

Stormwater Management Report

*North Woods Subdivision*

In

South Kingstown, Rhode Island

Owner/Applicant: True North Land Company, LLC

Prepared by:

Groundbreaking Designs, LLC

90 Highland Ave,

South Kingstown, RI 02879

October 30, 2020



## **Introduction**

The parcel of land identified as assessor's plat 47-2, lot 120 in the town of South Kingstown is in the permitting and planning process of being subdivided into 16 residential lots. The subject site is located approximately 400 feet northwest of the intersection of South Road and Curtis Corner Road and is abutted by residential dwellings and an existing church. The proposed subdivision includes one proposed dwelling fronting on Curtis Corner Road and the other 15 lots shall be serviced by approximately 980 linear feet of new paved private roadway, and all proposed dwellings are proposed with paved driveways. The proposed development is designed to reduce land disturbance to the maximum extent practicable including a 75-foot vegetated buffer of open space that is proposed along the perimeter of the proposed development.

## **Existing Conditions**

Moderate topography exists on the property with a hill summit at the approximate center of the property with slopes ranging from 2 – 15% encompassing the summit. Several natural depressions exist in the eastern portion of the property and two wetland areas ("A-Wetlands" and "B-Wetlands") bound the property to the west. A small isolated forested wetland ("C-Wetlands") exists in the southwestern portion of the site, and it overflows into the southern of the two aforementioned wetlands ("B-Wetlands"). Runoff from the site ultimately flows either into the wetlands to the west or to an existing depression abutting the northeast corner of the site. "A-Wetlands" has been designated as Design Point – 1, "B-Wetlands" as Design Point – 2, and the existing abutting depression in the northeast as Design Point – 3. Both the "A-Wetlands" and "B-Wetlands" ultimately discharge to a tributary of the Genessee Brook (ID# RI0008039R-08). The Genessee Brook is not TMDL impaired and it is classified as a warmwater stream. Runoff that flows to the northeast is completely detained and infiltrated to the ground within the existing aforementioned depression for storm events up to and including the 100-year 24-hour, Type III, storm event.

The soils on the site exhibit fine loess material overlain coarse ablation till with areas exhibiting a lens of dense till within the western wetland areas. The majority of the site is mapped as hydrologic soil group 'B' and the western portions of the site are mapped as hydrologic soil groups 'C' and 'D' by the USDA NRCS Web Soil Survey. Existing ground cover is composed of oak upland forest with a stand of pines in the northeast and grassy fields in the southern portions of the site.

The Environmental Resource map by DEM shows a floodplain in the vicinity of the wetlands, and FEMA mapping shows no floodplain on site.

## **Proposed Conditions**

The proposed development consists of approximately 980 linear feet of paved private roadway and sixteen (16) residential dwellings serviced by paved driveways. Proposed utilities consist of individual on-site wastewater treatment systems, public water, one private well, underground electric and communication lines, and the associated drainage systems and Best Management Practices (BMPs).

Runoff shall be directed by site gradation, swales, and culverts to the proposed BMPs, which consist of infiltration basins, exfiltrating sand filters, bioretention rain gardens, subsurface drywells, and a qualified pervious area (QPA). The BMPs have been designed such that the required recharge volume, water quality volume, and overbank flood protection requirements have been met. The channel protection requirement is waived due to the fact that in the scenario where flow is unobstructed, convergent channels of runoff from the proposed facilities exhibit peak flowrates of less than 2 cfs during the 24-hour, Type III, 1-year storm event. The calculations and data are provided in the Appendices. Regulatory setbacks of BMPs and all utilities to any private well and OWTS have been met by the proposed design.

### **Avoidance, Minimization, & Mitigation**

#### Avoidance:

All probable impacts to functions and values of freshwater wetlands have been avoided to the maximum extent practicable. The subject project is not water dependent and all areas of development reside outside of any and all jurisdictional wetland areas.

#### Minimization:

Several subdivision concepts were created, and the chosen concept (subject design) results in the smallest area of development, limit of disturbance, least area of impervious cover, and zero area of disturbance within any and all jurisdictional wetland areas.

#### Mitigation:

Natural areas in and around the wetlands are preserved on-site including a 75-foot open space vegetated buffer, which encircles the proposed development.

The extent of disturbed areas have been minimized to the maximum extent practicable.

All proposed structures are located outside of any flood plains, floodway, areas subject to flooding, flowing bodies of water or other freshwater wetlands.

Best management practices are utilized for the stabilization of disturbed areas.

Best management practices are utilized in accordance with the latest version of the RISDIS Manual to reduce stormwater flows and maximize the control, treatment and maintenance of systems associated with reducing stormwater impacts to acceptable levels.

All impervious surfaces have been reduced to the greatest extent practicable, including reducing the proposed roadway width to twenty (20) feet.

All stormwater practices are designed to allow for infiltration of non-contaminated run-off into uncontaminated soils

Sheet flow has been proposed to the maximum extent practicable.

All septic systems are proposed with the greatest practicable separation distance to any wetland

**Conclusion**

The proposed development in conjunction with the proposed stormwater BMPs will not adversely affect the down gradient areas.

The proposed storm drainage system provides the necessary recharge volume, water quality volume, and overbank flood protection requirements to the greatest extent practicable.

The proposed project will not impact life and/or property from flooding and/or flood flows.

The proposed design does not create any restriction or significant modification of the path or velocities of flood flows for the 1-year, 10-year or 100-year frequency, 24-hour, Type III storm events so as to cause harm to life, property, or other functions and values provided by freshwater wetlands since the flow paths will remain essentially the same and flow in a controlled safe manner.

The proposed design does not place any structure or obstruction within a floodway so as to cause harm to life, property, or any functions and values provided by freshwater wetlands.

Please see the Appendices for further hydrologic detail of the proposed development.

## **APPENDIX A: STORMWATER MANAGEMENT PLAN CHECKLIST AND LID PLANNING REPORT – STORMWATER DESIGN SUMMARY**

<b>PROJECT NAME</b> North Woods Subdivision	<b>(RIDEM USE ONLY)</b>
<b>TOWN</b> South Kingstown	STW/WQC File #:
<b>BRIEF PROJECT DESCRIPTION:</b> 16 Lot Subdivision with a private road and cul-de-sac.	Date Received:

### Stormwater Management Plan (SMP) Elements – Minimum Standards

When submitting a SMP,<sup>1</sup> submit **four separately bound documents**: Appendix A Checklist; Stormwater Site Planning, Analysis and Design Report with Plan Set/Drawings; Soil Erosion and Sediment Control (SESC) Plan, and Post Construction Operations and Maintenance (O&M) Plan. Please refer to [Suggestions to Promote Brevity](#).

**Note:** All stormwater construction projects **must create** a Stormwater Management Plan (SMP). However, not every element listed below is required per the [RIDEM Stormwater Rules](#) and the [RIPDES Construction General Permit \(CGP\)](#). This checklist will help identify the required elements to be submitted with an Application for Stormwater Construction Permit & Water Quality Certification.

### **PART 1. PROJECT AND SITE INFORMATION**

#### **PROJECT TYPE** (Check all that apply)

<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Commercial	<input type="checkbox"/> Federal	<input type="checkbox"/> Retrofit	<input type="checkbox"/> Restoration
<input type="checkbox"/> Road	<input type="checkbox"/> Utility	<input type="checkbox"/> Fill	<input type="checkbox"/> Dredge	<input type="checkbox"/> Mine
<input type="checkbox"/> Other (specify):				

#### **SITE INFORMATION**

Vicinity Map – See Plan Set

**INITIAL DISCHARGE LOCATION(S):** The WQv discharges to: (You may choose more than one answer if several discharge points are associated with the project.)

<input checked="" type="checkbox"/> <b>Groundwater</b>	<input type="checkbox"/> <b>Surface Water</b>	<input type="checkbox"/> <b>MS4</b>
<input type="checkbox"/> GAA	<input type="checkbox"/> Isolated Wetland	<input type="checkbox"/> RIDOT
<input checked="" type="checkbox"/> GA	<input type="checkbox"/> Named Waterbody	<input type="checkbox"/> RIDOT Alteration Permit is Approved
<input type="checkbox"/> GB	<input type="checkbox"/> Unnamed Waterbody Connected to Named Waterbody	<input type="checkbox"/> Town
<input type="checkbox"/> Other (specify):		

**ULTIMATE RECEIVING WATERBODY LOCATION(S):** Include pertinent information that applies to both WQv and flow from larger storm events including overflows. Choose all that apply, and repeat table for each waterbody.

<input checked="" type="checkbox"/> Groundwater or Disconnected Wetland (small storm events)	<input type="checkbox"/> SRWP
<input checked="" type="checkbox"/> Waterbody Name: Tributary to the Genessee Brook (large storm events)	<input type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Warmwater <input type="checkbox"/> Unassessed
<input checked="" type="checkbox"/> Waterbody ID: RI0008039R-08	<input type="checkbox"/> 4 <sup>th</sup> order stream of pond 50 acres or more
<input checked="" type="checkbox"/> TMDL for: None	<input type="checkbox"/> Watershed of flood prone river (e.g., Pocasset River)
<input type="checkbox"/> Contributes to a priority outfall listed in the TMDL: N/A	<input type="checkbox"/> Contributes stormwater to a public beach
<input checked="" type="checkbox"/> 303(d) list – Impairment(s) for: N/A	<input type="checkbox"/> Contributes to shellfishing grounds

<sup>1</sup> Applications for a Construction General Permit that do not require any other permits from RIDEM and will disturb less than 5 acres over the entire course of the project do not need to submit a SMP. The Appendix A checklist must still be submitted.

<b>PROJECT HISTORY</b>		
<input type="checkbox"/> RIDEM Pre- Application Meeting	Meeting Date:	<input type="checkbox"/> Minutes Attached
<input checked="" type="checkbox"/> Municipal Master Plan Approval	Approval Date:	<input type="checkbox"/> Minutes Attached
<input checked="" type="checkbox"/> Subdivision Suitability Required	Submitted	
<input type="checkbox"/> Previous Enforcement Action has been taken on the property	Enforcement #:	
<b>FLOODPLAIN &amp; FLOODWAY</b> See <a href="#">Guidance Pertaining to Floodplain and Floodways</a>		
<input type="checkbox"/> Riverine 100-year floodplain: <a href="#">FEMA FLOODPLAIN FIRMETTE</a> has been reviewed and the 100-year floodplain is on site		
<input type="checkbox"/> Delineated from FEMA Maps		
<b>NOTE:</b> Per Rule 250-RICR-150-10-8-1.1(B)(5)(d)(3), provide volumetric floodplain compensation calculations for cut and fill/displacement calculated by qualified professional		
<input type="checkbox"/> Calculated by Professional Engineer		
<input type="checkbox"/> Calculations are provided for cut vs. fill/displacement volumes proposed within the 100-year floodplain	Amount of Fill (CY):	
	Amount of Cut (CY):	
<input type="checkbox"/> Restrictions or modifications are proposed to the flow path or velocities in a floodway		
<input type="checkbox"/> Floodplain storage capacity is impacted		
<input checked="" type="checkbox"/> Project area is not within 100-year floodplain as defined by RIDEM		

<b>CRMC JURISDICTION</b>
<input type="checkbox"/> CRMC Assent required
<input type="checkbox"/> Property subject to a Special Area Management Plan (SAMP). If so, specify which SAMP:
<input type="checkbox"/> Sea level rise mitigation has been designed into this project

<b>LUHPPL IDENTIFICATION - MINIMUM STANDARD 8:</b>		
<b>1. OFFICE OF Land Revitalization and Sustainable Materials Management (OLRSMM)</b>		
<input type="checkbox"/> Known or suspected releases of HAZARDOUS MATERIAL are present at the site (Hazardous Material is defined in Rule 1.4(A)(33) of 250-140-30-1 of the RIDEM Rules and Regulations for Investigation and Remediation of Hazardous Materials (the Remediation Regulations))		<b>RIDEM CONTACT:</b>
<input type="checkbox"/> Known or suspected releases of PETROLEUM PRODUCT are present at the site (Petroleum Product as defined in Rule 1.5(A)(84) of 250-140-25-1 of the RIDEM Rules and Regulations for Underground Storage Facilities Used for Regulated Substances and Hazardous Materials)		
<input type="checkbox"/> This site is identified on the <a href="#">RIDEM Environmental Resources Map</a> as one of the following regulated facilities		<b>SITE ID#:</b>
<input type="checkbox"/> CERCLIS/Superfund (NPL)		
<input type="checkbox"/> State Hazardous Waste Site (SHWS)		
<input type="checkbox"/> Environmental Land Usage Restriction (ELUR)		
<input type="checkbox"/> Leaking Underground Storage Tank (LUST)		
<input type="checkbox"/> Closed Landfill		
<b>Note:</b> If any boxes in 1 above are checked, the applicant must contact the RIDEM OLRSM Project Manager associated with the Site to determine if subsurface infiltration of stormwater is allowable for the project. Indicate if the infiltration corresponds to “Red,” “Yellow” or “Green” as described in Section 3.2.8 of the RISDISM Guidance (Subsurface Contamination Guidance). Also, note and reference approval in PART 3, Minimum Standard 2: Groundwater Recharge/Infiltration.		
<b>2. PER MINIMUM STANDARD 8 of RICR 8.14.C.1-6 “LUHPPLS,” THE SITE IS/HAS:</b>		
<input type="checkbox"/> Industrial Site with RIPDES MSGP, except where No Exposure Certification exists. <a href="http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php">http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php</a>		
<input type="checkbox"/> Auto Fueling Facility (e.g., gas station)		
<input type="checkbox"/> Exterior Vehicles Service, Maintenance, or Equipment Cleaning Area		

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<input type="checkbox"/>	Road Salt Storage and Loading Areas (exposed to rainwater)	
<input type="checkbox"/>	Outdoor Storage and Loading/Unloading of Hazardous Substances	
<b>3. STORMWATER INDUSTRIAL PERMITTING</b>		
<input type="checkbox"/>	The site is associated with existing or proposed activities that are considered Land Uses with Higher Potential Pollutant Loads (LUHPPLS) (see RICR 8.14.C)	Activities: Sector:
<input type="checkbox"/>	Construction is proposed on a site that is subject to <a href="#">THE MULTI-SECTOR GENERAL PERMIT (MSGP) UNDER RULE 31(B)15 OF THE RIPDES REGULATIONS.</a>	MSGP permit #
<input type="checkbox"/>	Additional stormwater treatment is required by the MSGP Explain:	

REDEVELOPMENT STANDARD – MINIMUM STANDARD 6		
<input type="checkbox"/> Pre Construction Impervious Area		
<input checked="" type="checkbox"/>	Total Pre-Construction Impervious Area (TIA) 0 acres	
<input checked="" type="checkbox"/>	Total Site Area (TSA) 21.46	
<input type="checkbox"/>	Jurisdictional Wetlands (JW)	
<input type="checkbox"/>	Conservation Land (CL)	
<input type="checkbox"/> Calculate the Site Size (defined as contiguous properties under same ownership)		
<input type="checkbox"/>	Site Size (SS) = (TSA) – (JW) – (CL)	
<input type="checkbox"/>	(TIA) / (SS) = 0	<input type="checkbox"/> (TIA) / (SS) >0.4?
<input type="checkbox"/> YES, Redevelopment		

<p><b>PART 2. LOW IMPACT DEVELOPMENT ASSESSMENT – MINIMUM STANDARD 1</b>          (NOT REQUIRED FOR REDEVELOPMENT OR RETROFITS)          This section may be deleted if not required.</p>
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<p><b>Note:</b> A written description must be provided specifying why each method is not being used or is not applicable at the Site. Appropriate answers may include:</p> <ul style="list-style-type: none"> <li>• Town requires ... (state the specific local requirement)</li> <li>• Meets Town’s dimensional requirement of ...</li> <li>• Not practical for site because ...</li> <li>• Applying for waiver/variance to achieve this (pending/approved/denied)</li> <li>• Applying for wavier/variance to seek relief from this (pending/approved/denied)</li> </ul>	
<p><b>A) PRESERVATION OF UNDISTURBED AREAS, BUFFERS, AND FLOODPLAINS</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Sensitive resource areas and site constraints are identified (required)</li> <li><input checked="" type="checkbox"/> Local development regulations have been reviewed (required)</li> <li><input checked="" type="checkbox"/> All vegetated buffers and coastal and freshwater wetlands will be protected during and after construction</li> <li><input type="checkbox"/> Conservation Development or another site design technique has been incorporated to protect open space and pre-development hydrology. <b>Note:</b> If Conservation Development has been used, check box and skip to Subpart C</li> <li><input checked="" type="checkbox"/> As much natural vegetation and pre-development hydrology as possible has been maintained</li> </ul>	<p><b>IF NOT IMPLEMENTED, EXPLAIN HERE</b></p>

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<p><b>B) LOCATE DEVELOPMENT IN LESS SENSITIVE AREAS AND WORK WITH THE NATURAL LANDSCAPE CONDITIONS, HYDROLOGY, AND SOILS</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Development sites and building envelopes have been appropriately distanced from wetlands and waterbodies</li> <li><input checked="" type="checkbox"/> Development and stormwater systems have been located in areas with greatest infiltration capacity (e.g., soil groups A and B)</li> <li><input checked="" type="checkbox"/> Plans show measures to prevent soil compaction in areas designated as Qualified Pervious Areas (QPA's)</li> <li><input checked="" type="checkbox"/> Development sites and building envelopes have been positioned outside of floodplains</li> <li><input checked="" type="checkbox"/> Site design positions buildings, roadways and parking areas in a manner that avoids impacts to surface water features</li> <li><input checked="" type="checkbox"/> Development sites and building envelopes have been located to minimize impacts to steep slopes (<math>\geq 15\%</math>)</li> <li><input type="checkbox"/> Other (describe):</li> </ul>	
<p><b>C) MINIMIZE CLEARING AND GRADING</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Site clearing has been restricted to <u>minimum area needed</u> for building footprints, development activities, construction access, and safety.</li> <li><input checked="" type="checkbox"/> Site has been designed to position buildings, roadways, and parking areas in a manner that minimizes grading (cut and fill quantities)</li> <li><input checked="" type="checkbox"/> Protection for stands of trees and individual trees and their root zones to be preserved has been specified, and such protection extends at least to the tree canopy drip line(s)</li> <li><input checked="" type="checkbox"/> Plan notes specify that public trees removed or damaged during construction shall be replaced with equivalent</li> </ul>	
<p><b>D) REDUCE IMPERVIOUS COVER</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Reduced roadway widths (<math>\leq 22</math> feet for ADT <math>\leq 400</math>; <math>\leq 26</math> feet for ADT 400 - 2,000)</li> <li><input checked="" type="checkbox"/> Reduced driveway areas (length minimized via reduced ROW width (<math>\leq 45</math> ft.) and/or reduced (or absolute minimum) front yard setback; width minimized to <math>\leq 9</math> ft. wide one lane; <math>\leq 18</math> ft. wide two lanes; shared driveways; pervious surface)</li> <li><input type="checkbox"/> Reduced building footprint: Explain approach:</li>   <li><input checked="" type="checkbox"/> Reduced sidewalk area (<math>\leq 4</math> ft. wide; one side of the street; unpaved path; pervious surface)</li> <li><input checked="" type="checkbox"/> Reduced cul-de-sacs (radius <math>&lt; 45</math> ft; vegetated island; alternative turn-around)</li> <li><input checked="" type="checkbox"/> Reduced parking lot area: Explain approach – No parking lot</li> <li><input type="checkbox"/> Use of pervious surfaces for driveways, sidewalks, parking areas/overflow parking areas, etc.</li> <li><input checked="" type="checkbox"/> Minimized impervious surfaces (project meets or is less than maximum specified by Zoning Ordinance)</li> <li><input type="checkbox"/> Other (describe):</li> </ul>	
<p><b>E) DISCONNECT IMPERVIOUS AREA</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Impervious surfaces have been disconnected, and runoff has been diverted to QPAs to the maximum extent possible</li> <li><input checked="" type="checkbox"/> Residential street edges allow side-of-the-road drainage into vegetated open swales</li> <li><input type="checkbox"/> Parking lot landscaping breaks up impervious expanse AND accepts runoff</li> <li><input type="checkbox"/> Other (describe):</li> </ul>	No parking lots proposed
<p><b>F) MITIGATE RUNOFF AT THE POINT OF GENERATION</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Small-scale BMPs have been designated to treat runoff as close as possible to the source</li> </ul>	

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<p><b>G) PROVIDE LOW-MAINTENANCE NATIVE VEGETATION</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Low-maintenance landscaping has been proposed using native species and cultivars</li> <li><input checked="" type="checkbox"/> Plantings of native trees and shrubs in areas previously cleared of native vegetation are shown on site plan</li> <li><input checked="" type="checkbox"/> Lawn areas have been limited/minimized, and yards have been kept undisturbed to the maximum extent practicable on residential lots</li> </ul>	
<p><b>H) RESTORE STREAMS/WETLANDS</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Historic drainage patterns have been restored by removing closed drainage systems, daylighting buried streams, and/or restoring degraded stream channels and/or wetlands</li> <li><input type="checkbox"/> Removal of invasive species</li> <li><input type="checkbox"/> Other</li> </ul>	No closed drainage systems exist on site

**PART 3. SUMMARY OF REMAINING STANDARDS**

<b>GROUNDWATER RECHARGE – MINIMUM STANDARD 2</b>		
<b>YES</b>	<b>NO</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The project has been designed to meet the groundwater recharge standard.
<input type="checkbox"/>	<input type="checkbox"/>	If “No,” the justification for groundwater recharge criterion waiver has been explained in the Narrative (e.g., threat of groundwater contamination or physical limitation), if applicable (see RICR 8.8.D);
<input type="checkbox"/>	<input type="checkbox"/>	Your waiver request has been explained in the Narrative, if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is this site identified as a Regulated Facility in Part 1, Minimum Standard 8: LUHPPL Identification?
<input type="checkbox"/>	<input type="checkbox"/>	If “Yes,” has approval for infiltration by the OLRSM Site Project Manager, per Part 1, Minimum Standard 8, been requested?

<b>TABLE 2-1: Summary of Recharge (see RISDISM Section 3.3.2)</b> (Add or Subtract Rows as Necessary)					
<b>Design Point</b>	<b>Impervious Area Treated (sq ft)</b>	<b>Total Re<sub>v</sub> Required (cu ft)</b>	<b>LID Stormwater Credits (see RISDISM Section 4.6.1)</b>	<b>Recharge Required by Remaining BMPs (cu ft)</b>	<b>Recharge Provided by BMPs (cu ft)</b>
			<b>Portion of Re<sub>v</sub> directed to a QPA (cu ft)</b>		
DP-1: A Wetlands	8,280	242	0	242	750
DP-2: B Wetlands	49,200	1,438	32	1,406	8,735
DP-3: NE Abutters	14,200	415	0	415	3,555
DP-4:					
<b>TOTALS:</b>	71,680	2,095	32	2,063	13,040
<p><u>Notes:</u></p> <ol style="list-style-type: none"> <li>Only BMPs listed in RISDISM Table 3-5 “List of BMPs Acceptable for Recharge” may be used to meet the recharge requirement.</li> <li>Recharge requirement must be satisfied for each waterbody ID.</li> </ol>					
<input checked="" type="checkbox"/> See the “Drainage Calculations” sheet in Appendix B of the Stormwater Management Report for further detail of the above table.					

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>WATER QUALITY – MINIMUM STANDARD 3</b>		
<b>YES</b>	<b>NO</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet or exceed the required water quality volume WQv (see RICR 8.9.E-I)?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is the proposed final impervious cover greater than 20% of the disturbed area (see RICR 8.9.E-I)?
<input type="checkbox"/>	<input type="checkbox"/>	If “Yes,” either the Modified Curve Number Method or the Split Pervious/Impervious method in Hydro-CAD was used to calculate WQv; or,
<input type="checkbox"/>	<input type="checkbox"/>	If “Yes,” either TR-55 or TR-20 was used to calculate WQv; and,
<input checked="" type="checkbox"/>	<input type="checkbox"/>	If “No,” the project meets the minimum WQv of 0.2 watershed inches over the entire disturbed area.
<input type="checkbox"/>	<input type="checkbox"/>	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet or exceed the ability to treat required water quality flow WQf (see RICR 8.9.I.1-3)?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does this project propose an increase of impervious cover to a receiving water body with impairments? If “Yes,” please indicate below the method that was used to address the water quality requirements of no further degradation to a low-quality water.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RICR 8.36. A Pollutant Loading Analysis is needed and has been completed.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	The Water Quality Guidance Document ( <a href="#">Water Quality Goals and Pollutant Loading Analysis Guidance for Discharges to Impaired Waters</a> ) has been followed as applicable. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	BMPs are proposed that are on the <a href="#">approved technology list</a> . If “Yes,” please provide all required worksheets from the manufacturer.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Additional pollutant-specific requirements and/or pollutant removal efficiencies are applicable to the site as the result of a TMDL, SAMP, or other watershed-specific requirements. If “Yes,” please describe:

<b>TABLE 3-1: Summary of Water Quality (see RICR 8.9)</b>					
<b>Design Point and WB ID</b>	<b>Impervious area treated (sq ft)</b>	<b>Total WQv Required (cu ft)</b>	<b>LID Stormwater Credits (see RICR 8.18)</b>	<b>Water Quality Treatment Remaining (cu ft)</b>	<b>Water Quality Provided by BMPs (cu ft)</b>
			<b>WQv directed to a QPA (cu ft)</b>		
DP-1: A Wetlands	8,280	690	0	690	750
DP-2: B Wetlands	49,200	4099	92	4007	8,735
DP-3: NE Abutters	14,200	1,184	0	1,184	3,555
DP-4:					
<b>TOTALS:</b>	71,680	5,973	92	5,881	13,040
<b>Notes:</b>					
1. Only BMPs listed in RICR 8.20 and 8.25 or the Approved Technologies List of BMPs is Acceptable for Water Quality treatment.					
2. For each Design Point, the Water Quality Volume Standard must be met for each Waterbody ID.					
<input checked="" type="checkbox"/> YES	This project has met the setback requirements for each BMP.				
<input type="checkbox"/> NO	If “No,” please explain:				
<input checked="" type="checkbox"/>	See the “Drainage Calculations” sheet in Appendix B of the Stormwater Management Report for further detail of the above table.				

