PROJECT NARRATIVE

Property Description

The project site (Site) consists of City of Concord ML 783Z-16, known as 150 Manchester Street. The Site contains 150 feet of frontage on the southern side of Manchester Street, and 200 feet of frontage the northern side of Integra Drive. The subject parcel was historically two lots, 150 Manchester Street and 10 Integra Drive, which were merged in 2022. The merger created a larger 3.85-acre parcel which is split zoned encompassing land in both the Industrial (IN) and the Commercial Highway (CH) zoning districts. The Site is also encumbered by the Aquifer Protection Overlay District (AP). More specifically the parcel is located within a Groundwater Classification Area, identified as GA2, and is also located within the wellhead protection area of a well owned by Pembroke Water Works.

The site is bounded by similar commercial developments to the east and west; Capital City Kia and Bob Mariano CJDR. To the southwest, a multi-bay commercial business, and to the southeast a commercial office/warehouse structure of Metzger/McGuire. The surrounding uses are of similar site layout, size, and coverage of the proposed dealership expansion layout.

The parcel is currently home to the Capital City Subaru automotive dealership and contains a 9,560 square-foot (sf) metal framed building with 73 existing marked parking spaces and additional unmarked parking areas for vehicle inventory display and storage. The Site is currently used for motor vehicle sales and service, consistent with its original Site Plan approval. The dealership is accessed through an existing curb cut along the Manchester Street frontage, currently with no access to the Integra Drive portion of the parcel. The Integra Drive portion of the frontage is a mix of graveled area and vegetation, with no current approved use. The operational motor vehicle dealership is located on Manchester Street side of the parcel connected to municipal water and sewer utilities. An onsite stormwater management system, approved by the City of Concord in the 1990's, collects on-site stormwater runoff for detention and release into the municipal storm sewer system.

Project Description

The proposed project includes the expansion of inventory storage and display area onto the Integra Drive portion of the subject parcel. The project will also address improvements to the site landscaping and lighting, reconfiguring vehicle delivery access with a new driveway connection to Integra Drive, and a new closed drainage system to manage on-site stormwater. The existing impervious coverage of the lot is 65,377-sf, or 40%. The exiting site has minimal interior landscaping, with some peripheral plantings and trees. The project following improvements has an impervious area of 131,301-sf, or 78.9%. This percentage reflects the impervious area following the annexation of land to the City of Concord for the expansion of Manchester Street. The proposed development will have a 10-ft front landscape buffer along both Manchester Street and Integra Drive, a 10-ft wide planted buffer adjacent to the 8 Integra Drive (ML 783Z-13), as well as a 5-ft landscape buffer along the remaining sides of the property boundary.

The proposed site improvements are being made to satisfy a short term need for additional inventory storage area, as well as with future improvements in mind. The drainage infrastructure and site design have been completed in a way that will permit a future building expansion to match seamlessly into the proposed improvements, limiting impact in the future condition. This will allow the dealerships operations to continue uninterrupted and in line with the City's regulations to the maximum extent practical during the planned future expansion. This project has obtained Variances from the ZBA and requires a Conditional Use Permit (CUP) for impervious surface area within the AP overlay district.

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Conditional Use Permit Application
Article 28-3-6(d)(4) - Certain Uses within the Aquifer Protection District

Manchester Street Concord Auto, LLC – 150 Manchester Street (MBL 783Z-16)
150 Manchester Street, Concord, New Hampshire
January 15, 2025

Proposal Outline:

This Conditional Use Permit (CUP) is being submitted concurrently with an associated Site Plan Review application which includes a thorough Project Narrative and Stormwater Management Report. These documents illustrate the provisions made in the site design process for both handling and treating on-site stormwater runoff. Please refer to these documents for additional information which pertains to this CUP application.

The project site (Site) consists of City of Concord MBL 783-Z16, known as 150 Manchester Street. The Site contains 150 feet of frontage on the southern side of Manchester Street, and 200 feet of frontage on the northern side of Integra Drive. The subject parcel was historically two lots, 150 Manchester Street and 10 Integra Drive, which were merged in 2022. The merger created a larger 3.85-acre parcel, which is split zoned encompassing land in both the Industrial (IN) and the Commercial Highway (CH) zoning districts. The Site is also encumbered by the Aquifer Protection Overlay District (AP).

The site is bounded by similar commercial developments to the east and west; Capital City Kia and Bob Mariano CJDR. To the southwest, a multi-bay commercial lease property with multiple businesses, and to the southeast a commercial office/warehouse structure of Metzger/McGuire. The surrounding uses are of similar site layout, size, and lot coverage of the proposed dealership expansion layout.

The parcel currently contains a 9,560 square foot metal framed building with 77 marked parking spaces, plus additional unmarked parking areas for vehicle inventory display and storage. The Site is currently used for motor vehicle sales and service, consistent with its original Site Plan approval. The dealership is accessed through an existing curb cut along the Manchester Street frontage, currently with no access to the Integra Drive portion of the parcel. The Integra Drive portion of the frontage is a mix of graveled area and vegetation, with no current approved use. The operational motor vehicle dealership is located on the Manchester Street side of the parcel, connected to municipal water and sewer utilities. An onsite stormwater management system, approved by the City of Concord Planning Board in the 1990's, collects on-site stormwater runoff for detention and attenuated release into the municipal storm sewer system.

The proposed improvements are associated with the expansion of the existing Subaru dealership. The project includes a 15,354 square foot addition plus expansion of its associated parking and inventory storage/display areas. The proposed condition will include 16 service bays, 3 vehicle reconditioning bays, and an increase in sales and service square footage within the dealership.

The project also includes improvements to the sites landscaping and lighting, reconfiguring of vehicle delivery access through the connection to Integra Drive, and a new closed drainage system to manage on-site stormwater. The existing impervious coverage of the lot is 65,377-sf, or 40%. The exiting site has minimal interior landscaping, with some peripheral plantings. The proposed project fully built out has an impervious area of 131,488-sf, or 78.8%. This percentage reflects the impervious area proposed with the future lot area once the frontage is annexed to the City of Concord for the expansion of Manchester Street. The proposed development with have a 10-ft front landscape buffer along both Manchester Street and Integra Drive, a 10-ft wide planted buffer adjacent to the 8 Integra Drive (MBL 783-Z13), as well as a 5-ft landscape buffer along the remaining sides of the property boundary.

The proposed work is to be completed in two phases. Phase 1 includes the construction of inventory storage area and parking facilities on the Integra Drive portion of the parcel. This will include the construction of all the proposed stormwater management basins for the full buildout, plus site lighting, landscaping proposed in the Phase 1 area. Phase 2 will include the dealership expansion, and construction of the remaining Site Improvements to include new utility connections, site lighting, landscaping and remaining stormwater collection infrastructure. The two phased approach will allow the dealership's operations to continue uninterrupted while remaining within the City's regulations to the maximum extent practical throughout construction.

The two existing uses are to continue on the subject parcel, automotive sales and service/repair. The automotive service/repair use is prohibited within the AP District – Community Water Systems Protection Area (CWSPA). A Variance was obtained from the Concord Zoning Board of Adjustment (ZBA) to allow the otherwise prohibited use to expand into the IN district. The proposed Site improvements associated with the continued use involve the expansion of the existing dealership/service area and constructing more impervious parking and inventory storage areas. The Site improvements will result in approximately 131,488-sf of impervious surface area on the subject parcel which is 78.8% of the total parcel area. This exceeds the 2,500-sf and 15% lot coverage threshold for the CWSPA and necessitates the Conditional Use Permit. Therefore, this CUP application is not associated with the specific use of the parcel, per se, but rather it is associated with the impervious surface coverage that is needed to support the proposed use.

In order to justify this CUP, the project must be designed and permitted in a manner that will both protect and preserve the aquifer that is associated with the CWSPA. This means the project will need to incorporate an infiltration component into the drainage design in order to ensure that the groundwater will continue to be recharged at the same rate or more. This is to provide continued recharge capacity for the aquifer as a result of the increased impervious coverage created by the project. Inversely, the project must also ensure that the stormwater runoff infiltrated into the groundwater is not contaminating the aquifer during its operation. This means that the collected runoff will need to be properly treated before its recharge back into the groundwater.

As described in the Stormwater Management Report, through a combination of treatment devices, the proposed site improvements will provide the necessary level of stormwater treatment to ensure that the groundwater is properly protected from the infiltrated stormwater

runoff. The project will require an Alteration of Terrain (AoT) permit from NHDES which also regulates stormwater related discharges and includes specific regulatory requirements for discharges in groundwater protection areas. In addition, the project will be designed to meet the performance standards identified in the zoning ordinance for this CUP.

Standards of Review for Condition Use Permit – Z.O. Article 28-9-4(b)(4)

In submitting this application for a Conditional Use Permit, the applicant recognizes the need to successfully demonstrate, to the satisfaction of the City of Concord Planning Board, that each of following standards have been or will be fulfilled upon completion of the subject work. Specifically:

a. *The use is specifically authorized in this ordinance as a conditional use;*

   The use is specifically authorized by Section 28-3-6(d)(4)(2) in that the proposed site improvements on the subject parcel will render impervious more than 15 percent of the lot and more than 2,500-sf.

b. *If completed as proposed by the applicant, the development in its proposed location will comply with all requirements of this Article, and with the specific conditions or standards established in this ordinance for the particular use;*

   The proposed development will be in compliance with all aspects of this Article. In addition, the project will comply with the specific conditions established in there are no other specific conditions or standards established in Section 28-3-6(d)(1), Performance Standards, as discussed in the following section of this narrative. The proposed development will comply with all other aspects of the zoning ordinance, for which a Variance is not received, and will comply with the Site Plan Regulations, for which a waiver is not received.

c. *The use will not materially endanger the public health or safety;*

   The use is being developed in accordance with strict performance standards outlined in the ordinance to ensure protection of the aquifer. There is no reason to believe that the health or safety of the general public will be adversely affected in any other way by the impervious lot coverage on this parcel.

d. *The use will be compatible with the neighborhood and with adjoining or abutting uses in the area in which it is to be located;*

   The project is located within both the Industrial (IN) and Commercial Highway (CH) Zoning District's which allow up to 85% and 80% lot coverage, respectively. Every other developed parcel in this area far exceeds the 15% threshold. The proposed use, as it relates to the CUP, will have no impact on the neighborhood or adjoining uses in the area. The amount of impervious area proposed is very compatible with the adjacent land uses and under the 80% threshold required of the CH district, the more conservative of the two.

e. The use will not have an adverse effect on highway or pedestrian safety;

The existing dealership has a connection to Manchester Street. The proposed development will have access onto Integra Drive, providing the ability to separate traffic through both the Integra Drive and Manchester Street connections vs. the singular connection point that exists today. There is no reason to believe that it would have any impact on highway or pedestrian safety.

f. The use will not have an adverse effect on the natural, environmental, and historic resources of the City;

The parcel is located within the IN and CH zoning districts and is surrounded by developed parcels. Project reviews by the NH Natural Heritage Bureau and the NH Department of Historical Resources required no follow up, with each agency indicating the project is not expected to have adverse impacts on their specific jurisdictional areas. Based on this information, we do not perceive that the project will have any adverse impact to the natural, environmental, or historic resources of the City.

g. *The use will be adequately serviced by necessary public utilities and by community facilities and services of a sufficient capacity to ensure the proper operation of the proposed use, and will not necessitate excessive public expenditures to provide facilities and services with sufficient additional capacity.*

The existing use is fully serviced by the necessary public utilities. The proposed use will be fully serviced by necessary public utilities and will not necessitate any public expenditure for any upgrades required.

Standards of Review for Condition Use Permit – Z.O. Article 28-9-4(b)(4)

In addition to the requirements of Article 28-9-4(b)(4) discussed above, the applicant recognizes the need to successfully demonstrate, to the satisfaction of the City of Concord Planning Board, that the use will be in compliance with the performance standards listed in Section 28-3-6(d)(1), Performance Standards, of the zoning ordinance, as well as all applicable local, State, and Federal requirements.

The project will implement a Source Control Plan, in accordance with the NHDES Alteration of Terrain (AoT) Regulations and will be required to obtain an AoT permit. This combination of source control plan and AoT permit will cover all items listed in the Performance Standards sections of the ordinance due to the nature of its specific requirements.

CITY OF CONCORD

New Hampshire's Main Street™

Community Development Department

Planning Division

Waiver Request Form – Site Plan Regulations

Instructions:

1. List the section for which the waiver is being requested, along with a brief explanation of the request.
2. Explain how the waiver request complies with each criterion.

Section 36.08 *Waivers: Where the Planning Board finds that extraordinary hardships or practical difficulties may result from strict compliance with these regulations and/or the purposes of these regulations may be served to a greater extent by an alternative proposal, it may approve waivers to these subdivision regulations so that substantial justice may be done and the public interest secured, provided that such waiver shall not have the effect of nullifying the intent and purpose of these regulations…*

Waiver from Section Section 16.02(19) - Site Plan Requirements; Traffic Control Plan

A waiver to defer the submittal of a traffic control plan to the time of construction, where it is normally required to be submitted with the Site Plan application.

and further provided the Planning Board shall not approve waivers unless it shall make findings based upon the evidence presented to it in each specific case that:

(1) The granting of the waiver will not be detrimental to the public safety, health, or welfare or injurious to other property;

Granting the waiver will allow the project to be reviewed and permitted prior to the submission of a traffic control plan. This will negate numerous changes to the traffic control plan throughout the projects permitting process and allow the plan to reflect the anticipated construction effort. This waiver would not be detrimental to public safety, health, welfare or injurious to other property as a traffic control plan will be implemented as required, at a later date.

(2) *The conditions upon which the request for a waiver is based are unique to the property for which the waiver is sought and are not applicable generally to other property;*

This waiver is sought to defer the submittal of a traffic control plan to the time of construction. While this is not unique and is generally applicable to other properties, we are requesting the board allow the waiver to prevent numerous revisions to the traffic control plan during the permitting process and the burden it may have on planning staff and the applicant.

(3) *Because of the particular physical surroundings, shape, or topographical conditions of the specific property involved, a particular and unnecessary hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of these regulations are carried out;*

The applicant will be required to pay the applicable costs to continuously revise the traffic control plan pending any requests for changes. This would be an unnecessary burden to the client.

(4) *Specific circumstances relative to the subdivision or conditions of the land in such subdivision indicate that the waiver will property carry out, or not be contrary to, the spirit and intent of the regulations; and*

Permitting the deferral of the traffic control plan will meet the spirit and intent of the regulation by providing a comprehensive traffic control plan that matches the permitted site improvements, at the time of construction.

(5) *The waiver will not in any manner vary the provisions of the Zoning Ordinance, Master Plan Reports, or Official Map.*

This waiver will not vary from the zoning ordinance, master plan, or distort any official map. We are asking to deffer the requirement to create a traffic control plan which matches the permitted site improvements, at the time of construction.

Finally, note if the waiver complies with RSA 674:44(III)(e)(1) or (2) below and explain how.

(1) Strict conformity would pose an unnecessary hardship to the applicant and waiver would not be contrary to the spirit and intent of the regulations

OR

(2) Specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations

This is a deferral of the traffic control plan requirement, that will be listed as such on the approved Site Plan. The regulation will still be carried out at the time of construction versus at the submission of the site plan. This will properly carry out the spirit and intent of the regulation, while removing unnecessary plan revisions, the cost to the applicant for those revisions, and the time it takes planning staff to review aforementioned revisions.

FILE: G:_PROJECTS\23012\dwg\23012_EXHIBITS.dwg BY: Aaron DATE: 14 Jan 2025 - 11:08am

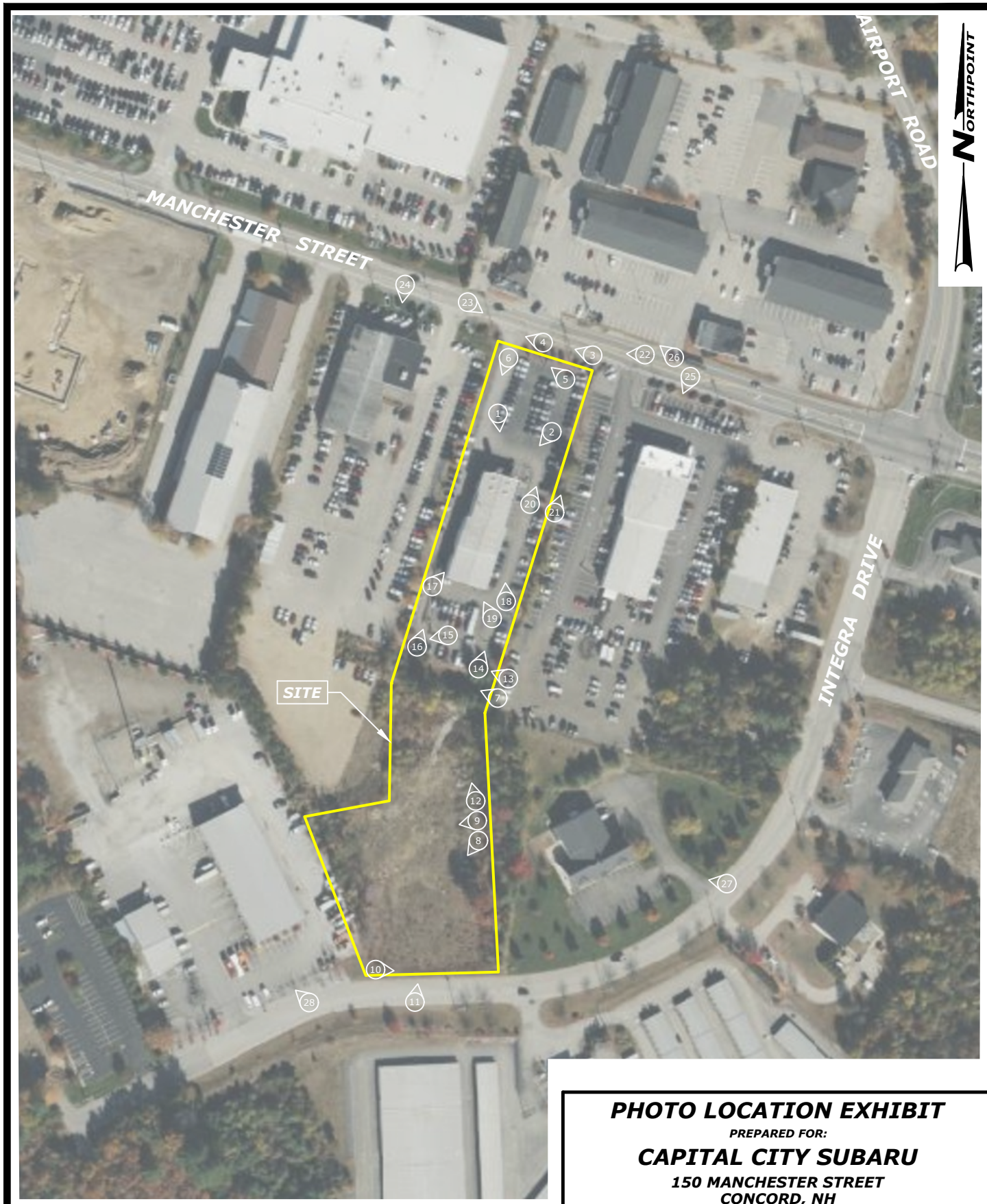

PHOTO LOCATION EXHIBIT

PREPARED FOR:

CAPITAL CITY SUBARU

150 MANCHESTER STREET
CONCORD, NH

NORTHPOINT ENGINEERING, LLC
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SCALE: 1"=200'	**DATE: JAN. 2025**
PROJ.: 23012	**SHEET: 1 OF 1**

Picture 1: View south of the existing dealership roadside façade

Picture 2: View southwest of the existing dealership roadside façade

Picture 3: View west along frontage of Manchester Street

Picture 4: View of existing Manchester Street curb cut

Picture 5: View of existing pole mounted sign "Subaru"

Picture 6: View southwest of dealership from Manchester Street curb cut

Picture 7: View west of existing Detention Pond

Picture 8: View south of historic 10 Integra Drive portion of the parcel

Picture 9: View west of the Integra Drive portion of the parcel

Picture 10: View northeast along Integra Drive frontage (Photo Date: November 7, 2024)

Picture 11: View north of Integra Drive portion of Parcel (Photo Date: November 7, 2024)

Picture 12: View north of the Integra Drive portion of the parcel

Picture 13: View of conex box in southeast corner of the parking area (non-approved)

Picture 14: View from southeast corner of the parking area along the eastern elevation of the dealership

Picture 15: View of existing dumpster enclosure at southwest corner of the parking area

Picture 16: View from southwest corner of the parking area along the western elevation of the dealership

Picture 17: View of the western elevation of the exiting dealership

Picture 18: View of the eastern elevation of the exiting dealership

Picture 19: View of southern elevation of the existing dealership

Picture 20: View from eastern portion of parking and vehicle inventory display area

Picture 21: View along the eastern property line behind vehicle display area near the Manchester Street frontage

Picture 22: View west along Manchester Street from Google Street View (Sept. 2023)

Picture 23: View east along Manchester Street from Google Street View (Sept. 2023)

Picture 24: Abutter (146 Manchester Street) – Bob Mariano CJDR from Google Street View (Sept. 2023)

Picture 25: Abutter (158 Manchester Street) – Capital City Kia from Google Street View (Sept. 2023)

Picture 26: Abutter (151 Manchester Street) – Alosa Rental Properties from Google Street View (Sept. 2023)

Picture 27: Abutter (8 Integra Drive) – Metzger/McGuire Co from Google Stret View (Aug. 2019)

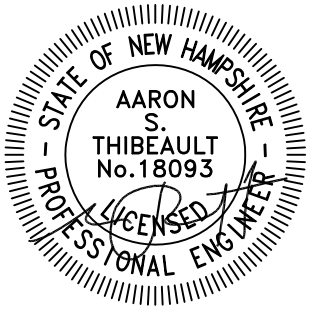
Picture 28: Abutter (12 Integra Drive) – Multi-Unit Development from Google Stret View (Aug. 2019)

STORMWATER MANAGEMENT REPORT

Prepared For

CAPITAL CITY SUBARU
150 MANCHESTER STREET
MAP 783Z LOT 16
CONCORD, NEW HAMPSHIRE

FEBRUARY 19, 2025



Prepared for:

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Project No. 23012

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I. PROJECT NARRATIVE

Project Description

The subject parcel consists of City of Concord ML 783Z-16, with 150-feet of frontage on the southern side of Manchester Street, and 200-feet of frontage on the northern side of Integra Drive. The subject parcel was historically two lots, 150 Manchester Street and 10 Integra Drive, which were merged in 2022. The merger created a larger 3.85-acre parcel which is split zoned encompassing land in both the Industrial (IN) and the Commercial Highway (CH) zoning districts. The parcel is currently home to the Capital City Subaru, an automotive dealership which contains a 9,560 square foot metal framed building with 77 existing marked parking spaces and additional unmarked parking areas for vehicle inventory display and storage. The dealership is accessed through an existing curb cut along the Manchester Street frontage, currently with no access to the Integra Drive portion of the parcel. The Integra Drive portion of the frontage is a mix of graveled area and vegetation, with no current approved use.

