

Stormwater Utility Assessment

District East Redevelopment Project
Onondaga County, New York

Prepared by:



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1.0 INTRODUCTION

The OHB Redev, LLC is proposing to redevelop the former Shoppingtown Mall into “District East” (Project). The Project site is located in the Town of Dewitt, east of Erie Boulevard and south of Kinne Road. The proposed Project focuses on transforming the approximately 69-acre property into a blended, multi-use site that will include retail space, medical/office space, residential, hotel, grocery, and entertainment.

2.0 SITE INFORMATION AND EXISTING CONDITIONS

2.1 Floodplain Identification

A review of Flood Insurance Rate Maps (FIRM Nos. 36067C0241F and 36067C0237F) for the site was conducted to identify flood zones immediately adjacent to or within the project site. The FIRM maps indicate the project site is not located in a designated 100- year or 500-year floodplain. The Federal Emergency Management Agency (FEMA) FIRM indicates that the base flood elevation is unknown. As such, FEMA-related flood mitigation measures will not be implemented for the proposed redevelopment project.

3.0 STORMWATER MANAGEMENT SITE ASSESSMENT, EVALUATION, AND PLANNING

3.1 Permit Overview

Stormwater management is to be provided for the project site in accordance with Town of DeWitt stormwater requirements and the New York Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-20-001, New York State Standards and Specifications for Sediment and Erosion and Sediment Control (2016), and the New York State Stormwater Design Manual (2015).

The District East Redevelopment Project includes installation of residential, entertainment, restaurants, hospitality, retail, and office/medical space. The proposed project includes the removal of a portion of the existing impervious area and the installation of new impervious area which will result in a net decrease in impervious surface. The redevelopment criteria in Chapter 9 (redevelopment activity) of the New York State Stormwater Management Design Manual dated January, 2015 applies to this development. Additionally, the project site is located within the Onondaga Lake Watershed and stormwater management practices are anticipated to be designed in accordance with Enhanced Phosphorus Removal Standards per the New York State Stormwater Design Manual.

Since the existing condition is nearly 100% developed, post-development stormwater flows will not increase over existing conditions. A preliminary Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the project. This SWPPP will be updated when the construction documents are prepared for the project. The final SWPPP will outline the post-construction stormwater management for the project.

3.2 Project Scope

The redevelopment project includes up to 69-acres of soil disturbance. Most of the existing site is composed of impervious surfaces (parking lots, roof, etc.). As outlined by the NYSDEC General Stormwater Permit, water quality, water quantity, and erosion and sediment control will be met for the redevelopment project. Erosion and sediment control practices will be installed at the site prior to the soil disturbance activities and be removed once the site is fully stabilized. The project will require post-construction stormwater management practices (SMPs) to mitigate stormwater runoff quantity and quality impacts.

3.3 Receiving Waters

The existing site stormwater flows to on-site infiltration practices, to the northwest and southeast where it enters the combined sewer owned and operated by Onondaga County. A portion of the drainage flows to subsurface infiltration on-site

3.4 Stormwater Quality and Quantity Analysis

The redevelopment site will be designed using the Design Manual's Green Infrastructure "Five Step" Process for the site planning, which includes the following:

- Site Planning – Conserve natural areas and reduce impervious cover
- Determine Water Quality Volume (WQv)
- Meet Runoff Reduction Volume (RRv) requirements – Apply green infrastructure techniques and standard SMPs with RRv Capacity
- Apply standard SMPs to address remaining WQv
- Meet rate reduction requirements – Apply volume control practices as necessary to meet preconstruction discharge rates.

The Chapter 9 regulations/guidance requirements allow for a redevelopment project to provide 25% of the total water quality volume for the project.

The water quality volume required for the site is approximately 25% of the total water quality volume (~238,000 cubic-feet), which is approximately 59,500 cubic-feet.

Figure 1 - Available Stormwater Treatment Area shows available surface and subsurface treatment areas within the redevelopment, which can be incorporated into the project design to address the quality and quantity needs for the project.

Peak flows for the entire site assuming one point of discharge was prepared and outlined below to show the pre- and post-construction stormwater flows for the project. The preliminary results of the preconstruction and postconstruction (100% impervious) analysis for the site are shown in Table 3-1.