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

CONVEYANCE AND NATURAL CHANNEL PROTECTION (RICR 8.10) – MINIMUM STANDARD 4		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Is this standard waived? If “Yes,” please indicate one or more of the reasons below:</p> <p>Post development peak discharge rates from the facility to all natural downstream channels are less than 2 cfs during the 1-year, 24-hour type III design storm event.</p>
		<p><input type="checkbox"/> The project directs discharge to a large river (i.e., 4th-order stream or larger. See RISDISM Appendix I for State-wide list and map of stream orders), bodies of water &gt;50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters.</p> <p><input type="checkbox"/> The project is a small facility with impervious cover of less than or equal to 1 acre.</p> <p><input checked="" type="checkbox"/> The project has a post-development peak discharge rate from the facility that is less than 2 cfs for the 1-year, 24-hour Type III design storm event (prior to any attenuation). (<u>Note</u>: LID design strategies can greatly reduce the peak discharge rate).</p>
<input type="checkbox"/>	<input type="checkbox"/>	<p>Conveyance and natural channel protection for the site have been met.</p> <p>If “No,” explain why:</p>

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

OVERBANK FLOOD PROTECTION (RICR 8.11) AND OTHER POTENTIAL HIGH FLOWS – MINIMUM STANDARD 5		
YES	NO	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is this standard waived? If yes, please indicate one or more of the reasons below:
		<input type="checkbox"/> The project directs discharge to a large river (i.e., 4th-order stream or larger. See Appendix I for state-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters. <input type="checkbox"/> A Downstream Analysis (see RICR 8.11.D and E) indicates that peak discharge control would not be beneficial or would exacerbate peak flows in a downstream tributary of a particular site (e.g., through coincident peaks).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does the project flow to an MS4 system or subject to other stormwater requirements? If "Yes," indicate as follows:
		<input type="checkbox"/> RIDOT <input type="checkbox"/> Other (specify):
<p><b>Note:</b> The project could be approved by RIDEM but not meet RIDOT or Town standards. RIDOT's regulations indicate that post-volumes must be <b>less</b> than pre-volumes for the 10-yr storm at the design point entering the RIDOT system. If you have not already received approval for the discharge to an MS4, please explain below your strategy to comply with RIDEM and the MS4.</p>		
		Indicate below which model was used for your analysis. <input type="checkbox"/> TR-55 <input checked="" type="checkbox"/> TR-20 <input checked="" type="checkbox"/> HydroCAD <input type="checkbox"/> Bentley/Haestad <input type="checkbox"/> Intellisolve <input type="checkbox"/> Other (Specify):
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the drainage design demonstrate that flows from the 100-year storm event through a BMP will safely manage and convey the 100-year storm? If "No," please explain briefly below and reference where in the application further documentation can be found (i.e., name of report/document, page numbers, appendices, etc.):
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Do off-site areas contribute to the sub-watersheds and design points? If "Yes,"
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Are the areas modeled as "present condition" for both pre- and post-development analysis?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Are the off-site areas shown on the subwatershed maps?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the drainage design confirm safe passage of the 100-year flow through the site for off-site runoff?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is a Downstream Analysis required (see RICR 8.11.E.1)?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calculate the following:
		<input checked="" type="checkbox"/> Area of disturbance within the sub-watershed (areas) 8.75 Acres
		<input checked="" type="checkbox"/> Impervious cover (%) 18.8%
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is a dam breach analysis required (earthen embankments over six (6) feet in height, or a capacity of 15 acre-feet or more, and contributes to a significant or high hazard dam)?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet the overbank flood protection standard?

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

**Table 5-1 Hydraulic Analysis Summary**

Subwatershed (Design Point)	1.2" Peak Flow (cfs) **		1-yr Peak Flow (cfs)		10-yr Peak Flow (cfs)		100-yr Peak Flow (cfs)	
	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)
DP-1: A-Wetlands	0.15	0.15	0.92	0.79	6.37	6.43	21.26	20.99
DP-2: B-Wetlands	0.05	0.05	1.07	1.10	8.22	8.18	33.23	33.14
DP-3: NE Depression Outfall	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTALS:</b>	0.20	0.05	1.99	1.89	14.59	14.61	54.49	54.13

\*\* Utilize modified curve number method or split pervious /impervious method in HydroCAD.

Note: The hydraulic analysis must demonstrate no impact to each individual subwatershed DP unless each DP discharges to the same wetland or water resource.

Indicate as follows where the pertinent calculations and/or information for the items above are provided	Name of report/document, page numbers, appendices, etc.
Existing conditions analysis for each subwatershed, including curve numbers, times of concentration, runoff rates, volumes, and water surface elevations showing methodologies used and supporting calculations.	See 'Appendix C HydroCAD Report'
Proposed conditions analysis for each subwatershed, including curve numbers, times of concentration, runoff rates, volumes, water surface elevations, and routing showing the methodologies used and supporting calculations.	See 'Appendix C HydroCAD Report'
Final sizing calculations for structural stormwater BMPs, including contributing drainage area, storage, and outlet configuration.	See 'Appendix C HydroCAD Report'
Stage-storage, inflow and outflow hydrographs for storage facilities (e.g., detention, retention, or infiltration facilities).	See 'Appendix C HydroCAD Report'

**Table 5-2 Summary of Best Management Practices**

BMP ID	DP #	BMP Type (e.g., bioretention, tree filter)	BMP Functions					Bypass Type	Horizontal Setback Criteria are met per RICR 8.21.B.10, 8.22.D.11, and 8.35.B.4		
			Pre-Treatment (Y/N/NA)	Re <sub>v</sub>	WQ <sub>v</sub>	CP <sub>v</sub> (Y/N/NA)	Overbank Flood Reduction (Y/N/NA)		External (E) Internal (I) or NA	Yes/No	Technical Justification (Design Report page number)
Sand Filter – "A"	1	Sand Filter	Filter Strip	Y	Y	NA	Y	NA	Y		
Sand Filter – "B"	2	Sand Filter	Sediment Forebay	Y	Y	NA	Y	NA	Y		
Infiltration Basin – "A"	2	Infiltration Basin	Filter Strip	Y	Y	NA	Y	NA	Y		
Sand Filter – "C"	2	Sand Filter	Filter Strip	Y	Y	NA	Y	NA	Y		
Infiltration Basin – "B"	2	Infiltration Basin	Sediment Forebay	Y	Y	NA	Y	NA	Y		
Drywells "6A", "6B", "8A", & "8B"	2	Infiltration	N	Y	Y	NA	Y	NA	Y		

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

**Table 5-2 Summary of Best Management Practices**

BMP ID	DP #	BMP Type (e.g., bioretention, tree filter)	BMP Functions					Bypass Type	Horizontal Setback Criteria are met per RICR 8.21.B.10, 8.22.D.11, and 8.35.B.4		
			Pre-Treatment (Y/N/NA)	Re <sub>v</sub>	WQ <sub>v</sub>	CP <sub>v</sub> (Y/N/NA)	Overbank Flood Reduction (Y/N/NA)		External (E) Internal (I) or NA	Yes/No	Technical Justification (Design Report page number)
Rain Gardens "7", "8", & "OS"	2	Bioretention	N	Y	Y	NA	N	NA	Y		
Rain Garden "16"	2	Bioretention	N	Y	Y	NA	N	NA	Y		
Sand Filter – "D"	3	Sand Filter	Sediment Forebay	Y	Y	NA	NA	NA	Y		
Rain Garden "N"	3	Bioretention	N	Y	Y	NA	NA	NA	Y		

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>Table 5.3 Summary of Soils to Evaluate Each BMP</b>									
<b>DP #</b>	<b>BMP ID</b>	<b>BMP Type</b> (e.g., bioretention, tree filter)	<b>Soils Analysis for Each BMP</b>						<b>Exfiltration Rate Applied (in/hr)</b>
			<b>Test Pit ID# and Ground Elevation</b>		<b>SHWT Elevation (ft)</b>	<b>Bottom of Practice Elevation* (ft)</b>	<b>Separation Distance Provided (ft)</b>	<b>Hydrologic Soil Group (A, B, C, D)</b>	
			<b>Primary</b>	<b>Secondary</b>					
1	Sand Filter – “A”	Sand Filter	D-4 145.0	D-1 145.0	141.0	144.0	3	C	8.27
2	Sand Filter – “B”	Sand Filter	D-1 145.0	D-2 144.0	141.5	144.5	3	C	8.27
2	Infiltration Basin – “A”	Infiltration Basin	SEV 7B 155.0	SEV 6B 155.0	157.0	161.0	4	B	8.27
2	Sand Filter – “C”	Sand Filter	SEV 7B 155.0	SEV 6B 155.0	152.0	159.0	7	B	8.27
2	Infiltration Basin – “B”	Infiltration Basin	D-5 149.0		141.5	148.0	6.5	B	1.02
2	Drywell “6A”	Infiltration	SEV 6A 152.0	SEV 6B 155.0	145.0	148.0	3	B	8.27
2	Drywell “6B”	Infiltration	SEV 6A 152.0	SEV 6B 155.0	148.0	151.0	3	B	8.27
2	Drywell “8A”	Infiltration	SEV 7C 150.0	SEV 9B 153.0	144.0	147.0	3	B	8.27
2	Drywell “8B”	Infiltration	SEV 7C 150.0	SEV 9B 153.0	142.5	145.5	3	B	8.27
2	Rain Garden “7”	Bioretention	SEV 7D 146.5	SEV 7C 149.5	144.0	147.0	3	B	1.02
2	Rain Garden “8”	Bioretention	SEV 8B 160.5	SEV 8A 160.0	151.0	158.33	7.33	B	1.02
2	Rain Garden “OS”	Bioretention	D-5 149.0		144.0	147.33	3.33	B	1.02
2	Rain Garden “16”	Bioretention	SEV 4A 155.0	SEV 4B 155.0	144.0	147.0	3	B	1.02
3	Sand Filter – “D”	Sand Filter	SEV 2B 163.0	SEV 2A 161.0	150.0	158.0	8	B	8.27
3	Infiltration Basin “N”	Infiltration Basin	D-6 151.0		147.5	151.0	3.5	B	1.02
* For underground infiltration systems (UICs) bottom equals bottom of stone, for surface infiltration basins bottom equals bottom of basin, for filters bottom equals interface of storage and top of filter layer									

<b>LAND USES WITH HIGHER POTENTIAL POLLUTANTS LOADS (LUHPPLs) – MINIMUM STANDARD 8</b>			
<b>YES</b>	<b>NO</b>	<b>N/A</b>	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Describe any LUHPPLs identified in Part 1, Minimum Standard 8, Section 2. If not applicable, continue to Minimum Standard 9.

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are these activities already covered under an MSGP? If “No,” please explain if you have applied for an MSGP or intend to do so?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	List the specific BMPs that are proposed for this project that receive stormwater from LUHPPL drainage areas. These BMP types must be listed in RISDISM Table 3-3, “Acceptable BMPs for Use at LUHPPLs.” Please list BMPs:
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Additional BMPs, or additional pretreatment BMP’s if any, that meet RIPDES MSGP requirements; Please list BMPs:
			Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.).

<b>ILLICIT DISCHARGES – MINIMUM STANDARD 9</b>			
Illicit discharges are defined as unpermitted discharges to Waters of the State that do not consist entirely of stormwater or uncontaminated groundwater, except for certain discharges identified in the RIPDES Phase II Stormwater General Permit.			
YES	NO	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you checked for illicit discharges?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have any been found and/or corrected? If “Yes,” please identify.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does your report explain preventative measures that keep non-stormwater discharges out of the Waters of the State (during and after construction)?

<b>SOIL EROSION AND SEDIMENT CONTROL (SESC) – MINIMUM STANDARD 10</b>			
YES	NO	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you included a Soil Erosion and Sediment Control Plan Set and/or Complete Construction Plan Set?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you provided a <b>separately-bound</b> document based upon the <a href="#">SESC Template</a> ? If yes, proceed to Minimum Standard 11 (the following items can be assumed to be addressed).
			If “No,” include a document with your submittal that addresses the following elements of an SESC Plan:
<input type="checkbox"/>			Soil Erosion and Sediment Control Plan Project Narrative, including a description of how the fifteen (15) Performance Criteria have been met:
<input type="checkbox"/>			Provide Natural Buffers and Maintain Existing Vegetation
<input type="checkbox"/>			Minimize Area of Disturbance
<input type="checkbox"/>			Minimize the Disturbance of Steep Slopes
<input type="checkbox"/>			Preserve Topsoil
<input type="checkbox"/>			Stabilize Soils
<input type="checkbox"/>			Protect Storm Drain Inlets
<input type="checkbox"/>			Protect Storm Drain Outlets
<input type="checkbox"/>			Establish Temporary Controls for the Protection of Post-Construction Stormwater Control Measures
<input type="checkbox"/>			Establish Perimeter Controls and Sediment Barriers
<input type="checkbox"/>			Divert or Manage Run-On from Up-Gradient Areas
<input type="checkbox"/>			Properly Design Constructed Stormwater Conveyance Channels
<input type="checkbox"/>			Retain Sediment On-Site
<input type="checkbox"/>			Control Temporary Increases in Stormwater Velocity, Volume, and Peak Flows
<input type="checkbox"/>			Apply Construction Activity Pollution Prevention Control Measures
<input type="checkbox"/>			Install, Inspect, and Maintain Control Measures and Take Corrective Actions

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<input type="checkbox"/>	Qualified SESC Plan Preparer's Information and Certification
<input type="checkbox"/>	Operator's Information and Certification; if not known at the time of application, the Operator must certify the SESC Plan upon selection and prior to initiating site activities
<input type="checkbox"/>	Description of Control Measures, such as Temporary Sediment Trapping and Conveyance Practices, including design calculations and supporting documentation, as required

**STORMWATER MANAGEMENT SYSTEM OPERATION, MAINTENANCE, AND POLLUTION PREVENTION PLAN – MINIMUM STANDARDS 7 AND 9**

**Operation and Maintenance Section**

YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have you minimized all sources of pollutant contact with stormwater runoff, to the maximum extent practicable?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have you provided a <b>separately-bound</b> Operation and Maintenance Plan for the site and for all of the BMPs, and does it address each element of RICR 8.17 and RISDISM Appendix C and E?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lawn, Garden, and Landscape Management meet the requirements of RISDISM Section G.7? If "No," why not?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is the property owner or homeowner's association responsible for the stormwater maintenance of all BMP's? If "No," you must provide a legally binding and enforceable maintenance agreement (see RISDISM Appendix E, page 26) that identifies the entity that will be responsible for maintenance of the stormwater. Indicate where this agreement can be found in your report (i.e., name of report/document, page numbers, appendices, etc.).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Do you anticipate that you will need legal agreements related to the stormwater structures? (e.g. off-site easements, deed restrictions, covenants, or ELUR per the Remediation Regulations). If "Yes," have you obtained them? Or please explain your plan to obtain them: -All necessary access easements to BMPs shall be recorded prior to the start of construction.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is stormwater being directed from public areas to private property? If "Yes," note the following: <u>Note:</u> This is not allowed unless a funding mechanism is in place to provide the finances for the long-term maintenance of the BMP and drainage, or a funding mechanism is demonstrated that can guarantee the long-term maintenance of a stormwater BMP by an individual homeowner.

**Pollution Prevention Section**

<input checked="" type="checkbox"/>	<input type="checkbox"/>	Designated snow stockpile locations?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Trash racks to prevent floatables, trash, and debris from discharging to Waters of the State?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Asphalt-only based sealants?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pet waste stations? ( <u>Note:</u> If a receiving water has a bacterial impairment, and the project involves housing units, then this could be an important part of your pollution prevention plan).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Regular sweeping? Please describe:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	De-icing specifications, in accordance with RISDISM Appendix G. (NOTE: If the groundwater is GAA, or this area contributes to a drinking water supply, then this could be an important part of your pollution prevention plan).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	A prohibition of phosphate-based fertilizers? ( <u>Note:</u> If the site discharges to a phosphorus impaired waterbody, then this could be an important part of your pollution prevention plan).

**PART 4. SUBWATERSHED MAPPING AND SITE-PLAN DETAILS**

**Existing and Proposed Subwatershed Mapping (REQUIRED)**

YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed drainage area delineations

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<input checked="" type="checkbox"/>	<input type="checkbox"/>	Locations of all streams and drainage swales
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Drainage flow paths, mapped according to the DEM <i>Guidance for Preparation of Drainage Area Maps</i> (included in RISDISM Appendix K)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Complete drainage area boundaries; include off-site areas in both mapping and analyses, as applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped seasonal high-water-table test pit locations
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped locations of the site-specific borings and/or test pits and soils information from the test pits at the locations of the BMPs
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped locations of the BMPs, with the BMPs consistently identified on the Site Construction Plans
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped bedrock outcrops adjacent to any infiltration BMP
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Soils were logged by a:
	<input checked="" type="checkbox"/>	DEM-licensed Class IV soil evaluator Name: David Kalen & David Manoni
	<input type="checkbox"/>	RI-registered P.E. Name:

<b>Subwatershed and Impervious Area Summary</b>				
<b>Subwatershed (area to each design point)</b>	<b>First Receiving Water ID or MS4</b>	<b>Area Disturbed (Acres)</b>	<b>Existing Impervious (Acres) (Includes areas off- site)</b>	<b>Proposed Impervious (Acres)</b>
<b>DP-1: A Wetlands 10.2 Ac.</b>	RI0008039R-08	1.10	0.27	0.19
<b>DP-2: B Wetlands 13.4 Ac.</b>	RI0008039R-08	8.94	0.28	1.09
<b>DP-3: NE Depression Outfall 7.4 Ac.</b>	None	2.25	0.17	0.34
<b>TOTALS: 31.0 Acres</b>		12.29	0.72	1.62

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>Site Construction Plans (Indicate that the following applicable specifications are provided)</b>		
<b>YES</b>	<b>NO</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed plans (scale not greater than 1" = 40') with North arrow
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed site topography (with 1 or 2-foot contours); 10-foot contours accepted for off-site areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Boundaries of existing predominant vegetation and proposed limits of clearing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Location clarification
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location and field-verified boundaries of resource protection areas such as: <ul style="list-style-type: none"> <li>▶ freshwater and coastal wetlands, including lakes and ponds</li> <li>▶ coastal shoreline features</li> </ul> Perennial and intermittent streams, in addition to Areas Subject to Storm Flowage (ASSFs)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	All required setbacks (e.g., buffers, water-supply wells, septic systems)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Representative cross-section and profile drawings, and notes and details of structural stormwater management practices and conveyances (i.e., storm drains, open channels, swales, etc.), which include: <ul style="list-style-type: none"> <li>▶ Location and size of the stormwater treatment practices (type of practice, depth, area). Stormwater treatment practices (BMPs) must have labels that correspond to RISDISM Table 5-2;</li> <li>▶ Design water surface elevations (applicable storms);</li> <li>▶ Structural details of outlet structures, embankments, spillways, stilling basins, grade-control structures, conveyance channels, etc.;</li> <li>▶ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.);</li> <li>▶ Location of floodplain and, if applicable, floodway limits and relationship of site to upstream and downstream properties or drainage that could be affected by work in the floodplain;</li> <li>▶ Planting plans for structural stormwater BMPs, including species, size, planting methods, and maintenance requirements of proposed planting</li> </ul>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report and corresponding water tables
N/A	N/A	Mapping of any OLRSM-approv ed remedial actions/systems (including ELURs) N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location of existing and proposed roads, buildings, and other structures including limits of disturbance; <ul style="list-style-type: none"> <li>▶ Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements;</li> <li>▶ Location of existing and proposed conveyance systems, such as grass channels, swales, and storm drains, and location(s) of final discharge point(s) (wetland, waterbody, etc.);</li> <li>▶ Cross sections of roadways, with edge details such as curbs and sidewalks;</li> <li>▶ Location and dimensions of channel modifications, such as bridge or culvert crossings</li> </ul>
N/A	N/A	Locations, cross sections, and profiles of all stream or wetland crossings and their method of stabilization

## Appendix B

### Drainage Calculations

#### Design Point 1 – A Wetlands

##### **Post Subcatchment Area: A Wetlands Controlled**

##### **BMP – Sand Filter “A”:**

$$I = 8,276 \text{ SF}$$

$$\text{Required ReV} = 8,276/12 \times 0.35 = 242 \text{ CF}$$

$$\text{Required WQV} = 8,276/12 = 690 \text{ CF}$$

BMP Sizing:  $740 \text{ SF bottom} \times 1260 \text{ SF top} \times 0.75' \text{ depth (invert elevation)} = 750 \text{ CF} =$   
Required WQV > Required ReV OK

Pretreatment: Filter Strip – All runoff sheet flows through forest and/or grassed surface for a minimum of 120'

## Design Point 2 – B Wetlands

### **Post Subcatchment Area: Cul-de-Sac**

#### **Sand Filter “B”**

I = 10,722 SF (pavement + ½ Lot 9 roof + Lot 13 roof)

Required ReV =  $10,722/12 \times 0.35 = 313$  CF

Required WQV =  $10,722/12 = 894$  CF

BMP sizing: 1370 SF bottom area, 2000 SF top area x 6” depth + 188 CF Sediment Forebay = 1,030 CF = Required WQV > Required Rev

Pretreatment: Sediment Forebay – 25% WQV = 185 CF required volume

Sediment Forebay sizing: 125 SF bottom area x 1.5’ depth = 188 CF > Required Pretreatment Volume

### **Post Subcatchment Area: Center Basin**

#### **BMP – Infiltration Basin “A” & Sand Filter “C”:**

I = 8,335 SF (road & Lot 14 roof and driveway)

Required ReV =  $8,335/12 \times 0.35 = 244$  CF

Required WQV =  $8,335/12 = 695$  CF

BMP sizing: (450 SF bottom, 745 SF top x 0.5’ height) + (260 SF bottom x 650 SF top x 1’ height) = 750 CF > Required WQV > Required ReV

Pretreatment: Filter Strip – All runoff sheet flows through grassed surface

### **Post Subcatchment Area: B Wetlands**

#### **Lot 7 – Rain Garden**

I = 3,780 SF (Lot 7 roof and driveway)

Required ReV =  $3,780/12 \times 0.35 = 111$  CF

Required WQV =  $3,780/12 = 315$  CF

BMP sizing: 480 SF x 8” deep rain garden = 320 CF > Required WQV > Required ReV

Lot 8 – Drywells

I = 1,872 SF (Lot 8 roof)

Required ReV =  $1,872/12 \times 0.35 = 55$  CF

Required WQV =  $1,872/12 = 156$  CF

BMP sizing: two (2) 6' dia x 2' deep drywells, each embedded in a 12'x12'x4' deep crushed stone reservoir

Available Volume:  $(56 \text{ CF} + 136 \text{ CF}) \times 2 = 384 \text{ CF} > \text{Required WQV} > \text{Required ReV}$

Lot 8 – Rain Gardens

I = 850 SF (Lot 8 driveway)

Required ReV =  $850/12 \times 0.35 = 25$  CF

Required WQV =  $850/12 = 71$  CF

BMP sizing: two (2) rain gardens totaling 106 SF x 8" deep = 71 CF = Required WQV > Required ReV

**Post Subcatchment Area: "E Depression" & "SE Basin"**

BMP – Infiltration Basin "B":

I = 14,400 SF

Required ReV =  $14,400/12 \times 0.35 = 420$  CF

Required WQV =  $14,400/12 = 1,200$  CF

BMP Sizing: 4,900 SF bottom, 5,880 SF top x 1' deep basin = 5,390 CF > Required WQV > Required ReV

Pretreatment: Sediment Forebay - 25%WQV = 300CF required volume

Sediment Forebay Sizing: 40 SF bottom, 360 SF top, x 2 feet deep = 400 CF > required volume

**Post Subcatchment Area: "SW Abutters"**

BMP – Rain Garden:

I = 5,700 SF (Lots 4 & 5 roofs and driveways)

Required ReV =  $5,700/12 \times 0.35 = 167$  CF

Required WQV =  $5,700/12 = 475$  CF

BMP Sizing: 950 SF x 6" deep rain garden = 475 CF = Required WQV > Required Rev

**Post Subcatchment Area: "South"**

**BMP – Rain Garden:**

$$I = 1,860 \text{ SF (drive)} + 1,920 \text{ SF (roof)} = 3,780 \text{ SF}$$

$$\text{Required ReV} = 3,780/12 \times 0.35 = 111 \text{ CF}$$

$$\text{Required WQV} = 3,780/12 = 315 \text{ CF}$$

$$\text{BMP sizing: } 630 \text{ SF} \times 6'' \text{ deep rain garden} = 315 \text{ CF} = \text{required WQV} > \text{required ReV}$$

## Design Point 3 – NE Depression

### **Post Subcatchment Area: Central Depression**

#### **BMP – Sand Filter – “D”:**

$$I = 8,800 \text{ SF}$$

$$\text{Required ReV} = 8,800/12 \times 0.35 = 257 \text{ CF}$$

$$\text{Required WQV} = 8,800/12 = 734 \text{ CF}$$

BMP Sizing: 1,110 SF bottom x 2,500 SF top x 1.5' deep basin = 2,700 CF > Required WQV > Required ReV

Pretreatment: Sediment Forebay – 25% WQV = 184 CF required volume

Sediment Forebay Sizing: 185 SF bottom x 1 feet deep = 185 CF > required volume

### **Post Subcatchment Area: NE Abutters**

#### **BMP-“natural” rain garden**

$$I=5,400 \text{ SF}$$

$$\text{Required ReV} = 5,400/12 \times 0.35 = 158 \text{ CF}$$

$$\text{Required WQV} = 5,400/12 = 450 \text{ CF}$$

BMP Sizing: 1500 SF x 6" deep rain garden = 750 CF > Required WQV > Required ReV

Appendix C:  
Soil Test Results



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



Site Evaluation Form  
Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

Weather: SUNNY 84°F/-

Shaded: Yes  No

Time: 4:00 PM

TH/A Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.				
Ap	7	a	S	10YR3/2	—	—	—	SL	1m Sbh	fr	5
Bw	24	c	S	10YR4/6	—	—	—	SL	1 Sbh	fr	5
C	39	c	S	10YR4/6	7.5YR4/6 2.5Y5/4	m	3 p	SL	0m	fr	7
2C	96+	—	—	2.5Y5/3	—	—	—	S	0 Sg	l	1
-----											
TH/B Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.				
Ap	8	a	S	10YR2/2	—	—	—	SL	1 C gn	vfr	3
Bw	19	c	S	10YR4/4	—	—	—	SL	1 Sbh	vfr	3
C	96+	—	—	2.5Y5/3	—	—	—	S	0 Sg	l	1
-----											

TH A Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

TH B Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program



2/15

Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TRWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 84°F +/- Shaded: Yes [X] No [ ] Time: 3:45 PM

Table with 10 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Rows include Ap, Bw, C, 2C horizons.

Table with 10 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Rows include Ap, Bw, C, 2C horizons.