The existing dealership is operational on the Manchester Street side of the parcel connected to municipal water and sewer utilities. An onsite stormwater management system, approved by the City of Concord in the 1990's, collects onsite stormwater runoff for detention and releases into the municipal system through a 6" orifice installed in an outlet pipe. The system presumably infiltrates a portion of the runoff due to the presence of drywells and underlying sandy soils within the detention pond, with no history of flooding or operational issues.

The proposed improvements are associated with the expansion of the existing dealerships vehicle display area / inventory storage area to accommodate a larger number of vehicles to supplement the business. The proposed condition will create an additional 45,548 SF of inventory storage area and associated access isles. The project also includes improvements to the site landscaping and lighting, reconfiguring vehicle delivery access with a connection to Integra Drive, and a new closed drainage system to manage onsite stormwater. These improvements are being made with future improvements in mind, therefor the drainage infrastructure has been sized to accommodate planned future expansion. Construction of the additional inventory storage area will allow the dealership operations to continue uninterrupted and inline with the City's regulations to the maximum extent practical during future expansion.

Methodology

In accordance with the provisions and requirements of the City of Concord Site Plan Regulations the 2, 10, 25 and 100-year, (24-hour) return frequency storms were used in all aspects of analysis and design for stormwater management improvements at the subject site, as further documented in this report. In addition, the 50-year (24-hour) return frequency storm was also analyzed in accordance with the NHDES Alteration of Terrain Regulations.

The methodology of the U.S.D.A–S.C.S publication Urban Hydrology for Small Watersheds – Technical Release No. 55 (TR-55) and Computer Program – Project Formulation Hydrology (TR-20) was selected for use in the design of segments of the drainage system in order to estimate peak stormwater discharge volumes. In implementing the methodology of TR-55 and TR-20 a HYDROCAD (Version 10.00) stormwater modeling, hydrograph generating, and routing computer program was utilized.

Estimates for Time of Concentration, used in the analysis were made using the methodology contained within U.S.D.A–S.C.S publication Urban Hydrology for Small Watersheds – Technical Release No. 55 (TR-55). In implementing the TR-55 Method, a minimum Time of Concentration of 5 minutes was utilized for urbanized areas.

All design and analysis calculations performed using the referenced methodologies are attached to this report. These calculations document the subcatchment area, breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the attached "Drainage Areas Plans" graphically define and illustrate the real extent of each watershed or subcatchment area investigated.

The USDA-NRCS Web Soils Survey was utilized in identifying soil types of the subject parcel and any contributing drainage area. In addition to Web Soils Survey historical knowledge of the area indicated the 'Concord Heights' is set atop a large deposit of sandy soil with a deep depth to the seasonal high-water table (SHWT). To confirm this, a site-specific soil survey was performed to analyze the site's capability to infiltrate stormwater on-site. Multiple test pits were logged surrounding the proposed stormwater management basin locations, and a report was developed to illustrate those findings, attached herein.

Existing Drainage Conditions

The subject site is approximately half developed due to the lot merger of 150 Manchester Street and 10 Integra Drive. The Integra Drive portion of the site slopes slightly toward the southwest, toward Integra Drive. There is a slight depression behind the curb line which prevents runoff from reaching the roadway, and previous disturbances have resulted in slight berms near the property lines which prevents stormwater from reaching adjacent parcels. The drainage for the Integra Drive portion of the property is contained on-site and must infiltrate or evaporate to exit the site. The Manchester Street portion of the site is designed to collect stormwater on the southeast edge of the property, where it is collected by the existing onsite stormwater drainage system. The runoff is directed toward a detention basin, with a 6" orifice on an outlet pipe for attenuated release into the municipal drainage system in Manchester Street.

The pre-developed condition of the Site is based on the surveyed condition with an exception made for the Integra Drive portion of the Site. The pre-developed drainage analysis assumes the parcel to be in a woods/grass combination, which is what the condition was prior to disturbance from a previous owner. This is in an effort to not artificially increase the pre-developed results and illustrate the condition of the Site for a majority of the previous years.

Given the flat nature of the parcel, and the well-drained underlying soils, there is very little runoff experienced from the site. Two separate Points of Comparison (POC's) have been established to compare the existing drainage conditions. POC#1 is the existing connection to the municipal drainage system at DMH 610. This is controlled by a 6" orifice which is installed in the outlet pipe of adjacent CB 780. POC#2 is CB 890, a stormdrain within the Integra Drive stormwater collection system, which has the potential to receive runoff from the site.

POC #1 and the existing drainage design utilizes a series of catch basins which are connected to an existing detention basin, shown as pond 7P in the stormwater model. The historic design utilizes a 6" orifice at the far end of the system (CB 780) to create a backwater condition to fill the pond. The 6" orifice is the outlet control of the drainage system, attenuating flows to the municipal system.

POC #2 is part of a large stormwater collection system designed in conjunction with the Integra Drive subdivision, known as the Legend Industrial Center from record documents. Drainage calculations obtained from the City of Concord, show the subdivision was designed to provide collection capacity for each lot within the subdivision for discharge into large stormwater pond. This was done to balance pre/post runoff conditions assuming 50% of the buildable area of the lot was discharged into the storm sewer. The pond was installed during Integra Drive's construction and currently exists on ML 783Z-8 (11 Integra Drive). The subject parcel, specifically the recently merged Integra Drive parcel, is a portion of Lot #12 from the Legend Industrial Center subdivision. Lot #12 was designed to discharge 8.3-cfs during the 10-year storm event, with a 12" stub provided in CB 890 for the envisioned connection.

Post-Development Drainage Conditions

Overview:

The proposed Site improvements involve the construction of 65,946 square feet of new impervious surface area as a result of the improvements. The new impervious surface area consists of expanded parking and inventory storage areas. Portions of this impervious area will be removed in the future expansion and replaced with the envisioned building addition.

To ensure there is not an increase in the stormwater runoff from the Site as a result of the increased impervious area, a majority of the onsite runoff will drain into a series of catch basins and will be directed toward the proposed stormwater management basins (SWMB's). Three of the four SWMB's are subsurface infiltration basins comprised of StormTech SC-740 chambers in a stone exfiltration trench. The final system is an above ground infiltration basin. These four systems are hydraulically connected through a series of underground culverts, allowing the system to operate as one large SWMB. The combined systems are designed to infiltrate collected runoff from impervious surfaces for the design storm events up to and including the 50-year storm event in the long term condition. The combined system will then overflow into the existing Integra Drive drainage system which is designed for collection capacity for the Site. This will allow for the eventual disconnection of drainage from the municipal Manchester Street system, which flows directly into downstream receiving water. As part of this design the connection to the Manchester Street system will remain, with the existing detention pond being replaced by a temporary connection to the proposed SWMB's. This connection is proposed at the existing elevation of the pond, with the intention to not affect the existing dealerships hydraulic condition. All four SWMB's are planned to be constructed which will be largely oversized for the proposed project as presented.

The Points of Comparison identified in the above section were analyzed in the post-developed condition to ensure that there would not be any adverse effects experienced by the adjacent downstream properties or receiving drainage channels. The following sections describe in greater detail the treatment methods, groundwater recharge requirements, channel protection criteria and peak runoff control criteria.

Stormwater Treatment:

The site has been designed to provide permanent stormwater treatment in compliance with Env-Wq 1507.03 and the City of Concord Site Plan Regulation for the runoff generated from the proposed site improvements. Stormwater runoff will be collected in a series of catch basins and directed into one of three separate subsurface infiltration basins, for exfiltration into the underlying soils.

Pretreatment of the collected runoff will be provided through a three-tier treatment train. The first tier starts with each proposed catch basin having a deep sump to allow for the collection of sediment and debris that are inadvertently captured during their operation. The second tier of pretreatment will include each catch basin outlet pipe being fitted with a Snout (manufactured hood). This will prevent floatable debris, including oils and gasoline as well as trash and debris, from being discharged from the catch basin toward the SWMB's. Instead, they will remain in the catch basin for removal and proper disposal on a semi-annual basis. Lastly, stormwater that is discharged from the catch basins and into the subsurface infiltration systems will first pass through an Isolator Row in the StormTech system. This represents the third tier of pre-treatment which will provide an additional mechanism for finer sediment to be removed from the storm water before it is infiltrated.

Permanent stormwater treatment is then accomplished by infiltration through the stone exfiltration trench that encompasses the StormTech chambers. Infiltration Treatment is in compliance with Env-Wq 1508.06 for the WQV (water quality volume). Additional storage well above the WQV will allow the infiltration

basins to provide stormwater management and treatment for both the 10-year and 50-year storm events, plus infiltration in the above ground basin during those events as well.

Groundwater Recharge:

As a result of the proposed development, the impervious surface area on the subject parcel will increase from 65,337-sf to 131,301-sf. All of the new impervious surface area will displace undisturbed HSG "A" soils. This correlates to a required Groundwater Recharge Volume (GRV) of 2,207-cf. The proposed SWMB's (infiltration basins) will provide well in excess of this required amount. The volume of the infiltration basins, below the lowest outlet elevation (321.36 at DMH #101), is 28,056-cf. All of this volume will be infiltrated. Therefore, the site far exceeds the groundwater recharge requirements of Env-Wq 1507.04.

Channel Protection:

The site has been designed to provide downstream Channel Protection in compliance with Env-Wq 1507.05 through the implementation of the SWMB's. Both Points of Comparison were analyzed to demonstrate compliance with the channel protection requirements. The 2-year, 24-hour post-developed peak flow rate at each of the POC's is less than or equal to the 2-year, 24-hour pre-developed peak flow rate. And the 2-year, 24-hour post-developed storm volume at each POC has not increased over the pre-developed volume by more than 0.10-af. See Table 1 in the Summary of Results below for actual values. This meets the criteria of Env-Wq 1507.05 and will ensure that downstream stream channels and receiving waters are protected from erosion-causing volumes and flows.

Peak Runoff Control:

The site has been designed to provide Peak Runoff Control in accordance with Env-Wq 1507.06 through the implementation of the subsurface SWMB's. Both Points of Comparison were analyzed to demonstrate compliance with the peak runoff control requirements. The site has been designed such that the 2-year, 10-year, and 50-year 24-hour post-developed peak flow rates do not exceed those of the existing condition at either of the Points of Comparison, thus ensuring that downstream properties will not be adversely affected by the development. See Table 2 in the Summary of Results below for actual values.

Design Infiltration Rate:

The infiltration rate was determined using the Default Values method described in Env-Wq 1504.13 (NHDES Alteration of Terrain Administrative Rules).

According to the USDA-NRCS Web Soils Survey, the subject parcel is located within native material identified as Windsor Soils. This was confirmed during the site-specific soil survey through test pitting and observations by the Certified Soil Scientist. This soil type has a saturated hydraulic conductivity rate (Ksat) that is generally between 6.0 and 20.0 inches per hour in the C-horizon per the published document '*Ksat Values for New Hampshire Soils, Society of Soil Scientists of Northern New England (SSSNNE), Special Publication No. 5, September 2009'*.

The lowest Ksat value in this range (6.0 in/hr) was utilized for this soil type, and a factor of safety of 0.5 was applied to achieve the design infiltration rate of **3.0 inches per hour**.

Summary of Results

Table 1. Peak Runoff Control Summary

Node	Peak Rates of Runoff at Study Points **(City of Concord)**							
	(2-Year, 24-Hour)		(10-Year, 24-Hour)		(25-Year, 24-Hour)		(100-Year, 24-Hour)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
10R (POC1)	4.0-cfs	4.0-cfs	6.6-cfs	5.7-cfs	8.6-cfs	6.6-cfs	12.7-cfs	9.8-cfs
20R (POC2)	0.0-cfs	0.0-cfs	0.0-cfs	0.0-cfs	0.01-cfs	0.05-cfs	0.16-cfs	0.36-cfs

Node	Peak Rates of Runoff at Study Points **(NHDES AoT)**	
	(50-Year, 24-Hour)	
	Pre	Post
10R (POC1)	10.5-cfs	8.1-cfs
20R (POC2)	0.04-cfs	0.15-cfs

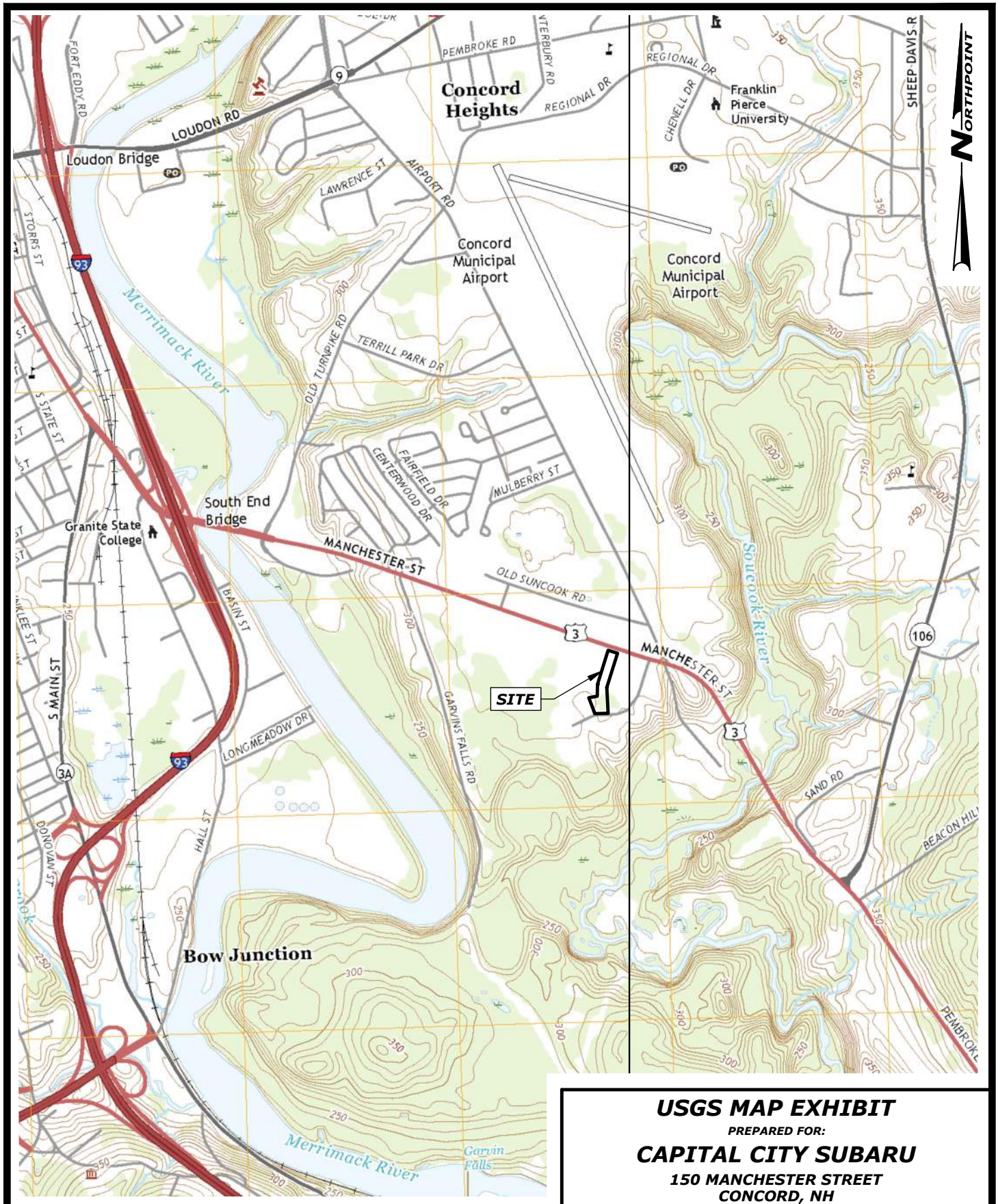
Table 2. Runoff Volume Control Summary

Study Point	Node	Runoff Volume at Study Points **(City of Concord)**	
		(10-Year, 24-Hour)	
		Pre	Post
POC 1	10R	20,924-CF	20,464-CF
POC 2	20R	0-CF	187-CF

Study Point	Node	Runoff Volume at Study Points **(NHDES AoT)**	
		(2-Year, 24-Hour)	
		Pre	Post
POC 1	10R	12,383-CF	12,341-CF
POC 2	20R	0-CF	4-CF

II. USGS MAP EXHIBIT

FILE: G:_PROJECTS\23012\dwg\23012_EXHIBITS.dwg BY: Aaron DATE: 14 Jan 2025 - 10:50am



USGS MAP EXHIBIT

PREPARED FOR:

CAPITAL CITY SUBARU

150 MANCHESTER STREET
CONCORD, NH

NORTHPOINT ENGINEERING, LLC
Civil Engineering ◢ Land Planning ◢ Construction Services

119 Storrs St, Ste 201
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SCALE: 1"=2000'	**DATE: JAN. 2025**
PROJ.: 23012	**SHEET: 1 OF 1**

III. Web Soil Survey Map

Map Scale: 1:1,780 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire
Survey Area Data: Version 30, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	A	5.1	99.4%
699B	Urban land, 0 to 8 percent slopes		0.0	0.5%
Totals for Area of Interest			**5.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

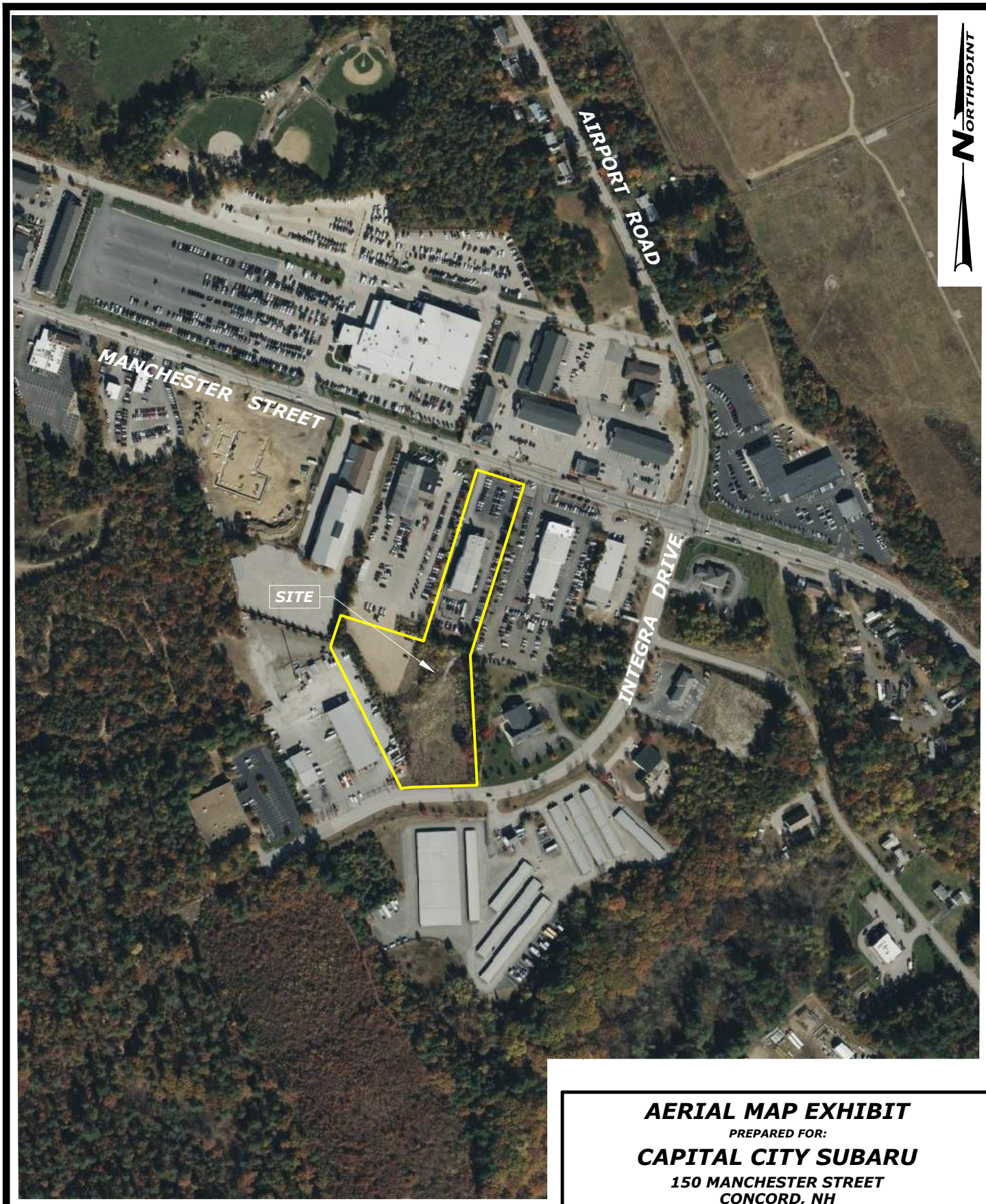
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

IV. Aerial Photograph Exhibits

FILE: G:_PROJECTS\23012\dwg\23012_EXHIBITS.dwg BY: erica DATE: 09 Jan 2025 - 2:35pm



AERIAL MAP EXHIBIT

PREPARED FOR:

CAPITAL CITY SUBARU

150 MANCHESTER STREET
CONCORD, NH

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SCALE: 1"=400'	**DATE: JAN. 2025**
PROJ.: 23012	**SHEET: 1 OF 1**

V. Inspection and Maintenance Manual

STORM WATER MANAGEMENT SYSTEM

INSPECTION & MAINTENANCE MANUAL

For:

CAPITAL CITY SUBARU
150 MANCHESTER STREET
MAP 783Z LOT 16
CONCORD, NEW HAMPSHIRE

FEBRUARY 19, 2025

Prepared for:

Manchester Street Concord Auto, LLC &
Manchester Street Concord Auto TIC, LLC
300 Trade Center – Suite 7700
Woburn, MA 01801-7419

Prepared By:

NORTHPOINT ENGINEERING, LLC
Civil Engineering ◢ Land Planning ◢ Construction Services

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Tel 603-226-1166
Fax 603-226-1160
www.northpointeng.com

Project No. 23012

STORM WATER MANAGEMENT SYSTEM
INSPECTION & MAINTENANCE MANUAL

Prepared For

CAPITAL CITY SUBARU
150 MANCHESTER STREET
CONCORD, NEW HAMPSHIRE

This document is to ensure that the Storm Water Management System for Manchester Street Concord Auto, LLC & Manchester Street Concord Auto TIC, LLC, facility is maintained in perpetuity by the owner or their assigned heirs after construction is completed. A description of the stormwater management facilities, along with long-term operation and maintenance procedures, is presented in this plan. The owner shall designate an operator of the storm water management facilities who shall be responsible for overseeing all maintenance procedures identified in this plan.

OPERATOR:

Capital City Subaru will act as both the owner and operator of the Storm Water Management System for this facility. Capital City Subaru shall be responsible for the long-term operation and maintenance of the stormwater management facilities.

WCK Concord-SB, LLC
d/b/a Capital City Subaru
300 Trade Center – Suite 7700
Woburn, MA 01801-7419

Contact: Dennis Wilson
dwilson@capitalcitysubaru.com
603-225-0200

Capital City Subaru shall be legally responsible for the long-term operation and maintenance of this Storm Water Management System as outlined in this Inspection & Maintenance Manual. When ownership of the stormwater management system changes, the succeeding owner will be presented with this Manual and supporting attachments at or before the legal conveyance of ownership. Capital City Subaru will establish an annual Storm Water Management System Inspection and Maintenance budget to ensure ongoing compliance with this Manual.