Table 3-1. Point of Analysis – Comparison of Pre- and Post-Construction Conditions

Point of Analysis	Site Condition	1 Year	2 Year	10 Year	100 Year
		Peak Flow (cfs)	Peak Flow (cfs)	Peak Flow (cfs)	Peak Flow (cfs)
Discharge Point	Postconstruction (Anticipated)	147	177	262	453
	Preconstruction	147	177	262	453
	Difference	0	0	0	0

Note: cfs = cubic feet per second

The existing Shoppingtown Mall site includes stormwater management for quantity which utilizes stormwater infiltration. During construction document development, the stormwater quantity analysis/design will include the following:

- Analysis showing existing infiltration for existing conditions
- Analysis showing surface/subsurface stormwater quantity controls (detention/subsurface infiltration)

The analysis will consider available off-site stormwater capacity of the surrounding systems. The stormwater system will be designed to address the Town of Dewitt off-site system capacity requirements and the NYSDEC quality/quantity control requirements.

In summary, the proposed project will incorporate postconstruction SMPs that addresses the water quality and quantity requirements for the redevelopment of the project site. These practices may include green infrastructure (porous

pavers, rain gardens, vegetated swales, stormwater planters, etc.), standard best management practices (wet pond, pocket pond, etc.), and subsurface quality controls. The selection of SMPs will be finalized during the construction documents phase.

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Extreme Precipitation Tables
Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are in inches.

Smoothing	Yes
State	New York
Location	
Longitude	76.064 degrees West
Latitude	43.041 degrees North
Elevation	0 feet
Date/Time	Sun, 13 Feb 2022 18:19:32 -0500

- The filter area for sand and organic filters should be sized based on the principles of Darcy's Law. A coefficient of permeability (k) should be used as follows:
 - Sand: 3.5 ft/day (City of Austin 1988)
 - Peat: 2.0 ft/day (Galli 1990)
 - Leaf compost: 8.7 ft/day (Clayton and Schueler, 1996)
 - Bioretention Soil: 0.5 ft/day (Clayton and Schueler, 1996)

The required filter bed area is computed using the following equation

$$A_f = \frac{WQ_v d_f}{k(h_f + d_f)t_f}$$

Where:

- A_f = Surface area of filter bed (ft²)
- WQ_v = Water Quality Volume(cu ft)
- d_f = Filter bed depth (ft)
- k = Coefficient of permeability of filter media (ft/day)
- h_f = Average height of water above filter bed (ft)
- t_f = Design filter bed drain time (days) (1.67 days or 40 hours is recommended maximum t_f for sand filters, two days for bioretention)

EDR	Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. P. 315.471.0688	District East	1/12/2023	22101
Project	Job No.	WQv Cals	CPP	TJD
Design	Comp. By	Check	By	Check

