgement
  - Stormwater Pollution Prevention Plan
  - Owner/Operator SPDES Permit Certification (Signed copy)
  - Contractor/Subcontractor SPDES Permit Certification (Signed copy)
  - Pre Construction Site Assessment Report
  - Site Assessment Reports
  - Monthly Assessment Logs – The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.
  - Quarterly Reports
  - Final Certification
  - SWPPP Modifications

- General Permit GP-02-01 for Stormwater Discharges from Construction Activity
- Ensure the SWPPP report, inspection reports and inspection quarterly summaries are certified by an authorized person who has responsibility for the overall operation of the site such as a project manager or site superintendent.
- Require the general contractor and all sub-contractors involved with construction activity that disturbs the site to fully implement the SWPPP and the requirements set forth in the General Permit. The SWPPP should be certified by the general contractor and all sub-contractors involved with earth disturbance during construction by signing the certifying statement.
- Upon project completion and when the site has reached final stabilization, the owner should sign the Notice of Termination prepared by the owner's engineer and submit to NYSDEC.
- Retain all site records and documentation including engineering reports, SWPPP reports, SWPPP inspection reports and all records of data used to complete the NOI for a minimum of 3 years from the date the site reached final stabilization.
- Provide an Operation & Maintenance manual to any future owners.

*Contractors and Sub-Contractors*

- Implement fully the SWPPP and the requirements set forth in the General Permit. Certify the SWPPP by signing the Contractor's Certification statement.
- Provide the names and addresses of all sub-contractors involved in construction activities that disturb site soils for inclusion in the SWPPP.
- Ensure all sub-contractors involved in construction activities that disturb site soils implement fully the SWPPP and the requirements set forth in the General Permit. All sub-contractors must certify the SWPPP by signing the Contractor's Certification statement.
- Conduct inspections on a regular basis of the erosion and sedimentation controls installed at the site. Maintain and repair as necessary all erosion and sedimentation controls.

e. Project Compliance with the General Permit

(1) Peak Storm Water Discharge

As shown above, the minor increase in impervious area as a result of the project and the diversion of runoff to the Saw Mill River will not increase the peak discharge in the Saw Mill River and the culvert/flume to the Hudson River. Thus, the peak discharge within the river downstream of the Project will not increase. Therefore, NYSDEC requirements for overbank flood control (10-year storm event) and extreme flood criteria (100-year storm event) do not apply to the sites that drain to the Saw Mill River. Palisades Point will discharge directly to the Hudson River and in accordance with the DEC Design Manual, overbank flood control and extreme flood criteria are not applicable.

(2) Stream Channel Protection Volume Requirements

Stream Channel Protection Volume requirements as stated in Section 4.3 of the DEC Design Manual are designed to protect stream channels from erosion. However, the Stream Channel Protection Volume requirements are not applicable if discharge is to a tidal water or a fourth order stream. Section 4.7 of the DEC Design Manual classifies streams according to their order in the network of streams in a watershed. A stream that is identified as a “blue-line” stream on USGS topo maps and has no tributaries or branches is defined as a first-order stream. When two first-order streams combine, a second-order stream is created, and so on. Based on a review of the USGS topo maps for the Saw Mill River watershed, over 6 “blue-line” streams enter the river north of Dobbs Ferry (See Appendix 3.C). As the Saw Mill River in Yonkers is a greater than fourth order stream and the Hudson River is a tidal water, the Project will not be required to comply with NYSDEC Stream Channel Protection Volume requirements for coverage under the General Permit.

The Project will not increase the velocity within the downstream portions of the Saw Mill River and therefore will not create the potential for increase erosion.

(3) Water Quality Requirements

The objective of a storm water management practice is to meet the pollutant removal goals by capturing and treating 90% of the average annual storm water runoff volume, otherwise known as the water quality volume. It is assumed that by meeting the water quality volume requirements through employment of acceptable practices listed in the DEC Design Manual, the Project will, by default, meet water quality objectives. Acceptable practices for water quality treatment meet the following criteria:

- Capture and treat the full water quality volume
- 80% TSS removal and 40% TP removal.
- Acceptable longevity in the field.
- Incorporate a pretreatment mechanism.

Since this is a redevelopment project, water quality measures for the proposed Project will also be designed in accordance with Chapter 9 of the DEC Design Manual. The DEC Design Manual requires the following:

- The plan must capture and treat by implication of standard practices 25% of the water quality volume for the original impervious area, plus 100% of additional impervious area, from the disturbed site areas.
- The plan may propose use of non-standard alternate practices to treat 100% of the water quality volume from the disturbed area. The practice must be sized to capture and treat the water quality peak discharge rate associated with water quality volume.
- The use of standard practices should be targeted to treat areas with the greatest pollution potential (e.g. parking areas, roadways, etc.)

For the Project, underground treatment and/or filtration devices will be provided on all discharge points from the parking garages and site roads. In accordance with the NYSDEC regulations, the water quality facilities are sized to capture and treat 90% of the average annual stormwater runoff volume. Diversion structures will be provided capture runoff from buildings, pedestrian plazas, walkways, etc. and divert the water quality flow to hydrodynamic systems prior to discharge. All systems will be constructed in accordance with NYSDEC requirements and treat Project generated stormwater rather than allow for the direct discharge of particulates/pollutants to the Saw Mill River. A summary of the water quality volume requirements for the project sites and the anticipated type of water quality devices is as follows:

**Table III. D -8**  
**Preliminary Water Quality Volume and Description of WQ Devices**

	<b>Existing Impervious Area (Ac)</b>	<b>Proposed Impervious Area (Ac)</b>	<b>Water Quality Volume (Cubic Feet)</b>	<b>Water Quality Device Description</b>
<b>River Park Center</b>	12.4	11.0	50,200	Hydrodynamic systems to treat WQ flow rate
<b>Government Center</b>	1.8	2.5	5,300	Underground filtration device
<b>Cacace Center</b>	2.6	3.3	6,600	Underground Filtration Device

A description of the typical water quality devices to be used for the Project is as follows:

(a) **Underground Filtration Devices**

The treatment of the water quality volume by standard practices will be accomplished through the design and implementation of underground filtration device systems. The required elements of these systems will be designed in accordance with Section 6.4 of the DEC Design Manual, and the *Design of Stormwater Filtering Systems*, December 1996, published by The Center for Watershed Protection. The devices will be sand filters, Storm Filter as manufactured by Contech or other similar products. The devices will be designed as “offline” practices, with flow diversion structures provided to divert the water quality volume to the filters for treatment. Larger flows will bypass the filters and be conveyed by the storm drainage pipe systems. The filters will provide 80% TSS removal and 40% TP removal. As stated in Table 7.4 of the DEC Design Manual, the filters will also provide good removal of nitrogen (>30% TN) and metals (>60% Metals) such as cadmium, copper, lead and zinc. Fair removal (35-70%) of bacteria such as coliform, streptococci and E. coli is expected.

(b) **Hydrodynamic Systems**

Hydrodynamic systems such as gravity and vortex separators are devices that move water in a circular, centrifugal manner to accelerate the separation

and deposition of primary sediment from the water. These measures include, but are not limited to, “proprietary” oil/grit separators/hydrodynamic chambers such as devices manufactured by Stormceptor® or Vortechs® systems. These devices contain both the isolation/diversion mechanism and a treatment chamber for capturing and treating the water quality flow. These devices can be installed in line with the storm drainage system and contain a bypass for flows in excess of the water quality flow. These devices meet the goal of the DEC criteria to provide at least 80% removal of total suspended sediment (TSS) from the first flush post-construction runoff. As an additional treatment measure all catch basins will be provided with sumps and hoods on outlet pipes.

Final design of all water quality measures will be incorporated into the site plans of the Project submitted for approval and into the SWPP that is required by the General Permit. With the measures outlined above in place and the implementation of a Soil Erosion and Sediment Control Plan and onsite maintenance and inspection measures, the Project will comply with the requirements of the General Permit.

f. **Proposed Infrastructure**

The drainage from the River Park Center building and parking garages will be conveyed to outlets along the riverwalk at the site. Runoff from the pedestrian areas along the Saw Mill River will drain directly to area drains and then to the river. All discharge points will pass through water quality facilities sized to capture and treat 90% of the average annual stormwater runoff volume. Runoff from buildings, pedestrian plazas, walkways, etc. will be captured and diverted to the water quality structures. The runoff from the Government Center garage will pass through an underground filtering device prior to discharge to the new storm drain system in New Main Street that will discharge to the river. The Cacace Center office/hotel building will be directed to the South Broadway combined sewer and the garage and Fire Department Headquarters will be directed to the Nepperhan Avenue and New Main Street storm drains and discharge to the Saw Mill River. Runoff to the South Broadway combined sewer will be maintained at the existing discharge rates.

A new storm drainage system is proposed to collect runoff from the entire Palisades Point project site including building roofs, parking decks, access roadways, other paved surfaces and landscaped areas. The proposed system will include catch basins, piping, headwalls and water quality treatment units. All of the stormwater collected will be piped to discharge to the Hudson River via three (3) headwall structures (1 existing and 2 new).

g. **Proposed Daylighting of the Saw Mill River at River Park Center and Larkin Plaza**

One of the objectives of the proposed Project is to daylight portions of the Saw Mill River that are currently in the flume/culvert. The proposed Project will involve modifications to two portions of the Saw Mill River between the Elm Street Bridge and the discharge point at the Hudson River. These changes are outlined below.

*River Park Center*

The Saw Mill River currently traverses this site on a curvilinear path entering east of the intersection of Elm Street and Palisade Avenue, where it flows in a southwesterly direction to within 80 feet of Nepperhan Avenue, where it turns in a more westerly direction and flows under School Street and enters a culvert flowing under the parking lot. Upon emerging from the culvert on the westerly side of Henry Herz Street, the river bends in a north-westerly direction toward an intersection with Ann Street, where it enters the flume, which flows under Palisade Avenue, Getty Square and ultimately discharges to the Hudson River.

The proposed river improvements at River Park Center will include daylighting of approximately 400 linear feet and re-alignment of approximately 1,100 linear feet of the river and will include the portions between Elm Street and Palisade Avenue. Realigned portions of the river will have a cross sectional area equal to or exceeding the existing river sections. Although the proposed redevelopment of this site will slightly increase the impervious surface, the peak storm water discharge will not be increased, nor will the flood elevations increase at the Elm Street Bridge.

The design objectives for the improvements to the Saw Mill River include the following:

- Maintain the existing water surface elevation at the upstream (Elm Street) limit of the Project.
- Provide stable bottom and side slopes for proposed channel.
- Provide diversity of vegetation on banks and adjacent area.
- Proposed river bottom and bank improvements to address flow velocities for the various storm events. The channel will be designed to pass the 100-year storm event. The slope and bed geometry will also be designed to allow the normal base flow, ranging between 5 and 60 cfs throughout the year, to pass at depths and velocity similar to the existing conditions.

The river improvements will also include pedestrian walkways, small pedestrian bridges and appropriate riverside landscaping added along the river's edge to enhance the appearance and public access along the river. These improvements will create three different environments referred to as the "Upper River", the "Rapids" and the "Pond". The final design of these environments will be incorporated into the site plans of River Park Center submitted for approval. The following is a general description of the environments.