TH 2A Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)
TH 2B Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



3/5

## Site Evaluation Form Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

Shaded: Yes  No  Time: 12:00 PM

Weather: SUNNY

TH <u>3A</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	2	a	S	10YR3/2	-	-	-	Sil	1m sbh	fr	5
Bw	21	c	S	10YR4/4	-	-	-	Sil	1m sbh	fr	5
C	77	c	w	10YR4/4	10YR4/6 2.5Y5/3	f	2 P	Sil	0 m	fr	7
2C	96+	-	-	2.5Y5/3	-	-	-	gr CoS	0 sy	l	1m
-----											
TH <u>3B</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	9	a	S	10YR3/3	-	-	-	SL	1m sbh	fr	3
Bw	21	c	S	10YR4/6	-	-	-	SL	1 sbh	fr	3
C	51	c	w	10YR4/4	10YR4/6 2.5Y5/3	m	3 P	SL LS	0 m	fr	3
2C	108+	-	-	2.5Y5/3	-	-	-	gr CoS	0 sy	l	1m
-----											

TH 3A Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

TH 3B Soil Class G/B Total Depth 9' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 9' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



4/15

## Site Evaluation Form Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 84°F+- Shaded: Yes  No  Time: 3:15

TH <u>4A</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	26	a	S	10YR3/3	-	-	-	Scl	1m sclh	fr	5
Bw	20	c	S	10YR4/4	-	-	-	Scl	1m sclh	fr	5
C	52	a	w	10YR4/4	10YR4/6 2.5Y5/3	m	3P	Scl	0 m	fr	7
2C	96+	-	-	2.5Y5/3	-	-	-	gn cos	0 sy	l	1m
-----											
TH <u>4B</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	7	a	S	10YR3/3	-	-	-	Scl	1m sclh	vfr	5
Bw	19	c	S	10YR4/4	-	-	-	Scl	1m sclh	fr	5
C	31	a	w	10YR4/4	10YR4/6 2.5Y5/3	-	-	Scl	0 m	fr	7
2C	96+	-	-	-	-	-	-	gn cos	0 sy	l	1m
-----											

TH 4A Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

TH 4B Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



5/15

## Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

Weather: SUNNY 84°F

Shaded: Yes  No  Time: 3:00 PM

TH <u>5A</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	6	a	s	10YR3/3	-	- - -	-	Sil	im sbh	fr	5
Bw	31	c	s	10YR4/6	-	- - -	-	Sil	1 sbh	fr	5
C	61	a	s	10YR4/6	7.5YR4/6 2.5Y5/3	m 3 p	-	Sil	o m	fr	7
2C	108+	-	-	2.5Y5/3	-	- - -	-	gr CoS	o sy	cl	lm
-----											
TH <u>5B</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	7	a	s	10YR3/3	-	- - -	-	Sil	lm sbh	vt fr	5
Bw	22	c	s	10YR4/6	-	- - -	-	Sil	1 sbh	fr	5
C	57	c	w	10YR4/6	7.5YR4/6 2.5Y5/3	c 3 p	-	Sil	o m	fr	5
2C	96+	-	-	2.5Y5/3	-	- - -	-	gr CoS	o sy	cl	lm
-----											

TH 5A Soil Class G/B Total Depth 9' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 9' (og)

TH 5B Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program



6/15

Site Evaluation Form
Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

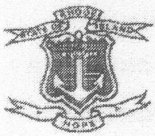
Weather: SUNNY 84°F

Shaded: Yes [checked] No [ ] Time: 2:45 PM

Table with 11 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Contains two sections for TH 6A and TH 6B soil profiles.

TH 6A Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)
TH 6B Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program



Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 82°F +/- Shaded: Yes [X] No [ ] Time: 2:15 PM

Table with 11 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Contains two soil profile sections (7A and 7B) with handwritten data.

TH 7A Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)
TH 7B Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program

8/5



## Site Evaluation Form Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 82°F Shaded: Yes  No  Time: 2:00 PM

TH <u>8A</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox			Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Contr.				
Ap	8	a	s	10YR3/3	-	-	-	-	SL	lm sbh	vfr	3
Bw	31	c	s	10YR4/6	-	-	-	-	SuL	c sbh	fr	5
2C	96+	-	-	2.5Y5/3	-	-	-	-	gr CoS	o sf	l	lm
/												
TH <u>8B</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox			Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Contr.				
Ap	8	a	s	10YR3/3	-	-	-	-	SuL	lm sbh	fr	5
Bw	36	c	w	10YR4/6	-	-	-	-	SuL	c sbh	fr	5
2C	102+	-	-	2.5Y5/3	-	-	-	-	gr CoS	o sf	l	lm
/												

TH 8A Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/R (og) GW Seepage Depth N/R SHWT 8' (og)

TH 8B Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/R (og) GW Seepage Depth N/R SHWT 8.5' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)  
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STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program



9/15

Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

Weather: SUNNY 82°F

Shaded: Yes [checked] No [ ] Time: 1:45 PM

Table with 11 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Contains data for two soil profiles (9A and 9B).

TH 9A Soil Class G/B Total Depth 98" Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 98+ (og)
TH 9B Soil Class G/B Total Depth 100" Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 100+ (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program

10/15



Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 81°F+ Shaded: Yes [X] No [ ] Time: 1:00 PM

Table with 11 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Contains two sections: TH 10A and TH 10B.

TH 10A Soil Class G/B Total Depth 100" Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 100"+ (og)
TH 10B Soil Class G/B Total Depth 108" Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 108"+ (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program



11/5

Site Evaluation Form
Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 80°F+ Shaded: Yes [checked] No [ ] Time: 12:30PM

Table with 11 columns: TH/A Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Contains two sections of soil profile data (TH I/A and TH I/B).

TH I/A Soil Class G/B Total Depth 102" Impervious/Limiting Layer Depth n/r (og) GW Seepage Depth n/r SHWT 102" (og)
TH I/B Soil Class G/B Total Depth 98" Impervious/Limiting Layer Depth n/r (og) GW Seepage Depth n/r SHWT 98" (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



12/15

## Site Evaluation Form Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 82°F Shaded: Yes  No  Time: 1:30 PM

TH/2A Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	8	a	S	10YR5/3	-	-	-	SL	1m sbl	fa	3
Bw	33	c	S	10YR4/6	-	-	-	Scl	c sbl	fa	5
C	57	c	S	2.5Y5/3	10YR4/6 2.5Y5/2	m	3 P	Scl	0 m	fa	7
2C	102+	-	-	2.5Y5/3	-	-	-	gr cos	0 st	l	1m
-----											
TH/2B Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	10	a	S	10YR3/3	-	-	-	SL	1m sbl	fa	3
Bw	37	c	S	10YR4/6	-	-	-	Scl	c sbl	fa	5
C	65	c	S	2.5Y5/3	10YR4/6 2.5Y5/2	m	3 P	Scl	0 m	fa	7
2C	96+	-	-	2.5Y5/3	-	-	-	gr cos	0 st	l	1m

TH 12A Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8.5' (og)

TH 12B Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



13/15

## Site Evaluation Form Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

Weather: SUNNY 82°F

Shaded: Yes  No  Time: 2:30 PM

TH <u>13A</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox			Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Contr.				
Ap	8	a	s	10YR3/2	-	-	-	-	SL	lm sbh	vfn	3
Bw	25	c	s	10YR4/6	-	-	-	-	SIL	sbh	fn	5
B/2c	41	c	s	10YR4/6	-	-	-	-	SL/gn COS	o m	fn	7
2C	102+	-	-	2.5Y5/3	-	-	-	-	gn COS	o sq	l	1m
-----												
TH <u>13B</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox			Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Contr.				
Ap	5	a	s	10YR3/3	-	-	-	-	SL	lm sbh	vfn	3
Bw	28	a	w	10YR4/6	-	-	-	-	SL	sbh	fn	3
2C	96+	-	-	2.5Y5/3	-	-	-	-	gn COS	o sq	l	1m
-----												

TH 13A Soil Class G/B Total Depth 8.5' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 102" (og)

TH 13B Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 96" (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program

14/15



## Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19/19

Soil Evaluator: David Kalen

License Number: D4052

Weather: SUNNY 84°F

Shaded: Yes  No  Time: 4:15

TH <u>14A</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	7	a	s	10YR3/2	-	-	-	SL	m sbh	fr	3
Bw	18	c	s	10YR4/4	-	-	-	SIL	sbh	fr	5
C	30	c	w	10YR4/4	2.5Y5/3	f	3 d	SIL	om	fr	7
2C	102+	-	-	2.5Y5/3	-	-	-	gn cos	os	l	1m
-----											
TH <u>14B</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	9	a	s	2.5Y4/2	-	-	-	SL	m sbh	fr	3
Bw	27	c	s	10YR4/4	-	-	-	SL	c sbh	fr	3
C	63	c	s	10YR4/4	10YR4/6 2.5Y5/3	m	3 p	sl/sil	om	fr	7
2C	96+	-	-	2.5Y5/3	-	-	-	gn cos	os	l	1m
-----											

TH 14A Soil Class G/B Total Depth 102" Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 102" (og)

TH 14B Soil Class G/B Total Depth 96" Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 96" (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)



# STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
Office of Water Resources  
Onsite Wastewater Treatment System Program



15/15

## Site Evaluation Form Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TWE NORTH LAND COMPANY, LLC

Property Location: CURTIS CORNER ROAD, AP 47-2 LOT 120 - SOUTH KINGSTOWN

Date of Test Hole: 7/19

Soil Evaluator: David Kalen License Number: D4052

Weather: SUNNY 84°F +/- Shaded: Yes  No  Time: 3:30 PM

TH 15A Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
AP	5	a	S	10YR3/2	—	—	—	SL	1m sbh	vfr	3
Bw	34	a	S	10YR4/4	—	—	—	SL	1 sbh	fr	3
ZC	96+	—	—	2.5Y5/3	—	—	—	gn cos	0 sy	l	1m
/											
TH 15B Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	12	a	S	10YR3/2	—	—	—	SL	1m sbh	vfr	3
Bw	32	a	S	10YR4/4	—	—	—	SL	1 sbh	fr	3
ZC	96+	—	—	2.5Y5/3	—	—	—	gn cos	0 sy	l	1m
/											

TH 15A Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

TH 15B Soil Class G/B Total Depth 8' Impervious/Limiting Layer Depth N/A (og) GW Seepage Depth N/A SHWT 8' (og)

Comments: (Do not use these results for other than designing onsite wastewater treatment systems)

\_\_\_\_\_

\_\_\_\_\_



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program



Site Evaluation Form

Part A - Soil Profile Description

Application Number 1932-0869

Property Owner: TRUE NORTH LAND COMPANY, LLC

Property Location: PLAT 47-2, LOT 120 SOUTH KINGSTOWN

Date of Test Hole: 10-26-20

Soil Evaluator: DAVID K. MANONI

License Number: D4086

Weather: 50°F, OVERCAST

Shaded: Yes [X] No [ ] Time: 10:00AM

Table with 11 columns: TH Horizon, Depth, Horizon Boundaries (Dist, Topo), Soil Colors (Matrix, Re-Dox Features), Re-Dox (Ab., S., Contr.), Texture, Structure, Consistence, Soil Category. Contains two sections of soil profile data for TH 7C and TH 7D.

TH 7C Soil Class G/B Total Depth 120" Impervious/Limiting Layer Depth 120"\*(og) GW Seepage Depth N/A SHWT 72" (og)

TH 7D Soil Class G/B Total Depth 96" Impervious/Limiting Layer Depth 96"\*(og) GW Seepage Depth N/A SHWT 30" (og)

Comments: \*NO REFUSAL ENCOUNTERED, IMPERVIOUS LAYER ASSUMED AT BOTTOM OF HOLE.

## North Woods Subdivision

### Drainage Testholes

<b>Location:</b> NW of Intersection of South Rd. & Tuckertown Rd. South Kingstown	<b>Date:</b> 10-10-20 <b>Time:</b> 10:00 AM – 12:00 PM	<b>Weather:</b> Sunny, 65°F <b>Shaded:</b> Yes
<b>Notes:</b> Testholes dug on west-facing backslope, with wetlands approx. 50'-200' to the west. Soil exhibits Loess over Ablation Till parent materials.		

Testhole D-1			
Horizon	Depth	Soil Texture	DEM Infiltration Rate* (inches/hour)
Ap	0-9"	FSL	1.02
Bw	9"-22"	FSL	1.02
C1	22"-42"	G,FSL	1.02
C2	42"-72"	G,S	8.27
Redox: @48"			
Estimated Seasonal High Groundwater Table: 48"			
Refusal: No			

\*DEM Infiltration Rates are obtained from the table in section 8.21 E4.(a.) of 250-ICCR-10-10-8 (Stormwater Management, Design and Installation Rules)

Testhole D-2			
Horizon	Depth	Soil Texture	DEM Infiltration Rate* (inches/hour)
A	0-6"	FSL	1.02
Bw	6"-24"	FSL	1.02
C1	24"-36"	FSL	1.02
Cd	36"-60"	FSL	Dense Layer
C2	60"-84"	G,S	8.27
Redox: @30"			
Estimated Seasonal High Groundwater Table: 30"			
Refusal: No			

\*DEM Infiltration Rates are obtained from the table in section 8.21 E4.(a.) of 250-ICCR-10-10-8 (Stormwater Management, Design and Installation Rules)

Testhole D-3			
Horizon	Depth	Soil Texture	DEM Infiltration Rate* (inches/hour)
A	0-6"	SIL	0.27
Bw	6"-18"	SIL	0.27
C1	18"-36"	FSL	1.02
Cdg	36"-72"	G,FSL	Dense Layer
Redox: @20"			
Estimated Seasonal High Groundwater Table: 18"			
Refusal: No			

\*DEM Infiltration Rates are obtained from the table in section 8.21 E4.(a.) of 250-ICCR-10-10-8 (Stormwater Management, Design and Installation Rules)

Testhole D-4			
Horizon	Depth	Soil Texture	DEM Infiltration Rate* (inches/hour)
Ap	0-8"	FSL	1.02
Bw	8"-20"	FSL	1.02
C1	20"-42"	FSL	1.02
C2	42"-96"	ST,S	8.27
Redox: @40"			
Estimated Seasonal High Groundwater Table: 48"			
Refusal: No			

\*DEM Infiltration Rates are obtained from the table in section 8.21 E4.(a.) of 250-ICCR-10-10-8 (Stormwater Management, Design and Installation Rules)

Testhole D-5			
Horizon	Depth	Soil Texture	DEM Infiltration Rate* (inches/hour)
C^	30"-0	HTM	
Ap	0"-10"	FSL	1.02
Bw	10"-30"	FSL	1.02
C1	30"-54"	FSL	1.02
C2	54"-84"	G,S	8.27
Redox: @40" (not indicative of SHGWT)			
Estimated Seasonal High Groundwater Table: 60" (from original grade)			
Refusal: No			

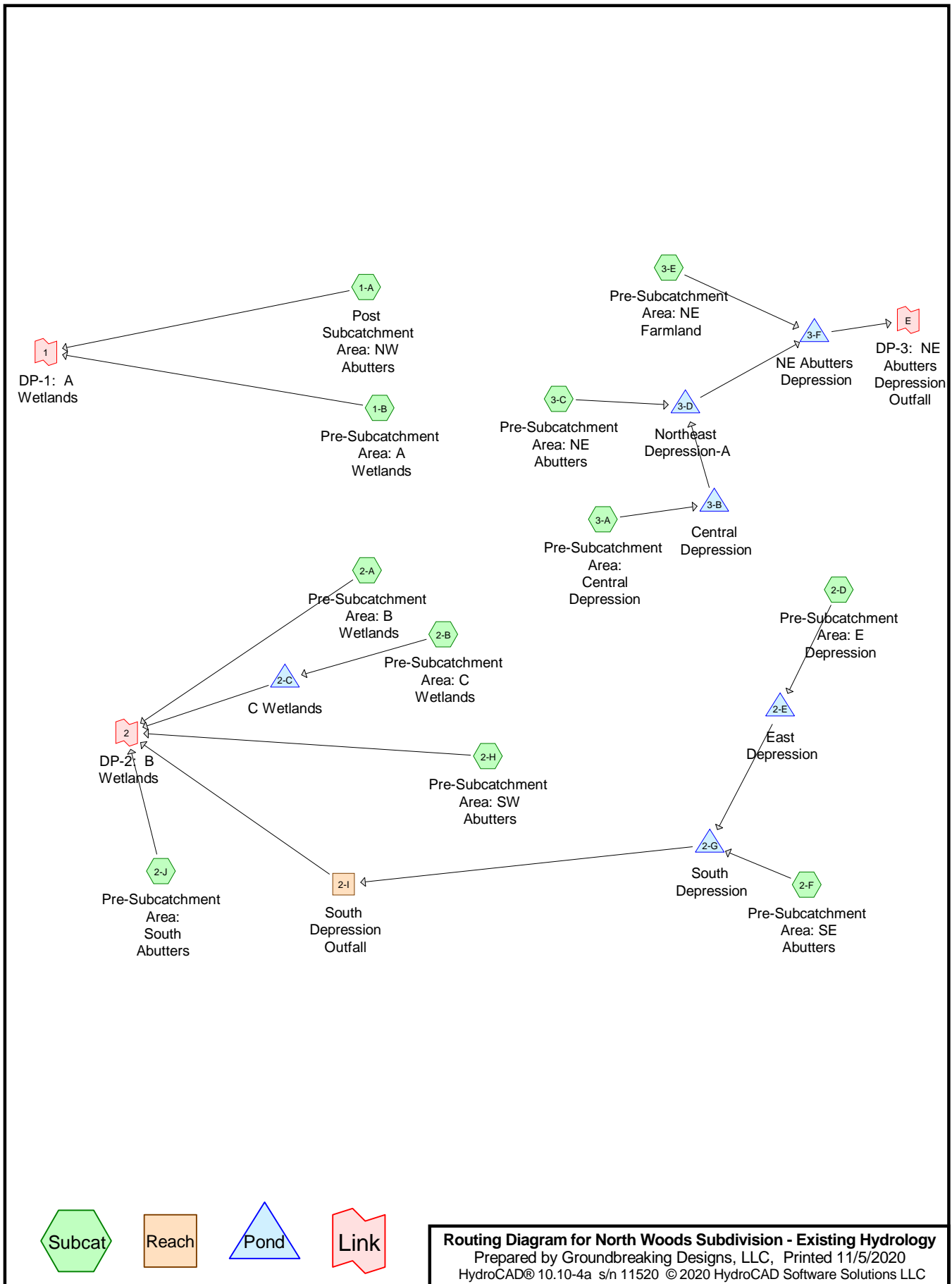
\*DEM Infiltration Rates are obtained from the table in section 8.21 E4.(a.) of 250-ICCR-10-10-8 (Stormwater Management, Design and Installation Rules)

Testhole D-6			
Horizon	Depth	Soil Texture	DEM Infiltration Rate* (inches/hour)
Ap	0"-10"	SL	1.02
Bw	10"-30"	SL	1.02
C	30"-42"	G,S	8.27
No Redox encountered			
Estimated Seasonal High Groundwater Table: 42" (assumed at bottom of hole)			
Refusal: No			

\*DEM Infiltration Rates are obtained from the table in section 8.21 E4.(a.) of 250-ICCR-10-10-8 (Stormwater Management, Design and Installation Rules)

Appendix D:

HydroCAD Report



## North Woods Subdivision - Existing Hydrology

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Page 2

### Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR.	Type III 24-hr		Default	24.00	1	2.80	2
2	10-YR.	Type III 24-hr		Default	24.00	1	4.90	2
3	100-YR.	Type III 24-hr		Default	24.00	1	8.50	2
4	WQV-1.2"	Type III 24-hr		Default	24.00	1	1.20	2

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 3

**Summary for Subcatchment 1-A: Post Subcatchment Area: NW Abutters**

Runoff = 0.66 cfs @ 12.69 hrs, Volume= 0.175 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (sf)	CN	Description
145,500	55	Woods, Good, HSG B
141,830	61	>75% Grass cover, Good, HSG B
11,760	98	Roofs, HSG B
299,090	60	Weighted Average
287,330	58	96.07% Pervious Area
11,760	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 1-B: Pre-Subcatchment Area: A Wetlands**

Runoff = 0.27 cfs @ 12.56 hrs, Volume= 0.064 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
2.500	55	Woods, Good, HSG B
0.500	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
3.230	59	Weighted Average
3.230	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.7	450	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
22.7	550	Total			

# North Woods Subdivision - Existing Hydrology

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 4

## Summary for Subcatchment 2-A: Pre-Subcatchment Area: B Wetlands

Runoff = 0.45 cfs @ 12.47 hrs, Volume= 0.083 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
1.610	55	Woods, Good, HSG B
1.470	70	Woods, Good, HSG C
3.080	62	Weighted Average
3.080	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.1	265	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
21.1	365	Total			

## Summary for Subcatchment 2-B: Pre-Subcatchment Area: C Wetlands

Runoff = 0.43 cfs @ 12.26 hrs, Volume= 0.052 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.270	55	Woods, Good, HSG B
0.450	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
1.100	69	Weighted Average
1.100	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	200	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.8	300	Total			

## Summary for Subcatchment 2-D: Pre-Subcatchment Area: E Depression

Runoff = 0.23 cfs @ 12.31 hrs, Volume= 0.045 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

# North Woods Subdivision - Existing Hydrology

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 5

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.900	55	Woods, Good, HSG B
0.320	61	>75% Grass cover, Good, HSG B
1.420	61	Weighted Average
1.320	58	92.96% Pervious Area
0.100	98	7.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

## Summary for Subcatchment 2-F: Pre-Subcatchment Area: SE Abutters

Runoff = 0.29 cfs @ 12.27 hrs, Volume= 0.053 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.440	55	Woods, Good, HSG B
1.460	61	>75% Grass cover, Good, HSG B
0.050	98	Roofs, HSG B
1.950	61	Weighted Average
1.900	60	97.44% Pervious Area
0.050	98	2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.3	270	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
11.0	370	Total			

## Summary for Subcatchment 2-H: Pre-Subcatchment Area: SW Abutters

Runoff = 0.25 cfs @ 12.53 hrs, Volume= 0.054 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 6

Area (ac)	CN	Description
1.160	55	Woods, Good, HSG B
1.070	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
2.450	60	Weighted Average
2.450	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	315	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.7	515	Total			

**Summary for Subcatchment 2-J: Pre-Subcatchment Area: South Abutters**

Runoff = 0.39 cfs @ 12.58 hrs, Volume= 0.098 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
2.100	55	Woods, Good, HSG B
2.480	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
4.660	59	Weighted Average
4.580	58	98.28% Pervious Area
0.080	98	1.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**Summary for Subcatchment 3-A: Pre-Subcatchment Area: Central Depression**

Runoff = 0.04 cfs @ 12.62 hrs, Volume= 0.014 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 7

Area (ac)	CN	Description
1.190	55	Woods, Good, HSG B
1.190	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Pre-Subcatchment Area: NE Abutters**

Runoff = 0.08 cfs @ 12.64 hrs, Volume= 0.031 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
2.560	55	Woods, Good, HSG B
2.560	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 0.75 cfs @ 12.26 hrs, Volume= 0.123 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 8

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-I: South Depression Outfall**

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 0.00" for 1-YR. event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 30.0 '/' Top Width= 90.00'  
 Length= 690.0' Slope= 0.0101 '/'  
 Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 2-C: C Wetlands**

Inflow Area = 1.100 ac, 0.00% Impervious, Inflow Depth = 0.57" for 1-YR. event  
 Inflow = 0.43 cfs @ 12.26 hrs, Volume= 0.052 af  
 Outflow = 0.01 cfs @ 24.18 hrs, Volume= 0.043 af, Atten= 98%, Lag= 714.8 min  
 Discarded = 0.01 cfs @ 24.18 hrs, Volume= 0.043 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 143.51' @ 24.18 hrs Surf.Area= 4,083 sf Storage= 1,855 cf

Plug-Flow detention time= 1,644.2 min calculated for 0.043 af (84% of inflow)  
 Center-of-Mass det. time= 1,572.8 min ( 2,472.7 - 899.9 )

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 9

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 24.18 hrs HW=143.51' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-E: East Depression**

Inflow Area = 1.420 ac, 7.04% Impervious, Inflow Depth = 0.38" for 1-YR. event  
 Inflow = 0.23 cfs @ 12.31 hrs, Volume= 0.045 af  
 Outflow = 0.12 cfs @ 12.74 hrs, Volume= 0.045 af, Atten= 47%, Lag= 25.5 min  
 Discarded = 0.12 cfs @ 12.74 hrs, Volume= 0.045 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 154.54' @ 12.74 hrs Surf.Area= 5,261 sf Storage= 223 cf

Plug-Flow detention time= 14.3 min calculated for 0.045 af (100% of inflow)  
 Center-of-Mass det. time= 14.3 min ( 888.5 - 874.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

# North Woods Subdivision - Existing Hydrology

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 10

**Discarded OutFlow** Max=0.12 cfs @ 12.74 hrs HW=154.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=154.50' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 2-G: South Depression

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 0.19" for 1-YR. event  
 Inflow = 0.29 cfs @ 12.27 hrs, Volume= 0.053 af  
 Outflow = 0.06 cfs @ 14.89 hrs, Volume= 0.053 af, Atten= 79%, Lag= 157.2 min  
 Discarded = 0.06 cfs @ 14.89 hrs, Volume= 0.053 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 149.32' @ 14.89 hrs Surf.Area= 2,547 sf Storage= 629 cf

Plug-Flow detention time= 116.9 min calculated for 0.053 af (100% of inflow)  
 Center-of-Mass det. time= 116.8 min ( 1,025.9 - 909.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	9,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	1,400	0	0
150.00	5,000	3,200	3,200
151.00	7,500	6,250	9,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	149.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>20.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.06 cfs @ 14.89 hrs HW=149.32' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=149.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 3-B: Central Depression

Inflow Area = 1.190 ac, 0.00% Impervious, Inflow Depth = 0.14" for 1-YR. event  
 Inflow = 0.04 cfs @ 12.62 hrs, Volume= 0.014 af  
 Outflow = 0.02 cfs @ 15.95 hrs, Volume= 0.014 af, Atten= 55%, Lag= 200.1 min  
 Discarded = 0.02 cfs @ 15.95 hrs, Volume= 0.014 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 11

Peak Elev= 158.27' @ 15.95 hrs Surf.Area= 738 sf Storage= 131 cf

Plug-Flow detention time= 97.3 min calculated for 0.014 af (100% of inflow)

Center-of-Mass det. time= 97.1 min ( 1,097.7 - 1,000.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	29,558 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	225	0	0
161.00	5,860	9,128	9,128
162.00	10,750	8,305	17,433
163.00	13,500	12,125	29,558

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	162.00'	<b>30.0' long x 14.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

**Discarded OutFlow** Max=0.02 cfs @ 15.95 hrs HW=158.27' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-D: Northeast Depression-A**

Inflow Area = 3.750 ac, 0.00% Impervious, Inflow Depth = 0.10" for 1-YR. event  
 Inflow = 0.08 cfs @ 12.64 hrs, Volume= 0.031 af  
 Outflow = 0.07 cfs @ 12.80 hrs, Volume= 0.031 af, Atten= 9%, Lag= 9.1 min  
 Discarded = 0.07 cfs @ 12.80 hrs, Volume= 0.031 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.01' @ 12.80 hrs Surf.Area= 4,416 sf Storage= 31 cf

Plug-Flow detention time= 7.0 min calculated for 0.031 af (100% of inflow)

Center-of-Mass det. time= 7.0 min ( 1,009.2 - 1,002.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	5,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	4,400	0	0
151.50	5,500	2,475	2,475
152.00	6,000	2,875	5,350

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 1-YR. Rainfall=2.80"

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Page 12

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.07 cfs @ 12.80 hrs HW=151.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.20" for 1-YR. event  
 Inflow = 0.75 cfs @ 12.26 hrs, Volume= 0.123 af  
 Outflow = 0.62 cfs @ 12.47 hrs, Volume= 0.123 af, Atten= 17%, Lag= 12.9 min  
 Discarded = 0.62 cfs @ 12.47 hrs, Volume= 0.123 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.01' @ 12.47 hrs Surf.Area= 65,040 sf Storage= 394 cf

Plug-Flow detention time= 10.6 min calculated for 0.123 af (100% of inflow)  
 Center-of-Mass det. time= 10.6 min ( 900.0 - 889.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.93 cfs @ 12.47 hrs HW=151.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.93 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Link 1: DP-1: A Wetlands**