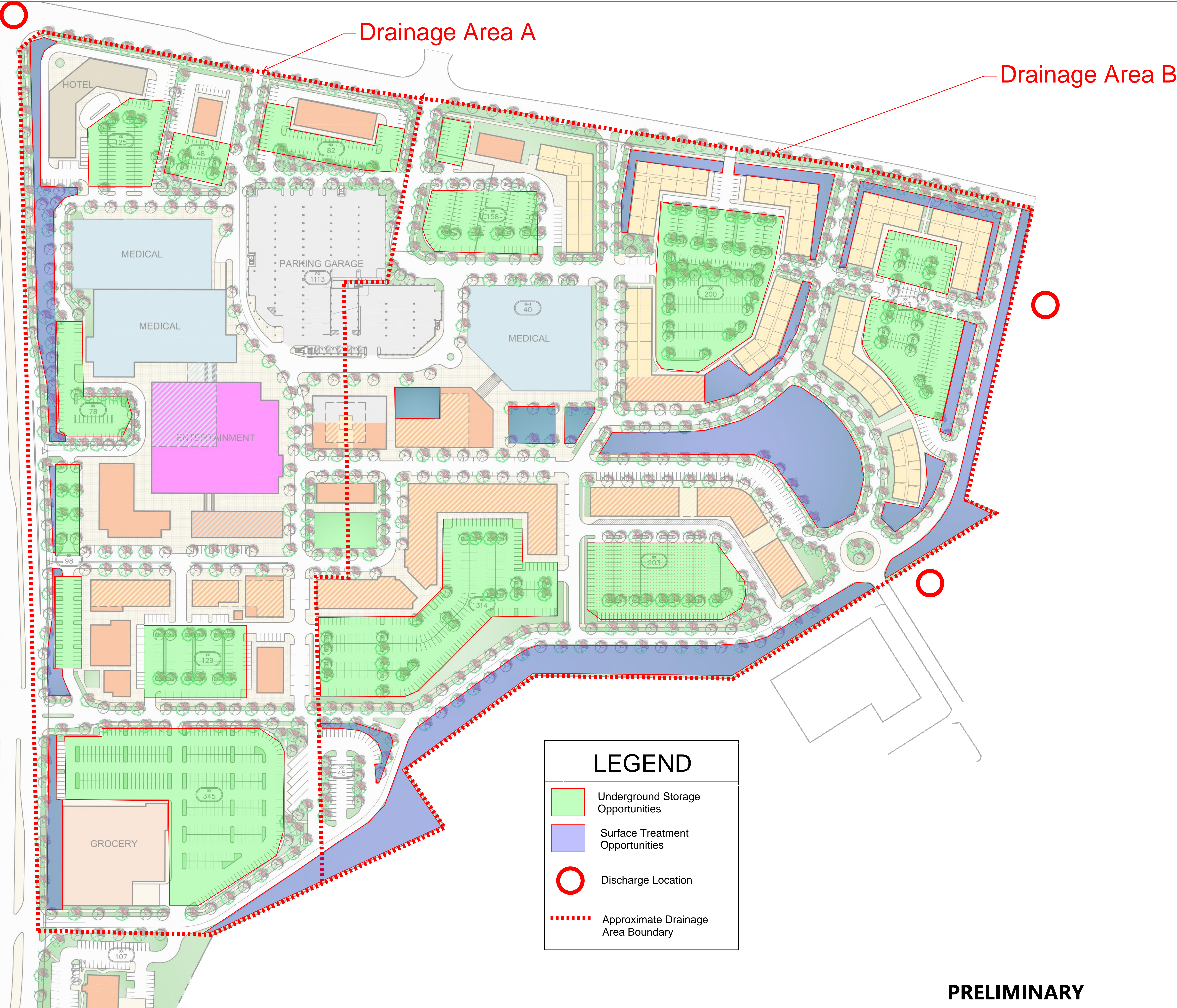
District East

Water Quality Volume (WQv)			
Total Drainage Area (A)	69	Acre	
Percent Impervious (I)	100	%	
1 -year storm rainfall intensity (P)	1	inches	
Equation:	$R_v = 0.05 + 0.009(I)$		
	R _v =	0.98	
Equation:	$WQ_v = \frac{(P \times R_v \times A)}{12}$		
	WQ _v =	5.463	Acre-Feet
		237947	Cubic-Feet
Treatment Requirements:			
Alternative Practice	4.10	Acre-Feet	75% not treated
	178460	Cubic-Feet	
Standard Practice	1.37	Acre-Feet	25% of existing to be treated by standard practice
	59487	Cubic-Feet	

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

where:

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



LEGEND

- Underground Storage Opportunities
- Surface Treatment Opportunities
- Discharge Location
- Approximate Drainage Area Boundary

PRELIMINARY

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The following is paraphrased from the New York Education Law, Article 145, Section 7209, and Chapter II, Section 75-1.4, and applies to this drawing: "It is a violation of this law for any person unless he is acting under the direction of a licensed professional engineer, licensed landscape architect or licensed land surveyor to alter an item in any way, if an item bearing the seal of an engineer, landscape architect or land surveyor is altered, the altering engineer, landscape architect or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration and a specific description of the alteration".

EDR

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PROJECT TITLE: DISTRICT EAST

PROJECT LOCATION: ERIE BOULEVARD SYRACUSE, NY

CLIENT: OHB REDEV, LLC

DRAWING TITLE: STORMWATER UTILITY ASSESSMENT
AVAILABLE STORMWATER TREATMENT AREAS

CONTRACT

DRAWINGS ISSUED FOR / REVISIONS

NO.	DATE	ISSUED FOR / REVISION	BY	CHK	APP
1	1/2023	FOR REVIEW	CRO	CPP	
2					
3					
4					
5					
6					

EDR JOB#: 22101

DATE: 1/2023

DRAWN BY: CRO

CHECKED BY: CPP

DRAWING NUMBER:

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