The "Upper River" portion will generally entail the portion of the river between Elm Street and the vicinity of the existing School Street Bridge. The grades of this portion of the river will be flattened (1.8 percent existing versus 1.3 percent proposed), although velocities will remain similar to existing conditions (2 fps vs. 1.7 fps for base flow; 5.9 fps vs. 5.0 fps for 10-year design flow; 6.9 fps vs. 5.7 fps for 100-year design flow). Pedestrian walkways and terraces will flank each side of the river and will be set above the 100-year flood elevation. River bottom and lower banks throughout this portion will be a "naturalized" stone/rip-rap surface, constructed to

the 10-year flood elevation. The banks between the 10- and 100-year flood elevations will be stabilized using a combination of “hard-scape”, live branch cuttings through boulders/rip-rap/geotextile baskets and live plantings through live fascine bundles, as conditions and access requirements dictate.

The “Rapids” portion of the river encompasses the portion flowing adjacent to Nepperhan Avenue, extending approximately 350 feet downstream from the “Upper River”. The grade separation between this portion of the river and Nepperhan Avenue is in excess of 30 feet, creating a canyon or gorge-like environment, which limits direct public interaction with the river. To enhance this area, the improvements will create visual and audible interest by means of rushing water. In many ways, this portion of the river will be similar to the existing river section within River Park Center. This area will have a naturalized boulder stream bed creating rapids and aeration of the water, allowing for a grade change of approximately 8 feet through the area (1.8 percent existing channel slope versus 2.2 percent average proposed slope within the Rapids). The slope will create velocities similar to or less than the existing river (4 fps vs. 3.4 fps for base flow; 12.5 fps vs. 12.5 fps for 10-year design flow; 15.0 fps vs. 14.9 fps for 100-year design flow). The lower velocity through the rapids is reflective of the larger cross section area of the proposed design. A small pedestrian walkway is being considered along the southern bank of the river. This walkway will be set at or above the 100-year flood elevation and will allow a pedestrian connection between the “Upper River” and the downstream portion of the site.

The “Pond” area encompasses the final portion of the river, prior to its return to the culvert. The area is generally located in the northeast quadrant of the intersection of New Main Street and Nepperhan Avenue. The proposed improvements will include a widening of the existing river section and erection of a short dam/spillway to create a still water area. The slope within this area will be flattened (0.9 percent existing vs. 0.8 percent proposed). The minimum velocity during the base flow will be approximately 1.3 fps. The area will be bounded to the south and west by an elevated pedestrian arcade and amphitheater and to the east by a shopping arcade. River banks will be stabilized using a combination of “hard-scape”, live branch cuttings through boulders/rip-rap/geotextile baskets and live plantings with live fascine bundles, as conditions and access requirements dictate.

Debris removal screens will be constructed upstream of the River Park Center site. All pedestrian bridge and walkways will be built above the 100-year flood elevation. Points of access to the river that are below the 100-year flood elevation will be gated, clear marked or closed via some other acceptable method during storm events.

#### *Larkin Plaza*

As previously noted, the Saw Mill River is culverted between Ann Street and the Hudson River. The profile, section and material composition of the flume/culvert vary greatly along this run.



If the City elects to make the improvements, the daylighting of Larkin Plaza would involve the creation of a naturalized section of the river within a linear park. The design would allow the interface between the tidal/saline Hudson River and the freshwater Saw Mill River to occur naturally. Due to the steep slope of the daylighted river, the banks would be generally stabilized using a “hardscape” with some live branch cuttings through boulders/rip-rap/geotextile baskets and live plantings with live fascine bundles. The daylighting would begin at the eastern portion of the Plaza by opening the existing 18 foot by 8 foot concrete arch culvert and diverting the Saw Mill River flow to open section. At the western end of the Plaza, the existing 30 foot 10 ft box culvert would be extended into the Plaza to allow the flow to reenter the culvert and exit to the Hudson River. The existing concrete arch culvert would either be abandoned in place or utilized as a diversion for high flows.

Due to this area’s proximity to the tidally influenced Hudson River, special consideration has been given to the potential for storm surge compounding the 100-year flood condition. This will be addressed by a combination of berms and walls with a top elevation set at 2-feet above 100-year flood at high tide. This will create an impound area to contain these flood waters during the flood condition.

h. Analysis of the Impact of the Daylighting and Other Improvements on Saw Mill River Flood Elevations

The hydraulics for the Saw Mill River daylighting was analyzed using HEC-RAS software. All improvements are designed to pass the base, the 10-year and the 100-year flood flow without creating on-site flooding conditions or increasing the flood elevations for the up-stream or down-stream areas adjacent to the Project sites. The results of this analysis are presented in the DEIS Appendix 3.C. The computed 100-year and 10-year flood elevation at the upstream side of the Elm Street bridge for existing and proposed conditions are shown on Tables III.D-9 and III.D-10.

**Table III. D-9**  
**Proposed Conditions–Saw Mill River**

	Design Flow (CFS)	Water Surface Elevation	Main Channel Slope	Main Channel Velocity (CFS)
Within “Pond” Area (HEC-RAS Station 1037)				
Base Flow	30	47.76	0.8%	1.3
10-year	1015	51.8		5.2
100-year	1540	53.02		5.9
Within the “Rapid” Area (HEC-RAS Station 1433)				
Base Flow	30	52.3	1.9%	3.3
10-year	1015	54.5		12.5
100-Year	1540	55.1		14.9
Within “Upper River Area (HEC-RAS Station 1690)				
Base Flow	30	55.4	0.8%	1.7
10-year	1015	59.5		5.0
100-Year	1540	60.9		5.7
Downstream of Elm Street Bridge (HEC-RAS Station 1934)				
Base Flow	30	58.94		2.0
10-year	1015	61.3		15.5
100-Year	1540	62.3		17.8

**Table III. D-10**  
**Existing and Proposed Flood Elevations (Elm Street Bridge)**

Design Storm	Existing Flood Elevation	Proposed Flood Elevations
10-year	62.7	61.3
100-year	64.3	62.3

The proposed improvements will provide a “naturalized” cobble and stone river bottom, supplemented with large boulders along narrower portions of the river. As noted above, the river banks will be constructed of placed stone, rip-rap or other “hard-scape” surface inter-planted with live-branch cuttings and fascine bundles, as lighting and slope conditions allow. The “hard-scape” bank is preferred due to the flow velocities experienced during the 10- and 100-year storm events. The final design will be consistent with the general condition of the existing stream.

Sediment load transport is largely a function of river velocity, distance from the disturbance, and particulate size. The Saw Mill River watershed is largely developed and does not have significant agricultural land-uses, which will limit the amount of land experiencing seasonal disturbance. River sediment loading, therefore, would largely be a result of smaller soil disturbances, surface pollutants and natural soil

erosion throughout the valley. The City of Yonkers is urban in nature, with limited areas for large soil disturbances. The predominant soil type both in the area and in further up-stream is characterized as Urban Land with Charlton-type associated soils, which are noted for small grain size. It is therefore assumed that local runoff would tend to contain sediment with smaller particle size. By maintaining flow velocities during “first flush”, or 1 to 2-year storm event, at or greater than one foot per second, aggradation and sedimentation will be minimized. Should minor deposition occur, water velocities from lower frequency storms would re-suspend sediments and transport them down stream during higher storm events.

Within Larkin Plaza, the daylighting design would also convey the flood flows without impact to upstream conditions. Special consideration has been given to the potential for Hudson River storm surge during the 100-year flood condition. This would be addressed by creating a combination of berms and walls with a top elevation set at 2-feet above 100-year flood at high tide.

i. Impact on Combined Sewer Overflow and Water Quality

A separate sanitary sewage system will be constructed for any new buildings and will not contribute to the existing combined sewers. In addition, other current flows will be diverted from the existing combined sewers to new storm drains and discharged to the Saw Mill River (see Section III.H Utilities). Therefore, the Project will decrease storm flow to the combined sewers and will not result in increases in the combined sewer overflow events.

The daylighting of the Saw Mill River and improvements to the river channel at River Park Center and Larkin Plaza would change the quality of the stormwater that is discharged into the Saw Mill River. Currently, due to the extensive amount of impervious street surfaces located around the Saw Mill River, all precipitation runs overland directly unabated to the Saw Mill River, and soon after to the Hudson River. With the implementation of the Project, stormwater runoff from impermeable surfaces, such as roadways and buildings, would be directed to a stormwater management/treatment system that will be constructed in accordance with NYSDEC requirements and treat Project generated stormwater rather than allow for the direct discharge of particulates/pollutants to the Saw Mill River. Diversion structures will be provided to divert runoff flow through the water quality structures. As indicated above, the proposed Project will not impact flood elevations or channel velocities upstream or downstream of the River Park Center site. The Project will not have a significant adverse effect upon the hydrology of the Saw Mill River.

j. Construction

The proposed plan includes construction of a concrete bypass culvert to temporarily re-route the Saw Mill River during the development of River Park Center. The bypass culvert will be designed to convey the 100-year flow and when the development of River Park Center is complete, this bypass culvert will serve as a permanent overflow channel for the river. The culvert will allow the construction of the new channel to be performed under generally “dry” conditions thereby enabling channel

stabilization prior to being subject to flows. The slopes will be stabilized with plantings, turf reinforced matt and hardscape. Stabilization prior to being exposed to water flow will significantly reduce the potential for erosion during the construction period. See Section III.M – for additional information on the construction sequence.

### 3. Mitigation Measures

#### a. Stormwater Management (Peak Storm Water Discharge)

As shown above, the minor increase in impervious area as a result of the project and the diversion of runoff to the Saw Mill River will not increase the peak discharge in the Saw Mill River and the culvert/flume to the Hudson River. Thus, the peak discharge within the river downstream of the Project will not increase. However, the peak discharge within the river downstream of the Project will not increase. Therefore, the NYSDEC requirements for overbank flood control (10-year storm event) and extreme flood criteria (100-year storm event) do not apply to the Project. Palisades Point will discharge directly to the tidal waters (the Hudson River) and in accordance with the NYSDEC Design Manual, overbank flood control and extreme flood criteria requirements are not applicable to this site.

#### b. Water Quality

With the implementation of the Project, stormwater runoff will pass through water quality facilities sized to capture and treat 90% of the average annual stormwater runoff volume. Runoff from buildings, pedestrian plazas, walkways, etc. will be captured and diverted through the water quality structures in accordance with NYSDEC requirements and not directly discharged to the Saw Mill River and Hudson River.

The Applicant entered into a Brownfield Cleanup Agreement (BCA), as a Volunteer, with the New York State Department of Environmental Conservation on December 12, 2006, to investigate and remediate the River Park Center site. Various remedial investigative activities were completed in August and September, 2007, in accordance with a NYSDEC approved Remedial Investigation Work Plan. Additional groundwater and soil samples are currently being taken to further delineate potential impacts in accordance with the request of the NYSDEC. Once the investigation is complete, a Remedial Investigation Report (RIR), which summarizes the finding of the investigation, will be submitted to the NYSDEC for approval. Based on the RIR findings, a Remedial Action Work Plan (RAWP) will be developed for the site and submitted to the NYSDEC for their approval. The RAWP will set forth the required remedial measures.