Inflow Area = 10.096 ac, 2.67% Impervious, Inflow Depth = 0.28" for 1-YR. event  
Inflow = 0.92 cfs @ 12.64 hrs, Volume= 0.239 af  
Primary = 0.92 cfs @ 12.64 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link 2: DP-2: B Wetlands**

Inflow Area = 14.660 ac, 1.57% Impervious, Inflow Depth = 0.19" for 1-YR. event  
Inflow = 1.07 cfs @ 12.53 hrs, Volume= 0.235 af  
Primary = 1.07 cfs @ 12.53 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link E: DP-3: NE Abutters Depression Outfall**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.00" for 1-YR. event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 14

**Summary for Subcatchment 1-A: Post Subcatchment Area: NW Abutters**

Runoff = 4.36 cfs @ 12.60 hrs, Volume= 0.717 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (sf)	CN	Description
145,500	55	Woods, Good, HSG B
141,830	61	>75% Grass cover, Good, HSG B
11,760	98	Roofs, HSG B
299,090	60	Weighted Average
287,330	58	96.07% Pervious Area
11,760	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 1-B: Pre-Subcatchment Area: A Wetlands**

Runoff = 2.47 cfs @ 12.37 hrs, Volume= 0.317 af, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
2.500	55	Woods, Good, HSG B
0.500	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
3.230	59	Weighted Average
3.230	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.7	450	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
22.7	550	Total			

# North Woods Subdivision - Existing Hydrology

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 15

## Summary for Subcatchment 2-A: Pre-Subcatchment Area: B Wetlands

Runoff = 2.98 cfs @ 12.33 hrs, Volume= 0.353 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
1.610	55	Woods, Good, HSG B
1.470	70	Woods, Good, HSG C
3.080	62	Weighted Average
3.080	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.1	265	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
21.1	365	Total			

## Summary for Subcatchment 2-B: Pre-Subcatchment Area: C Wetlands

Runoff = 1.74 cfs @ 12.23 hrs, Volume= 0.173 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.270	55	Woods, Good, HSG B
0.450	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
1.100	69	Weighted Average
1.100	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	200	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.8	300	Total			

## Summary for Subcatchment 2-D: Pre-Subcatchment Area: E Depression

Runoff = 1.35 cfs @ 12.28 hrs, Volume= 0.161 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

# North Woods Subdivision - Existing Hydrology

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 16

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.900	55	Woods, Good, HSG B
0.320	61	>75% Grass cover, Good, HSG B
1.420	61	Weighted Average
1.320	58	92.96% Pervious Area
0.100	98	7.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

## Summary for Subcatchment 2-F: Pre-Subcatchment Area: SE Abutters

Runoff = 2.25 cfs @ 12.17 hrs, Volume= 0.216 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.440	55	Woods, Good, HSG B
1.460	61	>75% Grass cover, Good, HSG B
0.050	98	Roofs, HSG B
1.950	61	Weighted Average
1.900	60	97.44% Pervious Area
0.050	98	2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.3	270	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
11.0	370	Total			

## Summary for Subcatchment 2-H: Pre-Subcatchment Area: SW Abutters

Runoff = 2.05 cfs @ 12.34 hrs, Volume= 0.254 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 17

Area (ac)	CN	Description
1.160	55	Woods, Good, HSG B
1.070	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
2.450	60	Weighted Average
2.450	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	315	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.7	515	Total			

**Summary for Subcatchment 2-J: Pre-Subcatchment Area: South Abutters**

Runoff = 3.31 cfs @ 12.42 hrs, Volume= 0.456 af, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
2.100	55	Woods, Good, HSG B
2.480	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
4.660	59	Weighted Average
4.580	58	98.28% Pervious Area
0.080	98	1.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**Summary for Subcatchment 3-A: Pre-Subcatchment Area: Central Depression**

Runoff = 0.70 cfs @ 12.33 hrs, Volume= 0.092 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 18

Area (ac)	CN	Description
1.190	55	Woods, Good, HSG B
1.190	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Pre-Subcatchment Area: NE Abutters**

Runoff = 1.46 cfs @ 12.36 hrs, Volume= 0.199 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
2.560	55	Woods, Good, HSG B
2.560	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 4.46 cfs @ 12.20 hrs, Volume= 0.453 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 19

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-I: South Depression Outfall**

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 0.17" for 10-YR. event  
 Inflow = 0.44 cfs @ 12.70 hrs, Volume= 0.046 af  
 Outflow = 0.24 cfs @ 13.78 hrs, Volume= 0.046 af, Atten= 47%, Lag= 64.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 0.34 fps, Min. Travel Time= 33.6 min  
 Avg. Velocity = 0.22 fps, Avg. Travel Time= 52.0 min

Peak Storage= 476 cf @ 13.22 hrs  
 Average Depth at Peak Storage= 0.02' , Surface Width= 31.35'  
 Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 30.0 ' / ' Top Width= 90.00'  
 Length= 690.0' Slope= 0.0101 ' / '  
 Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 2-C: C Wetlands**

Inflow Area = 1.100 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-YR. event  
 Inflow = 1.74 cfs @ 12.23 hrs, Volume= 0.173 af  
 Outflow = 0.24 cfs @ 13.40 hrs, Volume= 0.121 af, Atten= 86%, Lag= 70.2 min  
 Discarded = 0.01 cfs @ 13.40 hrs, Volume= 0.054 af  
 Primary = 0.23 cfs @ 13.40 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.01' @ 13.40 hrs Surf.Area= 4,956 sf Storage= 4,131 cf

Plug-Flow detention time= 887.4 min calculated for 0.121 af (70% of inflow)  
 Center-of-Mass det. time= 785.7 min ( 1,646.2 - 860.5 )

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 20

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 13.40 hrs HW=144.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.20 cfs @ 13.40 hrs HW=144.01' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.20 cfs @ 0.31 fps)

**Summary for Pond 2-E: East Depression**

Inflow Area = 1.420 ac, 7.04% Impervious, Inflow Depth = 1.36" for 10-YR. event  
 Inflow = 1.35 cfs @ 12.28 hrs, Volume= 0.161 af  
 Outflow = 0.18 cfs @ 14.15 hrs, Volume= 0.161 af, Atten= 87%, Lag= 112.5 min  
 Discarded = 0.18 cfs @ 14.15 hrs, Volume= 0.161 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 154.92' @ 14.15 hrs Surf.Area= 7,514 sf Storage= 2,622 cf

Plug-Flow detention time= 155.7 min calculated for 0.161 af (100% of inflow)  
 Center-of-Mass det. time= 155.7 min ( 1,017.9 - 862.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

# North Woods Subdivision - Existing Hydrology

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 21

**Discarded OutFlow** Max=0.18 cfs @ 14.15 hrs HW=154.92' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=154.50' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 2-G: South Depression

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 0.77" for 10-YR. event  
 Inflow = 2.25 cfs @ 12.17 hrs, Volume= 0.216 af  
 Outflow = 0.56 cfs @ 12.70 hrs, Volume= 0.216 af, Atten= 75%, Lag= 31.8 min  
 Discarded = 0.12 cfs @ 12.70 hrs, Volume= 0.170 af  
 Primary = 0.44 cfs @ 12.70 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 150.04' @ 12.70 hrs Surf.Area= 5,102 sf Storage= 3,406 cf

Plug-Flow detention time= 280.7 min calculated for 0.216 af (100% of inflow)  
 Center-of-Mass det. time= 280.8 min ( 1,150.8 - 870.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	9,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	1,400	0	0
150.00	5,000	3,200	3,200
151.00	7,500	6,250	9,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	149.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>20.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.12 cfs @ 12.70 hrs HW=150.04' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=0.44 cfs @ 12.70 hrs HW=150.04' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.44 cfs @ 0.54 fps)

## Summary for Pond 3-B: Central Depression

Inflow Area = 1.190 ac, 0.00% Impervious, Inflow Depth = 0.93" for 10-YR. event  
 Inflow = 0.70 cfs @ 12.33 hrs, Volume= 0.092 af  
 Outflow = 0.07 cfs @ 16.43 hrs, Volume= 0.092 af, Atten= 91%, Lag= 246.1 min  
 Discarded = 0.07 cfs @ 16.43 hrs, Volume= 0.092 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

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Page 22

Peak Elev= 159.35' @ 16.43 hrs Surf.Area= 2,769 sf Storage= 2,027 cf

Plug-Flow detention time= 410.5 min calculated for 0.092 af (100% of inflow)

Center-of-Mass det. time= 410.7 min ( 1,317.4 - 906.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	29,558 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	225	0	0
161.00	5,860	9,128	9,128
162.00	10,750	8,305	17,433
163.00	13,500	12,125	29,558

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	162.00'	<b>30.0' long x 14.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

**Discarded OutFlow** Max=0.07 cfs @ 16.43 hrs HW=159.35' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-D: Northeast Depression-A**

Inflow Area = 3.750 ac, 0.00% Impervious, Inflow Depth = 0.64" for 10-YR. event  
 Inflow = 1.46 cfs @ 12.36 hrs, Volume= 0.199 af  
 Outflow = 0.53 cfs @ 12.94 hrs, Volume= 0.199 af, Atten= 64%, Lag= 34.9 min  
 Discarded = 0.13 cfs @ 12.94 hrs, Volume= 0.157 af  
 Primary = 0.40 cfs @ 12.94 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.52' @ 12.94 hrs Surf.Area= 5,525 sf Storage= 2,612 cf

Plug-Flow detention time= 193.8 min calculated for 0.198 af (100% of inflow)

Center-of-Mass det. time= 193.8 min ( 1,102.1 - 908.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	5,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	4,400	0	0
151.50	5,500	2,475	2,475
152.00	6,000	2,875	5,350

**North Woods Subdivision - Existing Hydrology**

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Page 23

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.13 cfs @ 12.94 hrs HW=151.52' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=0.39 cfs @ 12.94 hrs HW=151.52' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.39 cfs @ 0.39 fps)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.79" for 10-YR. event  
 Inflow = 4.46 cfs @ 12.20 hrs, Volume= 0.495 af  
 Outflow = 1.54 cfs @ 12.64 hrs, Volume= 0.495 af, Atten= 65%, Lag= 26.4 min  
 Discarded = 1.54 cfs @ 12.64 hrs, Volume= 0.495 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.06' @ 12.64 hrs Surf.Area= 65,417 sf Storage= 4,074 cf

Plug-Flow detention time= 21.1 min calculated for 0.494 af (100% of inflow)  
 Center-of-Mass det. time= 21.1 min ( 881.5 - 860.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=1.54 cfs @ 12.64 hrs HW=151.06' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 1.54 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Link 1: DP-1: A Wetlands**

Inflow Area = 10.096 ac, 2.67% Impervious, Inflow Depth = 1.23" for 10-YR. event  
Inflow = 6.37 cfs @ 12.52 hrs, Volume= 1.034 af  
Primary = 6.37 cfs @ 12.52 hrs, Volume= 1.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link 2: DP-2: B Wetlands**

Inflow Area = 14.660 ac, 1.57% Impervious, Inflow Depth = 0.96" for 10-YR. event  
Inflow = 8.22 cfs @ 12.36 hrs, Volume= 1.177 af  
Primary = 8.22 cfs @ 12.36 hrs, Volume= 1.177 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link E: DP-3: NE Abutters Depression Outfall**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.00" for 10-YR. event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 25

**Summary for Subcatchment 1-A: Post Subcatchment Area: NW Abutters**

Runoff = 14.41 cfs @ 12.55 hrs, Volume= 2.098 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (sf)	CN	Description
145,500	55	Woods, Good, HSG B
141,830	61	>75% Grass cover, Good, HSG B
11,760	98	Roofs, HSG B
299,090	60	Weighted Average
287,330	58	96.07% Pervious Area
11,760	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 1-B: Pre-Subcatchment Area: A Wetlands**

Runoff = 8.54 cfs @ 12.33 hrs, Volume= 0.968 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
2.500	55	Woods, Good, HSG B
0.500	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
3.230	59	Weighted Average
3.230	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.7	450	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
22.7	550	Total			

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 26

**Summary for Subcatchment 2-A: Pre-Subcatchment Area: B Wetlands**

Runoff = 9.31 cfs @ 12.30 hrs, Volume= 1.013 af, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
1.610	55	Woods, Good, HSG B
1.470	70	Woods, Good, HSG C
3.080	62	Weighted Average
3.080	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.1	265	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
21.1	365	Total			

**Summary for Subcatchment 2-B: Pre-Subcatchment Area: C Wetlands**

Runoff = 4.56 cfs @ 12.22 hrs, Volume= 0.438 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.270	55	Woods, Good, HSG B
0.450	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
1.100	69	Weighted Average
1.100	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	200	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.8	300	Total			

**Summary for Subcatchment 2-D: Pre-Subcatchment Area: E Depression**

Runoff = 4.28 cfs @ 12.26 hrs, Volume= 0.452 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 27

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.900	55	Woods, Good, HSG B
0.320	61	>75% Grass cover, Good, HSG B
1.420	61	Weighted Average
1.320	58	92.96% Pervious Area
0.100	98	7.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

**Summary for Subcatchment 2-F: Pre-Subcatchment Area: SE Abutters**

Runoff = 7.25 cfs @ 12.16 hrs, Volume= 0.622 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.440	55	Woods, Good, HSG B
1.460	61	>75% Grass cover, Good, HSG B
0.050	98	Roofs, HSG B
1.950	61	Weighted Average
1.900	60	97.44% Pervious Area
0.050	98	2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.3	270	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
11.0	370	Total			

**Summary for Subcatchment 2-H: Pre-Subcatchment Area: SW Abutters**

Runoff = 6.84 cfs @ 12.31 hrs, Volume= 0.758 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 28

Area (ac)	CN	Description
1.160	55	Woods, Good, HSG B
1.070	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
2.450	60	Weighted Average
2.450	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	315	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.7	515	Total			

**Summary for Subcatchment 2-J: Pre-Subcatchment Area: South Abutters**

Runoff = 11.45 cfs @ 12.37 hrs, Volume= 1.383 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
2.100	55	Woods, Good, HSG B
2.480	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
4.660	59	Weighted Average
4.580	58	98.28% Pervious Area
0.080	98	1.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**Summary for Subcatchment 3-A: Pre-Subcatchment Area: Central Depression**

Runoff = 2.90 cfs @ 12.28 hrs, Volume= 0.311 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 29

Area (ac)	CN	Description
1.190	55	Woods, Good, HSG B
1.190	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Pre-Subcatchment Area: NE Abutters**

Runoff = 6.01 cfs @ 12.30 hrs, Volume= 0.668 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
2.560	55	Woods, Good, HSG B
2.560	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 13.51 cfs @ 12.19 hrs, Volume= 1.250 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 30

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-I: South Depression Outfall**

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 2.18" for 100-YR. event  
 Inflow = 8.01 cfs @ 12.35 hrs, Volume= 0.613 af  
 Outflow = 6.89 cfs @ 12.62 hrs, Volume= 0.613 af, Atten= 14%, Lag= 16.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 9.7 min  
 Avg. Velocity = 0.31 fps, Avg. Travel Time= 36.6 min

Peak Storage= 4,022 cf @ 12.45 hrs  
 Average Depth at Peak Storage= 0.17' , Surface Width= 39.99'  
 Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 30.0 '/' Top Width= 90.00'  
 Length= 690.0' Slope= 0.0101 '/'  
 Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 2-C: C Wetlands**

Inflow Area = 1.100 ac, 0.00% Impervious, Inflow Depth = 4.78" for 100-YR. event  
 Inflow = 4.56 cfs @ 12.22 hrs, Volume= 0.438 af  
 Outflow = 4.49 cfs @ 12.25 hrs, Volume= 0.386 af, Atten= 2%, Lag= 1.9 min  
 Discarded = 0.01 cfs @ 12.25 hrs, Volume= 0.056 af  
 Primary = 4.48 cfs @ 12.25 hrs, Volume= 0.330 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.10' @ 12.25 hrs Surf.Area= 5,113 sf Storage= 4,588 cf

Plug-Flow detention time= 311.3 min calculated for 0.386 af (88% of inflow)  
 Center-of-Mass det. time= 256.3 min ( 1,089.6 - 833.3 )

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 31

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 12.25 hrs HW=144.10' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=4.44 cfs @ 12.25 hrs HW=144.10' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 4.44 cfs @ 0.86 fps)

**Summary for Pond 2-E: East Depression**

Inflow Area = 1.420 ac, 7.04% Impervious, Inflow Depth = 3.82" for 100-YR. event  
 Inflow = 4.28 cfs @ 12.26 hrs, Volume= 0.452 af  
 Outflow = 3.93 cfs @ 12.34 hrs, Volume= 0.452 af, Atten= 8%, Lag= 5.2 min  
 Discarded = 0.19 cfs @ 12.34 hrs, Volume= 0.252 af  
 Primary = 3.74 cfs @ 12.34 hrs, Volume= 0.200 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 155.08' @ 12.34 hrs Surf.Area= 8,163 sf Storage= 3,907 cf

Plug-Flow detention time= 119.9 min calculated for 0.451 af (100% of inflow)  
 Center-of-Mass det. time= 119.9 min ( 962.2 - 842.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.19 cfs @ 12.34 hrs HW=155.08' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.19 cfs)

**Primary OutFlow** Max=3.69 cfs @ 12.34 hrs HW=155.08' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 3.69 cfs @ 0.76 fps)

**Summary for Pond 2-G: South Depression**

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 2.93" for 100-YR. event  
 Inflow = 8.43 cfs @ 12.31 hrs, Volume= 0.822 af  
 Outflow = 8.14 cfs @ 12.35 hrs, Volume= 0.822 af, Atten= 3%, Lag= 2.3 min  
 Discarded = 0.13 cfs @ 12.35 hrs, Volume= 0.209 af  
 Primary = 8.01 cfs @ 12.35 hrs, Volume= 0.613 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 150.28' @ 12.35 hrs Surf.Area= 5,702 sf Storage= 4,704 cf

Plug-Flow detention time= 96.8 min calculated for 0.822 af (100% of inflow)  
 Center-of-Mass det. time= 96.7 min ( 924.9 - 828.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	9,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	1,400	0	0
150.00	5,000	3,200	3,200
151.00	7,500	6,250	9,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	149.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>20.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.13 cfs @ 12.35 hrs HW=150.28' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=7.98 cfs @ 12.35 hrs HW=150.28' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 7.98 cfs @ 1.42 fps)

**Summary for Pond 3-B: Central Depression**

Inflow Area = 1.190 ac, 0.00% Impervious, Inflow Depth = 3.13" for 100-YR. event  
 Inflow = 2.90 cfs @ 12.28 hrs, Volume= 0.311 af  
 Outflow = 0.14 cfs @ 17.54 hrs, Volume= 0.311 af, Atten= 95%, Lag= 315.4 min  
 Discarded = 0.14 cfs @ 17.54 hrs, Volume= 0.311 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 33

Peak Elev= 160.95' @ 17.54 hrs Surf.Area= 5,757 sf Storage= 8,808 cf

Plug-Flow detention time= 821.3 min calculated for 0.310 af (100% of inflow)  
Center-of-Mass det. time= 821.8 min ( 1,688.0 - 866.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	29,558 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	225	0	0
161.00	5,860	9,128	9,128
162.00	10,750	8,305	17,433
163.00	13,500	12,125	29,558

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	162.00'	<b>30.0' long x 14.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

**Discarded OutFlow** Max=0.14 cfs @ 17.54 hrs HW=160.95' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.14 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-D: Northeast Depression-A**

Inflow Area = 3.750 ac, 0.00% Impervious, Inflow Depth = 2.14" for 100-YR. event  
 Inflow = 6.01 cfs @ 12.30 hrs, Volume= 0.668 af  
 Outflow = 5.95 cfs @ 12.34 hrs, Volume= 0.668 af, Atten= 1%, Lag= 1.9 min  
 Discarded = 0.13 cfs @ 12.34 hrs, Volume= 0.200 af  
 Primary = 5.82 cfs @ 12.34 hrs, Volume= 0.468 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.65' @ 12.34 hrs Surf.Area= 5,650 sf Storage= 3,314 cf

Plug-Flow detention time= 80.6 min calculated for 0.668 af (100% of inflow)  
 Center-of-Mass det. time= 80.7 min ( 948.5 - 867.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	5,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	4,400	0	0
151.50	5,500	2,475	2,475
152.00	6,000	2,875	5,350

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 34

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.13 cfs @ 12.34 hrs HW=151.65' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=5.80 cfs @ 12.34 hrs HW=151.65' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 5.80 cfs @ 0.97 fps)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 2.76" for 100-YR. event  
 Inflow = 17.58 cfs @ 12.24 hrs, Volume= 1.718 af  
 Outflow = 1.62 cfs @ 14.47 hrs, Volume= 1.718 af, Atten= 91%, Lag= 133.6 min  
 Discarded = 1.62 cfs @ 14.47 hrs, Volume= 1.718 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.52' @ 14.47 hrs Surf.Area= 68,490 sf Storage= 34,944 cf

Plug-Flow detention time= 218.1 min calculated for 1.718 af (100% of inflow)  
 Center-of-Mass det. time= 218.1 min ( 1,054.7 - 836.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=1.62 cfs @ 14.47 hrs HW=151.52' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 1.62 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Link 1: DP-1: A Wetlands**

Inflow Area = 10.096 ac, 2.67% Impervious, Inflow Depth = 3.64" for 100-YR. event  
Inflow = 21.26 cfs @ 12.46 hrs, Volume= 3.066 af  
Primary = 21.26 cfs @ 12.46 hrs, Volume= 3.066 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link 2: DP-2: B Wetlands**

Inflow Area = 14.660 ac, 1.57% Impervious, Inflow Depth = 3.35" for 100-YR. event  
Inflow = 33.23 cfs @ 12.37 hrs, Volume= 4.097 af  
Primary = 33.23 cfs @ 12.37 hrs, Volume= 4.097 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link E: DP-3: NE Abutters Depression Outfall**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.00" for 100-YR. event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 36

**Summary for Subcatchment 1-A: Post Subcatchment Area: NW Abutters**

Runoff = 0.15 cfs @ 12.51 hrs, Volume= 0.022 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (sf)	CN	Description
145,500	55	Woods, Good, HSG B
141,830	61	>75% Grass cover, Good, HSG B
11,760	98	Roofs, HSG B
299,090	60	Weighted Average
287,330	58	96.07% Pervious Area
11,760	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 1-B: Pre-Subcatchment Area: A Wetlands**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
2.500	55	Woods, Good, HSG B
0.500	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
3.230	59	Weighted Average
3.230	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.7	450	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
22.7	550	Total			

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 37

**Summary for Subcatchment 2-A: Pre-Subcatchment Area: B Wetlands**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
1.610	55	Woods, Good, HSG B
1.470	70	Woods, Good, HSG C
3.080	62	Weighted Average
3.080	62	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.1	265	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
21.1	365	Total			

**Summary for Subcatchment 2-B: Pre-Subcatchment Area: C Wetlands**

Runoff = 0.00 cfs @ 15.36 hrs, Volume= 0.002 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.270	55	Woods, Good, HSG B
0.450	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
1.100	69	Weighted Average
1.100	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	200	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.8	300	Total			

**Summary for Subcatchment 2-D: Pre-Subcatchment Area: E Depression**

Runoff = 0.08 cfs @ 12.24 hrs, Volume= 0.008 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 38

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.900	55	Woods, Good, HSG B
0.320	61	>75% Grass cover, Good, HSG B
1.420	61	Weighted Average
1.320	58	92.96% Pervious Area
0.100	98	7.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

**Summary for Subcatchment 2-F: Pre-Subcatchment Area: SE Abutters**

Runoff = 0.05 cfs @ 12.15 hrs, Volume= 0.004 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.440	55	Woods, Good, HSG B
1.460	61	>75% Grass cover, Good, HSG B
0.050	98	Roofs, HSG B
1.950	61	Weighted Average
1.900	60	97.44% Pervious Area
0.050	98	2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.3	270	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
11.0	370	Total			

**Summary for Subcatchment 2-H: Pre-Subcatchment Area: SW Abutters**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 39

Area (ac)	CN	Description
1.160	55	Woods, Good, HSG B
1.070	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
2.450	60	Weighted Average
2.450	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	315	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.7	515	Total			

**Summary for Subcatchment 2-J: Pre-Subcatchment Area: South Abutters**

Runoff = 0.05 cfs @ 12.34 hrs, Volume= 0.007 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
2.100	55	Woods, Good, HSG B
2.480	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
4.660	59	Weighted Average
4.580	58	98.28% Pervious Area
0.080	98	1.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**Summary for Subcatchment 3-A: Pre-Subcatchment Area: Central Depression**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 40

Area (ac)	CN	Description
1.190	55	Woods, Good, HSG B
1.190	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Pre-Subcatchment Area: NE Abutters**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
2.560	55	Woods, Good, HSG B
2.560	55	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 0.15 cfs @ 12.18 hrs, Volume= 0.014 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 41

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-I: South Depression Outfall**

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 30.0 '/' Top Width= 90.00'  
 Length= 690.0' Slope= 0.0101 '/'  
 Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 2-C: C Wetlands**

Inflow Area = 1.100 ac, 0.00% Impervious, Inflow Depth = 0.02" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 15.36 hrs, Volume= 0.002 af  
 Outflow = 0.00 cfs @ 17.68 hrs, Volume= 0.002 af, Atten= 21%, Lag= 139.3 min  
 Discarded = 0.00 cfs @ 17.68 hrs, Volume= 0.002 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 143.00' @ 17.68 hrs Surf.Area= 3,207 sf Storage= 14 cf

Plug-Flow detention time= 108.0 min calculated for 0.002 af (100% of inflow)  
 Center-of-Mass det. time= 107.6 min ( 1,211.0 - 1,103.4 )

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 42

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.00 cfs @ 17.68 hrs HW=143.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-E: East Depression**

Inflow Area = 1.420 ac, 7.04% Impervious, Inflow Depth = 0.07" for WQV-1.2" event  
 Inflow = 0.08 cfs @ 12.24 hrs, Volume= 0.008 af  
 Outflow = 0.06 cfs @ 12.37 hrs, Volume= 0.008 af, Atten= 20%, Lag= 8.0 min  
 Discarded = 0.06 cfs @ 12.37 hrs, Volume= 0.008 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 154.51' @ 12.37 hrs Surf.Area= 5,047 sf Storage= 39 cf

Plug-Flow detention time= 10.5 min calculated for 0.008 af (100% of inflow)  
 Center-of-Mass det. time= 10.5 min ( 803.7 - 793.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.09 cfs @ 12.37 hrs HW=154.51' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.09 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=154.50' (Free Discharge)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 2-G: South Depression**

Inflow Area = 3.370 ac, 4.45% Impervious, Inflow Depth = 0.01" for WQV-1.2" event  
 Inflow = 0.05 cfs @ 12.15 hrs, Volume= 0.004 af  
 Outflow = 0.03 cfs @ 12.28 hrs, Volume= 0.004 af, Atten= 33%, Lag= 8.0 min  
 Discarded = 0.03 cfs @ 12.28 hrs, Volume= 0.004 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 149.02' @ 12.28 hrs Surf.Area= 1,465 sf Storage= 26 cf