STORMWATER MANAGEMENT FACILITIES:

The Storm Water Management System for Capital City Subaru is specified on the design plans entitled "Site Improvement Plans prepared for: "Capital City Subaru"; (Tax Map 783Z Lot 16); 150 Manchester Street; Concord, NH" prepared by Northpoint Engineering, LLC. The Storm Water Management System specified on said plans collects storm water runoff from the onsite development. Attached to this I&M Manual is an *I&M Site Plan Exhibit* that provides an overview of the entire property and each of the stormwater management practices.

Storm Water Conveyance:
Stormwater sheet flows from rooftop and pavement areas into catch basins located throughout the subject site. Stormwater then flows though the stormwater system into the subsurface infiltration basins, as depicted on the attached *I&M Site Plan Exhibit*, and as further described in the following sections.

Stormwater Management Basins:
A group of four stormwater management basins (SWMB) will be constructed to collect, retain, and infiltrate stormwater runoff. SMWB #1-3 are subsurface infiltration basins and are located beneath the southwester parking and inventory storage areas. Infiltration Basin #1 (IB#1) is an above ground infiltration basin that works in conjunction with the (3) subsurface infiltration basins providing additional storage and treatment volume. The infiltration basins consist of StormTech SC-740 chambers in a stone trench. The SWMB's are depicted on the attached *I&M Site Plan Exhibit*.

POST-CONSTRUCTION OPERATION AND MAINTENANCE:

The following standards will be met after construction is complete:

Compliance Statement:
The Storm Water Management System will be inspected immediately after construction by a professional engineer. A Compliance Statement shall be prepared and certified by the inspecting party that the site has been inspected, is stabilized from erosion, and that the stormwater management system has been constructed as designed and approved. This statement shall identify the party responsible for implementing this Inspection & Maintenance Manual and reconfirm (as stated above) that all future responsible parties will be notified of their continuing legal obligation to carry out this Inspection & Maintenance Manual. A copy of the Compliance Statement shall be submitted to the City of Concord.

Maintenance Contract:
The owner shall contract with a third party or other qualified professional with knowledge of erosion and stormwater control. The contractor will be responsible for inspecting and removing accumulated sediments, oils, and debris from the entire Storm Water Management System as outlined in this Inspection & Maintenance Manual.

Maintenance Log:
A Maintenance Log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a brief description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. Copies of completed inspection checklists should be attached to the Maintenance Log as well. A maintenance log form is included as part of this Manual. The maintenance log shall be made accessible to the City of Concord.

Snow Storage and Removal

Multiple areas on the site have been identified as being reserved for snow storage during winter months. The facility owner will provide all snow removal activities on the site. Designated snow storage areas will be utilized to store snow accumulation. Snow will not be stored or piled in any location that will block the flow of stormwater runoff through the onsite stormwater management basins.

Snow will not be stored or piled in an area where snow melt will drain directly into stormwater treatment areas, where sediment and debris could clog the infiltration basin. Snow melt will be directed into onsite catch basins or sediment forebays upstream of treatment areas.

When the storage capacity of any one area on site is exceeded, the excess snow will be moved to a different designated storage area. When/if the storage capacity of the entire site is exceeded, excess snow will be removed from the site and disposed of properly.

Spring maintenance will include removing debris and accumulated sediment from snow storage areas and sweeping paved areas to remove accumulated fine sediment.

Deicing Log:
A Deicing Log will be maintained by the owner to track the frequency, amount, and type of deicing materials that are applied to the site. A Deicing Log form is included as part of this Manual. The deicing log shall be made accessible to the City of Concord, and a copy shall be provided to them upon request.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected, and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris. A Storm Water Management System Inspection & Maintenance Checklist is included as part of this manual that summarizes the following actions:

<u>Catch Basins:</u>
Inspect catch basins twice annually (preferably in Spring and Fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris.

- Remove any accumulated debris from grates, inlets, outlets, and weirs.
- Inspect catch basin snouts and remove debris or repair as needed.
- Clean sumps when sediment depths reach 12-inches from invert of outlet.
- Remove any floating debris and hydrocarbons at the time of the inspection.
- Inspect for damaged or missing brick and mortar and repair as necessary.

Subsurface Infiltration Basins:
Inspect each stormwater management basin at least twice annually and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance and/or rehabilitation conducted as warranted by inspection.

- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.

- Removal of trash and debris from inlet and outlet structures and anywhere else visible in the basin.

- Isolator Row should be maintained in accordance with manufacturer recommendations. Refer to the attached ADS Isolator Row O&M Manual.

- At least once annually, systems should be inspected for drawdown time. If infiltration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function, including but not limited to removal of accumulated sediment from the infiltration practice area or reconstruction of the infiltration practice area.

Parking and Impervious Surfaces:

- Deicing: All deicing activities shall be documented in the Deicing Log. (See Attached)

- A copy of the completed seasonal Deicing Log should be added to the official Maintenance Log.

- All snow storage areas will be located in areas that drain to the site's stormwater management system. Snow will not be stored in stormwater management basins. See attached *I&M Site Plan Exhibit* for locations of snow storage areas. Sediment from snow melt will be captured by catch basin sumps and SWMB sediment forebays. Stored snow will be removed and properly disposed of off-site if it exceeds the capacity of the snow storage areas.

- Debris and accumulated sediment will be removed from snow storage areas in spring. Paved areas will be swept to remove accumulated fine sediment.

Invasive Species:

- All storm water management areas shall be periodically checked for the presence of any invasive plant species.

- If any invasive species are identified, or potentially identified, contact the NHDES Exotic Species Program for consultation on properly identifying the species and appropriately managing it.

Inspection Checklist:

- A Stormwater Management System Inspection & Maintenance Checklist shall be completed during each inspection and a copy shall be added to the official Maintenance Log.

Stormwater Management Inspection Checklist

For
Capital City Subaru
Concord, New Hampshire

Inspector's Name (& Company): _____ Date of Inspection:_____

An inspection checklist shall be filled out during each inspection of the stormwater management system. A copy of the completed checklist shall be submitted to the Operator for inclusion within the official Maintenance Log.

Catch Basins	**Y**	**N**	**Notes**
Remove debris from grates, inlets, outlets, and weirs:…..			
Check Depth of Sediment in Sumps (Remove):…….			
Removal of floating debris:……			
Inspect bricks & mortar:…….			

Culverts	**Y**	**N**	**Notes**
Inspect for obstructions in culverts (Remove):……..			
Check for accumulated Sediment (Remove):……			
Inspect for erosion damage at inlet & outlet (Repair):…..			
Clean sediment or replace inlet and outlet apron rip rap:….			

Subsurface Infiltration Basin	**Y**	**N**	**Notes**
Outlet Structures: Remove debris from grates, inlets, outlets, and weirs (including floating debris & hydrocarbons)….....			
Basin infiltrating through basin bottom media …….			
Check for any apparent invasive species…….			

Invasive Species	**Y**	**N**	**Notes**
Check for any apparent invasive species and document actions taken…….			

Other Observations and/or Actions taken:

Deicing Log	**Y**	**N**	**Notes**
All deicing activities shall be documented in the Deicing Log……..			
A copy of the completed seasonal Deicing Log was added to the official Maintenance Log…….……			

Maintenance Log	**Y**	**N**	**Notes**
A copy of this completed Inspection Checklist has been added to the Official Maintenance Log……..…			

STORMWATER MANAGEMENT MAINTENANCE LOG

Manchester Street Concord Auto, LLC - 150 Manchester Street, Concord, New Hampshire

Sheet ___ of ___

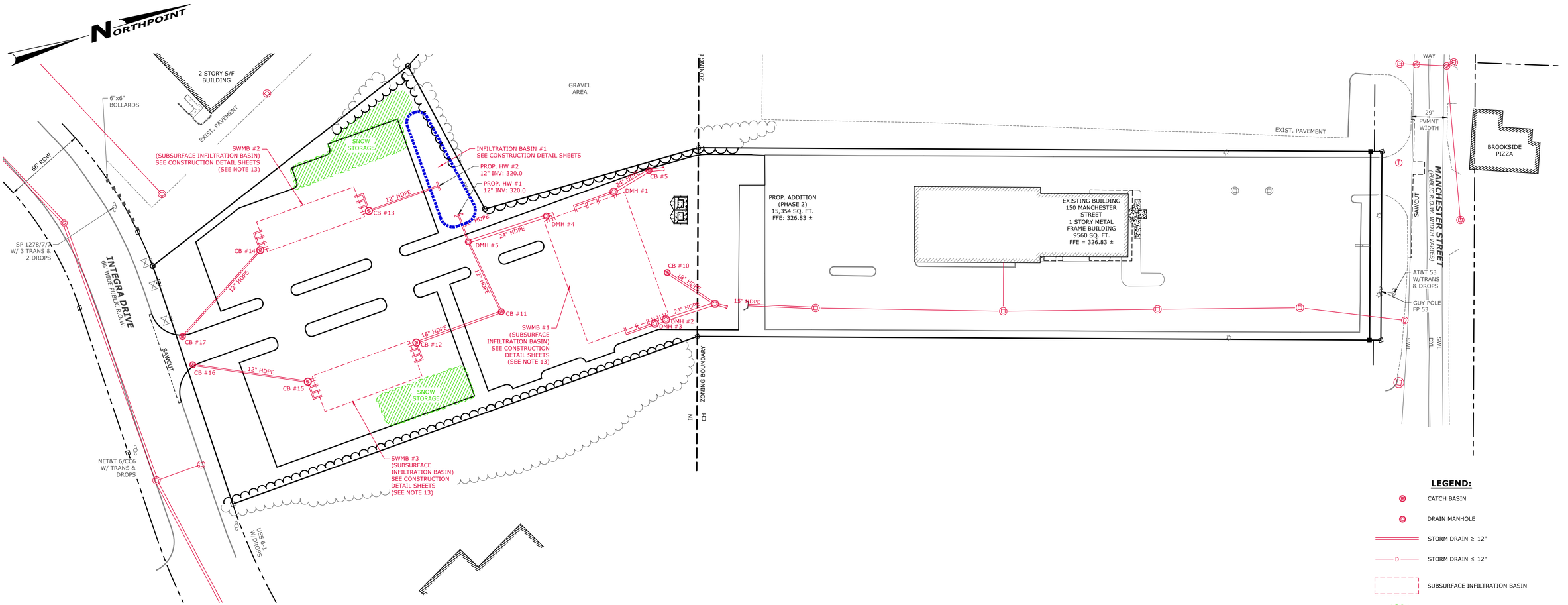
Date	Name of Inspector and/or Maintenance Personnel	Brief Description of Inspection, Maintenance and/or Corrective Actions taken	Checklist Completed (Y or N)

DEICING LOG

Manchester Street Concord Auto, LLC - 150 Manchester Street, Concord , New Hampshire

Sheet ___ of ___

Date	Amount and Type of Deicing Materials applied to the site



LEGEND:

- CATCH BASIN
- DRAIN MANHOLE
- STORM DRAIN ≥ 12"
- D — STORM DRAIN ≤ 12"
- SUBSURFACE INFILTRATION BASIN
- SNOW STORAGE AREAS
- STORMWATER MANAGEMENT BASIN

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.

I&M EXHIBIT

PREPARED FOR:

CAPITAL CITY SUBARU

150 MANCHESTER STREET (ML 783Z-16)
CONCORD, NH

APPLICANT: ***WCK CONCORD-SB, LLC d/b/a CAPITAL CITY SUBARU 150 MANCHESTER STREET CONCORD, NH 03301***	***OWNER:*** ***MANCHESTER STREET CONCORD AUTO, LLC & MANCHESTER STREET CONCORD AUTO TIC, LLC 300 TRADE CTR. - SUITE 7700 WORBURN, MA 01801-7419***

REVISIONS:

NO.	***DATE***	***DESCRIPTION***

NORTHPOINT ENGINEERING, LLC
Civil Engineering ◢ Land Planning ◢ Construction Services
119 Storrs St, Ste 201
Concord, NH 03301
Tel 603-226-1166
Fax 603-226-1160
www.northpointeng.com

DATE: FEB. 2025
PROJ.: 23012
SCALE: 1"=40'
SHEET: 1 OF 1

Isolator® Row
O&M Manual

ADS StormTech™

The Isolator® Row

Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

The Isolator Row

The Isolator Row is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

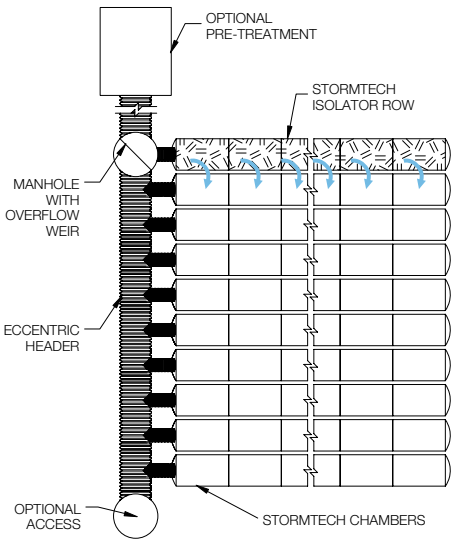
The Isolator Row is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row. After Stormwater flows through the Isolator Row and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

The Isolator Row may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row to minimize maintenance requirements and maintenance costs.

Note: *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*

Looking down the Isolator Row from the manhole opening, woven geotextile Fabric is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (*not to scale*)



Isolator Row Inspection/Maintenance

Inspection

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the **actual frequency of inspection and maintenance practices.**

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

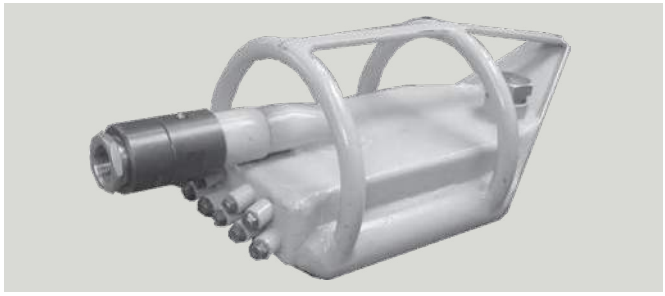
The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

Maintenance

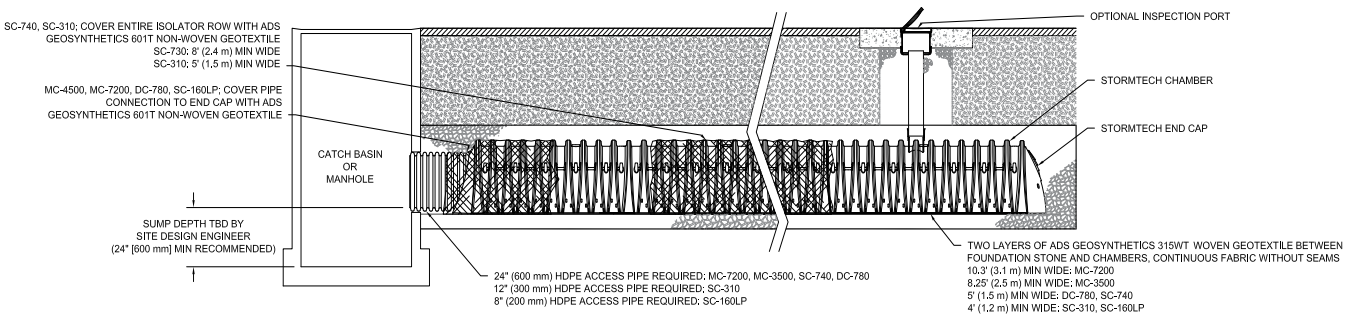
The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row lengths up to 200" (61 m). **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**



StormTech Isolator Row (not to scale)

Note: *Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row.*



Isolator Row Step By Step Maintenance Procedures

Step 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)
- i. Remove lid from floor box frame
- ii. Remove cap from inspection riser
- iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
- iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row
- i. Remove cover from manhole at upstream end of Isolator Row
- ii. Using a flashlight, inspect down Isolator Row through outlet pipe
  1. Mirrors on poles or cameras may be used to avoid a confined space entry
  2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

Step 2

Clean out Isolator Row using the JetVac process.

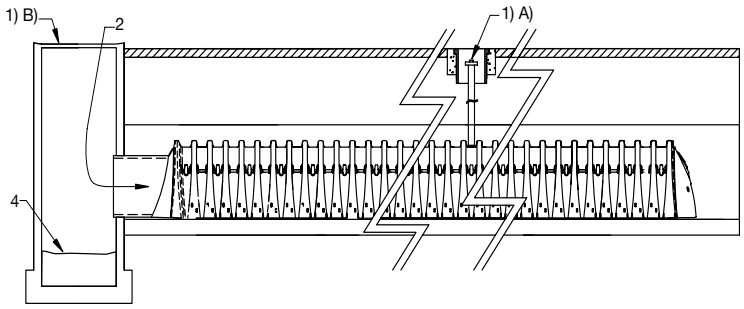
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

Step 3

Replace all caps, lids and covers, record observations and actions.

Step 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



Sample Maintenance Log

Date	Stadia Rod Readings		Sedi-ment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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VI. Drainage Analysis

- Extreme Precipitation Tables

- HydroCAD Output Data – Pre-Developed
    - Drainage Diagram
    - Area Listing and Soil Listing
    - Node List: 2-year, 10-year, 25-year, 50-year and 100-year
    - Full Summary: 10-year

- HydroCAD Output Data – Post-Developed
    - Drainage Diagram
    - Area Listing and Soil Listing
    - Node List: 2-year, 10-year, 25-year, 50-year and 100-year
    - Full Summary: 10-year

- BMP Worksheet – Infiltration Practice

- Test Pit Report – January 10, 2025

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.187 degrees North
Longitude	71.501 degrees West
Elevation	90 feet
Date/Time	Wed Jan 17 2024 15:35:38 GMT-0500 (Eastern Standard Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.39	0.49	0.64	0.80	1.00	**1yr**	0.69	0.98	1.16	1.47	1.86	2.37	2.58	**1yr**	2.09	2.48	2.90	3.59	4.13	**1yr**
2yr	0.31	0.48	0.60	0.79	1.00	1.25	**2yr**	0.86	1.15	1.45	1.81	2.26	2.82	3.16	**2yr**	2.50	3.04	3.51	4.20	4.80	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.58	**5yr**	1.08	1.44	1.83	2.29	2.84	3.52	4.01	**5yr**	3.12	3.85	4.45	5.22	5.92	**5yr**
10yr	0.42	0.66	0.84	1.14	1.48	1.89	**10yr**	1.28	1.71	2.19	2.74	3.39	4.17	4.80	**10yr**	3.69	4.61	5.32	6.16	6.94	**10yr**
25yr	0.50	0.79	1.01	1.39	1.85	2.38	**25yr**	1.59	2.15	2.77	3.46	4.26	5.21	6.10	**25yr**	4.61	5.86	6.73	7.68	8.57	**25yr**
50yr	0.57	0.91	1.17	1.63	2.19	2.84	**50yr**	1.89	2.55	3.31	4.13	5.08	6.18	7.31	**50yr**	5.47	7.03	8.06	9.07	10.05	**50yr**
100yr	0.64	1.04	1.35	1.91	2.60	3.39	**100yr**	2.24	3.02	3.96	4.94	6.05	7.32	8.78	**100yr**	6.48	8.44	9.65	10.72	11.80	**100yr**
200yr	0.74	1.21	1.57	2.24	3.09	4.05	**200yr**	2.66	3.59	4.73	5.89	7.20	8.68	10.54	**200yr**	7.68	10.13	11.55	12.67	13.86	**200yr**
500yr	0.89	1.46	1.91	2.77	3.87	5.11	**500yr**	3.34	4.52	5.98	7.45	9.07	10.89	13.43	**500yr**	9.64	12.91	14.67	15.82	17.15	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.20	0.32	0.39	0.52	0.64	0.88	**1yr**	0.55	0.86	1.06	1.37	1.59	2.04	2.44	**1yr**	1.81	2.35	2.66	3.30	3.88	**1yr**
2yr	0.30	0.47	0.58	0.78	0.96	1.15	**2yr**	0.83	1.12	1.31	1.72	2.19	2.75	3.06	**2yr**	2.44	2.94	3.42	4.09	4.67	**2yr**
5yr	0.35	0.53	0.66	0.91	1.15	1.37	**5yr**	1.00	1.34	1.54	2.00	2.56	3.30	3.72	**5yr**	2.92	3.58	4.15	4.90	5.57	**5yr**
10yr	0.38	0.59	0.73	1.02	1.31	1.55	**10yr**	1.13	1.52	1.75	2.25	2.87	3.80	4.33	**10yr**	3.36	4.16	4.79	5.60	6.38	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.81	**25yr**	1.35	1.77	2.07	2.62	3.34	4.55	5.26	**25yr**	4.03	5.06	5.76	6.71	7.62	**25yr**
50yr	0.49	0.74	0.92	1.32	1.78	2.04	**50yr**	1.54	2.00	2.36	2.95	3.76	5.22	6.10	**50yr**	4.62	5.87	6.61	7.68	8.74	**50yr**
100yr	0.55	0.83	1.03	1.49	2.05	2.31	**100yr**	1.77	2.26	2.70	3.32	4.24	5.99	7.08	**100yr**	5.30	6.81	7.61	8.80	10.01	**100yr**
200yr	0.61	0.91	1.16	1.67	2.33	2.59	**200yr**	2.01	2.53	3.07	3.73	4.78	6.88	8.21	**200yr**	6.09	7.89	8.72	10.10	11.46	**200yr**
500yr	0.71	1.05	1.35	1.96	2.79	3.03	**500yr**	2.41	2.96	3.66	4.37	5.61	8.26	9.98	**500yr**	7.31	9.60	10.39	12.14	13.76	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.73	0.90	1.08	**1yr**	0.78	1.05	1.19	1.58	1.99	2.49	2.74	**1yr**	2.21	2.64	3.14	3.81	4.34	**1yr**
2yr	0.33	0.50	0.62	0.84	1.03	1.24	**2yr**	0.89	1.21	1.39	1.82	2.32	2.90	3.25	**2yr**	2.57	3.13	3.64	4.32	4.94	**2yr**
5yr	0.41	0.62	0.78	1.06	1.35	1.57	**5yr**	1.17	1.53	1.78	2.28	2.91	3.74	4.30	**5yr**	3.31	4.13	4.75	5.54	6.27	**5yr**
10yr	0.48	0.74	0.92	1.29	1.67	1.90	**10yr**	1.44	1.86	2.15	2.71	3.47	4.55	5.31	**10yr**	4.03	5.11	5.87	6.70	7.57	**10yr**
25yr	0.62	0.94	1.17	1.67	2.20	2.47	**25yr**	1.90	2.42	2.76	3.40	4.35	5.89	7.04	**25yr**	5.22	6.77	7.73	8.61	9.66	**25yr**
50yr	0.74	1.12	1.40	2.01	2.70	3.01	**50yr**	2.33	2.95	3.32	4.05	5.16	7.18	8.70	**50yr**	6.35	8.37	9.54	10.43	11.63	**50yr**
100yr	0.89	1.35	1.69	2.44	3.34	3.67	**100yr**	2.88	3.59	4.01	4.82	6.14	8.75	10.79	**100yr**	7.74	10.37	11.81	12.63	14.00	**100yr**
200yr	1.07	1.61	2.04	2.95	4.11	4.48	**200yr**	3.55	4.38	4.84	5.74	7.31	10.66	13.36	**200yr**	9.43	12.85	14.63	15.30	16.84	**200yr**
500yr	1.37	2.04	2.63	3.82	5.43	5.85	**500yr**	4.68	5.72	6.22	7.24	9.22	13.85	17.76	**500yr**	12.26	17.08	19.44	19.73	21.51	**500yr**