The construction of the bypass culvert and new channel for the Saw Mill River at River Park Center will be addressed in RAWP. The remedial measures related to the Saw Mill River are expected to include:

- Prior to the installation of the bypass culvert, grossly contaminated soil and groundwater will be removed from the area of the proposed culvert. Post-excavation samples will be collected after the removal of the soils to evaluate the performance

of the clean-up with respect to attainment of the required Soil Cleanup Objectives outlined in the NYSDEC approved RAWP.

- Once the by-pass culvert has been completed, the contaminated sediment in the Saw Mill River will be removed in accordance with the NYSDEC approved RAWP.
- Prior to the relocation of the Saw Mill River, the proposed river-bed will be cleaned up in accordance with the NYSDEC approved RAWP to prevent migration of contaminants to the surface water.

Other sources of pollution of the Saw Mill River include runoff from residential and commercial development, roads and highways within the 25.3 square mile drainage basin upstream of the Project area. Cleanup programs at upstream properties, including the future development of the Nepperhan Valley within the City of Yonkers, will continue to improve the quality of the Saw Mill River.

c. Erosion and Sediment Control

During construction of the Project, the potential for soil erosion and sedimentation will be controlled through the use of temporary soil erosion and sediment control measures. These measures will be designed and installed in accordance with New York Guidelines for Urban Erosion and Sediment Control, dated October 2005, published by New York State Environmental Protection Division of Water and Chapter 56, Article XIII of the City Code. An approved Soil Erosion and Sediment Control Plan will minimize downstream erosion by controlling runoff at its source, minimizing runoff from disturbed areas and de-concentrating storm water runoff. Temporary and permanent stabilization methods will be implemented before construction begins and will be continuously modified throughout construction to provide the best methods for stormwater management and pollution prevention.

The Soil Erosion and Sediment Control Plan will provide for phasing of activities as follows:

(1) Pre-Construction Activities

- Identify all natural resources and mark and protect them as necessary, i.e., trees and vegetation.
- Identify on-site and downstream surface water bodies and install controls to protect them from sedimentation.
- Establish temporary stone construction entrance pads to capture mud and debris from the tires of construction vehicles.
- Install perimeter sediment controls such as silt fence as shown on the project plans.
- All earth disturbances during this phase should be limited to work necessary to install erosion and sedimentation controls.

(2) During Construction Activities

- Install runoff and drainage controls as shown on the project plans and as necessary. These controls should reduce run-off flow rates and velocities as well as divert off site and clean run-off.
- Stabilize the conveyance system (i.e. ditches, swales, berms etc.) by seeding, mulching, installing rock check dams.
- Stabilize all stormwater runoff outlets as shown on the project plans and as necessary.
- Stabilization measures should be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days. Where activities will resume within 21 days in that portion of the site, measures need not be initiated.
- Limit soil disturbance and exposure of bare earth to a minimum.
- All topsoil stockpiles should be staged in an area away from surface waters and storm drains and should be protected and stabilized.
- Construction vehicles shall enter and exit the site at the stabilized construction entrance. The construction entrances will be maintained during the life of the construction and repaired and/or cleaned periodically to ensure proper function.
- Water trucks will be used as needed during construction to reduce dust generated on the site. The contractor will provide dust control in compliance with applicable local and state dust control regulations.
- At any location where surface run-off from disturbed or graded areas may flow off-site, sedimentation control measures must be installed to prevent sedimentation from being transported.
- Regular inspections and maintenance should be performed as described in the following section.

(3) Other Pollutant Controls

*Paints and Solvents*

During construction, temporary structures such as construction trailers may be moved on site to store items such as paints, solvents and gasoline pertinent to the continuation of construction activities. The intention of these structures is to shelter such items and reduce the potential of entering the stormwater runoff due to construction activities. After use, solvents shall be disposed of in approved containers and removed at scheduled intervals.

*Fuels*

Fuel for construction equipment shall either be obtained from a licensed distributor of petroleum products or from an approved above ground storage tank on site. Fuel from construction vehicles may come into contact with stormwater when vehicles are stored outside. Good housekeeping and preventative maintenance procedures shall be implemented to ensure fuel spills and leaks are minimized during refueling and storage.

*Temporary Facilities*

Temporary sanitary facilities may be located on site for construction workers. Such facilities shall be located in an accessible and visible location. A waste management company may be contracted to arrive on site and provide the routine pumping and sanitization of the facility.

*Solid Waste*

No solid materials are allowed to be discharged from the Project sites with stormwater. All solid waste shall be collected and placed in containers. The containers will be emptied periodically by a contract trash disposal service and hauled away from the sites.

(4) Construction Sequence Scheduling

A phased construction sequence schedule of the Project will limit the acreage of exposed soils at any given time. Since the site disturbance at River Park Center will be greater than 5-acres, the construction sequence will require the approval of the NYSDEC prior to the filing of the NOI under the General Permit. Limiting the exposed soils will reduce the amount of sediments in runoff water and ultimately preserve the quality of surface waters. The construction phasing method selected will be designed to combine development with responsible land management as well as protection of sensitive environments both within the proposed Project and the surrounding area.

d. Implementing the SWPPP

The General Permit requires a site assessment and inspections for all construction activities in excess of one (1) acre. The site assessment and inspections insure the implementation of the SWPPP to retain surface water quality and prevent sediment laden runoff from entering rivers, streams, estuaries, wetlands and other sensitive environments.

The site assessment and inspections required for this Project will include the following:

- The operator/owner shall have a “qualified professional” conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by the General Permit have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.
- Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every seven (7) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. During each inspection, the qualified professional shall provide a written report identifying all disturbed site areas and drainage pathways, areas of the site that have undergone temporary or permanent stabilization, indicate all disturbed site areas that have not undergone active site work during the previous 14-day period, all maintenance

requirements for sediment control measures and all deficiencies that are identified with the implementation of the SWPPP.

- Prior to filing of the Notice of Termination or the end of permit term, the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization 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.

e. Maintenance of Stormwater Management Measures

As found in the investigation of the Saw Mill River flume, the presence of debris in the river is a cause of potential blockage and decrease in capacity to the underground portions of the river. The reconstruction of the Saw Mill River will include mechanisms to collect debris prior to flowing to the underground sections. This will include constructing debris racks either within the River Park Center site or offsite/upstream of the Project. Also, the continued development of the Nepperhan Valley and cleanup and control of the areas adjacent to the river will reduce potential for debris entering the river.

The water quality facilities constructed on each site will be maintained by the respective owner/operator of each property. The maintenance of the facilities will be documented in the final SWPPP.

The Applicant and the City do not currently have any ownership interest in the portions of the Saw Mill River and the flume that are located within private properties owned by others, and will not have any such ownership interest during construction of the Project or after its completion. The cleaning of debris from and maintenance of the portions of the existing channel located within the private properties is the responsibility of the owners.



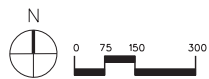
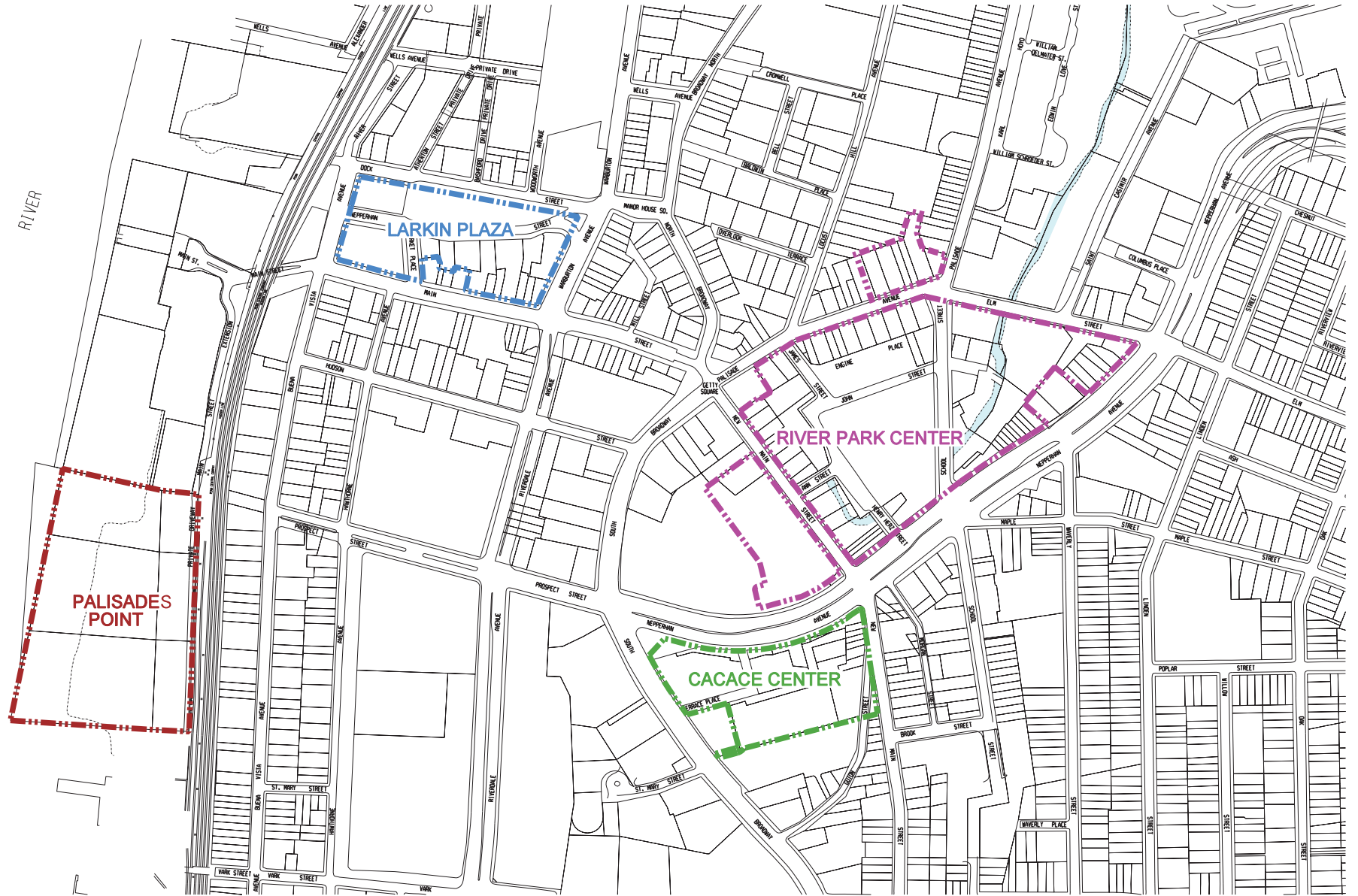


Exhibit III.D-1  
**PHASE I PROJECT LOCATIONS**  
**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC



Exhibit III.D-1a  
**CONSTRUCTION OF  
SAW MILL RIVER CULVERT**  
**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC



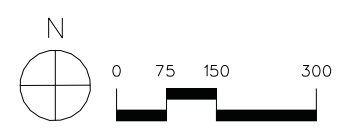
HUDSON RIVER

PALISADES POINT

LARKIN PLAZA

RIVER PARK CENTER

CACACE CENTER



- LEGEND:
- SANITARY SEWER
  - STORM SEWER
  - COMBINATION SEWER/STORM
  - WEST COUNTY SEWER TRUNK

Exhibit III.D-2  
**EXISTING  
SEWER AND DRAINAGE LINES**  
**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC

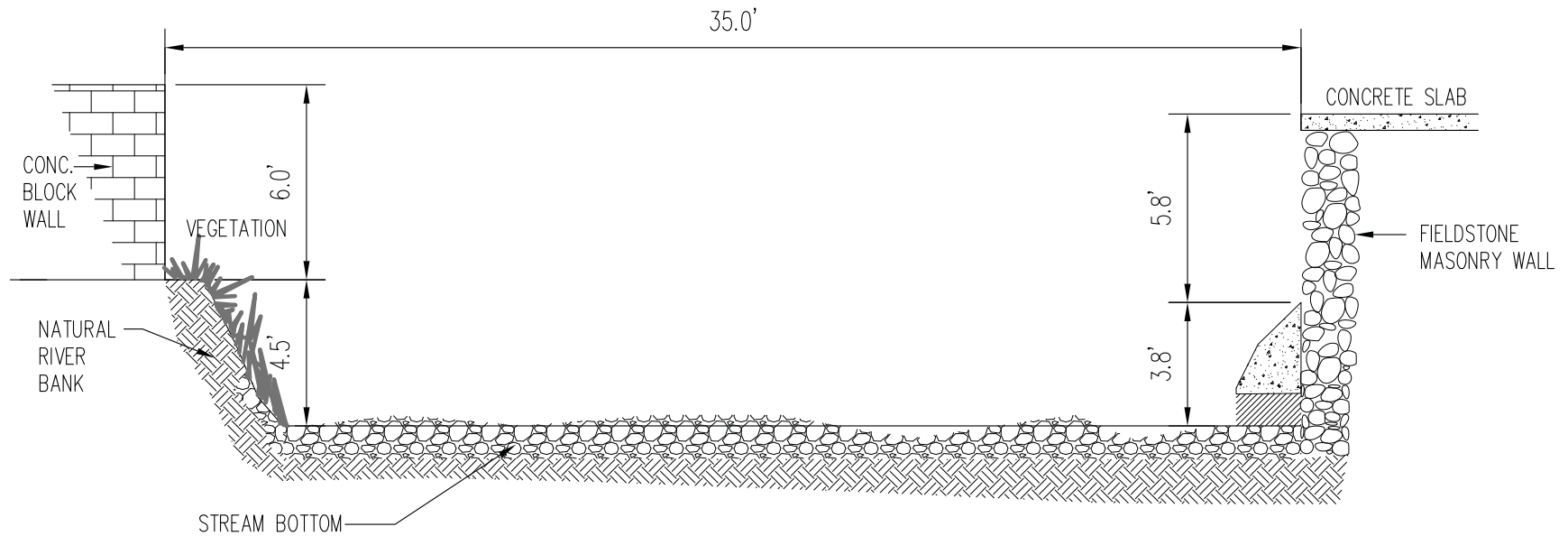


Exhibit III.D-3  
**SAW MILL RIVER**  
**EXISTING CONDITIONS:**  
**UPSTREAM OF ANNE STREET**  
**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC

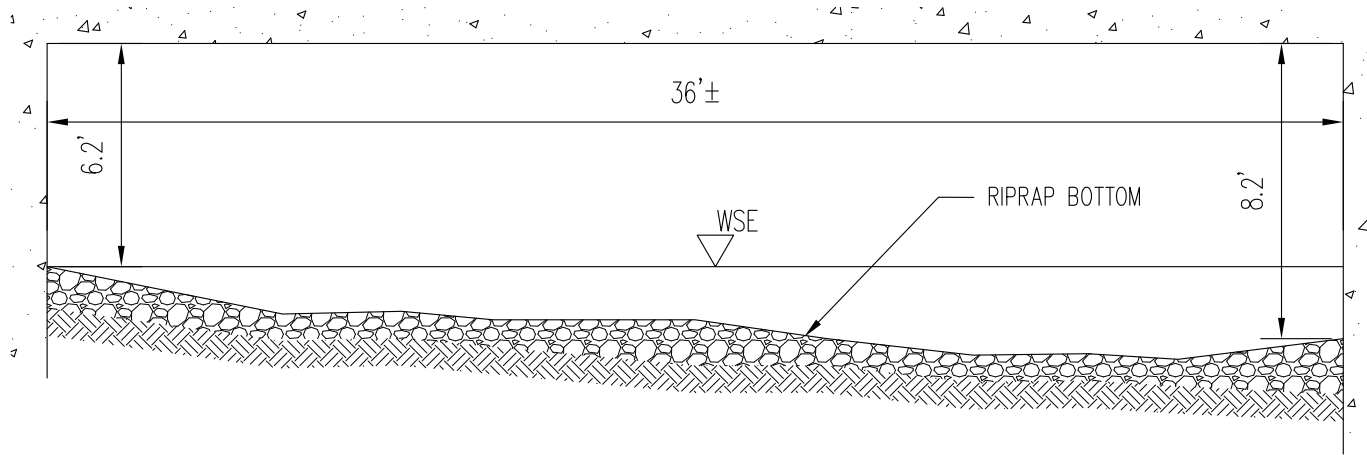


Exhibit III.D-4  
**SAW MILL RIVER**  
**EXISTING CONDITIONS:**  
**UNDER MUNICIPAL PARKING LOT**  
**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC

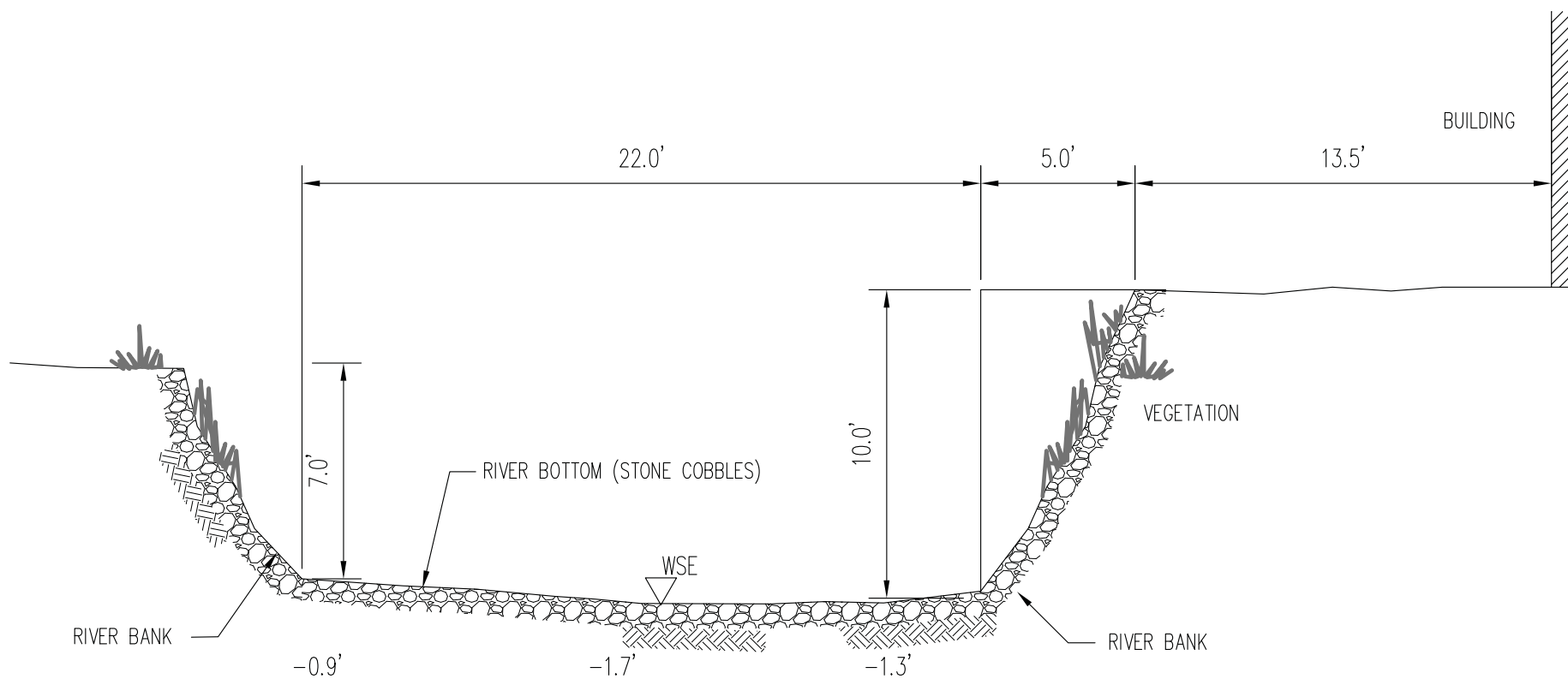
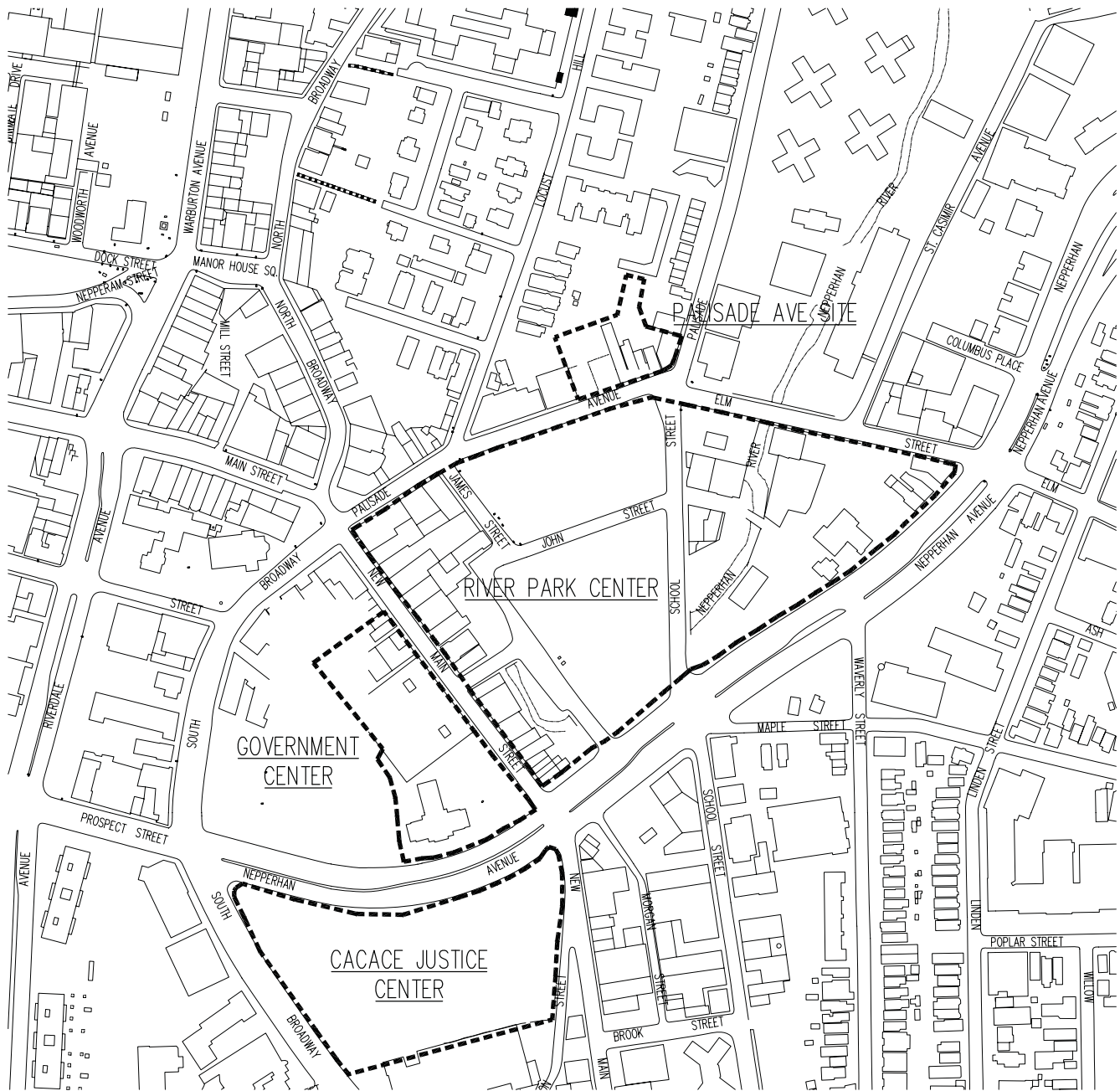