Plug-Flow detention time= 13.8 min calculated for 0.004 af (100% of inflow)  
 Center-of-Mass det. time= 13.8 min ( 800.4 - 786.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	9,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	1,400	0	0
150.00	5,000	3,200	3,200
151.00	7,500	6,250	9,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	149.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>20.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.03 cfs @ 12.28 hrs HW=149.02' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=149.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 3-B: Central Depression**

Inflow Area = 1.190 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 44

Peak Elev= 158.00' @ 0.00 hrs Surf.Area= 225 sf Storage= 0 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	158.00'	29,558 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	225	0	0
161.00	5,860	9,128	9,128
162.00	10,750	8,305	17,433
163.00	13,500	12,125	29,558

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	162.00'	<b>30.0' long x 14.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑**1=Exfiltration** ( Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-D: Northeast Depression-A**

Inflow Area = 3.750 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 151.00' @ 0.00 hrs Surf.Area= 4,400 sf Storage= 0 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	151.00'	5,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	4,400	0	0
151.50	5,500	2,475	2,475
152.00	6,000	2,875	5,350

**North Woods Subdivision - Existing Hydrology**

Type III 24-hr WQV-1.2" Rainfall=1.20"

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Page 45

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**1=Exfiltration** ( Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.02" for WQV-1.2" event  
 Inflow = 0.15 cfs @ 12.18 hrs, Volume= 0.014 af  
 Outflow = 0.11 cfs @ 12.30 hrs, Volume= 0.014 af, Atten= 24%, Lag= 7.3 min  
 Discarded = 0.11 cfs @ 12.30 hrs, Volume= 0.014 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.00' @ 12.30 hrs Surf.Area= 65,007 sf Storage= 71 cf

Plug-Flow detention time= 10.6 min calculated for 0.014 af (100% of inflow)  
 Center-of-Mass det. time= 10.6 min ( 799.5 - 789.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.17 cfs @ 12.30 hrs HW=151.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.17 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Link 1: DP-1: A Wetlands**

Inflow Area = 10.096 ac, 2.67% Impervious, Inflow Depth = 0.03" for WQV-1.2" event  
Inflow = 0.15 cfs @ 12.51 hrs, Volume= 0.022 af  
Primary = 0.15 cfs @ 12.51 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link 2: DP-2: B Wetlands**

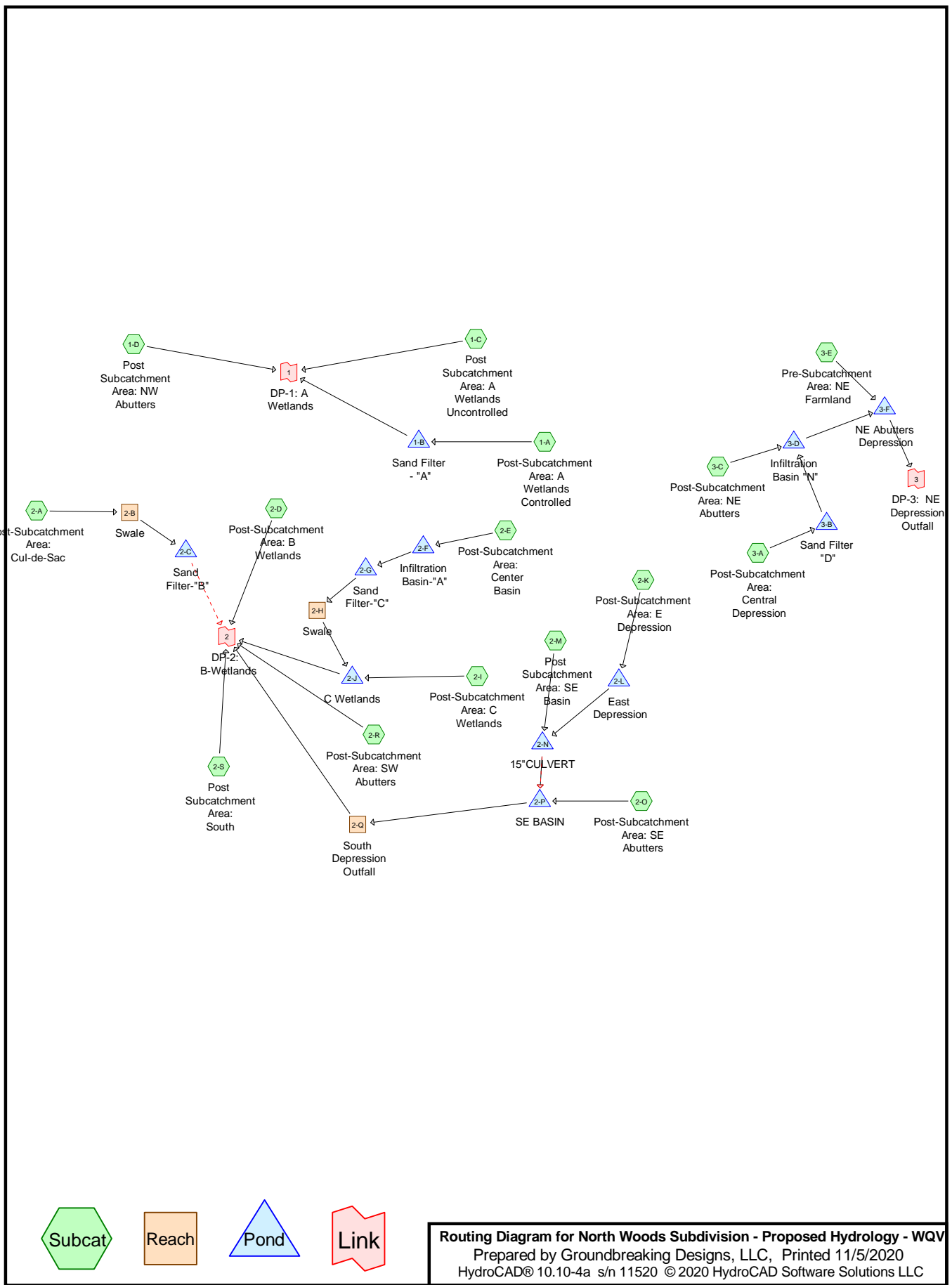
Inflow Area = 14.660 ac, 1.57% Impervious, Inflow Depth = 0.01" for WQV-1.2" event  
Inflow = 0.05 cfs @ 12.34 hrs, Volume= 0.007 af  
Primary = 0.05 cfs @ 12.34 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

**Summary for Link E: DP-3: NE Abutters Depression Outfall**

Inflow Area = 7.470 ac, 2.28% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs



**Summary for Subcatchment 1-A: Post-Subcatchment Area: A Wetlands Controlled**

Runoff = 0.16 cfs @ 12.19 hrs, Volume= 0.016 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.660	55	Woods, Good, HSG B
0.320	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
0.400	61	>75% Grass cover, Good, HSG B
0.190	98	Unconnected pavement, HSG B
1.800	66	Weighted Average
1.610	63	89.44% Pervious Area
0.190	98	10.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	110	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.1	90	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
13.9	300	Total			

**Summary for Subcatchment 1-C: Post Subcatchment Area: A Wetlands Uncontrolled**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
1.150	55	Woods, Good, HSG B
0.180	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
1.560	60	Weighted Average
1.560	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.7	180	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.7	280	Total			

**Summary for Subcatchment 1-D: Post Subcatchment Area: NW Abutters**

Runoff = 0.15 cfs @ 12.51 hrs, Volume= 0.022 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
3.340	55	Woods, Good, HSG B
3.256	61	>75% Grass cover, Good, HSG B
0.270	98	Roofs, HSG B
6.866	60	Weighted Average
6.596	58	96.07% Pervious Area
0.270	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 2-A: Post-Subcatchment Area: Cul-de-Sac**

Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.020 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
0.410	70	Woods, Good, HSG C
0.430	61	>75% Grass cover, Good, HSG B
1.080	73	Weighted Average
0.840	65	77.78% Pervious Area
0.240	98	22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.3	60	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.2	180	0.0700	12.00	9.43	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.2	340	Total			

**Summary for Subcatchment 2-D: Post-Subcatchment Area: B Wetlands**

Runoff = 0.00 cfs @ 15.67 hrs, Volume= 0.001 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.060	55	Woods, Good, HSG B
0.850	70	Woods, Good, HSG C
0.190	61	>75% Grass cover, Good, HSG B
0.100	74	>75% Grass cover, Good, HSG C
0.000	98	Unconnected pavement, HSG B
1.200	68	Weighted Average
1.200	68	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.1000	0.15		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.5	125	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	225	Total			

**Summary for Subcatchment 2-E: Post-Subcatchment Area: Center Basin**

Runoff = 0.17 cfs @ 12.16 hrs, Volume= 0.016 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.190	98	Unconnected pavement, HSG B
0.400	61	>75% Grass cover, Good, HSG B
0.590	73	Weighted Average
0.400	61	67.80% Pervious Area
0.190	98	32.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.4	80	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
12.3	180	Total			

**Summary for Subcatchment 2-I: Post-Subcatchment Area: C Wetlands**

Runoff = 0.00 cfs @ 15.33 hrs, Volume= 0.002 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.200	55	Woods, Good, HSG B
0.390	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
0.110	61	>75% Grass cover, Good, HSG B
0.000	98	Unconnected pavement, HSG B
0.060	74	>75% Grass cover, Good, HSG C
1.140	69	Weighted Average
1.140	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	140	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.9	240	Total			

**Summary for Subcatchment 2-K: Post-Subcatchment Area: E Depression**

Runoff = 0.14 cfs @ 12.24 hrs, Volume= 0.015 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.740	55	Woods, Good, HSG B
0.330	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
1.350	64	Weighted Average
1.170	59	86.67% Pervious Area
0.180	98	13.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

**Summary for Subcatchment 2-M: Post Subcatchment Area: SE Basin**

Runoff = 0.17 cfs @ 12.20 hrs, Volume= 0.016 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.200	98	Unconnected pavement, HSG B
0.320	61	>75% Grass cover, Good, HSG B
0.520	75	Weighted Average
0.320	61	61.54% Pervious Area
0.200	98	38.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0200	0.12		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	190	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
15.0	290	Total			

**Summary for Subcatchment 2-O: Post-Subcatchment Area: SE Abutters**

Runoff = 0.09 cfs @ 12.15 hrs, Volume= 0.008 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.240	55	Woods, Good, HSG B
1.190	61	>75% Grass cover, Good, HSG B
0.100	98	Roofs, HSG B
1.530	62	Weighted Average
1.430	60	93.46% Pervious Area
0.100	98	6.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.2	240	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
10.9	340	Total			

**Summary for Subcatchment 2-R: Post-Subcatchment Area: SW Abutters**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.870	55	Woods, Good, HSG B
1.070	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
0.000	98	Unconnected pavement, HSG B
2.160	60	Weighted Average
2.160	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.7	270	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.1	470	Total			

**Summary for Subcatchment 2-S: Post Subcatchment Area: South**

Runoff = 0.05 cfs @ 12.34 hrs, Volume= 0.007 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.080	98	Unconnected roofs, HSG B
2.100	55	Woods, Good, HSG B
2.400	61	>75% Grass cover, Good, HSG B
4.580	59	Weighted Average
4.500	58	98.25% Pervious Area
0.080	98	1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**Summary for Subcatchment 3-A: Post-Subcatchment Area: Central Depression**

Runoff = 0.17 cfs @ 12.25 hrs, Volume= 0.018 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
0.400	55	Woods, Good, HSG B
0.580	61	>75% Grass cover, Good, HSG B
0.220	98	Unconnected roofs, HSG B
1.200	66	Weighted Average
0.980	59	81.67% Pervious Area
0.220	98	18.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Post-Subcatchment Area: NE Abutters**

Runoff = 0.09 cfs @ 12.27 hrs, Volume= 0.010 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
1.880	55	Woods, Good, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.120	98	Unconnected pavement, HSG B
2.530	58	Weighted Average
2.410	56	95.26% Pervious Area
0.120	98	4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 0.15 cfs @ 12.18 hrs, Volume= 0.014 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr WQV-1.2" Rainfall=1.20"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-B: Swale**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 0.22" for WQV-1.2" event  
 Inflow = 0.23 cfs @ 12.14 hrs, Volume= 0.020 af  
 Outflow = 0.22 cfs @ 12.17 hrs, Volume= 0.020 af, Atten= 3%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.06 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 3.0 min

Peak Storage= 14 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 0.07', Surface Width= 1.14'  
 Bank-Full Depth= 1.00' Flow Area= 2.0 sf, Capacity= 25.35 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding  
 Side Slope Z-value= 1.0 ' / ' Top Width= 3.00'  
 Length= 185.0' Slope= 0.1081 ' / '  
 Inlet Invert= 165.00', Outlet Invert= 145.00'



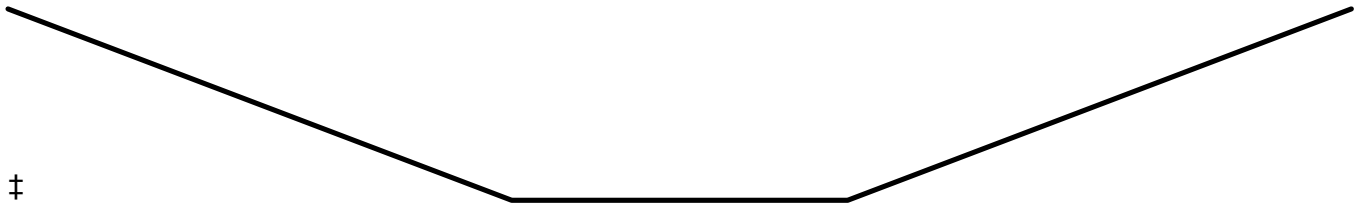
**Summary for Reach 2-H: Swale**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 83.28 cfs

2.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight  
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'  
 Length= 200.0' Slope= 0.1200 '/'  
 Inlet Invert= 160.00', Outlet Invert= 136.00'



**Summary for Reach 2-Q: South Depression Outfall**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 30.0 '/' Top Width= 90.00'  
 Length= 690.0' Slope= 0.0101 '/'  
 Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 1-B: Sand Filter - "A"**

Inflow Area = 1.800 ac, 10.56% Impervious, Inflow Depth = 0.10" for WQV-1.2" event  
 Inflow = 0.16 cfs @ 12.19 hrs, Volume= 0.016 af  
 Outflow = 0.14 cfs @ 12.25 hrs, Volume= 0.016 af, Atten= 11%, Lag= 4.0 min  
 Discarded = 0.14 cfs @ 12.25 hrs, Volume= 0.016 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 144.02' @ 12.25 hrs Surf.Area= 752 sf Storage= 13 cf

Plug-Flow detention time= 0.9 min calculated for 0.016 af (100% of inflow)  
 Center-of-Mass det. time= 0.9 min ( 790.8 - 789.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	1,095 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	740	0	0
145.00	1,450	1,095	1,095

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.75'	<b>40.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

**Discarded OutFlow** Max=0.14 cfs @ 12.25 hrs HW=144.02' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.14 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 2-C: Sand Filter-"B"**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 0.22" for WQV-1.2" event  
 Inflow = 0.22 cfs @ 12.17 hrs, Volume= 0.020 af  
 Outflow = 0.10 cfs @ 12.43 hrs, Volume= 0.020 af, Atten= 55%, Lag= 15.7 min  
 Discarded = 0.10 cfs @ 12.43 hrs, Volume= 0.020 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 143.47' @ 12.43 hrs Surf.Area= 523 sf Storage= 155 cf

Plug-Flow detention time= 10.6 min calculated for 0.020 af (100% of inflow)  
 Center-of-Mass det. time= 10.6 min ( 804.4 - 793.7 )

**North Woods Subdivision - Proposed Hydrology - WQ Type III 24-hr WQV-1.2" Rainfall=1.20"**

Prepared by Groundbreaking Designs, LLC

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Page 12

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	3,043 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	130	0	0
144.50	1,370	1,125	1,125
145.00	2,000	843	1,968
145.50	2,300	1,075	3,043

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Secondary	145.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.10 cfs @ 12.43 hrs HW=143.47' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.10 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-F: Infiltration Basin-"A"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 0.32" for WQV-1.2" event  
 Inflow = 0.17 cfs @ 12.16 hrs, Volume= 0.016 af  
 Outflow = 0.08 cfs @ 12.43 hrs, Volume= 0.016 af, Atten= 52%, Lag= 15.7 min  
 Discarded = 0.08 cfs @ 12.43 hrs, Volume= 0.016 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 161.35' @ 12.43 hrs Surf.Area= 423 sf Storage= 107 cf

Plug-Flow detention time= 8.0 min calculated for 0.016 af (100% of inflow)  
 Center-of-Mass det. time= 8.0 min ( 795.8 - 787.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	1,040 cf	<b>Custom Stage Data 1 (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	190	0	0
162.00	860	525	525
162.50	1,200	515	1,040

Device	Routing	Invert	Outlet Devices
#1	Discarded	161.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Device 3	161.50'	<b>2.0" x 2.0" Horiz. Orifice/Grate X 3.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads

#3 Primary 160.25' **12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500  
 Inlet / Outlet Invert= 160.25' / 160.00' S= 0.0056 '/' Cc= 0.900  
 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.08 cfs @ 12.43 hrs HW=161.35' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' (Free Discharge)  
 ↑ **3=Culvert** (Passes 0.00 cfs of 1.50 cfs potential flow)  
 ↑ **2=Orifice/Grate** ( Controls 0.00 cfs)

**Summary for Pond 2-G: Sand Filter-"C"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 159.00' @ 0.00 hrs Surf.Area= 130 sf Storage= 0 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	159.00'	578 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
159.00	130	0	0
160.00	450	290	290
160.50	700	288	578

Device	Routing	Invert	Outlet Devices
#1	Discarded	159.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	160.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=159.00' (Free Discharge)  
 ↑ **1=Exfiltration** ( Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=159.00' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-J: C Wetlands**

Inflow Area = 1.730 ac, 10.98% Impervious, Inflow Depth = 0.01" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 15.33 hrs, Volume= 0.002 af  
 Outflow = 0.00 cfs @ 17.66 hrs, Volume= 0.002 af, Atten= 21%, Lag= 140.2 min  
 Discarded = 0.00 cfs @ 17.66 hrs, Volume= 0.002 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 143.00' @ 17.66 hrs Surf.Area= 3,208 sf Storage= 14 cf

Plug-Flow detention time= 108.3 min calculated for 0.002 af (100% of inflow)  
 Center-of-Mass det. time= 107.6 min ( 1,210.1 - 1,102.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.00 cfs @ 17.66 hrs HW=143.00' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 2-L: East Depression**

Inflow Area = 1.350 ac, 13.33% Impervious, Inflow Depth = 0.13" for WQV-1.2" event  
 Inflow = 0.14 cfs @ 12.24 hrs, Volume= 0.015 af  
 Outflow = 0.11 cfs @ 12.37 hrs, Volume= 0.015 af, Atten= 20%, Lag= 8.0 min  
 Discarded = 0.11 cfs @ 12.37 hrs, Volume= 0.015 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 154.51' @ 12.37 hrs Surf.Area= 5,084 sf Storage= 70 cf

Plug-Flow detention time= 10.6 min calculated for 0.015 af (100% of inflow)  
 Center-of-Mass det. time= 10.5 min ( 803.7 - 793.2 )

**North Woods Subdivision - Proposed Hydrology - WQ Type III 24-hr WQV-1.2" Rainfall=1.20"**

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Page 15

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.12 cfs @ 12.37 hrs HW=154.51' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=154.50' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-N: 15" CULVERT**

Inflow Area = 1.870 ac, 20.32% Impervious, Inflow Depth = 0.11" for WQV-1.2" event  
 Inflow = 0.17 cfs @ 12.20 hrs, Volume= 0.016 af  
 Outflow = 0.17 cfs @ 12.21 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.3 min  
 Discarded = 0.01 cfs @ 12.21 hrs, Volume= 0.004 af  
 Primary = 0.16 cfs @ 12.21 hrs, Volume= 0.013 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 151.18' @ 12.21 hrs Surf.Area= 28 sf Storage= 4 cf

Plug-Flow detention time= 0.8 min calculated for 0.016 af (100% of inflow)

Center-of-Mass det. time= 0.8 min ( 791.2 - 790.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	1,481 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	18	0	0
152.00	72	45	45
153.00	900	486	531
154.00	1,000	950	1,481

Device	Routing	Invert	Outlet Devices
#1	Primary	151.00'	<b>15.0" Round Culvert</b> L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.00' / 150.00' S= 0.0200 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Discarded	151.00'	<b>8.210 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**North Woods Subdivision - Proposed Hydrology - WQ Type III 24-hr WQV-1.2" Rainfall=1.20"**

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Page 16

#3 Secondary 153.37' **10.0' long x 20.0' breadth Overflow**  
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60  
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 12.21 hrs HW=151.18' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.16 cfs @ 12.21 hrs HW=151.18' (Free Discharge)  
 ↑**1=Culvert** (Inlet Controls 0.16 cfs @ 1.45 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)  
 ↑**3=Overflow** ( Controls 0.00 cfs)

**Summary for Pond 2-P: SE BASIN**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 0.07" for WQV-1.2" event  
 Inflow = 0.25 cfs @ 12.18 hrs, Volume= 0.021 af  
 Outflow = 0.03 cfs @ 12.95 hrs, Volume= 0.021 af, Atten= 87%, Lag= 45.9 min  
 Discarded = 0.03 cfs @ 12.95 hrs, Volume= 0.021 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 149.09' @ 12.95 hrs Surf.Area= 4,977 sf Storage= 421 cf

Plug-Flow detention time= 123.1 min calculated for 0.021 af (100% of inflow)  
 Center-of-Mass det. time= 123.2 min ( 903.4 - 780.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	12,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	4,900	0	0
150.00	5,800	5,350	5,350
151.00	7,500	6,650	12,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	149.00'	<b>0.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>20.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.03 cfs @ 12.95 hrs HW=149.09' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=149.00' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-B: Sand Filter "D"**

Inflow Area = 1.200 ac, 18.33% Impervious, Inflow Depth = 0.18" for WQV-1.2" event  
 Inflow = 0.17 cfs @ 12.25 hrs, Volume= 0.018 af  
 Outflow = 0.16 cfs @ 12.32 hrs, Volume= 0.018 af, Atten= 6%, Lag= 4.1 min  
 Discarded = 0.16 cfs @ 12.32 hrs, Volume= 0.018 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 158.04' @ 12.32 hrs Surf.Area= 1,140 sf Storage= 40 cf

Plug-Flow detention time= 4.3 min calculated for 0.018 af (100% of inflow)  
 Center-of-Mass det. time= 4.3 min ( 798.3 - 794.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	28,935 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	1,110	0	0
159.00	1,960	1,535	1,535
160.00	3,060	2,510	4,045
161.00	5,860	4,460	8,505
162.00	10,750	8,305	16,810
163.00	13,500	12,125	28,935

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	161.70'	<b>7.0' long x 14.0' breadth Overflow</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#3	Primary	159.50'	<b>12.0" Round Culvert</b> L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 159.50' / 158.00' S= 0.0150 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.22 cfs @ 12.32 hrs HW=158.04' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑**2=Overflow** ( Controls 0.00 cfs)

↑**3=Culvert** ( Controls 0.00 cfs)

**Summary for Pond 3-D: Infiltration Basin "N"**

Inflow Area = 3.730 ac, 9.12% Impervious, Inflow Depth = 0.03" for WQV-1.2" event  
 Inflow = 0.09 cfs @ 12.27 hrs, Volume= 0.010 af  
 Outflow = 0.07 cfs @ 12.42 hrs, Volume= 0.010 af, Atten= 19%, Lag= 8.6 min  
 Discarded = 0.07 cfs @ 12.42 hrs, Volume= 0.010 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 151.01' @ 12.42 hrs Surf.Area= 3,032 sf Storage= 35 cf

Plug-Flow detention time= 7.1 min calculated for 0.010 af (100% of inflow)  
 Center-of-Mass det. time= 7.1 min ( 802.8 - 795.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	4,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	3,000	0	0
151.50	4,400	1,850	1,850
152.00	6,000	2,600	4,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.07 cfs @ 12.42 hrs HW=151.01' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 3-F: NE Abutters Depression

Inflow Area = 7.450 ac, 6.85% Impervious, Inflow Depth = 0.02" for WQV-1.2" event  
 Inflow = 0.15 cfs @ 12.18 hrs, Volume= 0.014 af  
 Outflow = 0.11 cfs @ 12.31 hrs, Volume= 0.014 af, Atten= 24%, Lag= 7.5 min  
 Discarded = 0.11 cfs @ 12.31 hrs, Volume= 0.014 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 151.00' @ 12.31 hrs Surf.Area= 65,007 sf Storage= 71 cf

Plug-Flow detention time= 10.6 min calculated for 0.014 af (100% of inflow)  
 Center-of-Mass det. time= 10.6 min ( 799.5 - 789.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.17 cfs @ 12.31 hrs HW=151.00' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.17 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)  
 ↳ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Link 1: DP-1: A Wetlands

Inflow Area = 10.226 ac, 4.50% Impervious, Inflow Depth = 0.03" for WQV-1.2" event  
 Inflow = 0.15 cfs @ 12.51 hrs, Volume= 0.022 af  
 Primary = 0.15 cfs @ 12.51 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Summary for Link 2: DP-2: B-Wetlands