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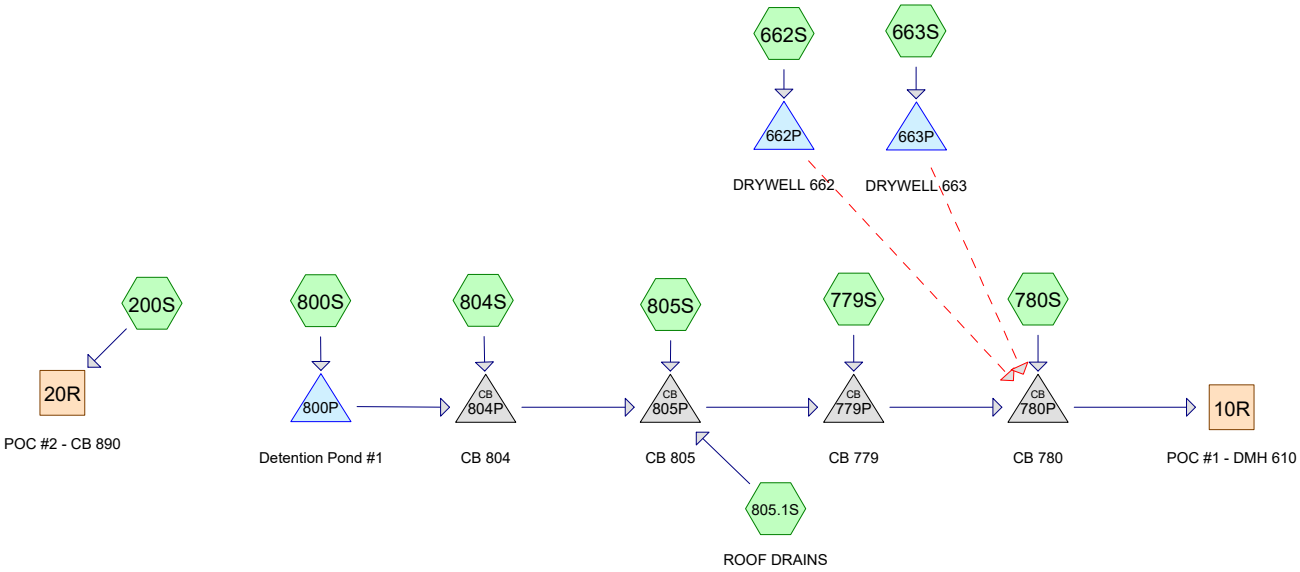


Subcat Reach Pond Link

Routing Diagram for 23012_Pre Development
Prepared by Northpoint Engineering, LLC, Printed 2/19/2025

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
10,790	39	>75% Grass cover, Good, HSG A (662S, 663S, 779S, 780S, 804S, 805S)
61,676	98	Paved parking, HSG A (662S, 663S, 779S, 780S, 804S, 805S)
9,560	98	Roofs, HSG A (805.1S)
95,535	32	Woods/grass comb., Good, HSG A (200S, 800S)
177,561	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
177,561	HSG A	200S, 662S, 663S, 779S, 780S, 800S, 804S, 805.1S, 805S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
177,561		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	779P	319.52	319.04	110.0	0.0044	0.012	12.0	0.0	0.0
2	780P	318.71	317.17	78.0	0.0197	0.012	12.0	0.0	0.0
3	800P	321.10	320.58	50.0	0.0104	0.013	15.0	0.0	0.0
4	804P	320.58	320.00	141.5	0.0041	0.012	12.0	0.0	0.0
5	805P	319.94	319.77	115.0	0.0015	0.012	12.0	0.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment200S: Runoff Area=89,098 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=486' Tc=30.0 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=84 Runoff=0.41 cfs 1,258 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=84 Runoff=0.41 cfs 1,272 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=2.08"
Tc=6.0 min CN=93 Runoff=0.37 cfs 1,171 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=89 Runoff=0.72 cfs 2,248 cf

Subcatchment800S: Runoff Area=6,437 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment804S: Runoff Area=17,898 sf 90.47% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=92 Runoff=0.94 cfs 2,970 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=2.59"
Tc=6.0 min CN=98 Runoff=0.60 cfs 2,063 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=92 Runoff=0.53 cfs 1,681 cf

Reach 10R: POC #1 - DMH 610 Inflow=3.99 cfs 12,383 cf
Outflow=3.99 cfs 12,383 cf

Reach 20R: POC #2 - CB 890 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 662P: DRYWELL 662 Peak Elev=325.64' Storage=0.002 af Inflow=0.41 cfs 1,258 cf
Discarded=0.00 cfs 139 cf Secondary=0.40 cfs 1,119 cf Outflow=0.40 cfs 1,258 cf

Pond 663P: DRYWELL 663 Peak Elev=325.57' Storage=0.002 af Inflow=0.41 cfs 1,272 cf
Discarded=0.00 cfs 142 cf Secondary=0.42 cfs 1,130 cf Outflow=0.42 cfs 1,272 cf

Pond 779P: CB 779 Peak Elev=320.61' Inflow=2.45 cfs 7,885 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=2.45 cfs 7,885 cf

Pond 780P: CB 780 Peak Elev=319.88' Inflow=3.99 cfs 12,383 cf
Outflow=3.99 cfs 12,383 cf

Pond 800P: Detention Pond #1 Peak Elev=321.10' Storage=0 cf Inflow=0.00 cfs 0 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0104 '/' Outflow=0.00 cfs 0 cf

Pond 804P: CB 804 Peak Elev=321.40' Inflow=0.94 cfs 2,970 cf
12.0" Round Culvert n=0.012 L=141.5' S=0.0041 '/' Outflow=0.94 cfs 2,970 cf

Pond 805P: CB 805 Peak Elev=321.15' Inflow=2.08 cfs 6,714 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=2.08 cfs 6,714 cf

Total Runoff Area = 177,561 sf Runoff Volume = 12,663 cf Average Runoff Depth = 0.86"
59.88% Pervious = 106,325 sf 40.12% Impervious = 71,236 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment200S: Runoff Area=89,098 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=486' Tc=30.0 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=2.52"
Tc=6.0 min CN=84 Runoff=0.75 cfs 2,316 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=2.52"
Tc=6.0 min CN=84 Runoff=0.76 cfs 2,342 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=93 Runoff=0.59 cfs 1,905 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=2.98"
Tc=6.0 min CN=89 Runoff=1.22 cfs 3,859 cf

Subcatchment800S: Runoff Area=6,437 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment804S: Runoff Area=17,898 sf 90.47% Impervious Runoff Depth=3.28"
Tc=6.0 min CN=92 Runoff=1.52 cfs 4,895 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=3.93"
Tc=6.0 min CN=98 Runoff=0.89 cfs 3,135 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=3.28"
Tc=6.0 min CN=92 Runoff=0.86 cfs 2,770 cf

Reach 10R: POC #1 - DMH 610 Inflow=6.58 cfs 20,924 cf
Outflow=6.58 cfs 20,924 cf

Reach 20R: POC #2 - CB 890 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 662P: DRYWELL 662 Peak Elev=325.67' Storage=0.002 af Inflow=0.75 cfs 2,316 cf
Discarded=0.00 cfs 147 cf Secondary=0.76 cfs 2,169 cf Outflow=0.76 cfs 2,316 cf

Pond 663P: DRYWELL 663 Peak Elev=325.60' Storage=0.002 af Inflow=0.76 cfs 2,342 cf
Discarded=0.00 cfs 149 cf Secondary=0.76 cfs 2,192 cf Outflow=0.77 cfs 2,342 cf

Pond 779P: CB 779 Peak Elev=322.76' Inflow=3.86 cfs 12,704 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=3.86 cfs 12,704 cf

Pond 780P: CB 780 Peak Elev=321.10' Inflow=6.58 cfs 20,924 cf
Outflow=6.58 cfs 20,924 cf

Pond 800P: Detention Pond #1 Peak Elev=321.10' Storage=0 cf Inflow=0.00 cfs 0 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0104 '/' Outflow=0.00 cfs 0 cf

Pond 804P: CB 804 Peak Elev=324.28' Inflow=1.52 cfs 4,895 cf
12.0" Round Culvert n=0.012 L=141.5' S=0.0041 '/' Outflow=1.52 cfs 4,895 cf

Pond 805P: CB 805 Peak Elev=323.97' Inflow=3.27 cfs 10,799 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=3.27 cfs 10,799 cf

Total Runoff Area = 177,561 sf Runoff Volume = 21,221 cf Average Runoff Depth = 1.43"
59.88% Pervious = 106,325 sf 40.12% Impervious = 71,236 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment200S: Runoff Area=89,098 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=486' Tc=30.0 min CN=32 Runoff=0.01 cfs 308 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=84 Runoff=1.02 cfs 3,181 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=84 Runoff=1.03 cfs 3,216 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=93 Runoff=0.75 cfs 2,478 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=89 Runoff=1.61 cfs 5,140 cf

Subcatchment800S: Runoff Area=6,437 sf 0.00% Impervious Runoff Depth=0.04"
Tc=6.0 min CN=32 Runoff=0.00 cfs 22 cf

Subcatchment804S: Runoff Area=17,898 sf 90.47% Impervious Runoff Depth=4.29"
Tc=6.0 min CN=92 Runoff=1.96 cfs 6,405 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=4.97"
Tc=6.0 min CN=98 Runoff=1.12 cfs 3,962 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=4.29"
Tc=6.0 min CN=92 Runoff=1.11 cfs 3,624 cf

Reach 10R: POC #1 - DMH 610 Inflow=8.59 cfs 27,722 cf
Outflow=8.59 cfs 27,722 cf

Reach 20R: POC #2 - CB 890 Inflow=0.01 cfs 308 cf
Outflow=0.01 cfs 308 cf

Pond 662P: DRYWELL 662 Peak Elev=325.69' Storage=0.002 af Inflow=1.02 cfs 3,181 cf
Discarded=0.00 cfs 151 cf Secondary=1.02 cfs 3,029 cf Outflow=1.02 cfs 3,181 cf

Pond 663P: DRYWELL 663 Peak Elev=325.63' Storage=0.002 af Inflow=1.03 cfs 3,216 cf
Discarded=0.00 cfs 154 cf Secondary=1.03 cfs 3,062 cf Outflow=1.03 cfs 3,216 cf

Pond 779P: CB 779 Peak Elev=325.19' Inflow=4.94 cfs 16,490 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=4.94 cfs 16,490 cf

Pond 780P: CB 780 Peak Elev=322.46' Inflow=8.59 cfs 27,722 cf
Outflow=8.59 cfs 27,722 cf

Pond 800P: Detention Pond #1 Peak Elev=321.11' Storage=9 cf Inflow=0.00 cfs 22 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0104 '/' Outflow=0.00 cfs 21 cf

Pond 804P: CB 804 Peak Elev=327.69' Inflow=1.96 cfs 6,426 cf
12.0" Round Culvert n=0.012 L=141.5' S=0.0041 '/' Outflow=1.96 cfs 6,426 cf

Pond 805P: CB 805 Peak Elev=327.17' Inflow=4.19 cfs 14,012 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=4.19 cfs 14,012 cf

Total Runoff Area = 177,561 sf Runoff Volume = 28,336 cf Average Runoff Depth = 1.92"
59.88% Pervious = 106,325 sf 40.12% Impervious = 71,236 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment200S: Runoff Area=89,098 sf 0.00% Impervious Runoff Depth=0.16"
Flow Length=486' Tc=30.0 min CN=32 Runoff=0.04 cfs 1,193 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=84 Runoff=1.27 cfs 4,009 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=84 Runoff=1.29 cfs 4,054 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=93 Runoff=0.90 cfs 3,016 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=4.91"
Tc=6.0 min CN=89 Runoff=1.97 cfs 6,352 cf

Subcatchment800S: Runoff Area=6,437 sf 0.00% Impervious Runoff Depth=0.16"
Tc=6.0 min CN=32 Runoff=0.00 cfs 86 cf

Subcatchment804S: Runoff Area=17,898 sf 90.47% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=92 Runoff=2.36 cfs 7,825 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=5.94"
Tc=6.0 min CN=98 Runoff=1.33 cfs 4,734 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=92 Runoff=1.34 cfs 4,428 cf

Reach 10R: POC #1 - DMH 610 Inflow=10.46 cfs 34,189 cf
Outflow=10.46 cfs 34,189 cf

Reach 20R: POC #2 - CB 890 Inflow=0.04 cfs 1,193 cf
Outflow=0.04 cfs 1,193 cf

Pond 662P: DRYWELL 662 Peak Elev=325.71' Storage=0.002 af Inflow=1.27 cfs 4,009 cf
Discarded=0.00 cfs 155 cf Secondary=1.28 cfs 3,854 cf Outflow=1.28 cfs 4,009 cf

Pond 663P: DRYWELL 663 Peak Elev=325.64' Storage=0.002 af Inflow=1.29 cfs 4,054 cf
Discarded=0.00 cfs 158 cf Secondary=1.30 cfs 3,896 cf Outflow=1.30 cfs 4,054 cf

Pond 779P: CB 779 Peak Elev=328.28' Inflow=5.94 cfs 20,087 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=5.94 cfs 20,087 cf

Pond 780P: CB 780 Peak Elev=324.34' Inflow=10.46 cfs 34,189 cf
Outflow=10.46 cfs 34,189 cf

Pond 800P: Detention Pond #1 Peak Elev=321.13' Storage=19 cf Inflow=0.00 cfs 86 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0104 '/' Outflow=0.00 cfs 85 cf

Pond 804P: CB 804 Peak Elev=331.91' Inflow=2.36 cfs 7,910 cf
12.0" Round Culvert n=0.012 L=141.5' S=0.0041 '/' Outflow=2.36 cfs 7,910 cf

Pond 805P: CB 805 Peak Elev=331.15' Inflow=5.03 cfs 17,071 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=5.03 cfs 17,071 cf

Total Runoff Area = 177,561 sf Runoff Volume = 35,696 cf Average Runoff Depth = 2.41"
59.88% Pervious = 106,325 sf 40.12% Impervious = 71,236 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment200S: Runoff Area=89,098 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=486' Tc=30.0 min CN=32 Runoff=0.16 cfs 2,877 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=5.44"
Tc=6.0 min CN=84 Runoff=1.57 cfs 5,001 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=5.44"
Tc=6.0 min CN=84 Runoff=1.59 cfs 5,056 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=6.49"
Tc=6.0 min CN=93 Runoff=1.08 cfs 3,650 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=6.02"
Tc=6.0 min CN=89 Runoff=2.38 cfs 7,789 cf

Subcatchment800S: Runoff Area=6,437 sf 0.00% Impervious Runoff Depth=0.39"
Tc=6.0 min CN=32 Runoff=0.02 cfs 208 cf

Subcatchment804S: Runoff Area=17,898 sf 90.47% Impervious Runoff Depth=6.37"
Tc=6.0 min CN=92 Runoff=2.84 cfs 9,502 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=7.08"
Tc=6.0 min CN=98 Runoff=1.58 cfs 5,641 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=6.37"
Tc=6.0 min CN=92 Runoff=1.61 cfs 5,376 cf

Reach 10R: POC #1 - DMH 610 Inflow=12.65 cfs 41,902 cf
Outflow=12.65 cfs 41,902 cf

Reach 20R: POC #2 - CB 890 Inflow=0.16 cfs 2,877 cf
Outflow=0.16 cfs 2,877 cf

Pond 662P: DRYWELL 662 Peak Elev=327.12' Storage=0.002 af Inflow=1.57 cfs 5,001 cf
Discarded=0.00 cfs 159 cf Secondary=1.58 cfs 4,842 cf Outflow=1.58 cfs 5,001 cf

Pond 663P: DRYWELL 663 Peak Elev=327.12' Storage=0.002 af Inflow=1.59 cfs 5,056 cf
Discarded=0.00 cfs 161 cf Secondary=1.60 cfs 4,895 cf Outflow=1.60 cfs 5,056 cf

Pond 779P: CB 779 Peak Elev=332.76' Inflow=7.10 cfs 24,376 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=7.10 cfs 24,376 cf

Pond 780P: CB 780 Peak Elev=327.11' Inflow=12.65 cfs 41,902 cf
Outflow=12.65 cfs 41,902 cf

Pond 800P: Detention Pond #1 Peak Elev=321.15' Storage=34 cf Inflow=0.02 cfs 208 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0104 '/' Outflow=0.01 cfs 206 cf

Pond 804P: CB 804 Peak Elev=337.95' Inflow=2.84 cfs 9,708 cf
12.0" Round Culvert n=0.012 L=141.5' S=0.0041 '/' Outflow=2.84 cfs 9,708 cf

Pond 805P: CB 805 Peak Elev=336.87' Inflow=6.02 cfs 20,726 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=6.02 cfs 20,726 cf

Total Runoff Area = 177,561 sf Runoff Volume = 45,101 cf Average Runoff Depth = 3.05"
59.88% Pervious = 106,325 sf 40.12% Impervious = 71,236 sf

Summary for Subcatchment 200S:

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
89,098	32	Woods/grass comb., Good, HSG A
89,098		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0188	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.82"
14.4	386	0.0041	0.45		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
30.0	486	Total			

Summary for Subcatchment 662S:

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 2,316 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
8,377	98	Paved parking, HSG A
2,645	39	>75% Grass cover, Good, HSG A
11,022	84	Weighted Average
2,645		24.00% Pervious Area
8,377		76.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 663S:

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 2,342 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
8,501	98	Paved parking, HSG A
2,643	39	>75% Grass cover, Good, HSG A
11,144	84	Weighted Average
2,643		23.72% Pervious Area
8,501		76.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 779S:

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 1,905 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
6,236	98	Paved parking, HSG A
515	39	>75% Grass cover, Good, HSG A
6,751	93	Weighted Average
515		7.63% Pervious Area
6,236		92.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 780S:

Runoff = 1.22 cfs @ 12.09 hrs, Volume= 3,859 cf, Depth= 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
13,233	98	Paved parking, HSG A
2,291	39	>75% Grass cover, Good, HSG A
15,524	89	Weighted Average
2,291		14.76% Pervious Area
13,233		85.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 800S:

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
6,437	32	Woods/grass comb., Good, HSG A
6,437		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 804S:

Runoff = 1.52 cfs @ 12.08 hrs, Volume= 4,895 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
16,193	98	Paved parking, HSG A
1,705	39	>75% Grass cover, Good, HSG A
17,898	92	Weighted Average
1,705		9.53% Pervious Area
16,193		90.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 805.1S: ROOF DRAINS

Runoff = 0.89 cfs @ 12.08 hrs, Volume= 3,135 cf, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,560	98	Roofs, HSG A
9,560		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 805S:

Runoff = 0.86 cfs @ 12.08 hrs, Volume= 2,770 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,136	98	Paved parking, HSG A
991	39	>75% Grass cover, Good, HSG A
10,127	92	Weighted Average
991		9.79% Pervious Area
9,136		90.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Reach 10R: POC #1 - DMH 610

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 66,297 sf, 81.99% Impervious, Inflow Depth = 3.79" for 10-YR event
Inflow = 6.58 cfs @ 12.09 hrs, Volume= 20,924 cf
Outflow = 6.58 cfs @ 12.09 hrs, Volume= 20,924 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2

Summary for Reach 20R: POC #2 - CB 890

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 89,098 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 662P: DRYWELL 662

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.09'
[58] Hint: Peaked 0.09' above defined flood level
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=680)

Inflow Area = 11,022 sf, 76.00% Impervious, Inflow Depth = 2.52" for 10-YR event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 2,316 cf
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 2,316 cf, Atten= 0%, Lag= 0.1 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 147 cf
Secondary = 0.76 cfs @ 12.09 hrs, Volume= 2,169 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 325.67' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.002 af
Flood Elev= 325.58' Surf.Area= 0.000 ac Storage= 0.002 af

Plug-Flow detention time= 40.4 min calculated for 2,316 cf (100% of inflow)
Center-of-Mass det. time= 40.7 min (858.6 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	320.10'	0.002 af	**4.00'D x 5.48'H 4' I.D. DRYWELL**

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.10'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 310.00'
#2	Secondary	325.58'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=325.67' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Secondary OutFlow Max=0.76 cfs @ 12.09 hrs HW=325.67' TW=321.09' (Dynamic Tailwater)
2=Orifice/Grate (Weir Controls 0.76 cfs @ 1.01 fps)

Summary for Pond 663P: DRYWELL 663

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.09'
[58] Hint: Peaked 0.09' above defined flood level
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=677)

Inflow Area = 11,144 sf, 76.28% Impervious, Inflow Depth = 2.52" for 10-YR event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 2,342 cf
Outflow = 0.77 cfs @ 12.08 hrs, Volume= 2,342 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.08 hrs, Volume= 149 cf
Secondary = 0.76 cfs @ 12.08 hrs, Volume= 2,192 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 325.60' @ 12.08 hrs Surf.Area= 0.000 ac Storage= 0.002 af
Flood Elev= 325.51' Surf.Area= 0.000 ac Storage= 0.002 af

Plug-Flow detention time= 41.2 min calculated for 2,341 cf (100% of inflow)
Center-of-Mass det. time= 41.4 min (859.3 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	319.90'	0.002 af	**4.00'D x 5.61'H 4' I.D. DRYWELL**

Device	Routing	Invert	Outlet Devices
#1	Discarded	319.90'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 309.90'
#2	Secondary	325.51'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=325.60' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Secondary OutFlow Max=0.76 cfs @ 12.08 hrs HW=325.60' TW=321.09' (Dynamic Tailwater)
2=Orifice/Grate (Weir Controls 0.76 cfs @ 1.01 fps)

Summary for Pond 779P: CB 779

Inflow Area = 50,773 sf, 81.00% Impervious, Inflow Depth = 3.00" for 10-YR event
Inflow = 3.86 cfs @ 12.08 hrs, Volume= 12,704 cf
Outflow = 3.86 cfs @ 12.08 hrs, Volume= 12,704 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.86 cfs @ 12.08 hrs, Volume= 12,704 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 322.76' @ 12.09 hrs
Flood Elev= 325.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	319.52'	**12.0" Round 12" PVC Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.52' / 319.04' S= 0.0044 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.85 cfs @ 12.08 hrs HW=322.75' TW=321.09' (Dynamic Tailwater)
1=12" PVC Culvert (Outlet Controls 3.85 cfs @ 4.90 fps)