Exhibit III.D-5  
**SAW MILL RIVER**  
**EXISTING CONDITIONS:**  
**UPSTREAM OF SCHOOL STREET**  
**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC



LEGEND:

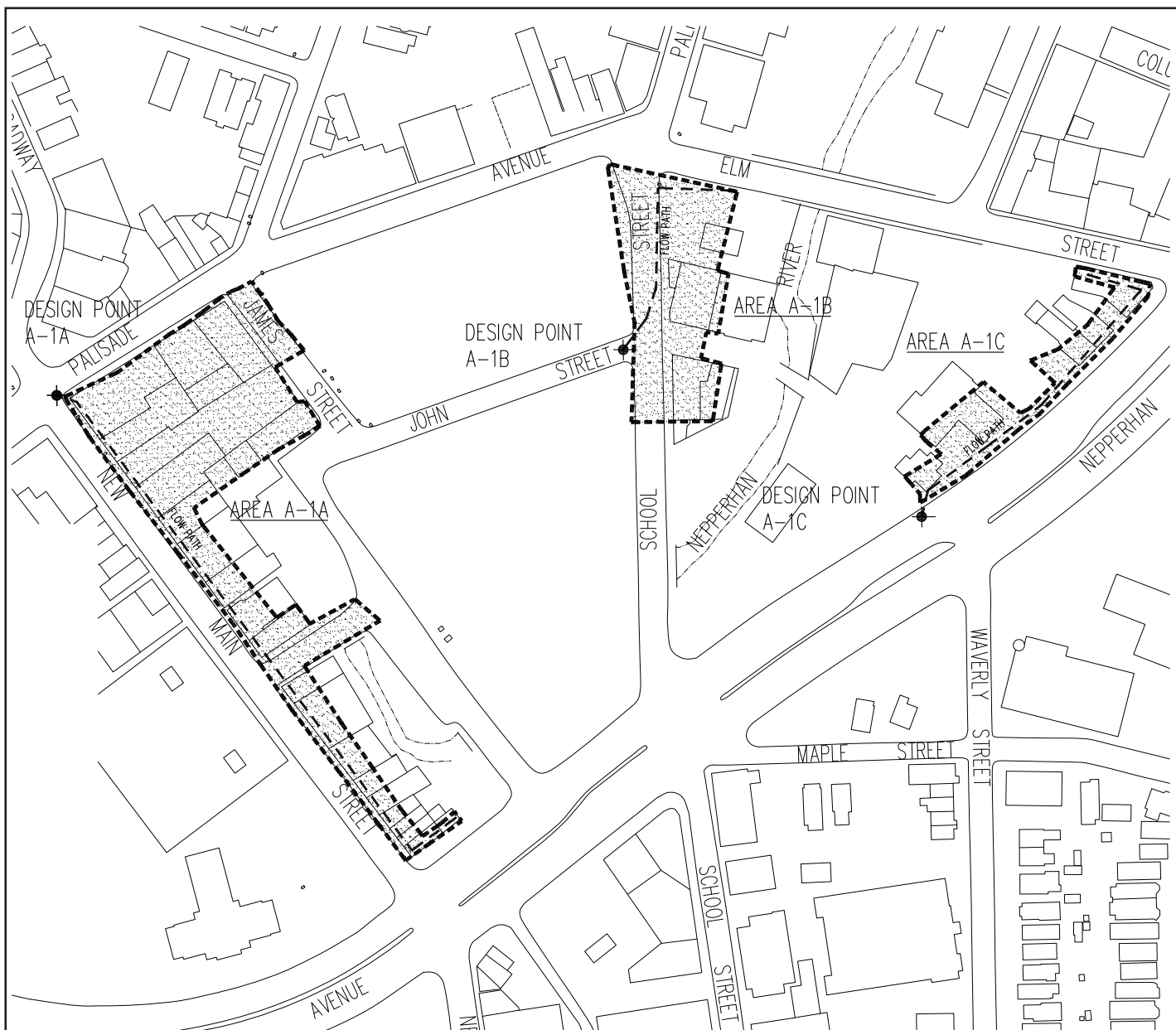
----- DRAINAGE BOUNDARY

Exhibit III.D-6  
**EXISTING CONDITION  
 OVERALL DRAINAGE  
 AREA MAP**

**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC





AREAS	ACRES	SURFACE TYP
A-1A	1.86	IMP
A-1B	0.84	IMP
A-1C	0.5	IMP
TOTAL	3.2	

**LEGEND:**



AREA DRAINING TO COMBINED SEWERS



DESIGN POINT



DRAINAGE BOUNDARY



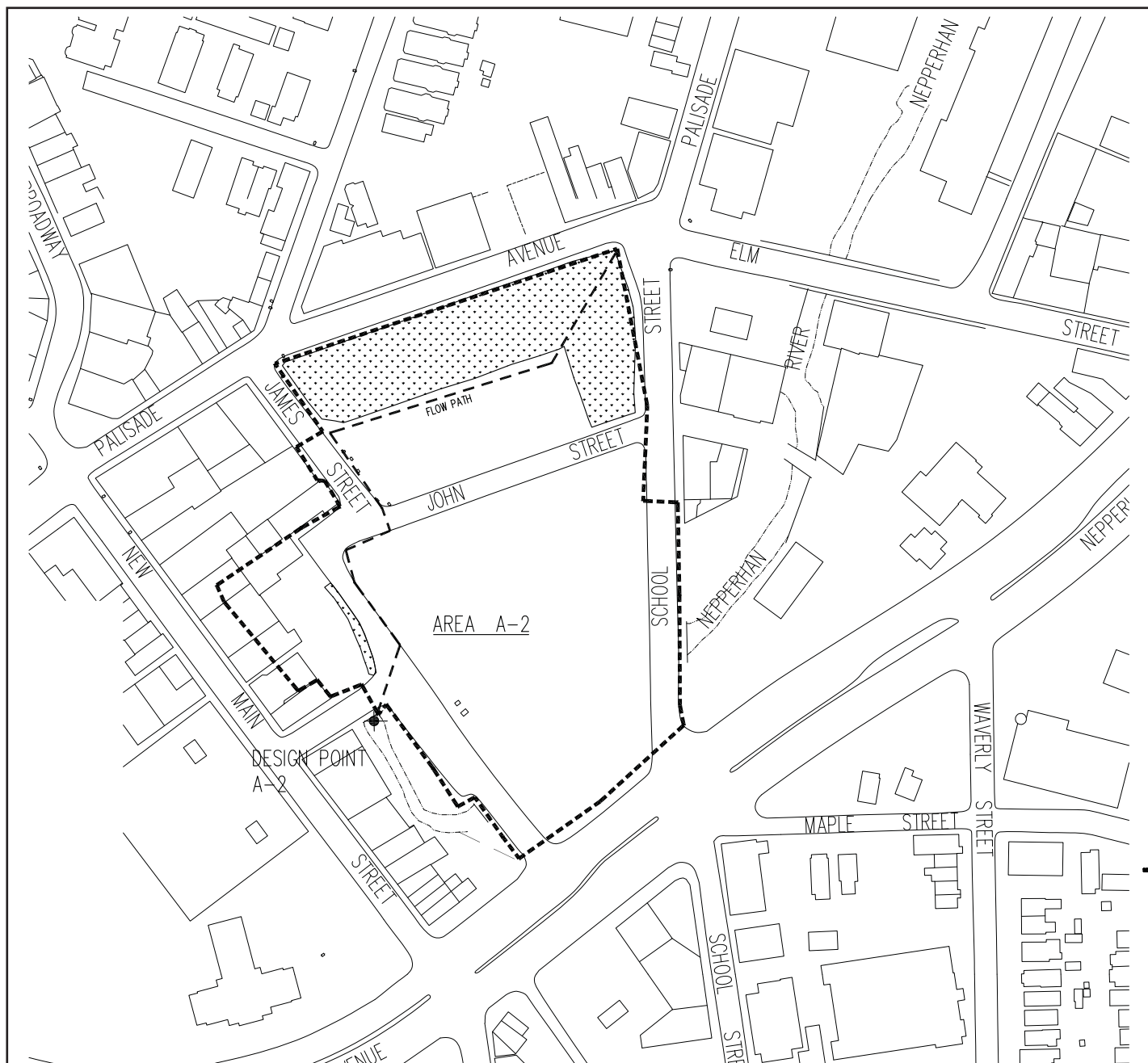
FLOW PATH

Exhibit III.D-7  
**EXISTING CONDITION  
 DRAINAGE AREA  
 TO COMBINED SEWER  
 RIVER PARK CENTER**

**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC





AREA A-2	
SURFACE TYPE	AREA (ACRES)
IMPERVIOUS	5.45
PERVIOUS	1.23
TOTAL	6.68

**LEGEND:**



PERVIOUS AREA



DESIGN POINT



DRAINAGE BOUNDARY

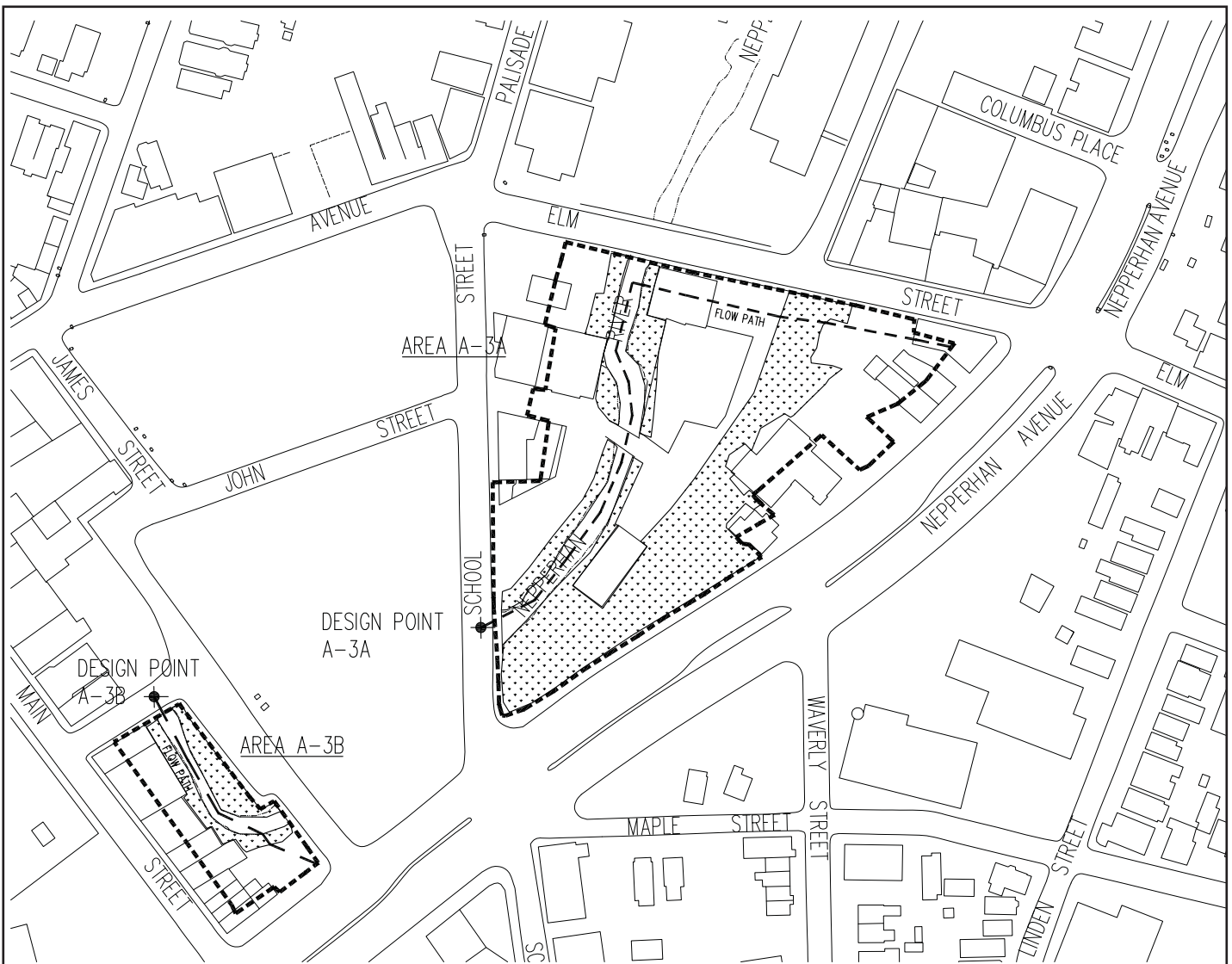


FLOW PATH

Exhibit III.D-8  
**EXISTING CONDITION  
 DRAINAGE AREA TO STORM  