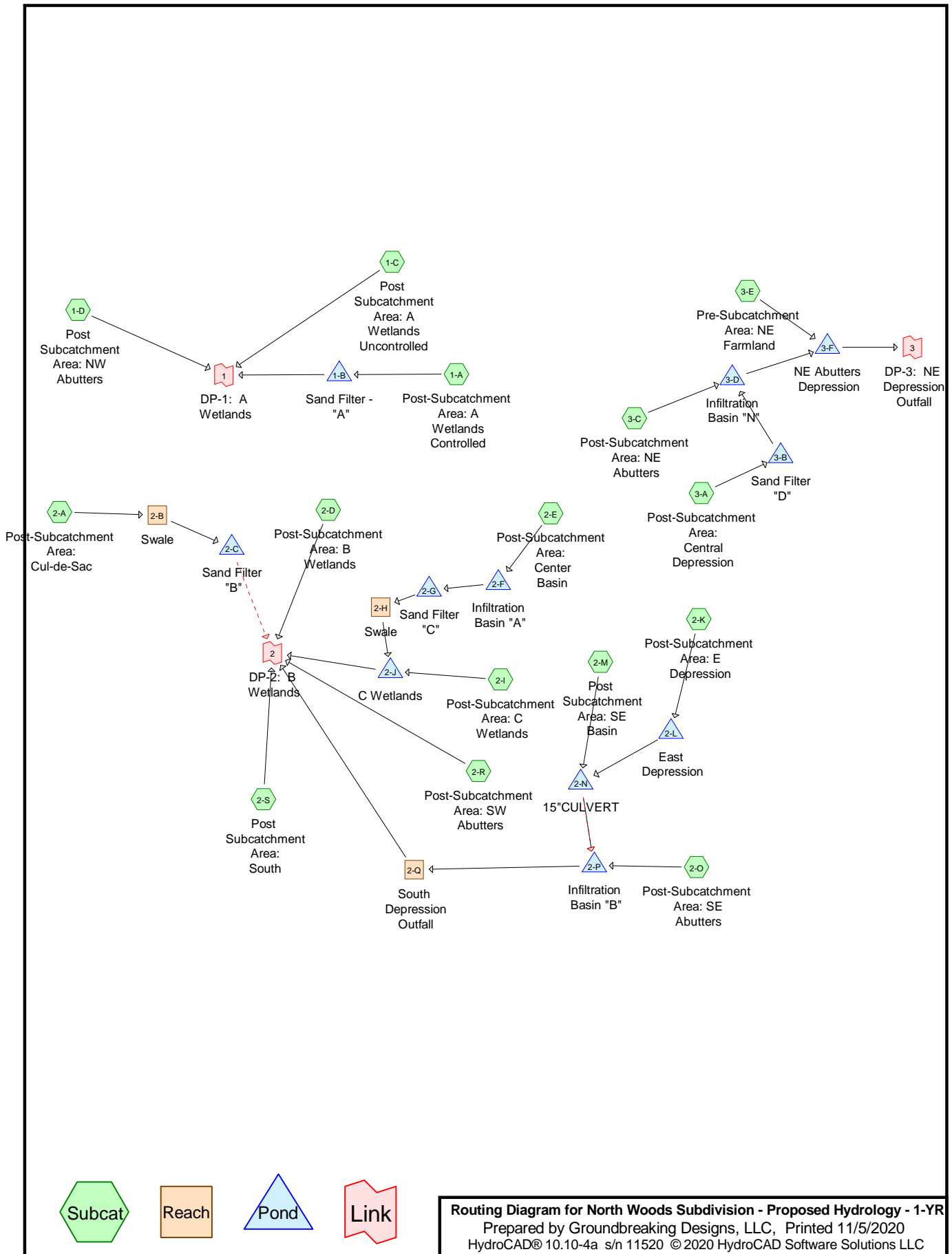
Inflow Area = 13.070 ac, 5.74% Impervious, Inflow Depth = 0.01" for WQV-1.2" event  
 Inflow = 0.05 cfs @ 12.34 hrs, Volume= 0.008 af  
 Primary = 0.05 cfs @ 12.34 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Summary for Link 3: DP-3: NE Depression Outfall

Inflow Area = 7.450 ac, 6.85% Impervious, Inflow Depth = 0.00" for WQV-1.2" event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



**Summary for Subcatchment 1-A: Post-Subcatchment Area: A Wetlands Controlled**

Runoff = 0.56 cfs @ 12.32 hrs, Volume= 0.087 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.780	55	Woods, Good, HSG B
0.320	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
0.400	61	>75% Grass cover, Good, HSG B
0.190	98	Unconnected pavement, HSG B
1.920	66	Weighted Average
1.730	62	90.10% Pervious Area
0.190	98	9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	230	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.4	330	Total			

**Summary for Subcatchment 1-C: Post Subcatchment Area: A Wetlands Uncontrolled**

Runoff = 0.14 cfs @ 12.63 hrs, Volume= 0.032 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
1.030	55	Woods, Good, HSG B
0.180	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
1.440	60	Weighted Average
1.440	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
7.7	400	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
28.8	500	Total			

**Summary for Subcatchment 1-D: Post Subcatchment Area: NW Abutters**

Runoff = 0.66 cfs @ 12.69 hrs, Volume= 0.175 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
3.340	55	Woods, Good, HSG B
3.256	61	>75% Grass cover, Good, HSG B
0.270	98	Roofs, HSG B
6.866	60	Weighted Average
6.596	58	96.07% Pervious Area
0.270	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 2-A: Post-Subcatchment Area: Cul-de-Sac**

Runoff = 0.78 cfs @ 12.15 hrs, Volume= 0.081 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
0.410	70	Woods, Good, HSG C
0.430	61	>75% Grass cover, Good, HSG B
1.080	73	Weighted Average
0.840	65	77.78% Pervious Area
0.240	98	22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.3	60	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.2	180	0.0700	12.00	9.43	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.2	340	Total			

**Summary for Subcatchment 2-D: Post-Subcatchment Area: B Wetlands**

Runoff = 0.67 cfs @ 12.20 hrs, Volume= 0.074 af, Depth= 0.68"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.060	55	Woods, Good, HSG B
0.850	70	Woods, Good, HSG C
0.190	61	>75% Grass cover, Good, HSG B
0.100	74	>75% Grass cover, Good, HSG C
0.100	98	Unconnected pavement, HSG B
1.300	70	Weighted Average
1.200	68	92.31% Pervious Area
0.100	98	7.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.1000	0.15		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.5	125	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	225	Total			

**Summary for Subcatchment 2-E: Post-Subcatchment Area: Center Basin**

Runoff = 0.46 cfs @ 12.17 hrs, Volume= 0.050 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.190	98	Unconnected pavement, HSG B
0.400	61	>75% Grass cover, Good, HSG B
0.590	73	Weighted Average
0.400	61	67.80% Pervious Area
0.190	98	32.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.4	80	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
12.3	180	Total			

**Summary for Subcatchment 2-I: Post-Subcatchment Area: C Wetlands**

Runoff = 0.46 cfs @ 12.25 hrs, Volume= 0.054 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.200	55	Woods, Good, HSG B
0.390	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
0.110	61	>75% Grass cover, Good, HSG B
0.000	98	Unconnected pavement, HSG B
0.060	74	>75% Grass cover, Good, HSG C
1.140	69	Weighted Average
1.140	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	140	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.9	240	Total			

**Summary for Subcatchment 2-K: Post-Subcatchment Area: E Depression**

Runoff = 0.40 cfs @ 12.28 hrs, Volume= 0.062 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.740	55	Woods, Good, HSG B
0.330	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
1.350	64	Weighted Average
1.170	59	86.67% Pervious Area
0.180	98	13.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

**Summary for Subcatchment 2-M: Post Subcatchment Area: SE Basin**

Runoff = 0.44 cfs @ 12.21 hrs, Volume= 0.051 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.200	98	Unconnected pavement, HSG B
0.320	61	>75% Grass cover, Good, HSG B
0.520	75	Weighted Average
0.320	61	61.54% Pervious Area
0.200	98	38.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0200	0.12		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	190	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
15.0	290	Total			

**Summary for Subcatchment 2-O: Post-Subcatchment Area: SE Abutters**

Runoff = 0.34 cfs @ 12.20 hrs, Volume= 0.053 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.240	55	Woods, Good, HSG B
1.190	61	>75% Grass cover, Good, HSG B
0.100	98	Roofs, HSG B
1.530	62	Weighted Average
1.430	60	93.46% Pervious Area
0.100	98	6.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.2	240	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
10.9	340	Total			

**Summary for Subcatchment 2-R: Post-Subcatchment Area: SW Abutters**

Runoff = 0.23 cfs @ 12.52 hrs, Volume= 0.048 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.870	55	Woods, Good, HSG B
1.070	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
0.000	98	Unconnected pavement, HSG B
2.160	60	Weighted Average
2.160	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.7	270	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.1	470	Total			

**Summary for Subcatchment 2-S: Post Subcatchment Area: South**

Runoff = 0.48 cfs @ 12.54 hrs, Volume= 0.114 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (sf)	CN	Description
6,970	98	Unconnected roofs, HSG B
91,476	55	Woods, Good, HSG B
104,544	61	>75% Grass cover, Good, HSG B
202,990	60	Weighted Average
196,020	58	96.57% Pervious Area
6,970	98	3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**Summary for Subcatchment 3-A: Post-Subcatchment Area: Central Depression**

Runoff = 0.42 cfs @ 12.28 hrs, Volume= 0.062 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
0.400	55	Woods, Good, HSG B
0.580	61	>75% Grass cover, Good, HSG B
0.200	98	Unconnected roofs, HSG B
1.180	65	Weighted Average
0.980	59	83.05% Pervious Area
0.200	98	16.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Post-Subcatchment Area: NE Abutters**

Runoff = 0.10 cfs @ 12.61 hrs, Volume= 0.033 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
1.880	55	Woods, Good, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.000	98	Unconnected pavement, HSG B
2.410	56	Weighted Average
2.410	56	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 0.75 cfs @ 12.26 hrs, Volume= 0.123 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 1-YR. Rainfall=2.80"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-B: Swale**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 0.90" for 1-YR. event  
 Inflow = 0.78 cfs @ 12.15 hrs, Volume= 0.081 af  
 Outflow = 0.77 cfs @ 12.17 hrs, Volume= 0.081 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 4.69 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.42 fps, Avg. Travel Time= 2.2 min

Peak Storage= 31 cf @ 12.16 hrs  
 Average Depth at Peak Storage= 0.15', Surface Width= 1.29'  
 Bank-Full Depth= 1.00' Flow Area= 2.0 sf, Capacity= 25.35 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding  
 Side Slope Z-value= 1.0 ' / ' Top Width= 3.00'  
 Length= 185.0' Slope= 0.1081 ' / '  
 Inlet Invert= 165.00', Outlet Invert= 145.00'



**Summary for Reach 2-H: Swale**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 0.00" for 1-YR. event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 83.28 cfs

2.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight  
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'  
 Length= 200.0' Slope= 0.1200 '/'  
 Inlet Invert= 160.00', Outlet Invert= 136.00'



**Summary for Reach 2-Q: South Depression Outfall**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 0.00" for 1-YR. event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 30.0 '/' Top Width= 90.00'  
 Length= 690.0' Slope= 0.0101 '/'  
 Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 1-B: Sand Filter - "A"**

Inflow Area = 1.920 ac, 9.90% Impervious, Inflow Depth = 0.54" for 1-YR. event  
 Inflow = 0.56 cfs @ 12.32 hrs, Volume= 0.087 af  
 Outflow = 0.23 cfs @ 12.82 hrs, Volume= 0.087 af, Atten= 60%, Lag= 29.8 min  
 Discarded = 0.23 cfs @ 12.82 hrs, Volume= 0.087 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.63' @ 12.82 hrs Surf.Area= 1,186 sf Storage= 604 cf

Plug-Flow detention time= 15.6 min calculated for 0.087 af (100% of inflow)  
 Center-of-Mass det. time= 15.6 min ( 877.0 - 861.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	1,095 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	740	0	0
145.00	1,450	1,095	1,095

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.75'	<b>40.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

**Discarded OutFlow** Max=0.23 cfs @ 12.82 hrs HW=144.63' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 2-C: Sand Filter "B"**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 0.90" for 1-YR. event  
 Inflow = 0.77 cfs @ 12.17 hrs, Volume= 0.081 af  
 Outflow = 0.23 cfs @ 12.62 hrs, Volume= 0.081 af, Atten= 71%, Lag= 26.7 min  
 Discarded = 0.23 cfs @ 12.62 hrs, Volume= 0.081 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.27' @ 12.62 hrs Surf.Area= 1,184 sf Storage= 837 cf

Plug-Flow detention time= 29.8 min calculated for 0.081 af (100% of inflow)  
 Center-of-Mass det. time= 29.8 min ( 849.8 - 820.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	3,043 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	130	0	0
144.50	1,370	1,125	1,125
145.00	2,000	843	1,968
145.50	2,300	1,075	3,043

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Secondary	145.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.23 cfs @ 12.62 hrs HW=144.27' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.23 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-F: Infiltration Basin "A"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 1.03" for 1-YR. event  
 Inflow = 0.46 cfs @ 12.17 hrs, Volume= 0.050 af  
 Outflow = 0.43 cfs @ 12.22 hrs, Volume= 0.050 af, Atten= 5%, Lag= 2.8 min  
 Discarded = 0.11 cfs @ 12.22 hrs, Volume= 0.042 af  
 Primary = 0.32 cfs @ 12.22 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 161.57' @ 12.22 hrs Surf.Area= 573 sf Storage= 218 cf

Plug-Flow detention time= 9.9 min calculated for 0.050 af (100% of inflow)  
 Center-of-Mass det. time= 9.9 min ( 808.9 - 799.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	1,040 cf	<b>Custom Stage Data 1 (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	190	0	0
162.00	860	525	525
162.50	1,200	515	1,040

Device	Routing	Invert	Outlet Devices
#1	Discarded	161.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Device 3	161.50'	<b>2.0" x 2.0" Horiz. Orifice/Grate X 3.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads

#3    Primary      160.25'    **12.0" Round Culvert**    L= 45.0'    CPP, square edge headwall, Ke= 0.500  
 Inlet / Outlet Invert= 160.25' / 160.00'    S= 0.0056 ' / '    Cc= 0.900  
 n= 0.012    Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.11 cfs @ 12.22 hrs    HW=161.57'    (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.11 cfs)

**Primary OutFlow** Max=0.32 cfs @ 12.22 hrs    HW=161.57'    (Free Discharge)  
 ↑ **3=Culvert** (Passes 0.32 cfs of 2.97 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 1.29 fps)

**Summary for Pond 2-G: Sand Filter "C"**

Inflow Area =      0.590 ac, 32.20% Impervious, Inflow Depth = 0.17"    for 1-YR. event  
 Inflow      =      0.32 cfs @ 12.22 hrs, Volume=      0.008 af  
 Outflow      =      0.08 cfs @ 12.57 hrs, Volume=      0.008 af, Atten= 76%, Lag= 20.8 min  
 Discarded =      0.08 cfs @ 12.57 hrs, Volume=      0.008 af  
 Primary      =      0.00 cfs @ 0.00 hrs, Volume=      0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 159.88' @ 12.57 hrs    Surf.Area= 411 sf    Storage= 237 cf

Plug-Flow detention time= 35.3 min calculated for 0.008 af (100% of inflow)  
 Center-of-Mass det. time= 35.3 min ( 774.8 - 739.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	159.00'	578 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
159.00	130	0	0
160.00	450	290	290
160.50	700	288	578

Device	Routing	Invert	Outlet Devices
#1	Discarded	159.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	160.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.08 cfs @ 12.57 hrs    HW=159.88'    (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs    HW=159.00'    (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-J: C Wetlands**

Inflow Area = 1.730 ac, 10.98% Impervious, Inflow Depth = 0.37" for 1-YR. event  
 Inflow = 0.46 cfs @ 12.25 hrs, Volume= 0.054 af  
 Outflow = 0.01 cfs @ 24.17 hrs, Volume= 0.044 af, Atten= 98%, Lag= 715.4 min  
 Discarded = 0.01 cfs @ 24.17 hrs, Volume= 0.044 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 143.53' @ 24.17 hrs Surf.Area= 4,117 sf Storage= 1,935 cf

Plug-Flow detention time= 1,653.7 min calculated for 0.044 af (81% of inflow)  
 Center-of-Mass det. time= 1,574.3 min ( 2,473.3 - 899.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 24.17 hrs HW=143.53' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 2-L: East Depression**

Inflow Area = 1.350 ac, 13.33% Impervious, Inflow Depth = 0.55" for 1-YR. event  
 Inflow = 0.40 cfs @ 12.28 hrs, Volume= 0.062 af  
 Outflow = 0.13 cfs @ 12.85 hrs, Volume= 0.062 af, Atten= 67%, Lag= 34.6 min  
 Discarded = 0.13 cfs @ 12.85 hrs, Volume= 0.062 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 154.60' @ 12.85 hrs Surf.Area= 5,581 sf Storage= 512 cf

Plug-Flow detention time= 27.2 min calculated for 0.062 af (100% of inflow)  
 Center-of-Mass det. time= 27.2 min ( 869.1 - 841.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.13 cfs @ 12.85 hrs HW=154.60' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=154.50' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 2-N: 15" CULVERT

Inflow Area = 1.870 ac, 20.32% Impervious, Inflow Depth = 0.32" for 1-YR. event  
 Inflow = 0.44 cfs @ 12.21 hrs, Volume= 0.051 af  
 Outflow = 0.44 cfs @ 12.21 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.00 cfs @ 12.21 hrs, Volume= 0.000 af  
 Primary = 0.44 cfs @ 12.21 hrs, Volume= 0.051 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 150.81' @ 12.21 hrs Surf.Area= 13 sf Storage= 3 cf

Plug-Flow detention time= 0.3 min calculated for 0.051 af (100% of inflow)

Center-of-Mass det. time= 0.3 min ( 794.9 - 794.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.50'	1,487 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.50	6	0	0
151.00	18	6	6
152.00	72	45	51
153.00	900	486	537
154.00	1,000	950	1,487

Device	Routing	Invert	Outlet Devices
#1	Primary	150.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.50' / 150.00' S= 0.0100 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

#2 Discarded 150.50' **0.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'  
 #3 Secondary 153.37' **10.0' long x 20.0' breadth Overflow**  
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60  
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.00 cfs @ 12.21 hrs HW=150.81' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.44 cfs @ 12.21 hrs HW=150.81' (Free Discharge)  
 ↑**1=Culvert** (Barrel Controls 0.44 cfs @ 2.77 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.50' (Free Discharge)  
 ↑**3=Overflow** ( Controls 0.00 cfs)

**Summary for Pond 2-P: Infiltration Basin "B"**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 0.37" for 1-YR. event  
 Inflow = 0.78 cfs @ 12.20 hrs, Volume= 0.103 af  
 Outflow = 0.08 cfs @ 15.35 hrs, Volume= 0.103 af, Atten= 90%, Lag= 188.6 min  
 Discarded = 0.08 cfs @ 15.35 hrs, Volume= 0.103 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 148.97' @ 15.35 hrs Surf.Area= 3,232 sf Storage= 2,226 cf

Plug-Flow detention time= 400.9 min calculated for 0.103 af (100% of inflow)  
 Center-of-Mass det. time= 401.2 min ( 1,235.7 - 834.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	11,380 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	40	0	0
148.00	640	340	340
149.00	3,300	1,970	2,310
150.00	4,270	3,785	6,095
151.00	6,300	5,285	11,380

Device	Routing	Invert	Outlet Devices
#1	Discarded	147.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>10.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.08 cfs @ 15.35 hrs HW=148.97' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-B: Sand Filter "D"**

Inflow Area = 1.180 ac, 16.95% Impervious, Inflow Depth = 0.63" for 1-YR. event  
 Inflow = 0.42 cfs @ 12.28 hrs, Volume= 0.062 af  
 Outflow = 0.25 cfs @ 12.61 hrs, Volume= 0.062 af, Atten= 41%, Lag= 19.7 min  
 Discarded = 0.25 cfs @ 12.61 hrs, Volume= 0.062 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 158.21' @ 12.61 hrs Surf.Area= 1,292 sf Storage= 258 cf

Plug-Flow detention time= 7.0 min calculated for 0.062 af (100% of inflow)  
 Center-of-Mass det. time= 7.0 min ( 837.7 - 830.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	28,935 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	1,110	0	0
159.00	1,960	1,535	1,535
160.00	3,060	2,510	4,045
161.00	5,860	4,460	8,505
162.00	10,750	8,305	16,810
163.00	13,500	12,125	28,935

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	161.70'	<b>7.0' long x 14.0' breadth Overflow</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#3	Primary	159.50'	<b>12.0" Round Culvert</b> L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 159.50' / 158.00' S= 0.0150 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.25 cfs @ 12.61 hrs HW=158.21' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑**2=Overflow** ( Controls 0.00 cfs)

↑**3=Culvert** ( Controls 0.00 cfs)

**Summary for Pond 3-D: Infiltration Basin "N"**

Inflow Area = 3.590 ac, 5.57% Impervious, Inflow Depth = 0.11" for 1-YR. event  
 Inflow = 0.10 cfs @ 12.61 hrs, Volume= 0.033 af  
 Outflow = 0.07 cfs @ 13.07 hrs, Volume= 0.033 af, Atten= 31%, Lag= 27.8 min  
 Discarded = 0.07 cfs @ 13.07 hrs, Volume= 0.033 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.02' @ 13.07 hrs Surf.Area= 3,057 sf Storage= 61 cf

Plug-Flow detention time= 8.2 min calculated for 0.033 af (100% of inflow)  
 Center-of-Mass det. time= 8.2 min ( 999.1 - 990.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	4,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	3,000	0	0
151.50	4,400	1,850	1,850
152.00	6,000	2,600	4,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.07 cfs @ 13.07 hrs HW=151.02' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.310 ac, 5.06% Impervious, Inflow Depth = 0.20" for 1-YR. event  
 Inflow = 0.75 cfs @ 12.26 hrs, Volume= 0.123 af  
 Outflow = 0.62 cfs @ 12.47 hrs, Volume= 0.123 af, Atten= 17%, Lag= 12.9 min  
 Discarded = 0.62 cfs @ 12.47 hrs, Volume= 0.123 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.01' @ 12.47 hrs Surf.Area= 65,040 sf Storage= 394 cf

Plug-Flow detention time= 10.6 min calculated for 0.123 af (100% of inflow)  
 Center-of-Mass det. time= 10.6 min ( 900.0 - 889.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.93 cfs @ 12.47 hrs HW=151.01' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.93 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)  
 ↳ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Link 1: DP-1: A Wetlands

Inflow Area = 10.226 ac, 4.50% Impervious, Inflow Depth = 0.24" for 1-YR. event  
 Inflow = 0.79 cfs @ 12.68 hrs, Volume= 0.206 af  
 Primary = 0.79 cfs @ 12.68 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

### Summary for Link 2: DP-2: B Wetlands

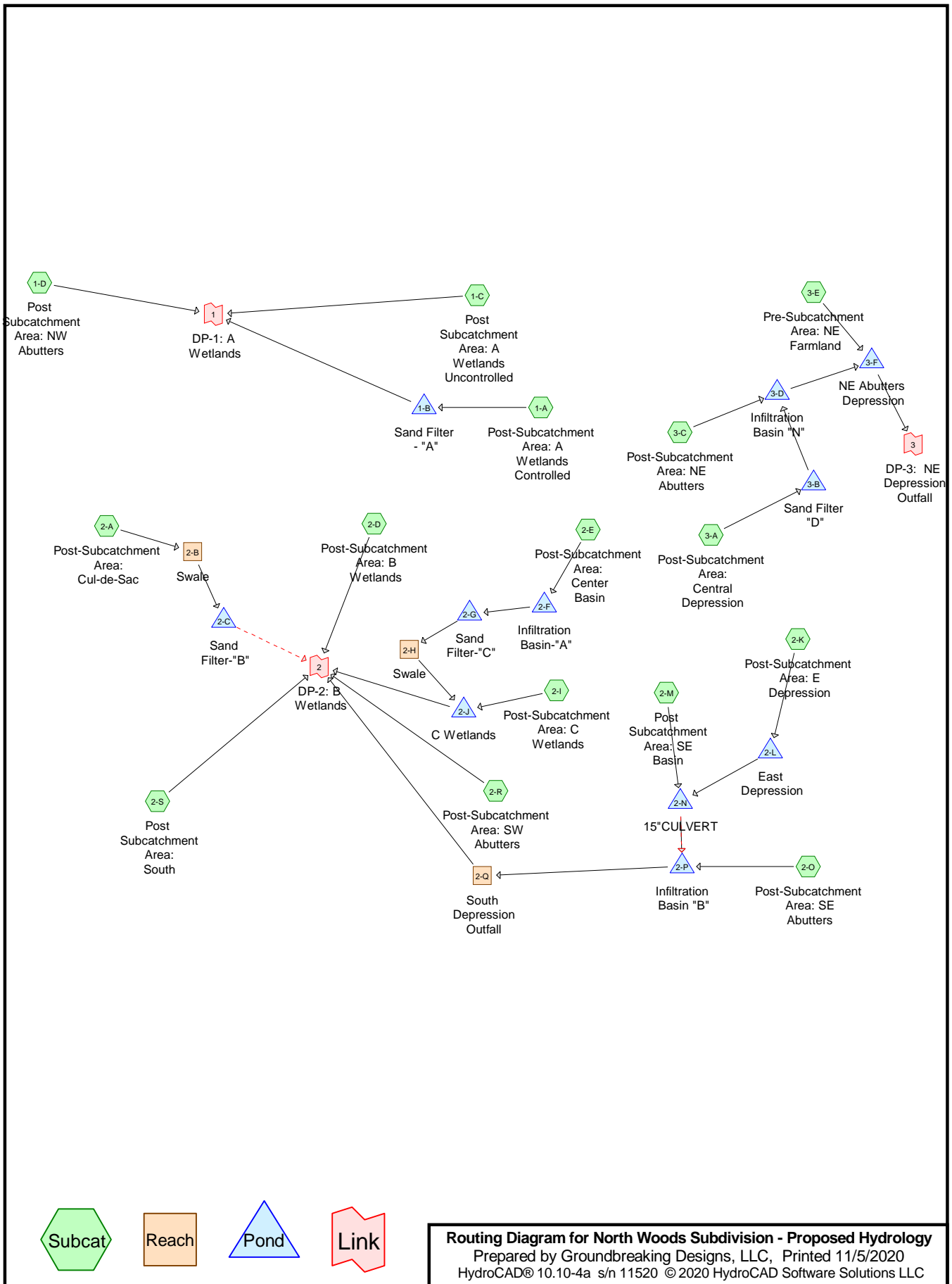
Inflow Area = 13.250 ac, 7.02% Impervious, Inflow Depth = 0.21" for 1-YR. event  
 Inflow = 1.10 cfs @ 12.42 hrs, Volume= 0.236 af  
 Primary = 1.10 cfs @ 12.42 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

### Summary for Link 3: DP-3: NE Depression Outfall

Inflow Area = 7.310 ac, 5.06% Impervious, Inflow Depth = 0.00" for 1-YR. event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs



**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 2

**Summary for Subcatchment 1-A: Post-Subcatchment Area: A Wetlands Controlled**

Runoff = 2.65 cfs @ 12.20 hrs, Volume= 0.268 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.660	55	Woods, Good, HSG B
0.320	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
0.400	61	>75% Grass cover, Good, HSG B
0.190	98	Unconnected pavement, HSG B
1.800	66	Weighted Average
1.610	63	89.44% Pervious Area
0.190	98	10.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	110	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.1	90	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
13.9	300	Total			

**Summary for Subcatchment 1-C: Post Subcatchment Area: A Wetlands Uncontrolled**

Runoff = 1.39 cfs @ 12.29 hrs, Volume= 0.162 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
1.150	55	Woods, Good, HSG B
0.180	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
1.560	60	Weighted Average
1.560	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.7	180	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.7	280	Total			

# North Woods Subdivision - Proposed Hydrology

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 3

## Summary for Subcatchment 1-D: Post Subcatchment Area: NW Abutters

Runoff = 4.36 cfs @ 12.60 hrs, Volume= 0.717 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
3.340	55	Woods, Good, HSG B
3.256	61	>75% Grass cover, Good, HSG B
0.270	98	Roofs, HSG B
6.866	60	Weighted Average
6.596	58	96.07% Pervious Area
0.270	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

## Summary for Subcatchment 2-A: Post-Subcatchment Area: Cul-de-Sac

Runoff = 2.27 cfs @ 12.15 hrs, Volume= 0.204 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
0.410	70	Woods, Good, HSG C
0.430	61	>75% Grass cover, Good, HSG B
1.080	73	Weighted Average
0.840	65	77.78% Pervious Area
0.240	98	22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.3	60	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.2	180	0.0700	12.00	9.43	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.2	340	Total			