Summary for Pond 780P: CB 780

Inflow Area = 66,297 sf, 81.99% Impervious, Inflow Depth = 3.79" for 10-YR event
Inflow = 6.58 cfs @ 12.09 hrs, Volume= 20,924 cf
Outflow = 6.58 cfs @ 12.09 hrs, Volume= 20,924 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.58 cfs @ 12.09 hrs, Volume= 20,924 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 321.10' @ 12.09 hrs
Flood Elev= 325.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.71'	**6.0" Vert. 6" Orifice Plate in 12" PVC** C= 0.600
#2	Primary	318.71'	**12.0" Round 12" PVC Culvert** L= 78.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.71' / 317.17' S= 0.0197 '/' Cc= 0.900

n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.57 cfs @ 12.09 hrs HW=321.09' TW=0.00' (Dynamic Tailwater)
1=6" Orifice Plate in 12" PVC (Orifice Controls 1.38 cfs @ 7.03 fps)
2=12" PVC Culvert (Inlet Controls 5.19 cfs @ 6.60 fps)

Summary for Pond 800P: Detention Pond #1

Inflow Area = 6,437 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 321.10' @ 0.00 hrs Surf.Area= 653 sf Storage= 0 cf
Flood Elev= 325.00' Surf.Area= 4,602 sf Storage= 11,379 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	321.10'	11,379 cf	**Detention Pond #1 (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.10	653	0	0
322.00	2,180	1,275	1,275
323.00	2,957	2,569	3,843
324.00	3,756	3,357	7,200
325.00	4,602	4,179	11,379

Device	Routing	Invert	Outlet Devices
#1	Primary	321.10'	**15.0" Round 15" PVC Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 321.10' / 320.58' S= 0.0104 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=321.10' TW=320.58' (Dynamic Tailwater)
1=15" PVC Culvert (Controls 0.00 cfs)

Summary for Pond 804P: CB 804

[80] Warning: Exceeded Pond 800P by 3.18' @ 12.09 hrs (9.44 cfs 3,748 cf)

Inflow Area = 24,335 sf, 66.54% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 1.52 cfs @ 12.08 hrs, Volume= 4,895 cf
Outflow = 1.52 cfs @ 12.08 hrs, Volume= 4,895 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.52 cfs @ 12.08 hrs, Volume= 4,895 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 324.28' @ 12.09 hrs
Flood Elev= 324.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.58'	**12.0" Round 12" PVC Culvert** L= 141.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 320.58' / 320.00' S= 0.0041 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.46 cfs @ 12.08 hrs HW=324.23' TW=323.94' (Dynamic Tailwater)
↑—**1=12" PVC Culvert** (Outlet Controls 1.46 cfs @ 1.86 fps)

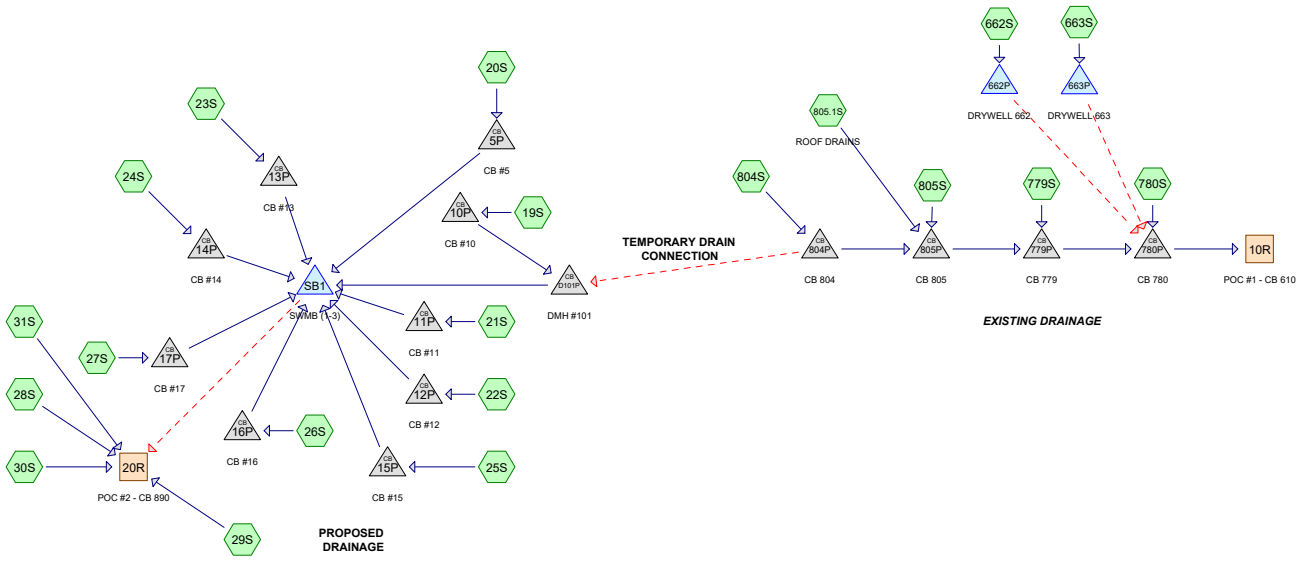
Summary for Pond 805P: CB 805

Inflow Area = 44,022 sf, 79.25% Impervious, Inflow Depth = 2.94" for 10-YR event
Inflow = 3.27 cfs @ 12.08 hrs, Volume= 10,799 cf
Outflow = 3.27 cfs @ 12.08 hrs, Volume= 10,799 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.27 cfs @ 12.08 hrs, Volume= 10,799 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 323.97' @ 12.09 hrs
Flood Elev= 325.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	319.94'	**12.0" Round 12" PVC Culvert** L= 115.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.94' / 319.77' S= 0.0015 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.22 cfs @ 12.08 hrs HW=323.94' TW=322.75' (Dynamic Tailwater)
↑—**1=12" PVC Culvert** (Outlet Controls 3.22 cfs @ 4.10 fps)



Subcat Reach Pond Link

Routing Diagram for 23012_Post Development
Prepared by Northpoint Engineering, LLC, Printed 2/19/2025

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
39,426	39	>75% Grass cover, Good, HSG A (19S, 20S, 21S, 22S, 23S, 24S, 25S, 28S, 29S, 30S, 31S, 662S, 663S, 779S, 780S, 804S, 805S)
128,575	98	Paved parking, HSG A (19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 30S, 662S, 663S, 779S, 780S, 804S, 805S)
9,560	98	Roofs, HSG A (805.1S)
177,561	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
177,561	HSG A	19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S, 29S, 30S, 31S, 662S, 663S, 779S, 780S, 804S, 805.1S, 805S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
177,561		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	5P	318.15	318.00	28.0	0.0054	0.012	24.0	0.0	0.0
2	10P	321.55	321.34	41.0	0.0051	0.012	18.0	0.0	0.0
3	11P	319.84	319.50	68.0	0.0050	0.012	18.0	0.0	0.0
4	12P	318.05	318.00	4.3	0.0116	0.012	24.0	0.0	0.0
5	13P	318.05	318.00	4.3	0.0116	0.012	24.0	0.0	0.0
6	14P	318.05	318.00	4.3	0.0116	0.012	24.0	0.0	0.0
7	15P	318.05	318.00	4.3	0.0116	0.012	24.0	0.0	0.0
8	16P	318.33	318.00	88.0	0.0037	0.012	12.0	0.0	0.0
9	17P	318.33	318.00	88.0	0.0037	0.012	12.0	0.0	0.0
10	779P	319.52	319.04	110.0	0.0044	0.012	12.0	0.0	0.0
11	780P	318.71	317.17	78.0	0.0197	0.012	12.0	0.0	0.0
12	804P	320.58	320.00	141.5	0.0041	0.012	12.0	0.0	0.0
13	804P	320.58	321.35	78.0	-0.0099	0.012	15.0	0.0	0.0
14	805P	319.94	319.77	115.0	0.0015	0.012	12.0	0.0	0.0
15	D101P	318.28	318.00	36.0	0.0078	0.012	24.0	0.0	0.0
16	SB1	318.00	318.33	88.0	-0.0037	0.012	12.0	0.0	0.0
17	SB1	318.00	318.33	88.0	-0.0037	0.012	12.0	0.0	0.0

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment19S: Runoff Area=9,644 sf 90.63% Impervious Runoff Depth=1.99"
Tc=5.0 min CN=92 Runoff=0.53 cfs 1,601 cf

Subcatchment20S: Runoff Area=10,637 sf 92.73% Impervious Runoff Depth=2.18"
Tc=5.0 min CN=94 Runoff=0.62 cfs 1,929 cf

Subcatchment21S: Runoff Area=12,459 sf 92.05% Impervious Runoff Depth=2.08"
Tc=5.0 min CN=93 Runoff=0.71 cfs 2,162 cf

Subcatchment22S: Runoff Area=9,024 sf 88.34% Impervious Runoff Depth=1.90"
Tc=5.0 min CN=91 Runoff=0.47 cfs 1,432 cf

Subcatchment23S: Runoff Area=15,746 sf 62.94% Impervious Runoff Depth=0.90"
Tc=5.0 min CN=76 Runoff=0.37 cfs 1,175 cf

Subcatchment24S: Runoff Area=7,988 sf 95.29% Impervious Runoff Depth=2.27"
Tc=5.0 min CN=95 Runoff=0.48 cfs 1,514 cf

Subcatchment25S: Runoff Area=9,918 sf 94.93% Impervious Runoff Depth=2.27"
Tc=5.0 min CN=95 Runoff=0.60 cfs 1,879 cf

Subcatchment26S: Runoff Area=649 sf 100.00% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=98 Runoff=0.04 cfs 140 cf

Subcatchment27S: Runoff Area=640 sf 100.00% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=98 Runoff=0.04 cfs 138 cf

Subcatchment28S: Runoff Area=1,974 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment29S: Runoff Area=5,676 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment30S: Runoff Area=8,935 sf 7.71% Impervious Runoff Depth=0.01"
Tc=5.0 min CN=44 Runoff=0.00 cfs 4 cf

Subcatchment31S: Runoff Area=1,679 sf 0.00% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=84 Runoff=0.41 cfs 1,258 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=84 Runoff=0.41 cfs 1,272 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=2.08"
Tc=6.0 min CN=93 Runoff=0.37 cfs 1,171 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=89 Runoff=0.72 cfs 2,248 cf

Subcatchment804S: Runoff Area=18,464 sf 87.36% Impervious Runoff Depth=1.90"
Tc=6.0 min CN=91 Runoff=0.94 cfs 2,930 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=2.59"
Tc=6.0 min CN=98 Runoff=0.60 cfs 2,063 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=92 Runoff=0.53 cfs 1,681 cf

Reach 10R: POC #1 - CB 610 Inflow=3.98 cfs 12,341 cf
Outflow=3.98 cfs 12,341 cf

Reach 20R: POC #2 - CB 890 Inflow=0.00 cfs 4 cf
Outflow=0.00 cfs 4 cf

Pond 5P: CB #5 Peak Elev=318.52' Inflow=0.62 cfs 1,929 cf
24.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=0.62 cfs 1,929 cf

Pond 10P: CB #10 Peak Elev=321.91' Inflow=0.53 cfs 1,601 cf
18.0" Round Culvert n=0.012 L=41.0' S=0.0051 '/' Outflow=0.53 cfs 1,601 cf

Pond 11P: CB #11 Peak Elev=320.26' Inflow=0.71 cfs 2,162 cf
18.0" Round Culvert n=0.012 L=68.0' S=0.0050 '/' Outflow=0.71 cfs 2,162 cf

Pond 12P: CB #12 Peak Elev=318.37' Inflow=0.47 cfs 1,432 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.47 cfs 1,432 cf

Pond 13P: CB #13 Peak Elev=318.33' Inflow=0.37 cfs 1,175 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.37 cfs 1,175 cf

Pond 14P: CB #14 Peak Elev=318.37' Inflow=0.48 cfs 1,514 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.48 cfs 1,514 cf

Pond 15P: CB #15 Peak Elev=318.41' Inflow=0.60 cfs 1,879 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.60 cfs 1,879 cf

Pond 16P: CB #16 Peak Elev=318.45' Inflow=0.04 cfs 140 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.04 cfs 140 cf

Pond 17P: CB #17 Peak Elev=318.45' Inflow=0.04 cfs 138 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.04 cfs 138 cf

Pond 662P: DRYWELL 662 Peak Elev=325.64' Storage=0.002 af Inflow=0.41 cfs 1,258 cf
Discarded=0.00 cfs 120 cf Secondary=0.40 cfs 1,119 cf Outflow=0.40 cfs 1,239 cf

Pond 663P: DRYWELL 663 Peak Elev=325.57' Storage=0.002 af Inflow=0.41 cfs 1,272 cf
Discarded=0.00 cfs 121 cf Secondary=0.42 cfs 1,130 cf Outflow=0.42 cfs 1,252 cf

Pond 779P: CB 779 Peak Elev=320.61' Inflow=2.43 cfs 7,844 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=2.43 cfs 7,844 cf

Pond 780P: CB 780 Peak Elev=319.87' Inflow=3.98 cfs 12,341 cf
Outflow=3.98 cfs 12,341 cf

Pond 804P: CB 804 Peak Elev=321.39' Inflow=0.94 cfs 2,930 cf
Primary=0.93 cfs 2,929 cf Secondary=0.01 cfs 1 cf Outflow=0.94 cfs 2,930 cf

Pond 805P: CB 805 Peak Elev=321.14' Inflow=2.06 cfs 6,672 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=2.06 cfs 6,672 cf

Pond D101P: DMH #101 Peak Elev=318.59' Inflow=0.53 cfs 1,601 cf
24.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.53 cfs 1,601 cf

Pond SB1: SWMB (1-3) Peak Elev=317.57' Storage=2,672 cf Inflow=3.87 cfs 11,971 cf
Discarded=0.84 cfs 11,974 cf Secondary=0.00 cfs 0 cf Outflow=0.84 cfs 11,974 cf

Total Runoff Area = 177,561 sf Runoff Volume = 24,597 cf Average Runoff Depth = 1.66"
22.20% Pervious = 39,426 sf 77.80% Impervious = 138,135 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment19S: Runoff Area=9,644 sf 90.63% Impervious Runoff Depth=3.28"
Tc=5.0 min CN=92 Runoff=0.85 cfs 2,638 cf

Subcatchment20S: Runoff Area=10,637 sf 92.73% Impervious Runoff Depth=3.49"
Tc=5.0 min CN=94 Runoff=0.97 cfs 3,095 cf

Subcatchment21S: Runoff Area=12,459 sf 92.05% Impervious Runoff Depth=3.39"
Tc=5.0 min CN=93 Runoff=1.12 cfs 3,515 cf

Subcatchment22S: Runoff Area=9,024 sf 88.34% Impervious Runoff Depth=3.18"
Tc=5.0 min CN=91 Runoff=0.78 cfs 2,392 cf

Subcatchment23S: Runoff Area=15,746 sf 62.94% Impervious Runoff Depth=1.87"
Tc=5.0 min CN=76 Runoff=0.81 cfs 2,453 cf

Subcatchment24S: Runoff Area=7,988 sf 95.29% Impervious Runoff Depth=3.60"
Tc=5.0 min CN=95 Runoff=0.74 cfs 2,396 cf

Subcatchment25S: Runoff Area=9,918 sf 94.93% Impervious Runoff Depth=3.60"
Tc=5.0 min CN=95 Runoff=0.92 cfs 2,974 cf

Subcatchment26S: Runoff Area=649 sf 100.00% Impervious Runoff Depth=3.93"
Tc=5.0 min CN=98 Runoff=0.06 cfs 213 cf

Subcatchment27S: Runoff Area=640 sf 100.00% Impervious Runoff Depth=3.93"
Tc=5.0 min CN=98 Runoff=0.06 cfs 210 cf

Subcatchment28S: Runoff Area=1,974 sf 0.00% Impervious Runoff Depth=0.07"
Tc=5.0 min CN=39 Runoff=0.00 cfs 11 cf

Subcatchment29S: Runoff Area=5,676 sf 0.00% Impervious Runoff Depth=0.07"
Tc=5.0 min CN=39 Runoff=0.00 cfs 31 cf

Subcatchment30S: Runoff Area=8,935 sf 7.71% Impervious Runoff Depth=0.18"
Tc=5.0 min CN=44 Runoff=0.01 cfs 137 cf

Subcatchment31S: Runoff Area=1,679 sf 0.00% Impervious Runoff Depth=0.07"
Tc=0.0 min CN=39 Runoff=0.00 cfs 9 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=2.52"
Tc=6.0 min CN=84 Runoff=0.75 cfs 2,316 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=2.52"
Tc=6.0 min CN=84 Runoff=0.76 cfs 2,342 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=93 Runoff=0.59 cfs 1,905 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=2.98"
Tc=6.0 min CN=89 Runoff=1.22 cfs 3,859 cf

Subcatchment804S: Runoff Area=18,464 sf 87.36% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=91 Runoff=1.53 cfs 4,893 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=3.93"
Tc=6.0 min CN=98 Runoff=0.89 cfs 3,135 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=3.28"
Tc=6.0 min CN=92 Runoff=0.86 cfs 2,770 cf

Reach 10R: POC #1 - CB 610 Inflow=5.69 cfs 20,464 cf
Outflow=5.69 cfs 20,464 cf

Reach 20R: POC #2 - CB 890 Inflow=0.01 cfs 187 cf
Outflow=0.01 cfs 187 cf

Pond 5P: CB #5 Peak Elev=318.61' Inflow=0.97 cfs 3,095 cf
24.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=0.97 cfs 3,095 cf

Pond 10P: CB #10 Peak Elev=322.02' Inflow=0.85 cfs 2,638 cf
18.0" Round Culvert n=0.012 L=41.0' S=0.0051 '/' Outflow=0.85 cfs 2,638 cf

Pond 11P: CB #11 Peak Elev=320.37' Inflow=1.12 cfs 3,515 cf
18.0" Round Culvert n=0.012 L=68.0' S=0.0050 '/' Outflow=1.12 cfs 3,515 cf

Pond 12P: CB #12 Peak Elev=318.47' Inflow=0.78 cfs 2,392 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.78 cfs 2,392 cf

Pond 13P: CB #13 Peak Elev=318.48' Inflow=0.81 cfs 2,453 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.81 cfs 2,453 cf

Pond 14P: CB #14 Peak Elev=318.46' Inflow=0.74 cfs 2,396 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.74 cfs 2,396 cf

Pond 15P: CB #15 Peak Elev=318.51' Inflow=0.92 cfs 2,974 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.92 cfs 2,974 cf

Pond 16P: CB #16 Peak Elev=318.48' Inflow=0.06 cfs 213 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.06 cfs 213 cf

Pond 17P: CB #17 Peak Elev=318.48' Inflow=0.06 cfs 210 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.06 cfs 210 cf

Pond 662P: DRYWELL 662 Peak Elev=325.67' Storage=0.002 af Inflow=0.75 cfs 2,316 cf
Discarded=0.00 cfs 128 cf Secondary=0.76 cfs 2,169 cf Outflow=0.76 cfs 2,297 cf

Pond 663P: DRYWELL 663 Peak Elev=325.60' Storage=0.002 af Inflow=0.76 cfs 2,342 cf
Discarded=0.00 cfs 129 cf Secondary=0.76 cfs 2,192 cf Outflow=0.77 cfs 2,321 cf

Pond 779P: CB 779 Peak Elev=321.70' Inflow=3.01 cfs 12,243 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=3.01 cfs 12,243 cf

Pond 780P: CB 780 Peak Elev=320.61' Inflow=5.69 cfs 20,464 cf
Outflow=5.69 cfs 20,464 cf

Pond 804P: CB 804 Peak Elev=321.97' Inflow=1.53 cfs 4,893 cf
Primary=0.96 cfs 4,434 cf Secondary=1.61 cfs 482 cf Outflow=1.53 cfs 4,893 cf

Pond 805P: CB 805 Peak Elev=322.13' Inflow=2.47 cfs 10,339 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=2.47 cfs 10,339 cf

Pond D101P: DMH #101 Peak Elev=318.98' Inflow=2.40 cfs 3,120 cf
24.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=2.40 cfs 3,120 cf

Pond SB1: SWMB (1-3) Peak Elev=318.18' Storage=6,442 cf Inflow=7.82 cfs 20,367 cf
Discarded=0.87 cfs 20,367 cf Secondary=0.00 cfs 0 cf Outflow=0.87 cfs 20,367 cf

Total Runoff Area = 177,561 sf Runoff Volume = 41,291 cf Average Runoff Depth = 2.79"
22.20% Pervious = 39,426 sf 77.80% Impervious = 138,135 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment19S: Runoff Area=9,644 sf 90.63% Impervious Runoff Depth=4.29"
Tc=5.0 min CN=92 Runoff=1.09 cfs 3,451 cf

Subcatchment20S: Runoff Area=10,637 sf 92.73% Impervious Runoff Depth=4.52"
Tc=5.0 min CN=94 Runoff=1.24 cfs 4,002 cf

Subcatchment21S: Runoff Area=12,459 sf 92.05% Impervious Runoff Depth=4.40"
Tc=5.0 min CN=93 Runoff=1.43 cfs 4,573 cf

Subcatchment22S: Runoff Area=9,024 sf 88.34% Impervious Runoff Depth=4.19"
Tc=5.0 min CN=91 Runoff=1.01 cfs 3,148 cf

Subcatchment23S: Runoff Area=15,746 sf 62.94% Impervious Runoff Depth=2.71"
Tc=5.0 min CN=76 Runoff=1.19 cfs 3,555 cf

Subcatchment24S: Runoff Area=7,988 sf 95.29% Impervious Runoff Depth=4.63"
Tc=5.0 min CN=95 Runoff=0.94 cfs 3,080 cf

Subcatchment25S: Runoff Area=9,918 sf 94.93% Impervious Runoff Depth=4.63"
Tc=5.0 min CN=95 Runoff=1.17 cfs 3,825 cf

Subcatchment26S: Runoff Area=649 sf 100.00% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=98 Runoff=0.08 cfs 269 cf

Subcatchment27S: Runoff Area=640 sf 100.00% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=98 Runoff=0.08 cfs 265 cf

Subcatchment28S: Runoff Area=1,974 sf 0.00% Impervious Runoff Depth=0.24"
Tc=5.0 min CN=39 Runoff=0.00 cfs 40 cf

Subcatchment29S: Runoff Area=5,676 sf 0.00% Impervious Runoff Depth=0.24"
Tc=5.0 min CN=39 Runoff=0.01 cfs 116 cf

Subcatchment30S: Runoff Area=8,935 sf 7.71% Impervious Runoff Depth=0.46"
Tc=5.0 min CN=44 Runoff=0.04 cfs 343 cf

Subcatchment31S: Runoff Area=1,679 sf 0.00% Impervious Runoff Depth=0.24"
Tc=0.0 min CN=39 Runoff=0.00 cfs 34 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=84 Runoff=1.02 cfs 3,181 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=84 Runoff=1.03 cfs 3,216 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=93 Runoff=0.75 cfs 2,478 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=89 Runoff=1.61 cfs 5,140 cf

Subcatchment804S: Runoff Area=18,464 sf 87.36% Impervious Runoff Depth=4.19"
Tc=6.0 min CN=91 Runoff=1.99 cfs 6,441 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=4.97"
Tc=6.0 min CN=98 Runoff=1.12 cfs 3,962 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=4.29"
Tc=6.0 min CN=92 Runoff=1.11 cfs 3,624 cf