 DRAIN/SAW MILL RIVER  
 RIVER PARK CENTER**

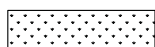
**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC



AREAS	IMPERVIOUS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
A-3A	2.32	1.45	3.77
A-3B	0.40	0.19	0.59
TOTAL			4.36

**LEGEND:**



PERVIOUS AREA



DESIGN POINT



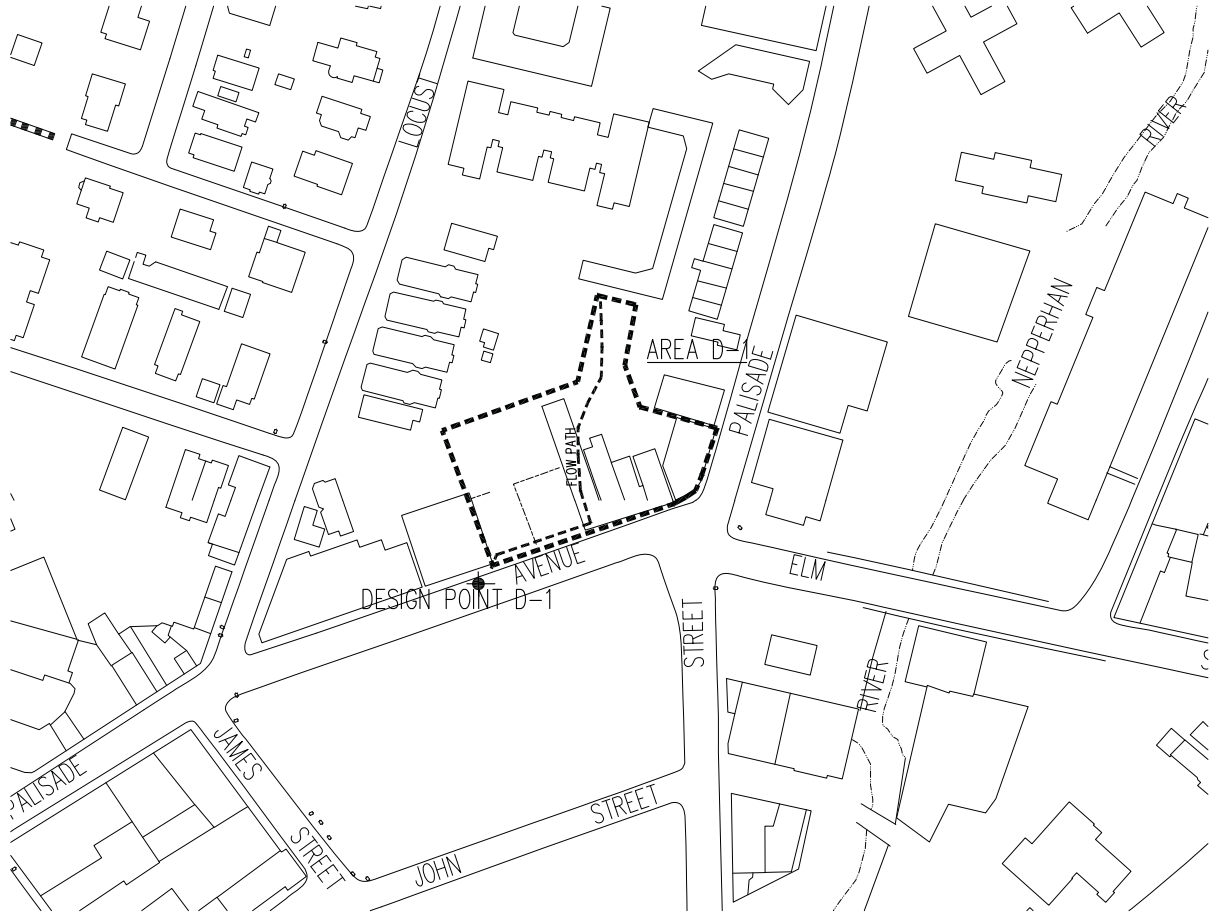
DRAINAGE BOUNDARY



FLOW PATH

Exhibit III.D-9  
**EXISTING CONDITION  
 DRAINAGE AREA DIRECTLY  
 TO SAW MILL RIVER  
 RIVER PARK CENTER**

**SFC PHASE I PROJECTS**  
 STRUEVER FIDELCO CAPPELLI LLC



AREAS	IMPERVIUOS (Ac)	GRAVEL (Ac)	TOTAL (Ac)
D-1	0.52	0.35	0.87

LEGEND:



DESIGN POINT



DRAINAGE BOUNDARY

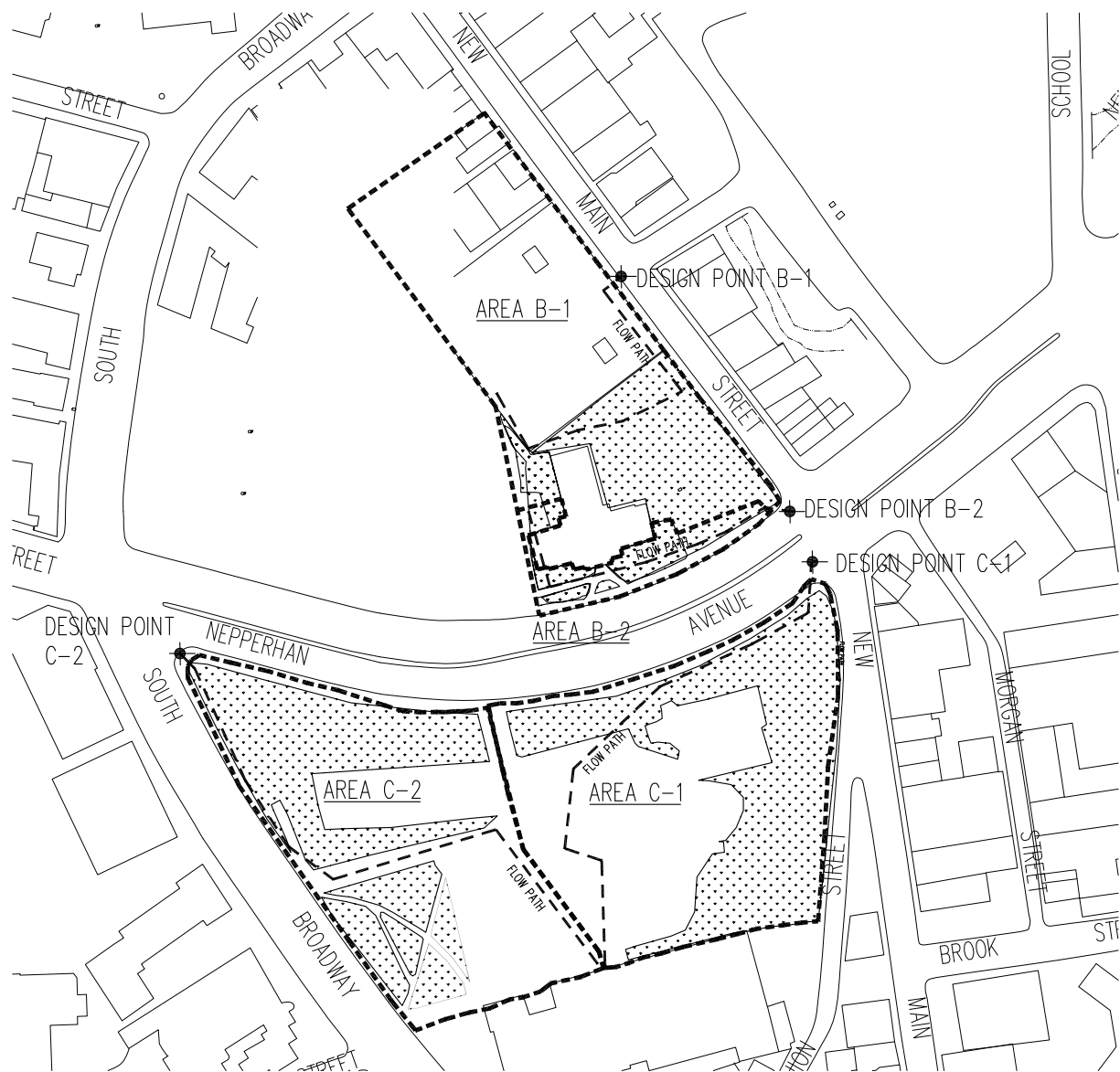


FLOW PATH

Exhibit III.D-10  
**EXISTING CONDITION  
PALISADE AVENUE SITE  
RIVER PARK CENTER**

**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC



AREAS	IMPERVIOUS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
B-1	1.47	1.03	2.50
B-2	0.15	0.17	0.32
C-1	1.36	1.22	2.58
C-2	1.19	1.16	2.35
TOTAL			7.75