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Type III 24-hr 10-YR. Rainfall=4.90"

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Page 4

## Summary for Subcatchment 2-D: Post-Subcatchment Area: B Wetlands

Runoff = 2.36 cfs @ 12.18 hrs, Volume= 0.220 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.060	55	Woods, Good, HSG B
0.850	70	Woods, Good, HSG C
0.190	61	>75% Grass cover, Good, HSG B
0.100	74	>75% Grass cover, Good, HSG C
0.100	98	Unconnected pavement, HSG B
1.300	70	Weighted Average
1.200	68	92.31% Pervious Area
0.100	98	7.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.1000	0.15		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.5	125	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	225	Total			

## Summary for Subcatchment 2-E: Post-Subcatchment Area: Center Basin

Runoff = 1.18 cfs @ 12.17 hrs, Volume= 0.117 af, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.190	98	Unconnected pavement, HSG B
0.400	61	>75% Grass cover, Good, HSG B
0.590	73	Weighted Average
0.400	61	67.80% Pervious Area
0.190	98	32.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.4	80	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
12.3	180	Total			

# North Woods Subdivision - Proposed Hydrology

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 5

## Summary for Subcatchment 2-I: Post-Subcatchment Area: C Wetlands

Runoff = 1.83 cfs @ 12.22 hrs, Volume= 0.178 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.200	55	Woods, Good, HSG B
0.390	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
0.100	61	>75% Grass cover, Good, HSG B
0.000	98	Unconnected pavement, HSG B
0.060	74	>75% Grass cover, Good, HSG C
1.130	69	Weighted Average
1.130	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	140	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.9	240	Total			

## Summary for Subcatchment 2-K: Post-Subcatchment Area: E Depression

Runoff = 1.58 cfs @ 12.27 hrs, Volume= 0.185 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.740	55	Woods, Good, HSG B
0.330	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
1.350	64	Weighted Average
1.170	59	86.67% Pervious Area
0.180	98	13.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 6

**Summary for Subcatchment 2-M: Post Subcatchment Area: SE Basin**

Runoff = 1.06 cfs @ 12.21 hrs, Volume= 0.113 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.200	98	Unconnected pavement, HSG B
0.320	61	>75% Grass cover, Good, HSG B
0.520	75	Weighted Average
0.320	61	61.54% Pervious Area
0.200	98	38.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0200	0.12		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	190	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
15.0	290	Total			

**Summary for Subcatchment 2-O: Post-Subcatchment Area: SE Abutters**

Runoff = 1.96 cfs @ 12.16 hrs, Volume= 0.187 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.240	55	Woods, Good, HSG B
1.190	61	>75% Grass cover, Good, HSG B
0.100	98	Roofs, HSG B
1.530	62	Weighted Average
1.430	60	93.46% Pervious Area
0.100	98	6.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.2	240	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
10.9	340	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 7

**Summary for Subcatchment 2-R: Post-Subcatchment Area: SW Abutters**

Runoff = 2.33 cfs @ 12.32 hrs, Volume= 0.286 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.870	55	Woods, Good, HSG B
1.110	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
0.150	98	Unconnected pavement, HSG B
2.350	63	Weighted Average
2.200	60	93.62% Pervious Area
0.150	98	6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.7	270	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.1	470	Total			

**Summary for Subcatchment 2-S: Post Subcatchment Area: South**

Runoff = 3.48 cfs @ 12.41 hrs, Volume= 0.480 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.160	98	Unconnected roofs, HSG B
2.100	55	Woods, Good, HSG B
2.400	61	>75% Grass cover, Good, HSG B
4.660	60	Weighted Average
4.500	58	96.57% Pervious Area
0.160	98	3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 8

**Summary for Subcatchment 3-A: Post-Subcatchment Area: Central Depression**

Runoff = 1.52 cfs @ 12.28 hrs, Volume= 0.182 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
0.400	55	Woods, Good, HSG B
0.580	61	>75% Grass cover, Good, HSG B
0.220	98	Unconnected roofs, HSG B
1.200	66	Weighted Average
0.980	59	81.67% Pervious Area
0.220	98	18.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Post-Subcatchment Area: NE Abutters**

Runoff = 1.87 cfs @ 12.33 hrs, Volume= 0.246 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
1.880	55	Woods, Good, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.120	98	Unconnected pavement, HSG B
2.530	58	Weighted Average
2.410	56	95.26% Pervious Area
0.120	98	4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 9

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 4.46 cfs @ 12.20 hrs, Volume= 0.453 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 10-YR. Rainfall=4.90"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

**Summary for Reach 2-B: Swale**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 2.27" for 10-YR. event  
 Inflow = 2.27 cfs @ 12.15 hrs, Volume= 0.204 af  
 Outflow = 2.25 cfs @ 12.16 hrs, Volume= 0.204 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 6.57 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.86 fps, Avg. Travel Time= 1.7 min

Peak Storage= 64 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 0.27', Surface Width= 1.54'  
 Bank-Full Depth= 1.00' Flow Area= 2.0 sf, Capacity= 25.35 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding  
 Side Slope Z-value= 1.0 ' / ' Top Width= 3.00'  
 Length= 185.0' Slope= 0.1081 ' / '  
 Inlet Invert= 165.00', Outlet Invert= 145.00'



Summary for Reach 2-H: Swale

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 0.29" for 10-YR. event
Inflow = 0.74 cfs @ 12.27 hrs, Volume= 0.014 af
Outflow = 0.72 cfs @ 12.31 hrs, Volume= 0.014 af, Atten= 2%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.08 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.25 fps, Avg. Travel Time= 1.5 min

Peak Storage= 38 cf @ 12.28 hrs
Average Depth at Peak Storage= 0.08', Surface Width= 2.51'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 83.28 cfs

2.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 200.0' Slope= 0.1200 '/'
Inlet Invert= 160.00', Outlet Invert= 136.00'



Summary for Reach 2-Q: South Depression Outfall

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 0.21" for 10-YR. event
Inflow = 0.35 cfs @ 13.08 hrs, Volume= 0.058 af
Outflow = 0.24 cfs @ 14.32 hrs, Volume= 0.058 af, Atten= 30%, Lag= 74.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 0.35 fps, Min. Travel Time= 33.2 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 51.0 min

Peak Storage= 484 cf @ 13.77 hrs
Average Depth at Peak Storage= 0.02', Surface Width= 31.37'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 30.0 '/' Top Width= 90.00'
Length= 690.0' Slope= 0.0101 '/'
Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 1-B: Sand Filter - "A"**

Inflow Area = 1.800 ac, 10.56% Impervious, Inflow Depth = 1.79" for 10-YR. event  
 Inflow = 2.65 cfs @ 12.20 hrs, Volume= 0.268 af  
 Outflow = 2.65 cfs @ 12.21 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.6 min  
 Discarded = 0.26 cfs @ 12.21 hrs, Volume= 0.175 af  
 Primary = 2.39 cfs @ 12.21 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.84' @ 12.21 hrs Surf.Area= 1,334 sf Storage= 867 cf

Plug-Flow detention time= 19.1 min calculated for 0.268 af (100% of inflow)  
 Center-of-Mass det. time= 19.1 min ( 861.3 - 842.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	1,095 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	740	0	0
145.00	1,450	1,095	1,095

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.75'	<b>40.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

**Discarded OutFlow** Max=0.26 cfs @ 12.21 hrs HW=144.84' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.26 cfs)

**Primary OutFlow** Max=2.39 cfs @ 12.21 hrs HW=144.84' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 2.39 cfs @ 0.69 fps)

**Summary for Pond 2-C: Sand Filter-"B"**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 2.27" for 10-YR. event  
 Inflow = 2.25 cfs @ 12.16 hrs, Volume= 0.204 af  
 Outflow = 1.30 cfs @ 12.36 hrs, Volume= 0.204 af, Atten= 42%, Lag= 12.2 min  
 Discarded = 0.40 cfs @ 12.36 hrs, Volume= 0.182 af  
 Secondary = 0.90 cfs @ 12.36 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 145.11' @ 12.36 hrs Surf.Area= 2,068 sf Storage= 2,199 cf

Plug-Flow detention time= 47.8 min calculated for 0.204 af (100% of inflow)  
 Center-of-Mass det. time= 47.8 min ( 863.4 - 815.6 )

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 12

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	3,043 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	130	0	0
144.50	1,370	1,125	1,125
145.00	2,000	843	1,968
145.50	2,300	1,075	3,043

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Secondary	145.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.40 cfs @ 12.36 hrs HW=145.11' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.40 cfs)

**Secondary OutFlow** Max=0.89 cfs @ 12.36 hrs HW=145.11' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.89 cfs @ 0.79 fps)

**Summary for Pond 2-F: Infiltration Basin-"A"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 2.39" for 10-YR. event  
 Inflow = 1.18 cfs @ 12.17 hrs, Volume= 0.117 af  
 Outflow = 1.18 cfs @ 12.18 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.4 min  
 Discarded = 0.15 cfs @ 12.18 hrs, Volume= 0.085 af  
 Primary = 1.03 cfs @ 12.18 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 161.55' @ 12.18 hrs Surf.Area= 782 sf Storage= 336 cf

Plug-Flow detention time= 10.6 min calculated for 0.117 af (100% of inflow)  
 Center-of-Mass det. time= 10.6 min ( 811.4 - 800.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	1,318 cf	<b>Custom Stage Data 1 (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	445	0	0
162.00	1,060	753	753
162.50	1,200	565	1,318

Device	Routing	Invert	Outlet Devices
#1	Discarded	161.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Device 3	161.50'	<b>2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns</b> X 6 rows C= 0.600 Limited to weir flow at low heads

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 13

#3 Primary 160.25' **12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500  
 Inlet / Outlet Invert= 160.25' / 160.00' S= 0.0056 '/' Cc= 0.900  
 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.15 cfs @ 12.18 hrs HW=161.55' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.15 cfs)

**Primary OutFlow** Max=1.02 cfs @ 12.18 hrs HW=161.55' (Free Discharge)  
 ↑ **3=Culvert** (Passes 1.02 cfs of 2.97 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Weir Controls 1.02 cfs @ 0.71 fps)

**Summary for Pond 2-G: Sand Filter-"C"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 0.67" for 10-YR. event  
 Inflow = 1.03 cfs @ 12.18 hrs, Volume= 0.033 af  
 Outflow = 0.87 cfs @ 12.27 hrs, Volume= 0.033 af, Atten= 16%, Lag= 5.7 min  
 Discarded = 0.13 cfs @ 12.27 hrs, Volume= 0.019 af  
 Primary = 0.74 cfs @ 12.27 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 160.10' @ 12.27 hrs Surf.Area= 660 sf Storage= 523 cf

Plug-Flow detention time= 26.9 min calculated for 0.033 af (100% of inflow)  
 Center-of-Mass det. time= 26.9 min ( 766.1 - 739.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	159.00'	795 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
159.00	265	0	0
160.00	650	458	458
160.50	700	338	795

Device	Routing	Invert	Outlet Devices
#1	Discarded	159.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	160.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.13 cfs @ 12.27 hrs HW=160.10' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=0.73 cfs @ 12.27 hrs HW=160.10' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.73 cfs @ 0.74 fps)

**Summary for Pond 2-J: C Wetlands**

Inflow Area = 1.720 ac, 11.05% Impervious, Inflow Depth = 1.34" for 10-YR. event  
 Inflow = 2.34 cfs @ 12.30 hrs, Volume= 0.192 af  
 Outflow = 0.50 cfs @ 12.76 hrs, Volume= 0.140 af, Atten= 79%, Lag= 27.8 min  
 Discarded = 0.01 cfs @ 12.76 hrs, Volume= 0.054 af  
 Primary = 0.49 cfs @ 12.76 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.02' @ 12.76 hrs Surf.Area= 4,974 sf Storage= 4,182 cf

Plug-Flow detention time= 773.8 min calculated for 0.140 af (73% of inflow)  
 Center-of-Mass det. time= 680.6 min ( 1,531.7 - 851.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 12.76 hrs HW=144.02' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.47 cfs @ 12.76 hrs HW=144.02' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.47 cfs @ 0.41 fps)

**Summary for Pond 2-L: East Depression**

Inflow Area = 1.350 ac, 13.33% Impervious, Inflow Depth = 1.64" for 10-YR. event  
 Inflow = 1.58 cfs @ 12.27 hrs, Volume= 0.185 af  
 Outflow = 0.19 cfs @ 14.15 hrs, Volume= 0.185 af, Atten= 88%, Lag= 112.8 min  
 Discarded = 0.19 cfs @ 14.15 hrs, Volume= 0.185 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 154.98' @ 14.15 hrs Surf.Area= 7,907 sf Storage= 3,126 cf

Plug-Flow detention time= 173.3 min calculated for 0.185 af (100% of inflow)  
 Center-of-Mass det. time= 173.3 min ( 1,014.8 - 841.5 )

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Page 15

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.19 cfs @ 14.15 hrs HW=154.98' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.19 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=154.50' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 2-N: 15" CULVERT**

Inflow Area = 1.870 ac, 20.32% Impervious, Inflow Depth = 0.72" for 10-YR. event  
 Inflow = 1.06 cfs @ 12.21 hrs, Volume= 0.113 af  
 Outflow = 1.06 cfs @ 12.21 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.00 cfs @ 12.21 hrs, Volume= 0.000 af  
 Primary = 1.06 cfs @ 12.21 hrs, Volume= 0.113 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 151.00' @ 12.21 hrs Surf.Area= 18 sf Storage= 6 cf

Plug-Flow detention time= 0.2 min calculated for 0.113 af (100% of inflow)

Center-of-Mass det. time= 0.2 min ( 795.8 - 795.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.50'	1,487 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.50	6	0	0
151.00	18	6	6
152.00	72	45	51
153.00	900	486	537
154.00	1,000	950	1,487

Device	Routing	Invert	Outlet Devices
#1	Primary	150.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.50' / 150.00' S= 0.0100 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

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Page 16

#2 Discarded 150.50' **0.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'  
 #3 Secondary 153.37' **10.0' long x 20.0' breadth Overflow**  
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60  
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.00 cfs @ 12.21 hrs HW=151.00' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=1.06 cfs @ 12.21 hrs HW=151.00' (Free Discharge)  
 ↑**1=Culvert** (Barrel Controls 1.06 cfs @ 3.42 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.50' (Free Discharge)  
 ↑**3=Overflow** ( Controls 0.00 cfs)

**Summary for Pond 2-P: Infiltration Basin "B"**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 1.06" for 10-YR. event  
 Inflow = 2.97 cfs @ 12.18 hrs, Volume= 0.300 af  
 Outflow = 0.45 cfs @ 13.08 hrs, Volume= 0.300 af, Atten= 85%, Lag= 54.0 min  
 Discarded = 0.10 cfs @ 13.08 hrs, Volume= 0.241 af  
 Primary = 0.35 cfs @ 13.08 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 150.05' @ 13.08 hrs Surf.Area= 4,379 sf Storage= 6,326 cf

Plug-Flow detention time= 595.0 min calculated for 0.299 af (100% of inflow)  
 Center-of-Mass det. time= 595.6 min ( 1,428.2 - 832.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	11,380 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	40	0	0
148.00	640	340	340
149.00	3,300	1,970	2,310
150.00	4,270	3,785	6,095
151.00	6,300	5,285	11,380

Device	Routing	Invert	Outlet Devices
#1	Discarded	147.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>10.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.10 cfs @ 13.08 hrs HW=150.05' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

**Primary OutFlow** Max=0.33 cfs @ 13.08 hrs HW=150.05' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 0.62 fps)

# North Woods Subdivision - Proposed Hydrology

Type III 24-hr 10-YR. Rainfall=4.90"

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Page 17

## Summary for Pond 3-B: Sand Filter "D"

Inflow Area = 1.200 ac, 18.33% Impervious, Inflow Depth = 1.82" for 10-YR. event  
 Inflow = 1.52 cfs @ 12.28 hrs, Volume= 0.182 af  
 Outflow = 0.43 cfs @ 12.85 hrs, Volume= 0.182 af, Atten= 72%, Lag= 34.5 min  
 Discarded = 0.43 cfs @ 12.85 hrs, Volume= 0.182 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 159.24' @ 12.85 hrs Surf.Area= 2,228 sf Storage= 2,045 cf

Plug-Flow detention time= 37.9 min calculated for 0.182 af (100% of inflow)  
 Center-of-Mass det. time= 37.9 min ( 868.1 - 830.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	28,935 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	1,110	0	0
159.00	1,960	1,535	1,535
160.00	3,060	2,510	4,045
161.00	5,860	4,460	8,505
162.00	10,750	8,305	16,810
163.00	13,500	12,125	28,935

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	161.70'	<b>7.0' long x 14.0' breadth Overflow</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#3	Primary	159.50'	<b>12.0" Round Culvert</b> L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 159.50' / 158.00' S= 0.0150 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.43 cfs @ 12.85 hrs HW=159.24' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.43 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=158.00' (Free Discharge)

↑ **2=Overflow** ( Controls 0.00 cfs)

↑ **3=Culvert** ( Controls 0.00 cfs)

## Summary for Pond 3-D: Infiltration Basin "N"

Inflow Area = 3.730 ac, 9.12% Impervious, Inflow Depth = 0.79" for 10-YR. event  
 Inflow = 1.87 cfs @ 12.33 hrs, Volume= 0.246 af  
 Outflow = 1.50 cfs @ 12.53 hrs, Volume= 0.246 af, Atten= 20%, Lag= 11.7 min  
 Discarded = 0.11 cfs @ 12.53 hrs, Volume= 0.148 af  
 Primary = 1.39 cfs @ 12.53 hrs, Volume= 0.098 af

**North Woods Subdivision - Proposed Hydrology**

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Page 18

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.56' @ 12.53 hrs Surf.Area= 4,586 sf Storage= 2,111 cf

Plug-Flow detention time= 137.1 min calculated for 0.245 af (100% of inflow)  
 Center-of-Mass det. time= 137.1 min ( 1,014.5 - 877.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	4,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	3,000	0	0
151.50	4,400	1,850	1,850
152.00	6,000	2,600	4,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.11 cfs @ 12.53 hrs HW=151.56' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

**Primary OutFlow** Max=1.39 cfs @ 12.53 hrs HW=151.56' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 1.39 cfs @ 0.60 fps)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.450 ac, 6.85% Impervious, Inflow Depth = 0.89" for 10-YR. event  
 Inflow = 4.46 cfs @ 12.20 hrs, Volume= 0.551 af  
 Outflow = 1.55 cfs @ 12.89 hrs, Volume= 0.551 af, Atten= 65%, Lag= 41.0 min  
 Discarded = 1.55 cfs @ 12.89 hrs, Volume= 0.551 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.08' @ 12.89 hrs Surf.Area= 65,557 sf Storage= 5,453 cf

Plug-Flow detention time= 27.9 min calculated for 0.551 af (100% of inflow)  
 Center-of-Mass det. time= 27.9 min ( 882.4 - 854.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

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Page 19

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=1.55 cfs @ 12.89 hrs HW=151.08' (Free Discharge)

↳ **1=Exfiltration** (Exfiltration Controls 1.55 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↳ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Link 1: DP-1: A Wetlands

Inflow Area = 10.226 ac, 4.50% Impervious, Inflow Depth = 1.14" for 10-YR. event  
Inflow = 6.43 cfs @ 12.47 hrs, Volume= 0.972 af  
Primary = 6.43 cfs @ 12.47 hrs, Volume= 0.972 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

## Summary for Link 2: DP-2: B Wetlands

Inflow Area = 13.430 ac, 8.04% Impervious, Inflow Depth = 1.03" for 10-YR. event  
Inflow = 8.18 cfs @ 12.35 hrs, Volume= 1.153 af  
Primary = 8.18 cfs @ 12.35 hrs, Volume= 1.153 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

## Summary for Link 3: DP-3: NE Depression Outfall

Inflow Area = 7.450 ac, 6.85% Impervious, Inflow Depth = 0.00" for 10-YR. event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

# North Woods Subdivision - Proposed Hydrology

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 20

## Summary for Subcatchment 1-A: Post-Subcatchment Area: A Wetlands Controlled

Runoff = 7.17 cfs @ 12.19 hrs, Volume= 0.676 af, Depth= 4.51"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.660	55	Woods, Good, HSG B
0.320	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
0.400	61	>75% Grass cover, Good, HSG B
0.190	98	Unconnected pavement, HSG B
1.800	66	Weighted Average
1.610	63	89.44% Pervious Area
0.190	98	10.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	110	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.1	90	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
13.9	300	Total			

## Summary for Subcatchment 1-C: Post Subcatchment Area: A Wetlands Uncontrolled

Runoff = 4.63 cfs @ 12.27 hrs, Volume= 0.483 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
1.150	55	Woods, Good, HSG B
0.180	70	Woods, Good, HSG C
0.230	77	Woods, Good, HSG D
1.560	60	Weighted Average
1.560	60	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.7	180	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.7	280	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 21

**Summary for Subcatchment 1-D: Post Subcatchment Area: NW Abutters**

Runoff = 14.41 cfs @ 12.55 hrs, Volume= 2.098 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
3.340	55	Woods, Good, HSG B
3.256	61	>75% Grass cover, Good, HSG B
0.270	98	Roofs, HSG B
6.866	60	Weighted Average
6.596	58	96.07% Pervious Area
0.270	98	3.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
10.3	310	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
38.2	410	Total			

**Summary for Subcatchment 2-A: Post-Subcatchment Area: Cul-de-Sac**

Runoff = 5.39 cfs @ 12.14 hrs, Volume= 0.466 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG B
0.410	70	Woods, Good, HSG C
0.430	61	>75% Grass cover, Good, HSG B
1.080	73	Weighted Average
0.840	65	77.78% Pervious Area
0.240	98	22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.3	60	0.0300	3.52		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.2	180	0.0700	12.00	9.43	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
10.2	340	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 22

**Summary for Subcatchment 2-D: Post-Subcatchment Area: B Wetlands**

Runoff = 5.96 cfs @ 12.17 hrs, Volume= 0.535 af, Depth= 4.94"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.060	55	Woods, Good, HSG B
0.850	70	Woods, Good, HSG C
0.190	61	>75% Grass cover, Good, HSG B
0.100	74	>75% Grass cover, Good, HSG C
0.100	98	Unconnected pavement, HSG B
1.300	70	Weighted Average
1.200	68	92.31% Pervious Area
0.100	98	7.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.1000	0.15		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.5	125	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	225	Total			

**Summary for Subcatchment 2-E: Post-Subcatchment Area: Center Basin**

Runoff = 2.74 cfs @ 12.17 hrs, Volume= 0.258 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.190	98	Unconnected pavement, HSG B
0.400	61	>75% Grass cover, Good, HSG B
0.590	73	Weighted Average
0.400	61	67.80% Pervious Area
0.190	98	32.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.4	80	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
12.3	180	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 23

**Summary for Subcatchment 2-I: Post-Subcatchment Area: C Wetlands**

Runoff = 4.79 cfs @ 12.21 hrs, Volume= 0.450 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.200	55	Woods, Good, HSG B
0.390	70	Woods, Good, HSG C
0.380	77	Woods, Good, HSG D
0.100	61	>75% Grass cover, Good, HSG B
0.000	98	Unconnected pavement, HSG B
0.060	74	>75% Grass cover, Good, HSG C
1.130	69	Weighted Average
1.130	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	140	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.9	240	Total			

**Summary for Subcatchment 2-K: Post-Subcatchment Area: E Depression**

Runoff = 4.46 cfs @ 12.25 hrs, Volume= 0.474 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.200	89	Paved roads w/open ditches, 50% imp, HSG B
0.740	55	Woods, Good, HSG B
0.330	61	>75% Grass cover, Good, HSG B
0.080	98	Unconnected pavement, HSG B
1.350	64	Weighted Average
1.170	59	86.67% Pervious Area
0.180	98	13.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.4	175	0.0300	0.87		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
18.1	275	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 24

**Summary for Subcatchment 2-M: Post Subcatchment Area: SE Basin**

Runoff = 2.34 cfs @ 12.20 hrs, Volume= 0.240 af, Depth= 5.53"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.200	98	Unconnected pavement, HSG B
0.320	61	>75% Grass cover, Good, HSG B
0.520	75	Weighted Average
0.320	61	61.54% Pervious Area
0.200	98	38.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0200	0.12		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
0.9	190	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
15.0	290	Total			

**Summary for Subcatchment 2-O: Post-Subcatchment Area: SE Abutters**

Runoff = 5.91 cfs @ 12.16 hrs, Volume= 0.511 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.240	55	Woods, Good, HSG B
1.190	61	>75% Grass cover, Good, HSG B
0.100	98	Roofs, HSG B
1.530	62	Weighted Average
1.430	60	93.46% Pervious Area
0.100	98	6.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0500	0.17		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.2	240	0.0500	3.35		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
10.9	340	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 25

**Summary for Subcatchment 2-R: Post-Subcatchment Area: SW Abutters**

Runoff = 7.05 cfs @ 12.30 hrs, Volume= 0.784 af, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.870	55	Woods, Good, HSG B
1.110	61	>75% Grass cover, Good, HSG B
0.220	77	Woods, Good, HSG D
0.150	98	Unconnected pavement, HSG B
2.350	63	Weighted Average
2.200	60	93.62% Pervious Area
0.150	98	6.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	100	0.0600	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.7	270	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.1	470	Total			

**Summary for Subcatchment 2-S: Post Subcatchment Area: South**

Runoff = 11.66 cfs @ 12.37 hrs, Volume= 1.415 af, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.160	98	Unconnected roofs, HSG B
2.100	55	Woods, Good, HSG B
2.400	61	>75% Grass cover, Good, HSG B
4.660	60	Weighted Average
4.500	58	96.57% Pervious Area
0.160	98	3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
14.0	830	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.9	930	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 26

**Summary for Subcatchment 3-A: Post-Subcatchment Area: Central Depression**

Runoff = 4.06 cfs @ 12.27 hrs, Volume= 0.445 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
0.400	55	Woods, Good, HSG B
0.580	61	>75% Grass cover, Good, HSG B
0.220	98	Unconnected roofs, HSG B
1.200	66	Weighted Average
0.980	59	81.67% Pervious Area
0.220	98	18.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0400	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
3.0	180	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.0	280	Total			

**Summary for Subcatchment 3-C: Post-Subcatchment Area: NE Abutters**

Runoff = 6.57 cfs @ 12.30 hrs, Volume= 0.735 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
1.880	55	Woods, Good, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.120	98	Unconnected pavement, HSG B
2.530	58	Weighted Average
2.410	56	95.26% Pervious Area
0.120	98	4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0500	0.11		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	360	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.7	460	Total			

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 27

**Summary for Subcatchment 3-E: Pre-Subcatchment Area: NE Farmland**

Runoff = 13.51 cfs @ 12.19 hrs, Volume= 1.250 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-YR. Rainfall=8.50"

Area (ac)	CN	Description
3.550	61	>75% Grass cover, Good, HSG B
0.170	98	Paved parking, HSG B
3.720	63	Weighted Average
3.550	61	95.43% Pervious Area
0.170	98	4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.30"
1.6	200	0.0200	2.12		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
13.5	300	Total			