Reach 10R: POC #1 - CB 610 Inflow=6.63 cfs 26,778 cf
Outflow=6.63 cfs 26,778 cf

Reach 20R: POC #2 - CB 890 Inflow=0.05 cfs 534 cf
Outflow=0.05 cfs 534 cf

Pond 5P: CB #5 Peak Elev=318.68' Inflow=1.24 cfs 4,002 cf
24.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=1.24 cfs 4,002 cf

Pond 10P: CB #10 Peak Elev=322.09' Inflow=1.09 cfs 3,451 cf
18.0" Round Culvert n=0.012 L=41.0' S=0.0051 '/' Outflow=1.09 cfs 3,451 cf

Pond 11P: CB #11 Peak Elev=320.45' Inflow=1.43 cfs 4,573 cf
18.0" Round Culvert n=0.012 L=68.0' S=0.0050 '/' Outflow=1.43 cfs 4,573 cf

Pond 12P: CB #12 Peak Elev=318.53' Inflow=1.01 cfs 3,148 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.01 cfs 3,148 cf

Pond 13P: CB #13 Peak Elev=318.58' Inflow=1.19 cfs 3,555 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.19 cfs 3,555 cf

Pond 14P: CB #14 Peak Elev=318.52' Inflow=0.94 cfs 3,080 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=0.94 cfs 3,080 cf

Pond 15P: CB #15 Peak Elev=318.57' Inflow=1.17 cfs 3,825 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.17 cfs 3,825 cf

Pond 16P: CB #16 Peak Elev=318.52' Inflow=0.08 cfs 269 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.08 cfs 269 cf

Pond 17P: CB #17 Peak Elev=318.52' Inflow=0.08 cfs 265 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.08 cfs 265 cf

Pond 662P: DRYWELL 662 Peak Elev=325.69' Storage=0.002 af Inflow=1.02 cfs 3,181 cf
Discarded=0.00 cfs 132 cf Secondary=1.02 cfs 3,029 cf Outflow=1.02 cfs 3,162 cf

Pond 663P: DRYWELL 663 Peak Elev=325.63' Storage=0.002 af Inflow=1.03 cfs 3,216 cf
Discarded=0.00 cfs 134 cf Secondary=1.03 cfs 3,062 cf Outflow=1.03 cfs 3,196 cf

Pond 779P: CB 779 Peak Elev=322.19' Inflow=3.29 cfs 15,546 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=3.29 cfs 15,546 cf

Pond 780P: CB 780 Peak Elev=321.13' Inflow=6.63 cfs 26,778 cf
Outflow=6.63 cfs 26,778 cf

Pond 804P: CB 804 Peak Elev=322.04' Inflow=1.99 cfs 6,441 cf
Primary=1.15 cfs 5,482 cf Secondary=1.99 cfs 985 cf Outflow=1.99 cfs 6,441 cf

Pond 805P: CB 805 Peak Elev=322.68' Inflow=2.65 cfs 13,068 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=2.65 cfs 13,068 cf

Pond D101P: DMH #101 Peak Elev=319.09' Inflow=3.07 cfs 4,436 cf
24.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=3.07 cfs 4,436 cf

Pond SB1: SWMB (1-3) Peak Elev=318.52' Storage=9,704 cf Inflow=10.20 cfs 27,154 cf
Discarded=0.89 cfs 27,158 cf Secondary=0.00 cfs 0 cf Outflow=0.89 cfs 27,158 cf

Total Runoff Area = 177,561 sf Runoff Volume = 54,745 cf Average Runoff Depth = 3.70"
22.20% Pervious = 39,426 sf 77.80% Impervious = 138,135 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment19S: Runoff Area=9,644 sf 90.63% Impervious Runoff Depth=5.25"
Tc=5.0 min CN=92 Runoff=1.32 cfs 4,216 cf

Subcatchment20S: Runoff Area=10,637 sf 92.73% Impervious Runoff Depth=5.47"
Tc=5.0 min CN=94 Runoff=1.49 cfs 4,853 cf

Subcatchment21S: Runoff Area=12,459 sf 92.05% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=93 Runoff=1.73 cfs 5,565 cf

Subcatchment22S: Runoff Area=9,024 sf 88.34% Impervious Runoff Depth=5.13"
Tc=5.0 min CN=91 Runoff=1.22 cfs 3,860 cf

Subcatchment23S: Runoff Area=15,746 sf 62.94% Impervious Runoff Depth=3.54"
Tc=5.0 min CN=76 Runoff=1.55 cfs 4,640 cf

Subcatchment24S: Runoff Area=7,988 sf 95.29% Impervious Runoff Depth=5.59"
Tc=5.0 min CN=95 Runoff=1.13 cfs 3,721 cf

Subcatchment25S: Runoff Area=9,918 sf 94.93% Impervious Runoff Depth=5.59"
Tc=5.0 min CN=95 Runoff=1.40 cfs 4,620 cf

Subcatchment26S: Runoff Area=649 sf 100.00% Impervious Runoff Depth=5.94"
Tc=5.0 min CN=98 Runoff=0.09 cfs 321 cf

Subcatchment27S: Runoff Area=640 sf 100.00% Impervious Runoff Depth=5.94"
Tc=5.0 min CN=98 Runoff=0.09 cfs 317 cf

Subcatchment28S: Runoff Area=1,974 sf 0.00% Impervious Runoff Depth=0.50"
Tc=5.0 min CN=39 Runoff=0.01 cfs 82 cf

Subcatchment29S: Runoff Area=5,676 sf 0.00% Impervious Runoff Depth=0.50"
Tc=5.0 min CN=39 Runoff=0.03 cfs 236 cf

Subcatchment30S: Runoff Area=8,935 sf 7.71% Impervious Runoff Depth=0.81"
Tc=5.0 min CN=44 Runoff=0.12 cfs 601 cf

Subcatchment31S: Runoff Area=1,679 sf 0.00% Impervious Runoff Depth=0.50"
Tc=0.0 min CN=39 Runoff=0.01 cfs 70 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=84 Runoff=1.27 cfs 4,009 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=84 Runoff=1.29 cfs 4,054 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=93 Runoff=0.90 cfs 3,016 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=4.91"
Tc=6.0 min CN=89 Runoff=1.97 cfs 6,352 cf

Subcatchment804S: Runoff Area=18,464 sf 87.36% Impervious Runoff Depth=5.13"
Tc=6.0 min CN=91 Runoff=2.41 cfs 7,899 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=5.94"
Tc=6.0 min CN=98 Runoff=1.33 cfs 4,734 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=92 Runoff=1.34 cfs 4,428 cf

Reach 10R: POC #1 - CB 610 Inflow=8.10 cfs 32,705 cf
Outflow=8.10 cfs 32,705 cf

Reach 20R: POC #2 - CB 890 Inflow=0.15 cfs 988 cf
Outflow=0.15 cfs 988 cf

Pond 5P: CB #5 Peak Elev=318.88' Inflow=1.49 cfs 4,853 cf
24.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=1.49 cfs 4,853 cf

Pond 10P: CB #10 Peak Elev=322.14' Inflow=1.32 cfs 4,216 cf
18.0" Round Culvert n=0.012 L=41.0' S=0.0051 '/' Outflow=1.32 cfs 4,216 cf

Pond 11P: CB #11 Peak Elev=320.52' Inflow=1.73 cfs 5,565 cf
18.0" Round Culvert n=0.012 L=68.0' S=0.0050 '/' Outflow=1.73 cfs 5,565 cf

Pond 12P: CB #12 Peak Elev=318.88' Inflow=1.22 cfs 3,860 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.22 cfs 3,860 cf

Pond 13P: CB #13 Peak Elev=318.88' Inflow=1.55 cfs 4,640 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.55 cfs 4,640 cf

Pond 14P: CB #14 Peak Elev=318.88' Inflow=1.13 cfs 3,721 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.13 cfs 3,721 cf

Pond 15P: CB #15 Peak Elev=318.88' Inflow=1.40 cfs 4,620 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.40 cfs 4,620 cf

Pond 16P: CB #16 Peak Elev=318.88' Inflow=0.09 cfs 321 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.09 cfs 321 cf

Pond 17P: CB #17 Peak Elev=318.88' Inflow=0.09 cfs 317 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.09 cfs 317 cf

Pond 662P: DRYWELL 662 Peak Elev=325.71' Storage=0.002 af Inflow=1.27 cfs 4,009 cf
Discarded=0.00 cfs 136 cf Secondary=1.28 cfs 3,854 cf Outflow=1.28 cfs 3,990 cf

Pond 663P: DRYWELL 663 Peak Elev=325.64' Storage=0.002 af Inflow=1.29 cfs 4,054 cf
Discarded=0.00 cfs 137 cf Secondary=1.30 cfs 3,896 cf Outflow=1.30 cfs 4,034 cf

Pond 779P: CB 779 Peak Elev=323.52' Inflow=3.57 cfs 18,602 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=3.57 cfs 18,602 cf

Pond 780P: CB 780 Peak Elev=322.10' Inflow=8.10 cfs 32,705 cf
Outflow=8.10 cfs 32,705 cf

Pond 804P: CB 804 Peak Elev=322.13' Inflow=2.41 cfs 7,899 cf
Primary=1.04 cfs 6,426 cf Secondary=2.41 cfs 1,498 cf Outflow=2.41 cfs 7,899 cf

Pond 805P: CB 805 Peak Elev=324.32' Inflow=2.67 cfs 15,587 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=2.67 cfs 15,587 cf

Pond D101P: DMH #101 Peak Elev=319.18' Inflow=3.71 cfs 5,714 cf
24.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=3.71 cfs 5,714 cf

Pond SB1: SWMB (1-3) Peak Elev=318.88' Storage=13,035 cf Inflow=12.41 cfs 33,613 cf
Discarded=0.90 cfs 33,617 cf Secondary=0.00 cfs 0 cf Outflow=0.90 cfs 33,617 cf

Total Runoff Area = 177,561 sf Runoff Volume = 67,594 cf Average Runoff Depth = 4.57"
22.20% Pervious = 39,426 sf 77.80% Impervious = 138,135 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment19S: Runoff Area=9,644 sf 90.63% Impervious Runoff Depth=6.37"
Tc=5.0 min CN=92 Runoff=1.59 cfs 5,120 cf

Subcatchment20S: Runoff Area=10,637 sf 92.73% Impervious Runoff Depth=6.61"
Tc=5.0 min CN=94 Runoff=1.78 cfs 5,856 cf

Subcatchment21S: Runoff Area=12,459 sf 92.05% Impervious Runoff Depth=6.49"
Tc=5.0 min CN=93 Runoff=2.07 cfs 6,736 cf

Subcatchment22S: Runoff Area=9,024 sf 88.34% Impervious Runoff Depth=6.25"
Tc=5.0 min CN=91 Runoff=1.47 cfs 4,703 cf

Subcatchment23S: Runoff Area=15,746 sf 62.94% Impervious Runoff Depth=4.54"
Tc=5.0 min CN=76 Runoff=1.99 cfs 5,962 cf

Subcatchment24S: Runoff Area=7,988 sf 95.29% Impervious Runoff Depth=6.72"
Tc=5.0 min CN=95 Runoff=1.35 cfs 4,476 cf

Subcatchment25S: Runoff Area=9,918 sf 94.93% Impervious Runoff Depth=6.72"
Tc=5.0 min CN=95 Runoff=1.67 cfs 5,558 cf

Subcatchment26S: Runoff Area=649 sf 100.00% Impervious Runoff Depth=7.08"
Tc=5.0 min CN=98 Runoff=0.11 cfs 383 cf

Subcatchment27S: Runoff Area=640 sf 100.00% Impervious Runoff Depth=7.08"
Tc=5.0 min CN=98 Runoff=0.11 cfs 378 cf

Subcatchment28S: Runoff Area=1,974 sf 0.00% Impervious Runoff Depth=0.89"
Tc=5.0 min CN=39 Runoff=0.03 cfs 146 cf

Subcatchment29S: Runoff Area=5,676 sf 0.00% Impervious Runoff Depth=0.89"
Tc=5.0 min CN=39 Runoff=0.08 cfs 419 cf

Subcatchment30S: Runoff Area=8,935 sf 7.71% Impervious Runoff Depth=1.30"
Tc=5.0 min CN=44 Runoff=0.25 cfs 970 cf

Subcatchment31S: Runoff Area=1,679 sf 0.00% Impervious Runoff Depth=0.89"
Tc=0.0 min CN=39 Runoff=0.03 cfs 124 cf

Subcatchment662S: Runoff Area=11,022 sf 76.00% Impervious Runoff Depth=5.44"
Tc=6.0 min CN=84 Runoff=1.57 cfs 5,001 cf

Subcatchment663S: Runoff Area=11,144 sf 76.28% Impervious Runoff Depth=5.44"
Tc=6.0 min CN=84 Runoff=1.59 cfs 5,056 cf

Subcatchment779S: Runoff Area=6,751 sf 92.37% Impervious Runoff Depth=6.49"
Tc=6.0 min CN=93 Runoff=1.08 cfs 3,650 cf

Subcatchment780S: Runoff Area=15,524 sf 85.24% Impervious Runoff Depth=6.02"
Tc=6.0 min CN=89 Runoff=2.38 cfs 7,789 cf

Subcatchment804S: Runoff Area=18,464 sf 87.36% Impervious Runoff Depth=6.25"
Tc=6.0 min CN=91 Runoff=2.90 cfs 9,622 cf

Subcatchment805.1S: ROOF DRAINS Runoff Area=9,560 sf 100.00% Impervious Runoff Depth=7.08"
Tc=6.0 min CN=98 Runoff=1.58 cfs 5,641 cf

Subcatchment805S: Runoff Area=10,127 sf 90.21% Impervious Runoff Depth=6.37"
Tc=6.0 min CN=92 Runoff=1.61 cfs 5,376 cf

Reach 10R: POC #1 - CB 610 Inflow=9.81 cfs 39,541 cf
Outflow=9.81 cfs 39,541 cf

Reach 20R: POC #2 - CB 890 Inflow=0.36 cfs 1,659 cf
Outflow=0.36 cfs 1,659 cf

Pond 5P: CB #5 Peak Elev=319.37' Inflow=1.78 cfs 5,856 cf
24.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=1.78 cfs 5,856 cf

Pond 10P: CB #10 Peak Elev=322.21' Inflow=1.59 cfs 5,120 cf
18.0" Round Culvert n=0.012 L=41.0' S=0.0051 '/' Outflow=1.59 cfs 5,120 cf

Pond 11P: CB #11 Peak Elev=320.59' Inflow=2.07 cfs 6,736 cf
18.0" Round Culvert n=0.012 L=68.0' S=0.0050 '/' Outflow=2.07 cfs 6,736 cf

Pond 12P: CB #12 Peak Elev=319.37' Inflow=1.47 cfs 4,703 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.47 cfs 4,703 cf

Pond 13P: CB #13 Peak Elev=319.37' Inflow=1.99 cfs 5,962 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.99 cfs 5,962 cf

Pond 14P: CB #14 Peak Elev=319.37' Inflow=1.35 cfs 4,476 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.35 cfs 4,476 cf

Pond 15P: CB #15 Peak Elev=319.37' Inflow=1.67 cfs 5,558 cf
24.0" Round Culvert n=0.012 L=4.3' S=0.0116 '/' Outflow=1.67 cfs 5,558 cf

Pond 16P: CB #16 Peak Elev=319.37' Inflow=0.11 cfs 383 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.11 cfs 382 cf

Pond 17P: CB #17 Peak Elev=319.37' Inflow=0.11 cfs 378 cf
12.0" Round Culvert n=0.012 L=88.0' S=0.0037 '/' Outflow=0.11 cfs 377 cf

Pond 662P: DRYWELL 662 Peak Elev=325.73' Storage=0.002 af Inflow=1.57 cfs 5,001 cf
Discarded=0.00 cfs 139 cf Secondary=1.58 cfs 4,842 cf Outflow=1.58 cfs 4,982 cf

Pond 663P: DRYWELL 663 Peak Elev=325.67' Storage=0.002 af Inflow=1.59 cfs 5,056 cf
Discarded=0.00 cfs 141 cf Secondary=1.60 cfs 4,895 cf Outflow=1.60 cfs 5,036 cf

Pond 779P: CB 779 Peak Elev=325.66' Inflow=4.26 cfs 22,015 cf
12.0" Round Culvert n=0.012 L=110.0' S=0.0044 '/' Outflow=4.26 cfs 22,015 cf

Pond 780P: CB 780 Peak Elev=323.62' Inflow=9.81 cfs 39,541 cf
Outflow=9.81 cfs 39,541 cf

Pond 804P: CB 804 Peak Elev=322.22' Inflow=2.90 cfs 9,622 cf
Primary=1.12 cfs 7,347 cf Secondary=2.90 cfs 2,298 cf Outflow=2.90 cfs 9,622 cf

Pond 805P: CB 805 Peak Elev=326.79' Inflow=3.18 cfs 18,365 cf
12.0" Round Culvert n=0.012 L=115.0' S=0.0015 '/' Outflow=3.18 cfs 18,365 cf

Pond D101P: DMH #101 Peak Elev=319.37' Inflow=4.47 cfs 7,418 cf
24.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=4.47 cfs 7,418 cf

Pond SB1: SWMB (1-3) Peak Elev=319.37' Storage=17,367 cf Inflow=14.99 cfs 41,467 cf
Discarded=0.93 cfs 41,478 cf Secondary=0.00 cfs 0 cf Outflow=0.93 cfs 41,478 cf

Total Runoff Area = 177,561 sf Runoff Volume = 82,965 cf Average Runoff Depth = 5.61"
22.20% Pervious = 39,426 sf 77.80% Impervious = 138,135 sf

Summary for Subcatchment 19S:

Runoff = 0.85 cfs @ 12.07 hrs, Volume= 2,638 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
8,740	98	Paved parking, HSG A
904	39	>75% Grass cover, Good, HSG A
9,644	92	Weighted Average
904		9.37% Pervious Area
8,740		90.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 20S:

Runoff = 0.97 cfs @ 12.07 hrs, Volume= 3,095 cf, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,864	98	Paved parking, HSG A
773	39	>75% Grass cover, Good, HSG A
10,637	94	Weighted Average
773		7.27% Pervious Area
9,864		92.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 21S:

Runoff = 1.12 cfs @ 12.07 hrs, Volume= 3,515 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
11,469	98	Paved parking, HSG A
990	39	>75% Grass cover, Good, HSG A
12,459	93	Weighted Average
990		7.95% Pervious Area
11,469		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 22S:

Runoff = 0.78 cfs @ 12.07 hrs, Volume= 2,392 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
7,972	98	Paved parking, HSG A
1,052	39	>75% Grass cover, Good, HSG A
9,024	91	Weighted Average
1,052		11.66% Pervious Area
7,972		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 23S:

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 2,453 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,911	98	Paved parking, HSG A
5,835	39	>75% Grass cover, Good, HSG A
15,746	76	Weighted Average
5,835		37.06% Pervious Area
9,911		62.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 24S:

Runoff = 0.74 cfs @ 12.07 hrs, Volume= 2,396 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
7,612	98	Paved parking, HSG A
376	39	>75% Grass cover, Good, HSG A
7,988	95	Weighted Average
376		4.71% Pervious Area
7,612		95.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 25S:

Runoff = 0.92 cfs @ 12.07 hrs, Volume= 2,974 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,415	98	Paved parking, HSG A
503	39	>75% Grass cover, Good, HSG A
9,918	95	Weighted Average
503		5.07% Pervious Area
9,415		94.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 26S:

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 213 cf, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
649	98	Paved parking, HSG A
649		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 27S:

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 210 cf, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
640	98	Paved parking, HSG A
640		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 28S:

Runoff = 0.00 cfs @ 15.19 hrs, Volume= 11 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
1,974	39	>75% Grass cover, Good, HSG A
1,974		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 29S:

Runoff = 0.00 cfs @ 15.19 hrs, Volume= 31 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
5,676	39	>75% Grass cover, Good, HSG A
5,676		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 30S:

Runoff = 0.01 cfs @ 12.44 hrs, Volume= 137 cf, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
689	98	Paved parking, HSG A
8,246	39	>75% Grass cover, Good, HSG A
8,935	44	Weighted Average
8,246		92.29% Pervious Area
689		7.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min Tc**

Summary for Subcatchment 31S:

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.00 cfs @ 15.12 hrs, Volume= 9 cf, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
1,679	39	>75% Grass cover, Good, HSG A
1,679		100.00% Pervious Area

Summary for Subcatchment 662S:

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 2,316 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
8,377	98	Paved parking, HSG A
2,645	39	>75% Grass cover, Good, HSG A
11,022	84	Weighted Average
2,645		24.00% Pervious Area
8,377		76.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 663S:

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 2,342 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
8,501	98	Paved parking, HSG A
2,643	39	>75% Grass cover, Good, HSG A
11,144	84	Weighted Average
2,643		23.72% Pervious Area
8,501		76.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 779S:

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 1,905 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
6,236	98	Paved parking, HSG A
515	39	>75% Grass cover, Good, HSG A
6,751	93	Weighted Average
515		7.63% Pervious Area
6,236		92.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 780S:

Runoff = 1.22 cfs @ 12.09 hrs, Volume= 3,859 cf, Depth= 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
13,233	98	Paved parking, HSG A
2,291	39	>75% Grass cover, Good, HSG A
15,524	89	Weighted Average
2,291		14.76% Pervious Area
13,233		85.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 804S:

Runoff = 1.53 cfs @ 12.09 hrs, Volume= 4,893 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
16,131	98	Paved parking, HSG A
2,333	39	>75% Grass cover, Good, HSG A
18,464	91	Weighted Average
2,333		12.64% Pervious Area
16,131		87.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 805.1S: ROOF DRAINS

Runoff = 0.89 cfs @ 12.08 hrs, Volume= 3,135 cf, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,560	98	Roofs, HSG A
9,560		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Subcatchment 805S:

Runoff = 0.86 cfs @ 12.08 hrs, Volume= 2,770 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.17"

Area (sf)	CN	Description
9,136	98	Paved parking, HSG A
991	39	>75% Grass cover, Good, HSG A
10,127	92	Weighted Average
991		9.79% Pervious Area
9,136		90.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Summary for Reach 10R: POC #1 - CB 610

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 60,426 sf, 89.86% Impervious, Inflow Depth = 4.06" for 10-YR event
Inflow = 5.69 cfs @ 12.08 hrs, Volume= 20,464 cf
Outflow = 5.69 cfs @ 12.08 hrs, Volume= 20,464 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Summary for Reach 20R: POC #2 - CB 890

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 18,264 sf, 3.77% Impervious, Inflow Depth = 0.12" for 10-YR event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 187 cf
Outflow = 0.01 cfs @ 12.44 hrs, Volume= 187 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 5P: CB #5

Inflow Area = 10,637 sf, 92.73% Impervious, Inflow Depth = 3.49" for 10-YR event
Inflow = 0.97 cfs @ 12.07 hrs, Volume= 3,095 cf
Outflow = 0.97 cfs @ 12.07 hrs, Volume= 3,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.07 hrs, Volume= 3,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.61' @ 12.07 hrs
Flood Elev= 325.28'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.15'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.15' / 318.00' S= 0.0054 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.97 cfs @ 12.07 hrs HW=318.61' TW=317.62' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.97 cfs @ 2.66 fps)