**LEGEND:**





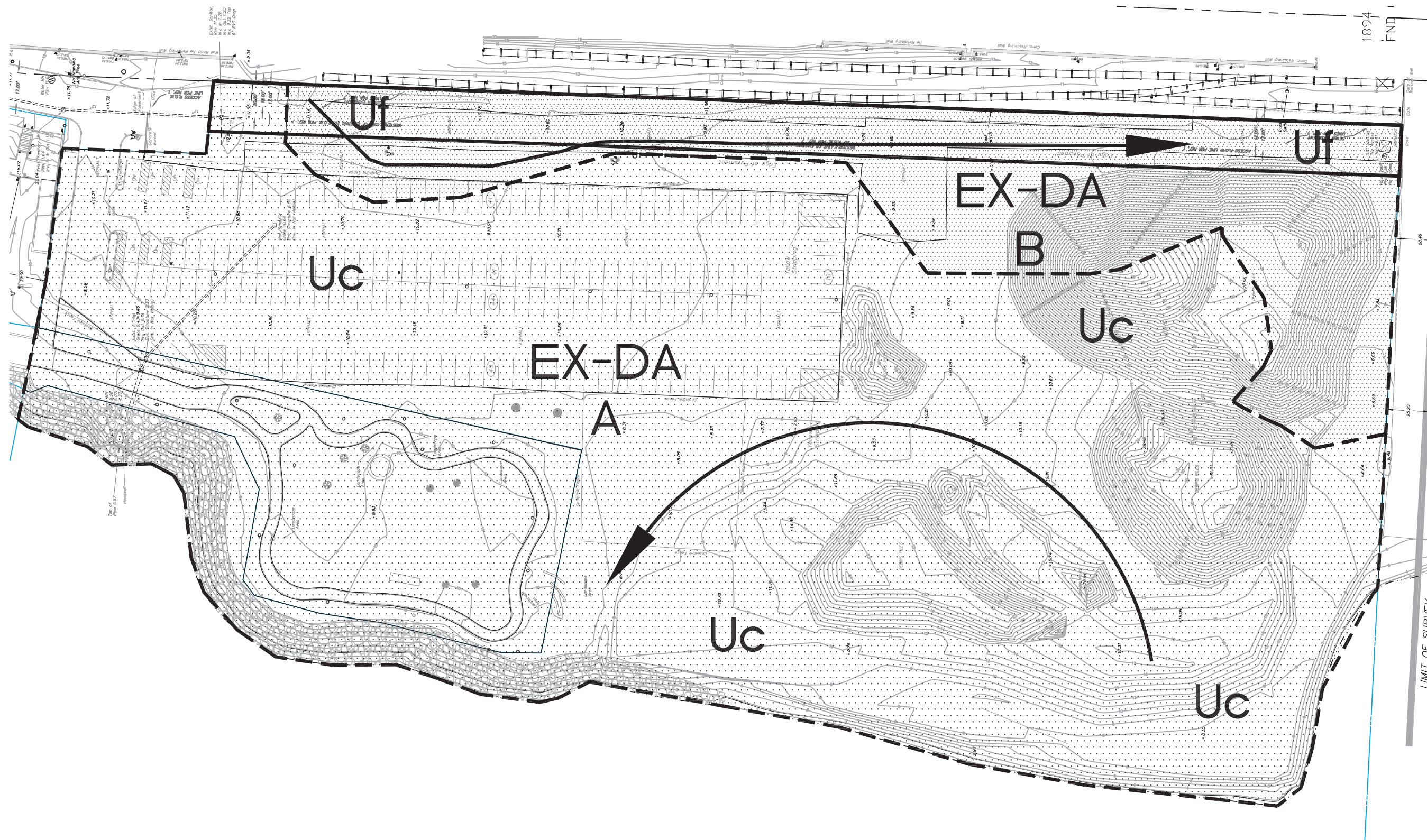
-  PERVIOUS AREA
-  DESIGN POINT
-  DRAINAGE BOUNDARY
-  FLOW PATH

Exhibit III.D-11  
**EXISTING CONDITION  
CACACE AND GOVERNMENT  
CENTERS**

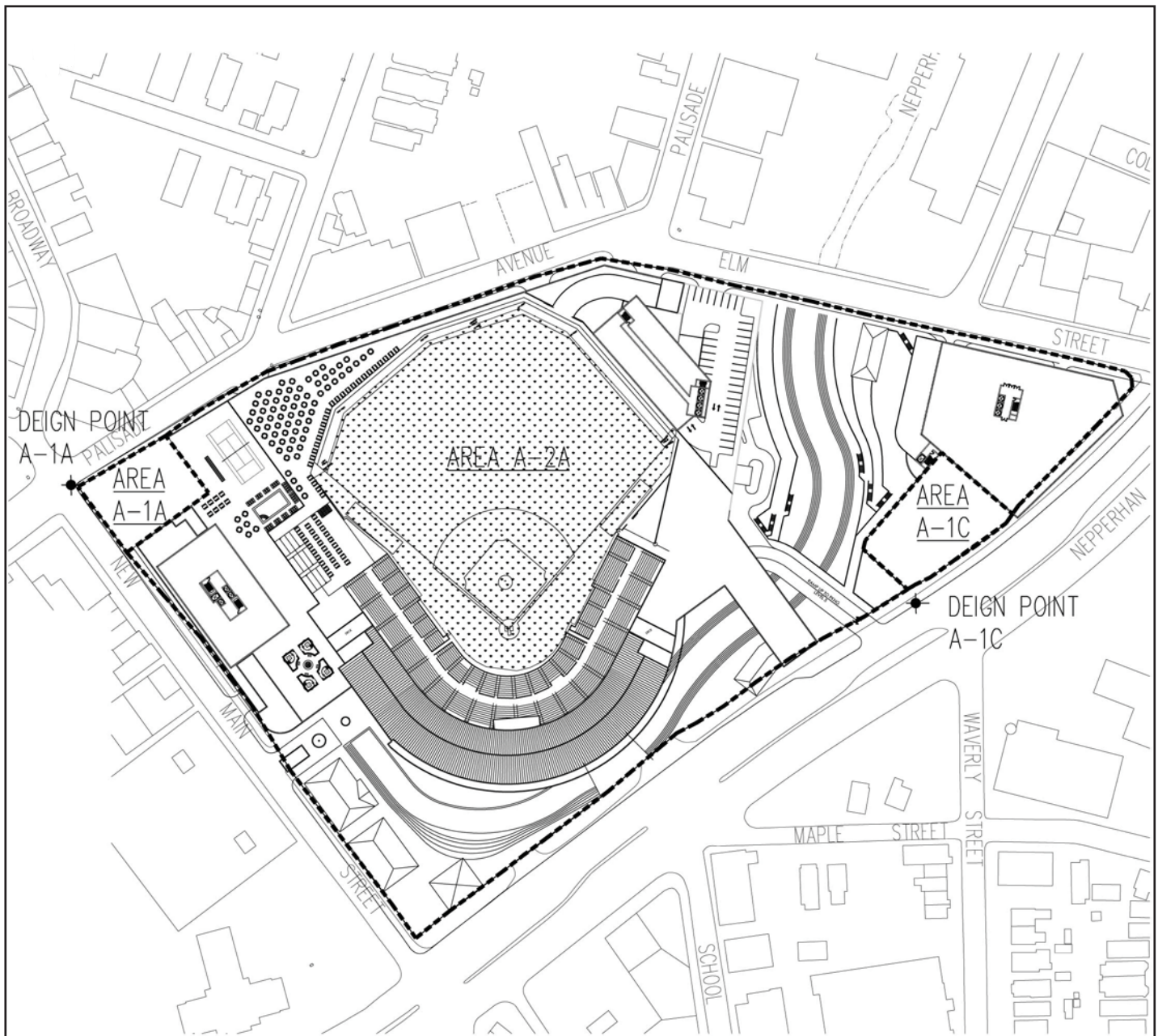
**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC





Water Shed	Area		Impervious Area			Pervious Area		
	SF	AC	SF	AC	CN	SF	AC	CN
EX - DA - A	225,677	5.18	89,510	2.05	98	136,167	3.13	79
EX - DA - B	46672	1.07	15,655	0.36	98	31,017	0.71	79
<b>Total</b>	<b>272,349</b>	<b>6.25</b>	<b>105,165</b>	<b>2.41</b>	<b>-</b>	<b>167,184</b>	<b>3.84</b>	<b>-</b>



AREAS	IMPERVIOUS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
A-1A	0.30	0	0.30
A-1C	0.41	0	0.41
A-2A	10.33	2.96	13.29
TOTAL	11.04	2.96	14.00