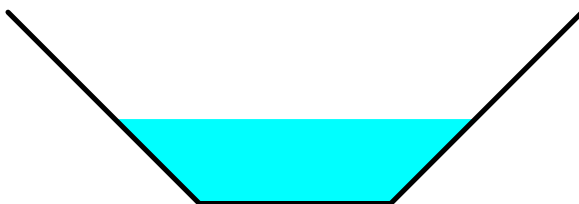
**Summary for Reach 2-B: Swale**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 5.18" for 100-YR. event  
 Inflow = 5.39 cfs @ 12.14 hrs, Volume= 0.466 af  
 Outflow = 5.36 cfs @ 12.15 hrs, Volume= 0.466 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Max. Velocity= 8.44 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 2.41 fps, Avg. Travel Time= 1.3 min

Peak Storage= 118 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 0.44', Surface Width= 1.89'  
 Bank-Full Depth= 1.00' Flow Area= 2.0 sf, Capacity= 25.35 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding  
 Side Slope Z-value= 1.0 ' / ' Top Width= 3.00'  
 Length= 185.0' Slope= 0.1081 ' / '  
 Inlet Invert= 165.00', Outlet Invert= 145.00'



**Summary for Reach 2-H: Swale**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 1.75" for 100-YR. event  
Inflow = 2.41 cfs @ 12.20 hrs, Volume= 0.086 af  
Outflow = 2.39 cfs @ 12.22 hrs, Volume= 0.086 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Max. Velocity= 6.06 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.93 fps, Avg. Travel Time= 1.1 min

Peak Storage= 79 cf @ 12.21 hrs  
Average Depth at Peak Storage= 0.16' , Surface Width= 2.96'  
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 83.28 cfs

2.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight  
Side Slope Z-value= 3.0 ' / ' Top Width= 8.00'  
Length= 200.0' Slope= 0.1200 ' / '  
Inlet Invert= 160.00', Outlet Invert= 136.00'



**Summary for Reach 2-Q: South Depression Outfall**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 2.45" for 100-YR. event  
Inflow = 9.35 cfs @ 12.34 hrs, Volume= 0.695 af  
Outflow = 7.88 cfs @ 12.62 hrs, Volume= 0.695 af, Atten= 16%, Lag= 16.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
Max. Velocity= 1.24 fps, Min. Travel Time= 9.3 min  
Avg. Velocity = 0.32 fps, Avg. Travel Time= 36.0 min

Peak Storage= 4,395 cf @ 12.46 hrs  
Average Depth at Peak Storage= 0.18' , Surface Width= 40.80'  
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 195.76 cfs

30.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds  
Side Slope Z-value= 30.0 ' / ' Top Width= 90.00'  
Length= 690.0' Slope= 0.0101 ' / '  
Inlet Invert= 149.00', Outlet Invert= 142.00'



**Summary for Pond 1-B: Sand Filter - "A"**

Inflow Area = 1.800 ac, 10.56% Impervious, Inflow Depth = 4.51" for 100-YR. event  
 Inflow = 7.17 cfs @ 12.19 hrs, Volume= 0.676 af  
 Outflow = 7.15 cfs @ 12.20 hrs, Volume= 0.676 af, Atten= 0%, Lag= 0.4 min  
 Discarded = 0.27 cfs @ 12.20 hrs, Volume= 0.272 af  
 Primary = 6.89 cfs @ 12.20 hrs, Volume= 0.404 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.92' @ 12.20 hrs Surf.Area= 1,396 sf Storage= 987 cf

Plug-Flow detention time= 15.1 min calculated for 0.676 af (100% of inflow)  
 Center-of-Mass det. time= 15.1 min ( 840.4 - 825.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	1,095 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	740	0	0
145.00	1,450	1,095	1,095

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.75'	<b>40.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65			
2.66 2.66 2.67 2.69 2.72 2.76 2.83			

**Discarded OutFlow** Max=0.27 cfs @ 12.20 hrs HW=144.92' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.27 cfs)

**Primary OutFlow** Max=6.85 cfs @ 12.20 hrs HW=144.92' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 6.85 cfs @ 0.99 fps)

**Summary for Pond 2-C: Sand Filter-"B"**

Inflow Area = 1.080 ac, 22.22% Impervious, Inflow Depth = 5.18" for 100-YR. event  
 Inflow = 5.36 cfs @ 12.15 hrs, Volume= 0.466 af  
 Outflow = 5.20 cfs @ 12.18 hrs, Volume= 0.466 af, Atten= 3%, Lag= 1.7 min  
 Discarded = 0.42 cfs @ 12.18 hrs, Volume= 0.293 af  
 Secondary = 4.78 cfs @ 12.18 hrs, Volume= 0.173 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 145.34' @ 12.18 hrs Surf.Area= 2,202 sf Storage= 2,674 cf

Plug-Flow detention time= 39.9 min calculated for 0.466 af (100% of inflow)  
 Center-of-Mass det. time= 39.9 min ( 844.8 - 804.9 )

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 30

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	3,043 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	130	0	0
144.50	1,370	1,125	1,125
145.00	2,000	843	1,968
145.50	2,300	1,075	3,043

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Secondary	145.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.42 cfs @ 12.18 hrs HW=145.34' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.42 cfs)

**Secondary OutFlow** Max=4.76 cfs @ 12.18 hrs HW=145.34' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 4.76 cfs @ 1.42 fps)

**Summary for Pond 2-F: Infiltration Basin-"A"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 5.26" for 100-YR. event  
 Inflow = 2.74 cfs @ 12.17 hrs, Volume= 0.258 af  
 Outflow = 2.70 cfs @ 12.19 hrs, Volume= 0.258 af, Atten= 1%, Lag= 1.2 min  
 Discarded = 0.16 cfs @ 12.19 hrs, Volume= 0.136 af  
 Primary = 2.55 cfs @ 12.19 hrs, Volume= 0.123 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 161.61' @ 12.19 hrs Surf.Area= 823 sf Storage= 390 cf

Plug-Flow detention time= 10.2 min calculated for 0.258 af (100% of inflow)  
 Center-of-Mass det. time= 10.2 min ( 806.1 - 795.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	1,318 cf	<b>Custom Stage Data 1 (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	445	0	0
162.00	1,060	753	753
162.50	1,200	565	1,318

Device	Routing	Invert	Outlet Devices
#1	Discarded	161.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Device 3	161.50'	<b>2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns</b> X 6 rows C= 0.600 Limited to weir flow at low heads

**North Woods Subdivision - Proposed Hydrology**

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 31

#3 Primary 160.25' **12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500  
 Inlet / Outlet Invert= 160.25' / 160.00' S= 0.0056 '/' Cc= 0.900  
 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.16 cfs @ 12.19 hrs HW=161.61' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.16 cfs)

**Primary OutFlow** Max=2.53 cfs @ 12.19 hrs HW=161.61' (Free Discharge)  
 ↑ **3=Culvert** (Passes 2.53 cfs of 3.00 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 2.53 cfs @ 1.62 fps)

**Summary for Pond 2-G: Sand Filter-"C"**

Inflow Area = 0.590 ac, 32.20% Impervious, Inflow Depth = 2.49" for 100-YR. event  
 Inflow = 2.55 cfs @ 12.19 hrs, Volume= 0.123 af  
 Outflow = 2.54 cfs @ 12.20 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.7 min  
 Discarded = 0.13 cfs @ 12.20 hrs, Volume= 0.037 af  
 Primary = 2.41 cfs @ 12.20 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 160.22' @ 12.20 hrs Surf.Area= 672 sf Storage= 602 cf

Plug-Flow detention time= 16.2 min calculated for 0.123 af (100% of inflow)  
 Center-of-Mass det. time= 16.2 min ( 761.9 - 745.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	159.00'	795 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
159.00	265	0	0
160.00	650	458	458
160.50	700	338	795

Device	Routing	Invert	Outlet Devices
#1	Discarded	159.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	160.00'	<b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Discarded OutFlow** Max=0.13 cfs @ 12.20 hrs HW=160.22' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=2.39 cfs @ 12.20 hrs HW=160.22' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 2.39 cfs @ 1.10 fps)

**Summary for Pond 2-J: C Wetlands**

Inflow Area = 1.720 ac, 11.05% Impervious, Inflow Depth = 3.74" for 100-YR. event  
 Inflow = 7.18 cfs @ 12.21 hrs, Volume= 0.536 af  
 Outflow = 7.10 cfs @ 12.23 hrs, Volume= 0.484 af, Atten= 1%, Lag= 1.3 min  
 Discarded = 0.01 cfs @ 12.23 hrs, Volume= 0.056 af  
 Primary = 7.09 cfs @ 12.23 hrs, Volume= 0.428 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 144.14' @ 12.23 hrs Surf.Area= 5,178 sf Storage= 4,779 cf

Plug-Flow detention time= 249.5 min calculated for 0.484 af (90% of inflow)  
 Center-of-Mass det. time= 203.6 min ( 1,021.4 - 817.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	3,200	0	0
144.50	5,800	6,750	6,750

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	<b>0.100 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	144.00'	<b>50.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.01 cfs @ 12.23 hrs HW=144.14' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=7.06 cfs @ 12.23 hrs HW=144.14' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 7.06 cfs @ 1.00 fps)

**Summary for Pond 2-L: East Depression**

Inflow Area = 1.350 ac, 13.33% Impervious, Inflow Depth = 4.22" for 100-YR. event  
 Inflow = 4.46 cfs @ 12.25 hrs, Volume= 0.474 af  
 Outflow = 4.19 cfs @ 12.32 hrs, Volume= 0.474 af, Atten= 6%, Lag= 4.2 min  
 Discarded = 0.19 cfs @ 12.32 hrs, Volume= 0.262 af  
 Primary = 4.00 cfs @ 12.32 hrs, Volume= 0.212 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 155.09' @ 12.32 hrs Surf.Area= 8,170 sf Storage= 3,939 cf

Plug-Flow detention time= 114.4 min calculated for 0.474 af (100% of inflow)  
 Center-of-Mass det. time= 114.5 min ( 943.5 - 829.0 )

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Type III 24-hr 100-YR. Rainfall=8.50"

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Page 33

Volume	Invert	Avail.Storage	Storage Description
#1	154.50'	12,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.50	5,000	0	0
155.00	8,000	3,250	3,250
156.00	10,000	9,000	12,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	154.50'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	155.00'	<b>60.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.19 cfs @ 12.32 hrs HW=155.09' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.19 cfs)

**Primary OutFlow** Max=3.99 cfs @ 12.32 hrs HW=155.09' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 3.99 cfs @ 0.78 fps)

**Summary for Pond 2-N: 15" CULVERT**

Inflow Area = 1.870 ac, 20.32% Impervious, Inflow Depth = 2.90" for 100-YR. event  
 Inflow = 5.94 cfs @ 12.30 hrs, Volume= 0.452 af  
 Outflow = 5.88 cfs @ 12.32 hrs, Volume= 0.452 af, Atten= 1%, Lag= 0.7 min  
 Discarded = 0.00 cfs @ 12.32 hrs, Volume= 0.000 af  
 Primary = 5.88 cfs @ 12.32 hrs, Volume= 0.452 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 152.13' @ 12.32 hrs Surf.Area= 183 sf Storage= 68 cf

Plug-Flow detention time= 0.1 min calculated for 0.452 af (100% of inflow)

Center-of-Mass det. time= 0.1 min ( 787.1 - 787.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.50'	1,487 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.50	6	0	0
151.00	18	6	6
152.00	72	45	51
153.00	900	486	537
154.00	1,000	950	1,487

Device	Routing	Invert	Outlet Devices
#1	Primary	150.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.50' / 150.00' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

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Page 34

#2 Discarded 150.50' **0.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'  
 #3 Secondary 153.37' **10.0' long x 20.0' breadth Overflow**  
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60  
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.00 cfs @ 12.32 hrs HW=152.12' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=5.86 cfs @ 12.32 hrs HW=152.12' (Free Discharge)  
 ↑**1=Culvert** (Barrel Controls 5.86 cfs @ 4.81 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.50' (Free Discharge)  
 ↑**3=Overflow** ( Controls 0.00 cfs)

**Summary for Pond 2-P: Infiltration Basin "B"**

Inflow Area = 3.400 ac, 14.12% Impervious, Inflow Depth = 3.40" for 100-YR. event  
 Inflow = 10.01 cfs @ 12.28 hrs, Volume= 0.963 af  
 Outflow = 9.48 cfs @ 12.34 hrs, Volume= 0.963 af, Atten= 5%, Lag= 3.6 min  
 Discarded = 0.12 cfs @ 12.34 hrs, Volume= 0.268 af  
 Primary = 9.35 cfs @ 12.34 hrs, Volume= 0.695 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 150.49' @ 12.34 hrs Surf.Area= 5,271 sf Storage= 8,447 cf

Plug-Flow detention time= 210.0 min calculated for 0.963 af (100% of inflow)  
 Center-of-Mass det. time= 210.8 min ( 1,022.6 - 811.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	11,380 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	40	0	0
148.00	640	340	340
149.00	3,300	1,970	2,310
150.00	4,270	3,785	6,095
151.00	6,300	5,285	11,380

Device	Routing	Invert	Outlet Devices
#1	Discarded	147.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	150.00'	<b>10.0' long x 55.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.12 cfs @ 12.34 hrs HW=150.49' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=9.32 cfs @ 12.34 hrs HW=150.49' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 9.32 cfs @ 1.89 fps)

# North Woods Subdivision - Proposed Hydrology

Type III 24-hr 100-YR. Rainfall=8.50"

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Page 35

## Summary for Pond 3-B: Sand Filter "D"

Inflow Area = 1.200 ac, 18.33% Impervious, Inflow Depth = 4.45" for 100-YR. event  
 Inflow = 4.06 cfs @ 12.27 hrs, Volume= 0.445 af  
 Outflow = 2.39 cfs @ 12.55 hrs, Volume= 0.445 af, Atten= 41%, Lag= 17.0 min  
 Discarded = 0.70 cfs @ 12.55 hrs, Volume= 0.346 af  
 Primary = 1.69 cfs @ 12.55 hrs, Volume= 0.099 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 160.20' @ 12.55 hrs Surf.Area= 3,633 sf Storage= 4,730 cf

Plug-Flow detention time= 47.0 min calculated for 0.445 af (100% of inflow)  
 Center-of-Mass det. time= 47.0 min ( 868.6 - 821.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	28,935 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	1,110	0	0
159.00	1,960	1,535	1,535
160.00	3,060	2,510	4,045
161.00	5,860	4,460	8,505
162.00	10,750	8,305	16,810
163.00	13,500	12,125	28,935

Device	Routing	Invert	Outlet Devices
#1	Discarded	158.00'	<b>8.270 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	161.70'	<b>7.0' long x 14.0' breadth Overflow</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#3	Primary	159.50'	<b>12.0" Round Culvert</b> L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 159.50' / 158.00' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.70 cfs @ 12.55 hrs HW=160.20' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.70 cfs)

**Primary OutFlow** Max=1.69 cfs @ 12.55 hrs HW=160.20' (Free Discharge)

↑ **2=Overflow** ( Controls 0.00 cfs)

↑ **3=Culvert** (Inlet Controls 1.69 cfs @ 2.86 fps)

## Summary for Pond 3-D: Infiltration Basin "N"

Inflow Area = 3.730 ac, 9.12% Impervious, Inflow Depth = 2.68" for 100-YR. event  
 Inflow = 7.39 cfs @ 12.36 hrs, Volume= 0.834 af  
 Outflow = 7.36 cfs @ 12.38 hrs, Volume= 0.834 af, Atten= 1%, Lag= 1.4 min  
 Discarded = 0.12 cfs @ 12.38 hrs, Volume= 0.175 af  
 Primary = 7.24 cfs @ 12.38 hrs, Volume= 0.659 af

**North Woods Subdivision - Proposed Hydrology**

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Page 36

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.67' @ 12.38 hrs Surf.Area= 4,957 sf Storage= 2,665 cf

Plug-Flow detention time= 50.0 min calculated for 0.834 af (100% of inflow)  
 Center-of-Mass det. time= 49.9 min ( 892.7 - 842.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	4,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	3,000	0	0
151.50	4,400	1,850	1,850
152.00	6,000	2,600	4,450

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	151.50'	<b>40.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.12 cfs @ 12.38 hrs HW=151.67' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=7.23 cfs @ 12.38 hrs HW=151.67' (Free Discharge)  
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 7.23 cfs @ 1.04 fps)

**Summary for Pond 3-F: NE Abutters Depression**

Inflow Area = 7.450 ac, 6.85% Impervious, Inflow Depth = 3.07" for 100-YR. event  
 Inflow = 18.64 cfs @ 12.22 hrs, Volume= 1.909 af  
 Outflow = 1.63 cfs @ 14.55 hrs, Volume= 1.909 af, Atten= 91%, Lag= 139.8 min  
 Discarded = 1.63 cfs @ 14.55 hrs, Volume= 1.909 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs  
 Peak Elev= 151.63' @ 14.55 hrs Surf.Area= 69,174 sf Storage= 41,999 cf

Plug-Flow detention time= 261.3 min calculated for 1.908 af (100% of inflow)  
 Center-of-Mass det. time= 261.3 min ( 1,095.3 - 834.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	105,000 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	65,000	0	0
152.50	75,000	105,000	105,000

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Page 37

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	152.00'	<b>40.0' long x 100.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=1.63 cfs @ 14.55 hrs HW=151.63' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 1.63 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=151.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Link 1: DP-1: A Wetlands

Inflow Area = 10.226 ac, 4.50% Impervious, Inflow Depth = 3.50" for 100-YR. event  
Inflow = 20.99 cfs @ 12.42 hrs, Volume= 2.985 af  
Primary = 20.99 cfs @ 12.42 hrs, Volume= 2.985 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

## Summary for Link 2: DP-2: B Wetlands

Inflow Area = 13.430 ac, 8.04% Impervious, Inflow Depth = 3.60" for 100-YR. event  
Inflow = 33.14 cfs @ 12.25 hrs, Volume= 4.030 af  
Primary = 33.14 cfs @ 12.25 hrs, Volume= 4.030 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

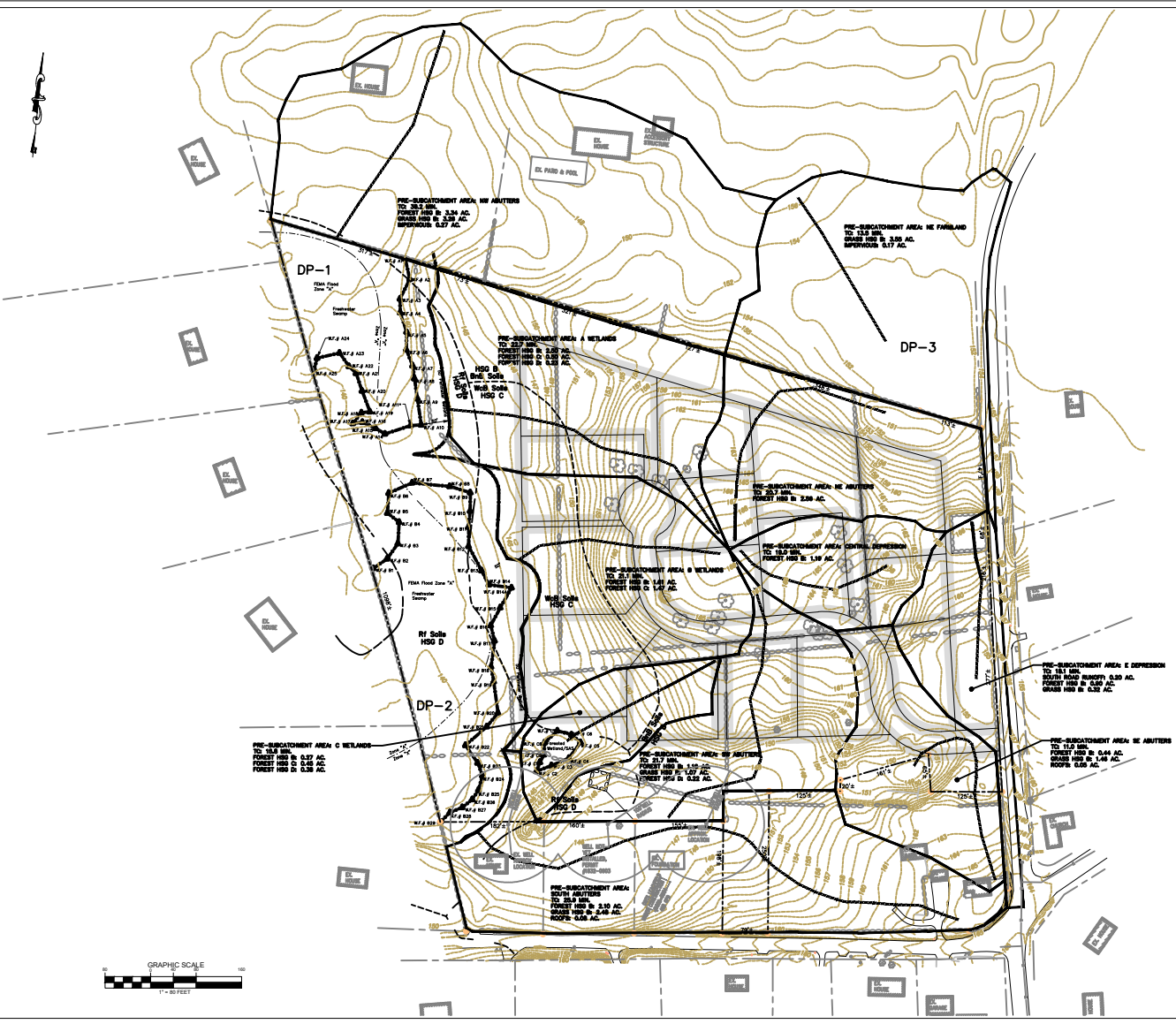
## Summary for Link 3: DP-3: NE Depression Outfall

Inflow Area = 7.450 ac, 6.85% Impervious, Inflow Depth = 0.00" for 100-YR. event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

## Appendix E:

### Watershed Maps



**RI DEM FWWP APPLICATION PLAN**  
**NORTH WOODS SUBDIVISION**  
**EXISTING CONDITIONS WATERSHED MAP**

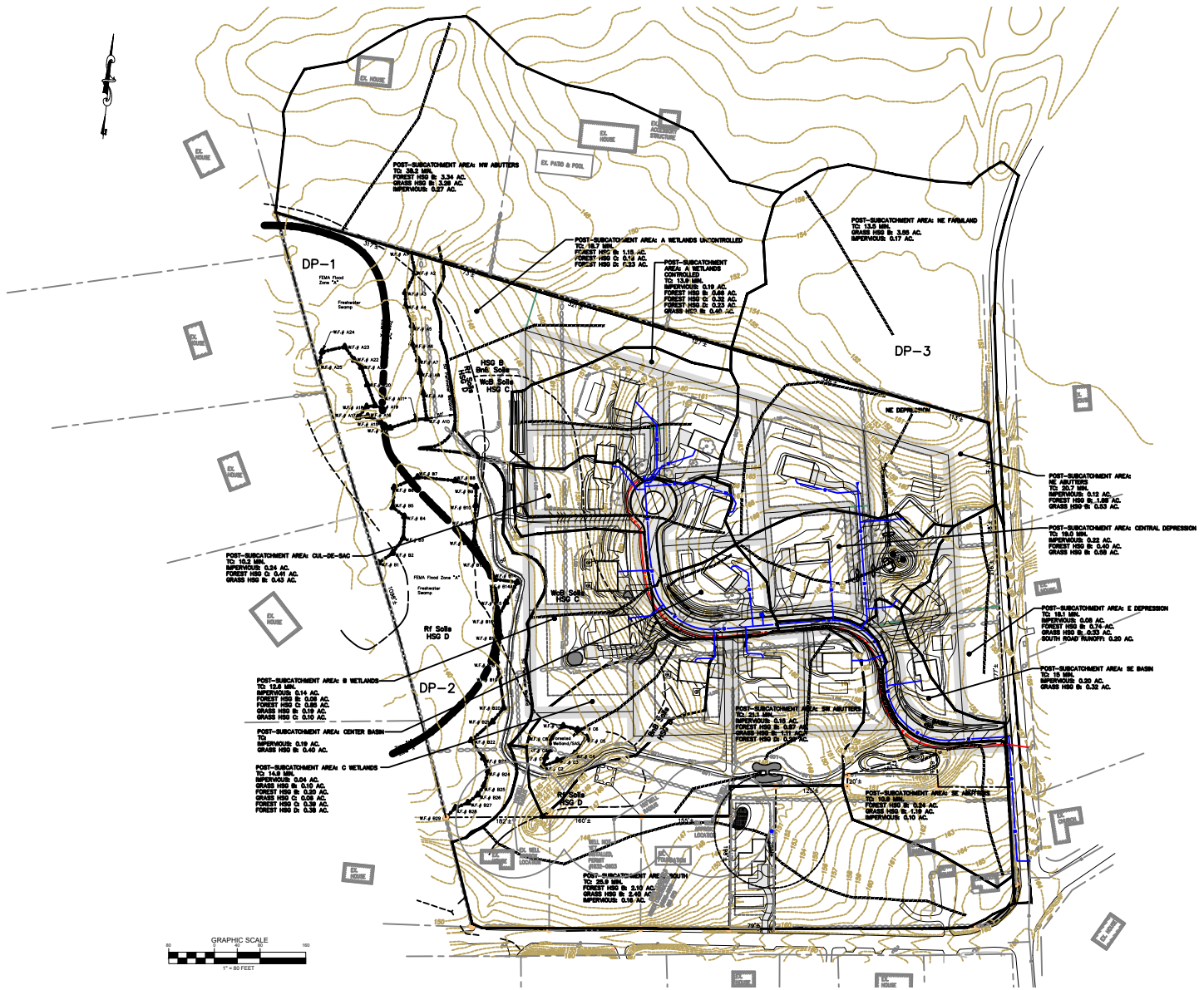
A.P. 47-2, LOT 120  
 SOUTH KINGSTOWN RHODE ISLAND  
 SCALE: AS SHOWN DATE: 10/30/20 SHEET 1 of 1

REGISTRATION:	
NO.	DATE

REVISIONS:	
NO.	DATE

JOB NO.: 20.010

**GROUND BREAKING DESIGNS, LLC**  
 CIVIL ENGINEERING & SITE DESIGN  
 90 HIGHLAND AVE.  
 SOUTH KINGSTOWN, RI 02879  
 PHONE: (401) 622-2932



RI DEM FWWP APPLICATION PLAN  
**NORTH WOODS SUBDIVISION**  
**POST CONSTRUCTION WATERSHED MAP**  
 A.P. 47-2, LOT 120  
 SOUTH KINGSTOWN, RHODE ISLAND  
 SCALE: AS SHOWN DATE: 10/30/20 SHEET 1 of 1

REVISIONS:

NO.	DATE	DESCRIPTION	BY

REGISTRATION:

**GROUND BREAKING DESIGNS, LLC**  
 CIVIL ENGINEERING & SITE DESIGN  
 90 HIGHLAND AVE.  
 SOUTH KINGSTOWN, RI 02879  
 PHONE: (401) 622-2932

JOB NO.: 20.01.0