Summary for Pond 10P: CB #10

Inflow Area = 9,644 sf, 90.63% Impervious, Inflow Depth = 3.28" for 10-YR event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 2,638 cf
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 2,638 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 2,638 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 322.02' @ 12.07 hrs
Flood Elev= 325.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.55'	**18.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 321.55' / 321.34' S= 0.0051 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.85 cfs @ 12.07 hrs HW=322.02' TW=318.94' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.85 cfs @ 2.69 fps)

Summary for Pond 11P: CB #11

Inflow Area = 12,459 sf, 92.05% Impervious, Inflow Depth = 3.39" for 10-YR event
Inflow = 1.12 cfs @ 12.07 hrs, Volume= 3,515 cf
Outflow = 1.12 cfs @ 12.07 hrs, Volume= 3,515 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.07 hrs, Volume= 3,515 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 320.37' @ 12.07 hrs
Flood Elev= 324.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	319.84'	**18.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.84' / 319.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.12 cfs @ 12.07 hrs HW=320.37' TW=317.62' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.12 cfs @ 2.95 fps)

Summary for Pond 12P: CB #12

Inflow Area = 9,024 sf, 88.34% Impervious, Inflow Depth = 3.18" for 10-YR event
Inflow = 0.78 cfs @ 12.07 hrs, Volume= 2,392 cf
Outflow = 0.78 cfs @ 12.07 hrs, Volume= 2,392 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.07 hrs, Volume= 2,392 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.47' @ 12.07 hrs
Flood Elev= 323.63'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.05'	**24.0" Round Culvert** L= 4.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.05' / 318.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.77 cfs @ 12.07 hrs HW=318.47' TW=317.62' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.77 cfs @ 2.45 fps)

Summary for Pond 13P: CB #13

Inflow Area = 15,746 sf, 62.94% Impervious, Inflow Depth = 1.87" for 10-YR event
Inflow = 0.81 cfs @ 12.08 hrs, Volume= 2,453 cf
Outflow = 0.81 cfs @ 12.08 hrs, Volume= 2,453 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.08 hrs, Volume= 2,453 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.48' @ 12.08 hrs
Flood Elev= 323.63'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.05'	**24.0" Round Culvert** L= 4.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.05' / 318.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=318.48' TW=317.65' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.81 cfs @ 2.48 fps)

Summary for Pond 14P: CB #14

Inflow Area = 7,988 sf, 95.29% Impervious, Inflow Depth = 3.60" for 10-YR event
Inflow = 0.74 cfs @ 12.07 hrs, Volume= 2,396 cf
Outflow = 0.74 cfs @ 12.07 hrs, Volume= 2,396 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.07 hrs, Volume= 2,396 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.46' @ 12.07 hrs
Flood Elev= 323.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.05'	**24.0" Round Culvert** L= 4.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.05' / 318.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.74 cfs @ 12.07 hrs HW=318.46' TW=317.61' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.74 cfs @ 2.43 fps)

Summary for Pond 15P: CB #15

Inflow Area = 9,918 sf, 94.93% Impervious, Inflow Depth = 3.60" for 10-YR event
Inflow = 0.92 cfs @ 12.07 hrs, Volume= 2,974 cf
Outflow = 0.92 cfs @ 12.07 hrs, Volume= 2,974 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.07 hrs, Volume= 2,974 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.51' @ 12.07 hrs
Flood Elev= 323.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.05'	**24.0" Round Culvert** L= 4.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.05' / 318.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.92 cfs @ 12.07 hrs HW=318.51' TW=317.61' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.92 cfs @ 2.55 fps)

Summary for Pond 16P: CB #16

Inflow Area = 649 sf,100.00% Impervious, Inflow Depth = 3.93" for 10-YR event
Inflow = 0.06 cfs @ 12.07 hrs, Volume= 213 cf
Outflow = 0.06 cfs @ 12.07 hrs, Volume= 213 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.07 hrs, Volume= 213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.48' @ 12.07 hrs
Flood Elev= 322.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.33'	**12.0" Round Culvert** L= 88.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.33' / 318.00' S= 0.0037 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.07 hrs HW=318.48' TW=317.61' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.06 cfs @ 1.29 fps)

Summary for Pond 17P: CB #17

Inflow Area = 640 sf,100.00% Impervious, Inflow Depth = 3.93" for 10-YR event
Inflow = 0.06 cfs @ 12.07 hrs, Volume= 210 cf
Outflow = 0.06 cfs @ 12.07 hrs, Volume= 210 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.07 hrs, Volume= 210 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.48' @ 12.07 hrs
Flood Elev= 322.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.33'	**12.0" Round Culvert** L= 88.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.33' / 318.00' S= 0.0037 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.07 hrs HW=318.48' TW=317.61' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.06 cfs @ 1.29 fps)

Summary for Pond 662P: DRYWELL 662

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.09'
[58] Hint: Peaked 0.09' above defined flood level
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=680)

Inflow Area =	11,022 sf,	76.00% Impervious,	Inflow Depth =	2.52"	for 10-YR event
Inflow =	0.75 cfs @	12.09 hrs, Volume=	2,316 cf		
Outflow =	0.76 cfs @	12.09 hrs, Volume=	2,297 cf,	Atten= 0%,	Lag= 0.1 min
Discarded =	0.00 cfs @	12.09 hrs, Volume=	128 cf		
Secondary =	0.76 cfs @	12.09 hrs, Volume=	2,169 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 325.67' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.002 af
Flood Elev= 325.58' Surf.Area= 0.000 ac Storage= 0.002 af

Plug-Flow detention time= 33.3 min calculated for 2,296 cf (99% of inflow)
Center-of-Mass det. time= 28.4 min (846.4 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	320.10'	0.002 af	**4.00'D x 5.48'H 4' I.D. DRYWELL**

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.10'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 310.00'
#2	Secondary	325.58'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=325.67' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Secondary OutFlow Max=0.76 cfs @ 12.09 hrs HW=325.67' TW=320.32' (Dynamic Tailwater)
2=Orifice/Grate (Weir Controls 0.76 cfs @ 1.01 fps)

Summary for Pond 663P: DRYWELL 663

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.09'
[58] Hint: Peaked 0.09' above defined flood level
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=677)

Inflow Area = 11,144 sf, 76.28% Impervious, Inflow Depth = 2.52" for 10-YR event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 2,342 cf
Outflow = 0.77 cfs @ 12.08 hrs, Volume= 2,321 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.08 hrs, Volume= 129 cf
Secondary = 0.76 cfs @ 12.08 hrs, Volume= 2,192 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 325.60' @ 12.08 hrs Surf.Area= 0.000 ac Storage= 0.002 af
Flood Elev= 325.51' Surf.Area= 0.000 ac Storage= 0.002 af

Plug-Flow detention time= 33.8 min calculated for 2,321 cf (99% of inflow)
Center-of-Mass det. time= 28.5 min (846.4 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	319.90'	0.002 af	**4.00'D x 5.61'H 4' I.D. DRYWELL**

Device	Routing	Invert	Outlet Devices
#1	Discarded	319.90'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 309.90'
#2	Secondary	325.51'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=325.60' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Secondary OutFlow Max=0.76 cfs @ 12.08 hrs HW=325.60' TW=320.57' (Dynamic Tailwater)
2=Orifice/Grate (Weir Controls 0.76 cfs @ 1.01 fps)

Summary for Pond 779P: CB 779

Inflow Area = 44,902 sf, 91.45% Impervious, Inflow Depth = 3.27" for 10-YR event
Inflow = 3.01 cfs @ 12.12 hrs, Volume= 12,243 cf
Outflow = 3.01 cfs @ 12.12 hrs, Volume= 12,243 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.01 cfs @ 12.12 hrs, Volume= 12,243 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 321.70' @ 12.10 hrs
Flood Elev= 325.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	319.52'	**12.0" Round 12" PVC Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.52' / 319.04' S= 0.0044 '/' Cc= 0.900

n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.10 cfs @ 12.12 hrs HW=321.59' TW=320.51' (Dynamic Tailwater)
└**1=12" PVC Culvert** (Outlet Controls 3.10 cfs @ 3.95 fps)

Summary for Pond 780P: CB 780

Inflow Area = 60,426 sf, 89.86% Impervious, Inflow Depth = 4.06" for 10-YR event
Inflow = 5.69 cfs @ 12.08 hrs, Volume= 20,464 cf
Outflow = 5.69 cfs @ 12.08 hrs, Volume= 20,464 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.69 cfs @ 12.08 hrs, Volume= 20,464 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 320.61' @ 12.08 hrs
Flood Elev= 325.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.71'	**6.0" Vert. 6" Orifice Plate in 12" PVC** C= 0.600
#2	Primary	318.71'	**12.0" Round 12" PVC Culvert** L= 78.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.71' / 317.17' S= 0.0197 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.65 cfs @ 12.08 hrs HW=320.59' TW=0.00' (Dynamic Tailwater)
├**1=6" Orifice Plate in 12" PVC** (Orifice Controls 1.21 cfs @ 6.14 fps)
└**2=12" PVC Culvert** (Inlet Controls 4.44 cfs @ 5.65 fps)

Summary for Pond 804P: CB 804

Inflow Area = 18,464 sf, 87.36% Impervious, Inflow Depth = 3.18" for 10-YR event
Inflow = 1.53 cfs @ 12.09 hrs, Volume= 4,893 cf
Outflow = 1.53 cfs @ 12.09 hrs, Volume= 4,893 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.96 cfs @ 12.18 hrs, Volume= 4,434 cf
Secondary = 1.61 cfs @ 12.09 hrs, Volume= 482 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 321.97' @ 12.09 hrs
Flood Elev= 324.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.58'	**12.0" Round 12" PVC Culvert** L= 141.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 320.58' / 320.00' S= 0.0041 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Secondary	321.35'	**15.0" Round Culvert (NEW)** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 320.58' / 321.35' S= -0.0099 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.95 cfs @ 12.18 hrs HW=321.39' TW=321.12' (Dynamic Tailwater)
1=12" PVC Culvert (Outlet Controls 0.95 cfs @ 1.90 fps)

Secondary OutFlow Max=1.53 cfs @ 12.09 hrs HW=321.95' TW=318.98' (Dynamic Tailwater)
2=Culvert (NEW) (Inlet Controls 1.53 cfs @ 2.63 fps)

Summary for Pond 805P: CB 805

[80] Warning: Exceeded Pond 804P by 0.37' @ 12.12 hrs (1.66 cfs 170 cf)

Inflow Area = 38,151 sf, 91.29% Impervious, Inflow Depth = 3.25" for 10-YR event
Inflow = 2.47 cfs @ 12.12 hrs, Volume= 10,339 cf
Outflow = 2.47 cfs @ 12.12 hrs, Volume= 10,339 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.47 cfs @ 12.12 hrs, Volume= 10,339 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 322.13' @ 12.10 hrs
Flood Elev= 325.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	319.94'	**12.0" Round 12" PVC Culvert** L= 115.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.94' / 319.77' S= 0.0015 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.94 cfs @ 12.12 hrs HW=322.04' TW=321.60' (Dynamic Tailwater)
1=12" PVC Culvert (Outlet Controls 1.94 cfs @ 2.47 fps)

Summary for Pond D101P: DMH #101

Inflow Area = 9,644 sf, 90.63% Impervious, Inflow Depth = 3.88" for 10-YR event
Inflow = 2.40 cfs @ 12.08 hrs, Volume= 3,120 cf
Outflow = 2.40 cfs @ 12.08 hrs, Volume= 3,120 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.40 cfs @ 12.08 hrs, Volume= 3,120 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.98' @ 12.08 hrs
Flood Elev= 326.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.28'	**24.0" Round Culvert** L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.28' / 318.00' S= 0.0078 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.36 cfs @ 12.08 hrs HW=318.98' TW=317.69' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.36 cfs @ 3.61 fps)

Summary for Pond SB1: SWMB (1-3)

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=395)

Inflow Area = 76,705 sf, 86.40% Impervious, Inflow Depth = 3.19" for 10-YR event
Inflow = 7.82 cfs @ 12.08 hrs, Volume= 20,367 cf
Outflow = 0.87 cfs @ 12.58 hrs, Volume= 20,367 cf, Atten= 89%, Lag= 29.6 min
Discarded = 0.87 cfs @ 12.58 hrs, Volume= 20,367 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 318.18' @ 12.58 hrs Surf.Area= 11,732 sf Storage= 6,442 cf
Flood Elev= 323.18' Surf.Area= 13,712 sf Storage= 30,294 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 48.0 min (833.9 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1	317.00'	1,716 cf	**Isolator Row Stone SWMB 1 (Prismatic)** Listed below (Recalc) 6,220 cf Overall - 1,929 cf Embedded = 4,291 cf x 40.0% Voids
#2	318.00'	1,929 cf	**SC-740 Isolator Row SWMB 1** x 42 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 3 Rows
#3	317.00'	5,962 cf	**Infiltration Basin Stone SWMB 1 (Prismatic)** Listed below (Recalc) 21,980 cf Overall - 7,075 cf Embedded = 14,905 cf x 40.0% Voids
#4	318.00'	7,075 cf	**SC-740 Infiltration Basin SWMB 1** x 154 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 154 Chambers in 11 Rows
#5	317.00'	628 cf	**Isolator Row Stone SWMB 2 (Prismatic)** Listed below (Recalc) 2,076 cf Overall - 505 cf Embedded = 1,571 cf x 40.0% Voids
#6	318.00'	505 cf	**SC-740 Isolator Row SWMB 2** x 11 Inside #5 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#7	317.00'	1,795 cf	**Infiltration Basin Stone SWMB 2 (Prismatic)** Listed below (Recalc) 6,508 cf Overall - 2,021 cf Embedded = 4,487 cf x 40.0% Voids
#8	318.00'	2,021 cf	**SC-740 Infiltration Basin SWMB 2** x 44 Inside #7 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 44 Chambers in 4 Rows
#9	317.00'	628 cf	**Isolator Row Stone SWMB 3 (Prismatic)** Listed below (Recalc) 2,076 cf Overall - 505 cf Embedded = 1,571 cf x 40.0% Voids
#10	318.00'	505 cf	**SC-740 Isolator Row SWMB 3** x 11 Inside #9 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#11	317.00'	2,217 cf	**Infiltration Basin Stone SWMB 3 (Prismatic)** Listed below (Recalc) 8,068 cf Overall - 2,527 cf Embedded = 5,541 cf x 40.0% Voids
#12	318.00'	2,527 cf	**SC-740 Infiltration Basin SWMB 3** x 55 Inside #11 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 55 Chambers in 5 Rows

#13	320.00'	3,464 cf	**Infiltration Basin IB-1 (Prismatic)** Listed below (Recalc)
		30,973 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.00	1,555	0	0
321.00	1,555	6,220	6,220

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.00	5,495	0	0
321.00	5,495	21,980	21,980

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.00	519	0	0
321.00	519	2,076	2,076

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.00	1,627	0	0
321.00	1,627	6,508	6,508

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.00	519	0	0
321.00	519	2,076	2,076

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.00	2,017	0	0
321.00	2,017	8,068	8,068

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.00	127	0	0
322.00	937	1,064	1,064
323.50	2,263	2,400	3,464

Device	Routing	Invert	Outlet Devices
#1	Discarded	317.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 300.00'
#2	Secondary	322.50'	**24.0" x 24.0" Horiz. Grate CB 16** C= 0.600 Limited to weir flow at low heads
#3	Secondary	322.50'	**24.0" x 24.0" Horiz. Grate CB 17** C= 0.600 Limited to weir flow at low heads
#4	Device 2	318.33'	**12.0" Round Culvert** L= 88.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.00' / 318.33' S= -0.0037 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#5	Device 3	318.33'	**12.0" Round Culvert**

L= 88.0' CPP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 318.00' / 318.33' S= -0.0037 '/' Cc= 0.900
n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.87 cfs @ 12.58 hrs HW=318.18' (Free Discharge)
└─**1=Exfiltration** (Controls 0.87 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=317.00' TW=0.00' (Dynamic Tailwater)
├─**2=Grate CB 16** (Controls 0.00 cfs)
│ └─**4=Culvert** (Controls 0.00 cfs)
└─**3=Grate CB 17** (Controls 0.00 cfs)
└─**5=Culvert** (Controls 0.00 cfs)

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **SWMB #1 & IB #1**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
2.36	ac	A = Area draining to the practice	
2.06	ac	A_I = Impervious area draining to the practice	
0.87	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.84	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.97	ac-in	WQV= 1" x Rv x A	
7,158	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,790	cf	25% x WQV (check calc for sediment forebay volume)	
Isolator Row		Method of pretreatment? (not required for clean or roof runoff)	
1,929	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
16,682	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
7,050	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
4.1	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
317.00	feet	E_{BTM} = Elevation of the bottom of the basin	
312.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
312.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
5.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
5.0	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ **24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
YES	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
YES	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
3.0	:1	If a basin is proposed, pond side slopes.	≥**3:1**
319.10	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
322.27	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
323.50	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **SWMB #2**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
0.61	ac	A = Area draining to the practice	
0.49	ac	A_I = Impervious area draining to the practice	
0.80	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.77	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.47	ac-in	WQV= 1" x Rv x A	
1,712	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
428	cf	25% x WQV (check calc for sediment forebay volume)	
Isolator Row		Method of pretreatment? (not required for clean or roof runoff)	
505	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
6,698	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
2,860	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
2.4	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
317.00	feet	E_{BTM} = Elevation of the bottom of the basin	
312.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
312.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
5.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
5.0	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ **24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
YES	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
	:1	If a basin is proposed, pond side slopes.	≥**3:1**
319.10	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
322.27	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
321.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
NO		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **SWMB #3**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
0.82	ac	A = Area draining to the practice	
0.71	ac	A_I = Impervious area draining to the practice	
0.87	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.83	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.68	ac-in	WQV= 1" x Rv x A	
2,468	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
617	cf	25% x WQV (check calc for sediment forebay volume)	
Isolator Row		Method of pretreatment? (not required for clean or roof runoff)	
505	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
8,561	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
3,645	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
2.7	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
317.00	feet	E_{BTM} = Elevation of the bottom of the basin	
312.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
312.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
5.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
5.0	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ **24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
YES	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
	:1	If a basin is proposed, pond side slopes.	≥**3:1**
319.10	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
322.27	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
321.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
NO		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

NORTHPOINT ENGINEERING, LLC
Civil Engineering ◢ Land Planning ◢ Construction Services
119 Storrs Street, Suite 201
Concord, NH 03301
Tel 603-226-1166
Fax 603-226-1160
www.northpointeng.com

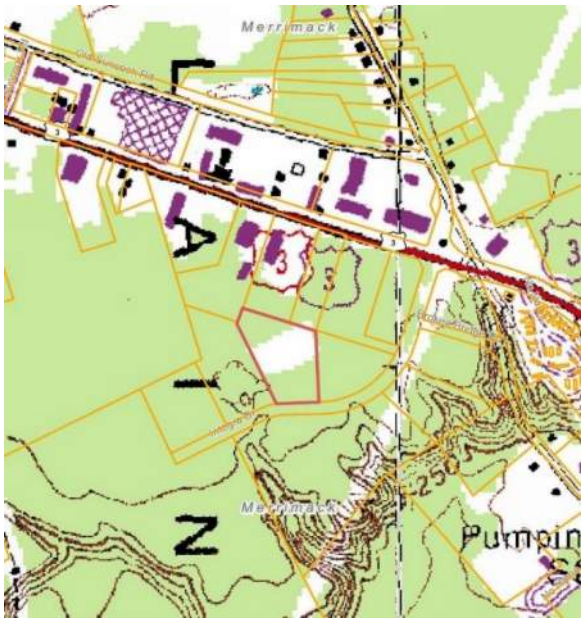
Site Specific Soil Survey Report
150 Manchester Street (MBL 783-Z16)
Concord, NH

A site-specific soil map has been prepared for 150 Manchester Street (inclusive of the merged 10 Integra Drive parcel) in Concord, NH.

Randall Shuey, NH Certified Soil Scientist #74, NH Certified Wetland Scientist #85 of Northpoint Engineering, LLC conducted the site-specific soil survey on the property. To support that work test pits were dug on site. The work was performed in September 2020 using a tile spade and hand auger. The purpose of the work was to provide base information for the proposed commercial development of the site and stormwater management.

The site is located on the northwest side of Integra Drive and southwest of Manchester Street and is located on top of a bluff well above the Merrimack River. The site is level. The site was cleared many years ago and was recently cleared again of a young growth forest.

LOCUS



WETLANDS

A wetland inspection was done on the property. There are no wetlands on the property.

SOILS:

The Site Specific Soil Survey encompassed the entirety property. The following standards were utilized to conduct the soil survey:

1. Site-Specific Soil Mapping Standards for New Hampshire and Vermont, SSSNNE Special Publication No. 3, Version 5.0, December 2017
2. Agricultural Handbook 18, Soil Survey Manual, 1993, USDA, NRCS
3. National Soil Survey Handbook – 430-VI, 1996, USDA, NRCS, and all amendments.
4. Agricultural Handbook 436, Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys, 1999, USDA, NRCS, and all amendments.

This report and accompanying map are within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, produced by a certified soil scientist, and is not a product of the USDA Natural Resources Conservation Service.

Soils units were mapped based on hand dug observations and results of deep test pits done by others and evaluation of landscape forms. Diagnostic characteristics within the soil profiles were used to compare the observed soil to the official soil series descriptions. Based on the mapping and soil observations a soil map was developed to identify areas of similar soils. Soils are noted for having a range in characteristics, so the profiles observed can vary to a certain degree from the Official Soil Series Description.

The soils on the site are of glacial outwash and have no indication of a restrictive layer or a seasonal highwater table to the depth of the test pits. The soils did not exhibit spodic horizons and had very little weathering. The majority of the variation was within the textures and particle sizes within the profiles.

Soil Identification Legend

SOIL MAP UNIT	SOIL NAME	DRAINAGE CLASS	NOTES	HYDROLOGIC SOIL GROUP
26	Windsor	Excessively Drained		A

SLOPE CLASS
A 0-3% SLOPE
B 3-8% SLOPE
C 8-15% SLOPE
D 15-25% SLOPE
E 25-60% SLOPE

26 WINDSOR

Taxonomic Class: Mixed mesic typic Udipsamment

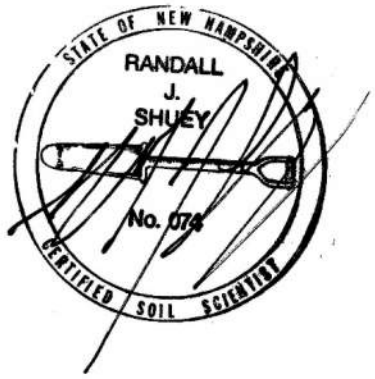
The Tunbridge – Lyman – Rock Outcropping consists of very deep excessively well drained soil formed in glacial outwash. These soils are mapped throughout the site. In general, these soils consist of sandy textures with some coarser material in some profiles.