**LEGEND:**



PERVIOUS AREA



DESIGN POINT



DRAINAGE BOUNDARY



FLOW PATH

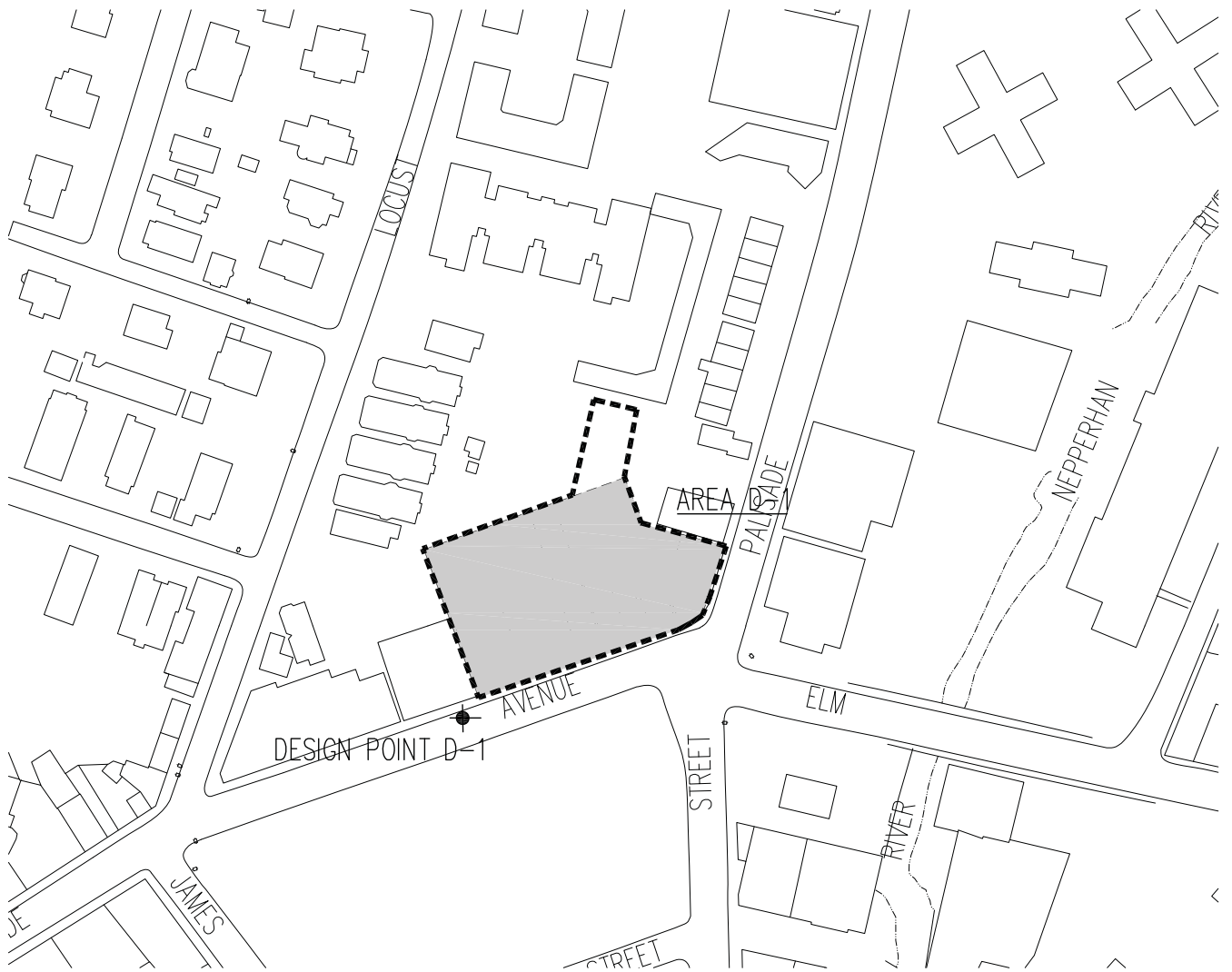
Exhibit III.D-13

**PROPOSED CONDITION  
RIVER PARK CENTER**

**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC





AREAS	IMPERVIOUS (Ac)	PERVIOUSL (Ac)	TOTAL (Ac)
D-1	0.78	0.09	0.87

**LEGEND:**




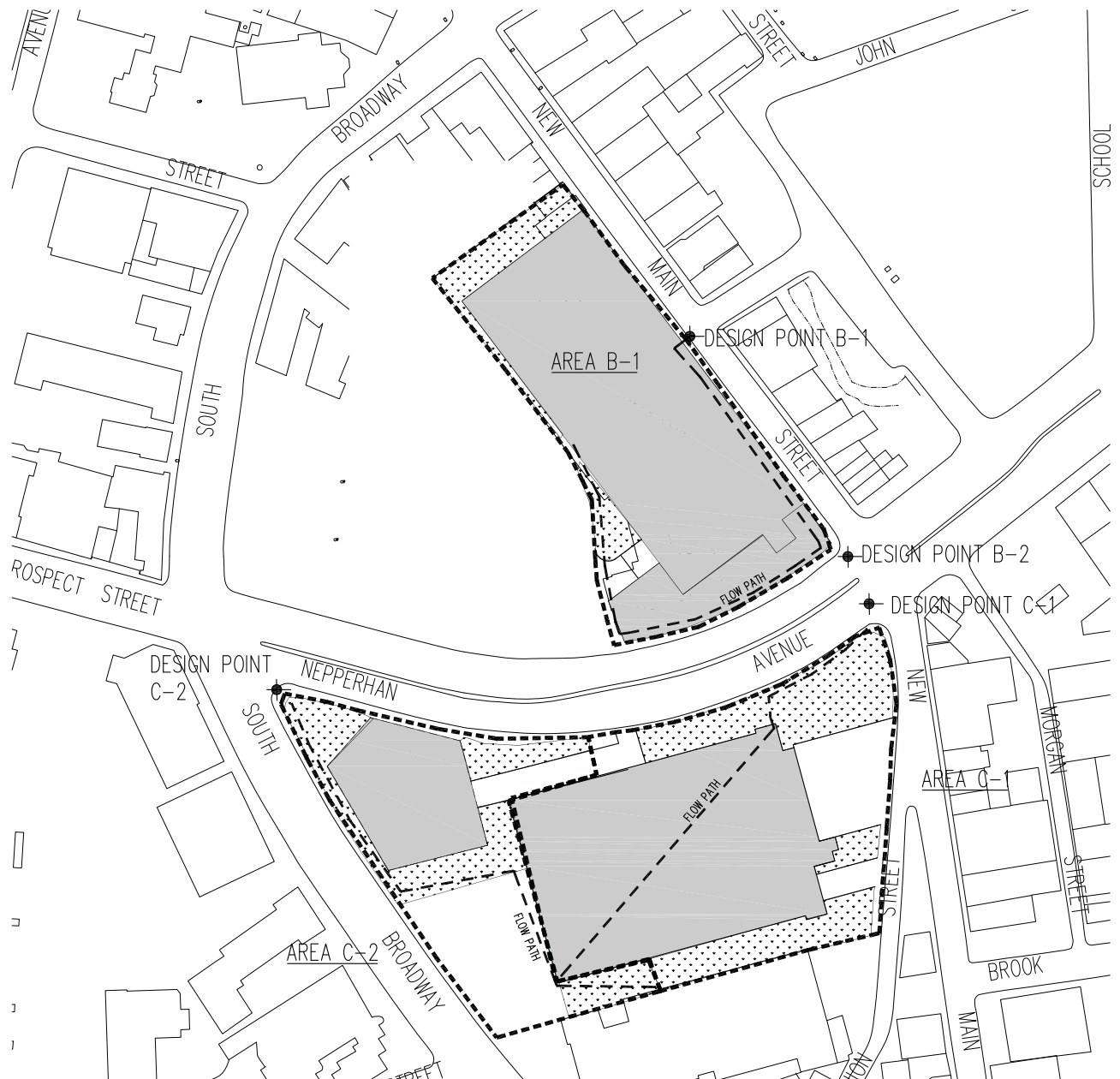
-  DESIGN POINT
-  DRAINAGE BOUNDARY
-  PROPOSED BUILDING

Exhibit III.D-14  
**PROPOSED CONDITION  
PALISADE AVENUE SITE  
RIVER PARK CENTER**

**SFC PHASE I PROJECTS**

STRUEVER FIDELCO CAPPELLI LLC



AREAS	IMPERVIOUS (Ac)	PERVIOUS (Ac)	TOTAL (Ac)
B-1	2.51	0.31	2.82
C-1	2.29	0.80	3.09
C-2	0.74	1.10	1.84
TOTAL			7.75

LEGEND:






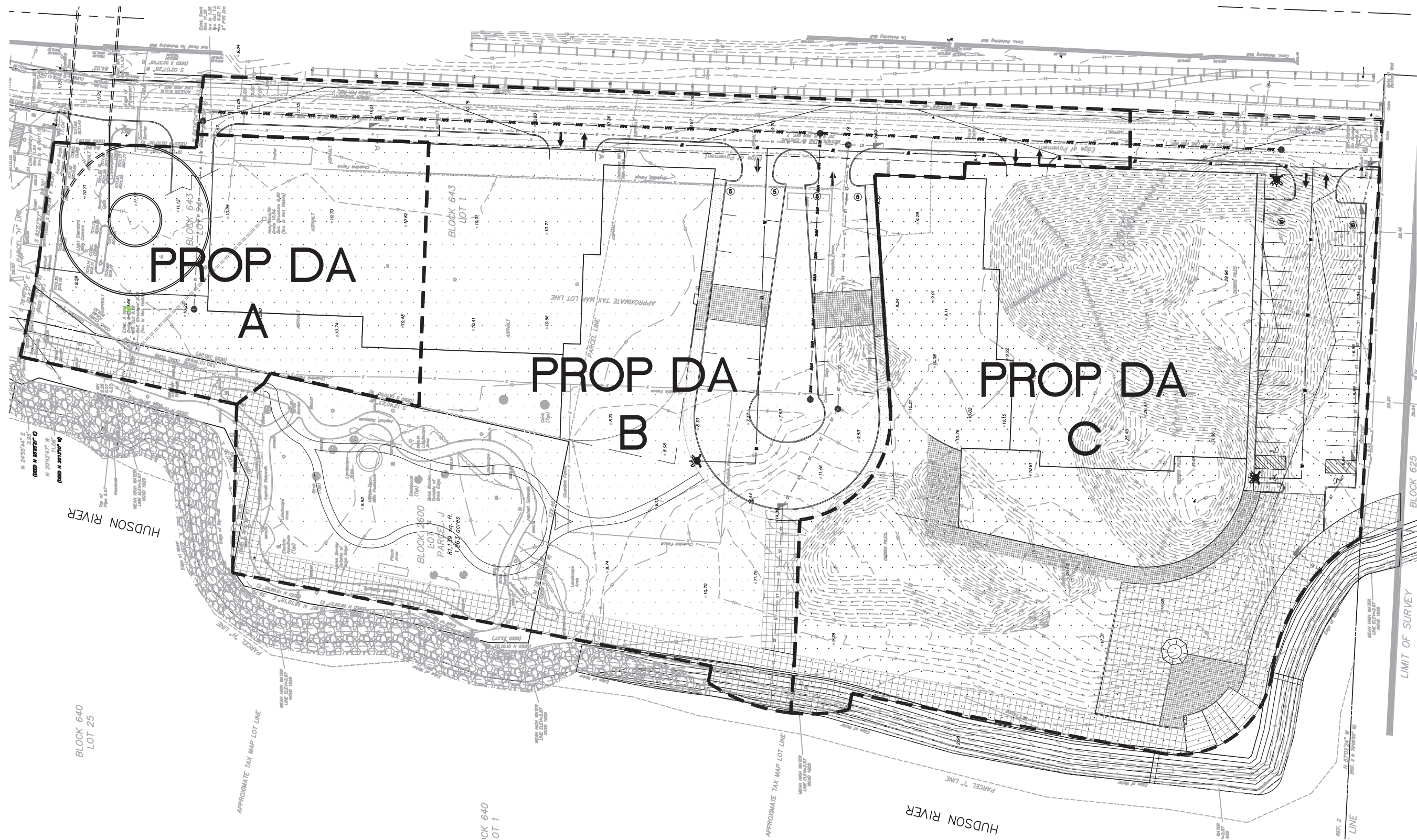
-  PERVIOUS AREA
-  DESIGN POINT
-  DRAINAGE BOUNDARY
-  FLOW PATH
-  PROPOSED BUILDING

Exhibit III.D-15  
**PROPOSED CONDITION  
CACACE AND GOVERNMENT  
CENTERS**

**SFC PHASE I PROJECTS**  
STRUEVER FIDELCO CAPPELLI LLC





Water Shed	Area		Impervious Area			Pervious Area		
	SF	AC	SF	AC	CN	SF	AC	CN
PROP D.A. - A	33,550	0.77	32,829	0.75	98	721	0.02	69
PROP D.A. - B	110,402	2.53	71,633	1.64	98	38,769	0.89	69
PROP D.A. - C	102,741.00	2.36	81,407	1.87	98	21,334	0.49	69
Total	246,693	5.66	185,869	4.27	-	60,824	1.40	-