Inclusions within the map unit include profiles with sand and gravel. These layers are discontinuous through the map unit and make up less than 15% of the area. Where sand and gravel layers are encountered, they are generally above the level of the proposed infiltration areas. Therefore, the land use is consistent with the Windsor map unit.

This concludes the requested work. Should you have any questions or comments, please feel free to contact us.

Sincerely,

Randall Shuey, CSS #74
Senior Soil Scientist



TEST PIT REPORT
Dan Obrien Kia – Integra Drive
Concord, NH

INSPECTOR – RANDALL SHUEY, NH CSS#74, NHDES DISIGNER #843

TEST PIT 1- 9/8/2020 – Mariano Detention Basin

Soil Classification - Windsor

DEPTH	HORIZON	COLOR	TEXTURE	CONSISTENCY / STRUCTURE	COMMENTS
0-6”	A	10YR 3/2	Loamy Sand	Granular Friable	
6-12”	Bw1	10YR 5/4	Sand and Gravel	Loose Single Grained	
12-36””	Bw2	10YR 5/4	Med Sand	Loose, Single Grained	
36-72”	C1	2.5Y 4/4	Coarse Sand and Gravel	Loose Single Grained	
72-96”	C2	2.5Y 5/4	Sand	Loose Single Grained	

SHWT – None to 96””
Observed Water – None
Bedrock – None

TEST PIT 2- 9/8/2020 – Rear of Kia Site Large Basin

Soil Classification – Windsor*

DEPTH	HORIZON	COLOR	TEXTURE	CONSISTENCY / STRUCTURE	COMMENTS
0-2”	A	10YR 3/3	Sandy Loam	Granular Friable	Discontinuous, disturbed
2-14”	Bw1	10 YR 5/4	Sand	Loose, Single Grained	
14-72”	C1	2.5Y 5/6	Layered Sand and Sand and Gravel	Loose, Single Grained	
72-108”	C2	2.5Y 5/4	Sand	Loose, Single Grained	

SHWT – None to 108”
Observed Water – None
Bedrock – None

TEST PIT 3- 9/8/2020 – Proposed Large Basin along western sideline

Soil Classification - Windsor

DEPTH	HORIZON	COLOR	TEXTURE	CONSISTENCY / STRUCTURE	COMMENTS
0-16”	Bw1	2.5Y 5/6	Sand	Loose Single Grained	
16-48”	C1	2.5Y 5/6	Sand and Gravel	Loose Single Grained	
48-96”	C2	2.5Y 5/4	Sand	Loose Single Grained	

SHWT – None to 96””
Observed Water – None
Bedrock – None
Top soil removed

TEST PIT 4- 9/8/2020 – Proposed small basin along Integra Drive

Soil Classification - Windsor

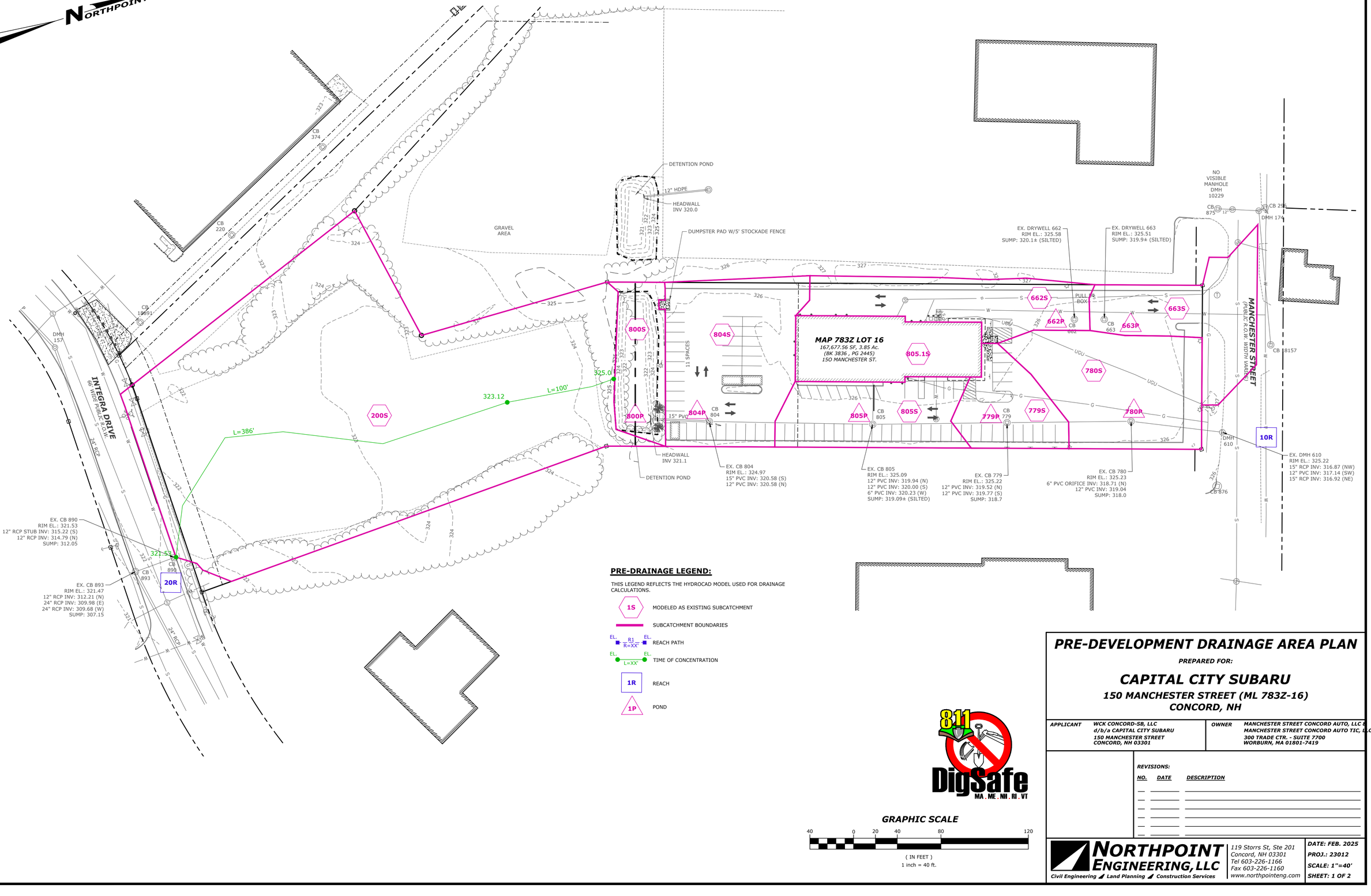
DEPTH	HORIZON	COLOR	TEXTURE	CONSISTENCY / STRUCTURE	COMMENTS
0-6”		2.5Y 4/2	Loamy Sand	Granular Friable	
6-12”		10YR 5/6	Sand	Loose Single Grained	
12-96”		2.5Y 5/4	Sand	Loose Single Grained	

SHWT – None to 96””
Observed Water – None
Bedrock – None

VII. Drainage Area Plans

- Pre-Developed Drainage Area Plan
- Post-Developed Drainage Area Plan

NORTHPOINT



PRE-DRAINAGE LEGEND:

THIS LEGEND REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- 1S — MODELED AS EXISTING SUBCATCHMENT
- SUBCATCHMENT BOUNDARIES
- EL. R1 R=XX' EL. — REACH PATH
- EL. L=XX' EL. — TIME OF CONCENTRATION
- 1R — REACH
- 1P — POND

GRAPHIC SCALE

40 0 20 40 80 120

(IN FEET)

1 inch = 40 ft.

PRE-DEVELOPMENT DRAINAGE AREA PLAN

PREPARED FOR:

CAPITAL CITY SUBARU

150 MANCHESTER STREET (ML 783Z-16)
CONCORD, NH

APPLICANT	WCK CONCORD-SB, LLC d/b/a CAPITAL CITY SUBARU 150 MANCHESTER STREET CONCORD, NH 03301	OWNER	MANCHESTER STREET CONCORD AUTO, LLC & MANCHESTER STREET CONCORD AUTO TIC, LLC 300 TRADE CTR. - SUITE 7700 WORBURN, MA 01801-7419

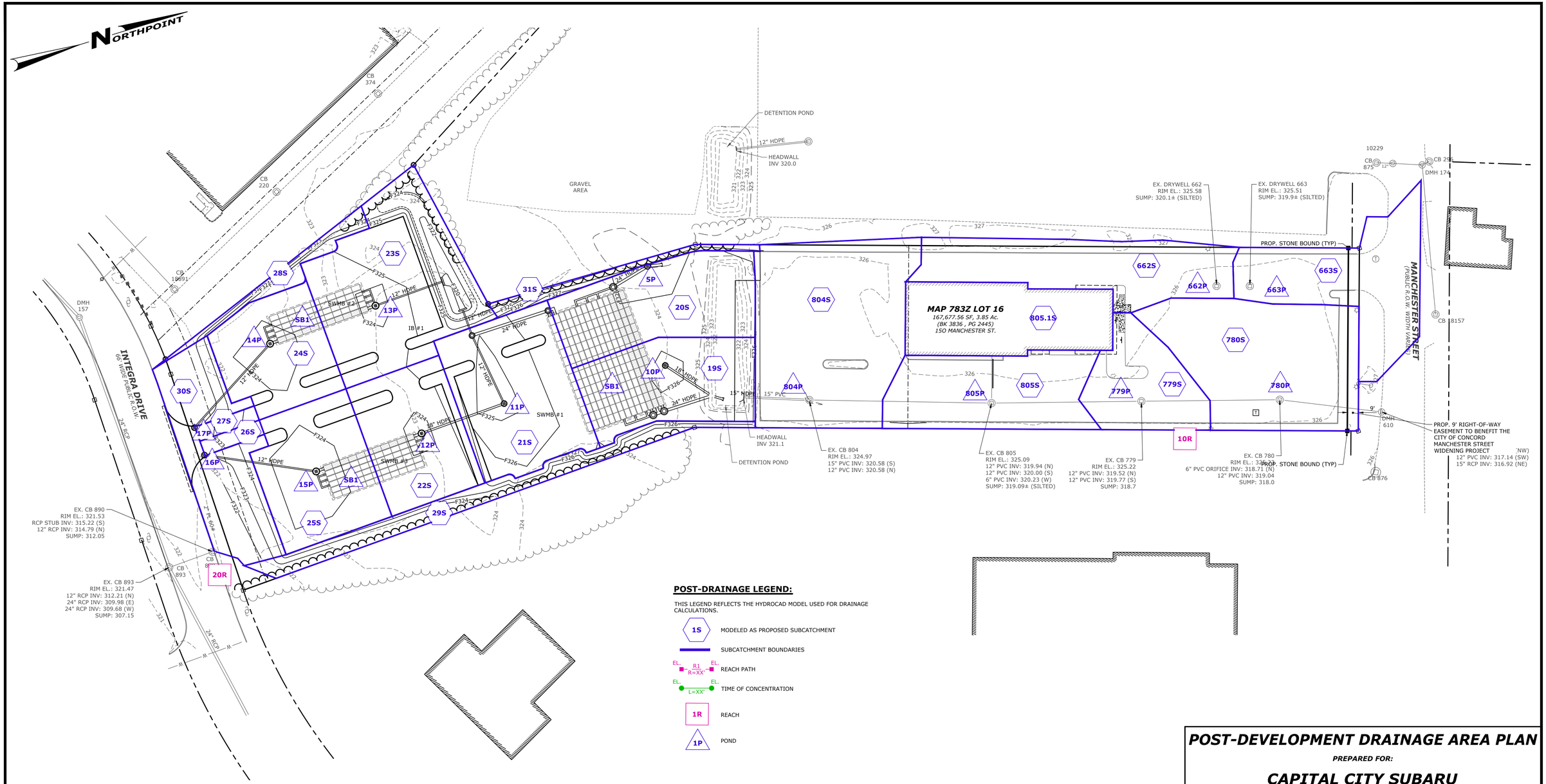
REVISIONS:

NO.	DATE	DESCRIPTION

NORTHPOINT ENGINEERING, LLC
Civil Engineering ◢ Land Planning ◢ Construction Services
119 Storrs St, Ste 201
Concord, NH 03301
Tel 603-226-1166
Fax 603-226-1160
www.northpointeng.com

DATE: FEB. 2025
PROJ.: 23012
SCALE: 1"=40'
SHEET: 1 OF 2

FILE: G:_projects\23012\dwg\23012_HYDROLOGY.dwg BY: Aaron DATE: 19 Feb 2025 - 9:44am



POST-DRAINAGE LEGEND:

THIS LEGEND REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- 1S — MODELED AS PROPOSED SUBCATCHMENT
- SUBCATCHMENT BOUNDARIES
- EL. — R1 R=XX' — EL. — REACH PATH
- EL. — L=XX' — EL. — TIME OF CONCENTRATION
- 1R — REACH
- 1P — POND

GRAPHIC SCALE

40 0 20 40 80 120

(IN FEET)

1 inch = 40 ft.

POST-DEVELOPMENT DRAINAGE AREA PLAN

PREPARED FOR:

CAPITAL CITY SUBARU

150 MANCHESTER STREET (ML 783Z-16)
CONCORD, NH

APPLICANT	WCK CONCORD-SB, LLC d/b/a CAPITAL CITY SUBARU 150 MANCHESTER STREET CONCORD, NH 03301	OWNER	MANCHESTER STREET CONCORD AUTO, LLC & MANCHESTER STREET CONCORD AUTO TIC, LLC 300 TRADE CTR. - SUITE 7700 WORBURN, MA 01801-7419

REVISIONS:

NO.	DATE	DESCRIPTION

NORTHPOINT ENGINEERING, LLC
Civil Engineering ◢ Land Planning ◢ Construction Services
119 Storrs St, Ste 201
Concord, NH 03301
Tel 603-226-1166
Fax 603-226-1160
www.northpointeng.com

DATE: FEB. 2025
PROJ.: 23012
SCALE: 1"=40'
SHEET: 2 OF 2

FILE: G:_projects\23012\dwg\23012_HYDROLOGY.dwg BY: Aaron DATE: 19 Feb 2025 - 9:44am

CITY OF CONCORD

New Hampshire's Main Street™

Community Development Department

Zoning Board of Adjustment

AnneMarie Skinner, AICP
City Planner

March 6, 2025

Northpoint Engineering, LLC
Attn: Jeff Lewis
119 Storrs St, Ste 201
Concord, NH 03301

RE: Notice of Decision – ZBA 0244-2025

Dear Mr. Lewis:

At a meeting of the Concord Zoning Board of Adjustment, held on March 5, 2025, the Board voted on the following:

> Northpoint Engineering, LLC, on behalf of Manchester Street Concord Auto, LLC and Manchester Street Concord Auto TIC, LLC, requests approval for a one-year extension of the variance (ZBA 0056-2023) approval to allow a 10-foot-wide planted buffer in lieu of the required 6-foot-tall perimeter fence; a storage setback of 10 feet where 50 feet is required; and the expansion of the existing use into the Aquifer Protection District overlay, at 150 Manchester St, in the Highway Commercial (CH) District and Industrial (IN) District. (ZBA 0244-2025)

With a vote of 5 in favor (Carley, Monahan, Morgan, Wallner, Winters) to 0 opposed, the Board granted the one-year extension request of ZBA 0056-2023 to extend its approval to July 5, 2026, and to adopt the applicant's proposed findings as the Board's findings of fact.

Adopted Findings of Fact:

1. *Explain the good faith effort that was made to commence the use or construction which was authorized by the variance.* "The Site has undergone full engineering and architectural design of the envisioned improvements which the Variance aimed to approve. A Major Site Plan has been submitted for review and approval by the Planning Board, and construction is planned to commence shortly after the receipt of approval."
2. *Explain why the delay in commencement was beyond the applicant's control.* "The Site has undergone full engineering and architectural design of the envisioned improvements which the Variance aimed to approve. A Major Site Plan has been submitted for review and approval by the Planning Board, and construction is planned to commence shortly after the receipt of approval."
3. *Explain why the circumstances relating to the property and the surrounding neighborhood have not changed substantially since the date of the original decision.* "The Site is neighbored by the same use(s) as the time of the Variance application. No substantial redevelopment has occurred abutting or near the Site. The largest project within a 0.5-mile radius of the Site is the construction of an additional car dealership, which mimics the use of the subject parcel."

If there is a significant change at any time in the future, you are hereby advised to discuss any proposed changes with the City Planner. If the use or construction authorized by this approval has not commenced by **July 5, 2026,** it shall be deemed to have expired and authorization shall be considered null and void as specified in Section 28-9-3(b)(5) of the Zoning Ordinance.

Granting of an extension does not authorize construction or use prior to the application for and approval of site plan review, architectural design review, and/or subdivision review, as applicable. Granting of a variance does not authorize construction or use prior to the application for and issuance of a building permit or sign permit, if applicable.

Zoning Board of Adjustment
AnneMarie Skinner, City Planner

AnneMarie Skinner, AICP
City Planner

CITY OF CONCORD

New Hampshire's Main Street™

Community Development Department

Zoning Board of Adjustment

March 6, 2025

Northpoint Engineering
Attn: Jeff Lewis
119 Storrs St, Ste 201
Concord, NH 03301

RE: Notice of Decision – ZBA 0250-2025

Dear Mr. Lewis:

At a meeting of the Concord Zoning Board of Adjustment, held on March 5, 2025, the Board voted on the following:

> Northpoint Engineering, LLC, on behalf of Manchester Street Concord Auto, LLC, and Manchester Street Concord Auto TIC, LLC, requests approval for a variance from Section 28-2-4(j) *Table of Principal Uses J1 Sale or rental of motor vehicles, other than construction equipment*, to allow the sale and display of motor vehicles where such sale and display is not otherwise allowed, at Tax Map Lot 783Z 16, addressed as 150 Manchester St, in the Industrial (IN) District and Highway Commercial (CH) District. This is a development of regional impact. (ZBA 0250-2025)

With a vote of 5 in favor (Carley, Monahan, Morgan, Wallner, Winters) to 0 opposed, the Board granted the variance from Section 28-2-4(j) *Table of Principal Uses J1 Sale or rental of motor vehicles, other than construction equipment,* to allow the sale and display of motor vehicles where such sale and display is not otherwise allowed, at Tax Map Lot 783Z 16, addressed as 150 Manchester St,, because all of the criteria under RSA 674:33 have been met based on the record before the Board, and the Board adopted the applicant's findings as the Board's findings of fact.

Adopted Findings of Fact:

1. *The variance will not be contrary to the public interest.* "The applicant's proposed use does not unduly, or in a marked degree, conflict with the ordinance. Allowing auto inventory to be parked immediately adjacent to where auto sales are permitted does not violate the ordinance's basic zoning objectives, nor would it alter the essential character of the locality. Traditionally such requirements are meant to minimize unsightly storage of vehicles that no longer operate, as in a junkyard. This use variance is requested in an area where automobile sales is the primary use of many properties, including two of the four properties sharing a boundary line. The remaining two abutting properties include automobile service with incidental vehicle storage, and an office type use. The office type use will be screened by a 10-ft vegetated buffer as a condition of another approved set of Variances for the Site.

   The lot merger of historic 10 Integra Drive was completed based on feedback of the Zoning Board during a previous variance application for the same purpose (expired). This merger took an underperforming lot which has been vacant for over 30 years, and split it between abutters, all with plans for improvement. This

can be viewed as a benefit to public interest by taking an underutilized parcel and making meaningful improvements.

With respect to public health, safety, and welfare, the proposed use within the AP Overlay District carries numerous regulatory protections that are put in place to ensure the aquifer is protected. As stated, the proposed use is similar to surrounding uses, and the expansion of the use will require updates to the existing facility and their standard operating practices. These updates will ensure the facility is up to current standards, promoting the safeguarding of the aquifer.

Not only would granting the Variance not alter the essential character of this area, or threaten public health, safety, or welfare, granting the Variance would allow one of Concord's existing and successful businesses to expand, which brings expanded employment opportunities and other benefits these businesses create."

2. *The spirit of the ordinance is observed by granting the variance.* "One major purpose of the ordinance is to encourage the most appropriate use of the land, and to dissuade development which may contradict this purpose in various ways. Surrounding uses include other auto dealerships, automotive repair facilities, automotive supply, and an office building. Granting the variances would not alter the essential character of this area instead promote the expansion of an existing permitted use within an area that fits the use. The provisions of the AP Overlay District will be honored as part of the local and state permitting process, ensuring public safety and welfare is not impacted by the proposed project. The proposed project will also improve upon the current condition of the Site, by bringing the entire subject parcel into compliance with current regulatory requirements, both aesthetically and functionally."

3. *Substantial justice will be done by granting the variance.* "The loss to the applicant if the variances are not granted is very high. Without the variances, the dealerships may not be able to continue in this location, given the demands from dealership licensing agreements with car manufacturers. On the other hand, the public stands to gain nothing if the variances are denied. Without these variances the current vacant condition of the previous 10 Integra Drive parcel is likely to continue, which is a disservice to the public. As noted, the proposed use is consistent with the area's present uses, and the expansion of the existing use would improve the current lot aesthetic and functional value."

4. *The values of surrounding properties will not be diminished.* "Aside from a large lot at the end of Integra Drive, the former 10 Integra Drive parcel is the last undeveloped lot on Integra Drive. It stands to reason that once developed with the proposed use, the 150 Manchester Street lot's fair market value and assessed values will increase, which in turn enhances, not diminishes, the values of surrounding properties, which are all commercial and industrial in nature. The proposed use is consistent with the abutting uses and fits exceedingly well in the existing vicinity."

5. *Denial of the variance would result in unnecessary hardship because*: "The special conditions of this property that distinguish it from other properties in the area are that it was once a stand alone parcel adjacent to the applicant's existing auto dealership, which was across the CH Zoning District boundary. Due to the acquisition and merger of the historic 10 Integra Drive parcel, the dealership was able to expand its land areas based on a Variance obtained in 2022 from the Concord Zoning Board of Adjustment, allowing the sale of motor vehicles to extend to within the IN District. The Variance has since expired, and the applicant would like to regain approval to expand the existing dealership use over the zoning district boundary.

   As noted, the general public purposes of the provision at issue are to prevent unsightly storage of unregistered vehicles and to protect the aquifer. These general public purposes are fully satisfied with this proposed use. Orderly and sightly storage of automobile inventory will occur immediately adjacent to existing auto sales and inventory storage. Auto service and repair will be regulated to protect groundwater based on regulatory requirements. Overall, the expansion and redevelopment of the site would not affect the neighboring properties, nor the zoning goals sought to be regulated by the ordinance. This makes the proposed use a reasonable one. For the reasons stated with respect to other variance standards, and those expressed in this section, the proposed use satisfies the legal requirements of this standard."

If there is a significant change at any time in the future, you are hereby advised to discuss any proposed changes with the City Planner. If the use or construction authorized by this approval has not commenced within the two-year

anniversary date of the original decision (or by **March 5, 2027**), it shall be deemed to have expired and authorization shall be considered null and void as specified in Section 28-9-3(b)(5) of the Zoning Ordinance.

Granting of a variance does not authorize construction or use prior to the application for and approval of site plan review, architectural design review, and/or subdivision review, as applicable. Granting of a variance does not authorize construction or use prior to the application for and issuance of a building permit, if applicable.

Zoning Board of Adjustment
AnneMarie Skinner, City Planner